

No. 828,134.

PATENTED AUG. 7, 1906.

J. R. MUNROE.
TRAIN SIGNAL APPARATUS.
APPLICATION FILED FEB. 8, 1906.

2 SHEETS—SHEET 1.

Fig. 1,

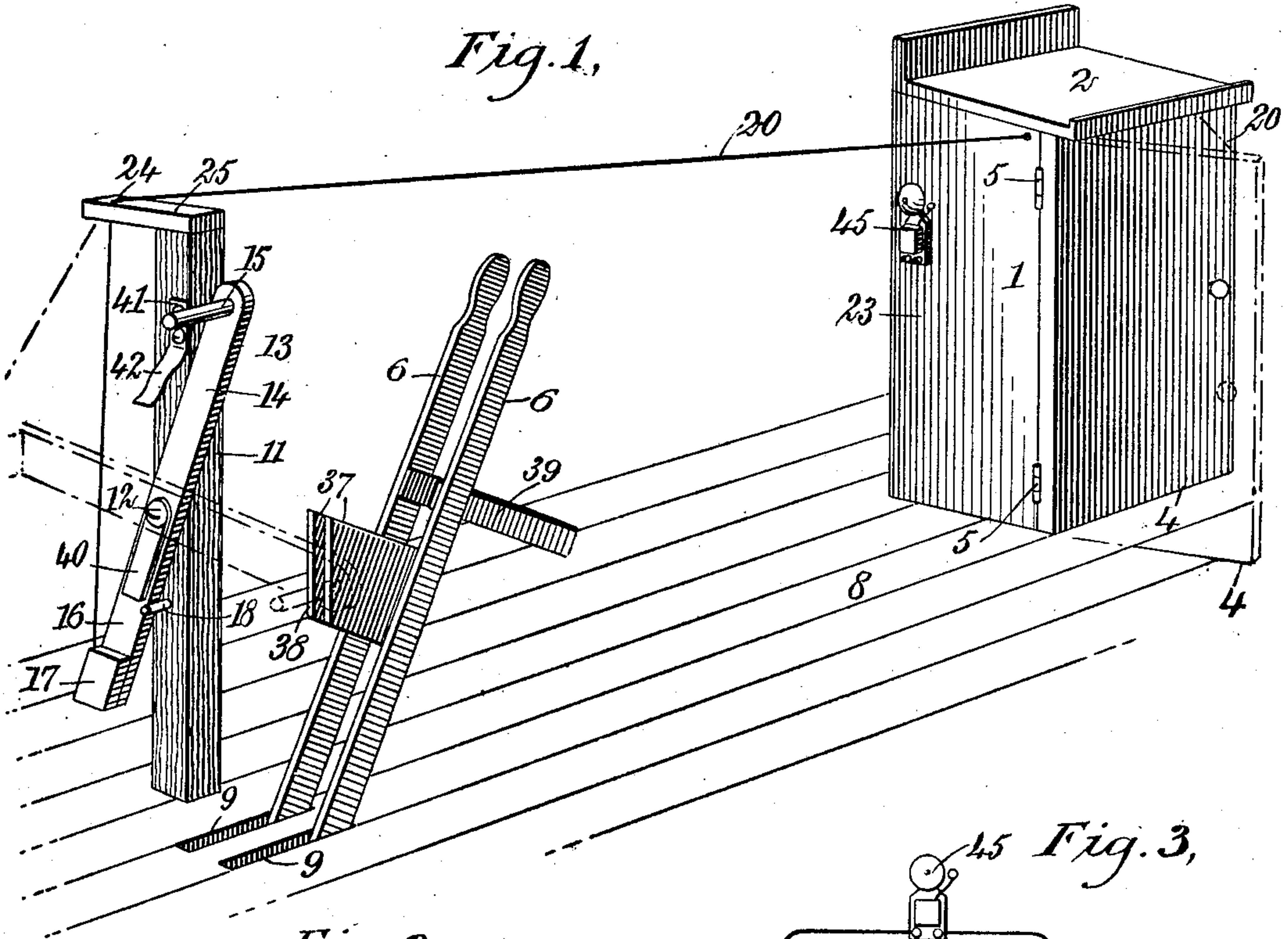
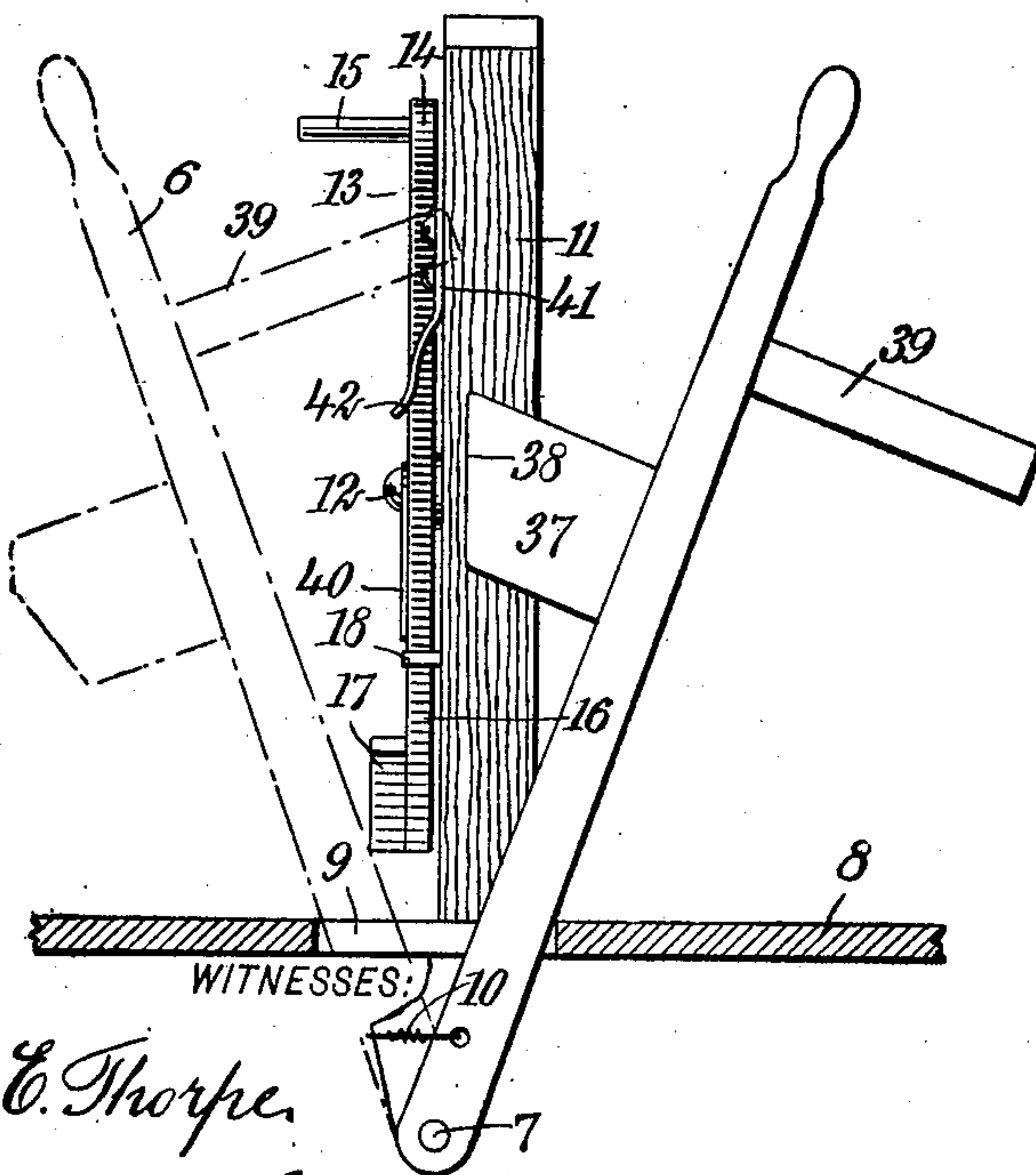
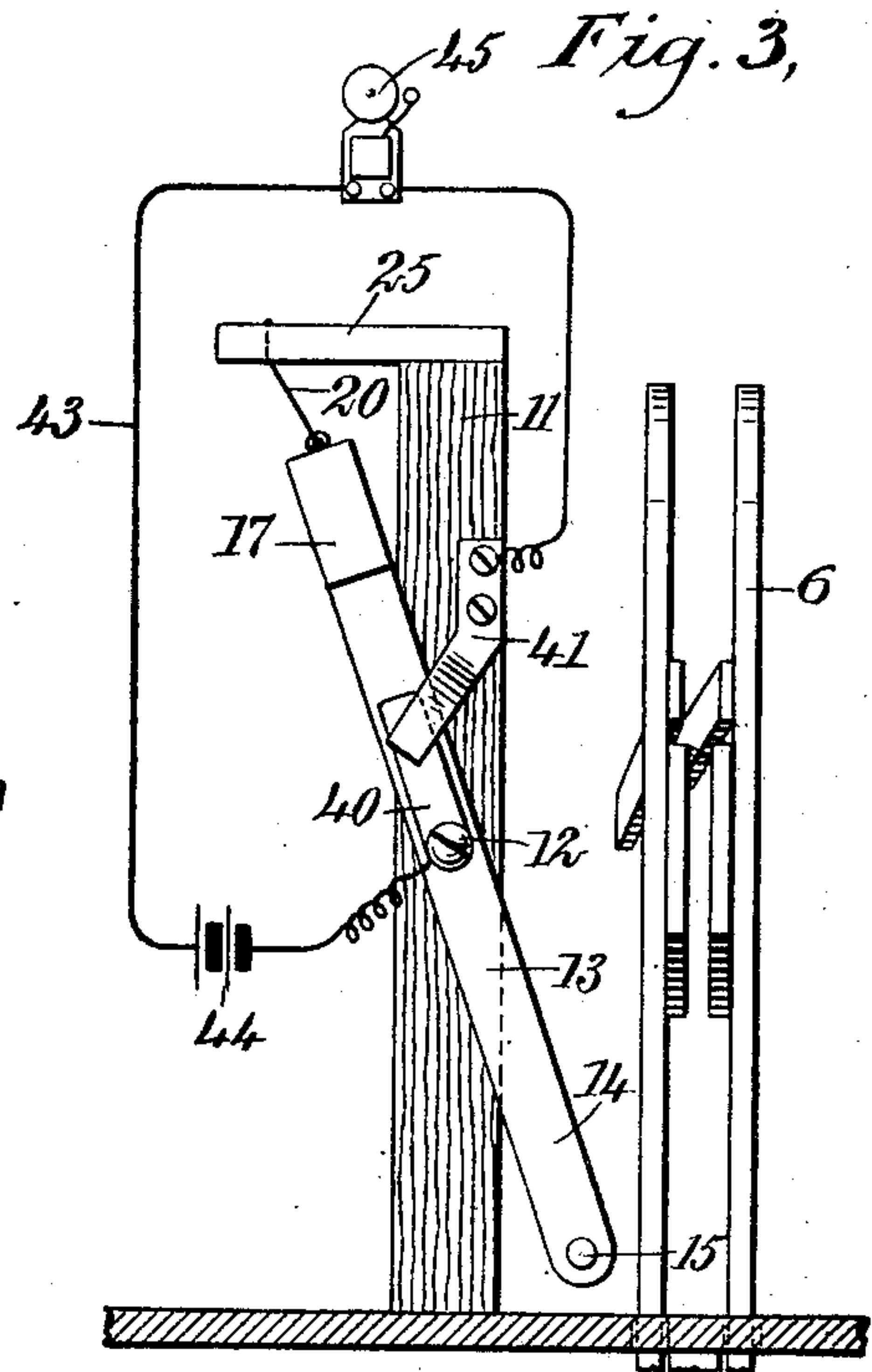


Fig. 2,



E. Thorpe.
J. R. Munroe.

WITNESSES:



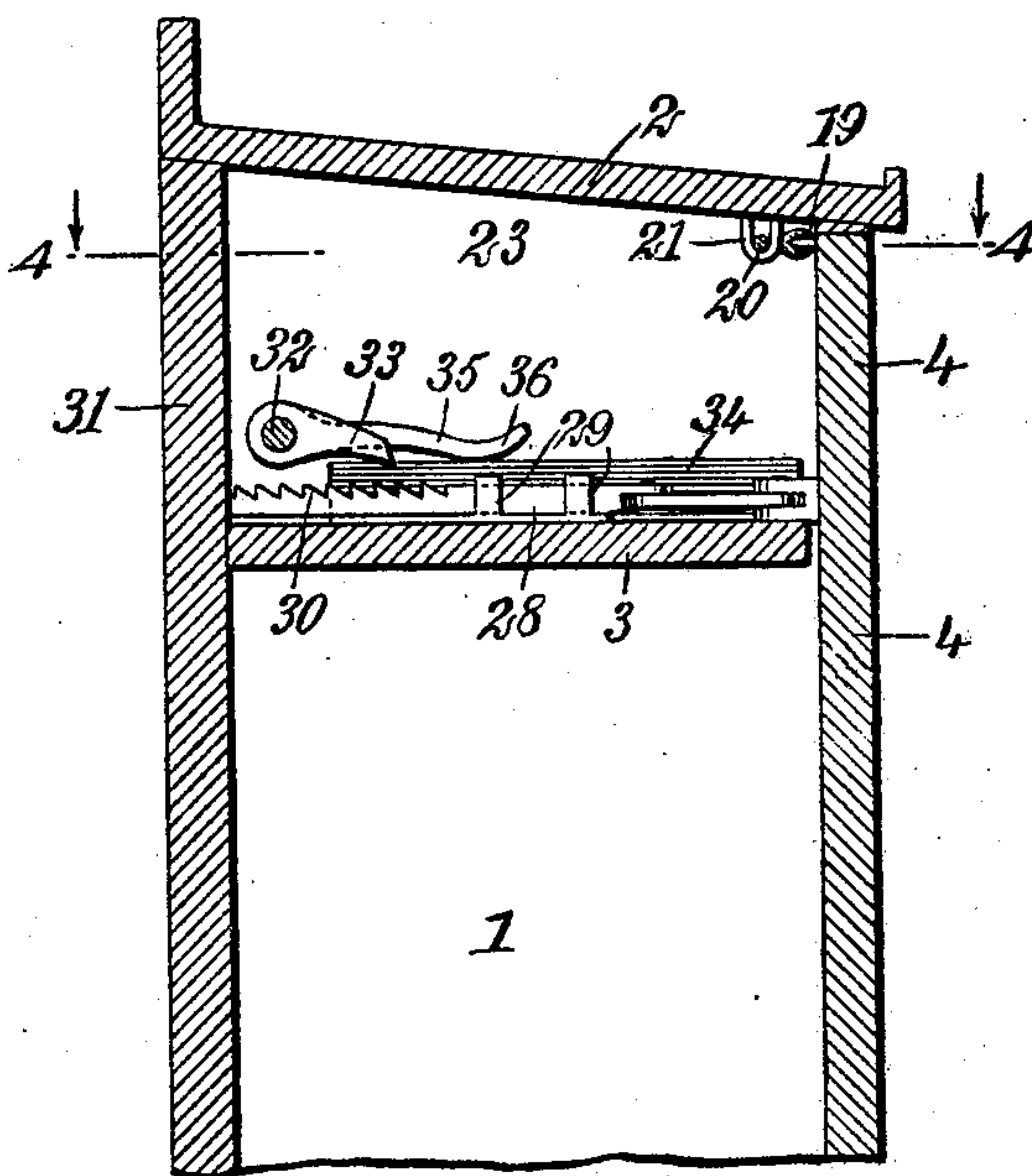
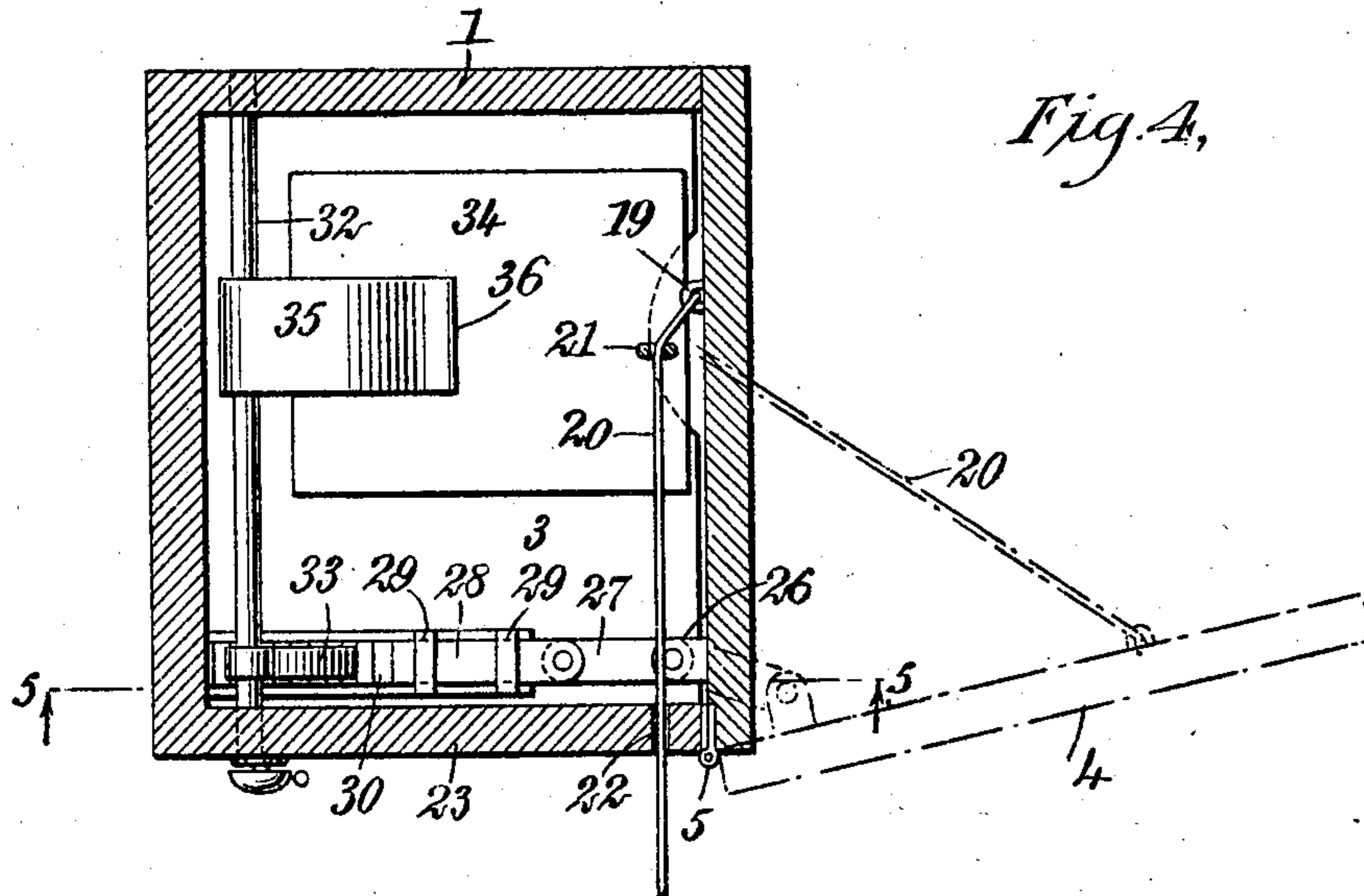
INVENTOR
James R. Munroe
BY *Munroe*
ATTORNEYS

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2 SHEETS—SHEET 2.



WITNESSES:

Edward Thorpe.
J. R. Munroe

INVENTOR

James R. Munroe

BY *Munroe*

ATTORNEYS

UNITED STATES PATENT OFFICE.

JAMES ROBERT MUNROE, OF HASKINS, IOWA, ASSIGNOR OF ONE-HALF
TO CHARLES A. ROGERS, OF WINNEMUCCA, NEVADA.

TRAIN SIGNAL APPARATUS.

No. 828,134.

Specification of Letters Patent.

Patented Aug. 7, 1906.

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To all whom it may concern:

Be it known that I, JAMES ROBERT MUNROE, a citizen of the United States, and a resident of Haskins, in the county of Washington and State of Iowa, have invented a new and Improved Train Signal Apparatus, of which the following is a full, clear, and exact description.

This invention relates to signal apparatus for trains.

The object of the invention is to provide apparatus of this class which will insure that a train-order is delivered to a train before the train is allowed to pass a signal-station.

More specifically, the invention contemplates an arrangement for controlling the semaphore-levers through the medium of the pad upon which the train-orders are copied.

The invention consists in the construction and combination of parts to be more fully described hereinafter and particularly set forth in the claims.

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

Figure 1 is a perspective showing the arrangement of the apparatus of my invention. Fig. 2 is a vertical cross-section taken through the floor shown in Fig. 1 and showing in detail the arrangement for controlling the semaphore-levers. Fig. 3 is a view similar to Fig. 2, but taken in a plane at right angles thereto and showing diagrammatically an electric circuit which is used in connection with the invention. Fig. 4 is a horizontal cross-section taken through the upper portion of a cabinet within which the order-pad is kept. This view illustrates the manner in which the order-pad controls the cabinet-door. This section is taken on the line 4 4 of Fig. 5, and Fig. 5 is a vertical section through the aforesaid cabinet and taken on the line 5 5 of Fig. 4.

Referring more particularly to the parts, 1 represents the cabinet arranged in the operator's room or signal-tower. The said cabinet is provided with a suitable cover 2, upon which a paper or pad may be laid for writing conveniently thereupon. In the upper portion of this cabinet I provide a horizontal shelf 3, as indicated most clearly in Figs. 4 and 5. The cabinet is further pro-

vided with a front door 4, which is adapted to swing outwardly on hinges 5 at the vertical side edge thereof, as shown in Figs. 1 and 4.

Semaphore-levers 6 are provided, which are pivotally attached at 7 beneath the floor 8 and project upwardly through slots 9 in the floor, as indicated. Each of these levers is connected by suitable means, such as the wire 10, (shown in Fig. 2,) with a semaphore. In the position in which these levers are shown in Fig. 1 and in Fig. 2 in full lines the semaphore will be set red or in the danger position. In this connection it should be understood that I now describe my invention as applied to a signal system in common use, in which the signals are normally set at the danger position. With this system of course the signal must be changed from the danger to the white or safety position before the train may pass the station.

At a suitable point adjacent to the levers 6 I provide a standard or post 11, upon the side of which there is pivotally mounted at 12 an interlocking lever or bar 13. One arm 14 of this lever normally extends upwardly, projecting in the direction of the levers 6, as shown in Fig. 1, and this arm is provided at a suitable point with a laterally-projecting handle 15. The opposite arm 16 of the lever 13 is provided with a counterweight 17, which normally holds the arm in the position shown. The post 11 is provided at a suitable point with a stop 18, against which the arm 16 normally rests, as will be readily understood.

I provide a connection between the door 4 and the interlocking lever 13, whereby opening of the door 4 operates to project the interlocking lever into the path of the semaphore-levers 6. For this purpose I provide on the inner face of the door 4 an eyebolt or staple 19, to which I attach a suitable cord 20, as indicated most clearly in Figs. 4 and 5. This cord passes through a guide-eye or staple 21, attached on the under side of the cover 2, and passes laterally in a substantially horizontal plane through an opening 22 in the side wall 23 of the cabinet, as shown. From this point the line or cord 20 passes to the post 11, where it runs through an opening 24 in the laterally-projecting guide-arm 25, from which point it passes downwardly and attaches, as shown in Fig. 1, to the ex-

tr emity of the arm 16 of the interlocking lever 13. From this arrangement it should be understood that when the door 4 is thrown into an open position, such as that indicated in dotted lines in Fig. 1, the interlocking lever 13 will be thrown into a substantially horizontal position, such as that indicated in dotted lines in Fig. 1, and in this way the arm 14 of the lever is projected into the path of the semaphore-levers 6.

I provide an arrangement whereby the door 4 locks itself automatically in an open position, so that once it has been opened and the order-pad removed from the shelf the door will not close until the pad is replaced. For this purpose preferably near the hinged edge of the door 4 I attach a bracket 26 to the inner face thereof, and to this bracket a link 27 is pivoted. This link is pivotally attached at its inner extremity to a rack 28, which is guided so as to slide horizontally in suitable guide-brackets 29. On its upper face and near its inner extremity this rack 28 is provided with teeth 30, which incline toward the rear wall 31 of the cabinet. As shown, the rack 28 rests upon the upper side of the shelf 3. At a suitable distance above the shelf 3 I provide a transverse shaft 32, which passes through the cabinet, so as to be rotatably supported thereby. Adjacent to the rack 28 this shaft 32 is provided with a rigidly-attached pawl 33, the extremity whereof normally lies adjacent to the teeth 30. This pawl is normally held out of engagement with the teeth by means of the order-pad 34, which rests upon the upper side of the shelf, as shown. This is accomplished by means of a wing 35, which is rigidly attached to the shaft 32 at a suitable point and which extends forwardly toward the door. This arrangement is very clearly shown in Figs. 4 and 5. Evidently when the order-pad 34 is removed the wing 35 will drop down upon the shelf 3 or it will descend sufficiently to enable the pawl 33 to engage the teeth 30. The outer extremity of the wing 35 is preferably bent upwardly, so as to form an inclined lip 36, which facilitates the replacing of the pad in position in a manner which will be described more fully hereinafter. From this arrangement it should be readily understood that when the door 4 is opened the rack 28 will be drawn forwardly and when the pad 34 is removed the rack will be locked against return, in this way preventing the door from being closed.

On the edges of the levers 6, which lie adjacent to the plane of movement of the interlocking lever 13 as viewed in Fig. 1, I provide laterally-projecting plates or wings 37, and the forward edges 38 of these wings are cut, as indicated in Fig. 2, so that they are substantially vertical when the levers are occupying the danger position. The wings 37 are arranged so that these edges 38 lie

quite close to the path of movement of the interlocking lever 13, as shown by dotted lines in Fig. 1. From this arrangement it should be understood that the interlocking lever could be moved so as to bring the wings 37 into the path of the levers, preventing their movement.

Arrangement is made for preventing the descent of the interlocking lever 13 when the levers 6 occupy the safety position. (Indicated in dotted outline in Fig. 2.) For this purpose the rear edges of the levers are provided with laterally or rearwardly projecting arms 39, which project into the path of the interlocking lever, as shown in Fig. 2. On this account it becomes impossible to close the door 4 of the cabinet until the levers 6 are returned to their normal position.

In operating the system it may be desirable at some time to allow a train to pass without delivering a train-order thereto. In order to provide for this, the interlocking lever 13 may be depressed into an extreme position, such as that shown in Fig. 3, so that its arm 14 passes out of the path of the levers 6 altogether. This movement of the interlocking lever 13 may be accomplished simply by forcing the arm 14 downwardly by means of the handle 15. Arrangement is provided for reminding the operator or signalman to return the lever 13 to its normal position, if it should be depressed, as indicated in Fig. 3. For this purpose by means of the pivot 12 a contact-plate 40 is attached to the arm 16 of the interlocking lever, and at a suitable point a spring contact-plate 41 is attached to the post 11. When the lever is thrown into the position shown in Fig. 3, the spring-contact 41, which is provided with an inclined or curved lip 42, engages the plate 40 and closes an electric circuit 43, including a battery 44 and an alarm or bell 45. The said bell 45 may be attached at a suitable point on the side wall 23 of the cabinet, as shown in Fig. 1. With this arrangement the alarm or bell 45 will ring continuously until the contact is broken between the plates 40 and 41, which will only occur when the lever 13 is returned. To summarize briefly, in the operation of the system it should be understood that the cabinet-door 4 is normally closed with the pad 34 in position under the wing 35 and lying upon the shelf. When the door is opened and the pad removed, the pawl 33 will lock the rack 28 against return, in this way preventing the closing of the door. At the same time the opening of the door projects the interlocking arm 13 across the path of the levers 6. These levers then cannot be operated until the pad is returned to its shelf, and the pad will not be so returned until the train-order has been delivered to the crew of the waiting train. When the pad is replaced, as suggested, its forward edge slips under the lip 36 of the wing 35, and this movement operates to release

the rack 28 from the pawl 33, permitting the door to be closed. The levers 6 may then be thrown to the safe or white position, indicating that the train may proceed.

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

1. In apparatus of the class described, in combination, a semaphore-lever, a cabinet
10 having a movable door, means for locking said lever by a movement of said door, and automatic means for locking said door against closing.

2. In apparatus of the class described, in
15 combination, a semaphore-lever, a cabinet having a shelf for an order-pad and a movable door, means operated by said door for locking said lever, automatic locking means
20 preventing the closing of said door, and a member controlling said locking means and adapted to engage a pad lying on said shelf.

3. In apparatus of the class described, in combination, a semaphore-lever, a cabinet
25 having a shelf for an order-pad and a movable door, a sliding rack connected with said door and adapted to be displaced by the opening thereof, a member supported near said shelf and adapted to be engaged by a pad
30 lying thereupon, a pawl rigid with said member and engaging said rack to lock the same against return, and means for locking said semaphore-lever by the opening of said door.

4. In apparatus of the class described, in combination, a semaphore-lever, an inter-
35 locking lever adapted to move in the path thereof and having an extreme position beyond the path of said semaphore-lever, an

alarm device, and means for actuating said alarm device when said interlocking lever occupies said extreme position.

5. In apparatus of the class described, in combination, a semaphore-lever, an interlocking lever adapted to move in the path of said semaphore-lever, an electric circuit having an alarm device therein, and means for
40 closing said circuit by said interlocking lever in an extreme position.

6. In apparatus of the class described, in combination, a semaphore-lever, an interlocking lever having an arm adapted to move
50 into the path of said semaphore-lever, a cord attached to said interlocking lever and controlling the same, a cabinet adapted to receive an order-pad and having a movable door, said cord being attached to said door.

7. In apparatus of the class described, in combination, a semaphore-lever, an interlocking lever adapted to move into the path
55 thereof, means for normally holding said interlocking lever out of the path of said semaphore-lever, a cabinet adapted to receive an order-pad and having a movable door, automatic locking means for locking said door in an open position, means connecting said door
60 with said interlocking lever, and means for releasing said locking means by the replacing of a pad within said cabinet.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

JAMES ROBERT MUNROE.

Witnesses:

EDGAR ATWATER,
N. H. DEISHER.