

(No Model.)

M. S. FIELD.
SPRING HINGE.

No. 551,030.

Patented Dec. 10, 1895.

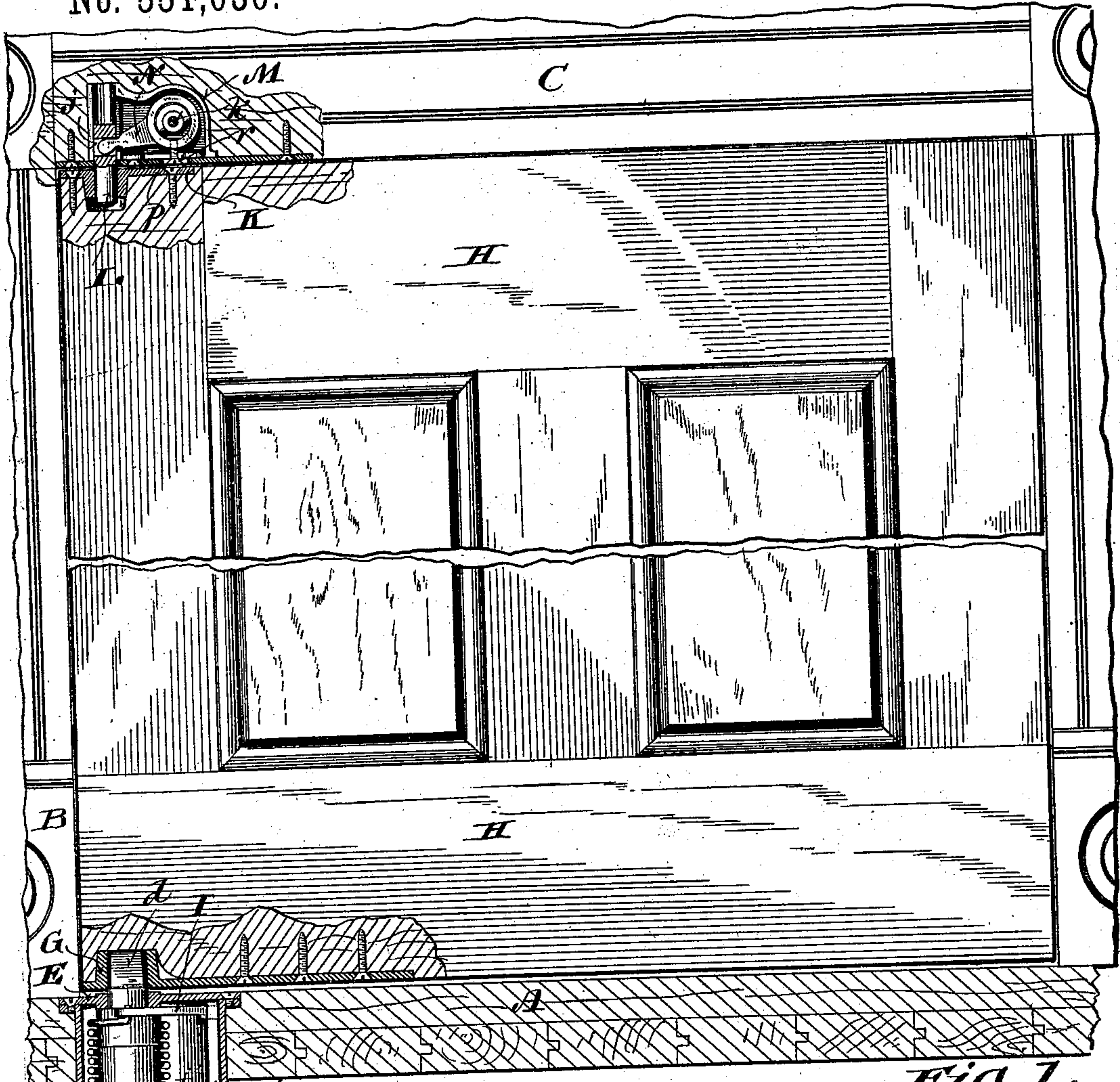


Fig. 1.

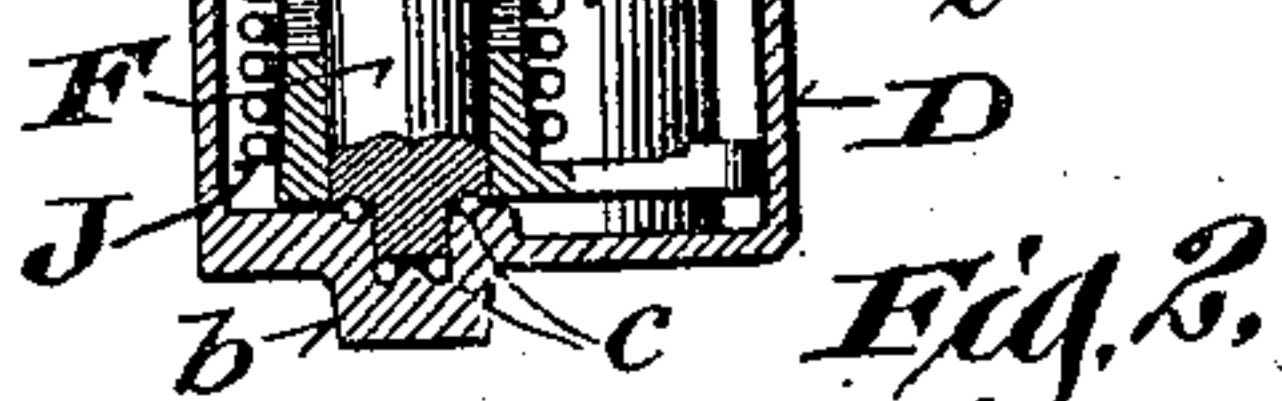


Fig. 2.

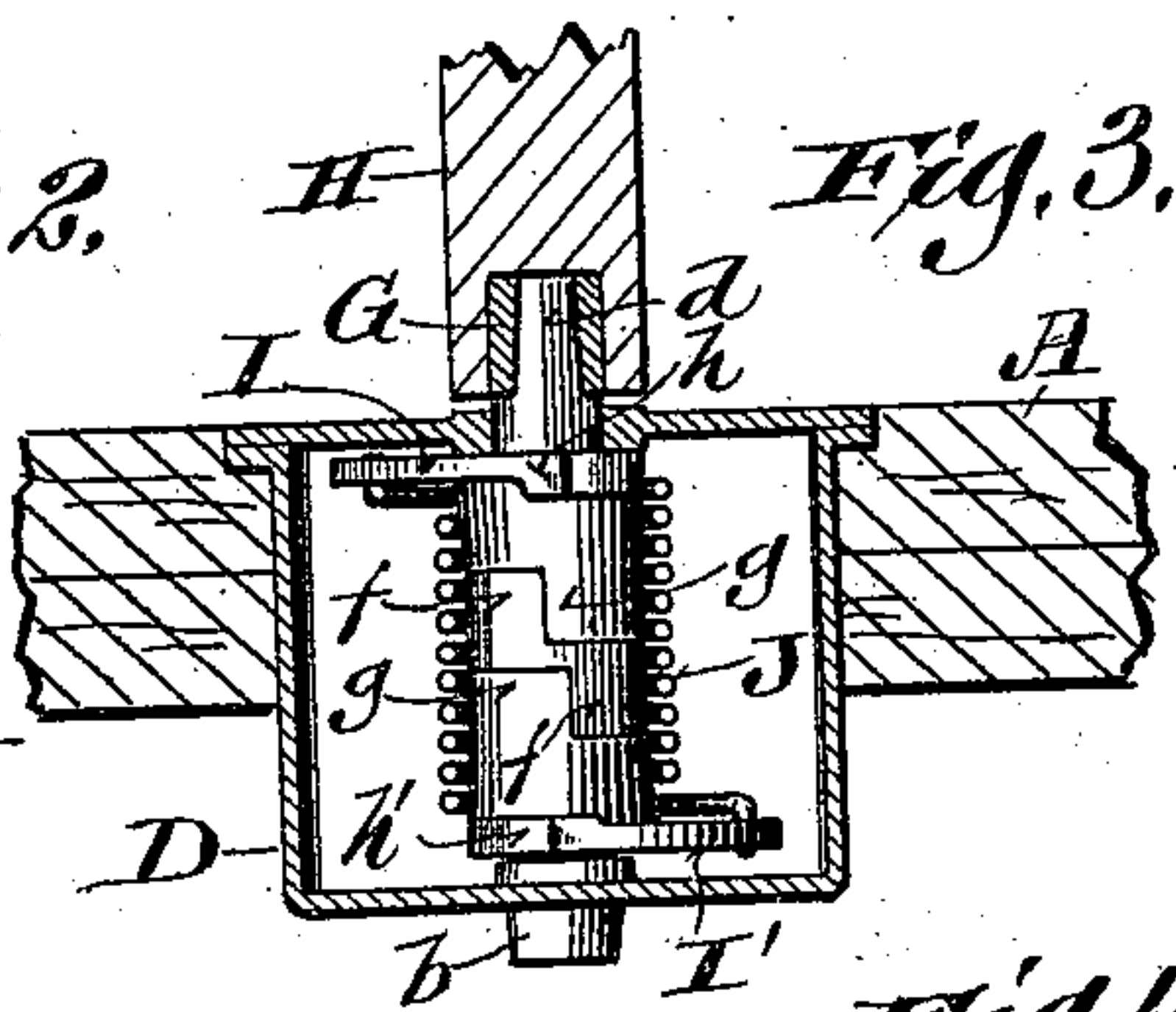


Fig. 3.

Fig. 5.

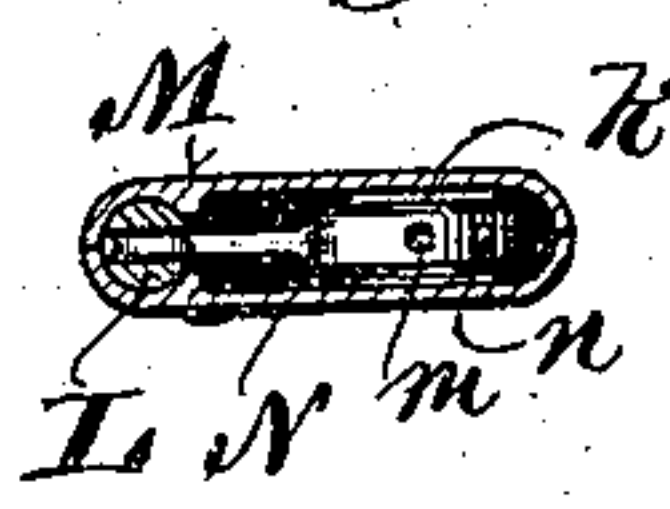


Fig. 6.

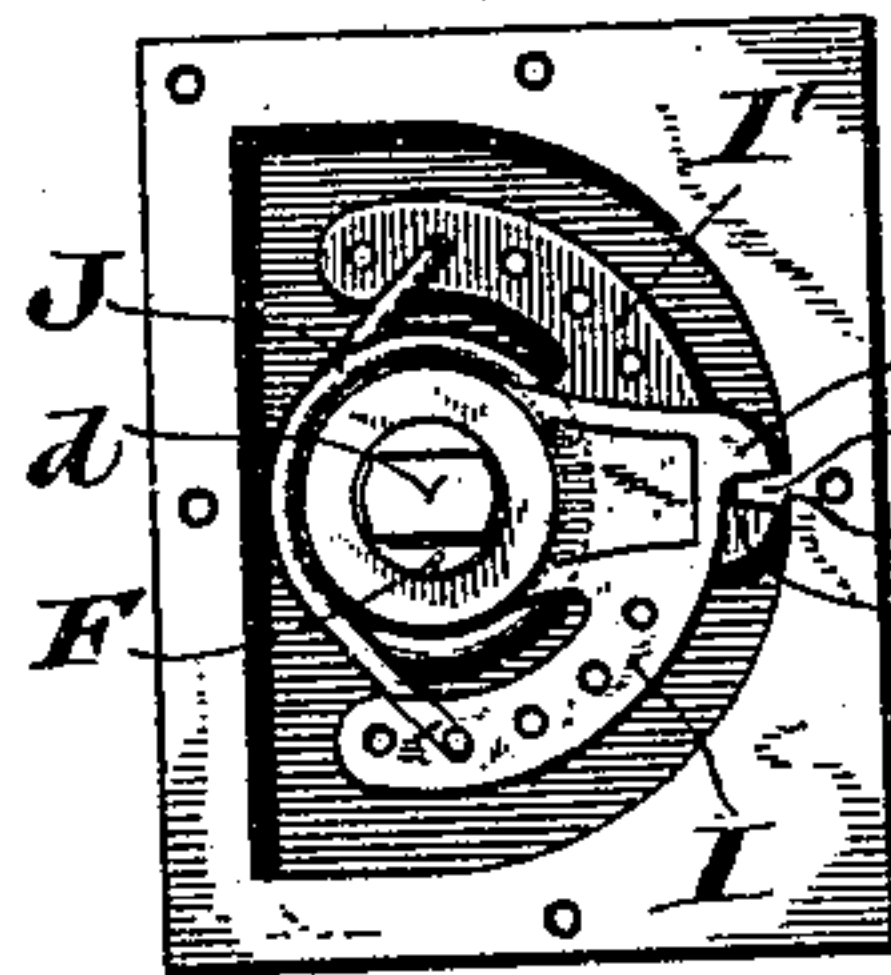
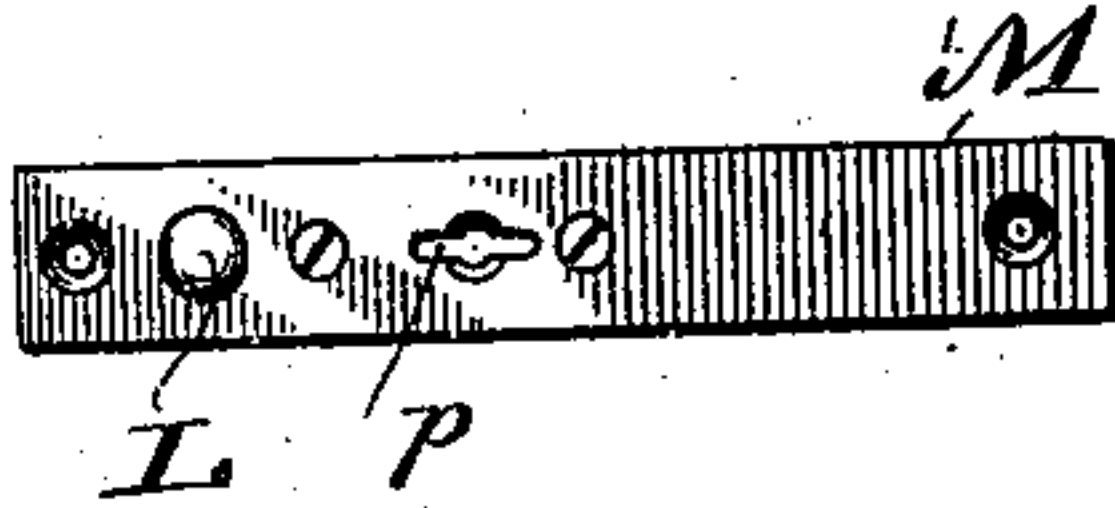
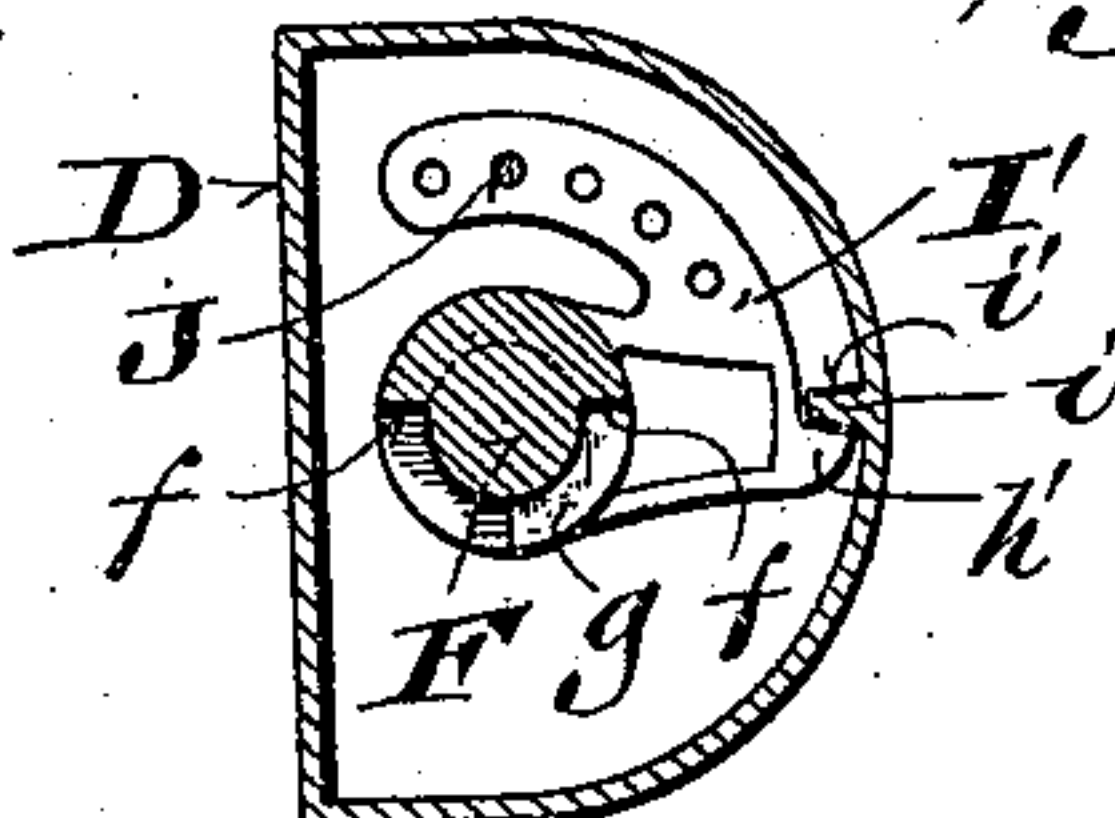


Fig. 4.

Witnesses:
Geo. W. Young.
N. E. Oliphant



Inventor:
Martin S. Field
By H. G. Underwood
Attorney.

UNITED STATES PATENT OFFICE.

MARTIN S. FIELD, OF RACINE, ASSIGNOR OF ONE-HALF TO GABRIEL E. LAWSON, OF MILWAUKEE, WISCONSIN.

SPRING-HINGE.

SPECIFICATION forming part of Letters Patent No. 551,030, dated December 10, 1895.

Application filed March 29, 1895. Serial No. 543,642. (No model.)

To all whom it may concern:

Be it known that I, MARTIN S. FIELD, a citizen of the United States, and a resident of Racine, in the county of Racine and State of Wisconsin, have invented certain new and useful Improvements in Door-Hinges; and I do hereby declare that the following is a full, clear, and exact description thereof.

My invention contemplates the hanging of a door by means of a preferably double-acting hinge and a pivot arranged to be out of the way and concealed from view, the said invention consisting in certain peculiarities of construction and combination of parts hereinafter set forth with reference to the accompanying drawings, and subsequently claimed.

In the drawings, Figure 1 represents an application of my invention, the parts involved appearing in elevation and section; Fig. 2, a plan view of a double-acting hinge embodied in my improvements, the cover of a casing constituting part of the hinge being removed; Fig. 3, a vertical transverse section of said hinge, illustrating certain of its parts in the position they assume when the door is closed, the same as in the former figures; Fig. 4, a horizontal section of said hinge; Fig. 5, a similar view looking upward into a casing containing the door-pivot and a lever in connection therewith, and Fig. 6 a face view of the casing for the pivot and lever.

Referring by letter to the drawings, A represents a threshold, B the sides of a door-frame, and C the transom-sill or top rail of the frame. Set in the threshold flush therewith I show a support in the form of a flanged casing D, having a detachable cover E, held in place by screws or other suitable means; but it is possible to have the support in the form of a skeleton frame, if it be desirable to effect a saving of metal. The lower portion of the support is provided with a socket *b* for the reduced lower end of a pintle F, and in order to lessen friction balls *c* are arranged in said step as well as between the support and the shoulder that results from the reduction of the pintle. The pintle extends up through the detachable cover E of the support D, and has its upper end in the form of a tenon *d*, that engages a corresponding mortise in a

plate G, set in the bottom edge of a door H, and secured in place by screws or other suitable means. By means of the mortise-and-tenon joint just specified a rigid connection is had between the door and pintle. Ears *f* on the pintle oppose lugs *g*, extending from hubs of segmental arms I I', loose on said pintle and connected to the ends of a spiral spring J, it being preferable to have each arm provided with a series of openings and to fashion the spring, so as to have each end thereof engage any one of the openings in a series to thereby regulate the tension of said spring.

A finger *h*, extending from the arm I, opposes one side of a vertical rib *i*, constituting part of the support D, and another finger *h'*, extending from the arm I', opposes the other side of the rib; but instead of the latter it is practical to have a separate stop for each of said fingers, it being understood that one of the arms must remain stationary to have the other pull against the spring. To render the hinge noiseless, I employ a facing *i'*, of rubber or other suitable material, on the rib *i* or its equivalents.

As a matter of convenience and preference, I prefer to provide the pintle F with a collar recessed from above and below to engage the arm-hub lugs *g*, the vertical boundaries of each recess being faced opposite those of the other and constituting the ears *f*, above specified. This being the preferred construction the recesses are about one-half of a circle in their extent, and each of the arm-hub lugs occupies about one-half of the recess with which it is engaged; but in any variation of the structural details it will be understood that the pintle F is in clutch connection with the arms I I' and that the throw of one arm is in a direction opposite that of the other against resistance of the spring J, one of said arms remaining stationary while the other is on throw.

By the employment of the two spring-connected arms I I', I obtain a double-acting hinge; but if a single-acting hinge be desirable one of said arms may be omitted and the corresponding end of the spring made fast to the support D or its cover.

Set in the upper edge of the door and held in place by screws or other suitable means is a plate K, having a keeper for the engagement of a pivot-bolt L, that works in a two-part casing M, set in the transom-sill or top rail C of the door-frame and also held in place by screws or other suitable means.

The casing M contains a lever N, that loosely engages a transverse opening *j* in the pivot-bolt L, and this lever is fulcrumed on a screw *k*, that connects the parts of said casing. The fulcrum end of the lever is preferably rounded and provided with radial openings *m n*, one of which is tapped, these openings being accessible through a longitudinal slot *p* in the face of the adjacent casing. When the pivot-bolt is engaged with the keeper-plate K, the tapped radial opening *m* in the fulcrum end of the lever N is opposite the center of the slot in the casing M, and a screw *r*, countersunk in the face of said casing, engages said opening. Hence it will be seen that said pivot-bolt is held against accidental retraction. The screw *r* being removed the other radial opening *n* in the fulcrum end of the lever may be engaged by a wire, nail, or other suitable tool and said lever manipulated to lift the pivot-bolt L clear of the keeper-plate K, this operation being necessary to permit the connection or disconnection of the door and hinge-pintle.

From the foregoing it will be seen that the door opens against resistance of spring J, and the expansion of this spring operates to automatically close said door. Consequently the latter is self-closing, and from the peculiar disposition of the parts comprised by the hinge the aforesaid door is also self-checking, the rib *i* or equivalent stop for each arm II', together with the normal tension of spring J, serving to hold the door closed against draft and also to prevent vibration of said hinge, while at the same time all of the metal work is concealed and out of the way.

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

1. The combination of a suitably supported pintle having a tenon, a spring-controlled arm loose on the pintle but in clutch therewith, a stop arranged to limit back-throw of

the arm, and a mortise-plate attachable to a door for engagement with the pintle-tenon.

2. The combination of a suitably supported pintle having a tenon, a pair of spring-connected arms loose on the pintle but in clutch therewith, suitable means for holding one arm when the other is on throw, and a mortise-plate attachable to a door for engagement with the pintle-tenon.

3. The combination of a suitable support designed for insertion in a threshold, a tenoned pintle having its bearing in the support, a pair of segmental arms loose on the pintle but in clutch therewith and each provided with a series of openings, a spiral-spring interposed between the arms and having its ends engaged with openings in the same, suitable means for holding one arm when the other is on throw, and a mortise-plate attachable to a door for engagement with the pintle-tenon.

4. The combination of a suitable support designed for insertion in a threshold, a tenoned pintle having its bearing in the support and provided with a collar recessed from above and below to have the vertical boundaries of one recess face opposite those of the other, a pair of segmental arms loose on the pintle and having lugs engaging said recesses, a spiral-spring connecting the arms, suitable means for holding one arm when the other is on throw, and a mortise-plate attachable to a door for engagement with the pintle-tenon.

5. The combination of a casing designed for insertion in a threshold and provided with a detachable cover, a tenoned pintle having its bearing in the casing, a pair of spring-connected arms loose on the pintle but in clutch therewith, fingers extended from the arms to oppose opposite sides of a rib in said casing, and a mortise-plate attachable to a door for engagement with the pintle-tenon.

In testimony that I claim the foregoing I have hereunto set my hand, at Milwaukee, in the county of Milwaukee and State of Wisconsin, in the presence of two witnesses.

M. S. FIELD.

Witnesses:

N. E. OLIPHANT,
HENRY DANKERT.