

BENJAMIN TURNER.
Improvement in Spring-Hinges.
No. 126,593. Patented May 7, 1872.

Fig. 1.

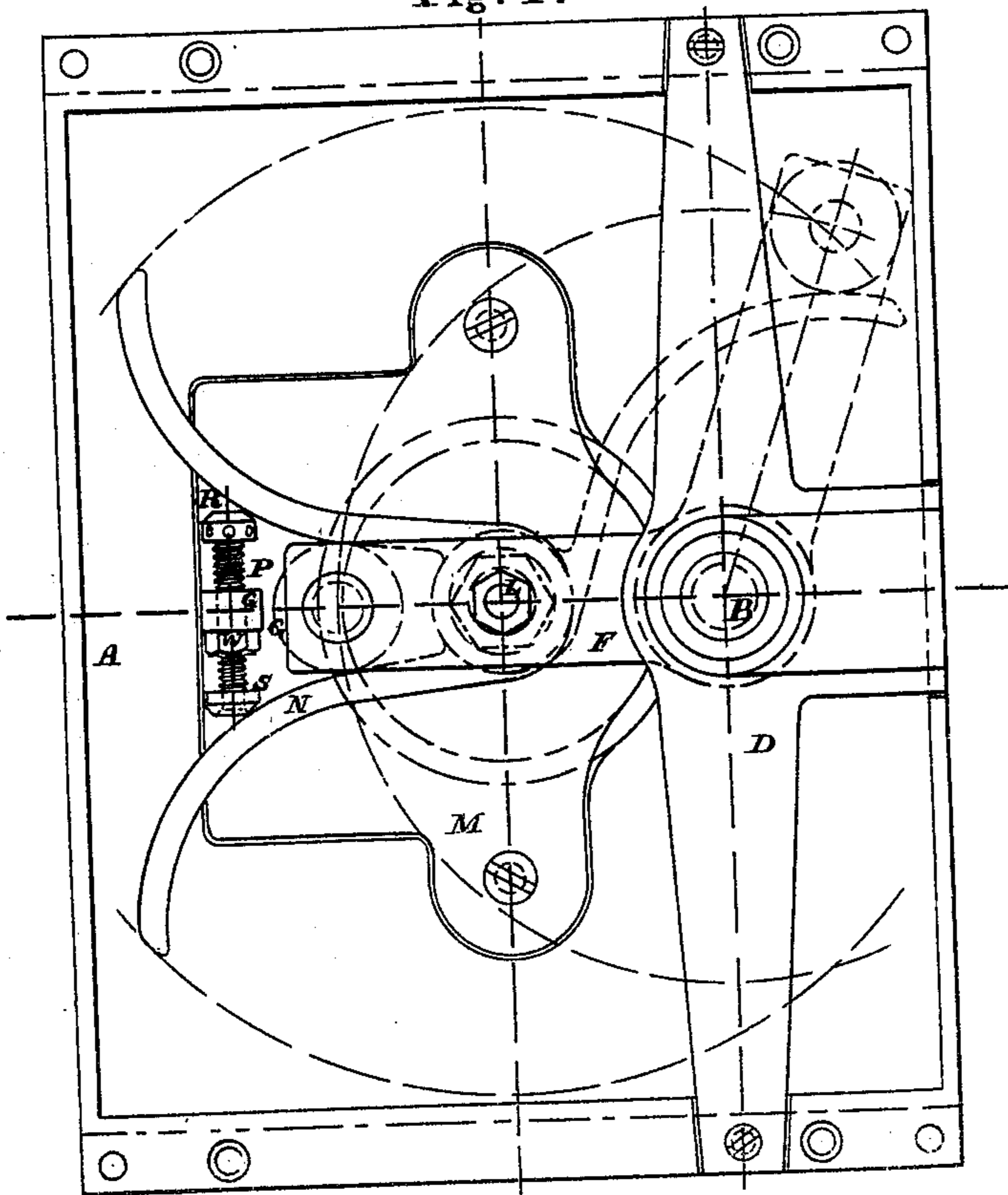
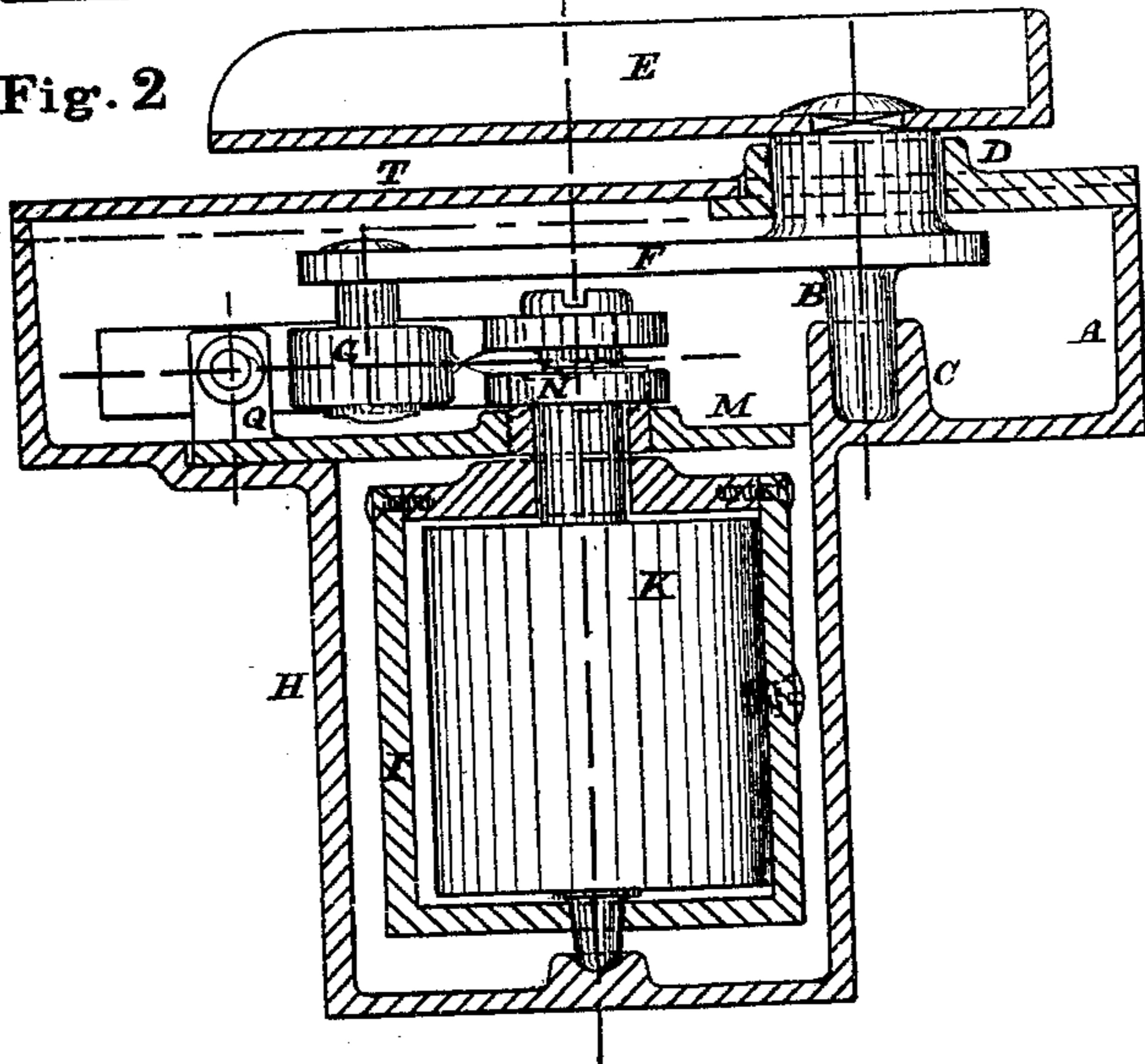


Fig. 2



WITNESSES:

Edmund Edwards
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UNITED STATES PATENT OFFICE.

BENJAMIN TURNER, OF LONDON, ENGLAND.

IMPROVEMENT IN SPRING-HINGES.

Specification forming part of Letters Patent No. 126,593, dated May 7, 1872.

SPECIFICATION.

I, BENJAMIN TURNER, of Bartholomew Close, in the city of London, England, have invented an Improved Spring-Hinge, of which the following is a specification, reference being had to the accompanying drawing making part of this specification.

This invention relates to certain novel improvements in spring-hinges used for causing doors to close after being opened in either direction. My object is to adjust the action of the hinge so that the door shall hang exactly in its proper position when closed; also, to make the strength of the spring variable, so that it may be adjusted to suit either light or heavy doors; also, to arrange a lever and roller or pin upon the door, working between two curved levers acted upon by the spring, the curvature of the levers and the position of their centers relative to the center of the hinge being such that the spring exerts greater force when the door is closed than when it is open, and that the door can be made to open through an arc of more than ninety degrees either way, if required, and that the spring and levers connected with it can then be removed, if required, without unhinging the door.

In the accompanying drawing, Figure 1 is a longitudinal section, and Fig. 2 a plan of a spring-hinge embodying my invention.

Similar letters of reference indicate corresponding parts in both figures.

A is a box, in which the spring-closing apparatus is contained. This box is usually fitted into an opening in the sill of the door to which it is to be applied, so that the top of the box is level with the door-sill. The vertical axis B of the hinge turns in a socket in the box C at its lower end, and at its upper end it works in a bearing, D, attached to the box. To the upper end of the axis, which projects through the bearing, I fasten the door by means of a shoe or socket, E, or in any other convenient manner; and to the part of the axis between its bearings I fix or make a lever, F, having at its end a vertical pin with or without a roller, G, upon it. When the door is closed, this lever is arranged to stand parallel with the sides of the box A; and at a point (in plan) between the center of the hinge and the outer end of the lever I make a recess, H, in the bottom of the box A, into which a cylindrical

case, I, containing a coiled spring, K, fits loosely. This spring has its outer end attached to the circumference of the case I, and its inner end is attached to a spindle, L, which works freely through the ends of the case, and the lower end of which works in a bearing at the bottom of the recess H in the box A. The upper end of the case is prolonged upward and forms a bearing, which revolves in a suitable frame, M, attached to the bottom of the box A. This bearing is continued upward above the frame, and is then made hexagonal or polygonal in plan. The upper end of the spindle is also continued upward through this bearing, and is also made hexagonal or polygonal in plan. To the hexagonal part of the bearing is attached a curved lever, N, and to the hexagonal part of the spindle is attached a similar lever, O, curved in the opposite direction, so that, if the ends of these levers are separated, they bend the spring K, the tendency of which is to keep them together. Between these two levers the pin or roller G at the end of the lever F upon the hinge-axis B works. Between the outer ends of the curved levers I make a screw, P, which works through a nut, Q, attached to the frame M, in which the bearing at the upper end of the spring-case I works. At each end of this screw I make a conical collar, R and S, and I make them at such a distance apart that the ends of the curved levers rest against them and at the same time allow the pin or roller described to move freely between the levers N and O. By turning this screw P in its nut, the position of the curved bars N and O and the roller G between them, and thus of the door, can be adjusted so that the door hangs exactly in its proper position when closed. Sometimes I place a lock-nut, W, upon the screw to retain it in its proper position when adjusted. Sometimes I make one of the conical collars S to work upon the screw, so that I can adjust the distance between them. The pressure of the spring can be varied by altering the position of the curved bars or levers N and O upon the hexagons or polygons on which they fit. By reason of the distance between the center upon which the lever F attached to the hinge turns, and that upon which the curved bars N and O turn, the leverage of the latter is greater when the door is closed, and it is accordingly kept more certain-

ly shut; and the length and curvature of the bars N and O are such that the door may, if necessary, be opened either way more than ninety degrees.

By opening the door as far as possible, the frame M, with the spring-case I and spring K, and the curved bars or levers N and O, and adjusting-screw P may be removed from the box A when required without taking the door from its hinges.

T is a loose cover, which is screwed or fixed upon the box A.

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

1. The combination of curved levers N and O attached to the spring K with hexagonal or polygonal fittings, substantially as described.

2. The combination of the adjusting-screw P and collars R and S with the curved levers

N and O, by which the position of the door, when closed, can be accurately adjusted, substantially as described.

3. The combination of the curved bars N and O with the spring-spindle L, and the center of the hinge B, the levers F, and pin G, so that the greatest force of the spring K is exerted when the door is closed, and so that the door may be opened more than ninety degrees in either direction, and the spring K, and bars N and O, and screw P may be removed with the frame M without unhinging the door.

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

BENJAMIN TURNER.

Witnesses:

EDMUND EDWARD,
CHARLES JAMES WINTERSGILL.