

No. 723,186.

PATENTED MAR. 17, 1903.

T. ROCHE.
SPRING HINGE.

APPLICATION FILED NOV. 1, 1902.

NO MODEL.

Fig. 1.

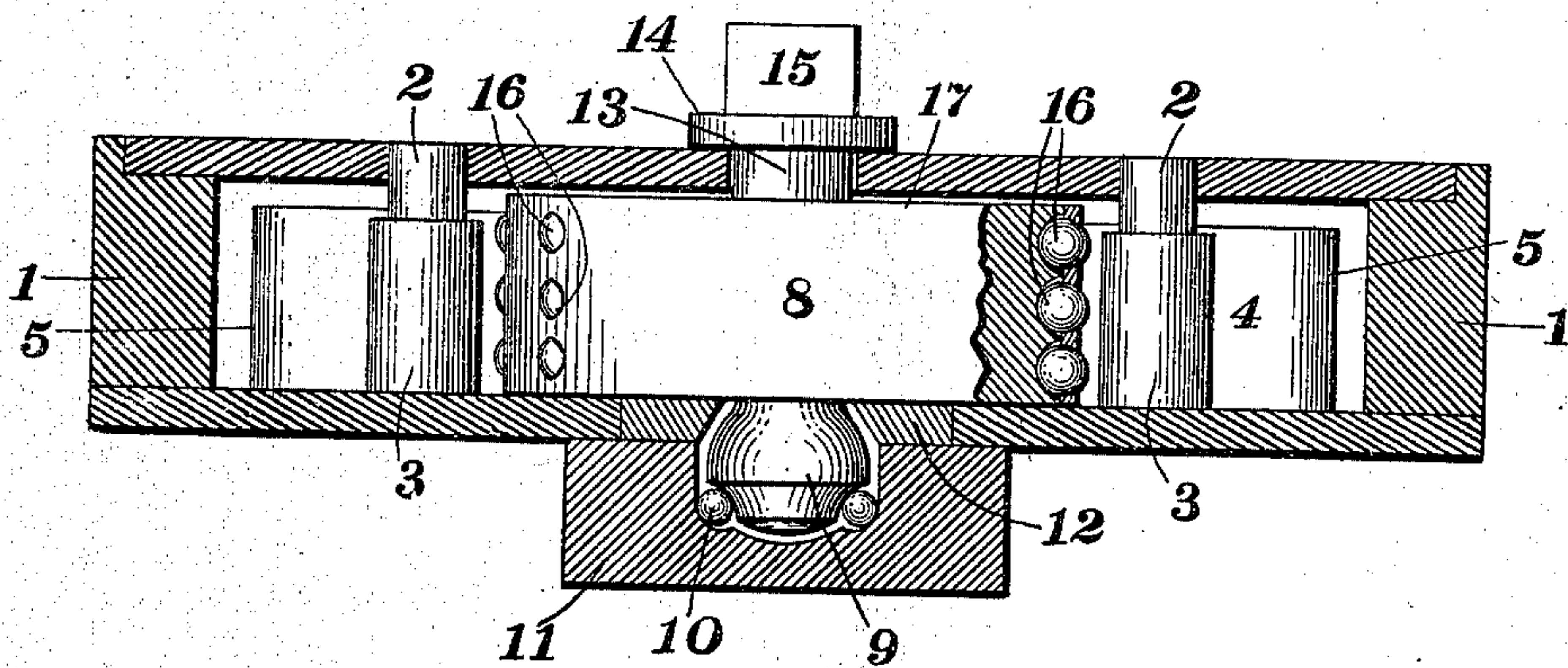
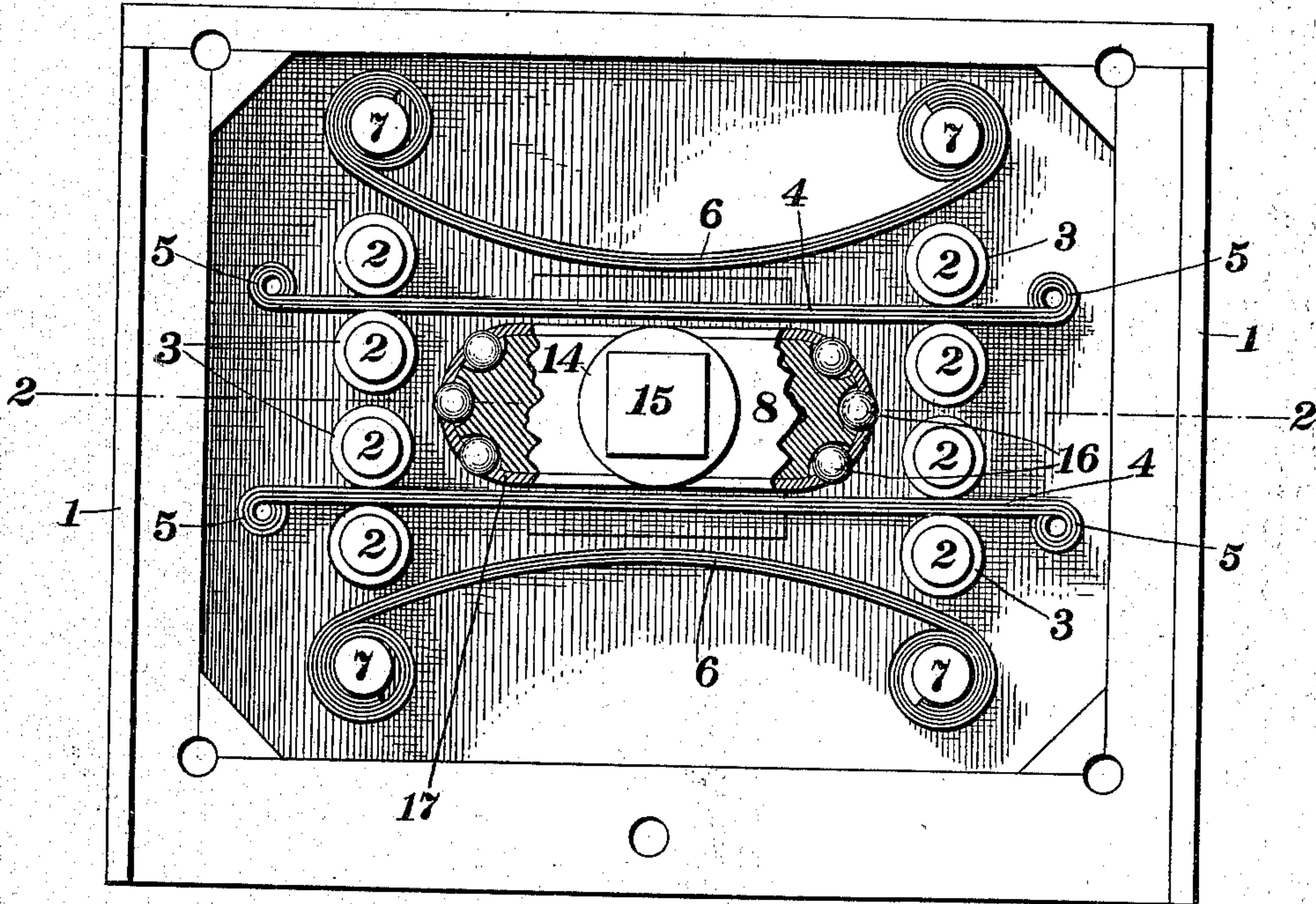


Fig. 2.

Witnesses

Percy C. Bowen.
Harry Estler

Inventor

T. Roche.
By *Walter J. Rogers*
Attorney

UNITED STATES PATENT OFFICE.

TIMOTHY ROCHE, OF BOSTON, MASSACHUSETTS, ASSIGNOR OF ONE-HALF TO
JAMES A. SHANNON, OF NEW YORK, N. Y.

SPRING-HINGE.

SPECIFICATION forming part of Letters Patent No. 723,186, dated March 17, 1903.

Application filed November 1, 1902. Serial No. 129,743. (No model.)

To all whom it may concern:

Be it known that I, TIMOTHY ROCHE, a citizen of the United States, residing at Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Spring-Hinges; 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.

My invention relates to spring-hinges for doors. Its object is to provide a spring-hinge so constructed and related to the door that the door may be swung in either direction, closed again by the force of the springs, or locked back if pushed beyond the median line in either direction.

To this end it comprises, essentially, a central rocking lever-arm lying between leaf-springs with accessory details.

In the accompanying drawings, Figure 1 is a plan view, and Fig. 2 is a sectional view line 2 2 of Fig. 1.

In the drawings, 1 represents a box-like casing or receptacle.

2 represents upright guide-posts in the receptacle 1, having antifriction-sleeves or roller-bearings 3.

4 represents leaf-springs having curled ends or enlargements on the end 5 to prevent them from being drawn entirely through the space between the guide-posts 2.

6 represents reinforcing bow-springs, which are anchored to posts 7.

Each leaf-spring 4 extends across the receptacle 1 and is guided by two of the posts 2, which are sufficiently close together to enable the roller-bearing 3 to contact with the side of the leaf-spring. The bow-spring 6 is placed in such relation to the adjacent leaf-spring 4 that when the leaf-spring 4 is pressed out it may supplement and reinforce the action of the leaf-spring.

Centrally disposed between the two leaf-springs 4 is the double-ended rotatable lever-arm 8, which has a bearing 9, shown herein as preferably of a ball form, with supplemental antifriction-balls 10, all playing in the socket-plate 11.

12 is a block which closes the opening about the ball-joint.

13 is the upper journal of the lever-arm 8, which turns in the top of the receptacle 1 and is retained in place by the collar 14. The journal 13 is continued into a squared post 15, which may take into a corresponding recess or other provision in the door, it being understood that the construction herein shown is intended to be placed beneath the floor or above the door, as occasion or necessity may require, and that the means of engagement may be reversed.

16 represents antifriction-balls, which lie in appropriate receptacles in the ends of the lever-arm 8, retained therein by a strap 17, and projecting through the straps, so that they may bear against the leaf-springs 4.

In operation it will be obvious that the lever-arm may be swung in either direction. The effect will be the same on each side, though the direction is reversed. One end of the lever-arm will impinge against the adjacent leaf-spring and press it out, while the opposite end will perform a similar operation upon the opposite leaf-spring. When the lever-arm moves to any point short of a plane at right angles to the position shown, it will have the oppositely-directed forces working together to close the door and yet to close the door gradually. When the lever-arm swings beyond the median line, the force of the spring will be exerted in the opposite direction and will therefore swing back the door against the wall or other guard, thereby locking it open. As already stated, the effect of both springs 6 is to take up and reinforce the leaf-springs 4 at just a time when the leaf-springs require additional force either to close the door or to lock it open. Obviously the antifriction-balls will give an easy action to the lever-arm, while the spaces between them enable the leaf-springs to take a firm hold at intervals.

The term "leaf-spring" is intended to cover any form of spring which will furnish a spring-bearing for the end of the lever-arm.

In the several parts shown it is obvious that many details may be variously modified

within the skill of the mechanic without departing from the spirit of the invention.

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

1. In a spring-hinge, a rotatable lever-arm lying between leaf-springs.
2. In a spring-hinge, the combination of a pair of leaf-springs, a rotatable lever-arm lying between the springs, and reinforcing-springs.
3. In a spring-hinge, the combination of a pair of leaf-springs, a rotatable lever-arm lying between the springs, and a bow-spring lying in the path of action of each leaf-spring.
4. In a spring-hinge, the combination of a series of posts with roller-bearings, of a leaf-spring guided by the posts, and a rotatable lever-arm.
5. In a spring-hinge, the combination of a series of posts, leaf-springs guided by the

posts and having enlarged ends, and a rotatable lever-arm.

6. In a spring-hinge, the combination of a box-like receptacle, a series of posts with roller-bearings, leaf-springs guided by the posts, a reinforcing-spring for each leaf-spring, and a rotatable lever-arm.

7. In a spring-hinge, the combination of a rotatable lever-arm, and opposing springs so disposed that the lever-arm may be swung in either direction, so that the door may be closed or opened and held or locked in the closed or open position according to the relation of the lever-arm to the median line.

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

TIMOTHY ROCHE.

Witnesses:

JAMES H. KENNEY,
JOSEPH R. YENDLEY.