

(No Model.)

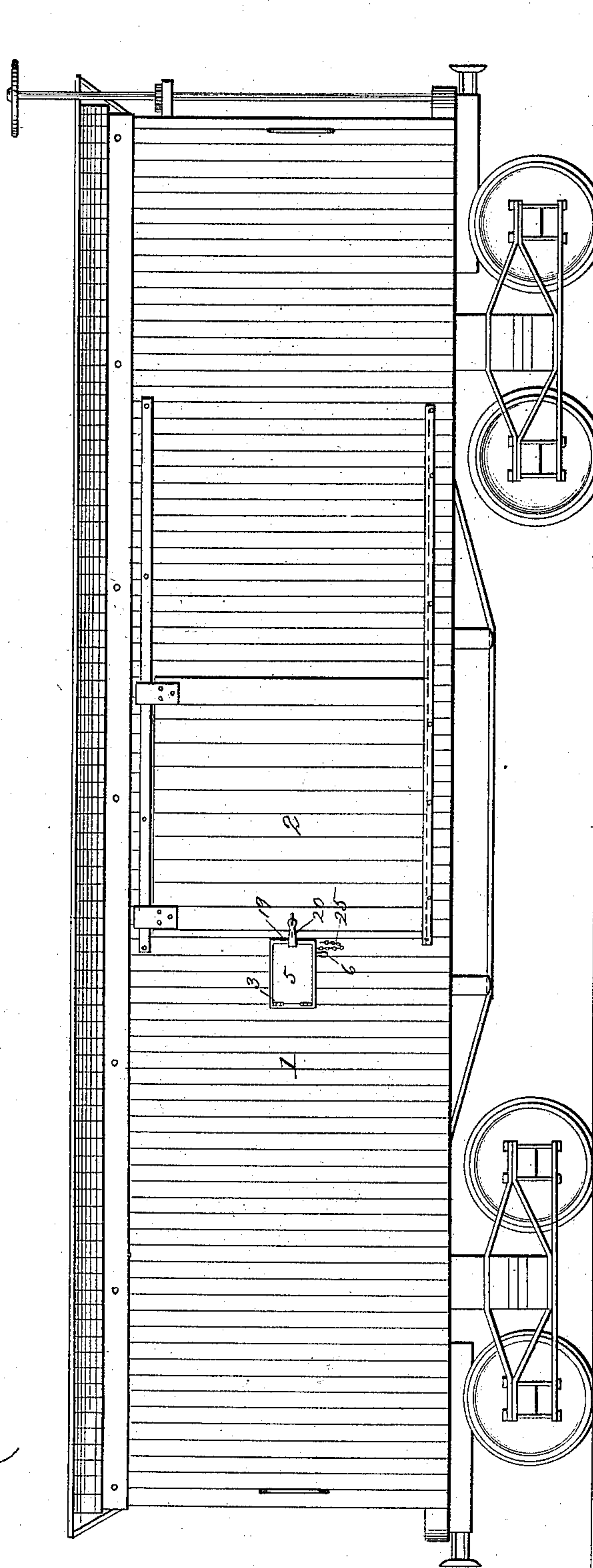
6 Sheets—Sheet 1.

J. C. BARR.
PERMUTATION LOCK.

No. 385,228.

Patented June 26, 1888.

Fig. 1.



Witnesses:
R. L. Apple
T. R. Stuart,

Inventor
John C. Barr:
By

Marble & Mason,
Attys.

(No Model.)

6 Sheets—Sheet 2.

J. C. BARR.
PERMUTATION LOCK.

No. 385,228.

Patented June 26, 1888.

Fig. 10.

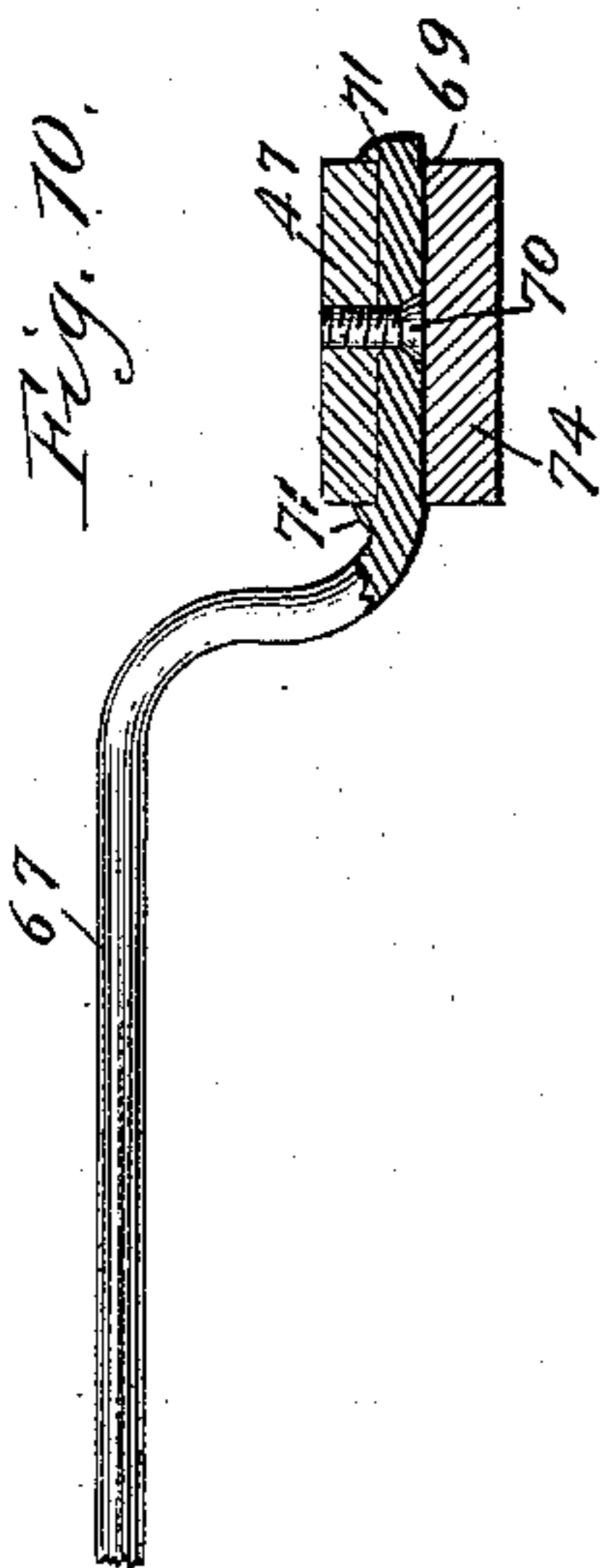
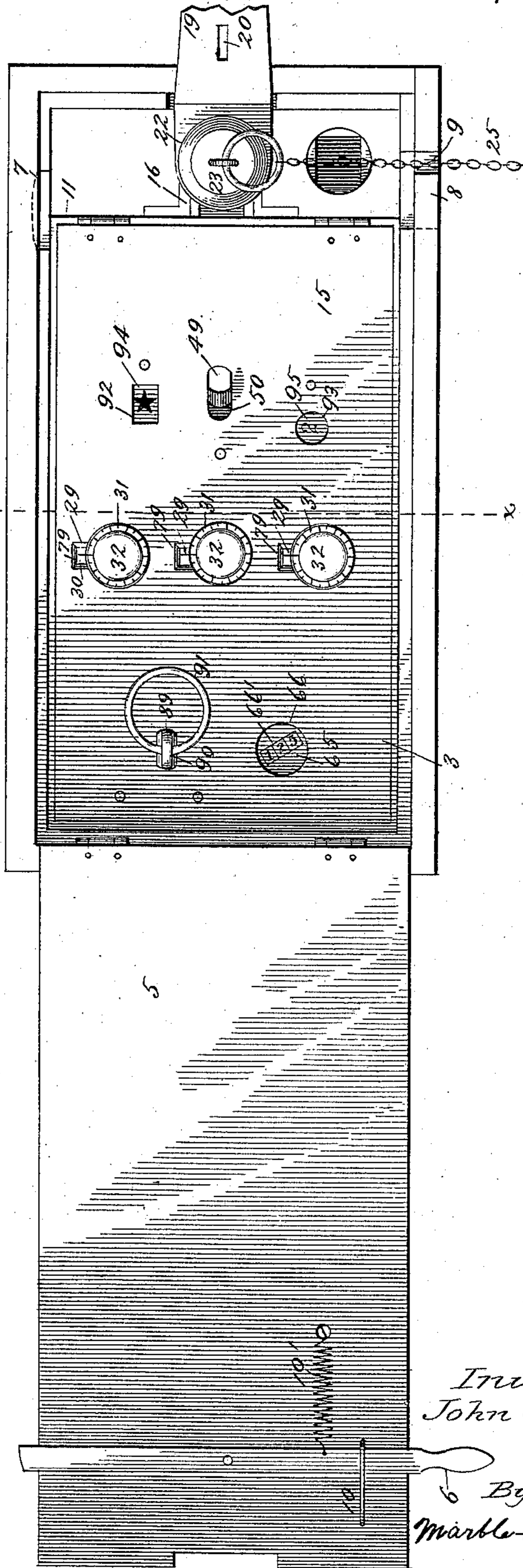


Fig. 2.



Witnesses:

R. R. Apple
T. R. Stuart

Inventor:
John C. Barr

By
Marble & Mason,
Attys.

(No Model.)

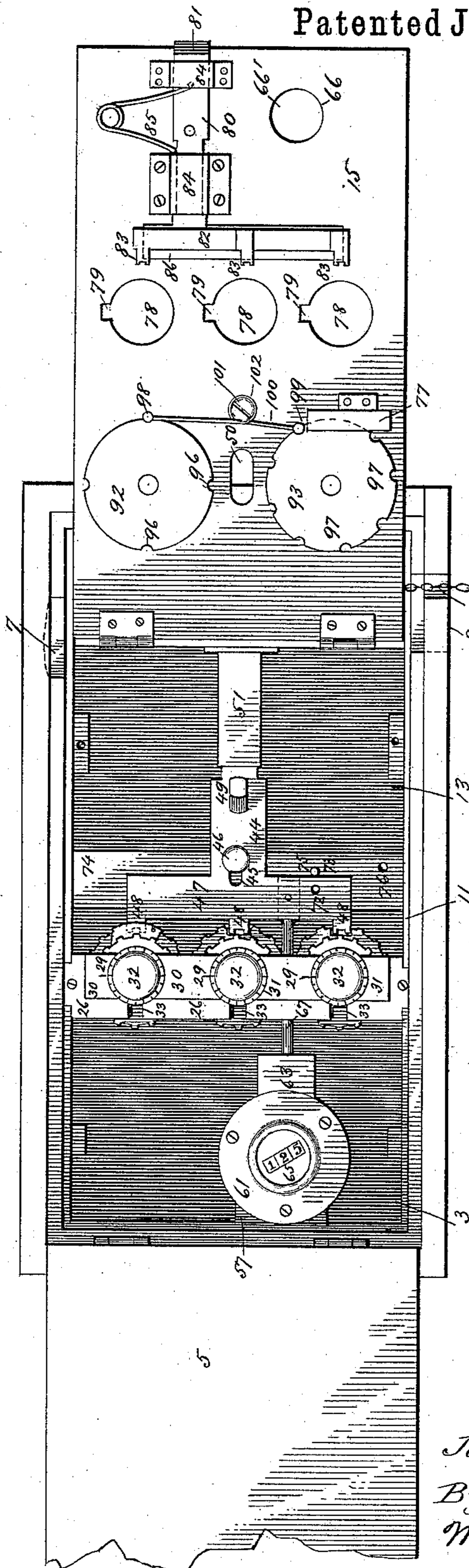
6 Sheets—Sheet 3.

J. C. BARR.
PERMUTATION LOCK.

No. 385,228.

Patented June 26, 1888.

Fig. 3.



Witnesses:
L. R. Apple
T. R. Stuart

Inventor:
John C. Barr,
By
Marblet Mason,
Attys.

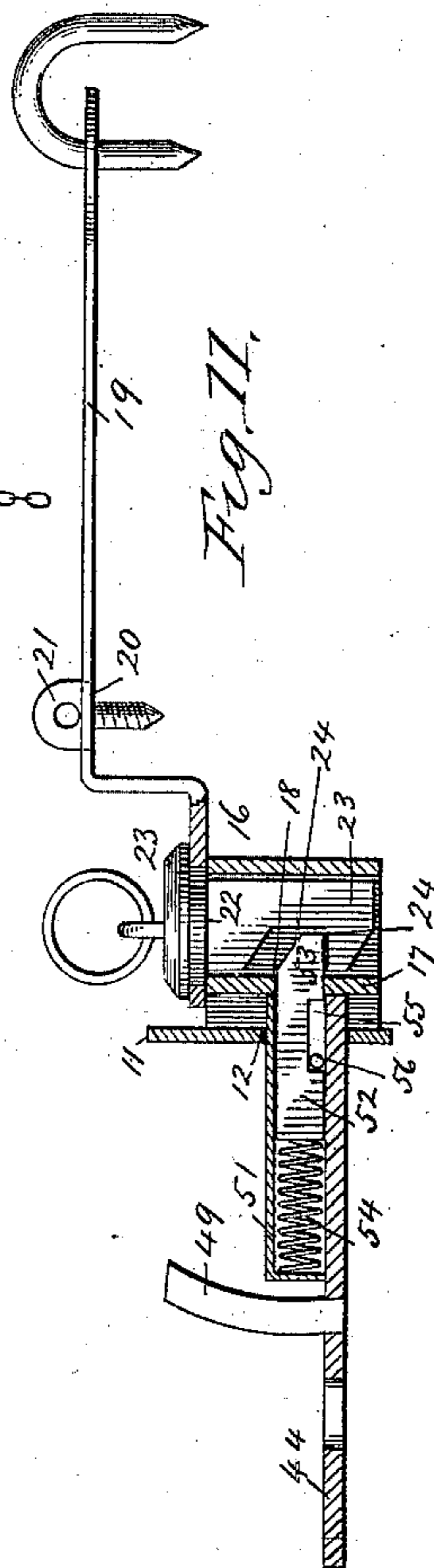


Fig. 11.

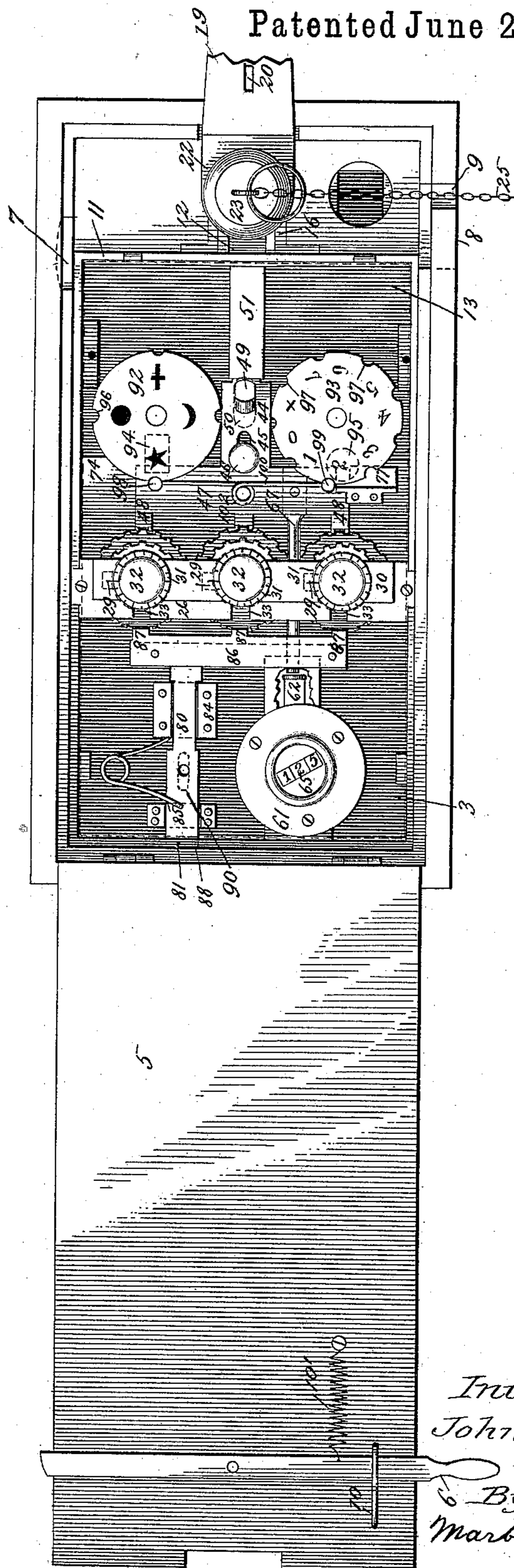
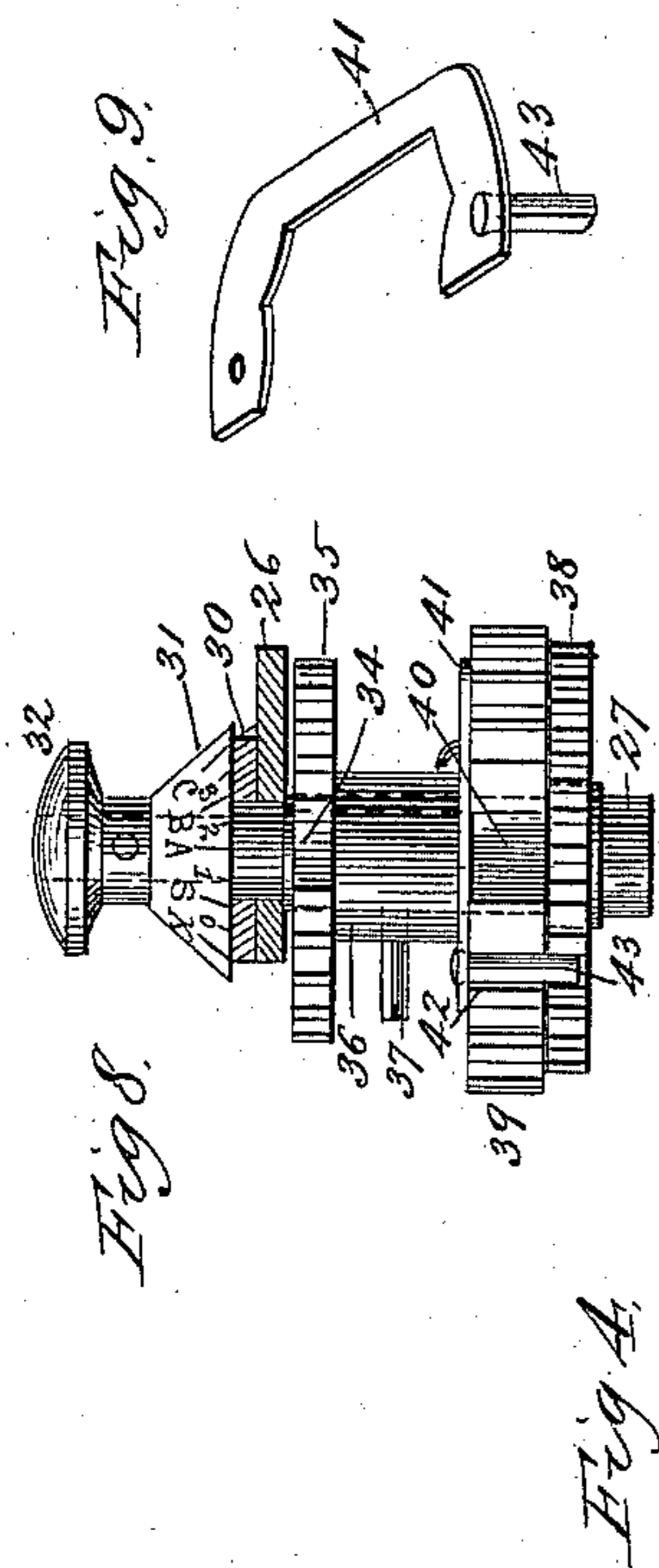
(No Model.)

6 Sheets—Sheet 4.

J. C. BARR.
PERMUTATION LOCK.

No. 385,228.

Patented June 26, 1888.



Witnesses:
L. R. Apple.
T. R. Stuart.

Inventor:
John C. Barr;

By
Marble & Mason,
Attys.

(No Model.)

6 Sheets—Sheet 5.

J. C. BARR.
PERMUTATION LOCK.

No. 385,228.

Patented June 26, 1888.

Fig. 12.

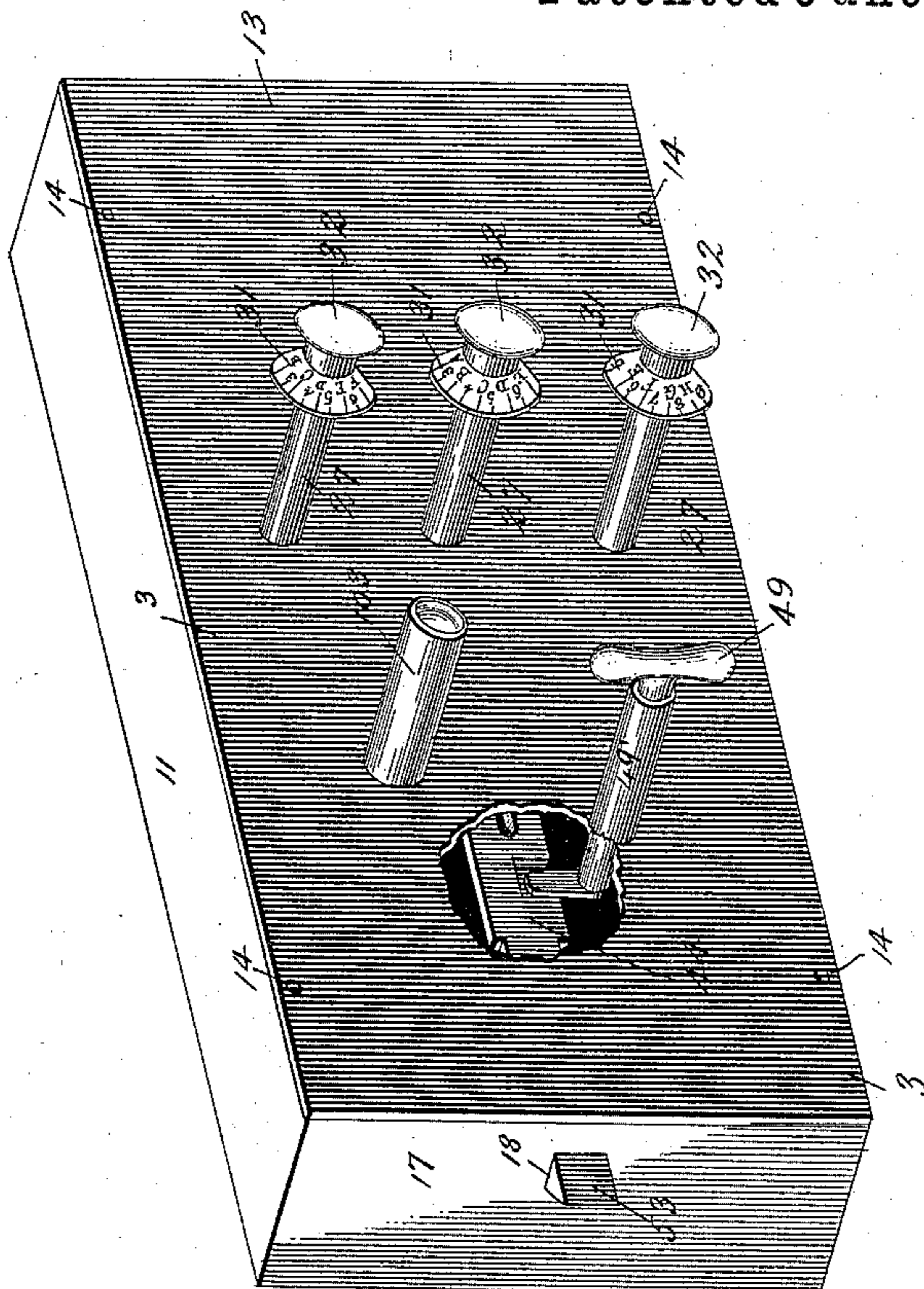
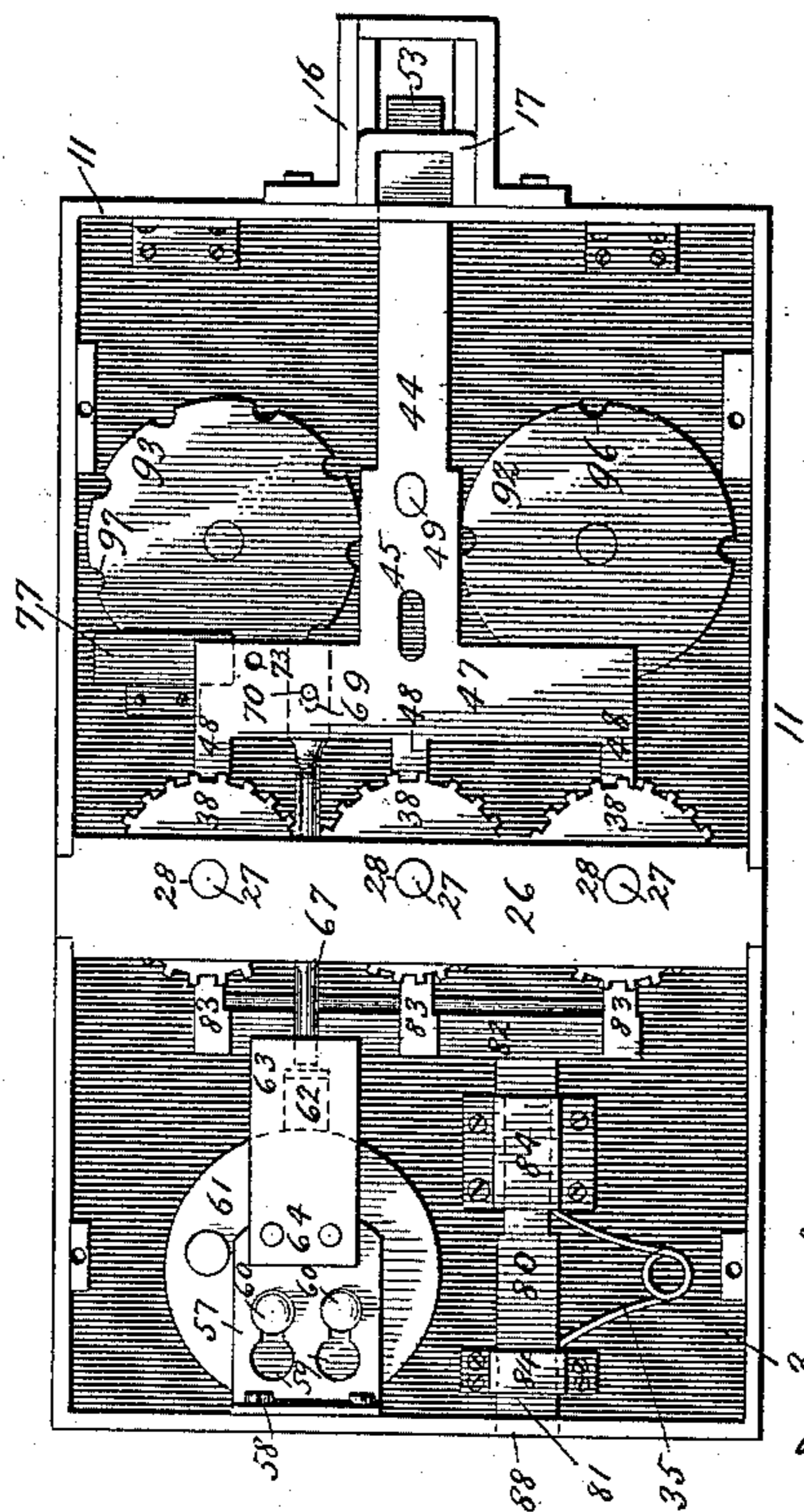


Fig. 5.



Witnesses:
L. L. Apple.
T. R. Stuart.

Inventor:
John C. Barr.

By
Marblet Mason,
Attys

(No Model.)

6 Sheets—Sheet 6.

J. C. BARR.
PERMUTATION LOCK.

No. 385,228.

Patented June 26, 1888.

Fig. 6.

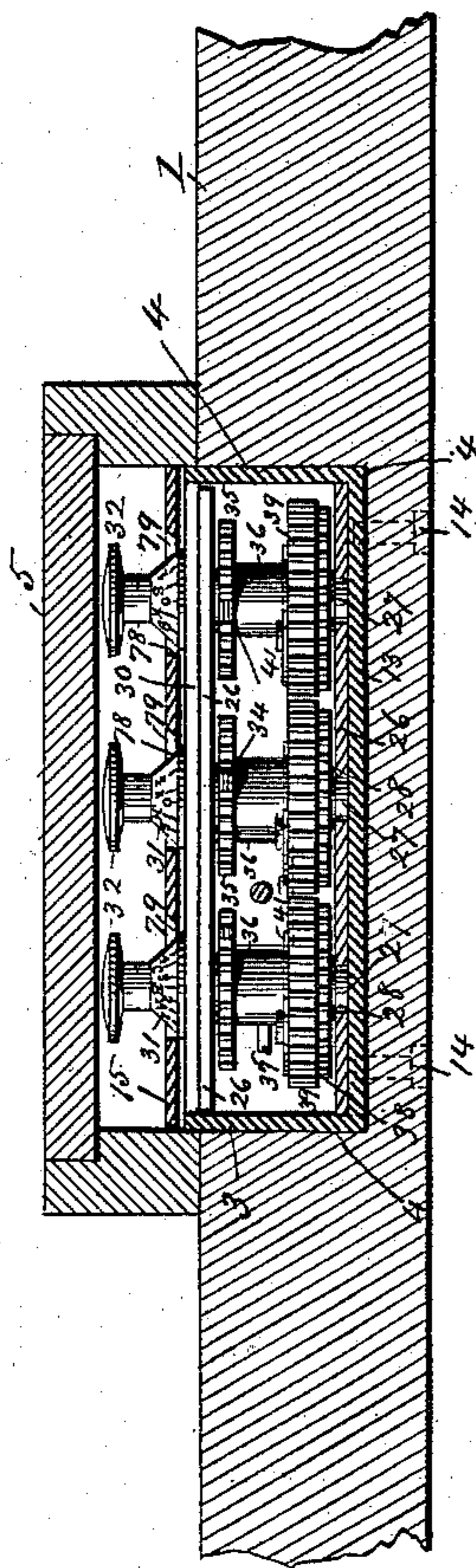
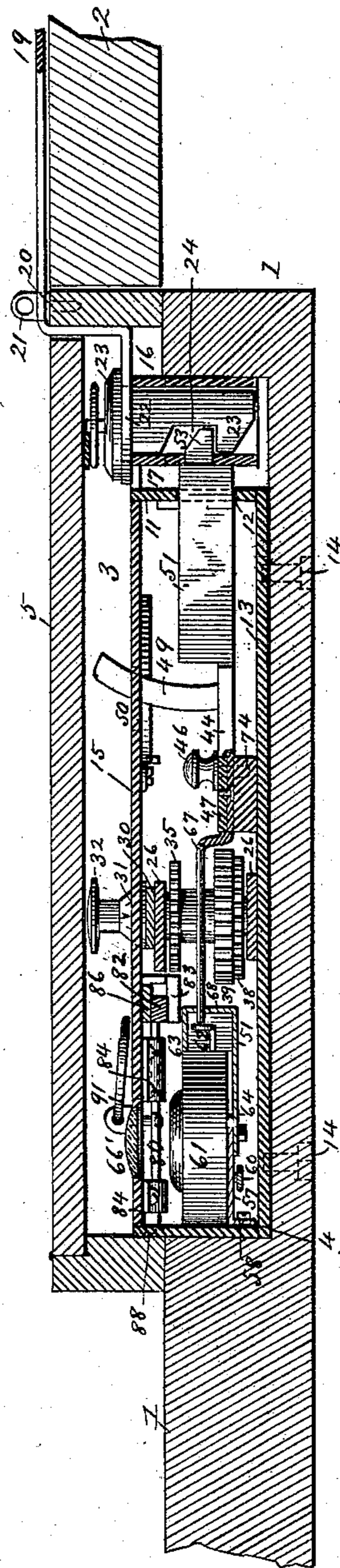


Fig. 7.



Witnesses:
R. L. Apple,
T. R. Stuart,

Inventor:
John C. Barr,

By
Marble & Mason,
Attys.

UNITED STATES PATENT OFFICE.

JOHN C. BARR, OF BISMARCK, DAKOTA TERRITORY.

PERMUTATION-LOCK.

SPECIFICATION forming part of Letters Patent No. 385,228, dated June 26, 1888.

Application filed March 3, 1888. Serial No. 266,053. (No model.)

To all whom it may concern:

Be it known that I, JOHN C. BARR, a citizen of the United States, residing at Bismarck, in the county of Burleigh and Territory of Dakota, have invented certain new and useful Improvements in Permutation-Locks; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to permutation or combination locks for freight, mail, and express cars, bonded warehouses, vessels, and similar structures where goods are to be held in bond or safety, and for safes and vaults where a secure inclosure is desired for valuables; and it consists in a main locking-bolt inclosed in a casing, which casing is itself locked by another bolt which is controlled by cogged disks or wheels mounted upon the spindles and controlling the movement of the main bolt; in the combination of two bolts and two separate and independent sets of cogged or toothed disks which lock said bolts and are operated by the same spindles, knobs, and dials; and, further, in the improved details of construction and combination or arrangement of parts of said lock, which will be hereinafter fully disclosed in the description, drawings, and claims.

The objects of my invention are, first, to provide a permutation or combination lock in which the locking mechanism of the main combination, which controls the main bolt, is inclosed in a casing which is locked by another bolt that is controlled by the disks of another combination, but which are upon the same spindles as the disks of the main combination, whereby a number of persons may know and be able to operate the main combination, but not be able to gain access thereto and change the same or discover an altered or new combination; second, to attach the register in such a manner that no access can be had to its interior setting mechanism without removing the back of the lock-casing, and, also, to connect said main bolt to the register in such manner that said bolt cannot be drawn back without operating said register, nor the register be changed without withdrawing said main bolt; third, to provide efficient, quickly-

operated, and simple means for changing the combinations controlling the main bolt and the bolt for the lock-casing door; and, fourth, to provide a lock which will be suitable whenever it is desired to have a lock in which the combinations can only be known to the persons whose business it is to open the same, and in which the combinations can only be changed or successfully operated by persons knowing the combination for opening the lock-casing as well as the combination for controlling the main bolt.

In the accompanying drawings, forming part of this specification, in which the same reference-numerals indicate the same or corresponding parts, Figure 1 represents a side elevation of a railway freight-car provided with my improved lock; Fig. 2, a front elevation of the lock, showing the outer door open; Fig. 3, a front elevation showing the door of the lock-casing open and the outer door partly broken away; Fig. 4, a front elevation of the lock mechanism, showing the door of the casing in dotted lines and the parts upon the inner face of said door in full lines, and also showing the combination set to admit of opening the lock-casing door; Fig. 5, a rear elevation of the locking mechanism with the back of the lock-casing removed; Fig. 6, a vertical or transverse section taken on the line *xx* of Fig. 2 and looking toward the spindles and disks; Fig. 7, a longitudinal section, the register proper being shown in side elevation; Fig. 8, a side view of one of the spindles, its knob, dial, and disks, the outer cross-piece and face-plate being shown in section; Fig. 9, a perspective detail view of the spring and stud for the lower disk or wheel; Fig. 10, a section of the cross-head of the bolt, illustrating the manner of attaching the register-operating rod; Fig. 11, a detail longitudinal section of the outer portion of the bolt, its casing, and the frame or throat; and Fig. 12, a perspective view of the lock as adapted for a vault, safe, or common door.

In the drawings, the numeral 1 indicates the side of a car, and 2 the car-door, these parts being of any desired construction, and merely shown to illustrate one application of the lock, which may be applied to any suitable structure.

3 represents the lock-casing, which is secured in a recess or opening, 4, in the side of the car,

and over said recess a hinged door, 5, is placed, which acts as a cover to protect the lock from dust, rain, and snow, and which is provided with a flat latch, 6, pivoted at its middle upon the inner face of said door and adapted to be engaged at its upper end in a notch, 7, in the upper part of the frame and at its lower end in a slot, 8, in the lower part of said frame, said slot having an open portion, 9, through which the lower end of the latch may enter. The movement of the lower end of said latch is limited by a wire strap, 10; also, a spring, 10', is secured to the door and the lower end of said latch, by which it is drawn into the slot from the open part thereof.

The lock-casing 3 consists of a rectangular frame, 11, having the slot 12 for the head of the main bolt, the back 13, which is removably secured to the frame by screws 14, and the hinged door 15. A small frame or throat, 16, is secured over the bolt-slot 12 in the casing and provided with a socket, 17, formed with a slot, 18, which registers with said bolt-slot and is slightly smaller than the same, as more plainly shown in Fig. 11.

A hasp, 19, is pivoted upon the car-door and has a slot, 20, for the passage of an eye or staple, 21, for the attachment of a common seal, if the combination be not used, and the free end of said hasp is formed with a round perforation, 22, into which the round portion of a plug, 23, enters, the said plug having its square, beveled, and recessed end 24 fitting in the throat or small frame 16, and having a chain, 25, secured to its head and to the side of the car, as shown in Figs. 2 and 4.

Two vertical cross-pieces, 26, are secured at the front and back of the lock-casing, as shown in Figs. 6 and 7, and in these cross-pieces the spindles 27 of the disks of the combination are journaled in openings or bearings 28. The outer cross-piece is provided with marks 29 upon its face-plate 30, with which register the marks upon dials 31, which are made integral with knobs 32 and secured to the outer ends of the spindles, as shown in Figs. 3 and 4. The edge of said outer cross-piece, 26, is also formed with notches or slots 33, with which register radial notches or slots 34 in the front disks, 35, upon the spindles. These disks are provided with cogged rims and with inwardly-extending sleeves 36, having adjusting-screws 37 for holding them upon the spindles, whereby said sleeves and disks may be secured upon the spindles with the notches or slots of said disks in any desired position relative to the marks upon the dials 31. (See Figs. 6 and 8.)

When it is desired to cause the notch or slot 34 of one disk 35 to register with the notch 33 in the cross-piece 26 while a certain mark upon the dial 31 registers with the mark 29 upon the face-plate 30, the set-screw 37 is unscrewed, leaving said disk and sleeve free to be revolved upon the spindle 27. The dial 31 is then turned by the knob 32 to bring its mark to register with the mark on said face-plate. Then the slot or notch 34 of the disk

35 is brought to register with the notch 33 of the cross-piece 26 by revolving the sleeve and disk. Then the set-screw 37 is tightened, when the slots or notches of the disk and cross-piece will register, and also the marks on the dial and face-plate will register. The function of these disks and their notches will be fully explained hereinafter when the bolt on the door of the lock-casing is described.

Cogged or notched disks 38 are also secured upon the spindles near the inner ends thereof, and are provided with notches or spaces between their cogs, which also register with the marks upon the dials 31. Thicker disks, 39, are loosely fitted and adapted to be revolved upon the spindles between the inner ends of the sleeves 36 and the inner notched disks, 38. The peripheries of these disks are also formed with cogs similar to the outer disks. These thick disks 39 are formed with deep radial notches 40. Flat nearly half-moon-shaped springs 41, of the form shown in Fig. 9, secured to the front faces of said disks at points opposite said notches, extend around over them and to slots 42 at the sides of said notches, and are provided with studs 43, which project from their ends through said slots and into the spaces between the cogs or teeth of the disks 38. The relative position of the notch 40 in each thick disk 39 with respect to the marks upon the dial 31 may be determined and changed by raising the spring 41, so as to disengage its stud 43 from the cogged disk 38, and then revolving the spindle 27 and said cogged disk until the desired mark upon the dial 31 comes opposite the mark 29 on the face-plate 30, and until the notch 40 is in its desired operative position, which will be hereinafter explained, when the spring will be released and its stud 43 will engage the registering-space between the cogs of the disk 38, and thus the thick disk 39 will be caused to revolve with the spindle. The main bolt 44 is formed with a longitudinal slot, 45, which slides over a screw-stud, 46, secured to the back of the casing, and the inner end of said bolt is formed with a cross-head, 47, having projecting arms or lips 48, formed with notched ends, which are capable of entering the notches 40 in the thick disks 39 when said notches are brought to register with said arms by revolving the knobs and spindles. This bolt is also provided with a handle, 49, which projects through and slides in a slot, 50, in the door 15 of the lock-casing; also, the outer portion of said bolt, which slides through the bolt-slot 12 in the casing, is provided with a box, 51, which fits and slides in said bolt-slot and has its side flanges secured to the edges of the bolt. A small bolt, 52, having a beveled outer end, 53, slides within this box and out at its open outer end, and a spring, 54, also in said box, forces said small bolt forward, the throw of said bolt being limited by its having a recess or slot, 55, which slides over a transverse pin, 56, secured in said box. This small bolt projects into the throat or small frame 16 at the

end of the casing through the slot 18 in the socket 17. On account of the small bolt having a beveled end and the spring tending to force it outward, it will be evident that the plug 23 may be forced into the throat or small frame 16, as the beveled end of said plug will push the beveled end 53 of said bolt back, and that when the end of said bolt registers with the recess 24 in the plug the spring will force it into said recess and retain it therein or in said throat or frame.

A plate, 57, is secured by its lip or flange 58 to the end of the frame of the lock-casing, being only accessible from the inner side or back of the casing, and is formed with two button-hole-shaped slots, 59, within which are secured setting-knobs 60, which are attached to the rear side of a register or tallying device, 61, which may be of any desired or suitable construction, said knobs being inserted through the enlarged ends of said slots and then slid into their smaller ends, where they will be secured and hold said register 61 to the plate 57, as shown in Figs. 5 and 7. This register is provided with a plunger, 62, which operates the registering mechanism when it is forced into contact therewith, and is inclosed in a box or casing, 63, which has its inner side or back, 64, extended over the back of the register and secured to the plate 57, as shown more plainly in Figs. 5 and 7. The dial 65 of the register is visible through a hole, 66, in the door of the lock-casing, said hole being preferably provided with a magnifying-glass, 66', for showing the numbers more plainly. This register can only be set or removed from the back of the casing, and then only after the back plate has been removed. So, therefore, all tampering with it from the front of the casing is prevented.

The plunger 62 of the register 61 is operated by a rod, 67, which has one end sliding in an opening formed in the closed end 68 of the box or casing 63 and bearing against said plunger, the other end of said rod being fitted in a groove or recess, 69, (see Fig. 10,) in the back of the cross-head 47 of the bolt 44, and held in the same by a screw, 70, and lips 71, the latter bearing against the edges of said cross-head and preventing the longitudinal movement of said rod in said groove or recess.

It will be observed that as the rod 67 is rigidly secured to the cross-head of the bolt 44 the latter cannot be slid backward and withdrawn from engagement with the recessed plug 23 without operating the register, that said rod can only be removed from the rear after removing the back plate, and that it will be impossible to remove said rod from the front and withdraw the bolt without registering.

The cross-head 47 of the main bolt, as shown in Fig. 3, is formed with a hole, 72, which registers with a hole, 73, formed in the back plate or in a bar, 74, which rests thereon when said bolt is in locking position. A pin, 75, is fitted in these holes and secures said bolt in

locked position, thereby rendering it impossible to draw the same until the lock-casing door 15 has been opened and said pin withdrawn; also, said pin may be placed in the hole 73, formed in said bar 74, by turning the spindles so that the notches 40 in thick disks 39 will register with the lugs or arms 48 and pushing the main bolt backward just far enough to uncover the hole 73. This will hold the disks in place while the spindles are being turned to register any desired combination; also, when said pin is not in use in either of the holes named it is placed within convenient reach in an extra hole, 76, formed in the bar 74. A flanged plate, 77, is secured upon the inner face of the door of the lock-casing and rests upon and serves to hold said pin in its hole or holes when the door is locked, thus preventing said pin from being displaced by any rattling or shaking motion. The door of the casing is formed with holes 78, through which the knobs and dials of the spindles project when the door is closed and locked, said holes having notches 79, which disclose the marks 29 upon the face-plate 30.

A bolt, 80, provided with a beveled outer end, 81, and a cross-head, 82, having notched arms or lips 83, slides in bearings 84, secured upon the inner face of the door, and a spring, 85, forces it outward. (See Figs. 3, 4, 5, and 7.) The arms or lips on the cross-head of this bolt register with and enter the slots or notches 33 in the outer cross-piece, 26; also, a plate, 86, having inturned lips 87, is also secured upon the inner face of the door. Its inturned lips support or bear against the outer sides of the arms or lips 83 of the bolt 80, which project into the slots or notches 33 of the cross-piece 26. The arms or lips 83 of said bolt are also adapted to project into the slots 34 of the outer disks, 35; also, when said slots in the disks have been brought to register with the slots 33 in the cross piece 26 and the door is closed the beveled end 81 of the bolt will spring into the slot 88 in the end of the frame of the lock-casing, the lips or arms of said bolt having free play in said slots. When, now, the disks are revolved by the spindles, the lips or arms 83 of said bolt will be prevented from being pushed back by the rims of the disks, as the cogs thereon will bear within the notches in the ends of said lips or arms. This bolt is also provided with a handle or knob, 89, which projects through and slides in a slot, 90, formed in the door of the lock-casing, and is preferably provided with a loose ring, 91, for manipulating or unlocking it. (See Figs. 2 and 7.)

The ends of the lips or arms upon the bolt 80 for locking the casing-door, as well as those upon the main bolt 44, are notched, so as to bear against the cogs upon the rims of the opposing disks, and thus prevent evil-disposed persons from discovering the location of the respective slots in the disks by hearing the rattling and feeling the slots strike against the ends of the arms, which would be possible were the rims of the disks smooth.

Two index-disks, 92 and 93, as shown in Figs. 3, 4, and 5, are pivoted upon studs secured to the inner face of the casing door and have various arbitrary marks or inscriptions upon their outer faces, said marks being arranged circularly, so as to register with holes 94 and 95, formed in said door; also, the peripheries of these disks are formed with notches 96 and 97, which register and correspond with the marks upon their faces and are engaged by lugs or studs 98 and 99, formed upon the ends of a spring-wire, 100, which is secured upon the inner face of the casing-door and between the disks by a screw, 101, passing through an eye, 102, formed in the middle of said wire.

The operation of the lock when used for a railway freight car is as follows: When a lock is first placed upon a car, the disks 35 for the combination controlling the bolt 80 of the lock-casing door 15 are set to allow the door to be opened on a combination of numbers—say, 0 00—which has been agreed upon by the manufacturer and the proper railway officials to whom the car is to be delivered. Then the lower disk, 93, upon said door is placed in position to present any numeral desired—say 1—which, by previous understanding, means that particular combination which is shown through the hole 95, and thus all who are properly concerned may know that the lock-casing door can be opened on that combination. The main bolt 44 is then locked in place by inserting the small pin 75 into the holes 72 and 73, respectively formed in the cross-head 47 of the bolt and in the bar 74. Then the hasp 19 is secured in place by inserting the plug 23 into the throat or frame 16, thereby locking the door of the car. When, now, the car reaches the road or division for which it is intended, the lock-casing door is opened and the pin 75 withdrawn from the above-named holes 72 and 73. Then the notches 40 in the disks 39 are brought to register with the lugs or arms 48 on the main bolt 44, which is then pushed back to release the plug 23, which is then withdrawn and left hanging by its chain 25. The car-door is now open, and the car may be loaded at pleasure. After this the combination for the lock-casing door is changed to the working-combination, which is only known to car accountants or division superintendents. Then the lower index-disk, 93, is turned to show the numeral corresponding to such combination—say 2. Then the pin 75 is placed in the holes 72 and 73. Then the lock-casing door is closed and the dials 31 turned to lock it, whereupon the number presented by the register 61 is recorded as a seal, which may be inspected at various points along the particular road or division to ascertain if there has been any tampering with the lock. When the car is loaded, the plug 23 is inserted through the hasp 19, when the car-door is locked and the car ready for its destination. When the car arrives at the headquarters of the division for which it is intended, the superintendent or other person in charge can ascertain from the lower index-disk, 93,

the character or number of the combination on which the door-bolt 80 is held, whereupon he can readily open the lock-casing. The larger thick disks, 39, may then be turned so as to bring their notches 40 to register with the arms 48 of the cross-head 47 of the main bolt 44, when said arms may be slid far enough into the said notches to hold said disks in place, but not far enough to register or break the seal, the cross-head being held in this position by the pin 75, which is inserted into the hole 73 in the bar 74. While the thick disks are thus held in place, the springs 41 and their studs 43 will be raised from between the notches of the inner disks, 38. Then the spindles will be turned until the characters of the working-combination or that known to authorized persons—such as station agents—register with the marks 29 upon the outer face-plate, 26, when the springs 41 will be released and the studs 43 drop between the cogs on the disk 38. The upper index-disk will then be set to show the mark or character indicating the combination used by station agents for withdrawing the main bolt 44, so that the plug 23 may be withdrawn and the car-door opened. Then the pin 75 is removed from the hole 73 in the bar 74 and inserted in the extra hole, 76. The door of the casing is then closed and locked by turning the disks off the combination, when the main bolt may be drawn by turning to the combination on which the inner disks, 38, were set. The car is now ready to be forwarded to the particular station where it is to be unloaded, and on its arrival there the station agent turns the dials 31 so as to register, say, the numerals 1 2 3, or any other numbers agreed upon between the division superintendent and his station agents. Then the handle 49 is pushed back, the plug 23 withdrawn, and the car-door opened, and, also, at the same time one of the register-numbers 1 2 3 has been advanced by pushing back the main bolt 44. Then the dials 31 are turned off the combination then in use and the car automatically sealed, as shown by the advanced number on the register 61. The car may then be loaded again and locked by inserting the plug 23 in the hasp 19. When said car is loaded at a particular station, it is billed and sent forward to its destination. On its arrival at first division headquarters, where only the lock-casing-door combination is known, the division superintendent or his authorized employé opens the lock-casing door and inserts the pin 75 in the holes 72 and 73, thereby throwing out of action the combination 1 2 3, which is on the main bolt and commonly known, and leaving the lock on the division-combination, thereby making it secure until the car arrives at the headquarters of the division upon which it is to be unloaded or at a terminal point.

The register acts as a seal, as the main bolt cannot be withdrawn without operating the same; hence, when a record is kept of the number indicated when the bolt is locked the register will inditiate any withdrawal of said

main bolt. The small bolt 52, which projects into the throat or frame 16 and slides in the box 51, will admit of said bolt being locked before the door 5 of the car is closed, as the plug 23 may be inserted after said bolt has been locked.

Whenever it is desired to change either of the combinations, it may be done by the person knowing the combination controlling the door of the lock-casing. Then a change in the combinations will be indicated by the index-disks 92 and 93, as they will be set to show the numbers or characters of the combinations or to indicate that the numbers of said combinations will be forwarded to the destination of the car, or any similar predetermined information may be given.

It will be obvious from the foregoing that this lock may be used for various other closures or structures besides freight-cars, since, by its security, simplicity of construction, and ease of operation, as well as by its register and index disks, it is especially suitable for the transportation of goods in bond, as customs officers may have their own special combinations; for bonded warehouses or other bonded inclosures, for vaults and safes, especially express-safes; for common warehouses, and for doors and structures generally where security, simplicity, and durability of construction are desired, together with a recording device which serves as a seal and infallibly indicates any withdrawal of the main bolt and a device for indicating the combinations used or their characters.

An illustration of my improved lock as employed for a vault, safe, or common door is given in Fig. 12, in which the spindles 27 are shown as extending out of the casing, so as to pass through said door. The handle 49 for the bolt is also shown as extended; but it is adapted to be turned instead of slid. A sleeve, 49', surrounds said handle and forms a bushing or bearing for it outside of the casing. The index disks or disk, which indicates the character of the combinations, is visible through a tube, 103, which may have a suitable magnifying-glass like the one 66'. (Shown in Fig. 7.) The throat or frame 16 for the small bolt 52, as shown in Figs. 7 and 11, is in this case dispensed with, the end of the lock-casing taking its place, said small bolt only projecting out of said casing. The construction and operation of this form of lock and its advantages are substantially the same as those of the lock before described.

Having thus fully described the construction and combination or arrangement of the several parts of my invention and its advantages, what I claim as new is—

1. The combination of a lock-casing provided with a door and lock mechanism for said door, with a main-lock mechanism within said casing and devices which connect, control, and operate both of said lock mechanisms, substantially as described.

2. The combination of a lock-casing pro-

vided with a door having locking devices and a main bolt within said casing, with spindles provided with disks and constructed and arranged to connect, control, and operate said locking devices and main bolt, substantially as described.

3. In a permutation-lock, the combination of the lock-casing provided with a cover having a lock, and the main bolt secured within said casing and provided with a cross-head having lugs or arms, with the spindles and the disks mounted thereon and having radial slots which are adapted to register with and receive said lugs or arms, substantially as described.

4. In a permutation-lock, the combination of a lock-casing, a main bolt within said casing, a bolt upon the door for controlling the closure of said casing, and spindles provided with two sets of disks respectively controlling said main and door bolts, and having suitably-marked dials, substantially as described.

5. In a permutation-lock, the combination of a lock-casing provided with a door, a set of spindles, each provided with two cogged disks formed with a slot or notch in the periphery of each, a main bolt having lips or arms adapted to register with and enter the slots in one set of said disks, and another bolt secured within said lock-casing and adapted to control the door of said casing, and also having lugs or arms adapted to register with and enter the slots of the other set of disks, substantially as described.

6. In a permutation-lock, the combination of a lock-casing provided with a hinged door formed with holes and slots and having a cross-piece formed with bearings, and also with slots or notches in its edge which register with said bearings, spindles mounted in said bearings and provided with a set of inner cogged disks having a radial slot or notch in each, with a set of outer cogged disks, also formed with radial slots or notches which are adapted to register with the slots in said cross-piece, and with knobs and dials on their outer ends which project through said holes in the door, a main bolt provided with a cross-head having lips or arms which are adapted to register with and enter the slots in said inner set of disks, and having a handle projecting through a slot in said door, and a bolt adapted to be slid upon the inner side of said door and provided with a cross-head having lugs or arms which are adapted to register with and enter the slots in said cross-piece, substantially as described.

7. In a permutation-lock, the combination of a lock-casing provided with a hinged door formed with holes and slots, and having a cross-piece formed with bearings and also with slots or notches in its edge which register with said bearings, spindles mounted in said bearings and provided with a set of inner cogged disks having a radial slot or notch in each, with a set of outer cogged disks, also formed with radial slots or notches which are adapted to

register with the slots in said cross-piece, and with knobs and dials on their outer ends which project through said holes in the door, a main bolt provided with a cross-head having notched lips or arms which are adapted to register with and enter the slots in said inner set of disks, and having a handle projecting through one of the slots in said door, and a bolt adapted to be slid upon the inner side of said door, and provided with a cross-head having notched lugs or arms which are adapted to register with and enter the slots in said cross-piece, the notched ends of said lips or arms being adapted to bear against the cogs of said inner and outer disks, substantially as and for the purpose described.

8. In a permutation-lock, the combination, with the main bolt 44, having an arm or lip, 48, of the spindle 27, provided with the knob 32, the dial 31, and the cogged disk 38, the disk 39, having the radial slot 40 and the notch 42, and the flat half-moon-shaped spring 41, having a stud, 43, projecting through said notch 42 and engaging the notches of said inner cogged disk, 38, substantially as described.

9. In a permutation-lock, the combination of the spindles 27, the disks 39, adjustably secured thereon and provided with radial slots 40 in their peripheries, the bolt 44, provided with a cross-head, 47, having arms or lips 48, which are adapted to register with and enter said slots in disks 39 and formed with a perforation, 72, the cross piece or bar 74, having a perforation, 73, and the pin 75, adapted to fit in either or both of said perforations, substantially as and for the purposes described.

10. In a permutation-lock, the combination of the outer cross-piece, 26, having the slots 33, the spindles 27, the disks 35, having slots 34, the plate 86, having lips 87, the bolt 80, provided with the beveled end 81, the knob 89, and the cross-head 82, having lips 83, and the spring 85, substantially as described.

11. In a permutation-lock, the combination of a lock-casing provided with a door formed with holes, lock-spindles projecting through said holes and having knobs and marked dials, a lock mechanism controlled and operated by said spindles, and one or more adjustable index-disks pivoted upon the inner side of said door and having marks or inscriptions thereon for indicating the lock-combination and for registering successively with one or more of said holes in the door, substantially as described.

12. In a permutation-lock, the combination of a lock-casing provided with a door formed with holes, a main bolt, and a bolt for locking the door, with spindles having disks or wheels for controlling said bolts, and also knobs and marked dials projecting through said holes, the adjustable index-disks pivoted upon the inner side of said door and having inscriptions or marks upon their outer faces for indicating the combinations and for successively registering with said holes in the door, and means for

holding said index-disks in their adjusted positions, substantially as described.

13. In a permutation lock, the combination of a lock-casing provided with a door formed with holes, a main bolt, and a bolt for locking the door, with spindles having disks or wheels for controlling said bolts, and also knobs and marked dials projecting through said holes, the adjustable index-disks pivoted upon the inner side of said door and having inscriptions or marks upon their outer faces for indicating the combinations and for successively registering with said holes, and also having notches in their edges which register with their marks, and a spring-wire secured to said door at its middle, between said disks, and having studs upon its ends for engaging said notches, substantially as described.

14. In a permutation-lock, the combination of a lock-casing, a sliding bolt within the same provided with a cross-head having lugs or arms, spindles provided with disks having radial slots adapted to register with and receive said lugs or arms, a rod having one end rigidly secured to said cross-head, and a register or tallying device provided with a plunger against which the other end of said rod is adapted to bear, substantially as described.

15. In a permutation-lock, the combination of the lock-casing 3, the sliding bolt 44, provided with the cross-head 47, having the groove 69 and lugs or arms 48, and the spindles provided with the disks 39, having the radial slots 40, adapted to receive said lugs or arms, with the rod 67, having one end fitted in said groove and provided with the screw 70 and lips 71, which bear against said cross-head, and a register or tallying device, 61, provided with a plunger, 62, against the end of which the other end of said rod is adapted to bear, substantially as described.

16. In a lock, the combination of a main bolt provided with a box or casing, a transverse pin fitted in the sides of said casing, a small bolt sliding within said casing and formed with a recess for said pin and with a beveled outer end, and a spiral spring bearing against the inner end of said bolt and against the end of said casing, substantially as described.

17. In a lock, the combination of a lock-casing having a bolt-slot, a throat or frame secured to the end of said casing and over said bolt-slot, a socket formed with a slot which is smaller than and registers with said bolt-slot, a main bolt provided with a box or casing having a transverse pin, a small bolt formed with a recess for said pin and with a beveled outer end, and a plug formed with a beveled end, and also with a recess for the engagement of the end of said small bolt, substantially as described.

18. The combination, with the car-door, of the hasp 19, formed with the slot 20 and round perforation 22, the eye or staple 21, the plug 23, the main bolt 44, the spring 54, and the small bolt 52, substantially as described.

19. The combination of the lock-casing having a hinged door and the lock mechanism, with the outer casing, also having a hinged door inclosing said lock-casing, and devices
5 for securing the last-named door, substantially as described.

20. The combination of the lock-casing having a hinged door and the lock mechanism, with the outer casing also having a hinged door in-
10 closing said lock-casing and formed with a

notch, 7, and a slot, 8 9, and provided with a flat latch, 6, a wire strap, 10, and a spring, 10', substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

JOHN C. BARR.

Witnesses:

SCHUYLER DURYEE,
CHAS. S. ROGERS.