

(No Model.)

G. W. WARNER.
DOOR SPRING.

No. 567,329.

Patented Sept. 8, 1896.

Fig 1

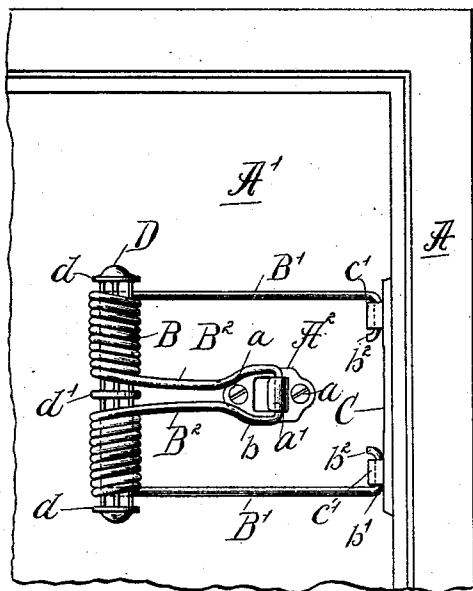


Fig 2

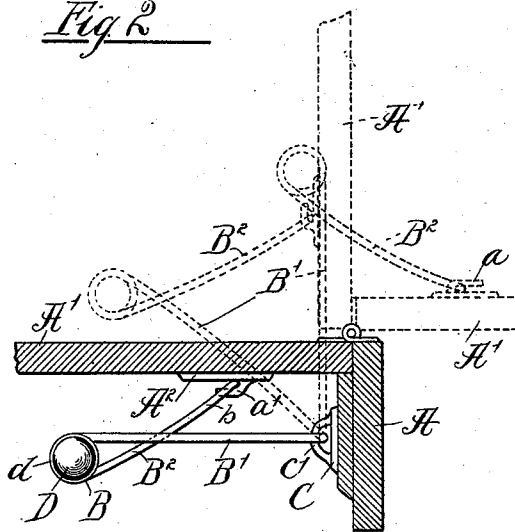


Fig 3

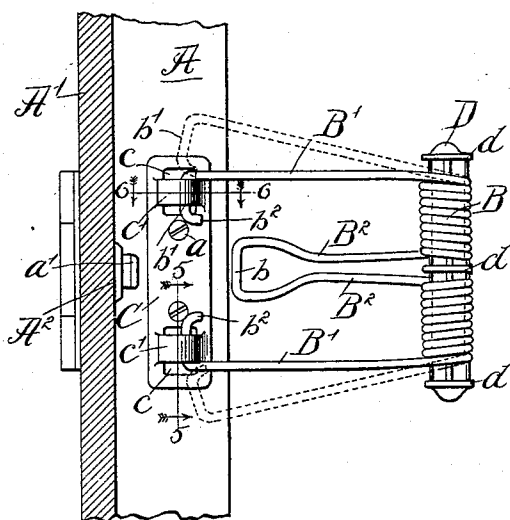


Fig 4

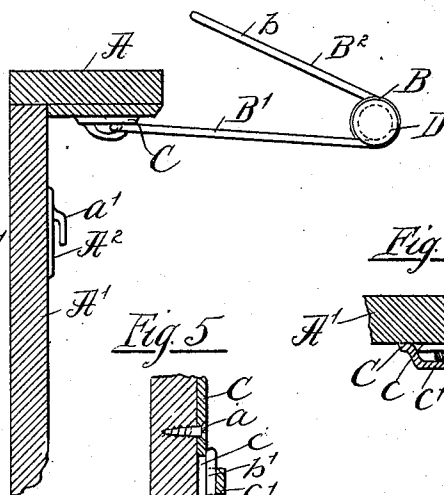


Fig 6

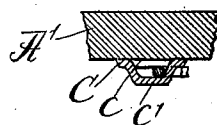
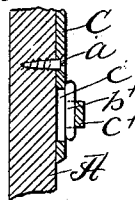


Fig 5



Witnesses

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UNITED STATES PATENT OFFICE.

GEORGE W. WARNER, OF FREEPORT, ILLINOIS.

DOOR-SPRING.

SPECIFICATION forming part of Letters Patent No. 567,329, dated September 8, 1896.

Application filed June 20, 1896. Serial No. 596,287. (No model.)

To all whom it may concern:

Be it known that I, GEORGE W. WARNER, of Freeport, in the county of Stephenson and State of Illinois, have invented certain new and useful Improvements in Door-Springs; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings and to the letters of reference marked thereon, which form a part of this specification.

This invention relates to door-springs and to certain features of construction herein-after described, and more particularly pointed out in the appended claims. More particularly is this an improvement upon United States Letters Patent No. 214,213, issued to my father, L. A. Warner, on the 8th day of April, 1879, which patent has for its object the closing of a door and holding it closed, as well as the holding of a door open when it has been opened beyond a certain point. In said patent the long arms of the spring are bent at their extreme ends at right angles, which bent ends serve as journals and form a hinge in connection with a hinge-plate. It was found in practice that considerable difficulty existed in keeping the long arms of this spring in position in the hinge-plate, owing to the fact that there was no retaining device thereon. The ends of the long arms being built at right angles and not otherwise engaged with said hinge-plate than by friction would spread apart and soon work entirely free from the hinge-plate.

It is the principal object of this invention to so construct the hinge-plate and the bent ends of the spring as to remedy the objections above pointed out and at the same time attain other advantages.

Referring to the drawings, Figure 1 shows an upright view of the spring placed in position with the door closed. Fig. 2 is a horizontal sectional view of the door-spring with the door closed, and showing also in dotted lines the dead-center position when the spring acts directly across the line of the door-hinge and also the open position of the door. Fig. 3 represents an upright view of the spring with the door closed and the central portion of the spring detached from the hook-

plate. It also shows in dotted lines the position assumed in removing the ends of the spring from the hinge-plate. Fig. 4 is a horizontal view of the door and door-jamb, showing the spring in the position illustrated in Fig. 3. Fig. 5 is a vertical sectional view lengthwise of the hinge-plate, taken on line 5 5 of Fig. 3. Fig. 6 is a transverse sectional view of the hinge-plate, taken on line 6 6 of Fig. 3.

In said drawings, A represents the vertical member or jamb of a door-frame, and A' the door. To the door, at a convenient place, is secured, by means of screws *a*, a hook-plate A², provided with a member A', raised above the surface of the plate A², so as to afford a hook or shoulder in which the loop end *b* of the spring B may be removably secured in a familiar manner.

C is a hinge-plate secured by screws or other means to the door-jamb, and into which the ends of the long arms B' of the spring B are removably secured in a manner to be hereinafter described. The spring B is bent between its ends to form two coils, which coils are located upon a pin or stud D, provided with shoulders *d d* at each end and an intermediate shoulder *d'*. The inner section of each coil is extended to form short arms B², which terminate in a central loop *b*. The outer section of each coil terminates in the long arms B'. As thus far described, the construction and mode of operation of the spring are not materially different from that described in the Letters Patent above referred to. The end of each long arm B is bent at right angles and is provided with a member *b'*, which stands substantially parallel with the longitudinal axis of the coils, and the extreme end *b*² is bent at right angles to the said member *b'*. As will be seen in Fig. 1, the members *b'* are extended toward each other and the bent ends *b*² turned in a direction toward the coil. The hinge-plate C is provided near each end with a rectangular-shaped opening *c*, extending entirely through the plate, the longer dimension of the openings *c* being in the direction of the length of the plate C. Extending upwardly from the plate C and spanning the distance between the side walls of the openings *c* is a hinge-

bearing strip c' , integral with the plate C. The width and height of this strip c' and its relation with respect to the opening c are such that the bent ends of the long arms b' of the spring can only be engaged with and disengaged from said plate when the spring is placed in certain relations with respect to said plate. For example, to place the spring in operative position the long arms B' must be placed as indicated in dotted lines in Fig. 3, in which position the members B' may be passed through the hinge-straps c' of the plate C, and thus be caused to assume the position shown in full lines in Fig. 3, it being observed that the length of the extreme curved ends b^2 , plus the thickness or diameter of the members b' , is less than the width of the openings c . The short arms B^2 of the spring, being in the position illustrated in Fig. 4, are then passed through the space between the arms B' , and the loop end b is caused to engage the hook member a' of the plate A^2 , the parts being then in the position shown in full lines in Fig. 2, with a tension upon the spring-coil. When in this operative position, the door may be moved into any desired position and the effect of the spring be acquired, while at the same time, it will be observed, it will be impossible to disengage the ends of the long arms B' from the plate C. This disengagement may only be effected by swinging the parts into the position illustrated in Fig. 3 and disengaging the loop b from the hook member a' , thus relieving the tension of the spring, whereupon the arms B' may be moved laterally outward

or away from each other into the position shown in dotted lines in Fig. 3.

The details of construction hereinabove described I consider most important in the manufacture of these articles, as they are certainly important in the commercial and actual use of the same.

What I claim, and desire to secure by Letters Patent, is as follows:

1. A door-spring comprising a blank bent between its ends to form coils, the central portion of the blank constituting a loop, a hook secured to the door and adapted to be engaged by said loop, a hinge-plate secured to the door-jamb provided with elongated openings therethrough, and with transversely-arranged bearing-strip, as c' , the outer ends of the coils of the spring being extended to form arms B' , each having a short member b^2 and an inturned end member b^2 , all combined and arranged substantially as and for the purpose described.

2. The combination with a door-spring of the character described, of the plate C, provided with two rectangular-shaped openings c , each covered with a hinge-strip c' , substantially as specified.

In testimony that I claim the foregoing as my invention I affix my signature, in presence of two witnesses, this 8th day of June, A. D. 1896.

GEORGE W. WARNER.

Witnesses:

TAYLOR E. BROWN,
WILLIAM L. HALL.