No. 720,304. PATENTED FEB. 10, 1903.

R. G. WINTER.

SEPARABLE HINGE.

APPLICATION FILED MAR. 22, 1902.

NO MODEL.

Fig. 2.

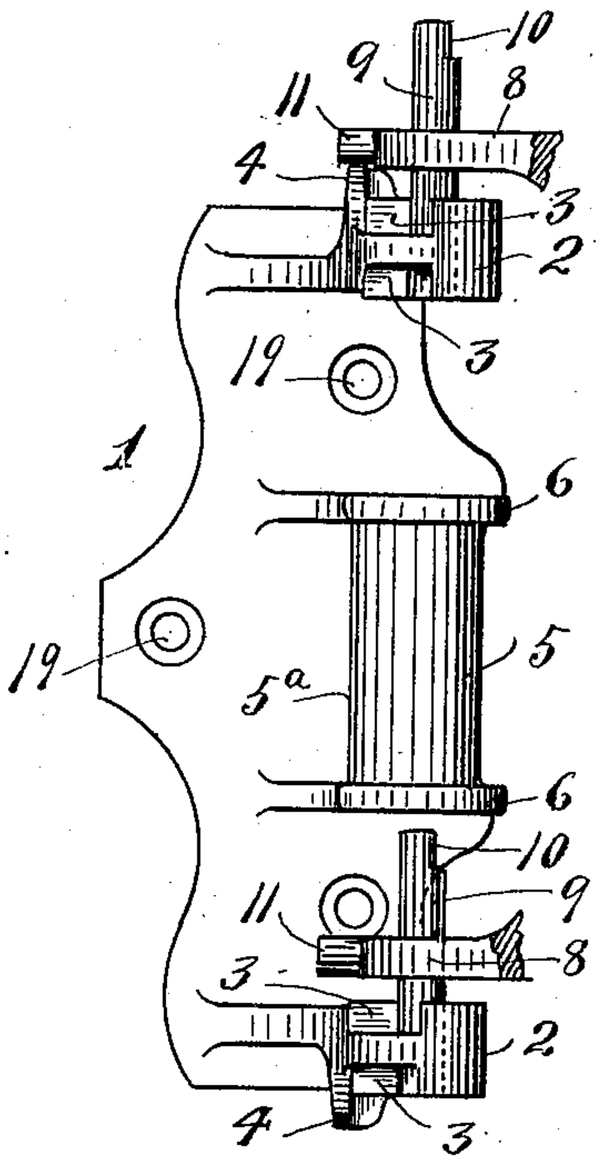


Fig. 1.

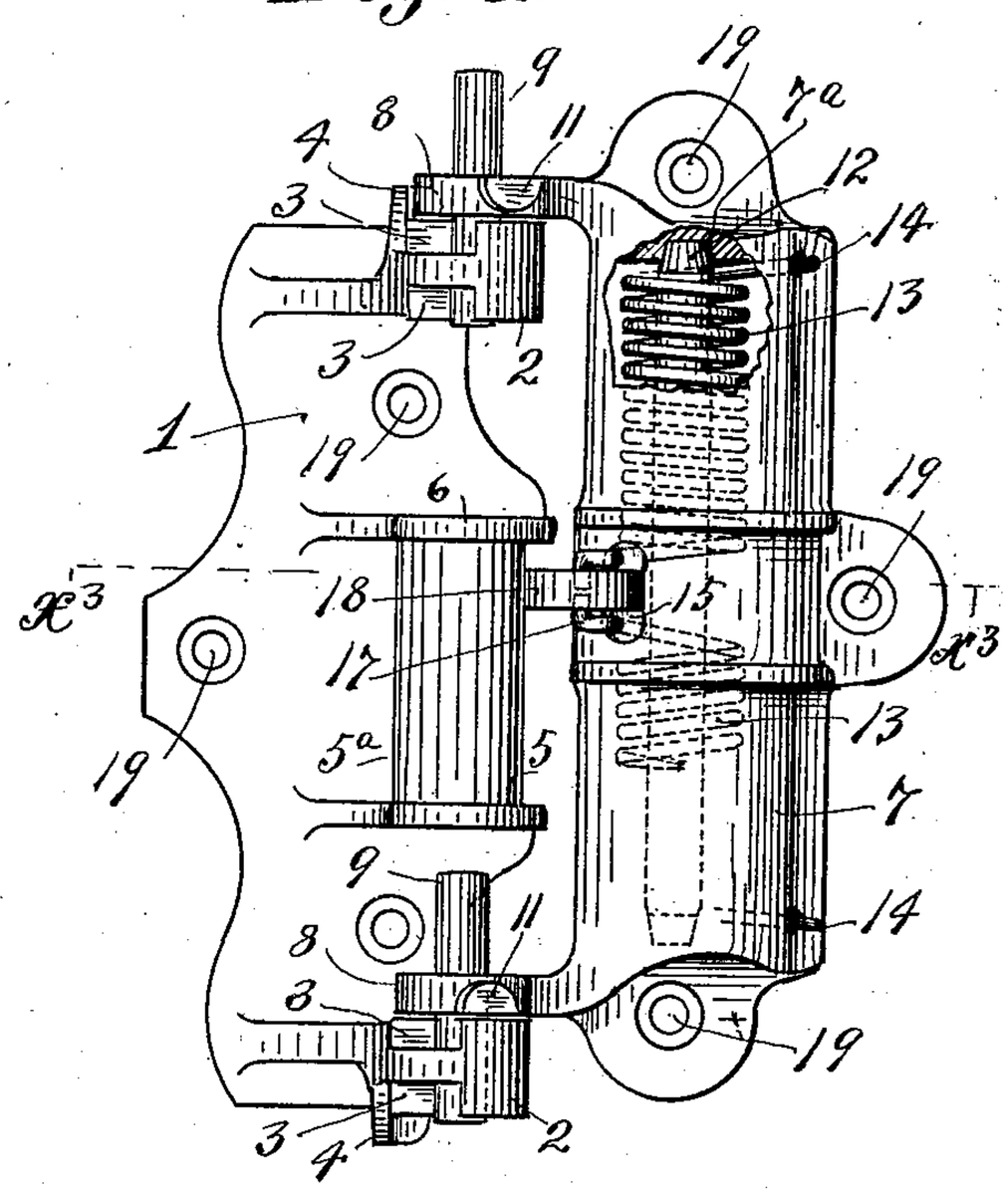


Fig. 4.

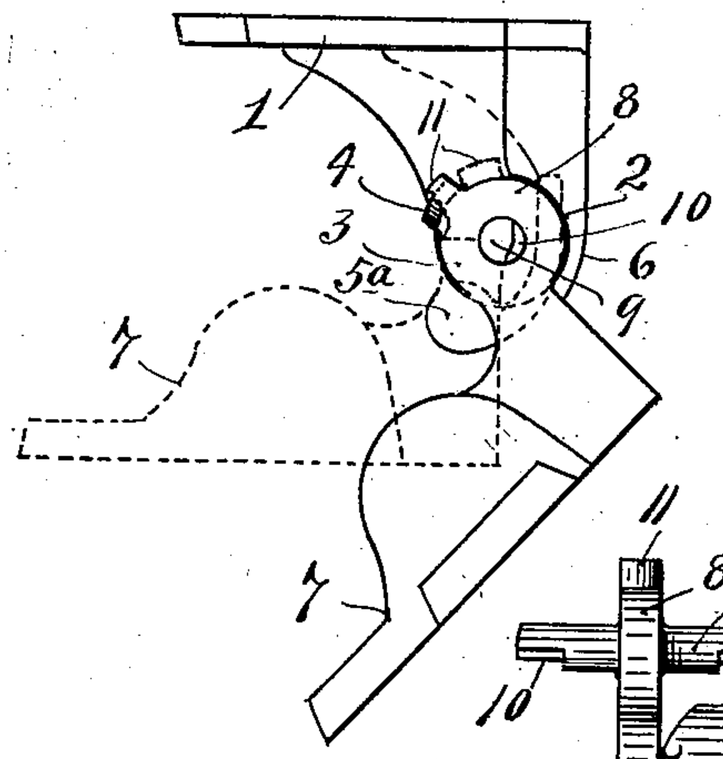


Fig. 3.

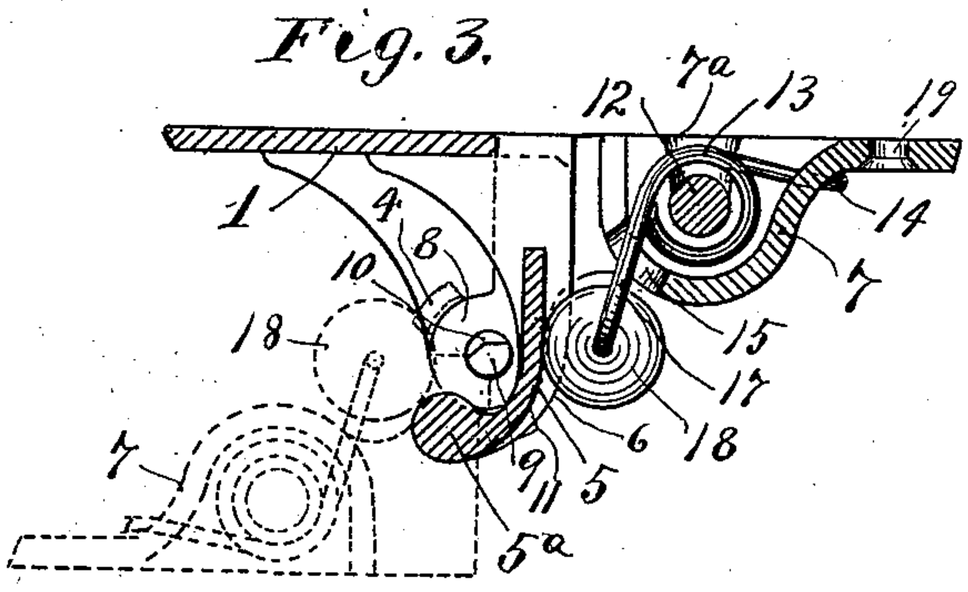
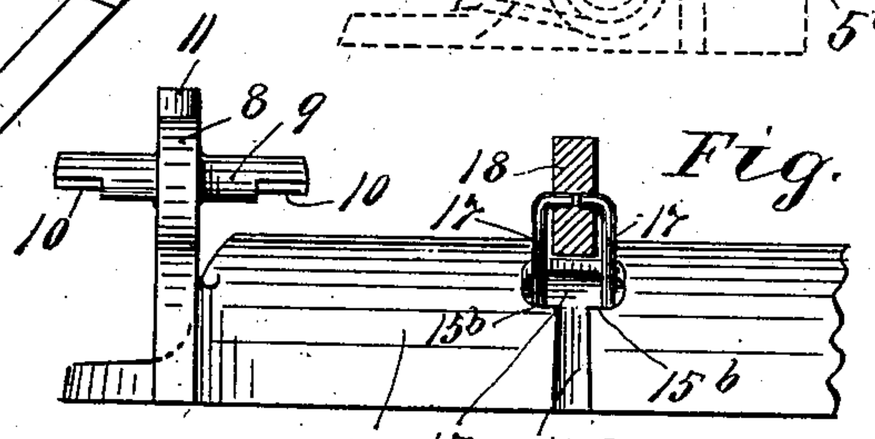


Fig. 5.



Witnesses
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UNITED STATES PATENT OFFICE.

RUDOLPH G. WINTER, OF MINNEAPOLIS, MINNESOTA.

SEPARABLE HINGE.

SPECIFICATION forming part of Letters Patent No. 720,304, dated February 10, 1903.

Application filed March 22, 1902. Serial No. 99,411. (No model.)

To all whom it may concern:

Be it known that I, RUDOLPH G. WINTER, a citizen of the United States, residing at Minneapolis, in the county of Hennepin and State of Minnesota, have invented certain new and useful Improvements in Separable 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 present invention has for its object to provide a separable hinge of improved construction especially adapted for use on screen-doors, but adapted for use also on storm-doors and other places.

The invention is illustrated in the accompanying drawings, wherein like characters indicate like parts throughout the several views.

Figure 1 is a face view or side elevation of a hinge embodying the several features of my invention. Fig. 2 is a view corresponding to Fig. 1, but with nearly all of one section of the hinge broken away and those portions which are shown being turned into different relative positions. Fig. 3 is a horizontal section on the line $x^3 x^3$ of Fig. 1. Fig. 4 is a plan view of the hinge; and Fig. 5 is a side elevation, with some parts broken away, of one of the hinge members.

The numeral 1 indicates as an entirety the relatively fixed member of the hinge—to wit, that member which would be secured to the door casing or frame. This hinge member 1 is provided in its ends with laterally-projecting perforated hinge-ears 2, the perforations of which stand in axial line. The ears 2 are provided with upper and lower segmental notches 3, which run into the perforations thereof and form lateral openings considerably less than one hundred and eighty degrees in extent. The said ears 2 are further provided with outwardly-extended segmental cam-lugs 4, which incline in both directions. At its intermediate portion the said member 1 is formed with a laterally-projecting resistance block or plate 5, which is curved at its inner portion and preferably turned inward to form a heavy head 5^a, as best shown in Fig. 3. At its extremities the said resistance-block 5 is also preferably provided with horizontally-extended ribs 6, as best shown in Figs. 1 and 2.

The relatively movable member of the hinge—to wit, that member which is securable to the door—is formed by a hollow channel-like body provided at its ends with projecting hinged ears 8. The hinged ears 8 are provided with trunnions 9, which to make the hinge reversible, as will hereinafter more fully appear, extend both upward and downward. The trunnions 9 are adapted to fit within the perforations of the ears 2, and the ends thereof are reduced or cut, as shown at 10, to adapt them to be inserted laterally through the segmental notches 3 of said ears 2. The ears 8 are provided with laterally-projecting lugs 11, which are adapted for coöperation with the cam-flanges 4 of the ears 2, as will be hereinafter more fully described.

Within the seats 7^a of the case formed by the body of the hinge member 7 is a laterally-removable longitudinally-extended bolt 12, around which is wound a double-ended coil-spring 13, the ends of which are anchored to the said hinge member 7 at 14 and the intermediate portion of which works through a perforation 15 in said body or case-forming section and is extended so as to form a lever or arm 17. The transversely-extended section at the free end of the said lever or arm section 17 affords a bearing on which is mounted a roller 18. The said transverse portion 17 is preferably divided at the center of the roller, as shown in Fig. 5, so as to permit the roller to be quickly placed in working position and removed.

The hinge members 1 and 7 are provided with the ordinary screw-holes 19, through which the screws may be inserted to secure the said parts in the one instance on the door casing or frame and in the other to the door.

The hinge is a reversible hinge—to wit, capable of use on a door arranged to swing either toward the right or toward the left. This reversible feature is made possible by the trunnions 9, which project both upward and downward from the respective ears 8. To illustrate: In the drawings the hinge is shown as so put together as to permit the door to swing toward the left. As is obvious, if

the door were to swing toward the right the hinge member 1 would have to be turned upside down or end for end. Then the member 7 would also have to be turned upside down or end for end, which would of course bring those two trunnions 9, which, as illustrated in the drawings, project upward and are idle, into coöperation with the perforated ears 2 of the hinge member 1. In other words, it is always those trunnions 9 which are turned downward that coöperate with the perforated ears 2. It is also evident that with this arrangement the ears 8 must always stand above the coöperating ears 2, so that the door and the hinge member 7 are supported by the said ears 2. At the same time the door, together with the hinge member 7, may be lifted from working positions. It is also evident that when the hinge is reversed, as above stated, so as to permit the door to swing toward the right, the cam-lug 11 and cam-flange 4, which in the drawings are shown as the lower members, will then become the upper members and will be brought into coöperating relation.

By reference to Fig. 5 it will be noted that the perforation 15 has an entrance slit or passage 15^a, which runs out at one edge of the case or body 7. With this construction when one prong of the spring-arm 17 has been forced laterally out of engagement with the roller 18 it may be turned outward through the slit 15^a, and in this way both sections of the spring may be readily detached or removed from working position. When the sections of the spring are placed in working position and when the hinge-section 7 is detached from the coöperating hinge-section 1, the prongs of the said spring-arm 17 will strike the shoulders 15^b, formed at the junction of the slit 15^a with the perforation 15, and will thereby be prevented from being thrown out of proper position.

The action of the hinge when applied as shown in the drawings will be substantially as follows: When the door is closed, the hinge members will stand as shown in Figs. 1 and 3 by full lines, and the spring 13 will force the roller 18 tightly against the inner face of the resistance block or plate 5, and will thereby yieldingly hold the door closed. When the door is swung open only to an ordinary extent or is given such swinging movement as it would be given by a person passing through the doorway, it will be automatically closed by the spring 13 and coöperating action of the roller 18 on the resistance-block 5. When, however, the door is forced open nearly to its extreme limit and substantially as indicated by dotted lines in Figs. 3 and 4, the roller 18 will engage the outer surface or back of the bead 5^a of the resistance block or plate 5 and will yieldingly hold the door in its open position. Furthermore, when the said door and hinge member 7 are swung open to their extreme position (indicated in Figs. 3 and 4) the upper cam-lug 11 will be caused to travel over and then be carried to a position inward of the coöperating upper flange 4, so that the gravity of the door and of the said hinge member 7 causes the said cam members 11 and 4 to coöperate and yieldingly hold said door in its open position. As is evident, to impart the initial closing movement to the door only sufficient force will be required to cause the cam-lug 11 to move over the cam-flange 4, under which action it must of course raise the door slightly. The initial closing movement being imparted to the door, the rest of its movement will, as has already been stated, be completed automatically by the force applied from the spring 13. Where the hinge is to be applied to a storm-door, the spring device will not usually be desired, and hence a simple hinge member having only the ears 8 and trunnions 9 may be employed, and such members may be left permanently secured to the storm-door. On the other hand, the spring-equipped hinge members may be left permanently secured to the screen-door. With this arrangement it becomes obvious that the screen-door and the storm-door may be very quickly and easily substituted or interchanged one for the other, inasmuch as the hinge members applied thereto are in each case adapted for coöperation with the hinge members having a perforated hinge-ear and which are left permanently secured to the door casing or frame.

From what has above been said it will be understood that the hinge above described is capable of considerable modification within the scope of my invention as herein set forth and claimed.

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

1. A pair of separable hinge members, the one having the perforated ears 2 with laterally-opening segmental entrance-notches 3, and the other having ears 8 with trunnions 9 projecting in both directions from said ears and engageable laterally through said notches 3 and insertible endwise through the perforations of said ears 2, substantially as described.

2. The combination with the hinge member having perforated hinge-ears, at least one of which has a cam-flange 4, of a coöperating hinge member having the ears 8 with trunnions working in said perforated hinge-ears, a cam-lug 11 on one of said ears 8 coöperating with said cam-flange 4 to yieldingly hold the door open, and a spring device which becomes active to yieldingly close the door after said lug 8 has been thrown outward of said cam-flange 4, substantially as described.

3. The combination with a pair of pivotally-connected hinge members, one thereof being formed to afford a spring seat or case and provided with the perforation 15 with open but contracted entrance-slit 15^a, and the two-part spring 13 located within the seat or case of said hinged member and provided

with the divider spring-arm 17 equipped with the roller 18, which perforation 15 and slit 15^a afford stop-shoulders 15^b against which the spring-arms 17 strike, and which slit 15^a permits of the removal of said arms 17 therethrough, one at a time, substantially as described.

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

RUDOLPH G. WINTER.

Witnesses:
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F. D. MERCHANT.