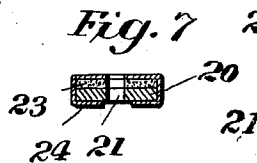
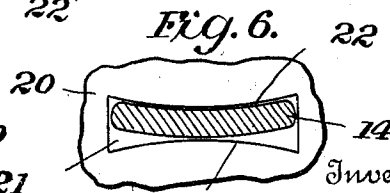
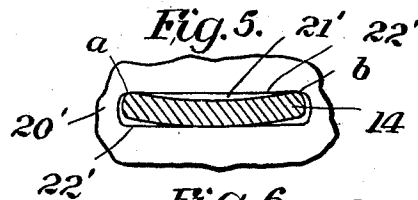
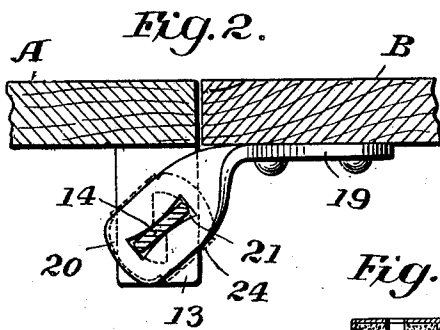
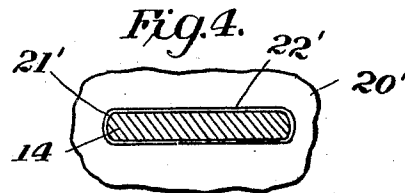
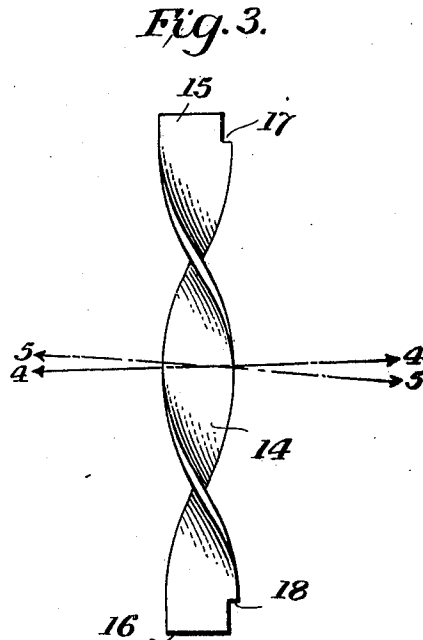
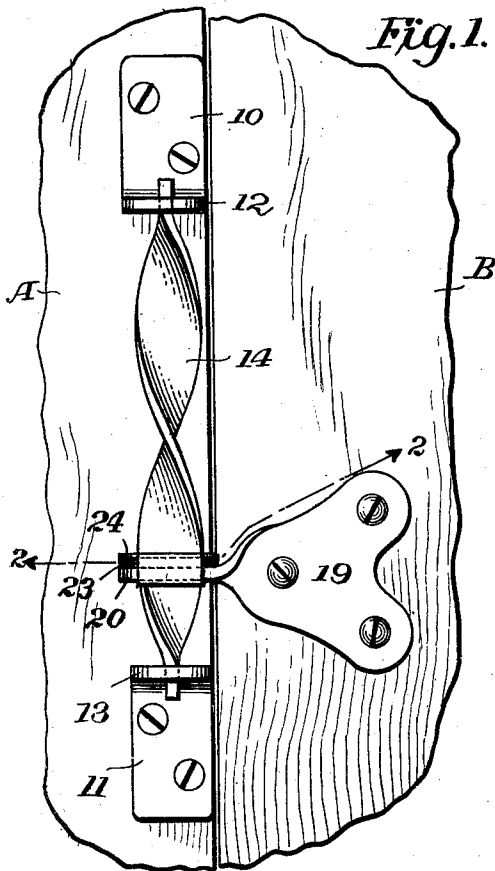


H. W. JOHNSTONE.
SPIRAL HINGE.
APPLICATION FILED NOV. 26, 1909.

991,512.

Patented May 9, 1911.



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UNITED STATES PATENT OFFICE.

HERBERT W. JOHNSTONE, OF HIGHLAND, CALIFORNIA.

SPIRAL HINGE.

991,512.

Specification of Letters Patent.

Patented May 9, 1911.

Application filed November 26, 1909. Serial No. 529,974.

To all whom it may concern:

Be it known that I, HERBERT W. JOHNSTONE, a citizen of the United States, and resident of Highland, county of San Bernardino, State of California, have invented certain new and useful Improvements in Spiral Hinges, of which the following is a specification.

This invention relates to hinges and in particular to hinges of the spiral type, and is an improvement of the hinge shown in Patent No. 902,809, granted Nov. 3, 1908 to H. K. and H. L. Fairall.

The objects of this invention are to simplify the construction of the hinge and to design the parts so that they will operate smoothly and may be easily assembled.

The invention generally stated consists in a twisted spiral strip which is adapted to be secured to one of two relatively swinging members, a cooperating member which is adapted to be secured to the other swinging member and which is provided with a slot which engages the spiral strip. The strip engaging faces of the slot are convex so as to allow for the slight inaccuracy in attachment to the relatively movable members. The strip is of uniform section throughout so that the cooperating member of the hinge may be easily slipped on.

In the drawings, Figure 1 is an elevation of the hinge showing it applied to a door; Fig. 2 is a section on the line 2—2, Fig. 1 showing one member of the hinge in plan; Fig. 3 is a detail of the spiral member; Fig. 4 is a section on the line 4—4, Fig. 3, showing the cooperating member of the hinge provided with a slot having straight engaging faces; Fig. 5 is a view similar to Fig. 4, but taken on the line 5—5, Fig. 3; Fig. 6 is a section of the spiral member on the line 5—5, Fig. 3, showing the cooperating member provided with a slot having convex strip engaging faces in accordance with this invention; Fig. 7 is a section through the slotted hinge member.

Referring to the drawings, A designates one of two relatively movable members, for instance the frame of a door, while B designates the other member which may be the door. A pair of brackets 10, 11, are secured to the frame of the door in any suitable manner and are provided with outwardly extending portions 12, 13. The twisted spiral strip 14 has its ends 15, 16, positioned in slots formed in the forwardly projecting

members 12, 13, the width of the strip at the ends being reduced to form shoulders 17, 18, which abut against the brackets. A cooperating hinge member 19 is secured to the door in any suitable manner and has a portion 20 which is provided with a slot or recess 21. The strip engaging faces 22, 22', of the slot or recess are convex in section, for a purpose hereinafter to be described.

In referring to Figs. 4 and 5, it will be noted that a cross section of the strip when taken on a line which is at right angles to the axis of the strip, is rectangular in form having straight sides, but a section taken on any other line, as the line 5—5, Fig. 3, is not rectangular in form but is in the form shown in Fig. 5, that is, one side of the strip is concave and the other side convex. If, therefore, the strip engaging faces 22', 22', of the slot 21' are straight and the plane of the portion 20 is not exactly at right angles to the axis of the strip, the faces of the recess 21' will bear on the strip at two points *a*, *b*, only as shown in Fig. 5, and rapid wear will take place. The curvature of the sides of the section will increase very rapidly with the deviation of the plane of the portion 20 from the horizontal, that is, from a plane at right angles to the axis of the strip.

In accordance with this invention the strip engaging faces 22 of the slot or recess 21 are convex in form so that under ordinary conditions when the portion 20 will be located on the line 5—5, Fig. 3, one of the faces 22 will engage the strip at substantially every point, and therefore the wear which is detrimental in the form shown in Fig. 5, will not take place. The convex surface of the strip and the cooperating convex face 22 of the slot will have an engaging surface which is substantially equal to that shown in Fig. 5.

By providing the slot with double convex strip engaging faces, the slot adapts itself to the strip when the plane thereof is on either side of the line 4—4, since the curvature of the strip will be reversed when the portion 20 is located in a reverse position. The strip is of substantially uniform section throughout, so that the member 19 may be easily slipped on the end of the strip and thus assembling and disassembling of the parts is facilitated.

It is desirable to provide means for constantly lubricating the contacting surfaces

of the hinge member and for that reason I have provided a pad of felt or other absorbent material on the slotted hinge member, as shown in Figs. 1 and 7 and in dotted lines in Fig. 2. Referring to these figures, 23 indicates a pad of felt or other absorbent material which is secured in place by a sheet metal clip 24. The pad and clip are preferably slotted to correspond to the slot 21 in the hinge member. It will be seen that the felt is inclosed excepting at the ends of the pad and the edges of the slot and hence it forms an excellent reservoir from which the oil will not readily evaporate. The clip 24 may be of heavy tin, sheet iron, or other suitable metal.

It is obvious that various changes may be made in detail of construction without departing from the spirit of this invention and it is therefore to be understood that this invention is not to be limited to the specific construction shown and described.

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

1. A hinge comprising a spiral member and a cooperating plate-like member having a slot therein engaging the spiral, one of the spiral engaging faces of the slot being convex.

2. A hinge comprising a spiral member of substantially uniform section throughout, and a cooperating plate-like member having a slot therein engaging the spiral, the spiral engaging faces of the slot being convex.

3. In a hinge, in combination, a pair of brackets provided with slots, a twisted

spiral strip of substantially uniform section throughout and positioned in the slots, and a cooperating plate-like member having a slot therein engaging the spiral strip, said slot being of substantially the same length and width as the strip, and said member being adapted to be slipped in position over the ends of said strip when removed from its brackets.

4. In a hinge, in combination, a pair of brackets provided with slots, a twisted spiral strip of substantially uniform section throughout and positioned in the slots, and a cooperating plate-like member having a slot therein engaging the spiral strip, the spiral engaging faces of the slot being convex.

5. A hinge comprising a spiral member and a member having a slot through which the spiral member slides, the latter member being provided with a pad of absorbent material adjacent to the slot.

6. A hinge comprising a spiral member and a member having a slot through which the spiral member slides, the latter member having a pad of absorbent material surrounding the slot, and a sheet metal clip arranged upon the pad and adapted to hold it in place and substantially inclosing said pad to prevent the evaporation of oil therefrom.

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

HERBERT W. JOHNSTONE.

Witnesses:

J. D. TURNBULL,
M. C. TAYLOR.