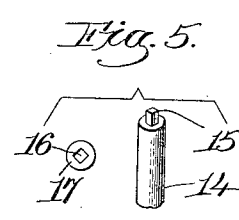
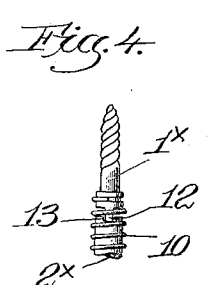
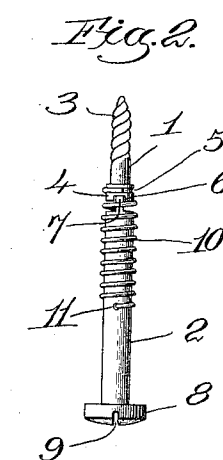
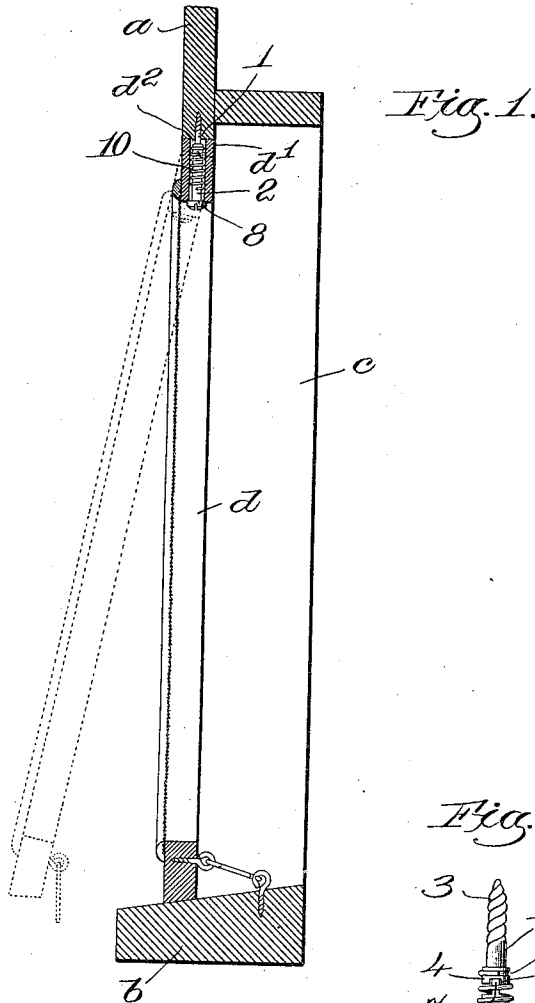


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SCREW HINGE.

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Patented May 6, 1913.



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SCREW-HINGE.

1,060,678.

Specification of Letters Patent.

Patented May 6, 1913.

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To all whom it may concern:

Be it known that I, VIVIAN GREENIDGE, residing at Newton Highlands, county of Middlesex, State of Massachusetts, have invented an Improvement in Screw-Hinges, of which the following description, in connection with the accompanying drawing, is a specification, like characters on the drawing representing like parts.

This invention has for its object the production of a novel, inexpensive and efficient hinge so constructed and arranged that it can be readily put up without the employment of skilled labor, the hinge structure containing within itself the means for attaching the members thereof to the parts to be united.

My invention is particularly adapted for use in suspending a sash frame, screen, or other device by an overhead or lateral connection with some fixed object, such as a door or window frame, and I have illustrated my invention in one example of such a structure.

The various novel features of my invention will be fully described in the subjoined specification and particularly pointed out in the following claims.

Figure 1 is a vertical sectional view of a window frame and a suspended screen connected by a hinge embodying one practical form of my present invention. Fig. 2 is an enlarged view in elevation of a hinge embodying my invention, as it would appear under normal conditions. Fig. 3 is a perspective view of the coupling end of one of the hinge members shown in Fig. 2, to show more clearly one part of the separable coupling. Fig. 4 is a detail view of a modified form of the coupling, to be referred to. Fig. 5 is a detail showing yet another arrangement of the coupling.

Referring to Figs. 1 and 2, the hinge is shown as comprising two members 1 and 2, placed end to end, the pointed member 1 having a screw-thread 3 and a head 4 provided with a peripheral, annular groove 5 and a transverse, flat-walled slot 6, said member 1 being in general a wood-screw and adapted to be screwed into one of the parts to be united by the hinge. The member 2, which may be termed the driving member, is shown as an elongated stud having at one end a transverse lug 7 to enter the slot 6, and at its other end said member has a circular retaining head 8, herein

shown as having a nick or slot 9 for the reception of the blade of a screw-driver. The socket and cooperating lug structure constitute a separable, hinge-coupling between the hinge members 1 and 2, the lug fitting loosely in the socket so that the member 2 can be swung laterally into and out of alinement with the member 1. A resilient, yielding connection is provided between said members 1 and 2, it being preferably a spiral spring 10, the coils of which surround the member 2 and the head 4 of member 1, one end of the spring being attached permanently to the member 2 in any convenient manner, as by passing it through a hole 11. At its other end the spring is attached permanently to the member 1 by contracting the last coil of the spring and snapping it into the groove 5, the spring thus acting under normal conditions to maintain the parts of the coupling in engagement and also maintaining the hinge members 1 and 2 in axial alinement. If the said members are pulled apart axially the spring will yield to permit such axial separation to a limited extent, and it will also permit the member 2 to be swung laterally out of alinement with the member 1. The spring also prevents any relative rotation of said members when axially separated far enough to disengage the parts of the coupling.

In Fig. 1 I have illustrated one manner of using my novel hinge, *a* being the top rail, *b* the sill, and *c* one of the sides of a window frame, while a mosquito net or screen-frame is indicated at *d*. It is frequently desirable to suspend such a screen from overhead, so that it may be swung outward and inward, and ordinarily usual leaf-hinges are employed, one leaf of each hinge being attached by several screws to the top bar *d'* of the screen-frame, while the other leaves are attached in similar manner to the top rail *a* of the window frame. Such an arrangement requires skilled labor to apply the hinges and hang the frame, the hinges and screws are expensive, and usually the hinges must be attached to the outside of the window frame. In using my novel hinge for such purposes I bore through the top bar of the frame a hole *d''* for each hinge to be used. The hinge as a whole is now inserted in one of the holes *d''*, the frame being in closed position, and by means of a screw-driver or other suitable tool the head 8 of the member 2 is en-

gaged and said member is rotated to screw the threaded member 1 into the top rail *a* of the window frame, as shown in Fig. 1. The hole must be large enough to receive easily the spring-encircled shank of the member 2, and the length of the shank must be such that when the member 1 is properly and securely screwed into place the head 8 will rest against the lower edge of the bar *d'* of the screen or other movable frame, as in full lines Fig. 1.

As many hinges will be used as may be requisite to properly suspend and connect the frame *d*, but ordinarily two hinges will be sufficient unless the suspended frame is very heavy. When the frame *d* is swung outward its weight will flex the spring connection of each hinge, permitting axial separation of the hinge members 1 and 2 more or less, so that perfect freedom of swinging movement of the frame is assured. The dotted line position of the frame in Fig. 1 shows this slight descent or drop of the frame with its top rail *d'* free of the bar *a* of the window frame. It will be understood that the coupling lug 7 need not be withdrawn from its socket 6 in order to get the hinge action, unless a very large angular movement is required, and when the screen-frame is brought back to closed position the contraction of the springs will restore the hinge parts to normal condition. This may be assisted, if desired, by the bevel of the window sill *b*, as shown in Fig. 1. The hinge member 1 is screwed securely into one of the two parts to be united by the hinge, as will be manifest, and the head 8 of the member 2 retains the latter in the other of such parts, while the coupling serves to transmit positively and surely the rotation of the member 2 to member 1 to effect the insertion of the latter into the frame or other object to which it is to be secured. I prefer to make the nick 9 parallel to the coupling slot or socket 6, as by so doing the coupling will be in proper position when the nick 9 is in parallelism with the rail *d'* of the frame.

A reverse arrangement of the parts of the coupling is shown in Fig. 4, wherein the head of the threaded member 1* is provided with a transverse coupling lug 12, while the adjacent end of the hinge member 2* is provided with the lug-receiving socket 13. As will be apparent the operation of the hinge is unchanged by this reversal, and the coupling may be further modified, as shown in Fig. 5, wherein the headed or driving member 14 has a square or other polygonal lug 15 to enter loosely a correspondingly shaped socket 16 in the threaded member 17 of the hinge. So long as the socket or slot is non-cylindrical, and presents flat walls to be engaged by the coupling lug, in order to form a positive coupling for transmitting rota-

tion from the driving to the threaded member of the hinge the precise construction of the coupling is not material.

The different parts or elements of the hinge herein described are easily made and inexpensive, and they can be quickly assembled.

By properly proportioning the parts the hinge can be made as heavy and strong as desired, and it can be used in various places and structures.

While I have shown my novel hinge in connection with a screen suspended at the top, my invention is not thereby restricted to such use, for the hinge is capable of use in practically all places where the ordinary hinge is employed.

Changes or modifications in details of construction and arrangement may be made by those skilled in the art without departing from the spirit and scope of my invention as set forth in the annexed claims.

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

1. In a screw hinge, a rotatable, threaded member, a driving member therefor, a permanent resilient connection between said members holding them normally in alinement but permitting relative lateral swinging movement and axial separation, and a positive, separable coupling between the adjacent ends of said members, whereby the threaded member may be rotated by the driving member and the latter may swing into and out of alinement with the threaded member.

2. In a hinge, in combination, two attaching members placed end to end, a positive, axially-separable coupling between the adjacent ends of said members and by which rotation of one member is transmitted to the other, and a spring connection between said members, acting normally to maintain them in axial alinement and with the coupling in operative condition.

3. In a screw hinge, a rotatable, threaded member, a second member having a retaining head and by which it may be rotated, a lug and socket coupling between the adjacent ends of said members, whereby rotation of the headed member is transmitted positively to the threaded member, to screw the latter into place, and a spring coiled about the adjacent ends of said members and permanently attached thereto, said spring acting normally to maintain the coupling operative while permitting axial separation of the two members.

4. In a screw hinge, a screw-threaded member, a stud-like member having a retaining head by which it may be rotated, one of said members having a flat-walled socket in its end, a lug on the adjacent end of the other member, to enter the socket and

constitute therewith a separable hinge-coupling between said members, and a spiral spring encircling the adjacent ends of said members and permanently attached to each, the spring normally acting to maintain the members in axial alinement with the lug of one member seated in the socket of the other member.

5. In a screw hinge, a threaded member adapted to be screwed into place, an elongated, stud-like driving member having a retaining head and adapted to enter a socket in one of the parts to be united by the hinge, a positive, axially separable coupling between the adjacent ends of said members, whereby rotation of the driving member is transmitted to the threaded member, and a resilient, normally contracted connection between said members, holding them normally in alinement while permitting swinging movement of one relatively to the other and also permitting limited axial separation of said members.

6. In a screw hinge, a rotatable threaded and pointed member having a slotted, annularly grooved head, an elongated stud-like driving member having a lug at one end to

enter the slot in the head of the threaded member and having at its opposite end a head by which it may be rotated, and a connecting spring coiled about the shank of the latter member and attached thereto, the opposite end of the spring surrounding the head of the threaded member and being attached thereto within its annular groove, the spring yieldingly connecting said members and normally acting to retain the lug in the slot.

7. In a hinge, two members normally in axial alinement and having self-contained means for attachment to the parts to be united, a yielding, resilient connection between said members, permitting axial separation thereof and movement of one into and out of alinement with the other, and a separable, positively-acting coupling between said members.

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

VIVIAN GREENIDGE.

Witnesses:

JOHN C. CONNOR,
BERTHA F. HEUSER.

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