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A Dissertation on Locks and Lockpicking, and the Principles of Burglar Proofing.

Lewis Falley, Jr.

575-7.

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A DISSERTATION

ON

LOCKS AND LOCKPICKING,

AND THE

PRINCIPLES OF BURGLAR PROOFING:

SHOWING THE

ADVANTAGES ATTENDING THE USE OF

THE MAGIC INFALLIBLE BANK-LOCK, THE INFALLIBLE SAFE LOCK, AND THE PATENT DOOR LOCK.

INVENTED BY

LINUS YALE, JR.,

(LATE OF NEWPORT, N. Y.)

AND HIS

PATENT CHILLED IRON BURGLAR-PROOF BANK DOORS, VAULTS, AND SAFES,

WHICH ARE ADOPTED BY THE

U. S. TREASURY DEPARTMENT FOR ALL THE NEW MINTS, CUSTOM-HOUSES, AND SUB-TREASURIES IN THE UNITED STATES.

MANUFACTURED AND SOLD BY

LINUS YALE, JR., & CO.,

No. 26 WALNUT STREET, PHILADELPHIA.

No. 152 BROADWAY, NEW YORK.

PHILADELPHIA:

T. K. AND P. G. COLLINS, PRINTERS.

1856.

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NOTICE TO THE PUBLIC.

HAVING heard that the *Bacon Lock* is presented to the public by interested parties, as *the Yale Lock*, with the evident intention of selling it, through the reputation our Mr. Linus Yale, Jr., has obtained, by picking the Day and Newell, or Hobbs, and other locks, it is due to ourselves to make the following statement. The Bacon Pin Lock was invented and patented, many years since, by Mr. Linus Yale, Sen., the father of our Mr. Linus Yale, Jr., who sold the patent to Mr. Bacon, of Connecticut, by whom the lock is now manufactured. The Lock is on an entirely different principle from any we make, and has been repeatedly picked, both in England and the United States. It is proper to state that neither Mr. Linus Yale, Sen., nor Mr. Bacon, has any connection with our firm.

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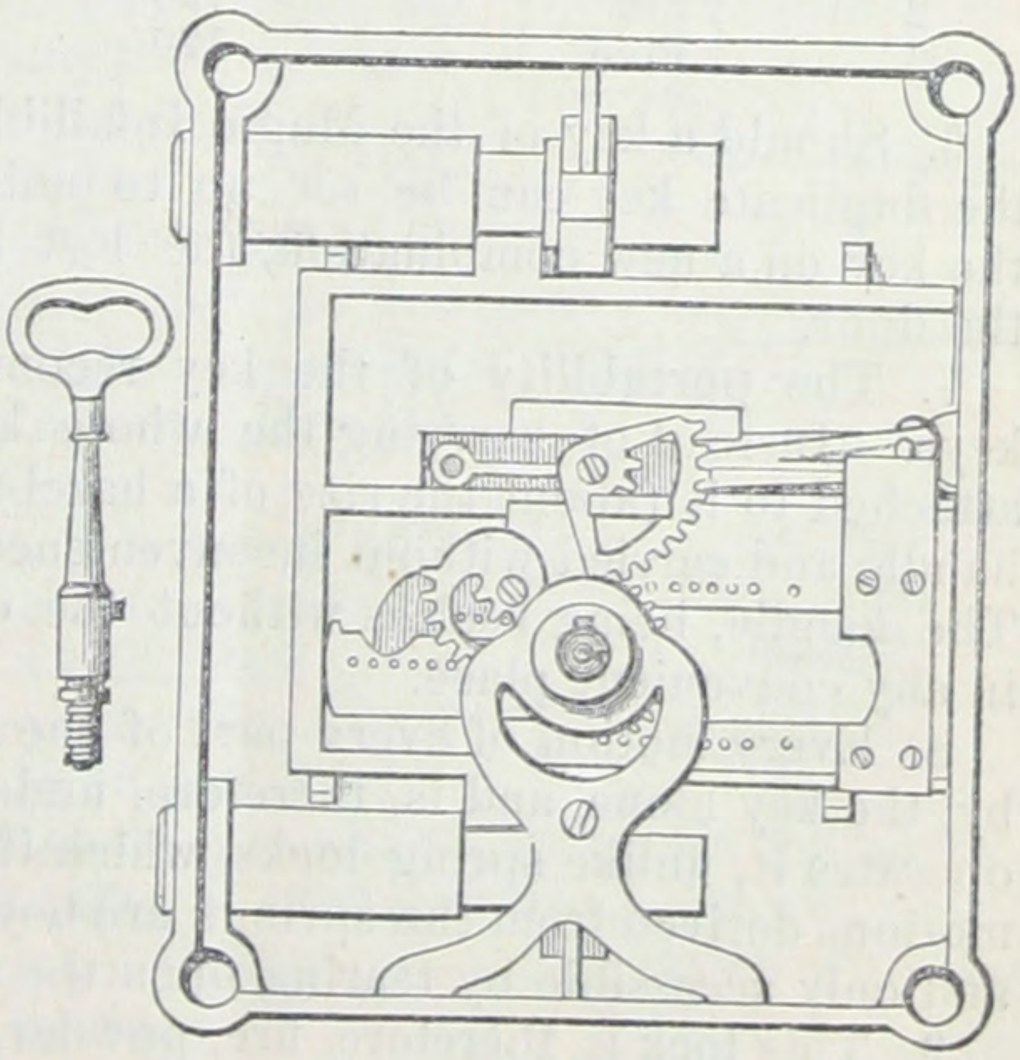
CHAPTER I.

Description of L. Yale, Jr.'s, Magic Infallible Bank Lock—Table of Permutations—Springless Principle—Unpickable and Powder-proof Qualities—Key Detached by Lock from Handle, and unconsciously restored to it—Notice by Patent Office Examiner—Infallible Safe Lock also Unpickable, Small Key pleasant to carry—Patent Door Lock, a Secure Fastening—L. Yale, Jr.'s, Chilled Iron Doors, and Safes cast on Wrought Mesh Work, pefectly Impregnable to Burglarious Effort—Salamandering—Challenge to Public, $3,000 Offered—Conditions of Challenge.

THE following is a description of L. Yale, Jr.'s, Burglar Proof Bank Locks, Doors, and Safes, which are offered by us as the most perfect and reliable safeguards against burglars, fire, and damp, ever presented to the public, and which, as such, have been adopted by the United States Treasury Department, for all the new Sub-Treasuries, Mints, and Custom Houses, and also by a large and increasing number of bankers, brokers, and merchants, and the community at large.

Whilst not wishing to make any invidious comparison between these and the many good locks now in use, we claim for these, as has been acknowledged by those qualified to judge, that they are the most perfect and the simplest locks in the world. Being powder-proof, and only requiring one simple turn of the key, like the most common door lock, and not an application of a wrench in four or more different places, neither a variety of motions with one wrench, they also require no light nor effort of memory. They have all, and more than all the advantages of the best locks, and have none of the defects so common in the complicated contrivances heretofore used.

It has been demonstrated by Mr. Hobbs, that "any lock which leaves its tumblers or stops exposed to sight or feeling through the key-hole, while they can be made to touch the fence or stump, may be easily picked," and Mr. Yale has lately demonstrated, in addition to the above proposition, "that any lock which is operated with a winged key that rubs an impression on the edges of the tumblers is equally unsafe," from which defects these locks are free.



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We request your attention to the following peculiarities of L. Yale, Jr.'s, Magic Infallible Bank Lock.

1. Being without springs, there are none to fail; it is impossible to injure it by fire, dampness, or neglect; springs, by becoming rusty or softening by the heat of a conflagration, are often useless at the most critical juncture, when the vault or safe must then be mutilated to get at its contents.

2. Absolute security from picking is attained by the lock detaching the head with its key-bits, from the handle, carrying it about three inches from the key-hole, from which it is then separated by a steel plate ground to fit tight; it is, therefore, impossible to introduce a picking wire for want of space, and no plastic substance can be introduced to take the print of the tumblers, and these never being exposed to sight or feeling, this lock is entirely unpickable.

3. When the key is withdrawn, all print or record of its action is obliterated, and no *tell-tale* left.

4. This lock is *powder-proof.* No powder can possibly be introduced into the lock itself; the key-hole alone can be loaded, which, from its strength and shape, can be no more injured by the explosion of gunpowder, than a pistol barrel of equal size.

5. This is a permutation lock, requiring the key only to be changed, when any new combination in locking out is required; the key itself changing the lock to the desired combination, or change. These keys, from their peculiar construction, are capable of a vastly greater number of changes than the key of any other lock made of a similar number of tumblers. The following table shows, at a glance, a comparison between this and other keys, and the number of their changes that can be made on each one, showing that the attempt to ring them in detail, even with the true key, to be entirely hopeless.

No. of Lock.	No. of Tumblers.	No. of changes in ordinary permutation keys.	No. of changes in key of the Magic Infallible Bank Lock.	No. of changes that can be made in the Magic Infallible Bank Lock itself.
1	Eight	40,320	4,314,240	100,000,000
2	Six	720	33,140	1,000,000
3	Five	120	3,840	100,000

6. Should a key of the Magic Infallible be lost or stolen, the bits of the duplicate key can be set up to unlock the door; on rearranging the key on a new combination, the lost key will be powerless to open the door.

7. The portability of the key recommends it over most bank lock keys. Instead of carrying the whole key, the key pod, with the bits attached to it (about the size of a hazel-nut), can be detached from the handle and carried without inconvenience in the vest pocket or wallet. The handle, being useless without the detached pod, may be hung up in any convenient place.

8. Every motion of every part of the lock is derived from, and given by, the key alone, and is, therefore, under the control of the hand which operates it, unlike spring locks, which if clogged by rust or dirt, their motions derived from the springs are beyond the control of the operator, and only accessible by tearing open the vault, door, or safe.

9. This lock is, therefore, fire, powder, damp, and thief proof, and not liable to get out of order, being made by first class machinists.

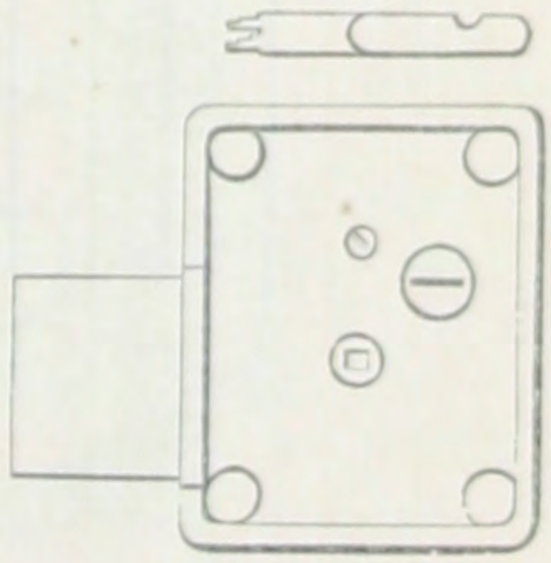
As an earnest of our confidence in it, we offer $3000 to any one who can pick this lock on any of our burglar proof safes or vault doors. See challenge.

The following description of this lock may be found in the Patent Office Report for 1852–53, page 386, by Examiner H. B. Renwick, from an inspection of the imperfect model first sent the Patent Office, since when it has been much improved, and in fact, perfected :—

"A very curious, novel, and it appears to me, unpickable lock has also been patented. The key-bit of this lock is composed of a series of closely packed cylindrical disks of different sizes. The key-hole is a small cylindrical cavity closed at the bottom, and when open has no connection with the tumblers or any part of the interior of the lock. The key-bit is attached to the handle by a spring connection, and when the operator introduces it and commences to turn the key, the first operation of the lock is to separate the bit from the handle; as he turns, the former is carried in the cylindrical cavity away from the handle; a solid metal block occupies the place of the cylinder; the key-hole is entirely closed; the bit moves on and lifts the tumblers, and by a continuation of the turning motion, the bolt is finally retracted. A reverse motion of the handle shoots the bolt, drops the tumblers, carries the key-bit beneath the handle, re-attaches it thereto, and when the latter is withdrawn, the key aperture is in its place and exposed. Powder enough to fill the cylinder is all that can be introduced into the lock, and its explosion therein damages it no more than it would a pistol barrel of the same size. It is simple in its details, has no long trains of motions depending on each other, and is not liable to get out of order."

L. YALE, JR.'S, INFALLIBLE SAFE LOCK,

Is designed for fire-proof safes, cash doors, &c. Like the Magic Infallible Bank Lock, it is without springs, and absolutely proof against powder, fire, damp, and thieves. By thrusting the key into the lock, the tumblers are arranged, when it should then be withdrawn. On turning the knob, the key-hole is securely closed, and the tumblers as arranged are carried into the interior of the lock, and brought into contact with the fence or stump beyond the reach of the picking tool. A turn of the knob relocks the bolt without the use of the key; and this must take place before the key-hole can be again opened, previously to which the tumblers are restored to their normal position, and all trace of any impression, either right or wrong, is totally obliterated; thus the picklock's effort is in vain.



Although from its low price, it is not a permutation lock, yet as no two locks are ever made to open by the same key, and as the lock gives no clue to the shape of the key, the chances of making a false key is but one in 10,000,000.

As the key must be withdrawn from the key-hole before the bolt can be unlocked, it prevents the liability of carelessly leaving the key in the lock, subject to the common trick of taking a wax impression of the key, from which a false key can be made.

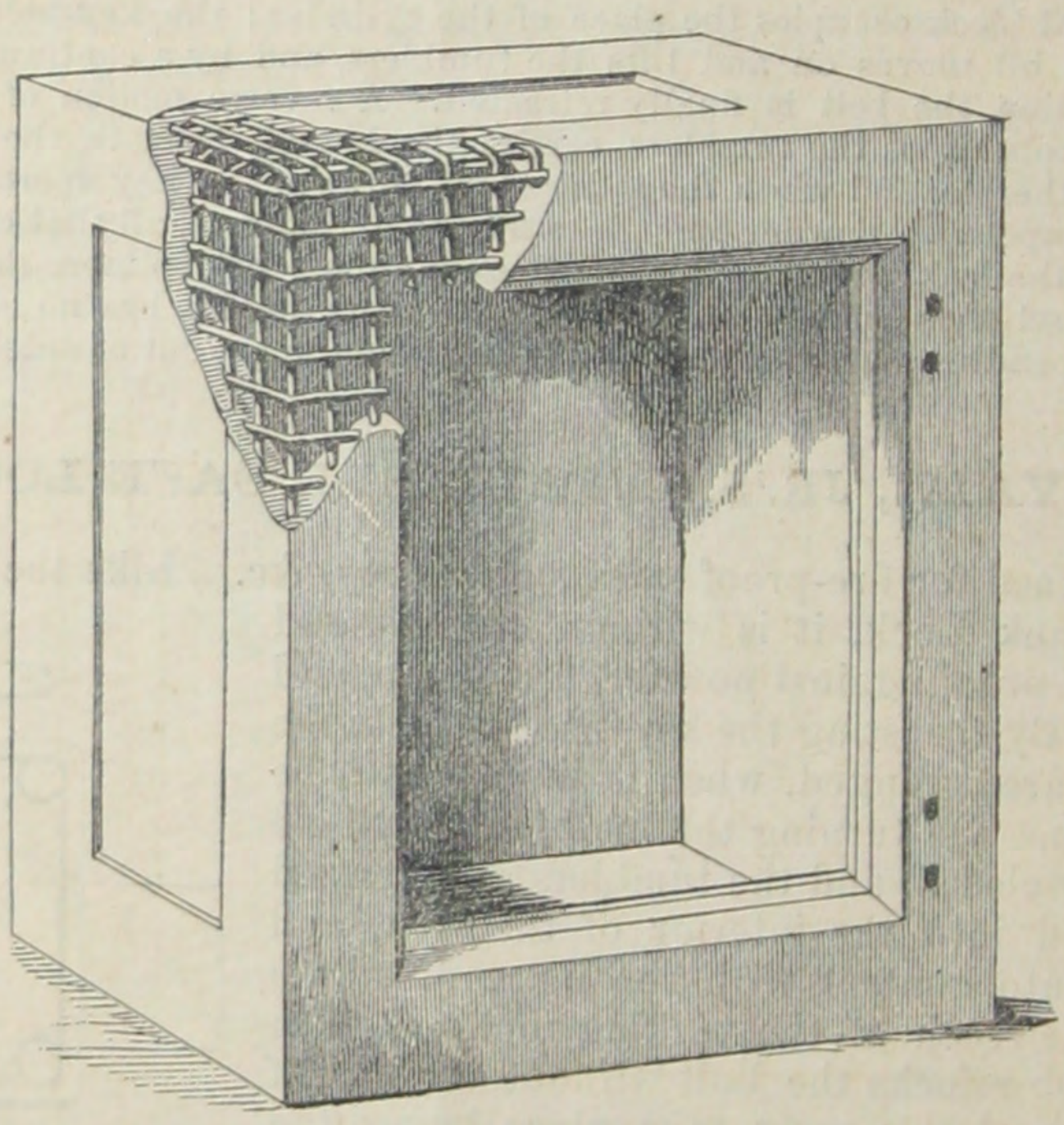
The key is small and smooth, folding up like a penknife, it is a pleasant and convenient form for carrying in the vest pocket.

L. Yale, Jr.'s, Patent Door Locks are simple in their construction, but entirely powder and pick proof, and admirably adapted for stores and dwelling-houses.

L. YALE, JR.'S,

Burglar-Proof Chilled Iron Bank Doors, Vaults, Safes, &c. &c.

Of all the different ways of combining wrought and cast iron to resist *burglarious* attempts, this has been found to be the *very best.* The

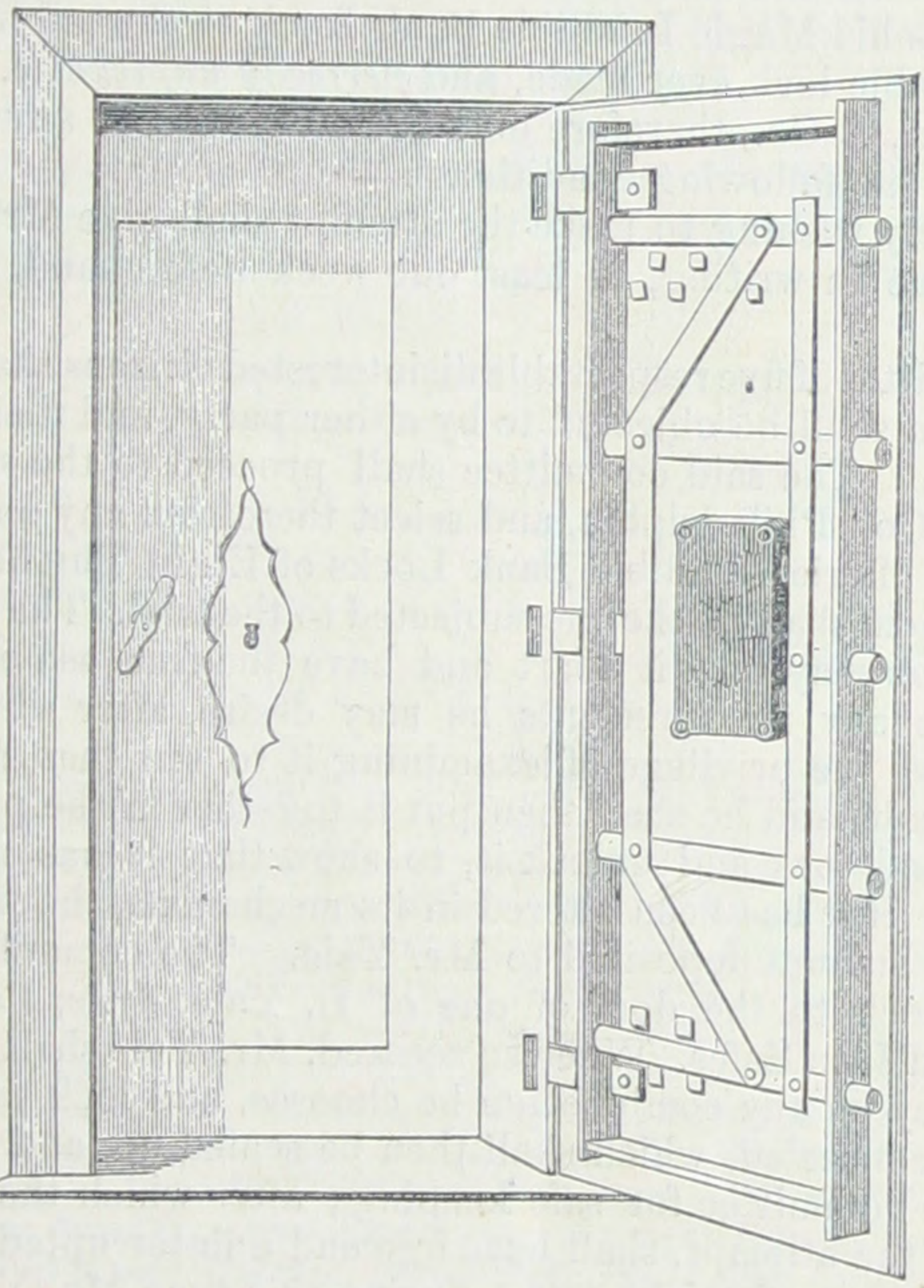


common way of putting plates of hard cast behind those of soft wrought iron, exposes the latter to be cut by the many "*drills,*" "*cutters,*" "*counter-bores,*" and "*chisels*" of the *burglar,* which, when thus treated, exposes the hard iron to be easily broken.

But, in L. Yale, Jr.'s, improved method, a lattice screen, or basket-work, of soft, tough, wrought iron (see cut No. 1), is placed centrally in the mould, around which the hard iron is poured, completely surrounding and embedding it, thus protecting it from the action of any tools the *burglar* can bring to bear against it. Cast iron, to be sufficiently hard to resist cutting by the burglar, is *too* hard to resist the sharp blows of the sledge. But in this plan, although it will crack by the blow, it will still be held in place by the interwoven wrought iron, which frustrates all attempts at separation. So much so, that any failure in the process of making, results in total loss of the stock employed,

as no amount of sledging will reduce it small enough to "charge" into the furnace again.

The cut shows the manner of construction, the corner being left unfilled to show the basket-work of wrought iron. Each safe is cast whole. The door is bolted in the *strongest* possible manner, and to enable us to attach the bolts, locks, &c., they are left soft on the inner side, though extremely hard exteriorly. They are of various sizes—from 500 lbs. to 10,000 lbs., and when secured by the MAGIC INFALLIBLE LOCK, may be depended upon as the thing wanted by bankers, brokers, jewellers, and others, who need a *completely burglar-proof safe or vault.*



It being often desirable to furnish double doors to bank vaults, we are prepared to furnish extra wide jambs, with our burglar-proof door within, and the fire door either of the same or of wrought iron, as may be desired.

Salamandering.

As there are many cases where the burglar-proof safe alone is required for use in bank vaults which are fire-proof in themselves, we do not salamander our safes unless specially requested, in order to save for our friends the cost of fire-proofing, and also the additional space which a salamandered safe requires. But to meet the requirements of a large number of our customers, we give particular attention to salamandering

our Burglar-Proof Safes, in a neat and efficient manner, whenever specially ordered. We offer them to the public in full confidence that they are equal to the best security against fire, in the world, entirely reliable under any and all circumstances; and when secured by our locks, they are a sure protection against fire, violence, or cunning, the best ever offered to the public.

CHALLENGE TO THE WORLD. $3000 OFFERED.

Having picked the most celebrated locks in the world, Linus Yale, Jr., now offers his Magic Infallible Bank Lock to the public, as the best and most reliable lock ever made, and *perfectly unpickable.*

L. Yale, Jr., & Co., therefore offer $3000 reward to any one who can pick it under the following conditions:—

1. The party wishing to make the attempt shall give Mr. Linus Yale, Jr., due notice in writing, at least one week beforehand, of his intentions.

2. A committee of five respectable disinterested citizens shall be selected, none of whom shall be objected to by either party, and their award shall be conclusive. The said committee shall proceed to the store of Linus Yale, Jr., & Co., Philadelphia, and select therefrom any one of L. Yale, Jr.'s, Patent Magic Infallible Bank Locks of Eight Tumblers; the lock selected by them shall be the one subjected to the trial. The party making the application may take it apart and have the free use of it for three days to take any measurements he may desire, after which Mr. Yale may then have the privilege of examining it to see that no alterations have been made, and he shall then put it together in the presence of the committee, and lock and unlock it, to show that it has not been tampered with. If it has been altered in its mechanism, the party so doing to forfeit the amount deposited to Mr. Yale. The committee shall then secure the lock to the door of one of L. Yale, Jr.'s, Patent Burglar Proof Chilled Iron Safes. When so secured, Mr. Yale shall be allowed to set up the key on any combination he chooses, and lock the door, keeping the key concealed, which shall then be sealed up, and placed in the hands of the committee for safe keeping; after which the party applying to make the attempt, shall have free and uninterrupted access to the lock for the space of thirty days; during this time Mr. Yale shall take the key from the committee, and unlock the door, relocking it on the same or any other combination, at intervals of three days apart, during the time of the trial.

3. The party attempting to pick the lock shall make a deposit of $450 in the hands of the committee, before commencing his operations, as a guarantee that he shall not injure the lock and the safe to which it is attached, in the course of his operations, of which $350 shall be restored to him by the committee, at the end of his attempt, if the lock and safe be not injured, to be proved, by neither the safe nor the lock being marred or defaced, and the true key locking and unlocking the lock at the expiration of the trial. But if, on the contrary, they be marred or defaced, or the lock cannot be opened by the true key, then the committee shall pay the said L. Yale, Jr., the said sum of

$350, as an indemnity for such injury. The remaining sum of $100 shall be paid Mr. L. Yale, Jr., by the committee, in any event, to reimburse him for his lost time, the interest of the reward now offered, and to prevent any person from using this challenge as an idle means of annoyance.

4. Linus Yale, Jr., shall at the same time deposit in the hands of the committee the sum of $3000, which shall be refunded him if at the end of the trial, the bolt be not retracted; but if the party making the attempt can fairly unlock the lock during the trial,* he shall do so in the presence of the committee and Mr. L. Yale, Jr., when the said sum of $3000 shall be awarded to the successful operator. At the termination of the trial, the committee shall give a written certificate of the trial and its results.

5. If a rival locksmith make the attempt, he shall put up his lock for L. Yale, Jr., to test, under the same conditions as these herein prescribed, with like penalties.

6. Each party, and the committee, shall sign this agreement in writing, before commencing operations, binding themselves respectively to fulfil these several obligations.

CHAPTER II.

DISSERTATION ON LOCKS, LOCK PICKING, AND BURGLAR PROOF SAFES, &c.; CRITICALLY NOTICING THE PROMINENT FASTENINGS OF THE PRESENT DAY.

Dissertation on Locks—Necessity of Good Locks—Reliance on Watchmen—A Good Lock and Safe the Cheapest Insurance—Duty of Inventors to Publish Exploded Ideas—The Lock Controversy up to the time of the great Exhibition in London—The Controversy continued by Hobbs, &c.—Present State of the Subject—Varieties of Locks—Warded, Tumbler, Pin, Combination, and Alphabet Locks—All the English Locks, Bramah, Barron, Chubb, &c., all picked—American Locks equally defective—The best of these, the Day and Newell's Parautoptic or Great Hobbs Lock having been repeatedly Picked by our Mr. L. Yale, Jr.—L. Yale, Jr.'s, Infallible Principle Springless Locks—Why Springs should never be Used—L. Yale, Jr.'s, Magic Infallible Bank, and Infallible Safe Locks the best in the World—$3,000 Challenge—Patent Office Report.—*Safes.* Burglar Proof Question Examined—Wrought Iron Doors can be Cut Through by Cutter and Counter Bore—Steel Doors and Chilled Iron Plates easily Fractured—Combination of Chilled and Wrought Iron—L. Yale, Jr.'s, Chilled Iron cast on Wrought Iron Mesh Work is Burglar Proof—Cross Bars Necessary—Patent Office Report. *Salamanders.* L. Yale, Jr.'s, Safes, Salamandered or not, as required—General Review of Whole Subject—*United States Treasury Department*—Commission appointed to Investigate State of Fastenings—Adoption by them of L. Yale, Jr.'s, Locks, Safes, and Vault Doors.

But few inventions in daily and hourly use have such a wide-spread interest to the public at large as those on which we would now offer the following remarks. From the richest to the poorest, all depend upon the skill of the locksmith to secure to them the fruits of their toil; and as a necessary consequence, few inventions have been so severely tried as this

* Without injury to it, so that the key which locked it can again lock and unlock it.

branch of mechanism. From time to time, as the cupidity of the robber has caused former inventions to be ranked among exploded ideas of the past, so there has been fresh progress, and fresh skill applied to counteract his efforts; each effort being anew marked with failure, and again and again new improvements have been presented to the public, alike in their turn to share the fate of their predecessors. The art of Locksmithing has become almost a science; and a review of the ingenuity and labor displayed in endeavoring to fill this great want of the community, would show to the inquiring mind the most ingenious system of attack and defence ever witnessed; difficulties and obstacles, instead of daunting, have only stimulated new effort, and as the latest result, we are now able to say "Eureka"—we have found it; and now offer to the public full security against the ravages of thieves and fire.

But little introduction, therefore, is needed in offering the following remarks on the subject of security for objects of value, the fruits of human toil, and their representatives. So long as exists a difference between *meum* and *tuum*, so long there is a necessity for locks, safes, and secure fastenings; and a precursory examination of the present miscalled *securities* in use, is here presented *as a duty*, for the reason that, whenever a lock has by universal consent been pronounced unpickable, it is not only the custodian of valuables, but also of the more invaluable attributes of the honor, name, fame, and integrity of those who, acting as agents for others, have confided in it. If a public officer, relying on the integrity of his lock, which had by common report, and the dicta of skilled engineers, been pronounced unpickable, should find his treasures abstracted, and the lock, still seemingly faithful to its trust, still locked when he went to it, still answering to his key, which he knows has never left his possession, his character and social position would alike suffer, and he would be driven forth, with those dependent on him, with the brand of dishonor on his brow. The *lock* would and does have a higher character than the man, for it is not, as he is, subject to a moral temptation. For this reason, a good lock is more to be relied on than a private watchman, although it is not unusual to hear bankers, jewellers, and others say they place their greatest reliance on the latter. But the method of picking the locks at present in use is so easy, the temptation is so great, that we instinctively recoil at the thought of placing a poor man, hired for a small stipend, in a position where, without active duties to occupy his attention, with the facilities of the long uninterrupted quiet of the night and a succession of nights before him, where he is placed as a guardian over treasures, a handful of which is to him untold wealth, from which he is only separated by an iron door fortified by a lock which he knows he can lock and unlock without a chance of detection. At first his curiosity alone is at work; to try it is no harm, to succeed injures no one; he tries it, and succeeds; he has entered; and, running his fingers through the glittering pile, he thinks of his sick wife, the long doctor's bill, the price of provisions, the cost of living; but honesty being triumphant, he closes all up securely again with a sigh. But an emergency sets a special temptation before him; he wants five dollars, but only designs BORROWING it, he will return it soon; the vault is again entered, and the five dollars are *borrowed*. Habit makes the mind callous; the owner finds the cash short some day, but he thinks it an

error; it is such a trifle he suspects no one, for he reasons that no one who could take fifty thousand would be content with five dollars; besides, he thinks his lock is secure. At length the man finds he has borrowed more than he can repay, and stands confessed to himself a "thief." "He may as well be hung for a sheep as a lamb," and laying his plans, having his own time for their execution, he effects a "heavy bank robbery," and this time alters his wooden key by which he has entered to a new combination, so that the banker cannot open the lock himself. During the consequent delay of tearing down the vault the watchman has escaped to parts unknown; a felon, it is true; but had not the fatal facility which has made villains of men in more elevated positions than that of an humble bank watchman been presented to him, he would probably have lived and died an honest man.*

On the other hand, a cashier suspecting his lock, and finding his cash short through error or inadvertence, may be led to do his watchman the injustice of undeserved suspicion.

We need not speak here of chloroform† and other stupefying influences, as they are too notorious; nor will public officers, by wilfully closing their eyes to the danger, obviate that danger by so doing; nor need we insist on the fact that watchmen have been bribed, and found to be the accomplices of thieves themselves. The daily journals have recorded too many such instances, and, judging from the past, will probably have to do so again, but the majority of cases never reach the public ear. Therefore, whilst reducing the chances to minimum risk by hiring watchmen to keep out the majority, a *good* lock is safety against the minority, and a good lock and good safe are the cheapest insurance against rogues and fire, that bankers and merchants can avail themselves of.

Influenced by these considerations, we here propose a brief examination of the methods adopted, with a view to security in the principal locks in use: methods which we fully prove on general principles, borne out by experiment, to be entirely fallacious, promising what they cannot perform, involving the mischievous error of inducing those ignorant of their defects, to rely on them, to their risk in the hour of trial, when they are in reality as useless to prevent the depredations of the skilled burglar, as the elaborately tied knot of former ages, before locks were in general use: and at the same time to offer one as a substitute for these, free from their numerous and serious defects, which the public may safely confide in.

This is also in accordance with the custom of former inventors, who,

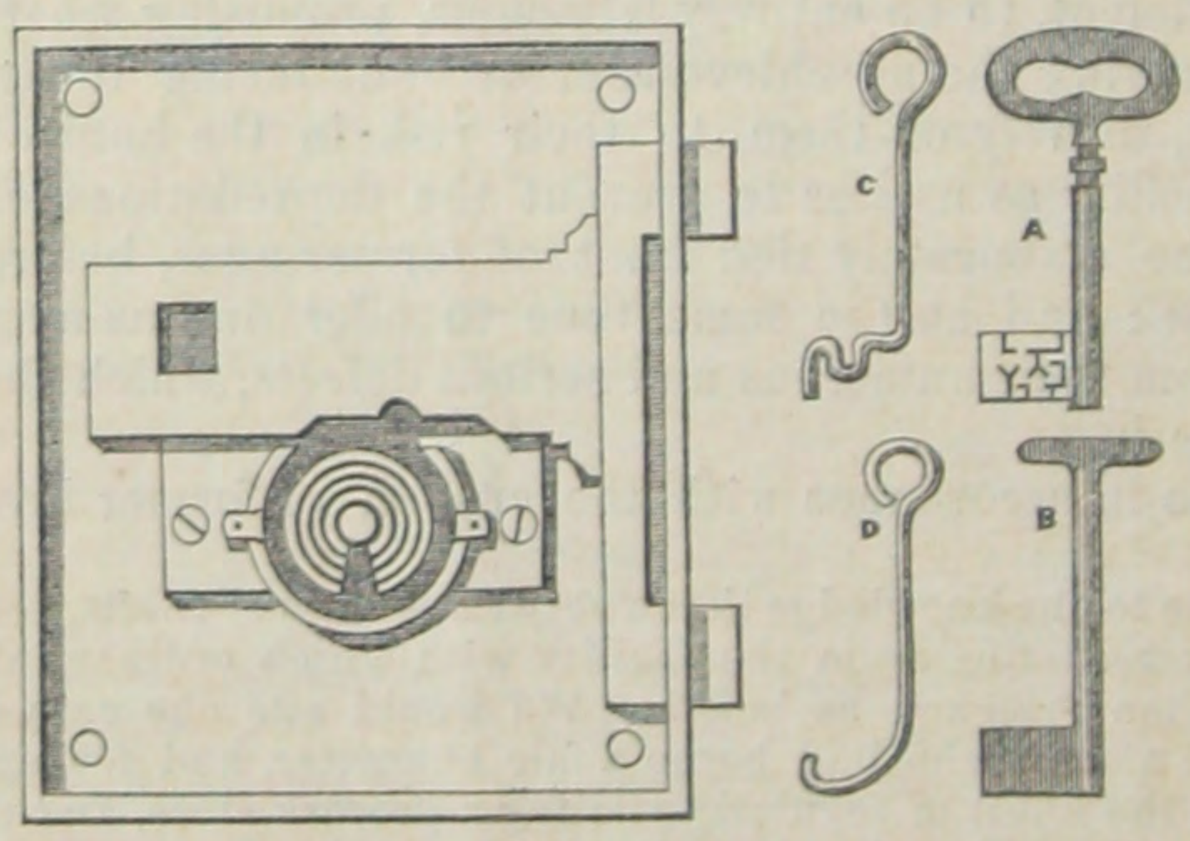
* It has come to our knowledge that a very large class of thefts, petty in amount, are constantly recurring from the facility with which ordinary door-locks are opened and then relocked as before. We would cite one case in the city of Albany, where a man who had borne a fair character, had for upwards of two years been in the habit of regularly visiting a grocery store, and taking enough to feed his family. By relocking all *safe*, he avoided suspicion, as the thefts were too small to be immediately apparent, and were only detected by mere accident.

† The recent robbery of Messrs. Ball, Black, & Co., in New York, is a case in point. $50,000 worth of jewellery were stolen from them in one night, the thief opening the door to escape by skeleton keys: although five clerks, and the porter passed the night in the store, none of them suspected anything wrong till morning, when they awoke suffering from the effect of some anæsthetic agent, which had evidently been administered to them.

in their various publications, or "Lock controversies," have, whilst presenting their inventions to the public, given the reasons why their own productions were superior in merit, and their rivals deficient in security. The value and propriety of this is apparent, since these inventions are so numerous, their recognized weakness so well known to burglars, are fortunately, for the *peace of mind* of the owners, so little known to them, the absence of mechanical taste, and the opportunities of gratifying it so few, to the mass of mankind, absorbed as they necessarily are in industrial pursuits, that few beyond the experts know anything about the principles of security involved, and these experts have to examine and report for the benefit of the community at large.

Up to the year 1851, whilst the varied and cunningly executed tribe of warded locks had lost their repute, from the facility with which their internal intricacies were mapped out on a waxed plate, affording a certain guide to the file or the skeleton key of the burglar, there still remained among those in best repute, Bramah & Barron's improved, and Chubb's detector locks, of world-wide reputation. But at the Great Exhibition in London these lost their name, succumbing to the acknowledged skill and dexterity of Mr. Hobbs, who picked not only these, but also all other locks subjected to his criticism. Since that time, the Parautoptic lock of Messrs. Day & Newell, which he then presented to the European public, has enjoyed a world-wide fame. The Messrs. Chubb and others have introduced improvements in their locks to guard against Mr. Hobbs' peculiar method, and other skilful mechanics have presented their labors to the public, many of them displaying great ingenuity, although, unfortunately, embodying in them many fatal errors.

This brings the lock controversy to the present date; but, before going further, it may be well to bring the general principles of locks under review.



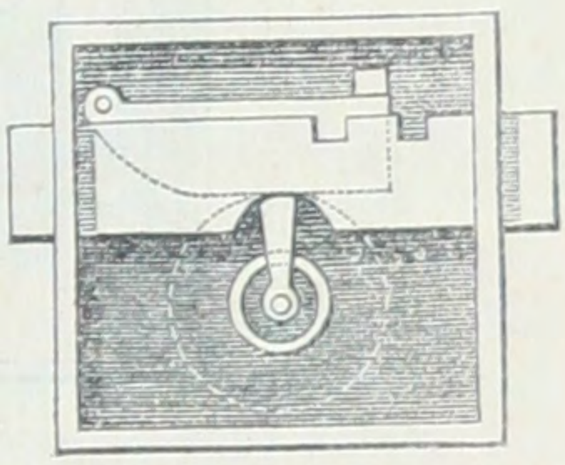
Plan of warded lock—A, its key cut out in the web, to thread and pass the wards; B, a tool used by burglars, to be covered with a coating of wax, which on insertion in the key-hole, on being pressed against the wards, takes a map of them, showing where a file can be used to avoid them in making a false key, or by which a wire, as at C, can be fashioned to pick the lock; even so simple a tool as the bent wire, D, will often answer.

Without going back to remote antiquity, we may commence with the era when a bolt, shot by a key of a definitely adjusted length, and more or less massive, was the commonly received fastening, but in course of

time it was found that a bent wire, or crooked stick, applied with moderate skill, could easily unlock the bolt.

Ingenuity then contrived *wards*, increasing in elaborate intricacy with each succeeding age, the key being cut away in the web to correspond to these wards and thread their labyrinths. Still in advance of the locksmith, the ingenious marauder found that the former had wrought laboriously, only to give him a clue to his so carefully guarded secret; a blank key coated with wax, when pressed against these wards, instantly gave a map of the interior, by which a skeleton key might be fashioned in a few minutes, so as to avoid all obstacles, press back and unlock the bolt. The problem of a secure lock was still unsolved.

Tumblers were next added, pressed by springs into notches on the bolt, so as to hold it firmly unless first lifted out. These were afterwards improved by making the double gated tumbler, by which, if the picklock lifted the tumbler either too much or not high enough, the bolt was held equally secure. A number of these tumblers, each lifted to different heights by different steps in the key, were supposed to give perfect security by the number of changes and chances being so great, that it would be impossible to lift them all exactly to the required and different heights. Of this kind the most celebrated was the Chubb lock. Substituting slides for tumblers, the same will apply to the Bramah lock.



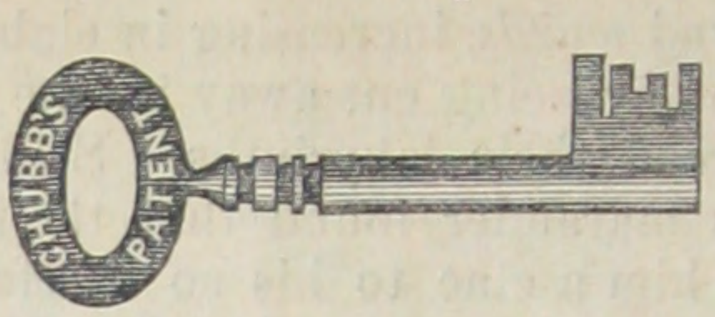
Single gated tumbler lock, which if the tumbler be not lifted high enough will hold the bolt fast; but this tumbler cannot be lifted too high.

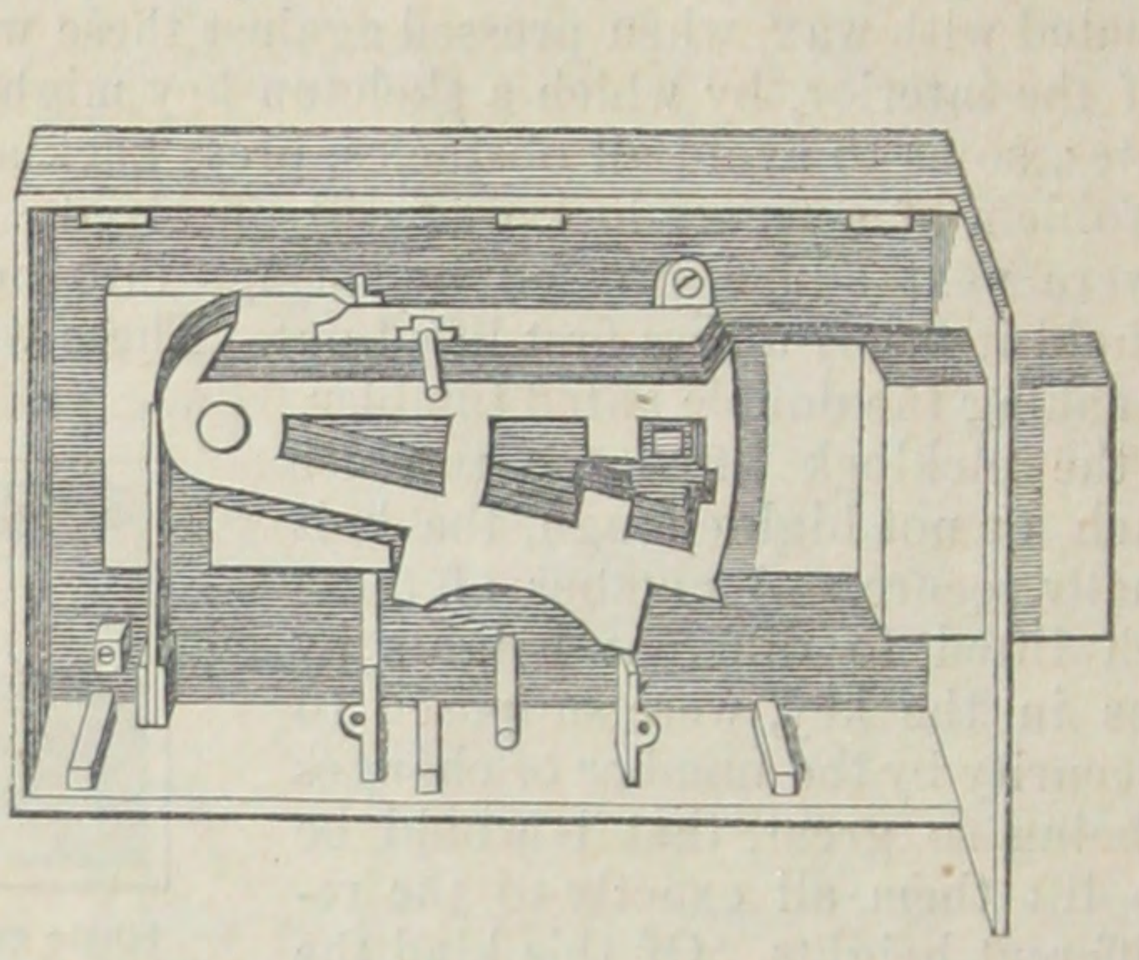
A combination of tumblers and wards was also used, but the latter, for the reasons above given, were abandoned as a useless addition.

To add to these complications for safety, the *Permutation* lock was devised, the key and lock being changed together at the owner's will, so as to make a new combination, and, in effect, a new lock whenever desired. As this involved much trouble in opening the lock and resetting it to work in unison with the changed key, and otherwise entailing a loss of time and the necessity of some aptness in mechanical skill, which merchants and professional men do not care to be troubled with, this made a new requirement, happily met by Messrs. Newell, Pye, Jones, Andrews, L. Yale, Jr., and others, who made the key itself arrange the interior of the lock to correspond with each new change of the key used in locking it; requiring only the key to be altered to make each new permutation.

But the permutation key, whilst it secured the owner by its changing form against the well-known device of furtively obtaining an impression of the true key by pressing it for a moment against a prepared waxed plate or cloth, from which impression a false key could be made, and by its power of change destroying the chances of ringing the few changes of which a fixed key is susceptible; yet, whilst this was an advance on the road to safety, it did not remedy the insecurity of the tumbler principle, whether double gated or otherwise, for, by applying a pressure to the bolt to bring the tumblers in contact with the stump or fence which prevented the bolt from sliding back, on introducing a tool to lift each tumbler in detail slowly against the stump, the sense of feeling easily indicated to the expert lock-picker, when the gating or notch in the

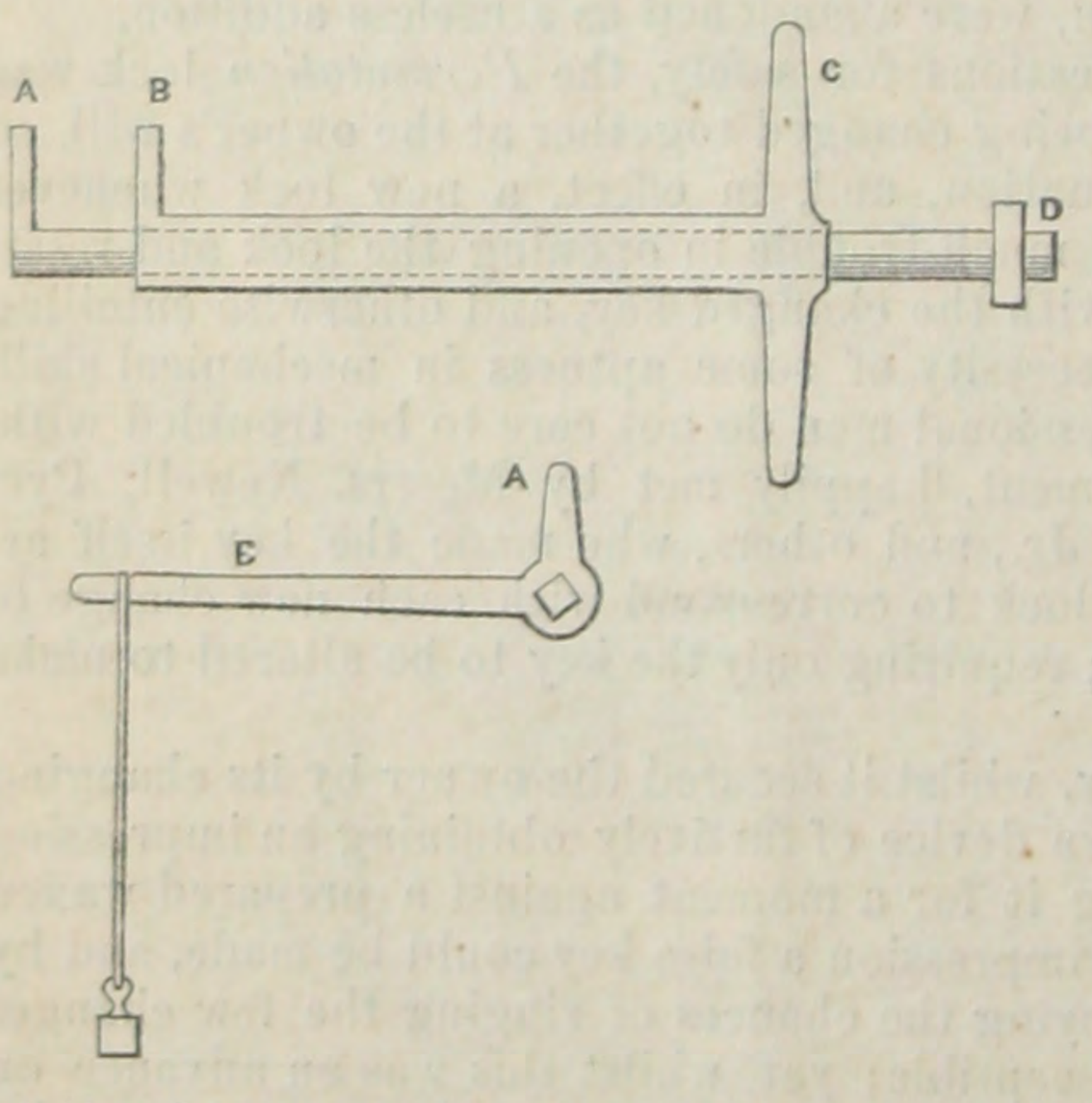
tumbler was opposite the stump, and when each successive tumbler was thus felt out, the bolt yielded to the pressure—the lock was opened.





Chubb's Lock, a good example of a double-gated tumbler lock. If these tumblers be over-lifted, or not lifted high enough, will prevent the bolt from being withdrawn.

By this mechanical or *tentative* process, Mr. Hobbs, in London, opened a Bramah lock of eighteen slides, and a Chubb lock of six tumblers in a short space of time, demonstrating his maxim: "That any lock which leaves its tumblers or stops exposed to sight or feeling, while they touch the fence or stumps, may be easily picked."



A side and end view of tools used by Mr. Hobbs and others in picking tumbler locks. B, C. A hollow tube with a handle C; the end B to be applied to lift the tumblers and feel them out; this tube incloses and slides around the rod A, D; the end A is applied to the bolt, whilst the lever E is attached to the end D, with a weight attached, to make a pressure on the bolt, leaving the hands of the operator free; as soon as the tumblers are lifted right, the lever shoots back the bolt.

In the Day & Newell's Parautoptic or Hobbs' lock, this method of picking was prevented by the "detached principle," which, on the application of pressure for the above purpose, broke all connection between the different sets of tumblers, thus rendering feeling impossible.

Further additions in the way of rings, curtains,

and eccentric slides, to close the key-hole after the true or false key or picking tool has been inserted, and commenced to turn, have also been used to prevent smoking the tumblers and getting an inspection of the tracks left by the use of the key, from which inspection a false key could be made—but how fruitlessly we shall see in its proper place.

Little mention need be made of the various *secret locks*, whose key-hole was hidden till a concealed spring had been pressed,* nor of the alarm locks which fired pistols, shot darts to harpoon the marauder, rang an alarum, &c., such being more justly ranked among pleasing toys of little practical value.

Ring Locks, Combination Letter Safety, or Puzzle Locks, which require no key to open them, but depend upon an exercise of memory to adjust their combinations, have long been known. Their motto, *sort aut labore* (by chance or labor), was *supposed* to indicate their value, implying that the chance of accidentally making the arrangement by which they had been locked, or by laboriously ringing all their changes, which in some cases run to millions in number, were the only methods of opening them without a knowledge of the right combination; but this is an error, as modern skill has furnished a certainty in operating to open them, which makes them useless, whilst they are still open to the liability of being opened by chance in the hands of the most unskilled. At the same time, they are all open to other charges and defects; a treacherous memory, sudden attack of sickness, inattention or mistake at the time of setting the combination, may make this class of locks as safe against the owner as the marauder. One of the best of this class has the serious objection of being a *tell-tale*, informing all within hearing of the exact combination on which it was locked or unlocked, by making a loud tick at each change of its arrangement, requiring only to be counted and remembered, when any one with a pair of pincers can unlock it, having the mental key given him by the lock itself. Some of this class are easily opened by an ingenious instrument, which is attached to the lock; on turning a handle, all the changes are speedily rung out with mechanical, and, consequently, mathematical accuracy and precision, and, on arriving at the right one, the bolt is instantly shot back.

The publicity given at the London Exhibition, by Mr. Hobbs, to the tentative or mechanical manner of picking, by which the educated sense of touch felt into the secrets of the best English locks, despite false notches and complications, vainly introduced, as though not only the fingers, but the very tools themselves had eyes in them, had the effect of building up the reputation of American locks and locksmiths, who then stood confessedly in advance of all others. The best English makers acknowledged the inefficiency of their inventions, by introducing improvements to guard against the ingenuity of American mechanics, and the people eagerly adopted the American lock.

Continental Europe added her gold medals and honorary certificates that the Parautoptic Lock was not only the best lock in the world, but

* "*Secret key-holes* are generally objectionable, on the ground that great reliance is frequently placed upon them, whilst all the while, perhaps, their existence is known and understood, although the party interested may not be aware of it."—*Gilbart's Prize Essay.*

also entirely reliable. But whilst the most eminent mechanicians were thus loudly proclaiming their confidence in this ingeniously guarded lock, Mr. L. Yale, Jr., saw a defect which he thought a vital error. He instituted a series of experiments, which have resulted unvaryingly, and, as a sequence, the best made Parautoptic Lock which can be placed on a bank door is entirely useless before his new method of picking; and further, his method is so exceedingly simple that any smart lad of sixteen can in a short time make a wooden key, the exact transcript of the owner's, which will open these locks, and relock them either on the same or any other combination he may choose, in an incredibly short space of time. Particular stress is put on the possibility of relocking the door on a new combination unknown to the owner of the lock, as in such a case the owner's key is powerless to unlock it, in which case the vault or safe must be broken open to get at the contents, giving ample time for the rogue to escape. The following certificates show the facility with which this lock, and all those operated by a winged key likewise, can be picked :—

NEWPORT, N. Y., Oct. 8, 1855.

This is to certify that I have this day seen Mr. L. Yale, Jr., lockmaker, cut a wooden key, from impressions taken from the tumblers of the "Newell Lock," after I had newly combined the true key, and locked said lock myself, keeping the key concealed from his sight. The false key unlocked the lock as readily as the true one; the whole time occupied being only 1¼ hour. The lock stamped "Newell's patent, 1836–'44, and June 10, 1851."

C. H. HOPKINS,
Cashier Dairyman's Bank.

ROME, N. Y., Oct. 12, 1855.

This is to certify that I this morning locked our "Newell Lock," called the "Hobbs Lock," "Day & Newell Lock," &c., affixed to our vault door, having newly combined the bits of the key, and keeping the key concealed; and saw a wooden key cut, from an inspection of the lock through the key-hole, which unlocked the lock, and in fact operated it in all respects, both locking and unlocking it like the true key. The whole accomplished between the hours of 9 and 12.

SAMUEL WARDWELL,
Cashier Fort Stanwix Bank.

Correspondence between Messrs. Samuel Perry and Samuel Hammond.

NEW YORK, Jan. 11, 1855.

TO SAMUEL HAMMOND, Esq., *Merchants' Exchange, New York.*

DEAR SIR: As I understand you are "well posted" on the subject of fine locks, I take the liberty of addressing you in regard to which of the many would be most likely to give me satisfaction, both as to security against burglars and certainty to continue in order, &c. &c. A few words of advice would be very acceptable, and much oblige

Yours, very respectfully,

SAMUEL PERRY,
3 *Front St.*

Answer to the above.

NEW YORK, Jan. 12, 1856.

Mr. SAMUEL PERRY—

DEAR SIR: Your note of yesterday is received, and I hasten to reply. If determination to avail myself of the best security modern locks can afford leads to that, I ought to be "well posted," as you remark; for I have taken pains to secure every improvement demonstrated, or proved necessary, as they have been made for many years. I was called upon, a few weeks since, by Mr. L. Yale, Jr., the inventor of the "Magic Infallible," a springless permutation lock, and the first examination convinced me that it was the finest thing in the way of a protection against burglars I had ever seen. Though I assured him I felt confident I had already an unpickable lock upon my safe, viz: the "Parautoptic" or "Newell Lock," sometimes called the "Hobbs Lock," the best of five upon the same safe, and one which I paid three hundred dollars for, it being the finest ten tumbler lock of that kind, judge of my surprise when Mr. Yale *assured* me, and by a slight diagram with a pencil *convinced* me, that it could be picked! This was not all; he *proved* it by cutting a wooden key, solely from an inspection of the lock through the key-hole, which turned the bolt back as readily as my key would have done!! And then, to complete my discomfiture, he cut away *one* bit of *his* key, and locked it so that *I* could never have unlocked it with my key; and yet the lock was not injured in the least, showing no signs of having been tampered with; proving in every respect how unsafe it was. I am convinced this knowledge of the true principles of locks has enabled him, in his lock, to overcome not only this, but every other known method of picking; and, in fact, I consider it in other and all respects superior to any other lock in market.

I would also volunteer a word or two on the subject of burglar-proof safes. Mr. Yale is also the inventor of the best combination of wrought and chilled cast-iron that I have ever seen, for doors to banks, and for safes, boxes, vaults, &c. I am happy to see that these very much needed improvements are meeting with the success they deserve.

Hoping the above may be of service to you,

I am, very respectfully, yours,

SAMUEL HAMMOND.

NEW YORK, Feb. 12, 1856.

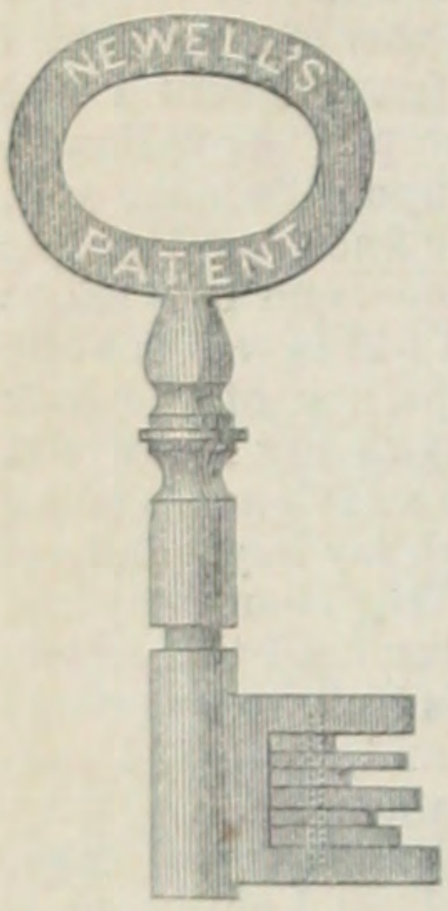
The undersigned hereby testifies that he saw Mr. Yale unlock one of Day & Newell's best ten tumbler parautoptic locks, with a key made by himself in a short space of time, from measurement of the lock while it was locked and on the door of a safe, in such a position that he could have no access to it except by the key-hole.

J. JAMES HYDE,
of the firm of John E. Hyde's Sons, 22 Maiden Lane.

We have thus seen that a new school of picking has been inaugurated, and, in addition to Mr. Hobbs's maxim, "that any lock which leaves its tumblers or stops exposed to sight or feeling through the key-hole, while they can be made to touch the fence or stump, is liable to be easily picked," L. Yale, Jr., adds the following proposition, as demonstrated: "That any lock now in use, which is operated by a winged key, is equally unsafe." These principles being established, they condemn all the locks operated by fixed keys in the country.

It was not at first intended to give the modus operandi of the new methods of lock picking, lest a knowledge of the fatal facility with which a lock can be picked by any one of average ability, might tempt to depredation—but the constantly recurring remarks made to us that we are the only ones who know these processes, have decided us to publish our methods in self-defence; for we do not doubt that now the

possibility of so doing is demonstrated, the method will soon be rediscovered by those who wish to do so for nefarious purposes: whilst those most interested in knowing whether that in which they place their reliance is secure, are still ignorant of the fact. We therefore intend at an early date to issue our second edition, with minute description, with illustrations of our methods of picking. Want of time and the pressure of business prevent us from doing so at this time, but we may say in general terms, that wherever a fixed key (*i. e.* one in which the handle and key-bits are united) can be introduced into a lock, there also can a tool be inserted, with plastic substances, ink, or chemical tests, by which a map of the track of the key along the edges of the tumblers can be taken with the greatest accuracy; from this map a wooden key can be easily made, of exact resemblance and equal efficiency with the true key in the hands of the owner.* Against this method of picking, slides, curtains, and eccentric disks are useless—and more than useless, as they have the mischievous effect of giving a sense of imaginary security which may tempt many to rely on their plausible appearance, to their cost.



Fixed or winged key, the best of the kind in use.

"Where then shall we find security?" is the unavailing exclamation of the compiler of the English Patent Office Reports, in noticing a new patent for a new lock. We answer, the difficulty is surmounted in L. Yale, Jr.'s, various locks, which we now explain, and for which we request your particular attention.

With a full knowledge of the weak points of his predecessors and contemporaries, after years of patient study, he has avoided them all: and we now offer his locks with certainty that no conceivable mode of picking can violate them; but always willing to be taught, he offers $3000 reward to any one who will demonstrate to him by actual performance how his magic infallible bank lock can be picked.

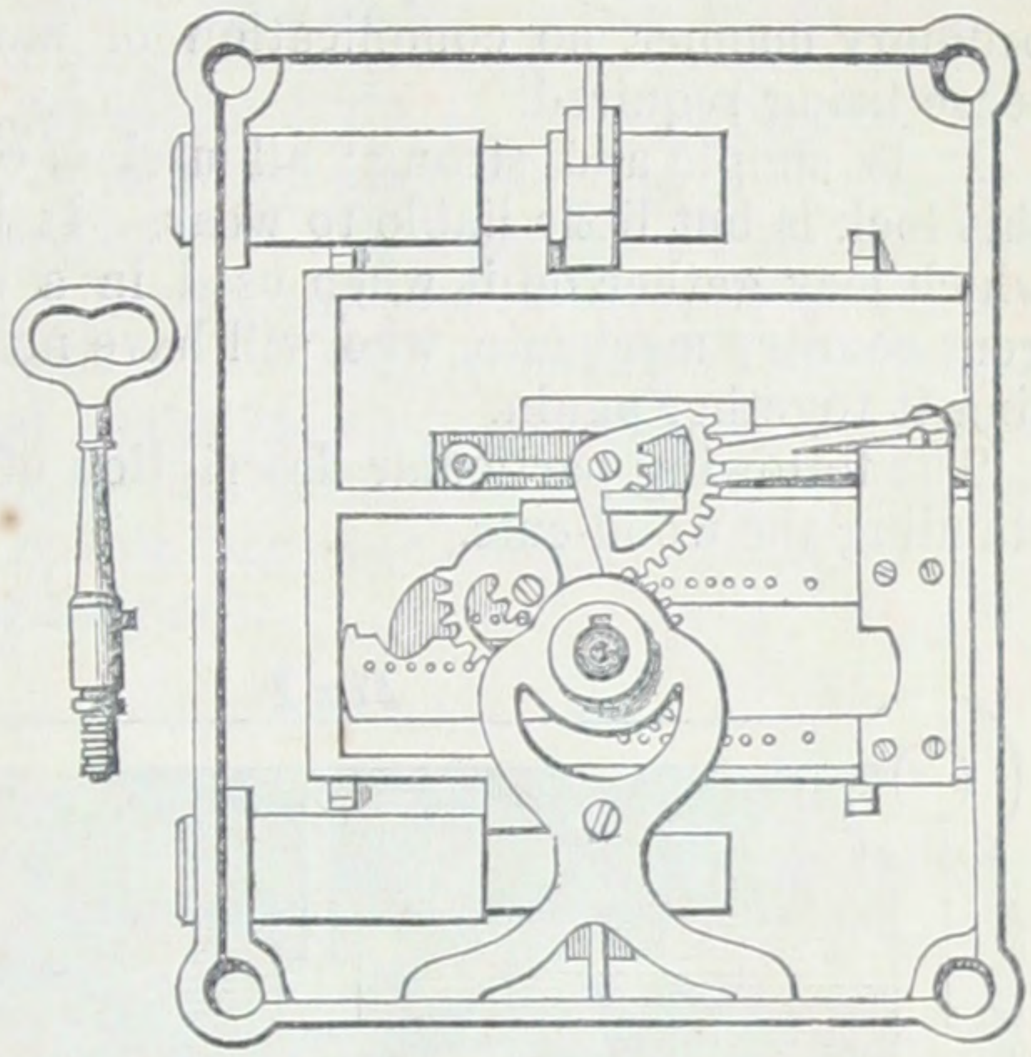
The adoption by the U. S. Treasury Department of his various locks, as well as safes and doors, is a further guarantee of their value, confirmed by the favor with which they have been received wherever known, and by the various medals and honorary certificates granted to them, stamping them as the most perfectly reliable and the simplest locks in the world.

The well-known and constantly recurring annoyance arising from springs, which fail from rust, particularly in damp safes and vaults—and also from clogging by dust, &c., which gathers in the lock in the course of time, has decided him to abandon such a pregnant source of annoyance and disappointment; for when tumblers stick together from rust, the springs are powerless, or the springs themselves may be eaten through by its corrosion, or softened by the heat of a conflagration; the

* We would suggest a conjecture that many an undetected robbery, in which no trace was left behind as a clue to the method of entrance into the safe, may have been effected in a manner somewhat similar to this.

lock then cannot be opened, and the safe or vault must be broken into before its contents are accessible.

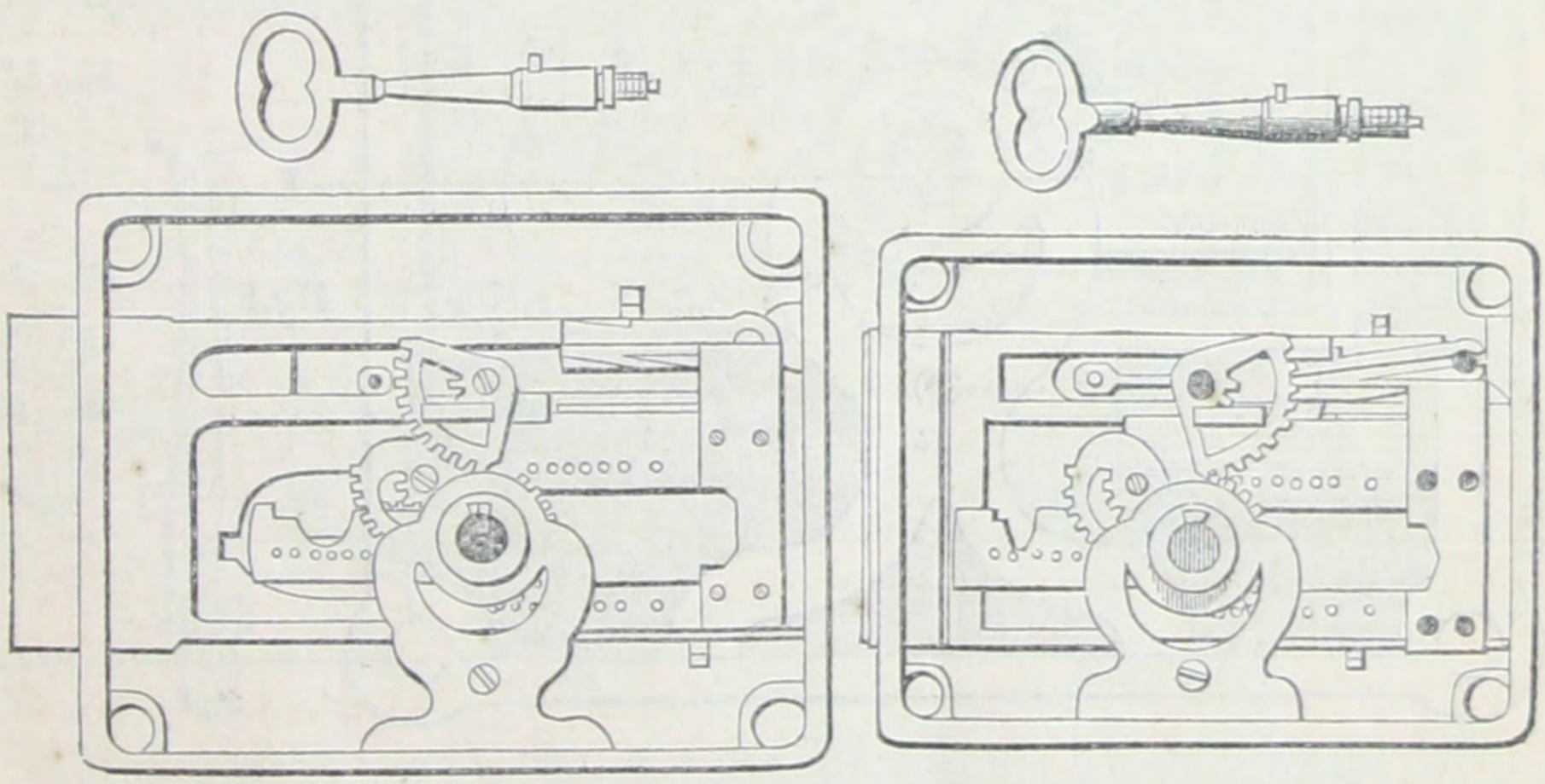
L. Yale, Jr.'s, Magic Infallible Bank Lock is made of the following sizes: No. 1, eight tumblers with rolling bolts; No. 2, six tumblers; No. 3, five tumblers with square bolts.



This is a Permutation Bank Lock, susceptible of a greater number of changes than any other bank lock of the same size ever made.

It is powder proof. No powder can be introduced into the lock itself to blow it off, and the key-hole, when charged with powder, can no more be injured than a pistol barrel of the same size.

Absolute security against picking is obtained, by cutting off all access to the tumblers when they are brought in contact with the fence or stump, by means of a closely fitting tempered steel plate, which closes the key-hole before the tumblers themselves can be moved. Therefore, no picking tool, however fine, can be introduced into the lock when the tumblers are in a position to be operated on. Hence, feeling or seeing the tumblers is alike impossible.



As the key-bits fill the key-hole of themselves, there is no room to introduce any plastic substance to take an imprint of the tumblers.

When the key is withdrawn, all record of its action is obliterated, and no *tell-tale* left.

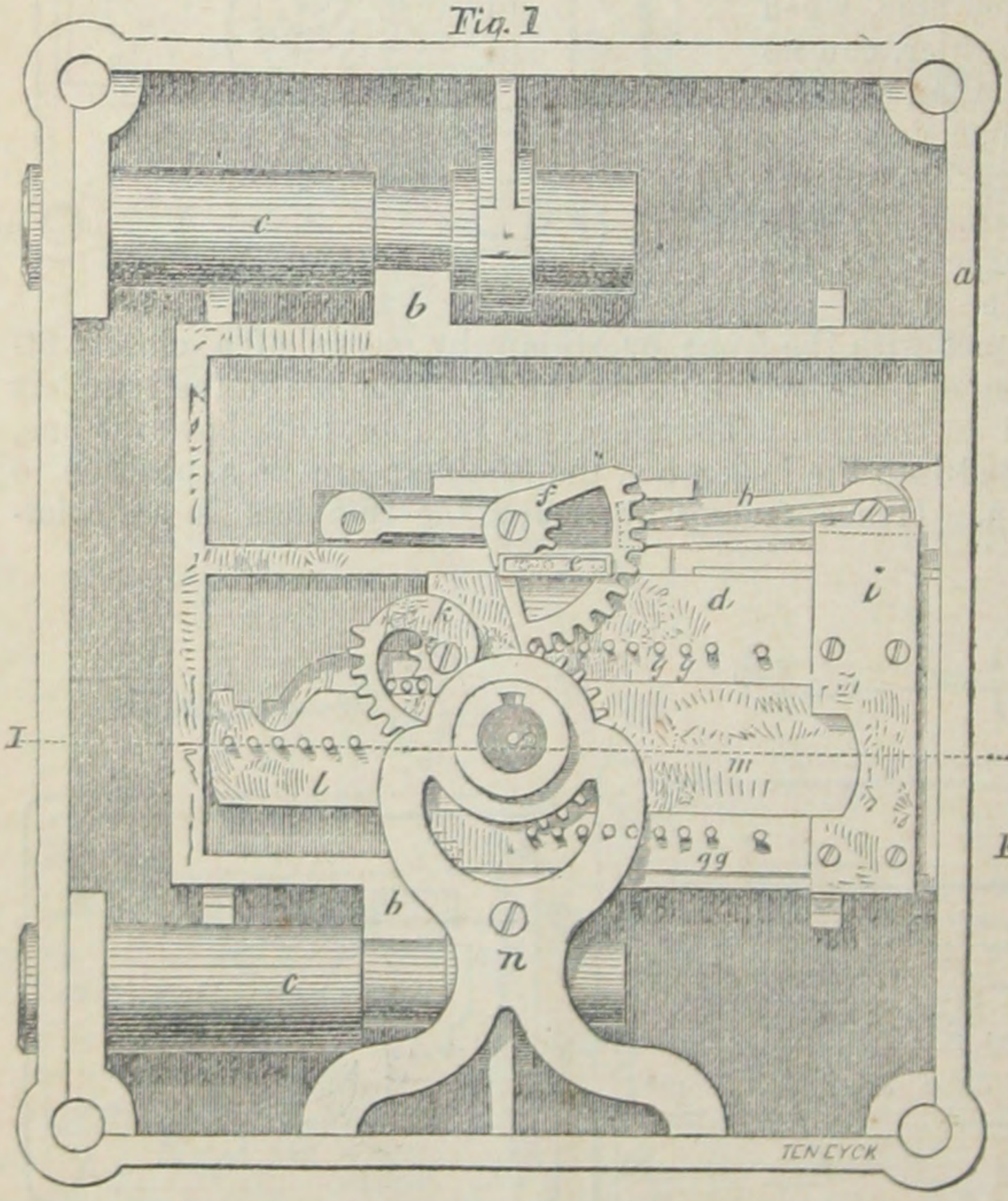
Should a key be lost or stolen, the duplicate key can be set up and

the door opened; on changing the duplicate key and relocking the door, the lost key can no longer open it; and the number of changes possible to be effected at the will of the owner, as given further on, is so great, that a lifetime constantly employed would not be long enough to ring the whole number. Only one turn of the key is required, and in the ordinary manner, no complication of movements, trick or secret nonsense being required.

It is simple and strong; all useless complications being discarded, this lock is but little liable to wear. It is easily cleaned from any rust which may gather on it when used in a damp situation, by any intelligent country mechanic, who will have no difficulty in cleaning and putting it together again.

The following particular description of this lock will assist in understanding the wood-cuts.

Fig. 1



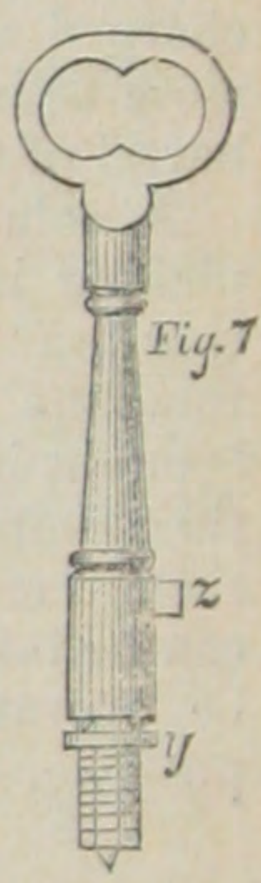


Fig. 7

Fig. 11

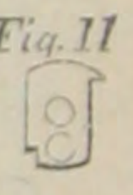


Fig. 8

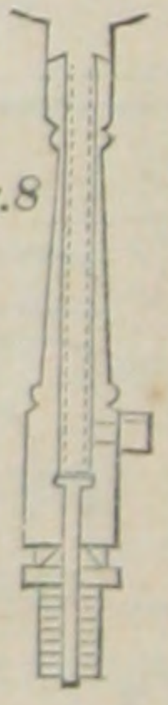


Fig. 9

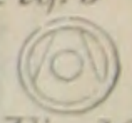


Fig. 10



Fig. 1 is a plan of the lock in the unlocked position. Fig. 2 is a section of the same through the line I I, from above, with the key-tumblers in their normal position. Fig. 3 is the same, showing the key-stem in the key-hole, the inner key-hole closed by the hard plate *m*; the key-bits carried into the lock, and the key-tumblers impressed by them; the crosshead *i* is also shown in contact with the driving wheel *f*. Figs. 4,

5 and 6 are plans of the tumbler carriage *d*, with the hard plate *m*, and crosshead *i* removed to show the tumblers. In Fig. 4 the key tumblers *r*, and fence tumblers *s*, are shown in the unlocked or normal position, held immovably in their place by the pin *a'*, which is attached to the hard plate *m*. The key-bits *x* are shown as just inserted, ready to be impressed against the tumblers. Fig. 5, the key-bit in place, with the key-tumbler *r* pressed into it, the fence-tumbler *s* as arranged by the key-tumbler now moved away from it, and held immovably by the knife-edge *t*, which has now entered that one of its notches which corresponds with the length of the key-bit used. This plan shows the arrangement of the tumblers when the inner key-hole is closed, corresponding to Fig. 3. In Fig. 6 the true-tumbler *s*, locked by the knife-edge, in the position given it by the key-tumbler *r* in locking; the latter as carried to its normal position, where it must always remain immovable when the external key-hole is open—the key is now withdrawn.

Fig. 2

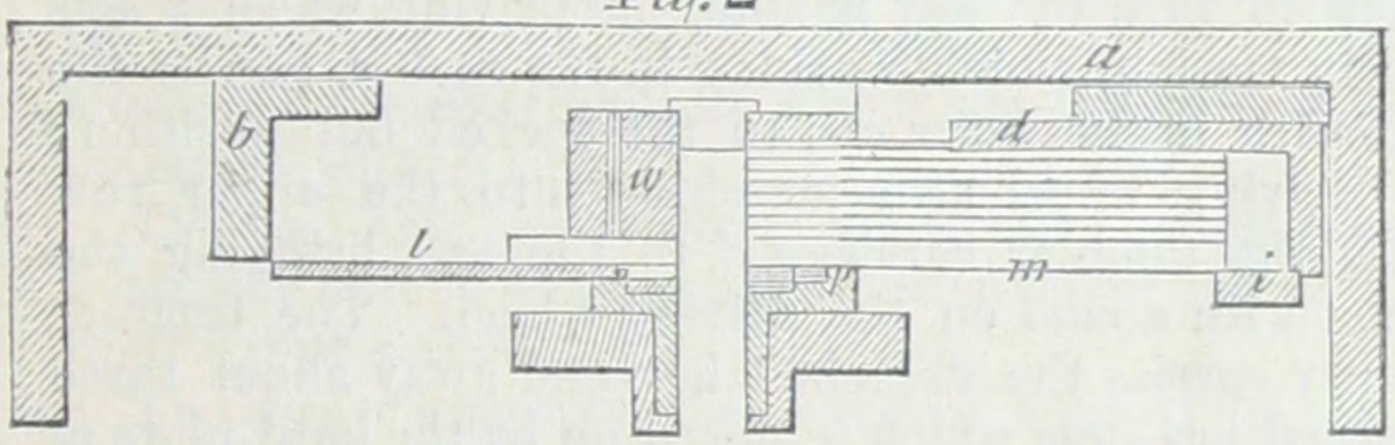


Fig. 3

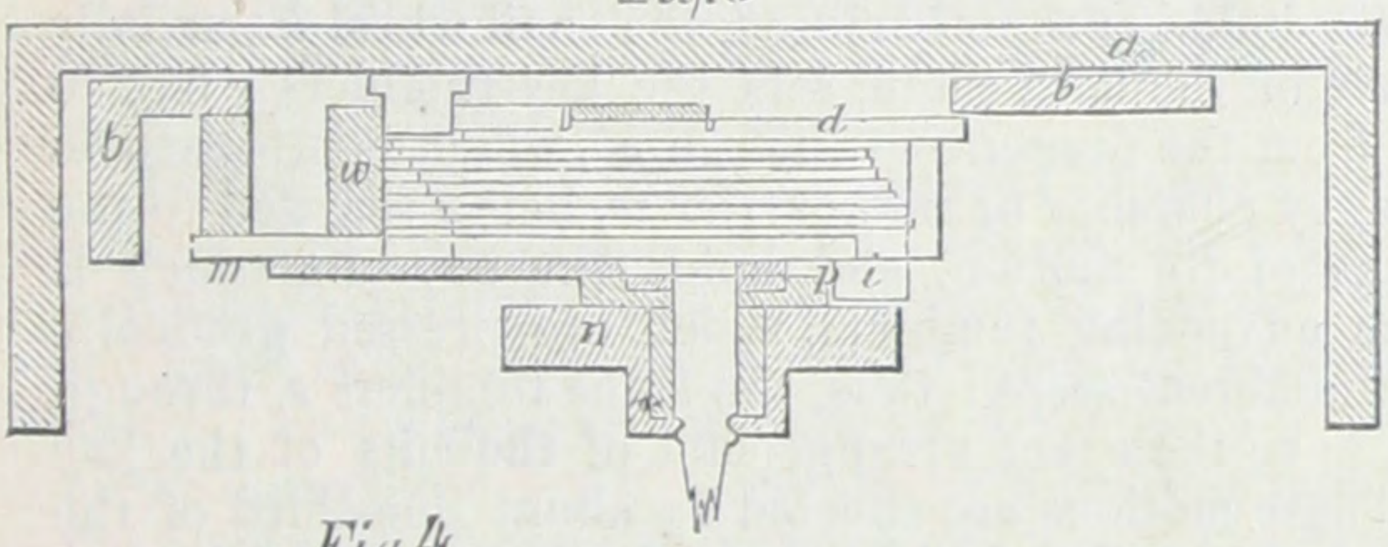


Fig. 6

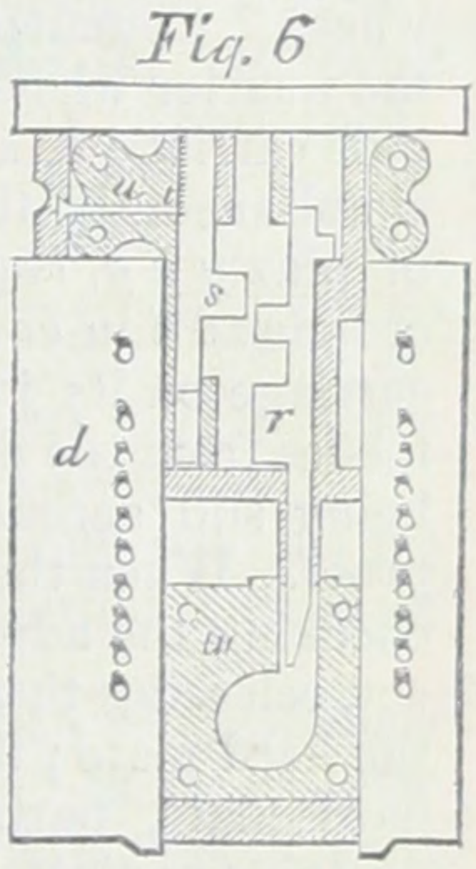


Fig. 4

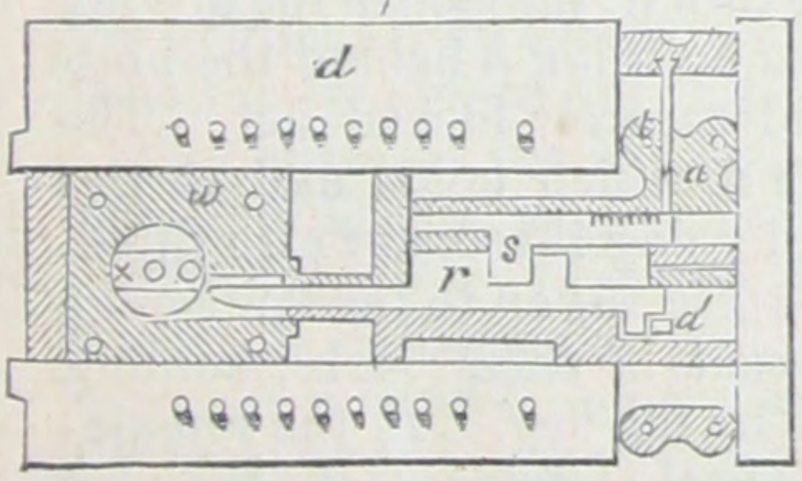


Fig. 5

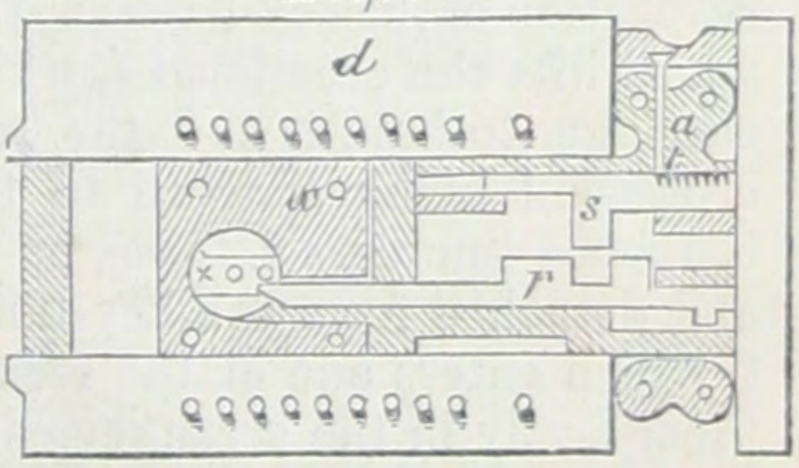


Fig. 7 is the key; *z*, the square pin or handle which turns the driving wheel; *y*, the key-pod attached to the handle by a dovetail and spring dowel. Fig. 8 is a section of key, showing spiral spring in handle, and spring dowel to keep the pod from slipping off. Figs. 9 and 10 show the dovetailing of the end of the handle, and the key where they unite. Fig. 11 is a key-bit with centre hole to pass over the centre pin, also hole for the screw to hold it with the others on the key-pod.

Fig. 12 is a perspective view of the key with the pod of bits shown detached, ready to be carried into the lock.

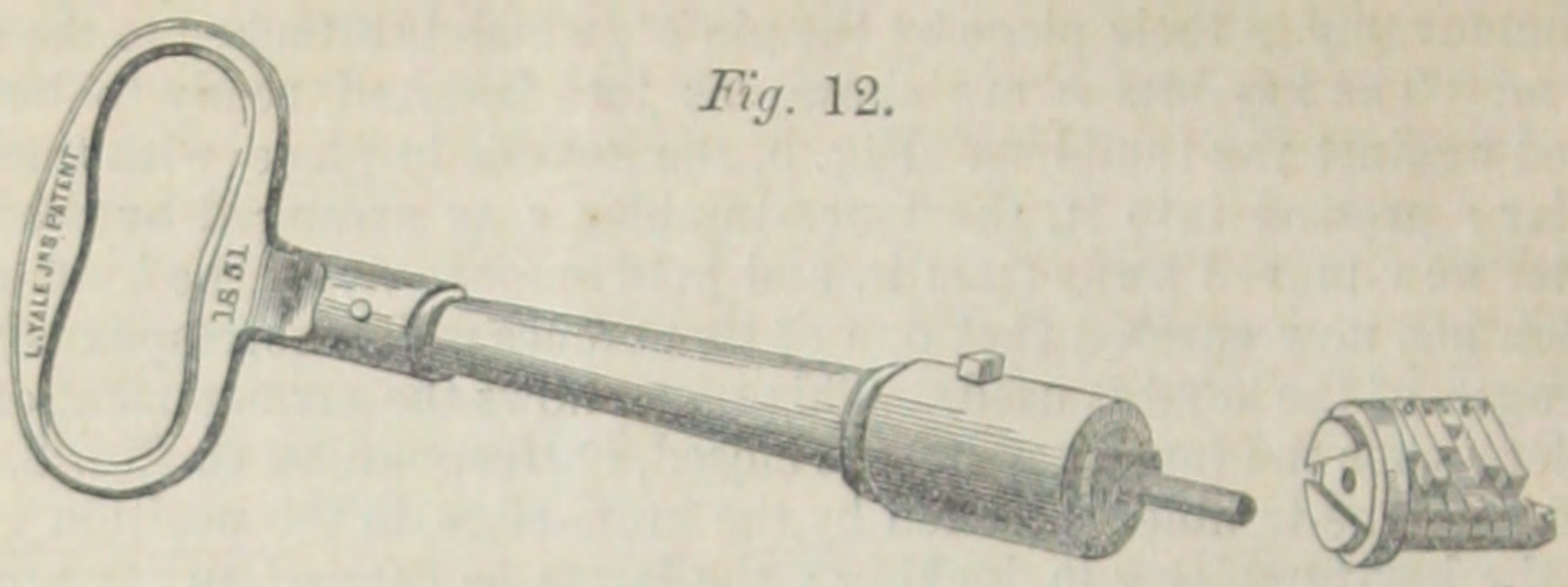


Fig. 12.

To Lock.—On inserting the key, the sliding drill pin presses back the dowel pin in the key, and detaches the pod with the bits from the key handle, and the square pin *z* enters an appropriate notch in the driving wheel. Commencing to turn the key handle, the driving wheel *p* sets the quarter wheel *f* in motion, which, working in the rack *e*, carries the bolt carriage *b*, and with it the bolts *c c*, to the locked out position; simultaneously the driving wheel also matching into the upper row of pins *g g g*, carries the tumbler carriage *d* to the left, bringing the crosshead *i* in contact with a *cam* on the driving wheel. The tumbler carriage on its journey carries the detached key-pod away about three inches from the external key-hole which is closed up by the hard plate *m* being slid across it. This plate is ground to fit closely, and is drill proof. When the key-hole is properly closed, the snail wheel *k* partially checking the advance of the hard plate, sets the key-tumblers *r* free to act, releasing them from the pressure of the pin *a'*, which is attached to the hard plate; the key chamber or pod carrier *w*, being screwed to the hard plate, partakes of its motion, and holds the key-bits which it contains against the advancing tumblers, which are pressed gradually but firmly into their different steps: thus, the fence tumblers *s*, through the key-tumblers *r*, have the exact arrangement of the bits of the key used in locking. These motions are effected by about one-third of the revolution of the key-handle. Continuing to turn it, the cam of the driving wheel lifts the crosshead *i*, which carries the bolt-dog *h* behind the bolt-carriage, to hold it and the bolts firmly and securely locked out. The crosshead being screwed to the fence-slide *u*, which holds and carries the fence-tumblers *s*, these, on the crosshead being lifted, are also lifted, and detached from the key-tumblers *r*, as in Fig. 5, on to the knife-edge *t*, which enters one of the series of notches cut in their backs, holding them firmly in the arrangement given them by the key. In the remaining motion of the key-handle, the driving wheel matching into the pins *g g g*, on the lower side of the tumbler carriage, carries it back to its original position, and whilst doing so, the snail wheel moves the hard plate and key chamber, drawing the key-tumblers away from the key-bits, at the same time the pin *a'* is restoring the key-tumblers to their normal position, *erasing every trace of the action of the key on them*, and binding them immovably, after which the key-hole is opened (see Fig. 6), the pod of bits is presented to the handle again, to which, on being withdrawn from the key-hole, it is found self-attached.

To Unlock.—On inserting the key as before, and turning in the reverse direction, the key-bits are separated from the handle, and carried away into the lock, and the key-hole closed. As before, the key-tumblers are arranged by being pressed against the key-bits; the crosshead is again brought to the cam on the driving-wheel, which now moves it downward, carrying the fence-tumblers into the key-tumblers, if the key be the same as the one used in locking out, and also removing the dog *h* from behind the bolt carriage; the remaining motion of the key-handle retracts the bolts, restores both sets of tumblers to their normal position, ready to receive the same or any new arrangement of the key, opens the key-hole, and attaches the pod to the handle, ready for withdrawal.

But if, while in the locked position, a changed or false key be applied, the key-tumblers will be wrongly arranged, and not in a position to receive the fence-tumblers which retain the impression of the key used in locking, consequently the fence-slide will be obstructed in its movements, preventing the crosshead from carrying down the bolt-dog to relieve the bolts, which continue to project till all the preceding movements regularly occur, which the key used in locking is alone competent to effect.

The bolt-carriage *b* carries the round tempered-steel bolts *c c* in such a manner that they would roll under the action of a saw; this prevents their being cut off.

The dog *h* takes all the pressure applied to the bolts to force them back, relieving the tumblers from the possibility of being crushed.

As will be seen at a glance, no powder can be introduced into the basin of the lock; the key-hole alone can be charged, injuring it no more than a pistol barrel of the same size.

As the crosshead *i* must be brought to the cam of the driving-wheel before it can move the dog *h* to release the bolts, and as the interior key-hole invariably closes in doing so, all access to the tumblers by even the finest cambric needle is cut off when the tumblers are liberated for action; and whenever the interior key-hole is open, they are held perfectly immovable. All attempts by a picking tool are impossible, and the hard plate secures them from drilling. The tumblers made of steel are guarded from the possibility of sticking together by rust in a damp situation by a brass furring between each pair.

The tumblers are inclosed between walls of bronze, and the tumbler carriage, pinions, &c., are made of the same material.

The key, Fig. 7, made of a convenient form for carrying in the pocket, is constructed in two principal parts. 1st. The *stem*, which serves as a *handle* to give motion by the square pin *z* to the works of the lock. 2d. The *pod of bits*, or key proper, *y*, which is attached to the handle by a dovetail and spring dowel, as shown in Figs. 8, 9, 10, and 12.

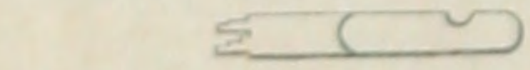
The arrangement of the key bits is novel. Instead of sweeping against the edges of the tumblers, as is usual, wearing out both the key and the tumbler in course of time, for which wearing away an allowance has to be made, causing a loss in the nicety of fit in the tumblers, in this lock the key does not sweep at all; but, the tumblers being pressed against the steps of the key, *no wear* takes place, permitting a closeness of fit in this lock which insures greater security, not attainable in those in which a circular or sweeping motion is used.

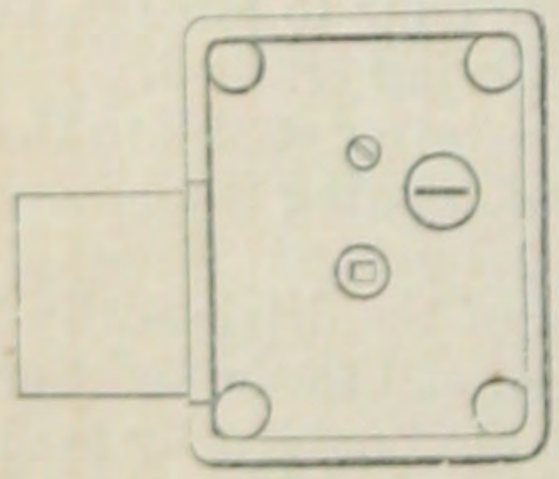
The key-bits of which we have just spoken are made of tempered steel, about the size of a dime; each one, respectively numbered, slips over the centre pin to steady it, and a screw holds them all securely in place in the usual manner. Each bit is so made as to be in fact *two* different bits (see Fig. 11) so far as the use is concerned, one side only being in use at a time, and on being taken off and reversed, it makes a new arrangement of key. By this arrangement each key has a vastly greater power of change than the ordinary keys of permutation locks, an eight bit key having, in fact, sixteen numbers to change. The advantages of this will be seen in the following table of permutations:—

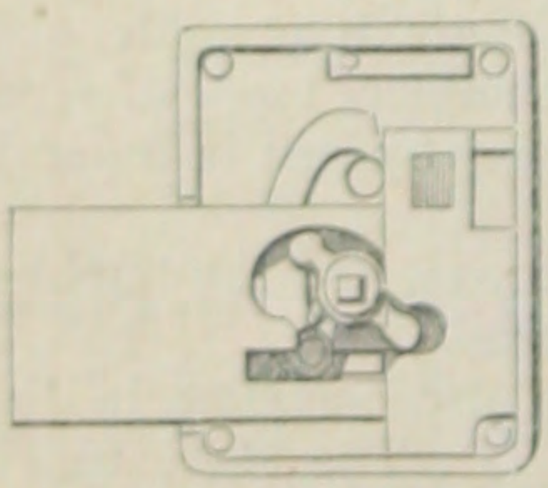
Ordinary permutation.		Permutation of key of magic lock.		Permutation of magic lock itself.	
5 bit key,	120 changes.	5 bit key,	3,840 changes.	100,000	changes.
6 "	720 "	6 "	33,140 "	1,000,000	"
8 "	40,320 "	8 "	4,314,240 "	100,000,000	"

L. YALE, JR.'S, INFALLIBLE SAFE LOCK

Is designed for money chests and small safes. Like the Magic Infallible Bank Lock, it is unpickable, powder-proof, and springless, and its tumblers are beyond sight and feeling when in contact with the fence.







It is constructed in the following manner: A strong bolt, moved by the door knob, is held in its "locked-out" position, directly by the tumbler carriage, which, in turn, is held from relieving it by the tumblers, although it has, at all times, sufficient movement to carry the tumblers out of sight nearly an inch, leaving blank metal in front of the key-hole. These tumblers, when at the key-hole, are *impressed* with the exact form of the key-bits, by its being pushed directly against their ends, and they, being inert, retain the impression until carried to the fence; and, if the proper key has been applied, they are in a position to pass on to the fence, and let the bolt move; but, if an improper key, or the proper key has been improperly applied, or applied wrong side up, the tumblers are *not* in a position to go on to the fence, and consequently the carriage cannot move far enough to relieve the bolt, but they come back to the key-hole, restored to their proper condition to receive the *proper* impression.

The key makes a direct, frictionless contact with the tumblers, leaving no "tell-tale" tracks, by which the burglar can ascertain its character or form.

The key-hole does not communicate with the interior chambers of the lock, and, of itself, will not hold sufficient powder to harm the lock.

There are no *springs* about it, consequently there are none to fail. Ninety-nine in one hundred failures to work well in locks can be traced

directly to springs, *mainly* by reason of rust or dirt clogging the tumblers, till there is not sufficient power in the springs to move them.

Therefore, the "Infallible Safe Lock" is *Picklock, Powder, Fire* and *Water-proof.*

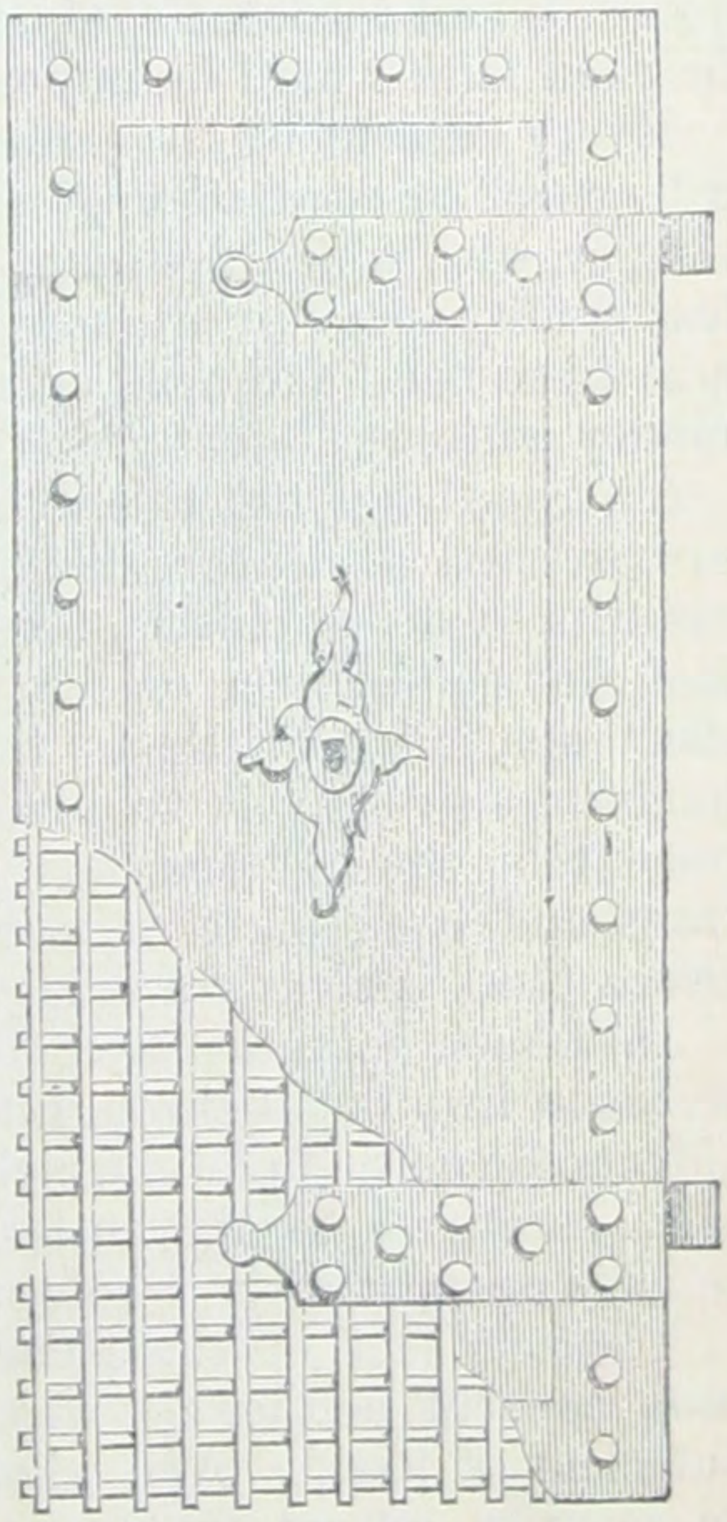
The key is small, smooth, and closes up, like the blade of a penknife, being the most *convenient* and pleasant key to carry that can be found in the market.

Although not a permutation lock, yet the chances of ringing all the changes of the lock are not one in 10,000,000, which is altogether beyond the limits of probability which encourages the attempt.

This lock presents this strikingly obvious advantage: The key must be withdrawn before the bolt can move, so that it cannot be left in the lock even by accident, or through carelessness, ready for some rogue to take the print of it in wax.

L. YALE, JR'S, PATENT BURGLAR PROOF CHILLED IRON BANK DOORS, VAULTS, SAFES, &c.

Equally important with a good lock is a secure safe, a truth only partially believed in, or else not fully understood. No one, for instance, puts a costly lock on a wooden door, it being evident that it is easier to cut through the door than to pick the lock; and yet we see unnumbered instances where the public rely on a door of no more value, to resist a burglar who has determined to use his knowledge and skill to enter it, than the wooden door above cited.



Chilled Iron Bank Door with corner left unfilled to show the network.

The only difference we can see between a wooden door, the same door lined with sheet iron, and the various wrought iron, ordinary chilled iron, steel, and other doors now in use, except the *appearance* of security, is merely a question of time in getting through them. In many cases where the temptation is known to be but trifling, the appearance of strength may deter the petty marauder from assaults on the safe; but if a regular graduate of the burglar school has resolved on entering, the present system of defence offers but little impediment to his action.

The merchant often feels indifferent about his safe, so long as he thinks it fire proof, because his money is on deposit at the bank, except what he may receive after bank hours, often enough of itself by the way, to pay for a dozen good safes, and his bills receivable are in the security of his banker's

vault. But if he has a thief proof safe in his own store, he has no anxiety about his afternoon receipts; and he *knows* his bills receivable are secure, whilst he does not know whether his banker's vault be safe or not, that only being taken for granted; and should the bank be robbed, he knows it is not responsible for his papers. If he has a thief-proof safe he is then certain that his books and papers are secure from defacement and mutilation by disappointed villains, who so often take that method of expressing their feelings on finding their labor and risk in forcing a safe to be profitless.

In like manner brokers, and insurance offices are equally interested in having a perfectly thief-proof safe in their own office for the security of their bills receivable, certificates of stock, coupon bonds, and other evidences of value. The general method of taking these in a tin box *secured* by a small padlock for deposit at some bank is fraught with danger and trouble to all concerned—not only in the street from foot-pads—but also, from the liability to mistake in the daily handling a number of boxes belonging to different parties—to say nothing of the trouble to bank officers who have the care of receiving and storing them.

In the case of coupon bonds, which are only examined semi-annually for the purpose of collecting the interest thereon, there is ample time to convert them into money, before the loss would probably be discovered, and recourse against the innocent purchaser who bought them in good faith would be impossible.

Every descent by the police on the dens of burglars brings to light a "*cutter*" or *counterbore*," a formidable tool of immense power and fine temper, with which a wrought iron door can be cut through with noiseless facility in a few minutes, when a hole is made sufficiently large to admit the hand and arm, either to unscrew the lock or to abstract the money without difficulty.

To guard against this well-known weakness, the use of chilled iron, or hardened steel doors has been adopted, in the hope to secure against assaults by drills, chisels, files, and counterbores: but it is a well-known fact that chilled iron or tempered steel, which is sufficiently hard to resist these, is too brittle to resist percussion, a few strokes of a muffled hammer shivering it to pieces like glass. It will therefore be seen at once that the common method of making safes and vault doors by a front and back plate of wrought iron having a chilled iron plate between them is clearly a fallacy.

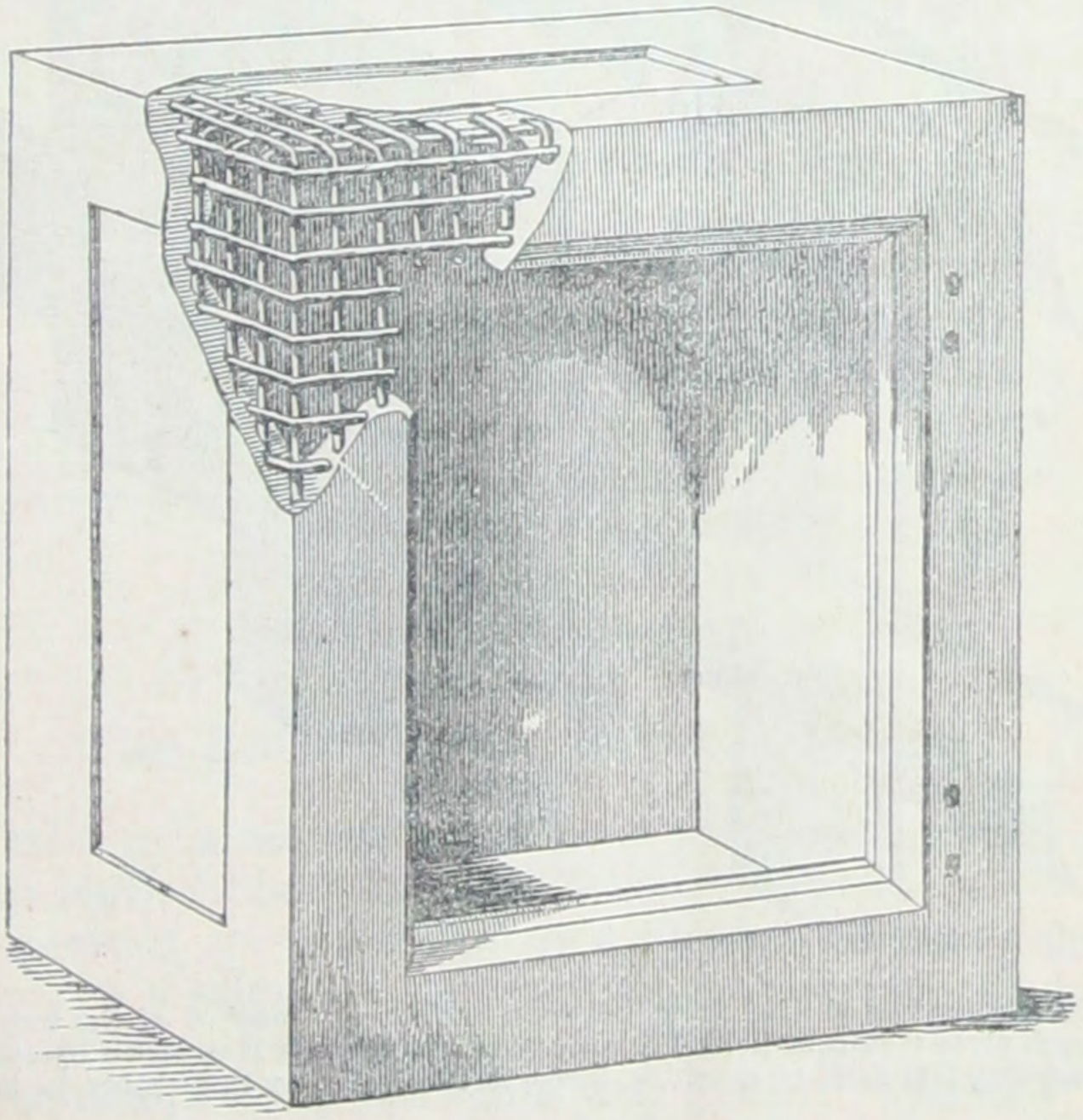
In fifteen minutes after the cutter is applied, the front plate of wrought iron is cut through noiselessly, a few blows of a muffled sledge shivers the chilled plate, which is the next obstruction, the inner wrought plate succumbs to the cutter as easily as the outer one has done—the door is open, and the whole operation completed in less than an hour.

The very fact of these combinations being used shows that by common consent neither the wrought nor the chilled iron or steel door is sufficient of itself. And whether the combination as above is any gain in security, except in *time*, and that only for a very short period, the intelligent reader can judge for himself.

It was evidently a great desideratum to combine the properties of both the chilled and wrought iron in one fabric; the best known

attempt of this kind is that in which the invention consists in setting up a number of parallel rods of wrought iron as a framework or skeleton of the size of the door or safe; the chilled iron is then cast around this frame. By another plan of the same maker the chilled iron is cast on boiler plate thickly studded with rivets, made of the size of the intended door or safe, the cast iron flowing around the rivet heads is thus held in its place.

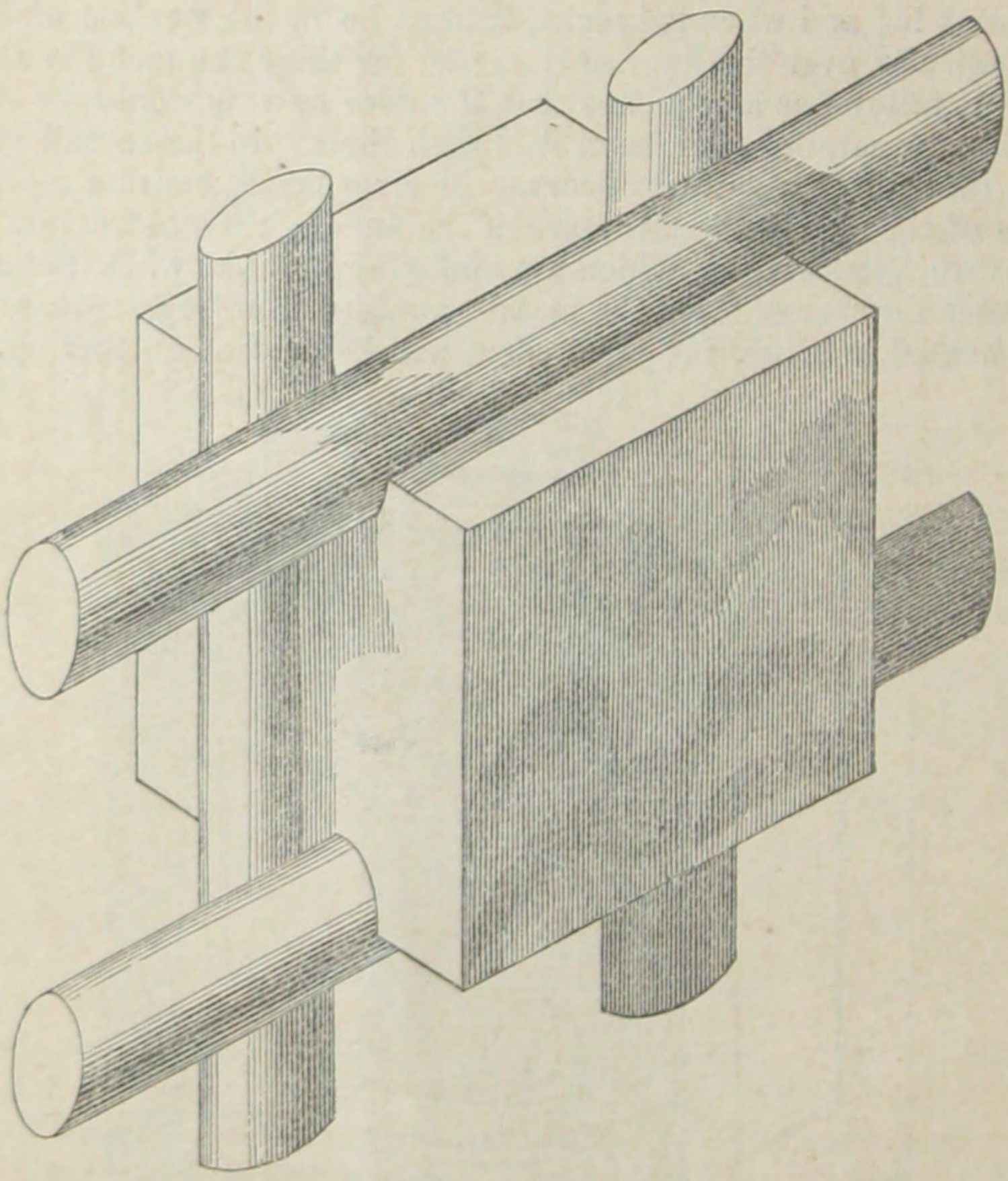
Both of these plans we consider defective. In the first, it is evident that each rod, running lengthwise through the thickness of the door or wall of the safe, must be considered as a foreign body; having no cohesion or affinity with the cast iron, it adds nothing to its strength, but, on the contrary, it is a weakness; for the hole made by each rod in which it lies, is so much of the thickness of the door abstracted from its structure; therefore, the thicker the rod, the thinner and weaker the door must be, and when it breaks, it must be in the weakest place, *i. e.*, longitudinally over the lines of the rods, for there the metal is the thinnest. It follows as a sequence that the door or safe would be stronger without any parallel rods, than it is with them. In the second plan, the metal, on cooling, contracts around the rivet heads, causing a disorganization of the crystalline structure of the metal; this contraction fills the metal with minute flaws, which are undistinguishable when painted up, but under the test of force the metal crumbles into fragments, and after being heated in a fire, the same effect will be evident on cooling.



Chilled Iron Safe with corner left unfilled to show the network.

Avoiding these defects, L. Yale, Jr.'s, Safes, Doors, &c., are constructed by making a *basket or network* of wrought iron oval rods, the meshes of

which are $1\frac{1}{4}$ inch apart, as the skeleton frame of the intended structure; around and through this network the cast iron is poured, of which the walls of the safe, or door, are made. The outer hard surface being proof against drills, &c., protects the wrought iron frame, whilst the latter binds the whole structure together, even should it be cracked by vigorous sledging. The horizontal bars support those placed vertically, and these in their turn bind those together, each running the whole length and breadth of the safe, there being 8 each way, or 16 in all, in each square foot. When assailed by a sledge, the chilled iron may be cracked along the line of some one or other of the rods, as before mentioned, as the whole door is rigid and unyielding, but each successive blow increases the difficulty of cracking it, as the door becomes somewhat pliable by constant battering. Long before the pieces can be

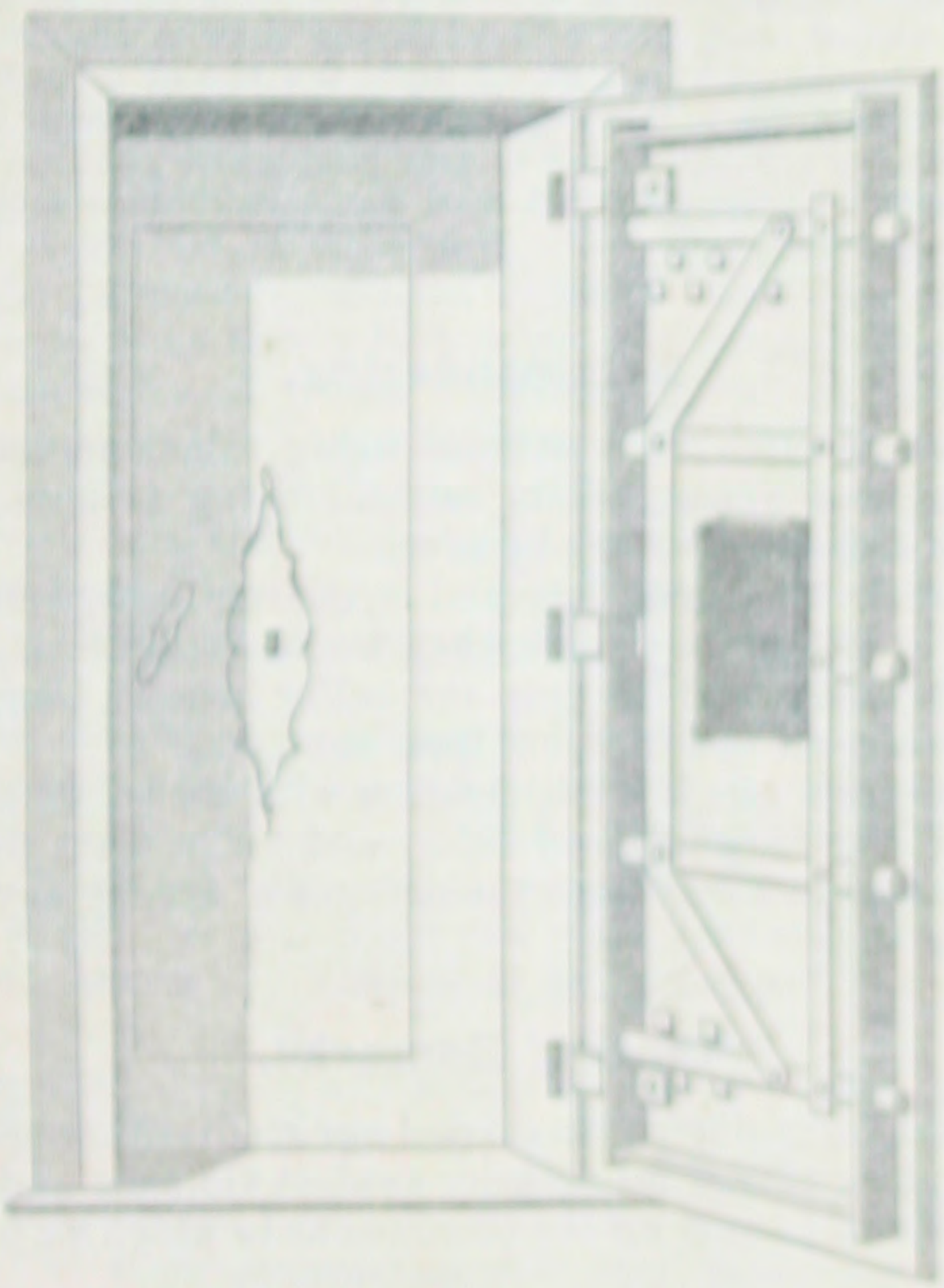


Full size of a fragment of chilled iron, between each of the meshes of the wrought iron rods, showing how each piece would be held if it were possible to break it so small by sledging; being a cube of iron resisting 500 tons of crushing force, it is manifestly impossible to break it burglariously.

broken as small as the size of a mesh, the difficulty of further fracture becomes absolutely insurmountable, and even if it were possible to break the whole of the cast iron into fragments as small as the meshes ($1\frac{1}{4}$ inch square), yet each piece would be firmly held in its place by the

wrought network which embraces it firmly on all four sides, holding it as if it were dovetailed into its place, each piece held so closely to the other that no lever can be introduced to force any one piece from its place.

No stronger proof need be cited of the strength and power of resistance which these doors present to this kind of attack, than the fact that all doors which are made imperfectly are a dead loss. After a week's endeavor, by sledging, to break up one of these doors for remelting in the foundry, it was abandoned as impracticable.*



Double Chilled Iron Door for Bank Vaults.

The Bank, Vault, and Safe Doors,

are constructed in a similar manner to the safes, and proof against force or skill—entirely burglar-proof.

They are secured to the jambs by a number of heavy throw-bolts, which are shot by a suitable handle or knob, relieving the lock of the strain unavoidable in shooting numerous heavy bolts, when they become rusty from the dampness of the vault they guard. The lock, to secure these throw-bolts, is securely fastened in the strongest possible manner.

These doors are hung to swing easily on wrought iron hinges, but as

* A sample door, showing the effect of heavy sledging, is to be seen at the store.

the door is securely dogged behind, they are only used for their proper purpose, and no reliance is placed on them for security; a thief, therefore, who should cut them off with the hope of thereby effecting an entrance, would find his labor in vain.

We close by the following description of the process of manufacture of these safes, doors, &c., from the Patent Office Report for 1852–53, page 386, by Examiner H. B. Renwick.

"Pig iron is cast around a wrought iron gauze or network. The network is made of the size of the intended door, with meshes about 1½ inch square, and is constructed of bars of small round or oval iron. All attack by drilling is prevented by the chilled cast iron, and when the door is assailed by a heavy sledge, the iron breaks in small pieces, each the size of a mesh, the fracture being along the centre line of iron rods, and each fragment being firmly held in place. The doors, by repeated blows, become pliable and yielding, and is bulged in here and there, but the strongest man has not yet been able to make any absolute break therein."

Salamandering.

These safes are often used without being salamandered, as for instance, in fire-proof vaults, where salamandering is unnecessary, and both the room and expense may be saved.

Owing to their thickness, one and a quarter inch, and consequent great weight, in all ordinary cases, they would break through the floors of a burning building, and fall into the cellar beneath long before they would become hot enough to injure their contents.

But as a fire-proof safe is a desideratum with many, we are prepared to salamander our burglar-proof safes, and make them perfectly fire-proof, unsurpassed in safety from the ravages of fire, by any salamander safe whatever.

Closing Remarks.

Having in the foregoing pages carried our readers through a review of the principal plans offered for security against violence and cunning, it only remains for us to sum up the conclusions to which we have brought them.

1. All locks operated by a fixed or winged key now in use, are easily picked, from the best parautoptic to the cheapest trunk lock inclusive, and no combination of wards or tumblers, curtains, disks, or sliding plates, giving such locks any real security.

2. All locks in which the tumblers can be felt when in contact with the fence or stump, whether opened by a mental or metal key, are under the same condemnation.

3. All locks relying on secrets or tricks, either in the use of the key, the opening the key-hole, or the manner of throwing the bolt, are no longer "*secret*," if commonly adopted, as then everybody knows that *secret*. The locksmith himself is only too glad to inform those who apply to him, in the hopes of securing a customer.

To the practised locksmith these tricks are mere toys.

4. Combination or letter locks, opened by a mental key, although seemingly safe, are hazardous to use, as the combinations may be for-

gotten ; their changes may be immense in number, valuable only against ignorant persons who might attempt to ring the changes in detail, but for the very reason that such an attempt is hopeless, the problem has been solved in a different and more direct manner with ease and certainty.

5. L. Yale, Jr.'s, locks are free from all these defects, and are the best ever offered the public.

6. Likewise with regard to thief-proof safes, we have seen that either chilled iron, wrought iron, or steel doors alone are useless for safety, as also the combinations of chilled and wrought iron before mentioned for this purpose.

7. L. Yale, Jr.'s, burglar-proof work, on the contrary, is entirely reliable under any and every condition of trial. At the same time being the cheapest to manufacture, it is sold at correspondingly low prices.*

In conclusion, we cannot do better than to make the following extract from "Gilbart's prize essay on Banks," which in its conclusions accords with the views we have herein laid down. After speaking of Tamm's "guarded tumbler," and Huffer's "revolving wheel," introduced by these English makers into their locks as their plan for safety, Gilbart says: "It is quite possible that an expert locksmith might find such obstructions very insignificant, but for general purposes it is deemed that any of the locks (English) pointed out would afford security seeing that persons of skill and art seldom find it necessary to obtain a livelihood by fraud."†

"At the same time the temptations to rob a bank are so strong that no pains or precautions can be deemed superfluous for its safe protection. Few things are more mischievous than the placing confidence in that security which is fancied only ; and the benefits of locks are by no means an exception to the rule that when any great advantage is to be reaped a corresponding amount of labor must be bestowed."

* As we were going to press, we received the following testimonial of the triumphant test of our work :—

BRIGGS BANK, CLYDE, April 30, 1856.

LINUS YALE, JR.,

DEAR SIR: * * * * About two months since, during a dark and stormy night, our bank was entered by burglars, through an adjoining cellar wall, and the vault, which was of brick, was pierced, which left us without any other protection than one of your highly approved chilled iron Burglar-Proof Safes, with your Magic Bank Lock attached ; these we deem sufficient, for they successfully resisted all the various devices and expedients known and practised by burglars. We have the most implicit confidence in their strength and safety, and feel assured that when once locked, we are more secure than we should be with any other safe and lock ever yet invented.

Yours, respectfully,

(Signed) WM. H. COFFIN, *Cashier*.

† This is a mistake—the burglar school graduates are generally men of skill and art, but their habits and inclinations unhappily make it necessary for them to use fraud, often for the excitement; when the same skill and energy they show in the walks of vice, would insure them steady and remunerative employment in honest pursuits. But be this as it may, L. Yale, Jr.'s, system of taking the measurement of the lock, and cutting a sufficient wooden key therefrom, makes it no longer necessary to be a skilled mechanic in order to open the best locks in use.

"Bank locks are not made to be picked, and should all be of such a character that no ordinary smith can accomplish it. It is also clear that if a key be lost when it is impossible to know into whose hands it may have fallen, the security of the lock is gone, and it should be immediately replaced by a different one. This is, however, a very serious inconvenience, attended with considerable expense, and should never be resorted to unnecessarily."*

Extract from Banker's Magazine, London, 1845.

"In a country where a large class subsist by robbery, and where the means of effecting it securely is the constant study of skilful and ingenious thieves, the only means of baffling them and protecting the ordinary depositories of valuables from their felonious attacks are to call in the aid of the greatest mechanical skill with respect to locks and fastenings, and to exercise unceasing care and vigilance. The bank robberies during late years show that they have been planned with extraordinary sagacity, and have been effected with a degree of skill which proves that they are not undertaken by ordinary thieves. The large amount of money which the house-breakers are confident of obtaining in case of a successful burglary at a bank, induces them to act with a degree of skill and caution proportionate to the expected booty; and it is for this reason that an unsuccessful attempt to rob a bank is seldom heard of. When a 'set' is made at a bank, every information is, in the first place, sought for by the burglars of the means of security adopted, and it has been ascertained that many weeks and even months have been employed in this manner.

"Attempts are made to tamper with servants, and an acquaintance is formed, if possible, with some of the female domestics. If, upon inquiry, it is found that the means of security are so numerous and inviolable as to give no chance of success, the matter is quietly dropped; but if any opportunity presents itself, no time is deemed too long to wait for the proper moment when the bank may be entered, the misnamed safe or strong room be opened, and a clean sweep of all the convertible securities and money it may contain.

"This was exemplified in a bank robbery at Glasgow, some years since; and when the Dorchester Bank, in 1842, was robbed, the burglars were in the house ninety-two nights before they succeeded in opening all the locks, which they did by fitting false keys that would lock and relock them."

Adoption of L. Yale, Jr.'s, Locks and Chilled Iron Burglar Proof Work, by the U. S. Treasury Department.

Owing to the numerous complaints constantly made the United States Treasury Department from the various custom-houses, sub-treasuries, mints, &c., that the various locks in use were constantly creating trouble, disappointment, and annoyance, and in many cases becoming totally unfit for use; a commission was appointed by the Secretary of the Treasury to investigate the condition of all the fastenings in use by the Department in all its branches—which resulted in an unequivocal condemnation of all those in use. A second commission was then appointed to examine the various manufactures, and select the best known in use. The result was the highly gratifying adoption of L. Yale, Jr.'s, Bank and Safe Locks, and Burglar Proof Safes and Vault Doors, for all the new Mints, Sub-Treasuries, and Custom-Houses in the United States.

* The Magic Bank Lock being a permutation lock, this expense is saved to the owner. (*Vide* page 19.)

RECOMMENDATIONS.

MINT OF THE UNITED STATES,
PHILADELPHIA, May 7, 1856.

The Chilled Iron Vault Doors, and Magic Infallible Bank Locks, manufactured by Messrs. Linus Yale, Jr. & Co., have been used at the Mint for some months past. They are of great strength and durability, and admirably adapted for vaults containing treasure or other valuables. They are, in all respects, superior to any articles of the kind which have come under my observation.

JAMES ROSS SNOWDEN,
Director U. S. Mint.

OFFICE OF GEORGE P. BISSELL & Co., BANKERS,
LINUS YALE, JR. HARTFORD, CONN., Jan. 22, 1856.

DEAR SIR: The Burglar-proof Safe and Magic Lock we purchased of Mr. Remington, about a year ago, have given us the most entire satisfaction. We are satisfied that the safe is as absolutely secure as anything can be. And the lock we consider the most complete and perfect lock which we have ever seen. It works beautifully; never gets out of order; and it combines, we think, all that is desirable in an article of the kind. We believe we have examined all, and *used many* of the different locks offered to the public, but we give your lock the preference *decidedly*. And it would be a large sum that would tempt us to have it removed from our door, and another one by any other maker substituted.

Respectfully yours,
GEO. P. BISSELL & CO.

EXCHANGE BANK,
LINUS YALE, JR., ESQ. HARTFORD, Jan. 24, 1856.

DEAR SIR: We have now had your Magic Lock and Burglar-proof Safe nearly two years, and are very much pleased with both. The lock has always worked perfectly well, and we think the safe is true to its name, *a perfect safe* from all intruders, and we have never been so well pleased with any other lock we have ever had as we have been with yours. Very respectfully yours,

H. L. BIDWELL, *Cashier.*

LINUS YALE, JR., ESQ. CLYDE, Feb. 8, 1856.

DEAR SIR: The "Yale's Patent" Burglar-proof Safe we purchased of you some time since, meets our entire approbation. We esteem it the only reliable article of the kind now in use, and we would cheerfully recommend to those who are in want of safeguards that will baffle the skill of the burglar, to treat with you for one of a similar kind.

Too much cannot be said in favor of your Magic Lock. We consider it not only safe against intruders, but certain at all times to operate with ease and accuracy when the proper key is applied.

In short, the safe and lock taken together are indispensable to the safety of Bankers, and cannot, in our judgment, be surpassed.

WM. H. COFFIN,
Cashier Briggs Bank, Clyde.

LINUS YALE, JR., ESQ. LYNDON, VT., Jan. 25, 1856.

DEAR SIR: Your favor of the 19th inst. is received, and in reply I have to say that your "Magic Bank Lock" in use upon our safe works *admirably*, gives *entire satisfaction*, and is regarded as affording peculiar security against the schemes of burglars.

Yours very respectfully,
EDWARD A. CAHOON,
Cashier Bank of Lyndon.

CUSTOM-HOUSE,
PITTSBURG, Jan. 26, 1856.

LINUS YALE, JR., ESQ.

DEAR SIR: I had in use in the vault in this office for about a year past, a "Burglar Proof Safe," and two of what are called the "Magic Locks," furnished by the Treasury Department from the house of S. Remington & Co., of the State of New York, and have to state that they have given entire satisfaction, and, so far as I am competent to judge, they are the best and most secure of the kind I have ever seen.

Very respectfully your obedient servant,
JNO. HASTINGS, *Surveyor.*

CITY BANK OF HARTFORD,
HARTFORD, Jan. 21, 1856.

LINUS YALE, JR., ESQ.

DEAR SIR: We have had your Magic Locks and Burglar-proof Doors in use about two years, and they have so far given us *entire satisfaction.*

Yours, truly,
G. F. DAVIS, *Cashier.*

HERKIMER COUNTY BANK,
LITTLE FALLS, N. Y., Jan. 21, 1856.

LINUS YALE, JR., ESQ.

DEAR SIR: The Burglar-proof Safe with the Magic Lock furnished us last summer, has given us good satisfaction, and *we* regard it to be what you claim for it, *burglar proof.*

Very respectfully, &c.,
A. G. STORY, *Cashier.*

CUSTOM HOUSE, NEWPORT, R. I.,
COLLECTOR'S OFFICE, Jan. 22, 1856,

SIR: Your note of the 19th inst. was received by the mail this morning. It affords me pleasure, in reply to it, to say that both the *Lock* and *Safe* furnished for this office by Messrs. Remington & Co., under your patent, have thus far proved entirely satisfactory for every purpose intended.

Respectfully, your obedient servant,
GEORGE TURNER, *Collector.*

LINUS YALE, JR., ESQ. ELMIRA, Jan. 22, 1856.

DEAR SIR: We were furnished last season, through E. W. Partridge, of Mohawk, N. Y., with a set of Burglar-proof Doors and your Magic Lock, and I am happy to say the doors and lock give entire satisfaction, and a feeling of security we never had in the use of other safeguards.

Yours, respectfully,
TRACY BEADLE,
Cashier Bank of Chemung, N. Y.

PYNCHON BANK, MASS.,
SPRINGFIELD, Jan. 22, 1856.

I hereby certify that Linus Yale, Jr., furnished this bank, some two years since (through S. Remington & Co.), with his Magic Lock and Burglar-proof Doors, that they have given entire satisfaction, and that I believe them to be superior to anything in use.

H. ALEXANDER, JR., *Cashier.*

WEEDSPORT BANK,
WEEDSPORT, N. Y., Jan. 22, 1856.

Allow me here to state that I am well pleased with the Vault Safe and Magic Lock had of you for the use of this bank, and believe they fully answer the recommendation given them by you.

R. S. MACK, *Cashier*.

BANK OF UTICA, Jan. 23, 1856.

We have for a year past used Yale's Magic Lock and Burglar-proof Doors, and have at this time *no reason for abatement* of the confidence that induced their selection.

P. V. ROGERS, *Cashier*.

ILION BANK,
ILION, N. Y., Jan. 24, 1856.

This bank has in use a Magic Lock and Burglar-proof Door furnished by S. Remington & Co., and, from the satisfaction it has given during about two years' use, it is fully believed to be a perfect protection against burglary.

J. A. RASBACH, *Cashier*.

OSWEGATCHIE BANK,

LINUS YALE, JR., ESQ. OGDENSBURG, Jan. 23, 1856.

DEAR SIR: Mr. Cady placed one of your Magic Locks upon our vault door, which thus far meets my approbation, and, I think, is not liable to get out of order. We also purchased from him a Burglar-proof Safe, which, with proper locks, I think, can be regarded as such.

Very respectfully, your obedient servant,

E. N. MERRIAM, *Cashier*.

FRANKFORT BANK,

LINUS YALE, JR., ESQ. FRANKFORT, N. Y., Jan. 24, 1856.

DEAR SIR: I am in receipt of your favor of the 19th inst. The Magic Lock and Burglar-proof Vault Door furnished for this bank by S. Remington & Co. have given *entire satisfaction;* and I most cheerfully add my testimony in their favor. I consider them equal, if not superior, to anything of the kind in use; indeed, I know of none others for which I would exchange them.

Very respectfully, yours,

R. H. POMERY, *Cashier*.

COLLECTOR'S OFFICE,
WILMINGTON, N. C., Jan. 29, 1856.

DEAR SIR: Your Magic Locks and Burglar-proof Door and Safe, furnished this custom-house by S. Remington & Co., have given entire satisfaction.

Very respectfully, your obedient servant,

JAS. T. MILLER, *Collector*.

MANCHESTER, N. H., Jan. 22, 1856.

DEAR SIR: Your Lock works well and must set the ingenuity of the burglar at defiance. The Safe is a *safe* compared with those in common use.

Respectfully, yours,

MOODY CURRIER,
Cashier Amoskeag Bank.

LINUS YALE, JR., ESQ. WASHINGTON, D. C., Jan. 24, 1856.

DEAR SIR: In reply to your favor of the 19th inst., we beg to state that we have fortunately not had occasion to fully test your Safe and Lock, but the latter works well, and we have every confidence in its solidity and safety.

Yours, &c.,
RIGGS & CO.

HARTFORD LIFE INSURANCE COMPANY,
LINUS YALE, JR., ESQ. HARTFORD, Jan. 22, 1856.

DEAR SIR: The Burglar-proof Doors, made by you, that are on the vault of the building erected by the Hartford Life Insurance Company, are massive, but beautiful and convenient. We are confident they will fully answer the purpose intended, making the vaults both fire and burglar proof.

Respectfully, yours,
W. L. MILLER, *Treasurer*.

LINUS YALE, JR., ESQ. CHITTENANGO BANK, Feb. 21, 1856.

DEAR SIR: Your favor of the 18th inst. is received. Your Magic Bank Lock works well—as well now as it did the first day it was put on our vault door, and in every particular gives perfect satisfaction.

Yours, truly,
D. H. RASBACH, *Cashier*.

FORT PLAIN BANK,
LINUS YALE, JR., ESQ. FORT PLAIN, N. Y., Feb. 20, 1856.

DEAR SIR: The lock I purchased of you last summer, called the Magic Bank Lock, works to our entire satisfaction. I am much pleased with it. I have never seen one which equals it in my estimation. I take great pleasure in recommending it to the public.

Yours, truly,
A. A. BRADLEY, *Cashier*.

ONEIDA CENTRAL BANK,
LINUS YALE, JR. ROME, N. Y., Feb. 20, 1856.

DEAR SIR: I take great pleasure in stating that your Magic Bank Lock, on the vault door of this Bank, after a trial of two years, works to a charm, and that in my opinion your Bank Lock is the safest and most reliable of any lock in use.

G. F. BICKNELL, *Cashier*.

LINUS YALE, JR. CHICAGO, Feb. 23, 1856.

DEAR SIR: The Magic Bank Lock we purchased from you in May last fully meets our expectations, and we find it all you represented it to be. We believe it superior to any other Bank Lock we have yet seen.

Your obedient servants,
J. H. BURCH & CO., *Bankers*.

THE CITY BANK,
LINUS YALE, JR., ESQ. OSWEGO, March 6, 1856.

SIR: Your Magic Bank Lock, furnished us by Mr. Cady, has now been in constant use for over three years, and has given entire satisfaction.

I take pleasure in recommending it to Bankers and Brokers for security, durability, and not liable to get out of order.

Very respectfully,
DELOS DE WOLF, *Cashier*.

NEW YORK, March 6, 1856.

We have had in use the past two years "Yale's Magic Lock," &c., furnished us by Mr. Cady; it works well, and gives entire satisfaction.

E. W. CLARK, DODGE & CO.

BANK OF COOPERSTOWN,
COOPERSTOWN, March 1, 1856.

Having used one of "Yale's Magic Locks" for the last three years, I am prepared to say that it has not only afforded entire satisfaction, but is, in my opinion, the *best Bank Lock now extant.*

F. A. LEE, *Cashier.*

ELMIRA BANK,
ELMIRA, Feb. 25, 1856.

LINUS YALE, JR., ESQ.

DEAR SIR: Your Magic Bank Lock has given us entire satisfaction. It has been in use since 1st of Nov., 1853, and works easy, and has never been out of order.

We think it a most excellent and elegant lock.

Respectfully,
F. F. FAIRMAN, *Cashier.*

BURNET BANK,
SYRACUSE, Feb. 23, 1856.

LINUS YALE, JR.

SIR: Mr. Cady furnished one of your Magic Bank Locks for our chilled iron safe or chest, and we regard it as just what we want. It gives entire satisfaction, and I cheerfully commend it to all Bankers.

Respectfully yours,
JOHN D. PECK, *Cashier.*

JUDSON BANK,
OGDENSBURG, Feb. 22, 1856.

L. YALE, JR., ESQ.

DEAR SIR: The Lock (Yale's Magic Infallible) furnished for this bank through your agent, Mr. Cady, about a year since, we are much pleased with. I consider it one of the best Locks now in use, and seems to me to afford better security against burglars, and less liable to get out of order than any other I have examined.

Respectfully yours,
J. D. JUDSON, *President.*

BRIGGS BANK,
CLYDE, N. Y., April 30, 1856.

LINUS YALE, JR., ESQ.

DEAR SIR: You have doubtless been informed by your agent (Mr. Cady) that we have purchased of him, during the last winter, one of those highly approved Chilled Iron Burglar-proof Safes, with your Magic Infallible Bank Lock attached.

About two months since, during a dark and stormy night, our Bank was entered by burglars through an adjoining cellar wall, and the vault (which was built of brick), was pierced, which left us without any other protection than the safe and lock above referred to, and this we deem sufficient, for they successfully resisted all the various devices and expedients known and practised by burglars.

We have the most implicit confidence in their strength and safety, and feel assured that when once locked, we are more secure than we should be with any other safe and lock ever yet invented.

Yours respectfully,
WM. H. COFFIN, *Cashier.*

OSWEGO RIVER BANK,
FULTON, N. Y., Feb. 25, 1856.

LINUS YALE, JR.

SIR: During the month of November last, I contracted with J. L. Cady, Esq., for one of your Magic Bank Locks and a Chilled Iron Safe. I take great pleasure in recommending both to those who have use for this kind of protection, believing, as I do, that it is perfectly impossible for any burglar, however skilled in his art, to effect an entrance into this safe either through the lock or the body of the safe.

The lock has been the wonder and admiration of those who have had the opportunity of examining it; and our Board of Directors are perfectly satisfied with both lock and safe.

Yours truly,
D. W. GARDNER, *Cashier*.

CENTRAL BANK OF BROOKLYN,
BROOKLYN, Feb. 25, 1856.

LINUS YALE, JR., ESQ.

DEAR SIR: * * I would say that the lock (Magic Bank) furnished by Mr. Cady has been on one of our safes and in continuous use for nearly three years, to our entire satisfaction.

Very respectfully yours,
EDWARD COPELAND.

FRONTIER BANK,
POTSDAM, Feb. 22, 1856.

LINUS YALE, JR., ESQ.

DEAR SIR: Your Magic Infallible Bank Lock has, I believe, been in use on our Chilled Iron Safe for about two years.

I would do injustice to myself if I did not say most emphatically that I am well pleased with it, and was I in want of a Bank Lock, should give yours the preference over any that I have examined or have any knowledge of.

Respectfully yours,
B. USHER, *President*.

We respectfully refer to the following gentlemen, public institutions, &c., who are a portion of those using our work.

HON. JAMES GUTHRIE, Sec'y U. S. Treasury, Washington, D. C.
SAMUEL CASEY, Esq., Treasurer U. S. Treasury Department, Washington, D. C.
CAPT. BOWMAN, U. S. Treasury Department, Washington, D. C.
G. W. SMITH, Esq., U. S. Treasury Department, Washington, D. C.
JAMES ROSS SNOWDEN, Esq., Director U.S. Mint, Philadelphia.
RIGGS & Co., Bankers, Washington, D.C.

U. S. SUB-TREASURY, Charleston, S. C.
U. S. CUSTOM HOUSE, St. Louis, Mo.
Do. do. Bangor, Me.
Do. do. Newport, R. I.
Do. do. Wilmington, N. C.
Do. do. Oregon Territory.
Do. do. Pittsburg, Pa.
Do. do. Charleston, S. C.
Do. do. Norfolk, Va.
Do. RECEIVER'S OFFICE, Dubuque, Iowa.
PYNCHON BANK, Springfield, Mass.
MERCHANTS' do. Albany, N. Y.

DUNCAN, SHERMAN & Co., Bankers, N. Y. City.
E. W. CLARK, DODGE & Co., do. do.
BANK OF THE STATE OF NEW YORK, do.
Do. do. REPUBLIC, do.
Do. do. UNION, do.
KNICKERBOCKER BANK, do.
PEOPLE'S BANK, do.
CHATHAM BANK, do.
EAST RIVER BANK, do.
DRY-DOCK BANK, do.
MECHANICS' BANK, do.
SEAMAN'S SAVINGS BANK, do.
S. HAMMOND, Esq., Exchange Building, do.
CENTRAL BANK, Brooklyn, L. I.
MECHANICS' BANK, do. do.
BANK OF BROOKLYN, do. do.
WILLIAMSBURG CITY BANK, Williamsburg, do.
BROADWAY BANK, South Boston, Mass.
SAVINGS BANK, Temple Place, Boston.
E. W. CLARK & Co., St. Louis, Ill.
MARINE BANK, Chicago, do.
CHICAGO do. do. do.
ONEIDA Co. do. Utica, N. Y.
CONN. RIVER BANKING Co., Hartford, Conn.
FORT PLAN BANK, Fort Plain, N. Y.
FRONTIER BANK, Pottsdam, N. Y.
HARTFORD LIFE INS. Co., Hartford, Conn.
HAMILTON BANK, Hamilton, N. Y.
JUDSON'S BANK, St. Lawrence, do.
OSWEGO CITY BANK, Oswego, do.
ONEIDA CENTRAL BANK, Rome, do.
FORT STANWIX do. do. do.
AMERICAN EXPRESS Co., Utica, do.
UTICA CITY BANK, do. do.
BANK OF UTICA, do. do.
Do. OF CHEMUNG, Elmira, do.
Do. OF LYNDON, Lyndon, Vt.
Do. OF WEEDSPORT, Weedsport, N. Y.
Do. OF COOPERSTOWN, Cooperstown, do.
Do. OF ROME, Rome, do.
DAIRYMAN'S BANK, Newport, do.
ILION do. Ilion, do.
SUSQUEHANNA VALLEY BANK, Binghampton, do.
SYRACUSE CITY BANK, Syracuse, do.
GEO. P. BISSELL & Co., Bankers, Hartford, Conn.
JOHN E. BUCKINGHAM, Esq., Washington, D. C.
ISAAC CAREY, Esq., Pres't N. E. Bank Note Co., Boston, Mass.
ALEX. CRUIKSHANKS, Esq., Peru, Ill.
N. GILBERT, Esq., Chicago, do.
S. BRONSON, Esq., do. do.
ERASTUS WRIGHT, Esq., Springfield, do.
HAYWARD, BARTLETT & Co., Baltimore, Md.

EXCHANGE BANK, Hartford, Conn.
CITY do. do. do.
AMOSKEAG do. Manchester, N. H.
BANK OF MEMPHIS, Memphis, Tenn.
BURNET BANK, Syracuse, N. H.
EXCHANGE do. Rome, N. Y.
ELMIRA do. Elmira, do.
HAVERHILL do. Haverhill, Mass.
ESSEX do. do. do.
UNION do. do. do.
LIPENCOTT & BARR, Pittsburg, Pa.
C. WARRINER, Esq., Washington, D. C.
SAMUEL HAMMOND, Esq., do. do.
BOGY, MILTENBERGER & Co., St. Louis, Mo.
ALBANY CITY BANK, Albany, N. Y.
ALBANY EXCHANGE BANK, do. do.
ADAMS BANK, Ashford, do.
FAYETTEVILLE BANK, Fayetteville, do.
WEEDSPORT BANK, Weedsport, do.
OSWEGATCHIE BANK, Ogdensburg, N. Y.
FULTON Co. BANK, Gloversville, do.
METACOMET BANK, Fall River, Mass.
OSWEGO RIVER BANK, Fulton, N. Y.
BRIGGS BANK, Clyde, do.
WEST WINFIELD BANK, West Winfield, N. Y.
PULASKI BANK, Pulaski, N. Y.
FARMERS' AND MECHANICS' BANK, Hartford, Conn.
BANK OF HARTFORD COUNTY, Hartford, Conn.
MIDDLETOWN BANK, Middletown, Conn.
HADLEY FALLS do. Holyoke, Mass.
MECHANICS' do. Worcester, do.
INSTITUTION OF SAVINGS, N. Bedford, do.
MERRIMACK BANK, Haverhill, do.
BANK OF ROYALTON, Royalton, Vt.
Do. OF BRADFORD, Bradford, do.
Do. OF COMMERCE, Bangor, Me.
ERIE BANK, Dunkirk, N. Y.
BANK OF BINGHAMPTON, Binghampton, N. Y.
JANESVILLE CITY BANK, Wisconsin.
BANK OF CHITTENANGO, N. Y.
FRANKFORT BANK, Frankfort, do.
HERKIMER Co. BANK, Little Falls, do.
AGRICULTURAL BANK, Herkimer, do.
MOHAWK VALLEY BANK, Mohawk, do.
SPRAKER'S BANK, Canajoharie, do.
EXCHANGE BANK, Hamilton, do.
ONONDAGA Co. BANK, Syracuse, do.
UNION BANK, Rochester, do.
BANK OF PLATTSBURG, Plattsburg, do.
SAVINGS BANK, Mobile, Ala.,
BANK OF TOLEDO, Toledo, O.
CHAMPAIGN Co. BANK, Urbana, do.
FRANKLIN BANK, do. do.
SOCIETY FOR SAVINGS, Hartford, Conn.
EXCHANGE BANK, Columbus, O.
and many others.