

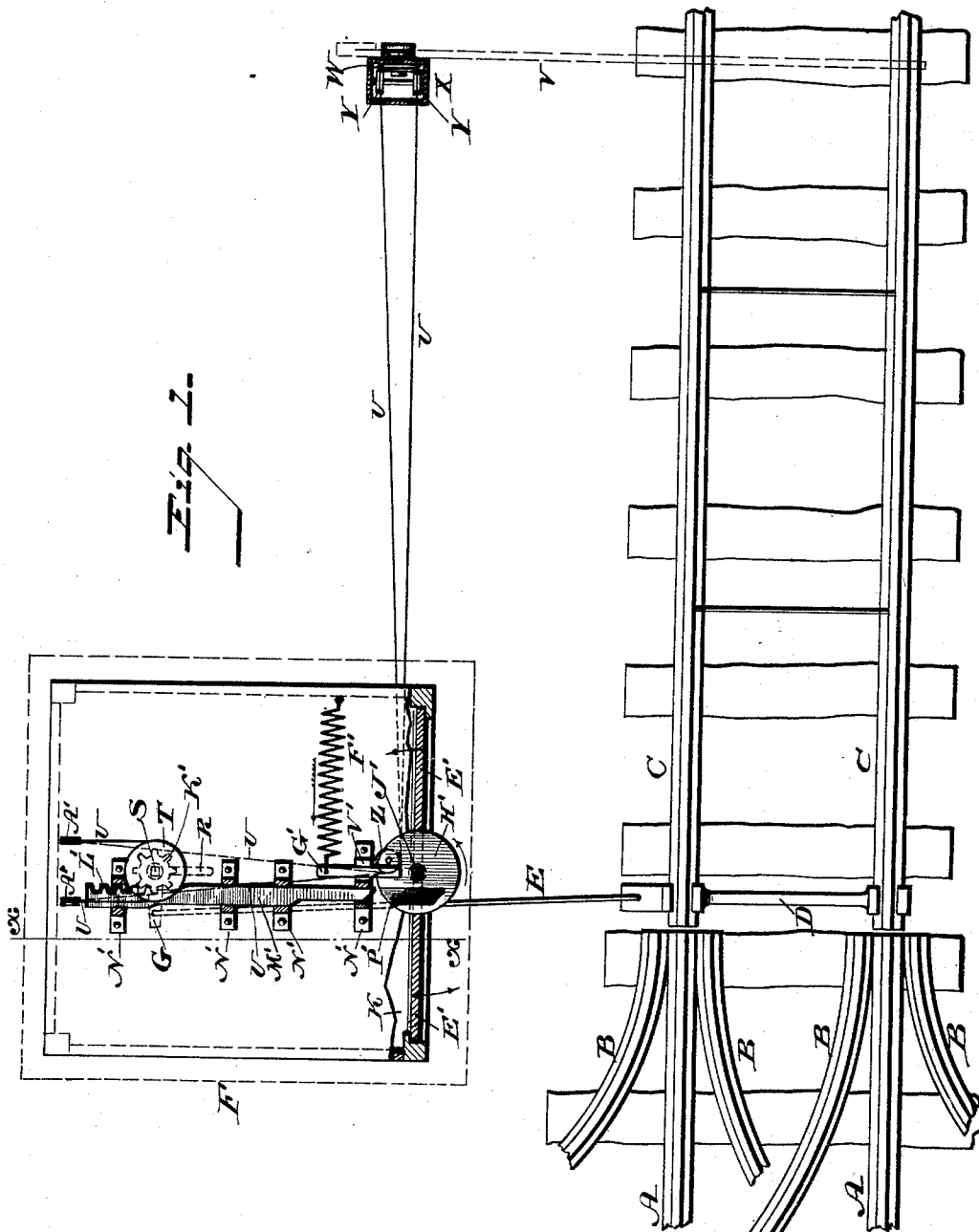
(No Model.)

3 Sheets—Sheet 1.

J. N. STRONG.
RAILROAD SWITCH.

No. 483,818.

Patented Oct. 4, 1892.



WITNESSES :

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INVENTOR

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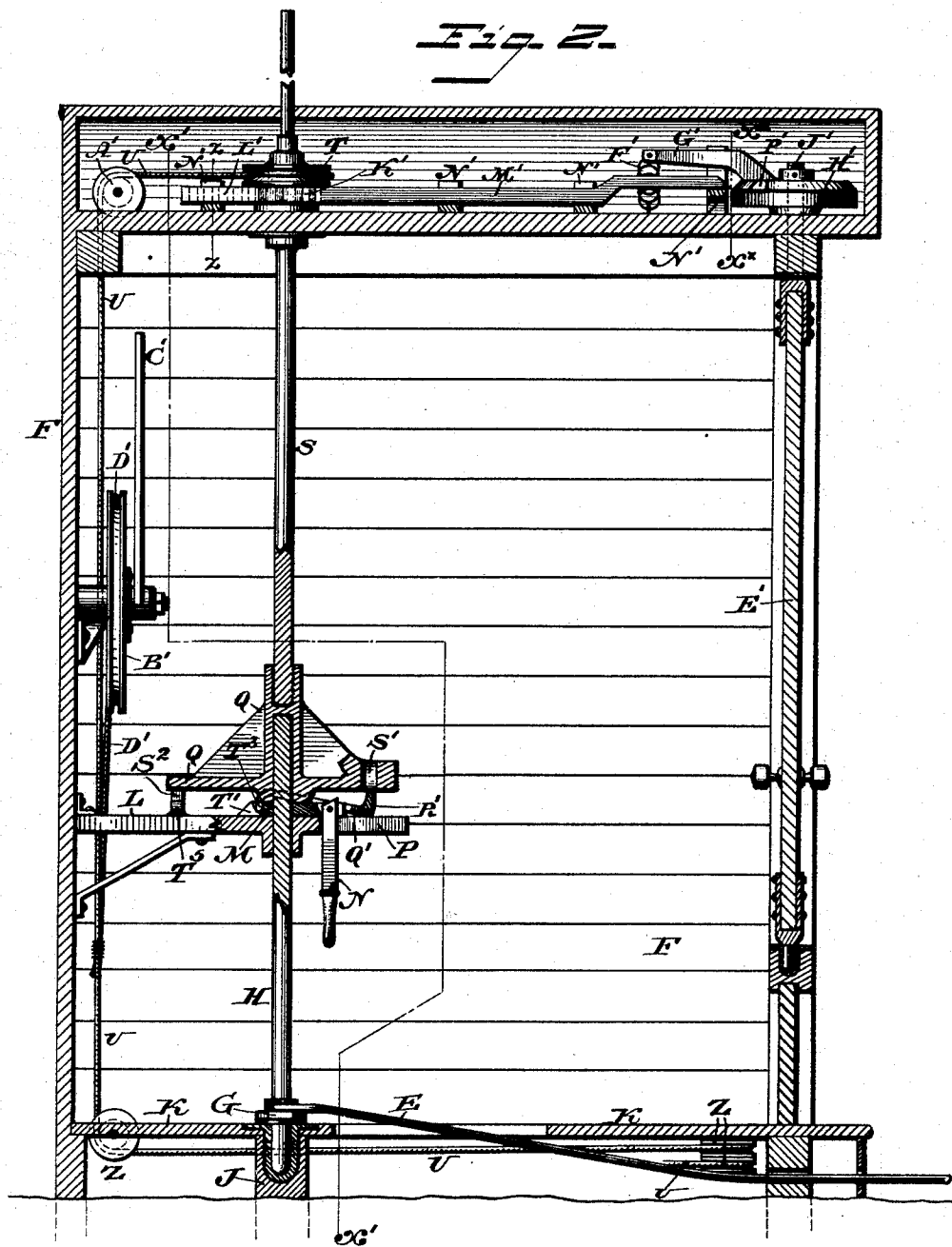
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3 Sheets—Sheet 2.

J. N. STRONG.
RAILROAD SWITCH.

No. 483,818.

Patented Oct. 4, 1892.



WITNESSES:
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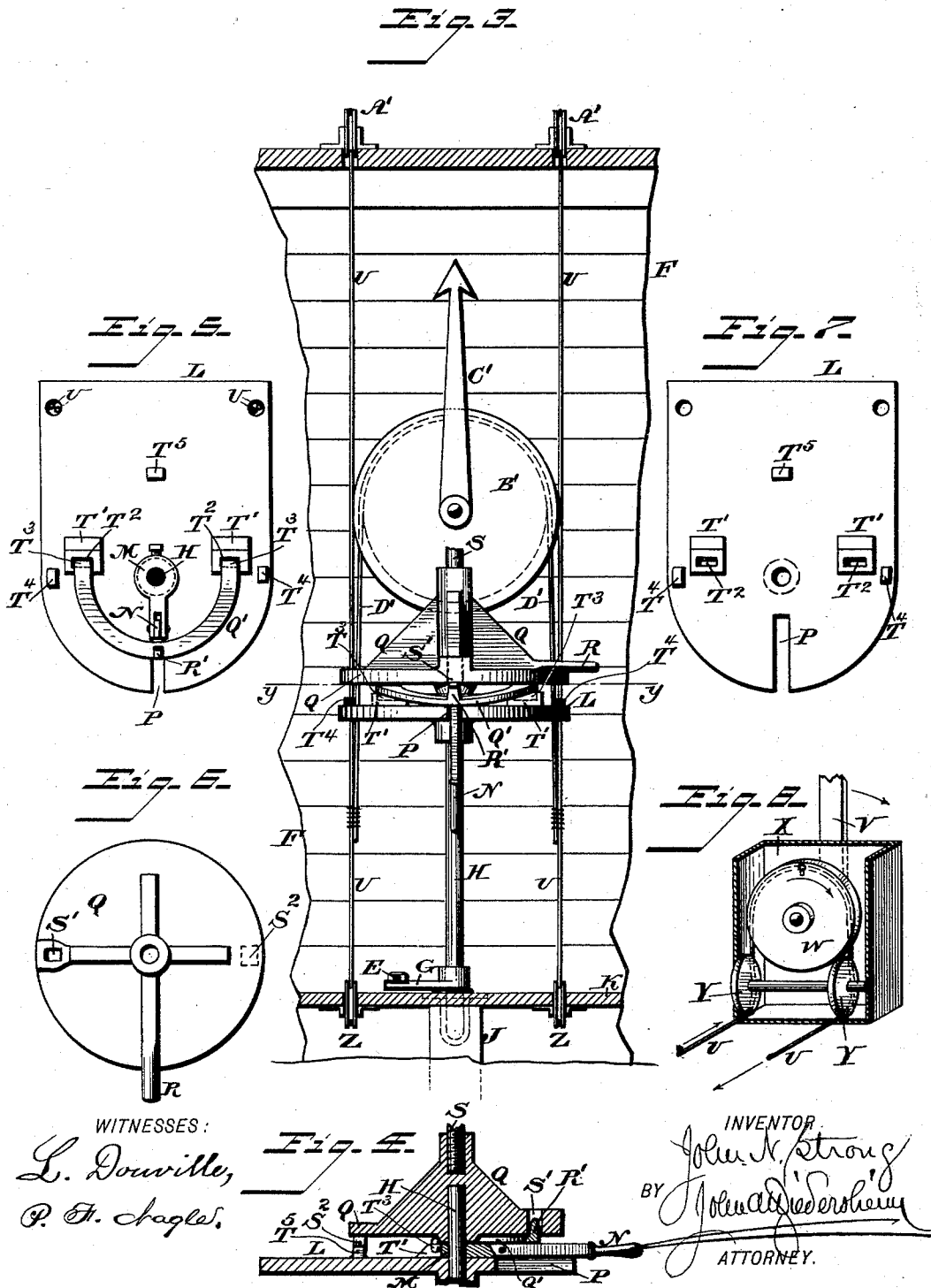
Fig. 10.
G' N' F'
X' M' X'
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UNITED STATES PATENT OFFICE.

JOHN N. STRONG, OF PHILADELPHIA, PENNSYLVANIA.

RAILROAD-SWITCH.

SPECIFICATION forming part of Letters Patent No. 483,818, dated October 4, 1892.

Application filed January 28, 1892. Serial No. 419,546. (No model.)

To all whom it may concern:

Be it known that I, JOHN N. STRONG, a citizen of the United States, residing in the city and county of Philadelphia, State of Pennsylvania, have invented a new and useful Improvement in Railroad-Switches, which improvement is fully set forth in the following specification and illustrated in the accompanying drawings.

My invention consists of novel mechanism for operating and locking a switch.

It also consists of a switch-house having novel signal-operating mechanism.

It further consists of novel mechanism for locking the door of the switch-house, so that the same cannot be opened until or unless the switch is properly set.

Figure 1 represents a plan view of a switch-house having signal and switch mechanism embodying my invention. Fig. 2 represents a vertical section on line $x x$, Fig. 1. Fig. 3 represents a vertical section on line $x' x'$, Fig. 2. Fig. 4 represents a central vertical section of a detail portion of the apparatus, parts being shown in a different position from that in Fig. 2. Fig. 5 represents a horizontal section on line $y y$, Fig. 3. Fig. 6 represents a top view of the head shown in Fig. 3, the other parts being removed. Fig. 7 represents a top view of the supporting-plate shown in Fig. 5, the other parts being removed. Fig. 8 represents a perspective view of the portion of the signaling apparatus outside of the switch-house on an enlarged scale. Fig. 9 represents a sectional view on line $z z$, Fig. 2. Fig. 10 represents a sectional view on line $x' x'$, Fig. 2.

Similar letters of reference indicate corresponding parts in the several figures.

Referring to the drawings, A designates the main rails of a track, B the switch-rails, and C the movable rails thereof. The movable rails C are connected by a cross-bar D, which is attached to a rod E, one end of which enters the switch-house F, where it is pivoted to the crank-arm G, secured to a vertical rotary shaft H. The latter has its lower end stepped in a bearing J in the floor K of the switch-house, and its upper end passes through an opening in a horizontal plate or shelf L, suitably secured to the wall of the house F.

Secured to the shaft H, above the plate L, is a piece M, having a handle-lever N pivoted or hinged thereto and adapted to lower and drop into a slot P in the plate L, so as to prevent the rotation of said shaft, thus locking the switch.

Freely mounted on the upper end of the shaft H is a head Q, provided with a projecting handle R for operating the same, and in the said head is secured the lower end of a shaft S, the upper end of which is journaled in the top or roof of the switch-house F and carries a pulley T for operating the cord or chain U of the signaling device.

The signal V consists of a long arm adapted to be swung across the track, so as to be in the rear of the train which is being switched, so as to prevent a following train from running into the same, said signal being a considerable distance from the house F and connected with the hub of a wheel W, so as to be raised or lowered by the oscillation of said wheel, which is suitably mounted in a box or support X. Should the arm not be raised, a train may run into the same and break it, thus announcing the carelessness of the engineer, while of course directing his attention to the fact that the train should be stopped. The cord U passes around the wheel W and also around the wheels Y, which are at a right angle to the wheel W, so that a proper direction is given to the arm. Within the switch-house the said cord U passes around the wheels or pulleys Z, journaled in the lower part of the switch-house, and the wheels A', journaled in the upper part thereof, and around the pulley T, whereby motion is given to the said cord, so that the signal V is operated. A grooved wheel or pulley B', having connected with it an index or pointer C', is suitably journaled on the rear wall of the house F and is oscillated by means of a cord D', passing around it and having its ends secured to opposite portions of the cord U, whereby any movement of the head Q, and consequently of the signal V, is indicated by the said pointer C'.

E' designates the door of the switch-house, pivoted at the top and bottom of the center thereof to the frame of the house, so as to

swing open when pushed and to readily close when drawn by the spring F', which is secured to the frame of the house and to an arm G' on a disk or plate H', connected with the top pivot or journal J' of the door. To lock the door, so that it cannot be opened while the switch is opened or when the signal V is displayed or across the track, the shaft S is provided with a pinion K', which engages with a rack L' on a bar M'. The said bar M' moves in ways N', suitably secured to the frame or ceiling of the house F, and has its front end adapted to engage in a recess or groove P' in the disk H' when the door is closed, and thereby prevent the same from rotating, and thus the door from being opened, until after the switch is closed and the signal V is raised or removed from across the track.

Mounted on the plate L is a rising-and-falling dog Q', having a nose R', adapted to enter an opening or recess S' in the head Q when the latter is turned for locking the door and placing the signal V across the track.

On the plate L are blocks T', which are formed with recesses T² to receive the toes T³ of the dog Q' for placing said dog, when raised, into locking engagement with the head Q. On said plate L are also the stop-pieces T⁴ and T⁵, the stop-pieces T⁴ being adapted to limit the throw of the lever N and head Q, respectively, said head being provided with a depending stop-piece S², which is adapted to abut against the stop T⁵.

The operation of the apparatus is as follows: The switchman having entered the house F, the door E' thereof is closed by the action of the spring F'. The signal V is then set or lowered across the track by rotating the head Q by means of its handle R, the pointer C' indicating to the switchman when the signal is in place. The movement of the shaft S, rotating the pinion K' thereon, moves the rack-bar M', so that the latter engages in the recess P' of the disk H', thereby locking the door E'. Owing to the position of the head Q when the signal is set the recess S' therein is directly over the nose R', which was before under the solid part of said head, so that the lever N may be raised from the slot P of the plate L and turned above the plate L, so as to rotate the shaft H, and thereby move the switch-rail C. The lever N is moved until it abuts against a stop T⁴, which indicates that the arm G is sufficiently rotated to move the rod E and the rails C, so that the latter connect with the siding rails. After the switch has been moved it requires to be reset, and unless this is accomplished the switchman cannot leave the house through the door E'. It is therefore necessary to return the lever N to its prior position in the slot P. This permits the dog Q' to drop and unlock the head Q, when the latter may be rotated by the handle R. The pinion K' is thus turned so as to operate the rack L', whereby the bar M' is withdrawn

from the slot P' in the disk H', thus unlocking the latter, so that the door may be opened by hand. When the door E' is shut, unless it is fully closed the end of the bar M' will come in contact with the edge of the disk or plate H' instead of entering the recess or groove P', and this by the action of the bar M', the rack L', and the pinion K', the latter being attached to the shaft S, as has been stated, prevents the rotation of the head Q, thus making it necessary for the switch-operator to close and lock the door and display the danger-signal V before he can change or open the switch.

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

1. A head with a recess therein and a switch-operating shaft on which said head is mounted, a plate through which said shaft freely passes, a dog on said plate having a nose adapted to enter the recess of the head, and a lever having a pivotal connection with said shaft, whereby a switch may be operated, said lever being adapted to raise said dog, whereby the latter may be locked to said head, said parts being combined substantially as described.

2. A switch-operating shaft, a plate through which said shaft passes, a lever pivotally connected with said shaft, a dog mounted on said plate, and a head which is freely mounted on said shaft, said plate having recesses to receive the toes of the dog when the latter is raised to engage with the head, thus preventing rotation of said head, said parts being combined substantially as and for the purpose set forth.

3. A horizontal plate having a recess therein, a rotary shaft with lever and an arm and rod for operating the movable rails, a head freely mounted on said shaft above said plate and having a vertical shaft secured thereto, a pulley on said vertical shaft, a wheel with a signal adapted to be lowered across the main-track rails, intermediate pulleys and cords between said shaft-pulley and said wheel for operating said signal, and means, substantially as described, for locking said head and plate together, said parts being combined substantially as described.

4. The plate L, with the recess P, the rotary shaft H, with the piece M connected therewith and having the pivoted lever N, the head Q, freely mounted on the shaft H and having the recesses S', and the dog Q', with a nose R', adapted to enter said recess S', said parts being combined substantially as described.

5. A plate with a recess therein, a rotary shaft for operating the movable rails journaled in said plate, a head freely mounted on said shaft, a dog on the plate, provided with toes adapted to engage in recesses in blocks secured to said plate, and a nose on

said dog engaging in a recess in said head, said parts being combined substantially as described.

5 6. A switch-house with a swinging door, a disk on a journal of said door with a recess therein, an arm on said disk, a spring controlling said arm, a signal-operating mechanism, and a sliding lock for said disk, having a

rack engaging a rotary cog-wheel on the signal mechanism, said parts being combined substantially as described.

JOHN N. STRONG.

Witnesses:

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