No. 787,999. PATENTED APR. 25, 1905.

H. J. VALENTINE.

SPRING HINGE.

APPLICATION FILED FEB. 18, 1904.

2 SHEETS—SHEET 1.

Fig. 1

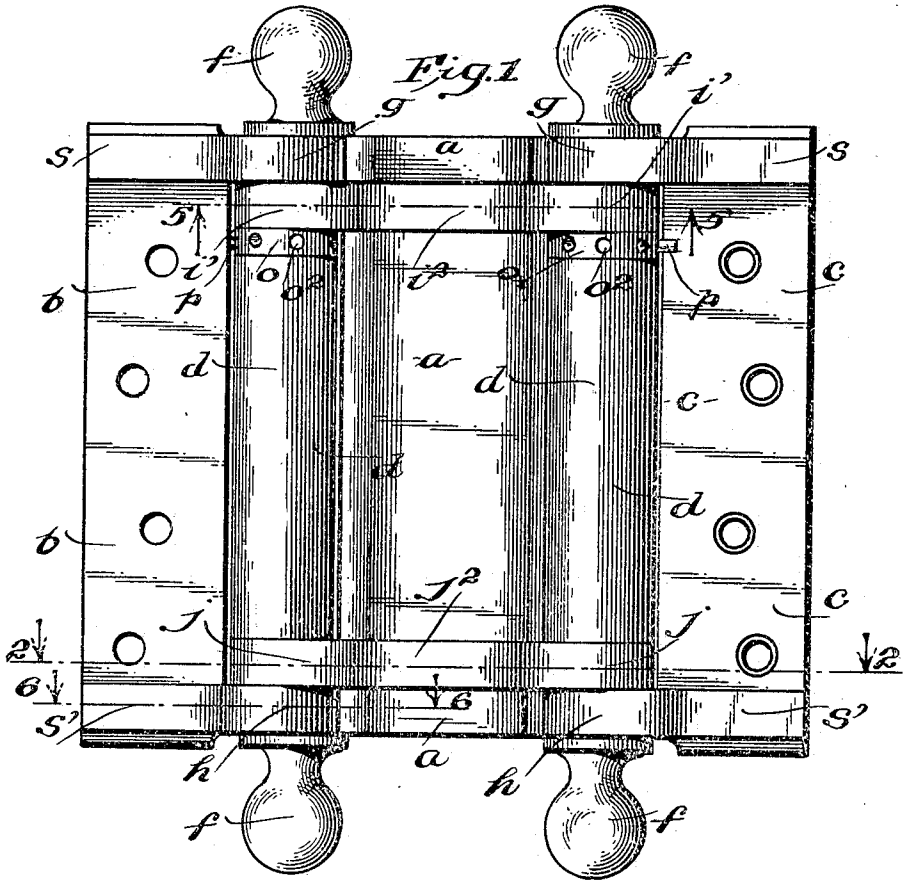


Fig. 2.

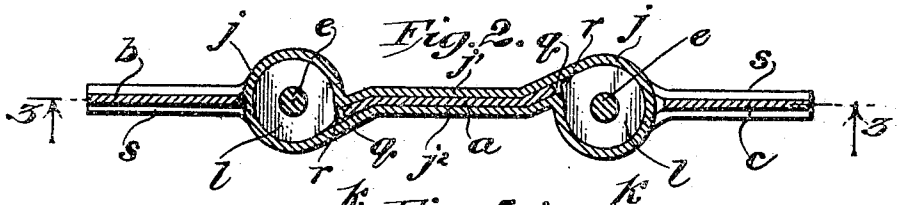


Fig. 5.

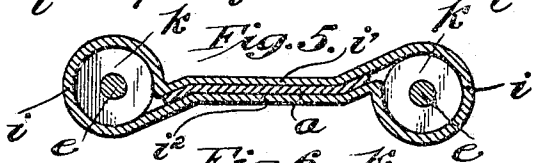
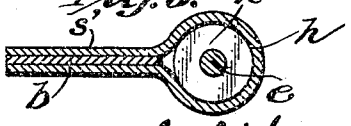


Fig. 6.



Witnesses
Comitchell
Geo. L. Wheelock.

Inventor
HARRY J. VALENTINE
by Dickerson, Brown, Raegener & Binney, Attys

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2 SHEETS—SHEET 2.

Fig. 3.

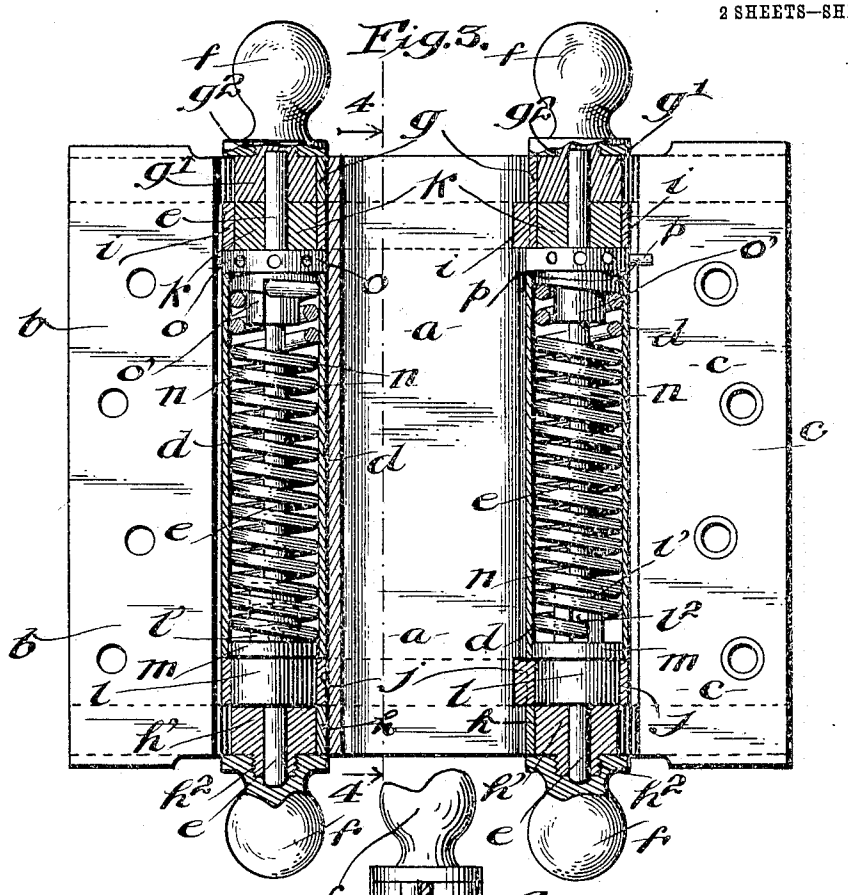
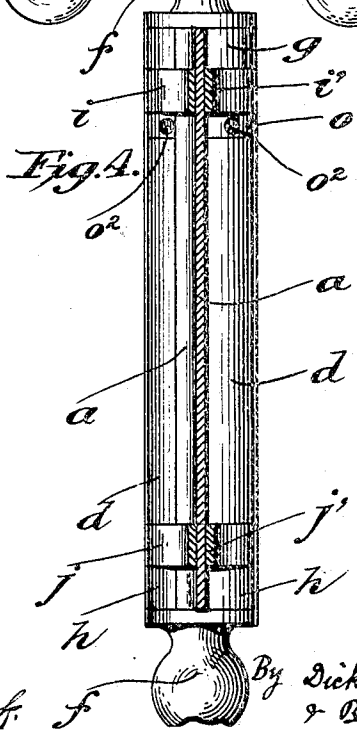


Fig. 4.



Witnesses
C. P. Mitchell
Geo. L. Wheelock.

Inventor
HARRY J. VALENTINE
By Dickerson, Brown, Paegener & Binney
Attys.

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No. 787,999. Patented April 25, 1905.

UNITED STATES PATENT OFFICE.

HARRY J. VALENTINE, OF CLEVELAND, OHIO, ASSIGNOR TO THE COLUMBIAN HARDWARE COMPANY, OF CLEVELAND, OHIO, A CORPORATION OF OHIO.

SPRING-HINGE.

SPECIFICATION forming part of Letters Patent No. 787,999, dated April 25, 1905.

Application filed February 18, 1904. Serial No. 194,152.

To all whom it may concern:

Be it known that I, HARRY J. VALENTINE, a citizen of the United States, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Spring-Hinges, of which the following is a specification.

This invention relates to spring-hinges, more especially of the double-acting variety—that is to say, those by which the door supported by them is permitted to swing in either direction and in so doing place one of the springs of the hinge under tension, which acts to close the door after it has been released. The invention may be applied to single-acting hinges.

The objects of this invention are to so improve the construction of spring-hinges as that they will be very durable and substantial, to attain which the hinge is made of as few parts as possible. To attain the desired result, the leaves of the hinge are made of peculiar construction and the parts combined, as will hereinafter appear.

In order that my invention may be clearly understood, I will now proceed to describe the same with reference to the accompanying drawings, showing a desirable form thereof, in which—

Figure 1 is a front elevation of my improved double-acting hinge opened out. Fig. 2 is a transverse section thereof on the line 2 2. Fig. 3 is a section of the hinge on the line 3 3, Fig. 2, parts in elevation, showing the interior construction thereof. Fig. 4 is a section on the line 4 4, Fig. 3. Fig. 5 is a transverse section on the line 5 5, Fig. 1, showing the intermediate member only; and Fig. 6 is a transverse section on the line 6 6, Fig. 1, showing only one of the leaves.

Referring to the drawings, the hinge comprises mainly an intermediate web or member a between the two leaves b c, the cylindrical casings d, the pintles e, and the knobs f. Each leaf b c is provided with an upper knuckle g and with a lower knuckle h, which knuckles are substantially cylindrical and respectively receive plugs or bushings g' h', the bushing g' being provided with a screw-threaded boss g^2 and the lower bushing with a similar boss h^2. Within the upper and lower knuckles i j, respectively, of the intermediate member or web a are plugs or bushings k l, respectively. The lower bushings l are provided with recessed axial studs l', over which are placed washers m, the recess l^2 in said studs receiving one end of the torsion-spring n, while the upper end of the torsion-spring n is inserted into the recess of a stud o', located on a capstan or tension-piece o. The parts described are evidently combined by assembling them so that the pintles e will pass through the bushings or plugs g', h', k, and l and through the capstans o and washers m, while the cylindrical casings d inclose the parts between the knuckles. After assembling the parts the knobs f are screwed onto the screw-threaded necks g^2 h^2.

As will be more clearly evident from Figs. 2, 5, and 6, the knuckles are formed in a peculiar manner. The knuckles i j of the intermediate member or web a are formed by bending strips of sufficiently strong metal upon and across but at some distance from the ends of the said member or web a, so that the intermediate portions i' j', respectively, of said strips will be located on one face of the intermediate member, while the ends of said strip will be joined together at i^2 j^2, respectively, on the other face of the said intermediate member. Those portions of each transverse strip formed into the knuckles i j which extend directly transverse of the intermediate member or web a are in contact with the faces of the web from edge to edge, and the meeting portions of said parts are united either by brazing or soldering, or, if desired, by riveting them together. The transverse metallic strips formed into the knuckles i j not only form the knuckles, but transverse reinforcing and ornamental bands on the intermediate member a. The leaves b c, provided with the knuckles g h, are in like manner reinforced and ornamented by transverse strips s s', which are bent around both faces of each of said leaves and formed into said knuckles,

the portions of the strips s s' in contact with the said leaves being suitably secured thereto.

It will be seen that each of the transverse reinforcing-strips is made of substantially, if not of, the same width from end to end and that the two side portions of each bent-up strip—the only portions besides the knuckle—straddle the leaf transversely thereof from the knuckle and lie in substantially parallel planes with the leaf, so that the ends of the leaves are uncovered.

As is well known, in this class of hinges the lower ends of the torsion-springs are anchored—that is to say, they are fixed against turning—while the upper ends thereof are turned by means of capstans—such as o, before mentioned—these capstans being provided with a series of sockets o^2 to receive a securing-pin, such as p, which projects from the capstan and engages with the corresponding leaf. In the present invention riveting of the bushing, plug, or core inside the knuckles j is dispensed with. Instead advantage is taken of the fact that by using a metallic strip to form the knuckles j recesses, such as q, are left at each edge of the intermediate web or member a, which recesses are located to one side of the knuckles. The bushings or plugs l are therefore formed irregular in contour or have a side projection or nose r, which sets into the recess q, thus preventing the turning of the said bushing or plug. The lower ends of the torsion-springs being thus prevented from turning, tension may be applied to the springs by turning the capstans o. When the door is opened in either direction, the appropriate leaf acts on the straining or tension pin p, thus placing the spring under greater tension, the reaction of which is sufficient to close the door when released.

Having thus described my invention and without limiting myself to details, what I claim as new therein, and desire to secure by Letters Patent, is—

1. In a spring-hinge, the leaves, an intermediate member or web, and strips, formed with knuckles and secured transversely thereon at some distance from the ends of the said member, substantially as described.

2. In a spring-hinge, the combination of the intermediate member, leaves, transverse strips on the said member and leaves formed with cylindrical knuckles, and pintles passing through the knuckles, substantially as described.

3. In a spring-hinge, the combination of a knuckle member, in which a recess is located at one side of a knuckle, a bushing or plug substantially filling said knuckle and of irregular shape to provide a nose or projection to engage said recess to prevent turning of the bushing, a spring connected at one end with said bushing, a leaf or second knuckle member, a pintle passing through the knuckles and bushing, said second knuckle member being subjected to the action of the other end of said spring, and a spring and pintle casing.

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

HARRY J. VALENTINE.

Witnesses:
H. L. KEIFER,
W. F. DORN.