

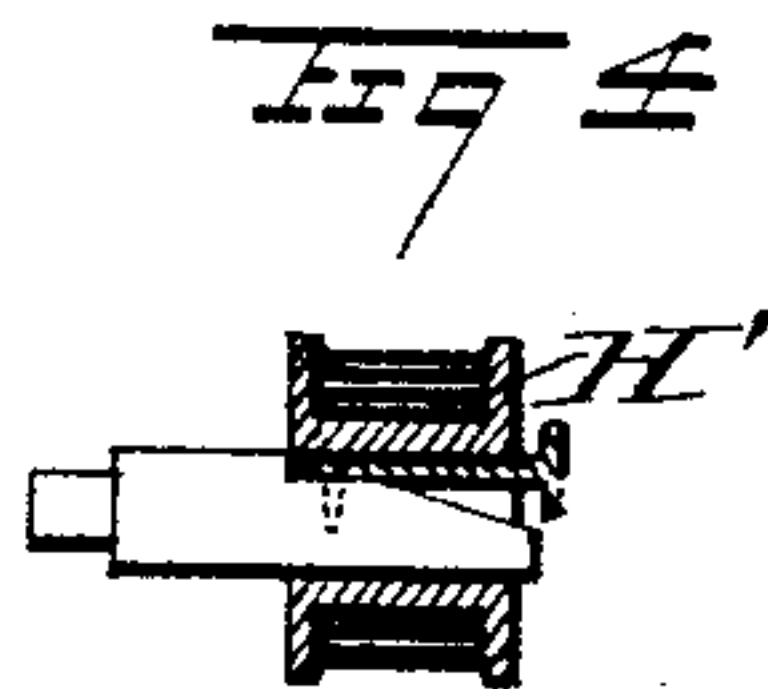
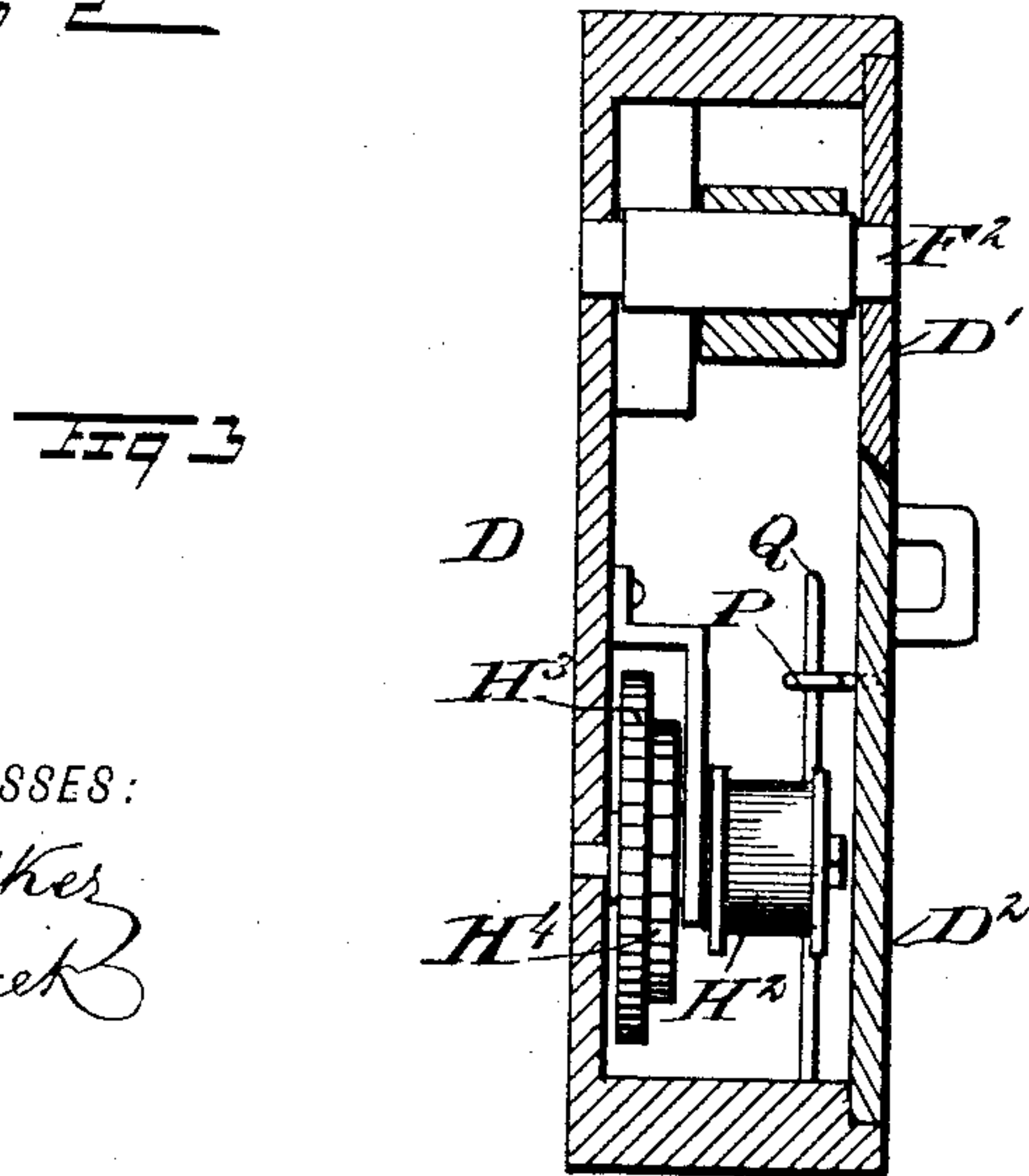
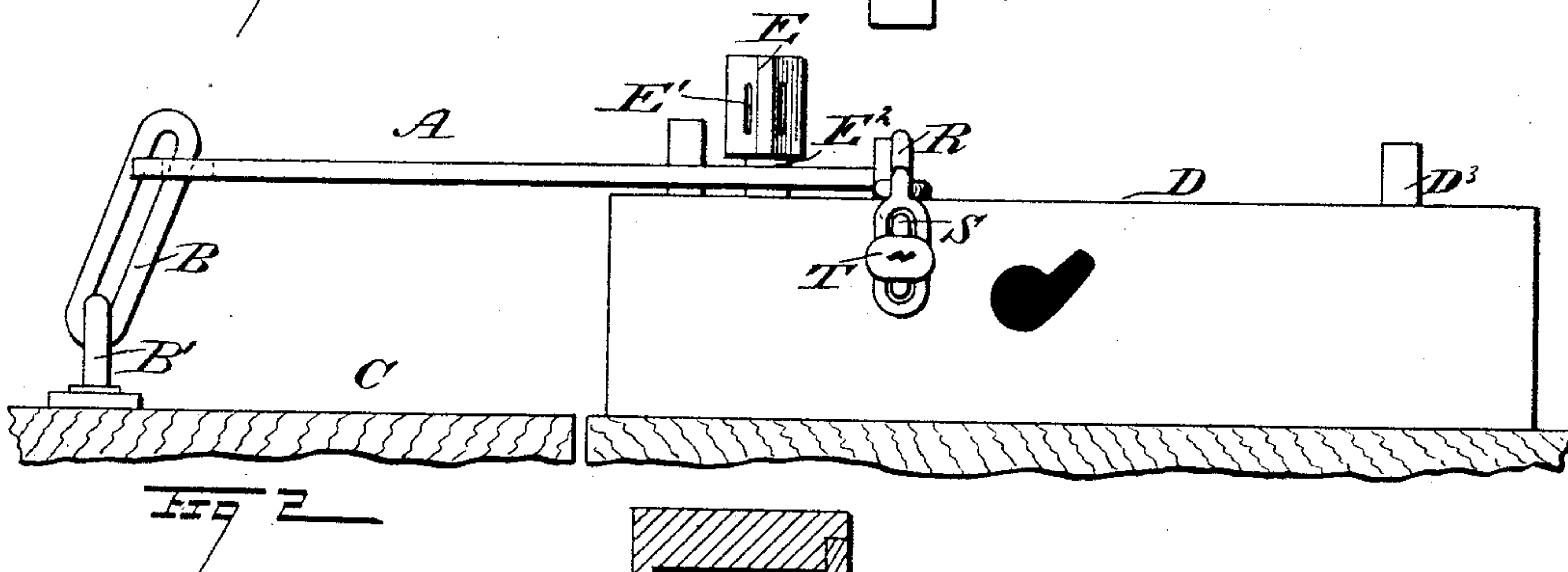
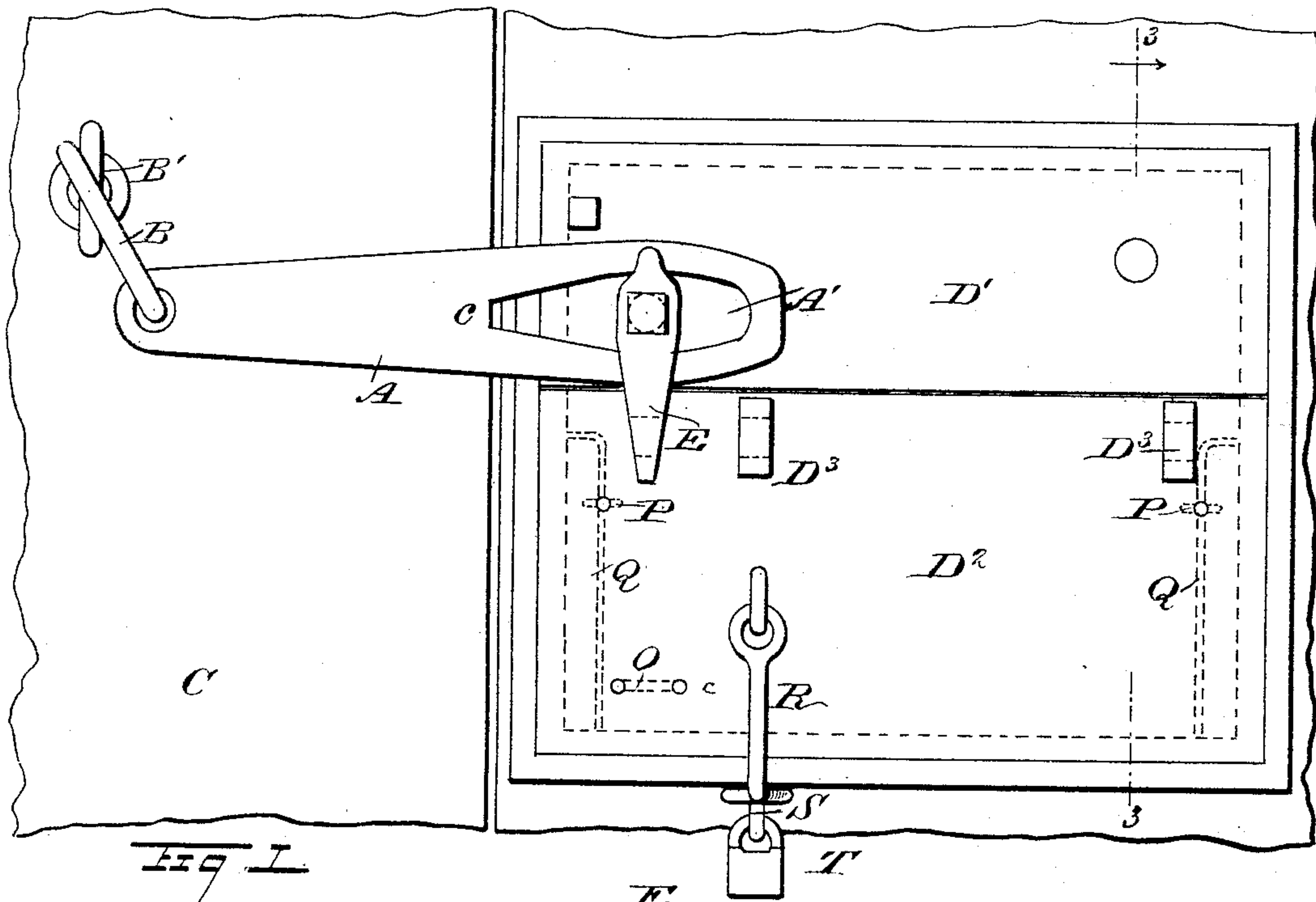
(Model.)

2 Sheets—Sheet 1

L. T. CRABTREE.
INDICATOR LOCK.

No. 471,956.

Patented Mar. 29, 1892.



WITNESSES:

W. Walker
C. Sedgwick

INVENTOR

L. T. Crabtree
BY Munn & Co.
ATTORNEYS.

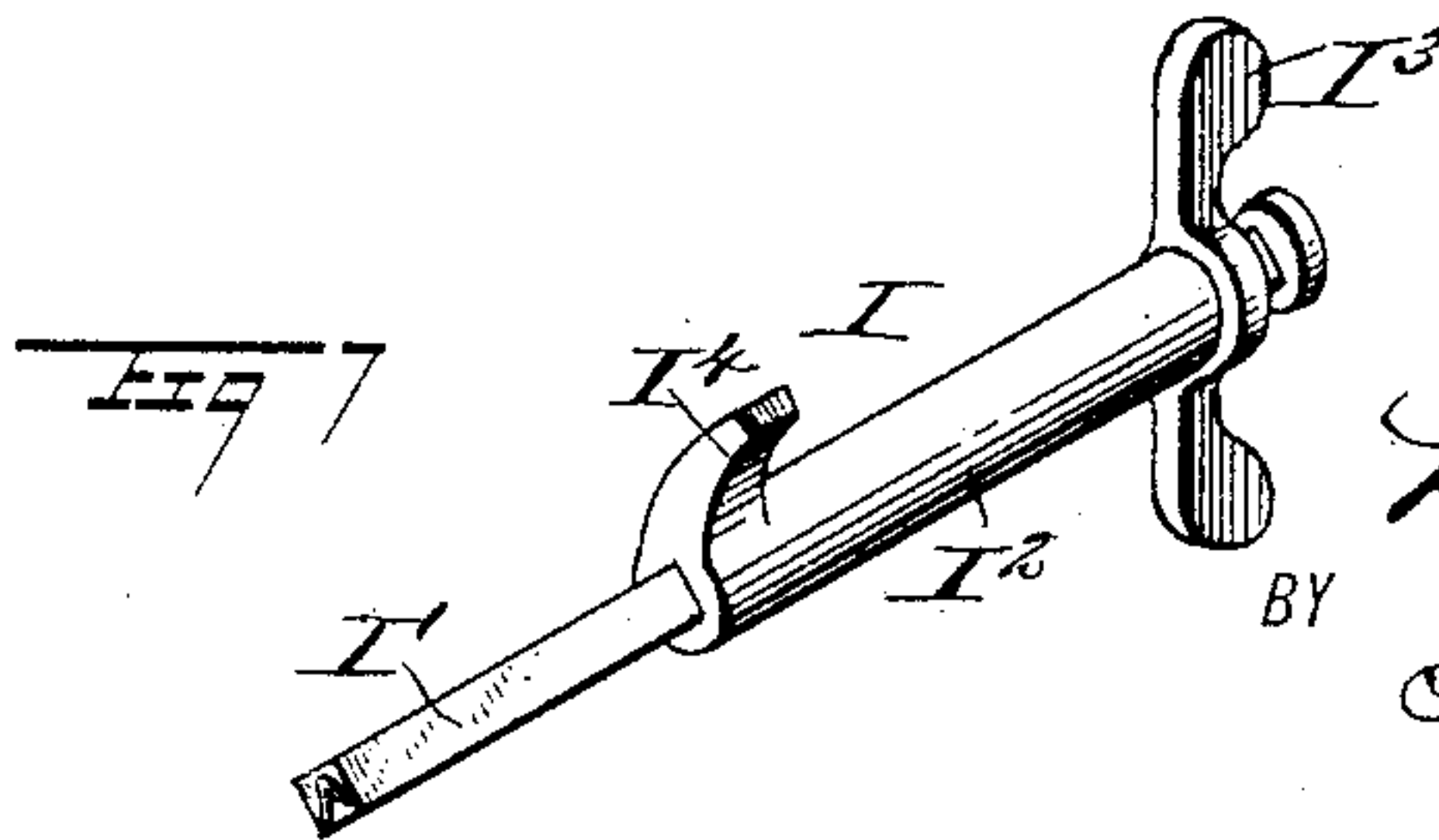
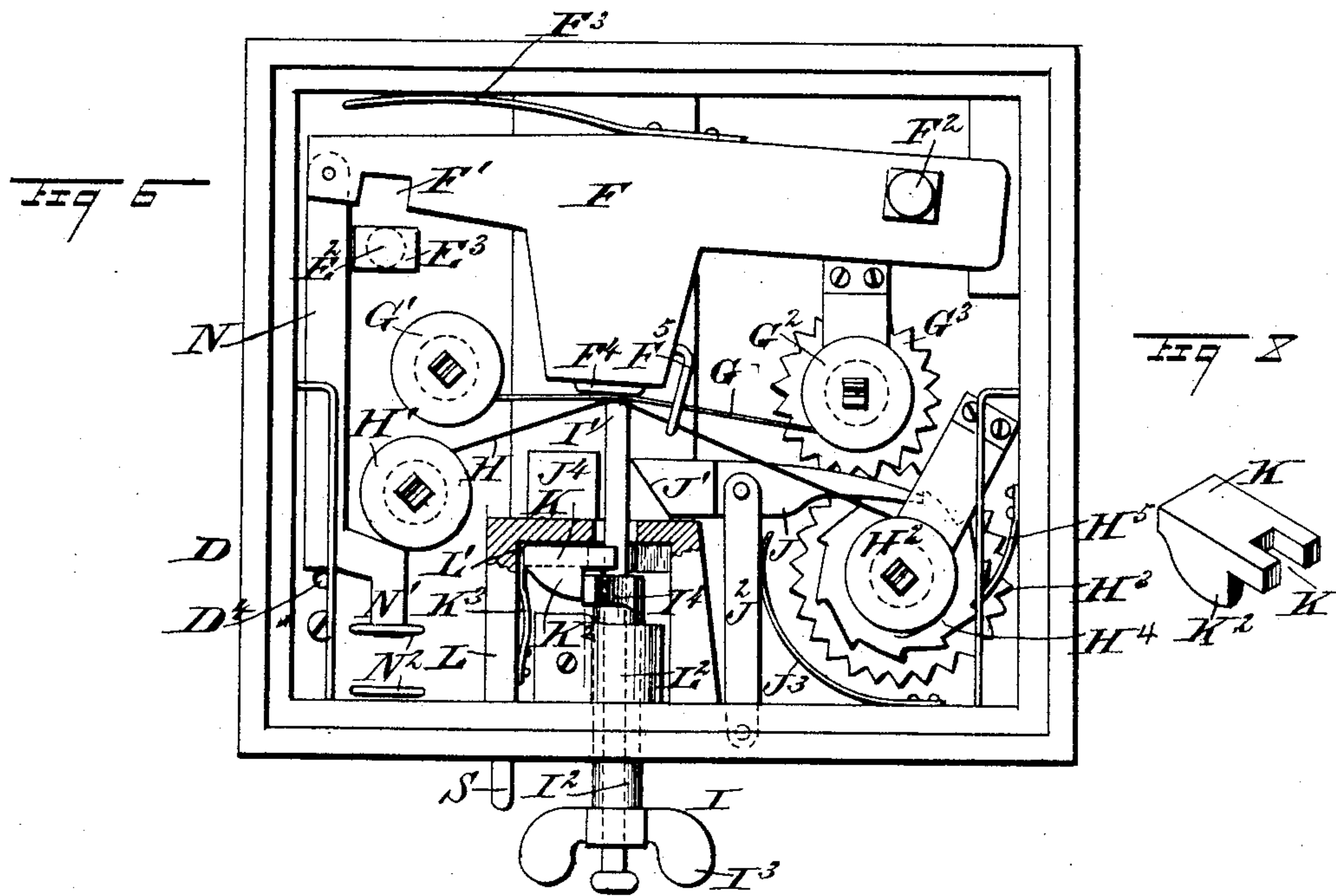
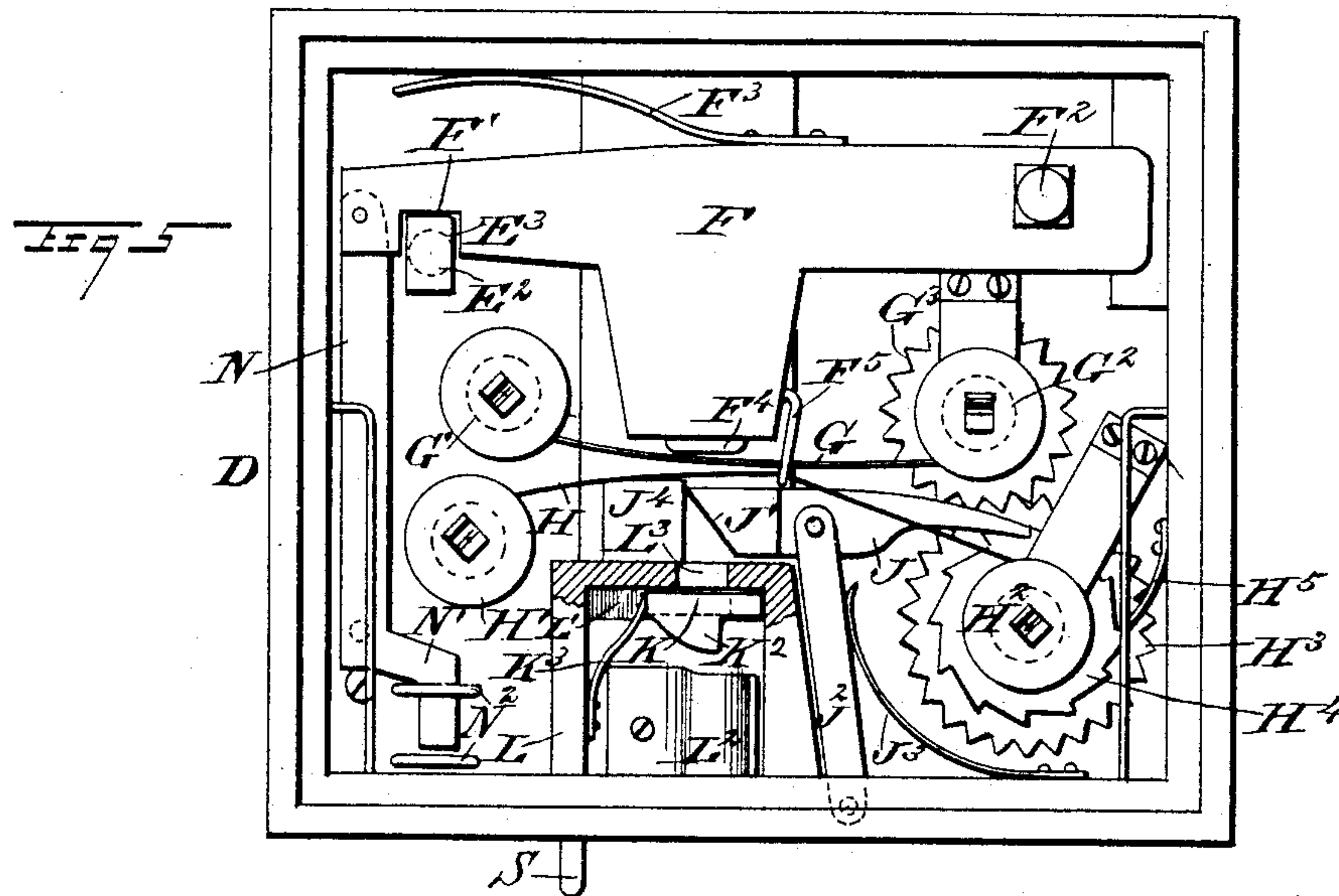
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2 Sheets—Sheet 2.

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UNITED STATES PATENT OFFICE.

LEONARD T. CRABTREE, OF EMBARRASS, WISCONSIN.

INDICATOR-LOCK.

SPECIFICATION forming part of Letters Patent No. 471,956, dated March 29, 1892.

Application filed July 23, 1891. Serial No. 400,463. (Model.)

To all whom it may concern:

Be it known that I, LEONARD T. CRABTREE, of Embarrass, in the county of Waupaca and State of Wisconsin, have invented a new and Improved Recording Door-Lock, of which the following is a full, clear, and exact description.

The object of the invention is to provide a new and improved recording door-lock which is simple and durable in construction, more especially designed for use on railroad freight-car doors and other doors, and arranged to automatically keep record of all opening and closing of the door and constructed to prevent picking of the lock by unauthorized persons.

The invention consists of certain parts and details and combinations of the same, as will be hereinafter described, and then pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a side elevation of the improvement as applied to a railroad-car door. Fig. 2 is an inverted plan view of the same. Fig. 3 is a transverse section of the same on the line 3 3 of Fig. 1. Fig. 4 is a transverse section of one of the paper-rollers. Fig. 5 is a face view of the lock with the front plate removed and parts in section. Fig. 6 is a similar view of the same in a different position. Fig. 7 is a perspective view of the key, and Fig. 8 is a perspective view of the entrance-plate for the sliding plate for the key.

The improved lock is provided with a hasp A, formed at one end with a longitudinally-extending slot A' and pivotally connected at its opposite end with a link B, held on a staple B', secured to the outside of the car C, as illustrated in Figs. 1 and 2. Through the elongated opening A' in the hasp A is adapted to pass an arm E, adapted to be swung into a right-angular position to the hasp A, so that the latter is locked in place on the shank E² of the said arm in the rear of the latter. It is understood that the staple and hasp are attached to the car-door and the lock is fastened to the side of the car.

When the arm E is swung in line with the opening A', then the hasp A can be taken off the shank and arm to unlock the door. The

shank E² is mounted to turn in bearings arranged in a casing D, secured to the door to be locked in place by the hasp A and arm E. The latter is provided near its front end with an opening E' for attaching a wire lock or other supplementary securing device, as hereinafter more fully described. The front plate of the casing is made in two parts D' and D², of which the part D' is rigidly secured to the casing, while the other part D² may be partly opened, as hereinafter described.

In the fixed part D' and the back of the casing is journaled the above-mentioned shank E², the said shank being formed within the casing with a rectangular body part E³ adapted to be engaged by a notch F', similar in shape to the said body part E³ and formed in a locking-lever F. When the part E³ stands in the position shown in Fig. 5 and is engaged by the notch F' of the locking-lever F, then the said shank cannot be turned, and consequently the arm E, being then in the position shown in Fig. 1, securely locks the hasp A in place.

When the lever F is swung into the position shown in Fig. 6, the notch F' disengages the body part E³, so that the latter, its shank, and the arm E can be turned to move the latter in line with the opening A' in the hasp A, which latter can then be taken off the said shank and arm, and the door is unlocked. The arm F, opposite the end containing the notch F', is pivoted on a pivot F², journaled in the back and fixed front part D' of the casing D.

A spring F³, held on the upper edge of the lever F, presses with its free end against the inside of the casing, so that the lever F is held in a lowermost position—that is, with the notch F' engaging the body part E³ of the arm E. The lever F is formed at or near its middle and on the under side with a projection carrying an elastic block F⁴, made of rubber or other suitable material, and over which passes a band of paper G, unwinding from a roll G', journaled in the casing and adapted to be wound up on a roll G², also journaled in the said casing opposite the roll G', the block F⁴ being between the said two rolls.

An inking-ribbon H is arranged below the paper G and passes with the latter through an eye F⁵ held on the lever F. The inking-

ribbon H unwinds from a roll H' and winds up on a roll H², as plainly shown in Figs. 5 and 6, the said rolls H' and H² being arranged below the rolls G' and G². The paper G is printed on by means of an impression-key I, formed with a shank I', preferably made square, as plainly shown in Fig. 7, the inner end of the said shank being formed with a letter or other character embossed or otherwise formed thereon, and serving to press against the inking-ribbon H, so as to move the paper G onto the elastic block F⁴ to receive the impression of the character at the end of the shank I'. (See Fig. 6.)

In order to move the ribbon H and the paper G, the roll H² carries on its shaft a gear-wheel H³ in mesh with a gear-wheel G³, held on the roll G², so that when the roll H² is turned to wind up the ribbon H a similar motion is given to the roller G² to wind up the paper G. On the roll H² is also secured a ratchet-wheel H⁴, engaged by a pawl J, formed at its back end with an incline J', adapted to be engaged by the shank I' of the key, so that the pawl J turns the ratchet-wheel, and consequently the rollers H² and G², to wind up the ribbon and paper, as before mentioned. A spring H⁵, engaging the ratchet-wheel H⁴, prevents return movement of the rolls. The pawl J is pivoted on a link J², fulcrumed in the casing D at or near the bottom, the said link being pressed on by the free end of a spring J³, so as to hold the inclined end J' in the path of the shank I' of the key I, so that the said key imparts a sliding motion to the pawl to move the rolls H² and G² in the manner previously described. The inner swinging motion of the pawl J is limited by the inclined end striking against a fixed lug J⁴, arranged within the casing D. This lug may be on top of a small box L, secured within the casing D and containing a plate K, mounted to slide in suitable guideways L', held or formed in the under side of the top of the casing L. A spring K³ presses on one end of the plate, so as to hold the latter with its solid part over an opening L³, formed in the top of the casing L, and through which the shank I' of the key I has to pass in order to engage the pawl J, the ribbon H, and the paper G in the manner above described. The plate K is formed at the end opposite the spring K³ with a square opening K', through which passes the correspondingly-shaped shank I' of the key I. The plate is also provided with a lip K², adapted to be engaged by the lug I⁴, held on the sleeve I², fitted to slide on the shank I' of the key, the said sleeve being provided with a handle I³ for conveniently turning the said sleeve.

When the plate is in a normal position, as shown in Fig. 5, the spring K³ causes the solid part of the plate to stand in front of the opening L³, so that the shank I' of the key I cannot be passed through the said opening L³ into the casing D. Within the casing L is arranged a guard L², corresponding to the shape

of the sleeve I² and its lug I⁴, a corresponding opening being also formed in the bottom of the casing, as plainly illustrated in Fig. 2, so that the sleeve I² is passed in the right position into the casing L to engage with the lug I⁴ and the lip K² to shift the plate K to the left to register the recess K' with the opening L³ for the passage of the shank I' of the key I. (See Fig. 6.)

On the free end of the lever F is hung a bolt N, provided with an angular extension or arm N', adapted to engage staples N², held in the casing D and secured to the back thereof. The arm N' of the bolt N is also adapted to engage a staple O, projecting inward from the inside of the removable part D² of the cover of the casing D. The said removable part D² of the cover of the casing is provided with eyes P, preferably two in number and arranged at opposite ends to engage rods Q, secured to the inside of the casing D, so as to permit of sliding the part D² when the staple O is disengaged from the arm N' of the bolt N.

The removable part D² of the cover is adapted to be locked in place on the casing by means of a hasp R, pivoted on the said part D², and extending over the bottom of the casing to engage a staple S, on which is secured a lock T of any approved construction after the hasp engages the said staple. (See Figs. 1 and 2.) When this lock and hasp are in place, the removable part D² is held firmly in position on the casing; but when it is desired to open part of the casing an authorized person having the proper key for opening the lock T can slide the part D² downward so as to get at the rolls G' and G² to remove the printed paper G whenever desired.

When the several parts are in position, as shown in Fig. 1—that is, the car-door and the part D² are in a locked position—and the operator desires to open the door with the key I, he first inserts the said key with the lug end of the sleeve I² close to the lettered end of the shank I'. The inner or lettered end of the shank I' then rests against the solid part of the plate K, and the lug I⁴ is free to engage the lip K², so that when the operator turns the handle I³ the said lug I⁴ shifts the plate K to the left and brings the recess K' in line with the opening L³, so that the shank I' can be pushed inward through the said opening L³. This inward movement of the shank I' imparts motion to the pawl J, so that the ribbon H and the paper G are wound up a suitable distance on their respective rolls H² and G². The lettered end of the shank I' after passing the pawl J engages the ribbon H, and finally the paper G, which latter is pressed against the block F⁴ and an impression of the letter or other character on the end of the shank I' is made on the paper G. At the same time the inward sliding motion of the shank causes the lever F to swing upward so that its notch F' disengages the rectangular body part E³ of the shank E², so as to permit of turning the arm E into line with the

elongated aperture A' in the hasp A. The latter can then be removed from the shank E² and the said arm, and the car-door is unlocked. It will thus be seen that whenever the car-door is unlocked by the key an impression is made on the paper G, so that the examining official can at all times determine by whose key the door had been opened last. When it is desired to close the car-door, the hasp A is passed over the arm E, standing horizontally, so that the said hasp engages the shank E². The arm E is then turned into the position shown in Fig. 1 to lock the hasp A in place and at the same time engage with its body part E³, the notch F' of the lever F, which latter is returned to its normal position on the withdrawal of the key I by the spring F³.

When the examining official desires to remove the printed strip of paper G, he opens with his key the lock T, so as to permit of removing the hasp R from the staple S. The cover part D² can now be moved downward, the eyes P sliding on the rods Q so that that part of the casing is uncovered, and the strip of paper G can be removed for record in the books or other purposes, and a new blank strip of paper inserted in its place. The cover part D² is then again pushed to its former position and locked in place by the hasp R engaging the staple S, and placing and locking the lock T in position on the staple S. On the removable part D² of the cover of the casing D are secured apertured lugs D³, the apertures of which are arranged in line with the aperture E' in the arm E for the insertion of sealing wires, plumbs, &c.

It is understood that the pawl J, on the withdrawal of the key, is pushed back to its normal position by the spring J³ pressing on the link J², carrying the said pawl. The gear-wheel H³ is preferably made larger in diameter than the gear-wheel G³, so that the ribbon H travels at a different rate of speed than the paper G, for the purpose of having a sufficient space between the printed characters on the paper slip G.

With the lock in use on a railroad, each conductor or other train-man whose duties require him to open the door will be supplied with the key I; also, station-agents along the route or others who may need them are provided with similar keys. The ends of the shanks I' of the several keys are marked with a different letter, figure, or character, recorded in a book kept for that purpose, with the name of the person attached to whom the key was issued or given. Now every time the door is unlocked the paper G will show the impression of the key, and the record will indicate the person who uses the key. Certain stations on the railroad will be designated as stations where the marked or printed part of the paper is to be detached and returned to the proper official for inspection. A key is furnished these stations that will

unlock the lock T for the purpose previously mentioned. It is understood that the person in charge has to first unlock the lock by the regular key I, so as to swing the lever F upward to carry the bolt N along, in order to free the removable part D² of the key. It will be seen that in this manner it will be very easy for railroad officials to detect at what time and place, &c., a car has been opened. In case a car fitted with this lock goes onto a road that does not have the system in use, then the bolt N is lifted so as to swing the lever F into an uppermost position, a screw-pin or other means being inserted in an opening D⁴ in the casing D to lock the said bolt N in place to hold the lever F out of engagement with the shank E². In this position the arm E can be used to lock the hasp A, the said arm being engaged at its opening E' by sealing-wires or sealing-plumbs or other devices passing through the apertured lugs D³ and the opening E' in the said arm E.

The long and very uncertain process of tracing off a sealed record as now employed by most railroads will be entirely avoided, as it can be readily ascertained by the examining official, by whom and between what stations the car-door was last opened.

Having thus fully described my invention, I claim as new and desire to secure by Letters Patent—

1. In a recording door-lock, a locking-lever provided with an impression-block, a strip of paper passing over the said impression-block, an inking-ribbon, and a key having a character marked at one end and adapted to press the said ribbon onto the said paper and the latter onto the said impression-block, substantially as shown and described.

2. In a recording door-lock, a locking-lever provided with an impression-block, a strip of paper passing over the said impression-block, an inking-ribbon, a key having a character marked at one end and adapted to press the said ribbon onto the said paper and the latter onto the said impression-block, and means, substantially as described, for imparting movement to the said ribbon and paper, as set forth.

3. In a recording door-lock, a locking-lever provided with an impression-block, a strip of paper passing over the said impression-block, an inking-ribbon, a key having a character marked at one end and adapted to press the said ribbon onto the said paper and the latter on the said impression-block, a shank having a rectangular body part adapted to be engaged by a notch on the said lever, and an arm held on the said shank and adapted to pass through a correspondingly-shaped opening formed in the locking-hasps, substantially as shown and described.

4. The combination, in a lock, of a locking-lever having an impression-block in line with the key-hole, with a strip of paper in the lock-casing and crossing the space between said

block and the key-hole, whereby when the character-key is inserted to engage and release the locking-lever it will apply a character to the paper, substantially as set forth.

5 5. In a car-door lock of the character described, a key formed with a shank provided with a character at one end, and a sleeve held on the said shank and formed with a lug and a handle, substantially as shown and described.

10 6. The combination, in a lock, with a locking-lever having an impression-block in line with the key-hole, of paper-carrying rolls at opposite sides thereof carrying a strip of paper across the space between the key-hole and the block, and mechanism for actuating the rolls, including a movable key-operated part in the path of the key, substantially as set forth.

15 7. In a car-door lock, the combination, with a locking-lever provided with an impression-block, of a strip of paper passing over the said impression-block, an inking-ribbon passing in line with the said paper opposite the impression-block, a key formed with a shank having a character marked at one end, the said character being adapted to engage the said ribbon to impress the character on the paper forced against the impression-block on the said lever, and sets of rolls for the said ribbon and the said paper to unwind and wind up the same, substantially as shown and described.

20 8. In a lock, the combination, with a locking-lever crossing the path of the key, of a laterally-movable plate crossing the key-passage, having a lip to retract it by and an opening to align the key-passage when said plate is retracted and permit the entrance of the key to the locking-lever to throw it, substantially as set forth.

25 9. In a car-door lock, the combination, with a locking-lever provided with an impression-block, of a strip of paper passing over the said impression-block, an inking-ribbon passing in line with the said paper opposite the impression-block, a key formed with a shank having a character marked at one end, the said character being adapted to engage the said ribbon to impress the character on the paper forced against the impression-block on the said lever, sets of rolls for the said ribbon and the said paper to unwind and wind up the same, gearing for connecting the winding-up rolls of the ribbon and paper with each other, a ratchet-wheel held on one of the said rolls, and a pawl adapted to be actuated by the said shank and

engaging the said ratchet-wheel to turn the said winding-up rolls, substantially as shown and described. 60

10. In a car-door lock, the combination, with a locking-lever provided with an impression-block, of a strip of paper passing over the said impression-block, an inking-ribbon passing in line with the said paper opposite the impression-block, a key formed with a shank having a character marked at one end, the said character being adapted to engage the said ribbon to impress the character on the paper forced against the impression-block on the said lever, sets of rolls for the said ribbon and the said paper to unwind and wind up the same, gearing for connecting the winding-up rolls of the ribbon and paper with each other, a ratchet-wheel held on one of the said rolls, and a pawl adapted to be actuated by the said shank and engaging the said ratchet-wheel to turn the said winding-up rolls, said pawl being provided with a beveled end and carried by a spring-pressed link, substantially as shown and described. 70 75 80

11. In a lock, the combination, with a movable plate crossing the key-passage, provided on its side next to the key-hole with a lip and having an opening to align the key-passage, of a key comprising a sleeve having a handle at its outer end and a lip at its inner end to engage the lip and retract the plate, and a shank sliding through the sleeve from end to end and adapted to pass through the opening in the plate when the latter has been retracted by turning the sleeve, substantially as set forth. 85 90

12. In a door-lock, the combination, with the casing and a cover made in two parts, of which one is fixed and the other held movably on the casing, of rods held in the said casing and engaged by eyes on the said movable cover part, a bolt held to slide on the said casing, a key-actuated lever carrying the said bolt, a set of staples held in the said casing and engaged by the said bolt, and a staple held on the movable part of the said cover and adapted to be engaged by the said bolt, substantially as shown and described. 95 100 105

13. In a door-lock, the combination, with a casing, of a movable cover, eyes held on the said cover, and rods secured in the said casing and engaged by the said eyes, substantially as shown and described.

LEONARD T. CRABTREE.

Witnesses:

J. W. BAILEY,
M. J. BAILEY.