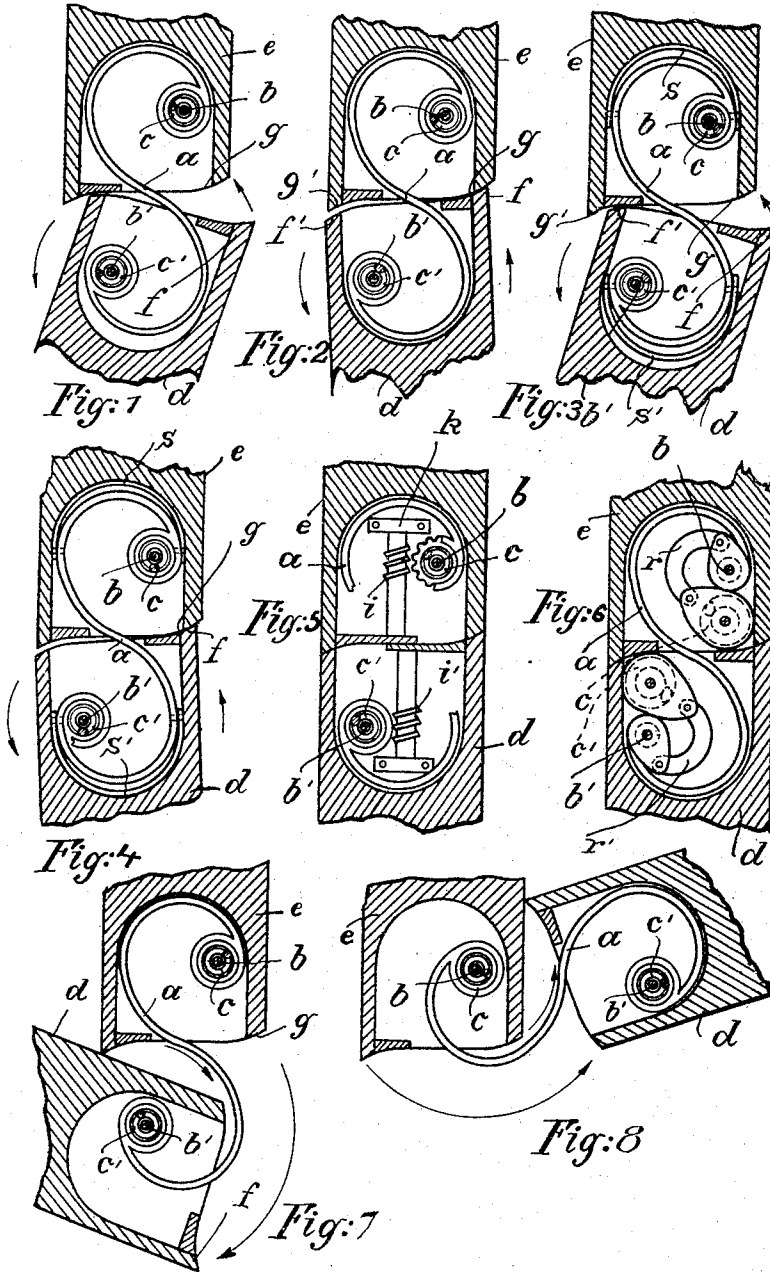


H. FRANCKSEN.
DOUBLE ACTING SPRING HINGE FOR DOORS.
APPLICATION FILED JUNE 28, 1915.

1,220,084.

Patented Mar. 20, 1917.



Inventor:-
Hermann Francksen
By: F. Singer.
Atty.

UNITED STATES PATENT OFFICE.

HERMANN FRANCKSEN, OF BREMEN, GERMANY.

DOUBLE-ACTING SPRING-HINGE FOR DOORS.

1,220,084.

Specification of Letters Patent.

Patented Mar. 20, 1917.

Application filed June 28, 1915. Serial No. 36,801.

To all whom it may concern:

Be it known that I, HERMANN FRANCKSEN, merchant, a citizen of the German Empire, and a resident of Bremen, Germany, have invented certain new and useful Improvements in Double-Acting Spring-Hinges for Doors; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters or figures of reference marked thereon, which form a part of this specification.

The invention relates to a double acting spring hinge for doors and the like, which is arranged to be fully covered when the door is closed. Said hinge consists of two casings adapted to be let into the door and door-frame respectively, each having an axis and spring, the axis and spring of one casing being connected with the same parts of the other casing by an S-shaped piece projecting from one casing into the other.

In the double spring hinges heretofore used the axes project out of the surface of the door and door-frame, while in the invention the axes are inclosed entirely in the recesses in said parts. This position of the axes is of the greatest importance for the proper operation of a door adapted to open in both directions and to be automatically closed by springs. Whereas in existing double acting hinges the door after being thrown into the closed position did not remain closed, but swung out on the other side, which was very disturbing to persons passing through, the present device is provided with means to effectively retard the door when it reaches its closed position. If the door is turned out of its closed, into its open, position the wooden edges outside of the recesses will pass over each other. When however the open door is released it will be swung back by the spring, so that the wooden edges come into a different position in regard to each other, inasmuch as at the moment in which the door reaches its closed position and thus strikes against its S-shaped connecting piece, this piece will be momentarily bent. As a consequence, the door will be moved to a small extent beyond the normal closed position, so that the above mentioned wooden edges will strike against each other and form an extremely effective

brake at the right moment for bringing the door to rest. The momentum of the door need not be taken up by the bent connecting piece itself, but by intermediary members, which enter into action earlier than said bent piece and then yield under the force of the stroke, but afterward extend again and bring the door into its normal closed position. The intermediate member can consist of rubber, springs, or the like. The more violently the door is thrown into its closed position the more energetic is the action of the brake, and the door will be effectively prevented from swinging out on the other side about the opposite axis.

In the drawing the invention is shown by way of example:

Figure 1 being a cross section of the double acting spring hinge inserted into the door and door-frame, the door just swinging back into the closed position.

Fig. 2 is a similar section showing the door after it has swung somewhat beyond its closed position.

Figs. 3 and 4 are sections corresponding to Figs. 1 and 2 but with auxiliary springs which can also consist of rubber or the like.

Fig. 5 represents a section of a double acting spring hinge having adjusting rings constructed as toothed wheels, in which worms engage.

Fig. 6 is a section of a double acting spring hinge, in which the springs are arranged near the entrance of the recesses in door and door-frame and are connected with the axes by an intermediate piece.

Figs. 7 and 8 show the construction according to Fig. 1 with the door in two different positions.

d is the door, e the door-frame. The S-shaped bent piece a shown in Figs. 1 to 8 surrounds with each end one of the axes b, b' and around these axes the springs c, c' are wound. In the construction shown in Fig. 6 the springs c, c' are arranged near the entrance of the recesses and are connected by the members r, r' with the axes b, b' . The door d in Fig. 1 is not quite closed and is brought into the closed position by the spring c' . In Fig. 2 the door d has reached its closed position or rather has swung somewhat beyond the closed position, the S-shaped curved piece a being momentarily bent and the edge f of the door striking against the opposite edge g . This pressure works as a brake, it takes up the

momentum of the door *d*, and, at the same time, it prevents said door from swinging about the axis *b*. The brake assists in bringing the door *d* into its closed position, or, in other words, restricts the annoying swinging of the door down to a very small degree. In Figs. 3 and 4 the intermediate springs *s*, *s'*, which may be made of rubber instead of metal, yield, instead of the bent piece *a*. According to Fig. 5 the spring *b* is connected with a toothed wheel and this is turned by the worm *i*. If the head *k* of this worm *i* is turned the spring *c* will be tightened or loosened. The opposite worm *i'* acts of course in exactly the same way. From Fig. 6, where the springs *c*, *c'* are arranged near the entrance of the recesses, thus in front of the axes *b*, *b'*, it will be clear that said axes, in comparison with Fig. 5, are arranged somewhat more toward the side, so that the door can be swung around the frame through a larger angle. According to Figs. 7 and 8 the curved piece *a* is shown in two different positions, in which the door *d* is moved through 90°.

What I claim and desire to secure by Letters Patent of the United States is:—

1. The described double acting spring hinge, comprising in combination, two cas-

ings let into the door and door-frame respectively, an axis provided in each of said casings respectively, an S-shaped piece the ends of which surround each of said axes respectively, and springs adapted to act on, and to keep, said S-shaped piece in a normal position corresponding to the closed position of the door, substantially as, and for the purpose, set forth.

2. The described double acting spring hinge, comprising in combination, two casings let into the door and door-frame respectively, an axis provided in each of said casings respectively, an S-shaped piece the ends of which surround each of said axes respectively, springs on said axis adapted to keep said S-shaped piece in a normal position corresponding to the closed position of the door, a toothed wheel connected with said spring, and a worm engaging in said toothed wheel, substantially as, and for the purpose, set forth.

In testimony whereof I affix my signature in presence of two witnesses.

HERMANN FRANCKSEN.

Witnesses:

FRITZ SCHRÖDER,
WILLIAM STRUP.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."