Close & Buckman,

Spring Hinge.

No. 49,982. Patented Sep. 19, 1865.

Fig. 1

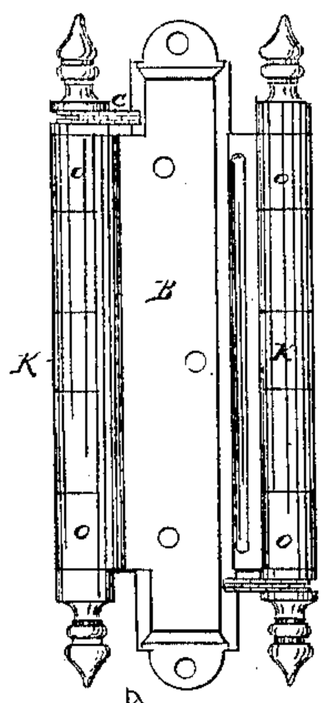


Fig. 2

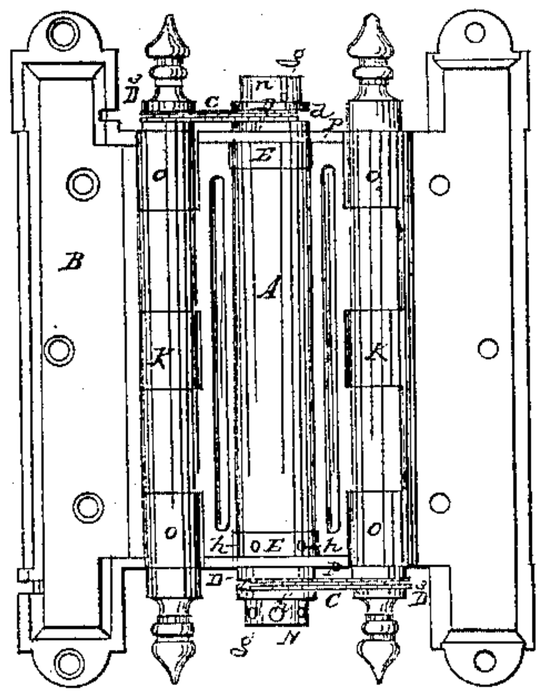


Fig. 3

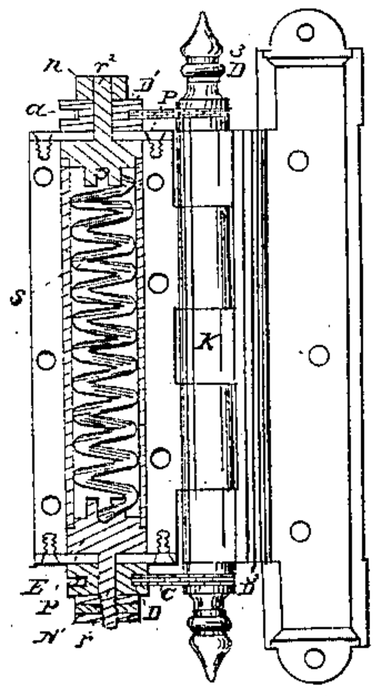


Fig. 5

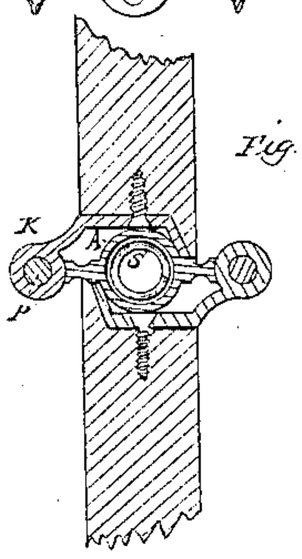


Fig. 6.

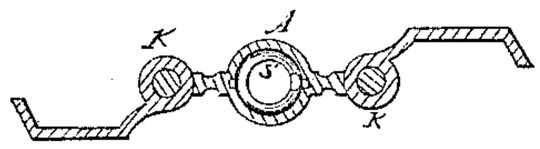


Fig. 4.

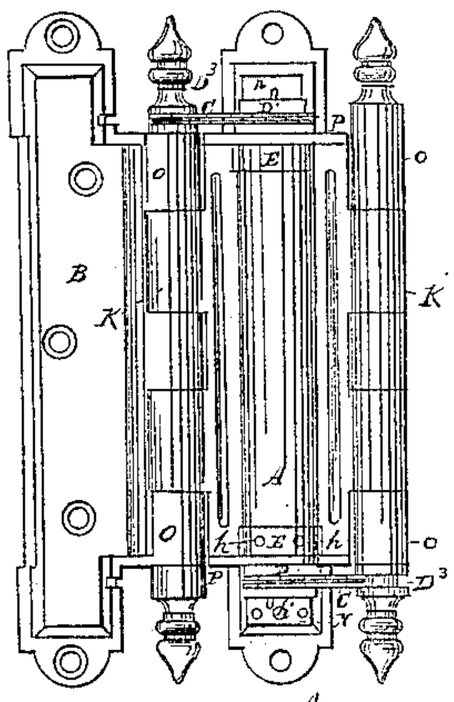
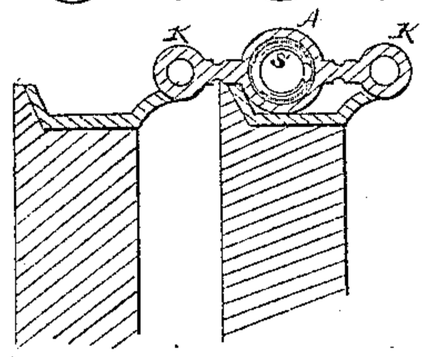


Fig. 7



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UNITED STATES PATENT OFFICE.

JEREMIAH CLOSE AND IRA BUCKMAN, JR., OF BROOKLYN, NEW YORK.

HINGE.

Specification forming part of Letters Patent No. **49,982,** dated September 19, 1865.

To all whom it may concern:

Be it known that we, JEREMIAH CLOSE and IRA BUCKMAN, Jr., of the city of Brooklyn, county of Kings, and State of New York, have invented a new and useful Improvement in Double and Single Jointed Spring-Butts; and we do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, in which—

Figure 1 is a view of a double-jointed butt when closed; Fig. 2, of a double-jointed butt when both joints are open; Fig. 3, a view of a single-jointed butt, with a sectional drawing of the barrel inclosing the spring, and a sectional drawing of the adjustments of the spring. Fig. 4 is a view of the butt with one of its joints open and the other one closed. Fig. 5 is a sectional drawing of the butt closed, as in Fig. 1, showing it attached to the door. Fig. 6 is a sectional drawing of a butt with both joints open, as in Fig. 2. Fig. 7 is a sectional drawing of the butt attached to the door and jamb, showing the butt open, as in Fig. 4.

This invention has reference to that class of butts or hinges which, by reason of spiral springs deriving their tension from the springs being wound up acting on the butts, cause the door to close after the same has been opened.

One of the principal objects of this invention is to combine with a double-jointed butt a helix or spiral spring or springs, in such a manner that the spring or springs shall keep one of the joints closed while the other joint is being opened in the act of opening the door, and also to close the door when it is released, the spring acting by being wound up or having its diameter contracted by the opening of the door and expanded while closing the same, or vice versa.

A further object of this invention is to make one spring act on both portions of the double-jointed butt, so as to close either of the joints when opened, and at the same time to keep the unopened joint closed, so as to prevent it from being opened by the weight of the door.

To enable others to make and use our invention we will proceed to describe the same.

The springs are made of tempered steel, the other parts of the butt of iron or any other suitable material.

B B^2 are the flaps or leaves of the butt, made in the form shown in the drawings, so that when the butt is closed they inclose the barrel or cylinder A, which contains the spring S. This barrel forms a portion of the middle leaf of the butt, and is parallel to the joints or knuckles K K of the butt. The pins or axes of these joints are made fast to the outside leaves of the butt, so as to turn with them, and have attached to one end of each a grooved pulley, D^3, in which one end of the chain C is attached, and around which said chain is wound when the door is opened. There is one chain to each end of the butt. The other ends of the chains are fastened to grooved pulleys D′ D (grooves *d d*) by pins *g g*, Fig. 2, and these last-mentioned pulleys are secured to the stems *r* r^2 of small wrenches E E, which fit the ends of the barrel A, as shown in the sectional drawing of Fig. 3. One of these pulleys, D′, Fig. 3, is permanently attached to the stem r^2. The other, D, fits loosely on the stem *r*′, so as to be easily turned, and it is clamped fast in any desired position by the nut N, which nut can be tightened or loosened by means of a small lever, the end of which is to be inserted into one of the holes *h h*, Fig. 2, for that purpose. At the opposite end of the barrel a similar nut is permanently fastened to the stem of the other wrench.

There are collars P P, Figs. 2, 4, and 3, shaped to fit the end of the middle leaf and barrel of the butt, and also fitting the heads of the wrenches D D′, through which the stems *r*′ r^2 pass. The collars are fastened by screws to the ends of the butt, as shown by the dotted lines, Fig. 3, and serve to keep the wrenches in their proper places.

The ends of the spring S, being properly bent, fit into the forked portion of the wrenches E E^2, as shown in Fig. 3. The side of one of the wrenches, E, has holes *h h*, like a capstan-head, in which the end of a small lever is inserted to wind up or adjust the tension of the spring. The spring S may be divided, or there may be a separate spring to operate each leaf of the butt, in which case one end of each spring

is secured to the barrel or cylinder A, near its center, in the middle leaf of the butt, and the same device for regulating the tension of the springs and securing them in position will be attached to both ends of the barrel A.

The advantages of placing the springs or spring of a double-jointed butt in the middle leaf or in one of the leaves of a single-jointed butt are that a helical or spiral spring can be applied of sufficient strength and capacity to effect the purpose without the enlargement of the knuckle-joint of the hinge, or in any way weakening or lessening the strength of the bearings or pin that supports the weight of the door. By the above-described arrangement of mechanism an increased power of leverage may be obtained with but a slight action of the spring, which is easily adjusted to any required tension, and operate uniformly in closing the door from any point, whether wide or partly open.

The construction of the single-jointed butt is similar in all respects to the double-jointed one, except that but one joint and the leaf are required, and that one chain is crossed, so as to rotate the wrenches in opposite directions when the door is opened.

The butt is applied, adjusted, and operated as follows, to wit: The outside leaves are fitted and screwed fast to the door and door-jamb, as shown in Figs. 5 and 7. For convenience in so fitting them the spring can be relaxed and the butt opened at both joints, as in Figs. 2 and 6. When the butt is screwed fast, close one side or leaf, as in Figs. 4 and 7, and insert the end of a small lever in one of the holes *h h* in the side of the wrench E. Turn the wrench and it will turn the spring, together with the other wrench at the opposite end of the spring, till the chain is wound tight around the pulley D′. Continue to turn the wrench E (let it be in the direction to wind up the spring) till the spring is wound to the proper degree of tension. Two levers may be necessary to accomplish it. The spring is to be kept in this position till the pulley D is turned around so as to wind its chain tight, and in such direction that when the power of the spring shall be made to act it will increase the tightness of the chain. The nut N is then to be screwed up till it will securely clamp the pulley D fast to the wrench E. Then the adjustment will be complete, and the door may be opened either outward or inward, the spring causing it to close in either instance, and also keeping the unopened joint from being opened by the weight of the door. The adjustment of the single-jointed butt is similar.

Having thus fully described our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. In a hinge composed of three leaves and two pintles, operating the two outer leaves by a power located within a cavity or cavities in said central leaf, substantially as described.

2. A hinge formed with three leaves and two pintles, as described, the spring or springs of which are located in a cavity or cavities formed in the central leaf, in combination with the wrench or forked spring-holder E, the collar P, the grooved pulley D, the wrench or capstan N, the chain C, and smaller grooved pulley D^3 on the shaft of the outside leaf, B, substantially as and for the purposes herein set forth.

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