

J. M. STROUT.
Hatchways.

No. 152,576.

Patented June 30, 1874.

Fig. 1

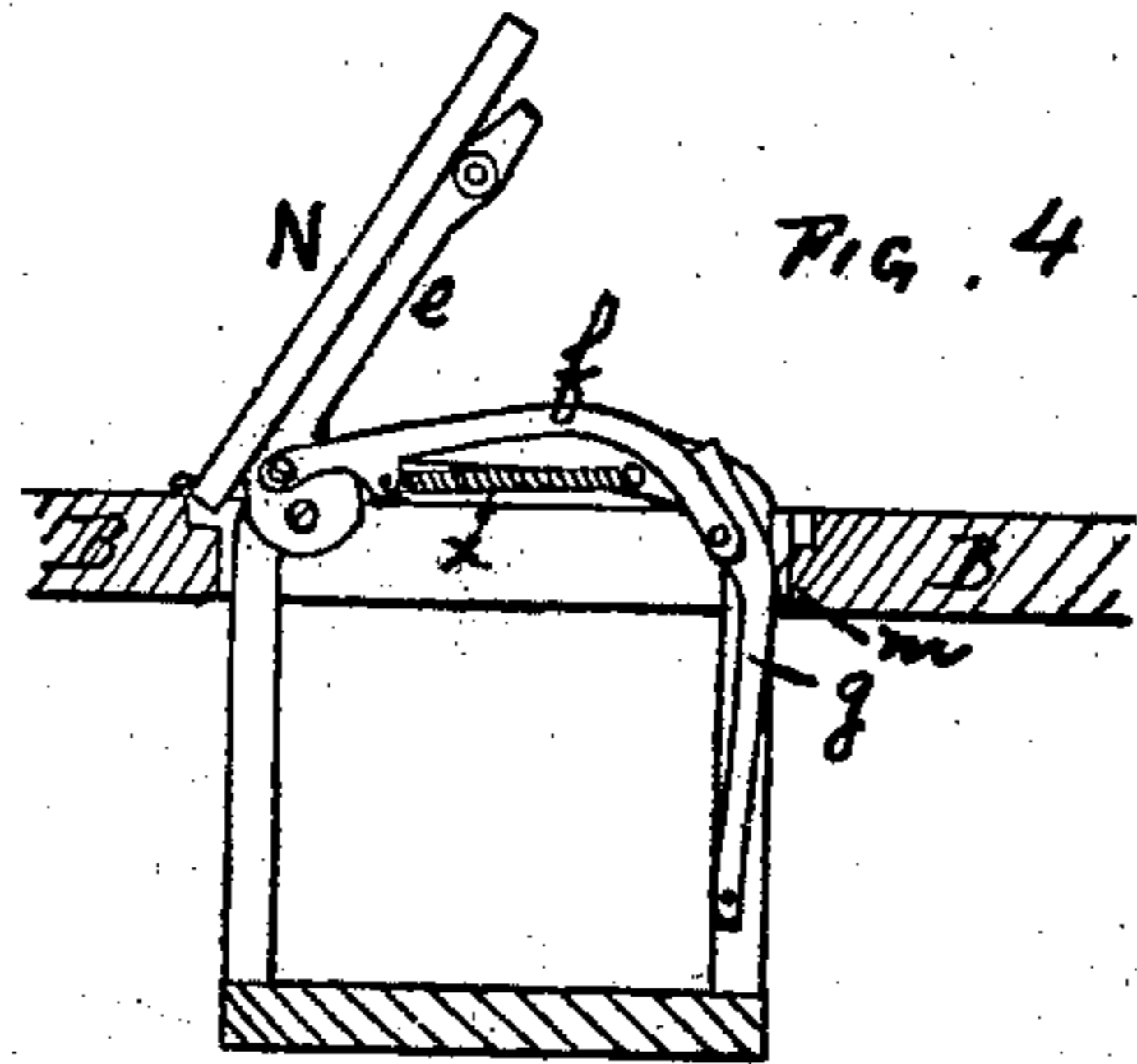
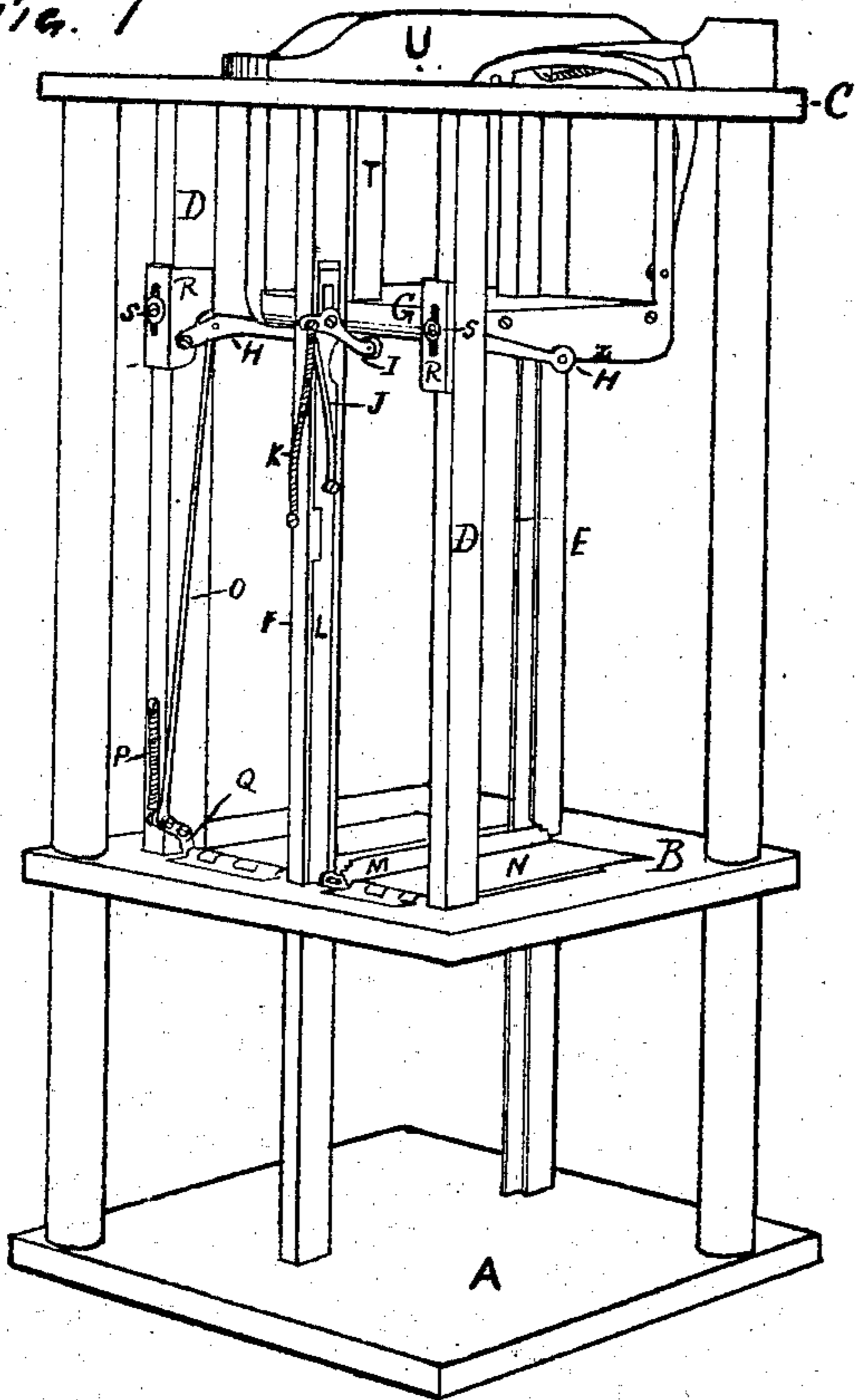


Fig. 4

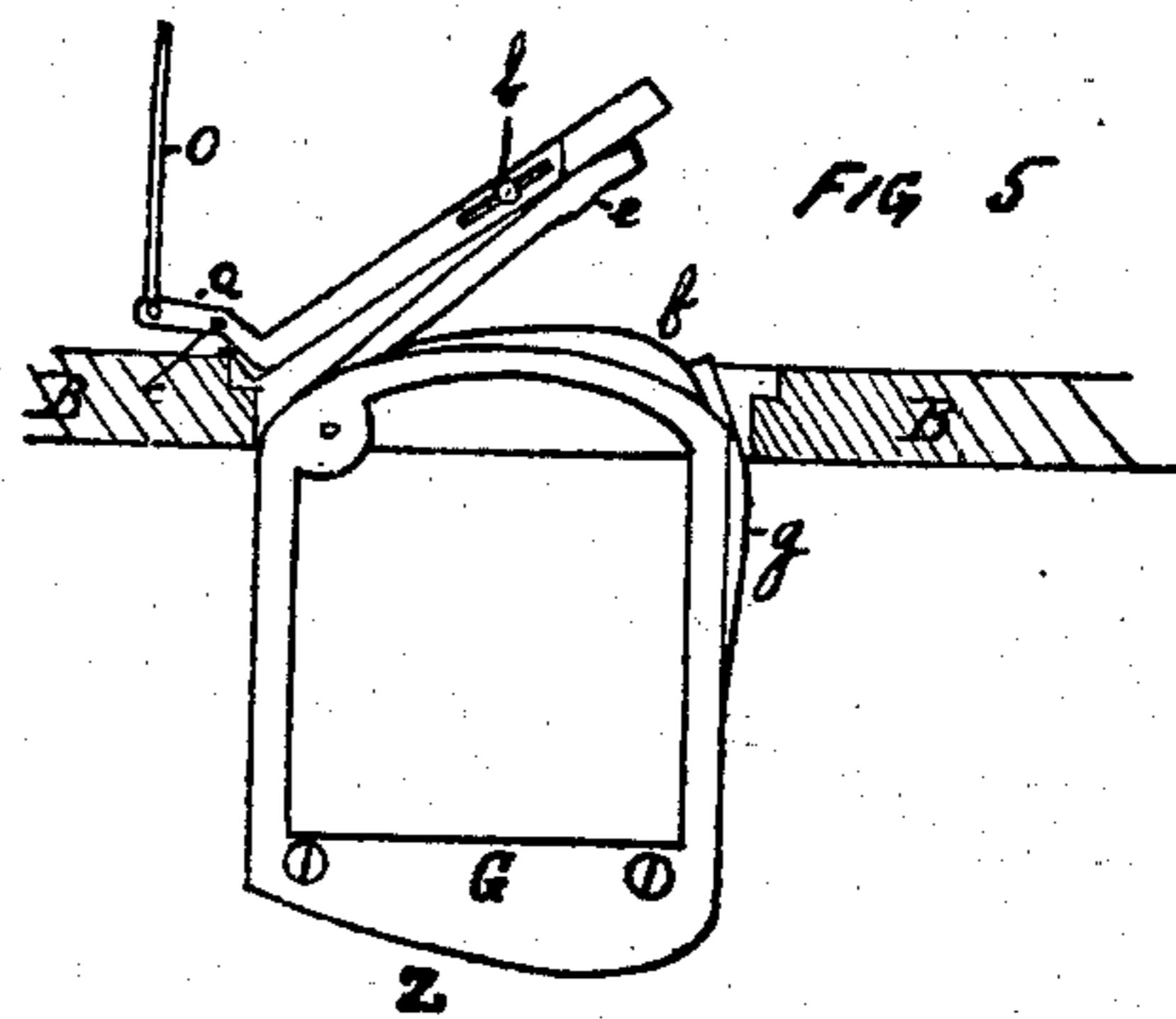


Fig. 5

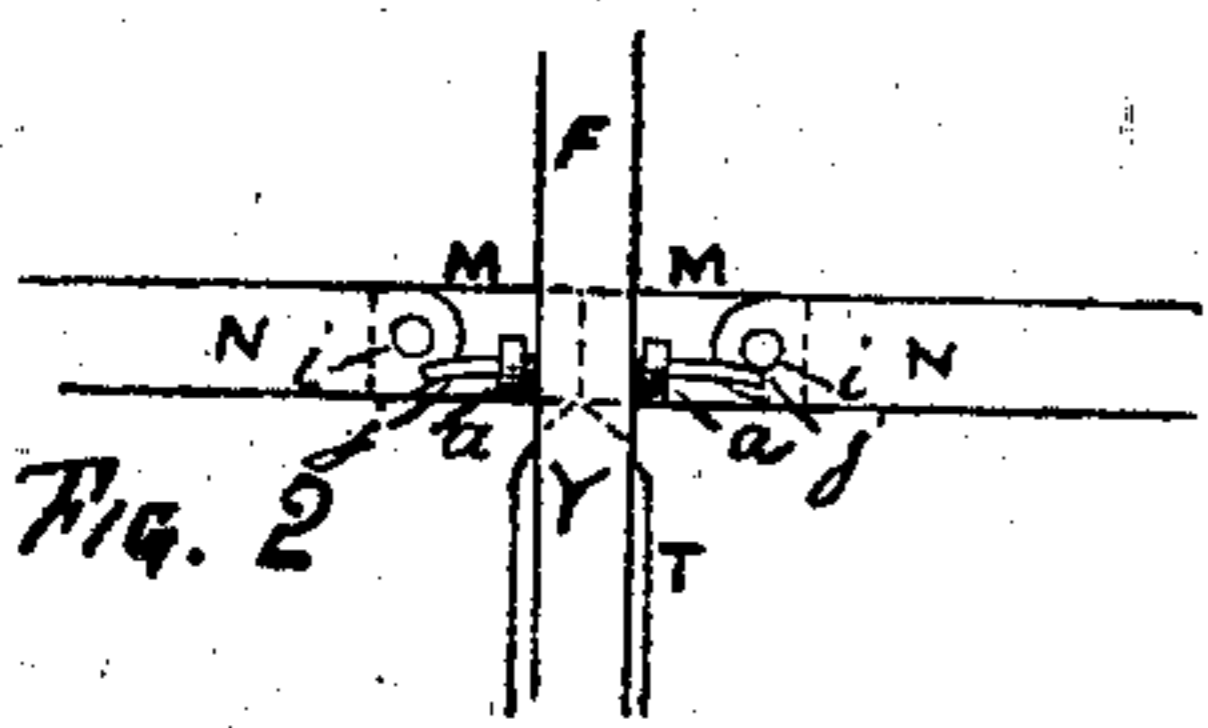


Fig. 2

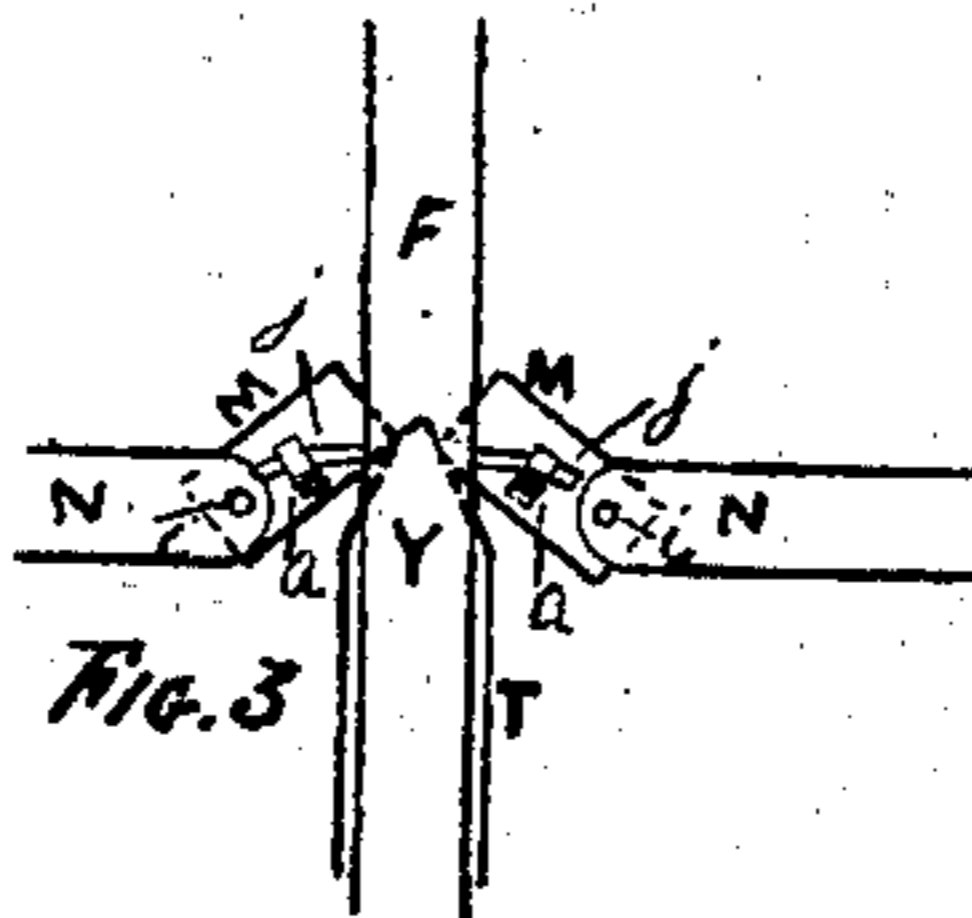


Fig. 3

WITNESSES:

Geo. H. Shaw,
H. E. Metcalf.

INVENTOR,

Jesse M. Strout,
By C. A. Shaw,
Att'y.

UNITED STATES PATENT OFFICE.

JESSE M. STROUT, OF CHELSEA, MASSACHUSETTS, ASSIGNOR OF ONE-HALF HIS RIGHT TO CHARLES O. STROUT, OF BOSTON, MASSACHUSETTS.

IMPROVEMENT IN HATCHWAYS.

Specification forming part of Letters Patent No. **152,576**, dated June 30, 1874; application filed May 15, 1874.

To all whom it may concern :

Be it known that I, JESSE M. STROUT, of Chelsea, in the county of Suffolk, State of Massachusetts, have invented a certain new and useful Improvement in Self-Closing Hatches, of which the following is a description sufficiently full, clear, and exact to enable any person skilled in the art or science to which my invention appertains to make and use the same, reference being had to the accompanying drawing forming a part of this specification, in which—

Figure 1 is an isometrical perspective view of my improved elevator; and Figs. 2, 3, 4, and 5, details to be referred to.

Like letters of reference indicate corresponding parts in the different figures of the drawing.

My invention relates to that class of elevators which are self-closing; and consists in a novel construction and arrangement of the parts, as hereinafter more fully set forth and claimed, by which a simpler, cheaper, and more effective device of this character is produced than is now in common use.

In Fig. 1, A B C represent the floors of a building, E F being the guides in which the elevator-carriage G works and D D uprights to which a part of the mechanism is attached, the carriage being raised and lowered in any convenient manner by a cable or rope passing over a pulley disposed in the beam U. The floor B is provided with an aperture or hatch, through which the carriage passes, and with the hinged traps or doors N, for closing the same. The doors are also provided with wings or auxiliary traps M, for closing the space corresponding with the guides E F. The carriage G has attached to its front and upper side a system of levers, *e f g*, (best seen in Figs. 4 and 5,) to assist in opening the traps, the lever *g* being provided with a cam-shaped outer edge, and having its lower end pivoted to the front of the carriage, one end of the lever *e* being pivoted or hinged to the top of the carriage, and the two levers *e g* jointed or connected by the horizontal lever *f*. There is also a coiled spring, *x*, one end of which is attached to the carriage, and the other to the lever *f*,

and which, by its contractile action, tends to keep the lever *e* in a horizontal position. Each of the traps N is provided with a bell-crank lever, Q, pivoted at *c* to the standard D. The long arm of this lever is slotted, and passes over a stud, *b*, Fig. 5, projecting from the side of the trap, the short arm being pivoted to the rod Q, the upper end of which rod is pivoted to the lever H, which lever is hinged by one end to the block R on the standard D, the block being rendered adjustable on the standard by the screw and washer S. There is also a coiled spring, P, one end of which is attached to the short arm of the lever Q, and the other to the standard D, and which operates to elevate the short arm of the lever. Fitted into one side of the guide F there is a sliding bar, L, to the upper part of which bar is pivoted the rod J, the upper end of the rod being jointed to the short arm of the horizontal lever I, which lever is pivoted to the guide F. There is also a coiled spring, K, one end of which is attached to the guide, and the other to the upper end of the rod J, and which, by contractile action, operates to depress the sliding bar and elevate the long arm of the lever I. Disposed in the lower end of the bar L, and opposite the ends of the traps M, there is a long pin or rod, *j*, which passes through an aperture in the guide F, and projecting from the rear ends of the traps M are two swivel-eyes, *a a*, Figs. 2 and 3, through which the pin passes loosely. The lower sides of the carriage are provided with inclined plates *z*, Fig. 5, and the central upper portion with a wedge-shaped projection, *y*, Figs. 2 and 3, the plates being essential to the proper operation of the levers H.

From the foregoing the nature and operation of my invention will be understood by all conversant with such matters.

The carriage G being elevated, as shown in Fig. 1, as it descends, the end of the long arm of the lever I will be brought into contact with an incline on the under side of the carriage, near the guide F. The carriage, continuing to descend, will depress the long arm of the lever, and raise the sliding bar L, which, by means of the pin *j* and swivel-eyes *a*, will

open the auxiliary traps M, turning them up on the pivots *i* into a vertical position. (It will be seen that this is essential in order that the traps N may be opened without bringing the traps M into contact with the guides F E.) The carriage continuing to advance or descend, the inclined plates *z* are next brought into contact with the long arms of the levers H, by which the rods O will be pushed down, and the bell-crank levers Q caused to tip up or raise the traps N preparatory to the passage of the carriage through the floor B. The long arms of the levers H H I are provided with ordinary friction-rollers, and as the carriage passes down, the roller in the lever I acts against the standard T of the carriage, and the rollers in the arms H H against the side standards or frame of the carriage, the traps being thereby held in a vertical position until the carriage has arrived opposite the traps. The carriage, still continuing to descend, will release the traps, and the springs P K, acting on the levers Q and bar L, will tend to shut or close them; but as this occurs, the cam-shaped edges of the levers *g* strike friction-rollers *m* in the floor B, by which the levers are thrown inwardly, actuating the horizontal levers *f*, and raising the levers *e* against the under sides of the platforms N, by means of which the platforms are prevented from closing until the carriage has nearly passed through the floor, when the inwardly-inclined face of the lever *g*, then in contact with the roll *m*, permits the spring *x* to gradually withdraw the lever *e*, and allow the traps to close in a manner which will be readily apparent without a more particular description.

The carriage being on the floor A, the mechanism will be operated in its ascent as follows: The projection *y* first strikes and turns up or opens the auxiliary traps M, and as the carriage advances the cam-shaped edge of the lever *g* strikes the friction-roller *m*, by which the lever is pushed inwardly, and the

lever *e* brought against the platforms N, thus raising the platforms into a vertical position as the carriage advances. As the platforms are raised, the levers Q and bar L, operate to depress the long arms of the levers H H I, swinging them out of the path of the carriage; but when the carriage has passed said levers, the springs P K will act to close the traps, as before stated, the levers assuming the position shown in Fig. 1. It will be obvious that without the aid of the lever *e*, the carriage G, advancing through the floor B, would open the trap N; but I have found the lever of great service in saving power, as it acts upon the outer end of the trap instead of near where the trap is hinged.

Having thus described my invention, what I claim is—

1. The levers *g f e* and spring *x*, combined with the carriage G, to operate the traps N, substantially as specified.

2. The sliding bar L, lever I, rod J, and spring K, combined with the carriage G, to operate the auxiliary traps M, substantially as specified.

3. The slotted lever Q, rod O, spring P, and lever H, combined with the carriage G and lever *e*, to operate the platforms N, substantially as set forth.

4. In combination with the carriage G, the inclined plates *z*, arranged as shown, for operating the levers H, substantially as specified.

5. In combination with the carriage G, the auxiliary traps M, hinged to the main traps N, and arranged as specified, so as to fill the space between the main traps corresponding with the guides F E when closed, but so as to be turned back with the main traps when the same are opened, substantially as specified.

JESSE M. STROUT.

Witnesses:

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GEO. G. SHAW.