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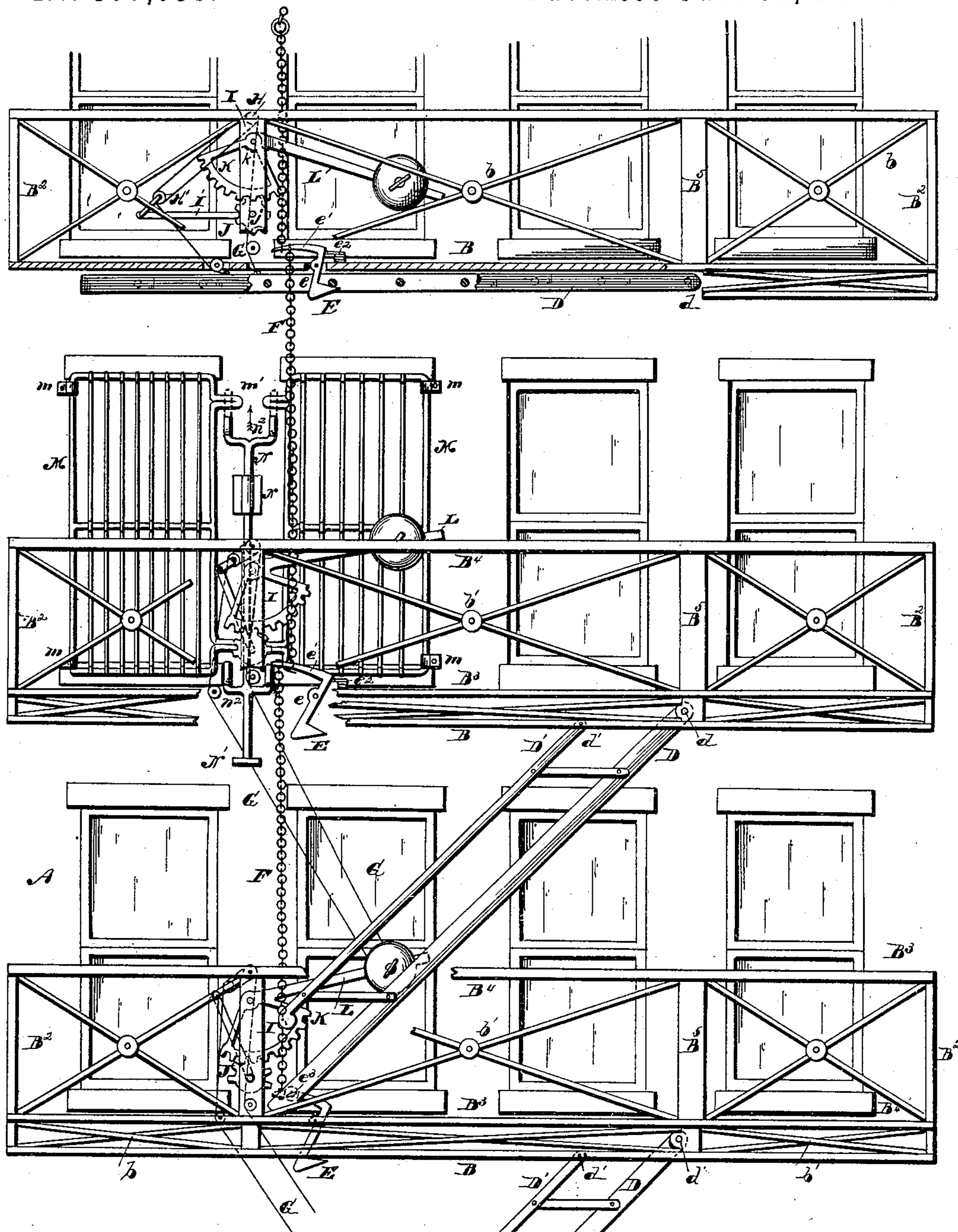
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J. BATTEN.

FIRE ESCAPE.

No. 377,058.

Patented Jan. 31, 1888.

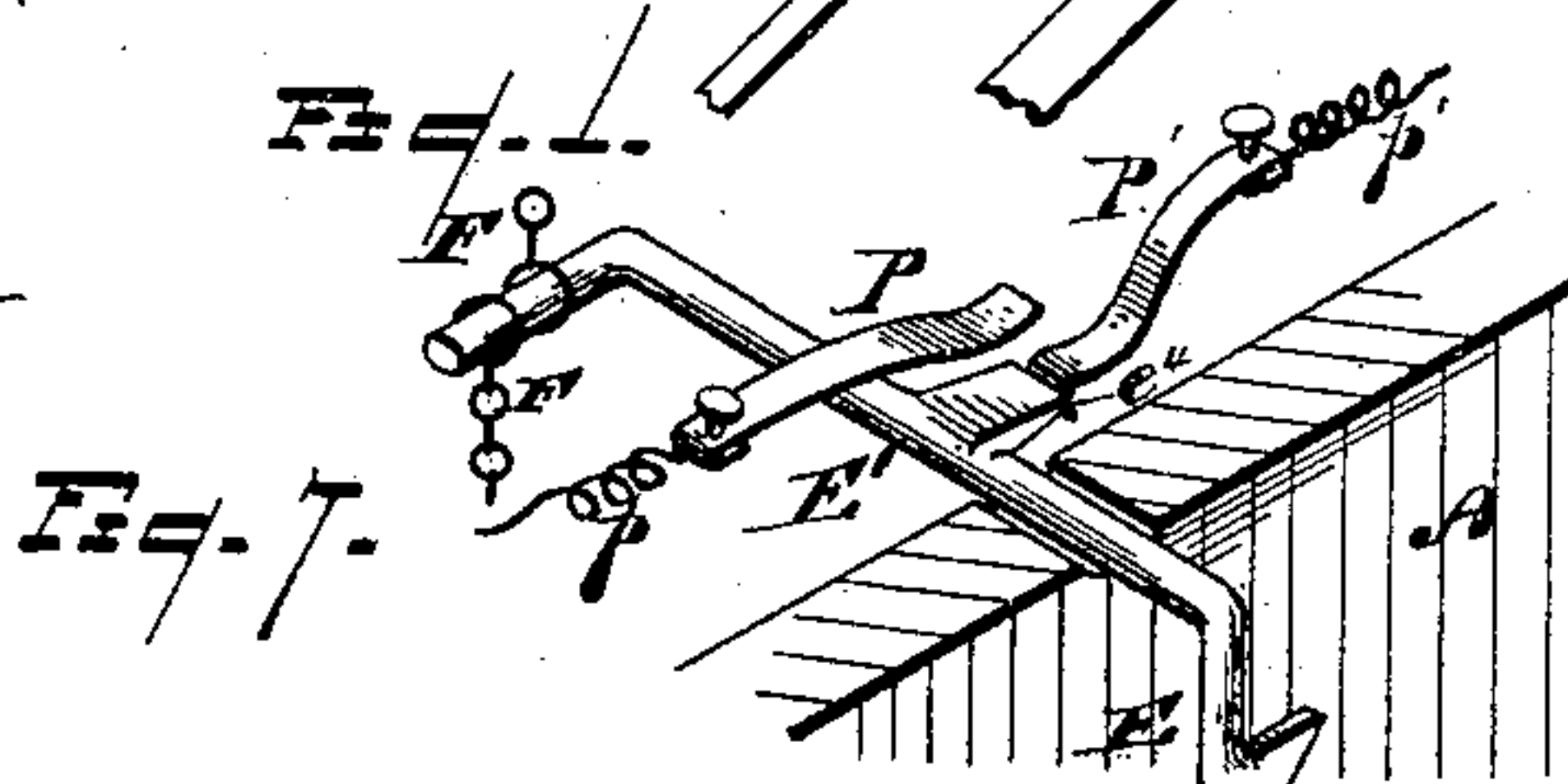


WITNESSES

Samuel C. Thomas

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Fz = 7.



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(No Model.)

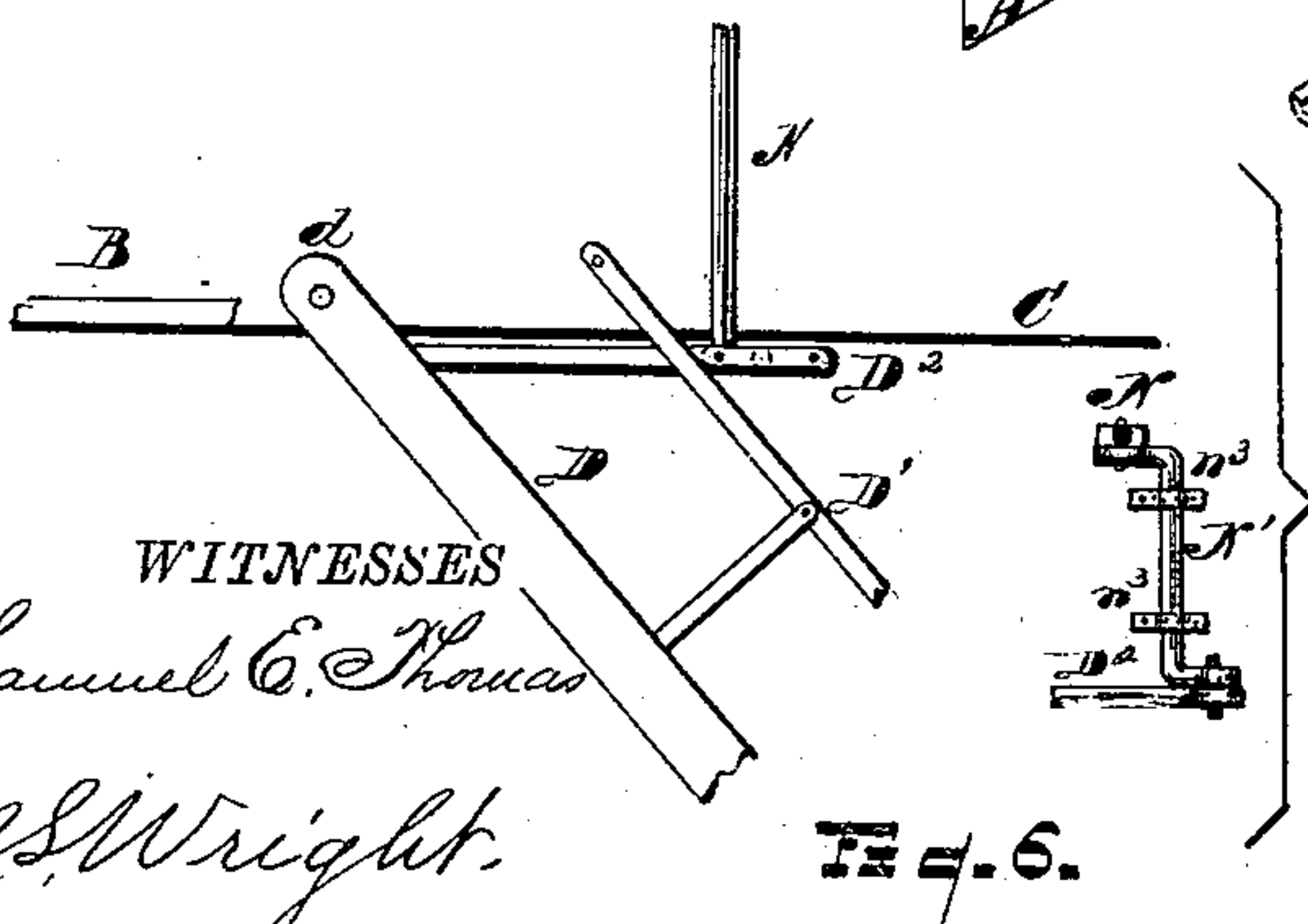
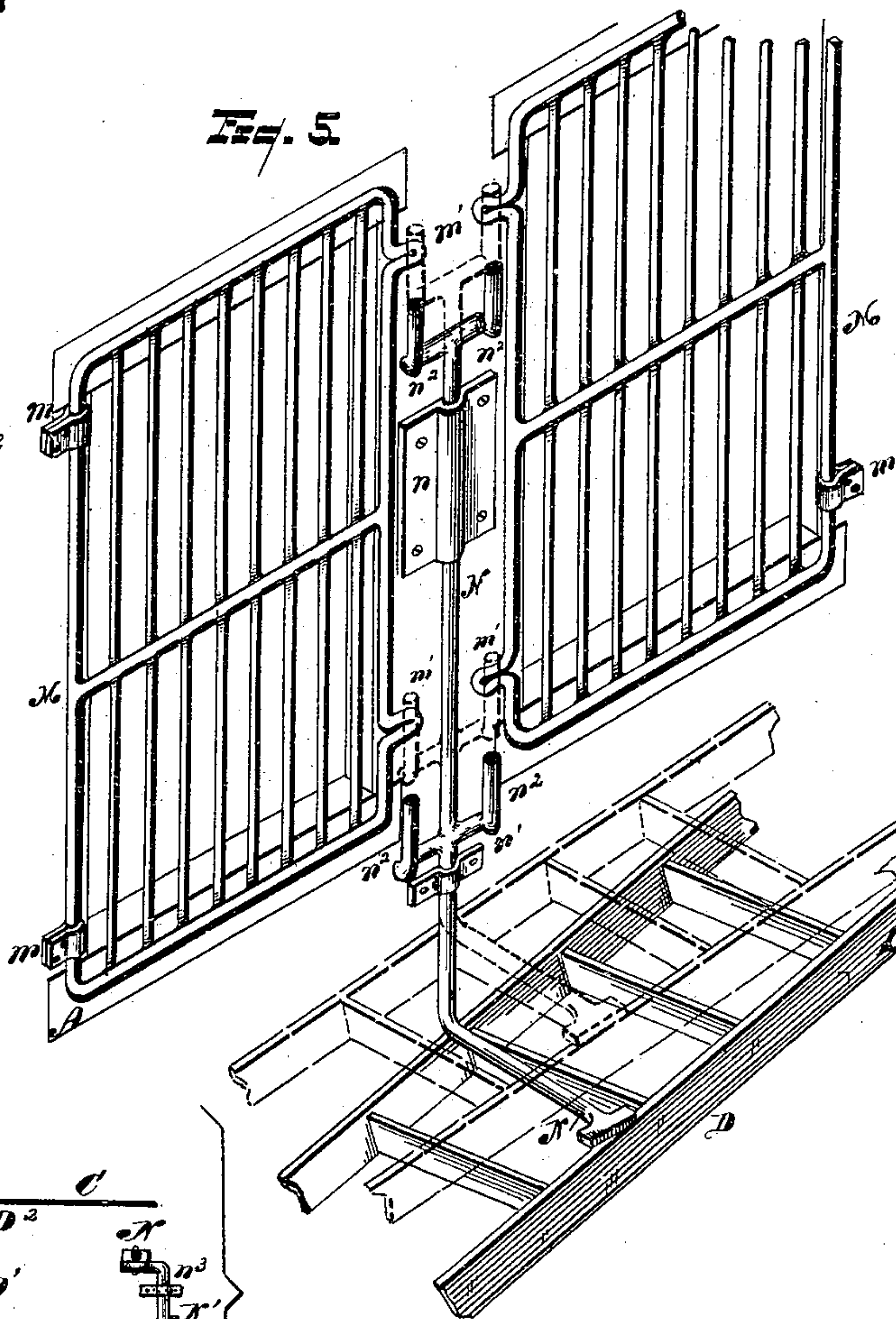
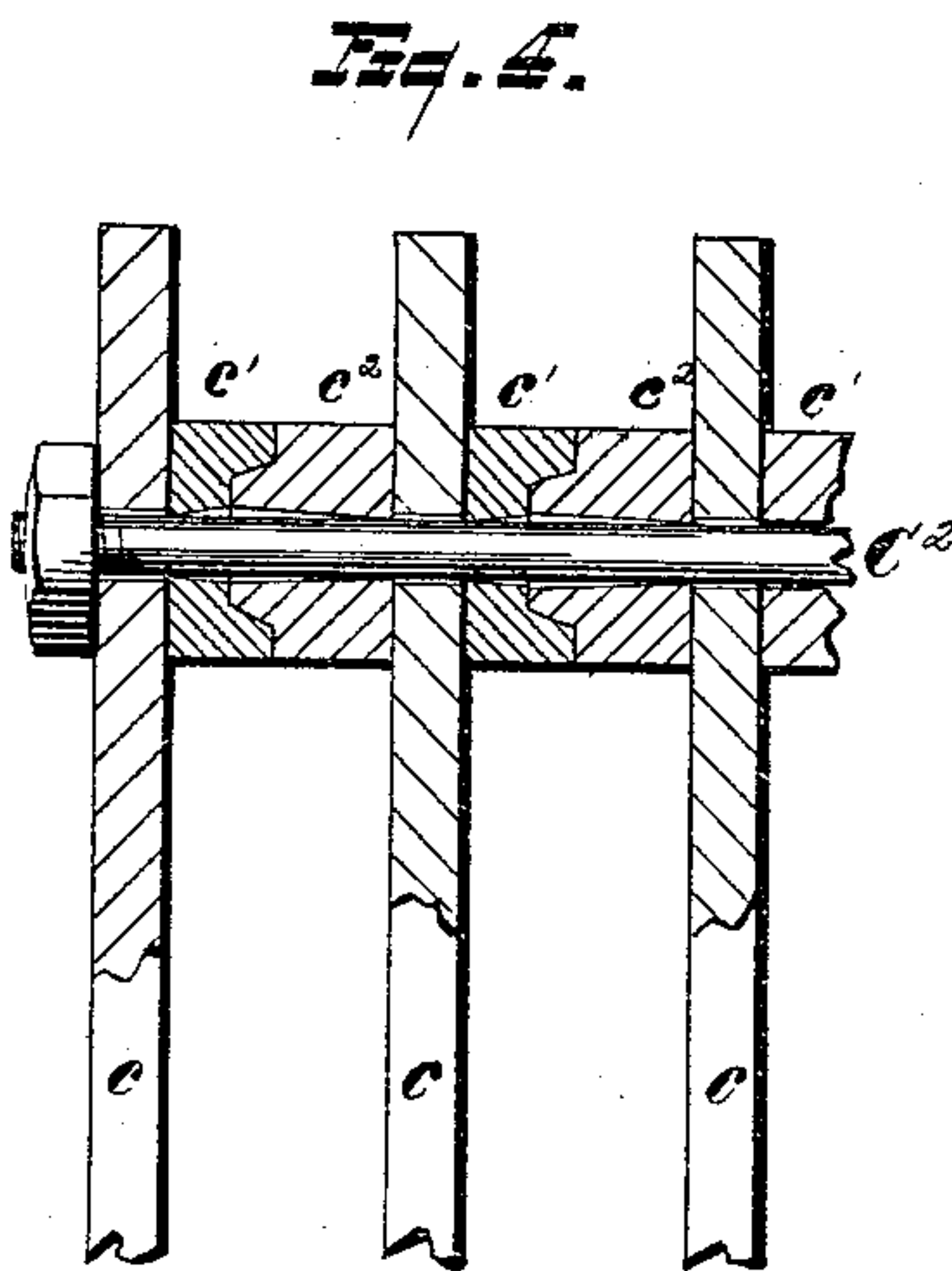
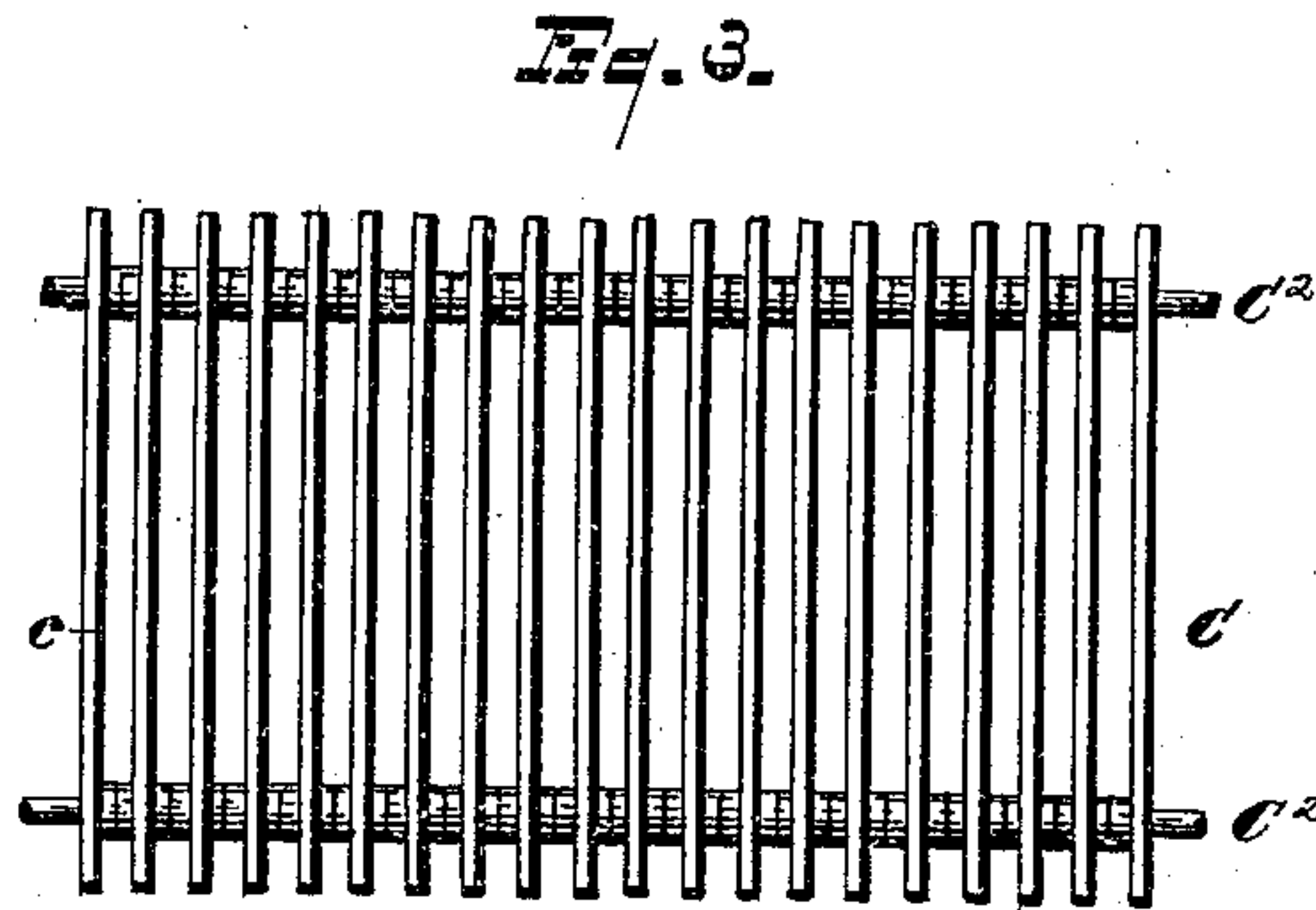
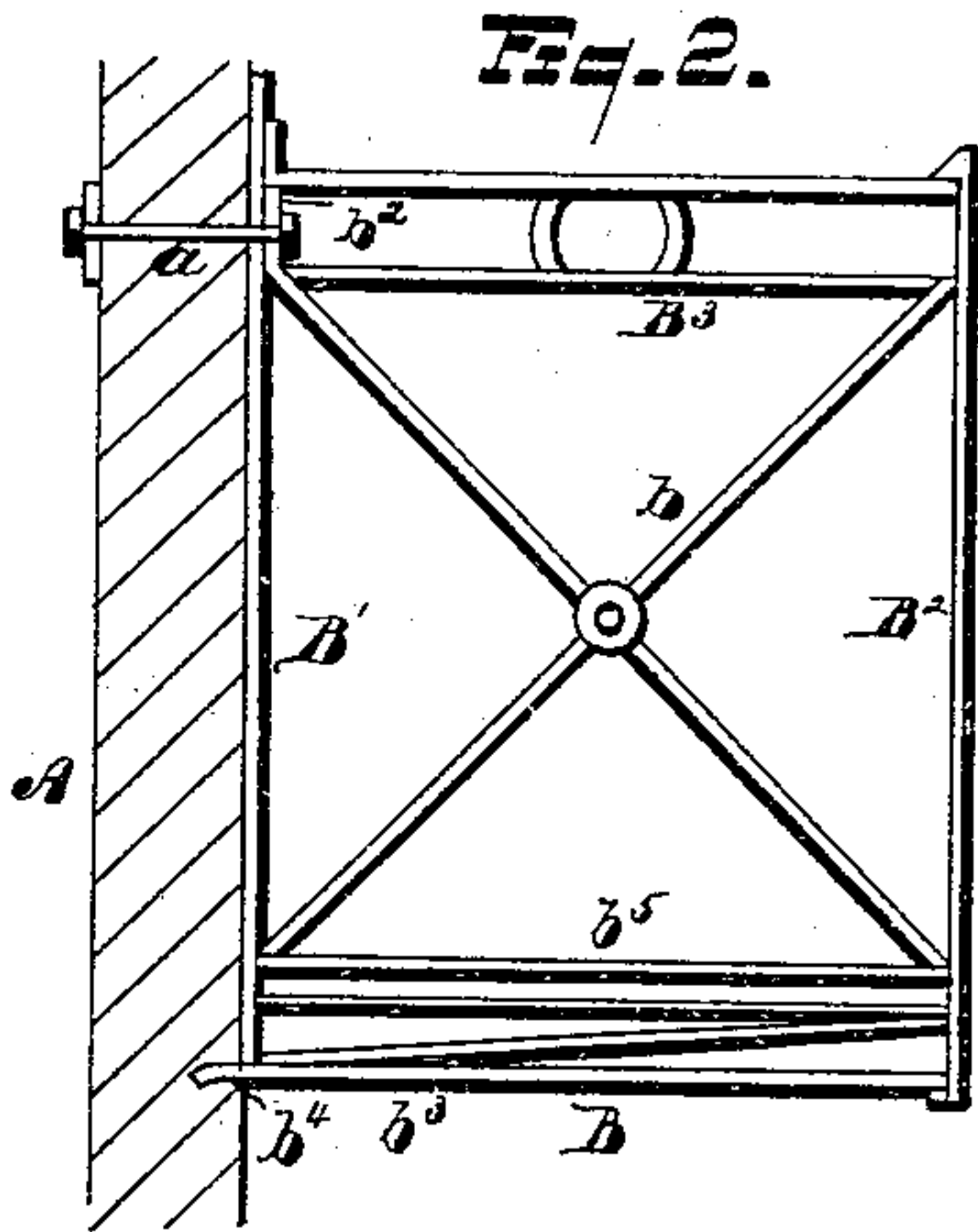
2 Sheets—Sheet 2.

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WITNESSES  
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# UNITED STATES PATENT OFFICE.

JOHN BATTEN, OF PITTSBURG, PENNSYLVANIA.

## FIRE-ESCAPE.

SPECIFICATION forming part of Letters Patent No. 377,058, dated January 31, 1888.

Application filed May 24, 1887. Serial No. 239,215. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN BATTEN, of Pittsburg, county of Allegheny, State of Pennsylvania, have invented a new and useful Improvement in Fire-Escapes; and I declare the following to be a full, clear, and exact description of the same, such as will enable others skilled in the art to which it pertains to make and use it, reference being had to the accompanying drawings, which form a part of this specification.

My invention relates to certain new and useful improvements in fire-escapes, and has reference more especially to fire-escapes connected with a series of balconies provided with ladders.

The invention consists in the novel features of construction and combination of devices hereinafter described and claimed, reference being made to the accompanying drawings, in which—

Figure 1 is a front elevation illustrating my invention; Fig. 2, an end view of one of the balconies; Fig. 3, a section of the floor of the balcony; Fig. 4, an enlarged view of the same, partly in section; Fig. 5, a perspective illustrating the mechanism for releasing the window-grating. Fig. 6 represents a modification of the mechanism for releasing the window-grating; Fig. 7, a diagram drawing of the tilting hook led into the interior of the building and alarm mechanism associated therewith.

A represents the building.

B represents my improved balcony.

While I do not limit myself to any definite construction of the balcony, I prefer to construct it upon its front and ends with trusses  $b$   $b'$ , as thereby the balcony may be made of light weight, and yet of sufficient strength to support any weight which may be located thereon.

At the ends of the balconies I prefer to provide one of the trusses with a bracket-arm, as shown at  $b^2$ , through which the bolt  $a$  may be inserted to engage the bracket to the building.

The base of the balcony may be provided with an extended bar,  $b^3$ , adapted to engage in a corresponding orifice in the building, as shown at  $b^4$ , to assist in supporting the same. The trusses  $b'$  serve both to give strength and to somewhat conceal the ladder engaged with the balcony. A balcony so made, while strong, obviates a clumsy appearance.

The floor is located a little above the lower edge of the balcony, and may be supported upon angle-irons  $b^5$ , (shown in Fig. 2;) and C represents the flooring, which I prefer to construct of bars  $c$ , which may be separated by thimbles  $c'$   $c^2$ , a rod,  $C^2$ , passing through said bars and thimbles to unite a suitable number of bars to form a section or the entire body of the floor.

I have found that by the use of the thimbles located between the bars firmness is given, while the bars are properly separated. I prefer to construct the thimbles as shown in Fig. 4, one of thimbles, as  $c'$ , being recessed to receive a shoulder upon the corresponding section, as  $c^2$ . The thimbles may thus be readily cast with their orifices to receive the bolt  $C^2$  in a very convenient and economical manner.

The balcony is provided, preferably, with a rear brace-bar,  $B'$ , through which the bolt  $a$  is passed, and to which the truss-rods are engaged, the trusses uniting it with a front bar,  $B^2$ , at the ends, the front truss-rods,  $b'$ , uniting the bars  $B^3$  and  $B^4$ , the balcony being provided with additional connecting-bars,  $B^5$ . The bars  $B^2$  may be made of angle-iron.

D represents a ladder having a pivoted or hinged connection at one end with the balcony, as shown at  $d$ , the latter being preferably provided with a folding arm,  $D'$ , also pivotally connected with the balcony, as shown at  $d'$ .

As shown in Fig. 1, the ladder is illustrated as folded up in connection with the upper balcony, but as released and let down in the lower balconies. When folded up, the free end of the ladder is supported by a hook, E, pivotally engaged with the balcony, as shown at  $e$ , said hook being provided with an angular arm,  $e'$ , the construction being such that the hook itself may be engaged under one of the rungs of the ladder to support it, while by tilting the hook slightly it will be released from the rung, when the ladder will descend.

The hook is provided with a beveled face, as shown, so that when the arm strikes the hook as the ladder is raised it will tilt the hook to permit the passage of the rung, when the hook will tilt back into its normal position to support the ladder.

To make the hook tilt into its normal position automatically, it may be provided with a



spring,  $e^2$ ; or the angular arm may be weighted, as shown in connection with the lower balcony, Fig. 1, at  $e^3$ .

A chain, F, connects the series of hooks from one balcony to another, said chain being engaged with the angular arm of each hook, by which means it is evident that a person upon the top balcony, by pulling upon the chain, will tilt the entire series of hooks, and thereby release simultaneously the entire series of ladders, while a person upon any balcony may release any given ladder below him without releasing the ladders above him, this construction permitting one ladder to be released separately or the entire series to be released simultaneously. The lower ladder thus might be stationary, if preferred, the ladders above it being capable of being folded and released by a person upon any balcony.

The arms of the hooks E may be located either within or upon the outside of the building, as may be preferred, and the chain F may be extended into the interior of the building and into the office, if desired, so that if required an attendant could release the entire series of ladders.

To ease the descent of the ladders, and also to assist in folding them up under the floors of the balconies, I have provided novel mechanism, illustrated in Fig. 1, in which G represents a cable, the two ends of which are preferably engaged with the ladder and at each side thereof, so that the ladder may be more conveniently balanced in its movements.

The cable is passed over pulleys H H', the pulley H being located upon an upright bar, I, and the pulley H' being located upon the outer end of a lever, I', said lever connected at its inner end with a gear, J, mounted upon a journal, j.

K is a segmental gear journaled upon the post I, as shown at k, and having a weighted arm, L, connected therewith to counterbalance the ladder.

By this construction it is evident that when the ladder is lowered the lever I' will be raised toward a vertical position, as shown in Fig. 1 in connection with two lower balconies. The gear J will be thereby rotated, giving motion to the segmental gear K and raising the weighted arm L, and vice versa. When it is desired to fold up the ladder, the free end of the weighted arm L descends, giving motion to the gear J and throwing downward the lever I' toward a horizontal position, thus taking up the slack in the cable G. It will thus be seen that the bar, weighted lever, pulleys, and gears alluded to constitute a self-tightening device for the cable G.

I will now proceed to describe my improvement relating to window-guards and their operation by the fire-escape.

It is evidently very desirable, and indeed most essential, that the windows of prisons, asylums, &c., should be provided with window-guards which may be quickly and easily displaced in case of fire for the exit of the in-

mates, as it can be of little value that a fire-escape be provided on the exterior if the windows are guarded so that there can be no egress to the fire-escape. My invention is designed to remedy the difficulty formerly existing in this respect and to provide removable window-guards, or guards which may be readily opened in case of fire, and yet which might be so arranged as to thoroughly protect the windows to prevent escape. By my invention, also, these guards are made to be released automatically by the descent of the ladders.

M represents my improved guards, which may be hinged at one side, as shown at m, the opposite edges of the guards being provided with extended arms  $m'$ .

N represents a reciprocating locking-bar, which may be held in place in a vertical position by bearings  $n n'$ . This locking-bar is constructed with prongs or fingers  $n^2$ , constructed to project over the extensions  $m'$  of the guards, and thereby prevent the guards from being opened when the locking-bar is in its normal position. The bar is constructed with an angular arm at its base, as shown at N', which may also be weighted, if desired, so that when free to move it will thereby of its own gravity release its prongs from the window-guards.

The bar is held in its normal or locked position by the ladder when it is folded up, the ladder extending underneath the angular arm of the bar, so that when the ladder is in the process of being closed up it will strike against said angular arm N' and force upward the locking-bar, so that its prongs will engage over the extensions of the window-guards.

By this construction it is evident that the guards will be at all times securely locked when the ladders are in folded position, which would be the case at all times except when released in case of fire. The facilities for releasing the ladders could readily be kept out of the way of the inmates, so that in no case could they be reached or be tampered with, and also the ladders might be readily connected with some alarm, so that it should be sounded in the event of their being released.

I do not limit myself to any particular apparatus for sounding the alarm, as it may be accomplished in a variety of ways, all of which come within the scope of my invention; but it may be accomplished, as shown in Fig. 7, by providing the tilting hook with an angular arm, E'. The chains or cables F are connected on the inside of the building to tilt the hook.

P and P' represent metallic bars, the bar P' being of spring metal, which connect with the circuit-wires  $p p'$ , leading to an alarm-bell. In its normal position the spring-bar P' is held down by a finger,  $e^4$ , upon the arm of the tilting hook, so as to keep the circuit open, the finger being so engaged with the spring-bar that when the hook is tilted the finger will be disengaged. The spring-bar P' will then fly up into contact with the bar P and close the circuit. By such a construction the circuit



will not be broken by the return of the hook to its normal position after the ladder is disengaged.

Instead of constructing the bar N, by which the grating M is locked and unlocked, independent of the ladder, it may be directly engaged with the ladder, so as not to depend upon its own gravity to unlock the grating, but so as to be forcibly released as the ladder descends. This can be readily accomplished by engaging the outer end of the arm N' to the ladder, as by means of an intervening bar, D<sup>2</sup>, in which case the arm N' is in the nature of a crank arm or bell-crank engaged to the floor of the balcony by suitable bearings, n<sup>3</sup>.

What I claim is—

1. The combination, with a balcony, of a flooring constructed of bars separated by thimbles c' c<sup>2</sup>, said bars and thimbles united by rods C', substantially as described.

2. The combination, with a balcony, of a ladder pivotally engaged underneath the floor of the balcony, a tilting hook to support the ladder when folded, said hook constructed to automatically engage the ladder when folded, substantially as described.

3. The combination, with a series of balconies, of a series of ladders pivotally connected with said balconies, respectively, said balconies provided with tilting hooks to support the ladders when folded, and a chain or cable connecting said hooks, substantially as and for the purpose described.

4. The combination, with a balcony, of a ladder pivotally engaged therewith at one end, a cable engaged with said ladder and passed over intermediate pulleys, one of said pulleys engaged with a tightening device comprising the bar I, lever I', gear J, and the segmental gear K, having a weighted arm, L, substantially as described.

5. The combination of a pivoted ladder, a lever, I', connected with a rotatable gear, J, having rotatable gear K meshing therewith, said gear K provided with a weighted arm, and a cable engaged with the ladder and passed over intermediate pulleys, one of said pulleys

engaged with said arm I', substantially as and in the manner described.

6. The combination, with a balcony, of a ladder pivotally engaged therewith, of a counterpoise device consisting of rotatable gears J and K, meshing with each other, the gear J connected with a lever, I', and the gear K with a weighted arm, L, and pulley engaged with the arm I', and the pulley engaged with the balcony, a cable passed over said pulleys and engaged with the ladder, the construction being such that when the ladder descends the weighted arm will be lifted, and vice versa, substantially as described.

7. The combination, with the hinged guards M, having the extensions m', and the pivoted folding ladder D, of the vertically-movable locking bar N, having fingers n<sup>2</sup>, and provided at its lower end with the angular arm N', arranged above the ladder, substantially as described.

8. The combination, with a balcony provided with a folding ladder, of movable window-guards, a movable slide to engage and release said guards, said slide operated automatically by the operation of the ladder, substantially as described.

9. The combination, with movable window-guards, of a device for locking and unlocking said guards, a pivoted ladder arranged to lock the said guards when folded up, substantially as described.

10. The combination, with movable window-guards, of a locking device and a ladder engaged to operate said locking device, substantially as described.

11. The combination, with a folding ladder, of a tilting supporting-hook and electric mechanism whereby an alarm may be sounded on the disengagement of the hook with the ladder, substantially as described.

In testimony whereof I sign this specification in the presence of two witnesses.

JOHN BATTEN.

Witnesses:

WM. K. SHRYOCK,  
R. KENNEDY.