

(No Model.)

2 Sheets—Sheet 1.

G. W. VAN ALLEN.
SELF CLOSING HATCHWAY.

No. 278,204.

Patented May 22, 1883.

Fig. 1.

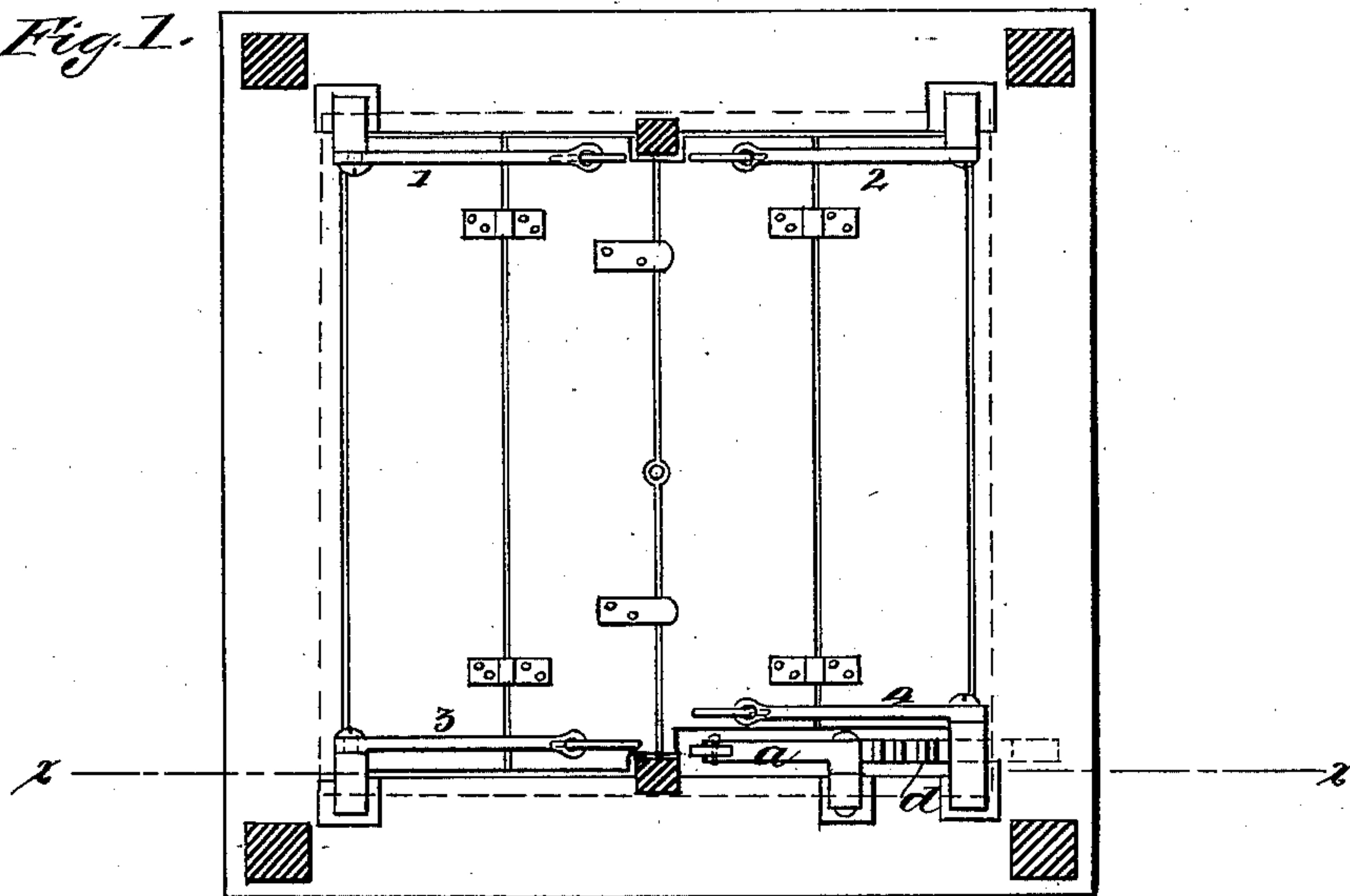


Fig. 2.

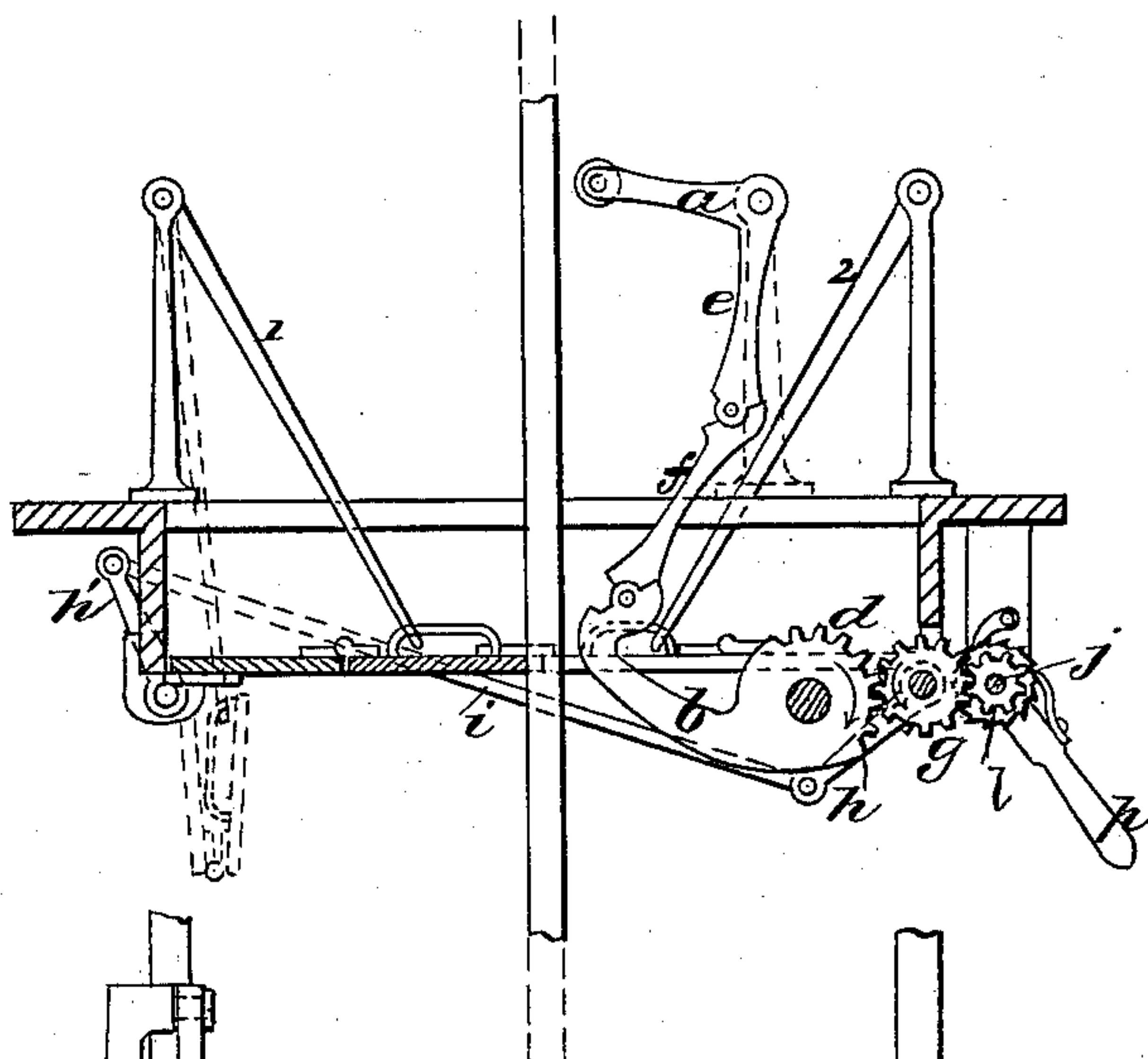
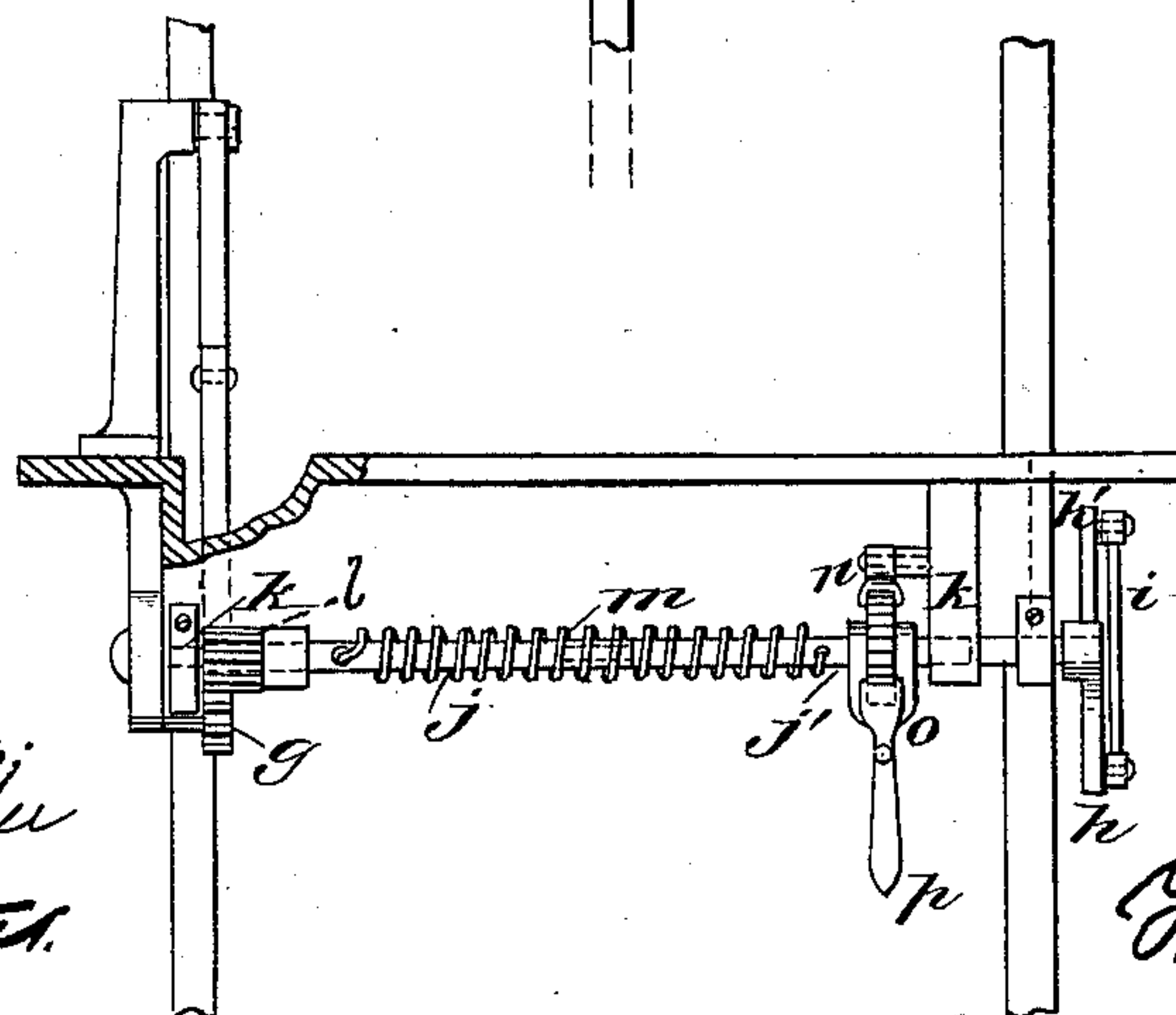


Fig. 3.



Witnesses:
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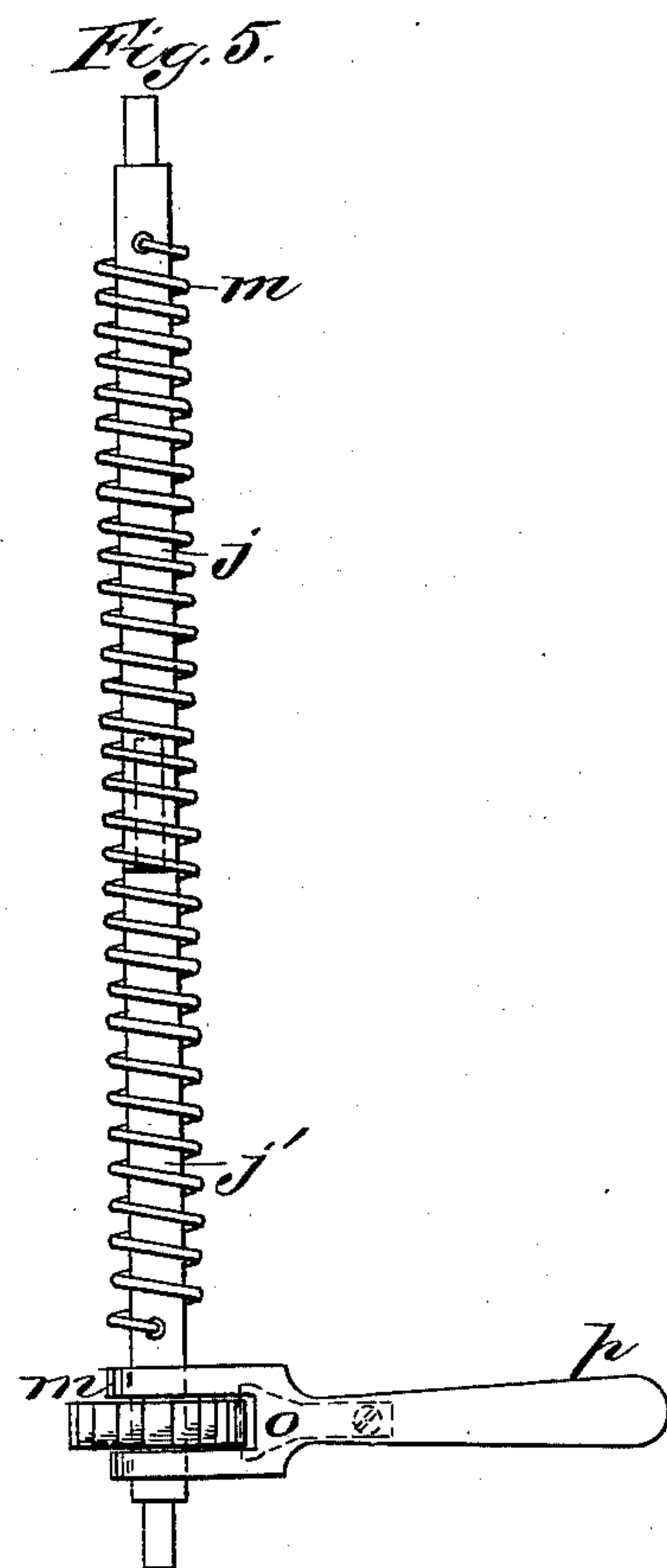
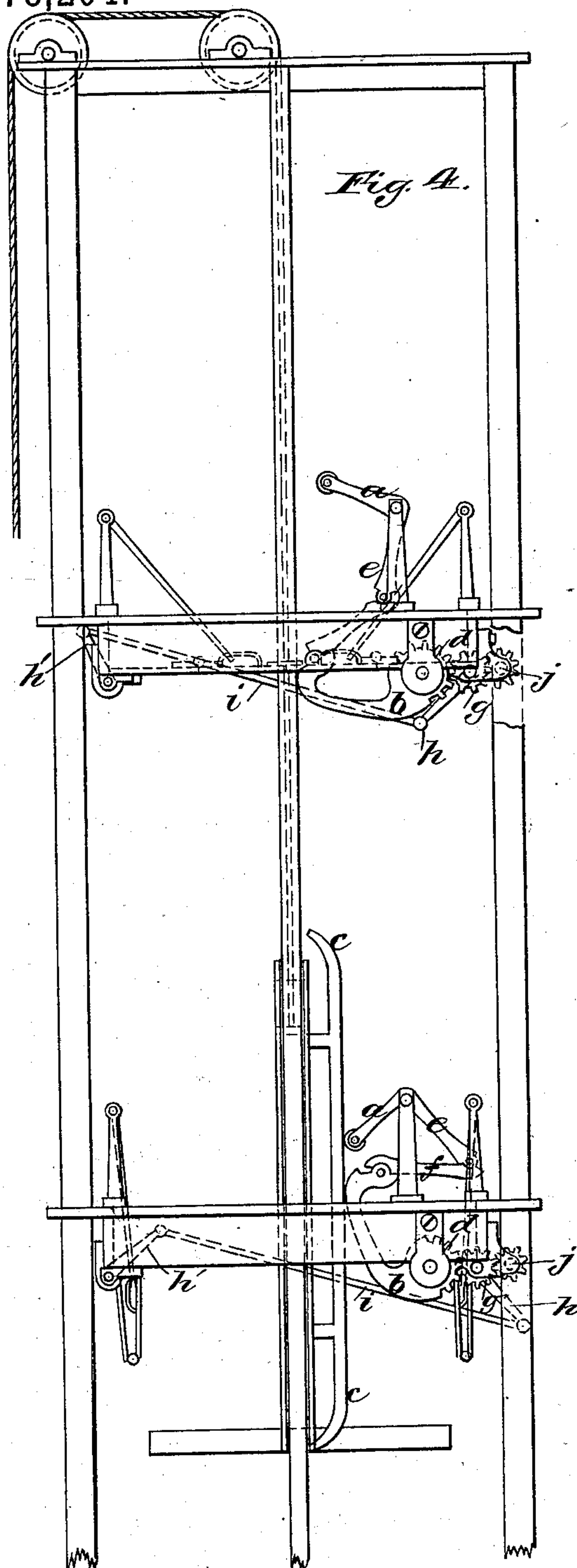
(No Model.)

2 Sheets—Sheet 2.

G. W. VAN ALLEN.
SELF CLOSING HATCHWAY.

No. 278,204.

Patented May 22, 1883.



Witnesses:
Henry R. Darker.
Jacobus H. Hunter

Inventor:
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UNITED STATES PATENT OFFICE.

GEORGE W. VAN ALLEN, OF NEW YORK, N. Y., ASSIGNOR TO MARTIN B. BROWN, OF SAME PLACE.

SELF-CLOSING HATCHWAY.

SPECIFICATION forming part of Letters Patent No. 278,204, dated May 22, 1883.

Application filed March 13, 1883. (No model.)

To all whom it may concern:

Be it known that I, GEORGE W. VAN ALLEN, of the city, county, and State of New York, have invented certain new and useful Improvements in Self-Closing Hatchways; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, forming part of this specification.

10 These improvements relate to self-closing hatchways in which the mechanism connected with and operating the hatchway-doors is separate and distinct for each floor.

15 In the drawings, Figure 1 is a plan view of one set of the hatchway-doors constructed according to my improvements, looking down at the doors when they are in a closed position. Fig. 2 is a vertical sectional side view of the same, taken in the line *xx* of Fig. 1. Fig. 3 20 is a vertical rear view of the same. Fig. 4 is a vertical side view of two sets of such hatchway-doors, the upper set representing the doors in a closed position and the lower set representing them in an open position, with 25 the elevator-car passing through the hatchway. Fig. 5 is a detached view of a tension device used with my improved mechanism to aid in closing and holding closed the hatchway-doors.

30 The improvements relate more especially to a better combination, arrangement, and construction of the devices shown in the Letters Patent granted to A. B. See on the 14th day of July, 1874, and numbered 153,121. The 35 combination, arrangement, and construction of specific devices herein shown and described, however, give a more efficient and durable mechanism, both for opening and for closing and holding in a closed position the hatchway-doors. Each set of hatchway-doors is so 40 connected by mechanism that the one half thereof will be worked directly and the other half indirectly by operating mechanism connected to the hinge of one of said doors, and such last- 45 mentioned mechanism in turn is operated by the passage of the elevator-car up and down through the hatchway, as set forth in said See patent. The construction and arrangement of the parts, however, are substantially and ma- 50 terially different, rendering them more positive in their operation, the doors being more

directly operated upon and their weight being better counterbalanced than heretofore. These various changes will now be fully described, so as to distinguish the new from the old.

55 *a* is the upper arm, and *b* is the lower arm, with which the rail or bar *c* of the elevator-car comes in contact in passage up or down of the car through the hatchway. On the rear of this lower arm, *b*, I place a segmental gear, *d*, 60 the upper arm, *a*, having another arm, *e*, forming, as it were, a bell-crank connection therewith, which arm *e* of the bell-crank is in turn connected to the arm *b* by an intermediate arm, *f*. This arm *f* has shoulders where it is piv- 65 oted at each end, respectively, to the arm *e* and arm *b*, so that the motion upward of arm *a* and the motion downward of the arm *b* is limited thereby, thus enabling the folding in- 70 ward of arms *a* and *b* and of the said arm *f* while the elevator-car is passing through the hatchway, as seen in Fig. 4, at the lower set of hatchway-doors, and the subsequent unfolding there- 75 of to the extent of closing fully the doors after the passage through of the car, as seen at the upper set of hatchway-doors in the same figure. The moving upward of the arm *b* causes its seg- 80 mental gear *d* to rotate the gear-wheel *g*, placed on the end of one of the hinge-pins of one of the hatchway-doors. This causes the said door to be rotated or drawn downward, and at the same time fold itself into two sections, the in- 85 ner section or member of the door being retained during such movement by the stop-rods 1, 2, 3, and 4, which serve to support the door when in a closed position, as in said See patent. The same motion is imparted to the 90 other portion of the doors through connecting mechanism—such as cranks *h h'* and connecting-rod *i*—so that both of said hatchway-doors shall be opened at the same instant, substan- 95 tially as seen and described in said See patent.

It will be seen that the passage of the car downward through the hatchway causes this same folding up of the hatchway-doors by first 100 operating upon the arm *a*, by reason of which a positive and direct motion is communicated to one end of the hinge of one side of the set of doors through the arm *e*, intermediate arm, *f*, and arm *b*, the latter now operating merely as an intermediate medium for working its segmental gear. At the rear of the hinge of

the set of doors containing this cog-wheel *g* is placed a tension device, which I shall now proceed to describe.

j j' is a divided shaft journaled in bearings *k k* immediately in the rear of the hinge of that side of the set of doors which is operated by the arms *a* and *b*. To the end of the member *j* is connected a pinion-wheel, *l*, which gears with the cog-wheel *g* on the end of door-hinge. The member *j* of the divided shaft is bored out at its inner end, so as to permit of the smaller inner end of the member *j'* having free rotation therein as within a socket. Around the periphery of these two members *j* and *j'* is placed a spiral spring, *m*, so arranged that when the hatchway-doors open downward the end *j* will be rotated and coil up said spring. On the passing out of the way of either arm *a* or *b* the tension on this spring *m* will at once draw the doors into a closed position. At the stationary but free end *j'* of this divided shaft is attached an ordinary ratchet-wheel, *n*, and pawl *o*, with which, by means of the attached handle *p*, a different initial tension can be placed on or taken off the spring *m*, so that the doors are enabled to close themselves with more or less force after the elevator-car has

passed away from the arm *a* or *b*, and be held closed with greater or less force. Light or heavy doors may thus be easily provided with the proper counter-balance at the putting in of the apparatus.

I claim—

1. The combination of the arm *a*, segmental arm *b*, and intermediate connecting-arms *e* and *f* with a hatchway-door, substantially as and for the purpose described. 35
2. The combination of the divided shaft *j j'*, spring *m*, pinion *l*, and gear-wheel *g*, with a hatchway-door, substantially as and for the purpose described. 40
3. The combination of the divided shaft *j j'*, spring *m*, ratchet *n*, pawl *o* and handle *p*, pinion *l*, and gear-wheel *g* with a hatchway-door, substantially as and for the purpose described. 45
4. The combination of the arm *a*, segmental arm *b*, connected to each other by the arms *e* and *f*, and the gear-wheel *g*, with a hatchway-door and tension mechanism connected therewith, substantially as described.

GEORGE W. VAN ALLEN.

Witnesses:

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