(No Model.)

J. B. KNITTEL.

HINGE.

No. 525,712. Patented Sept. 11, 1894.

Fig. 1.

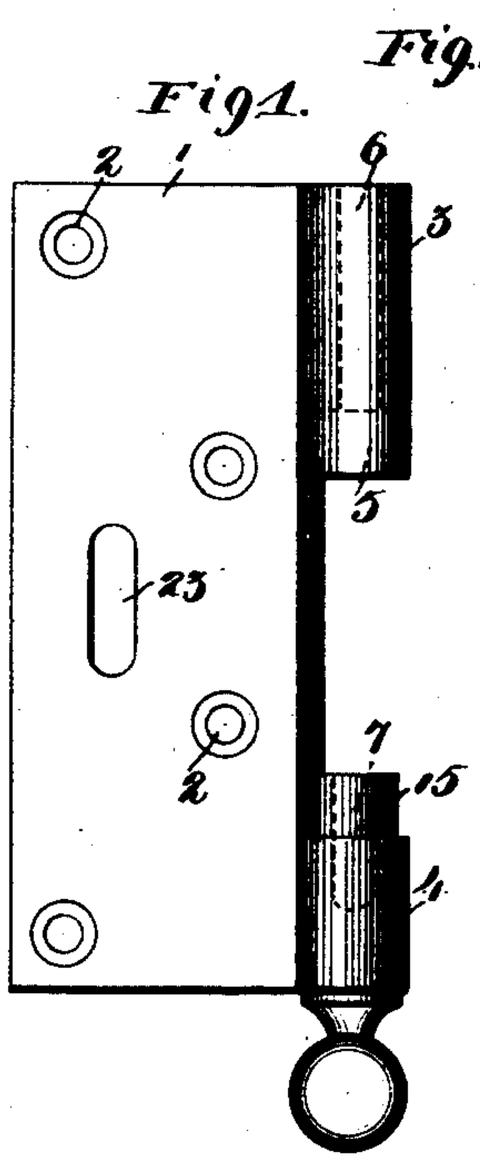


Fig. 2.

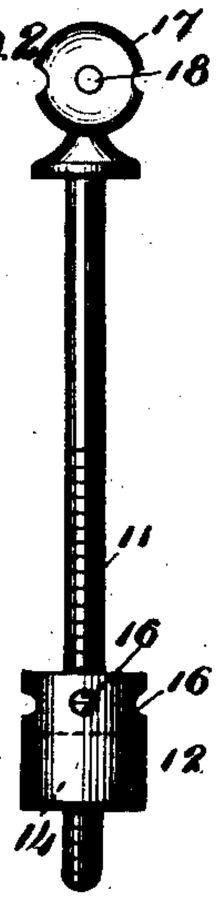


Fig. 3.

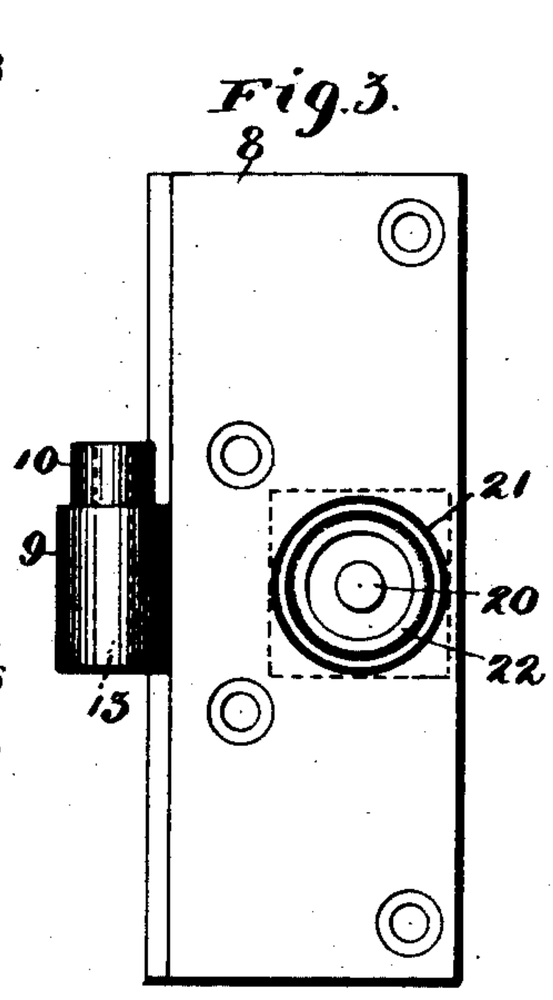


Fig. 4.

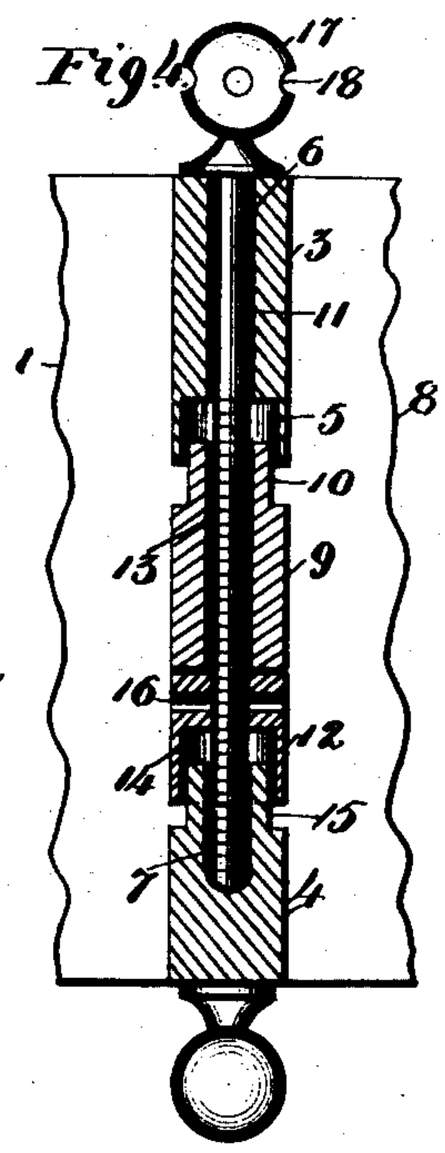


Fig. 5.

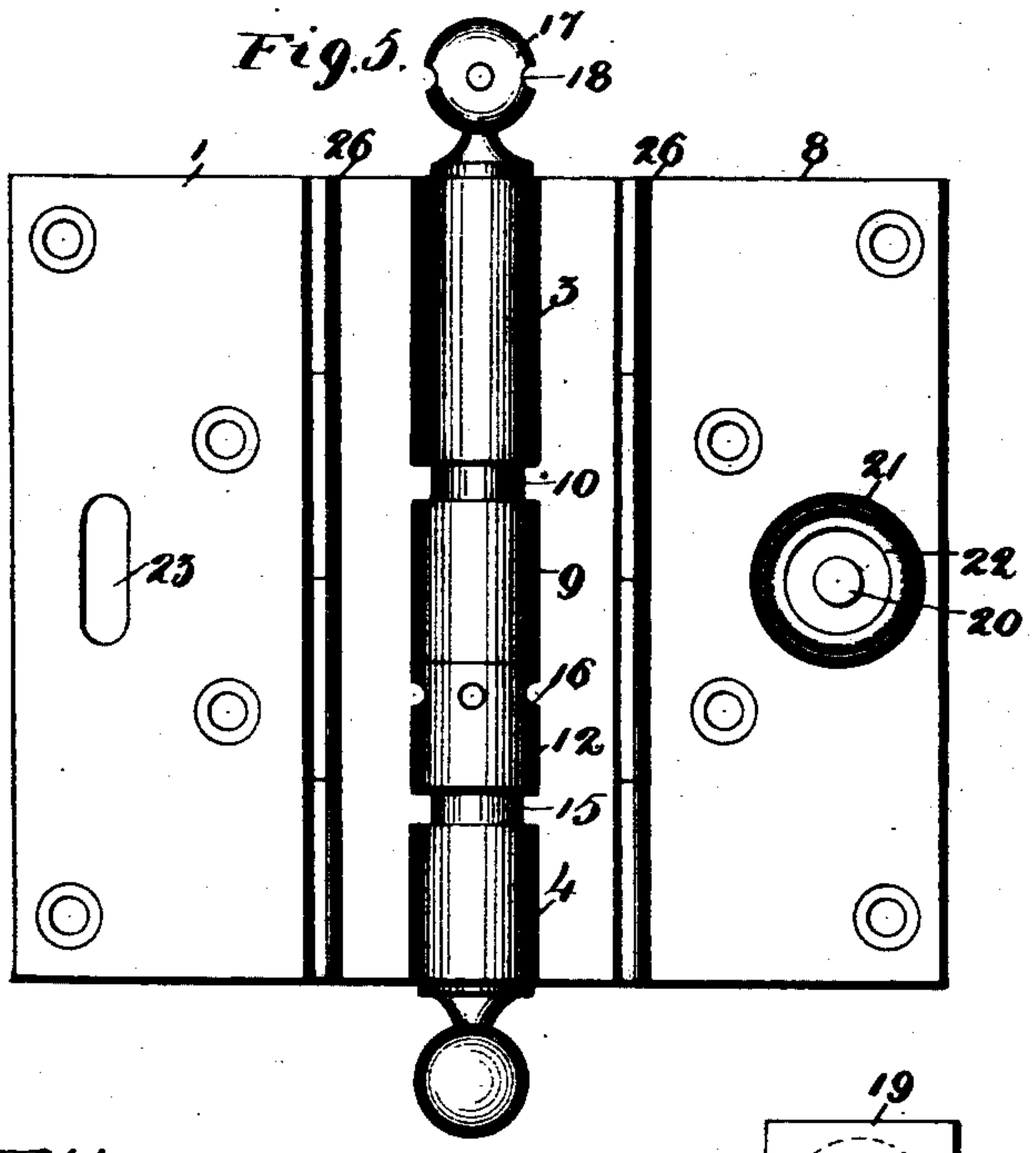


Fig. 6.

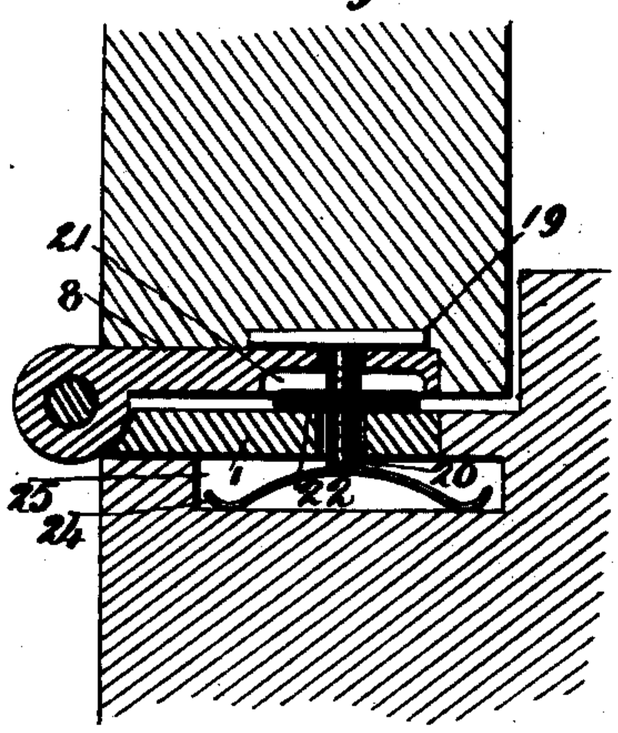
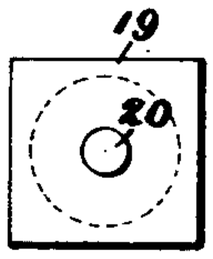


Fig. 7.



Witnesses;
J. J. O'Donohoe
Edw. Buckmann Jr.

Inventor:
John B. Knittel.
By, Keller & Stuart
Attorneys.

UNITED STATES PATENT OFFICE

JOHN B. KNITTEL, OF ST. LOUIS, MISSOURI.

HINGE.

SPECIFICATION forming part of Letters Patent No. 525,712, dated September 11, 1894.

Application filed January 15, 1894. Serial No. 496,928. (No model.)

To all whom it may concern:

Be it known that I, JOHN B. KNITTEL, of the city of St. Louis, State of Missouri, have invented certain new and useful Improvements in Hinges, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part hereof.

My invention has relation to improvements in hinges and consists in the novel arrangement and combination of parts more fully set forth in the specification and pointed out in the claims.

In the drawings, Figure 1 is a front view of that leaf of the hinge secured to the door jamb. Fig. 2 is an elevation of the adjusting bolt and nut. Fig. 3 is the front view of that leaf of the hinge secured to the door. Fig. 4 is a vertical section taken through the hinge joint when the parts are brought together, the leaves in this view being shown broken. Fig. 5 is an elevation of a modified form of hinge. Fig. 6 is a horizontal section taken through the door and jamb showing the hinge when closed; and Fig. 7 is a front view of the plate in the rear of the door hinge the purpose of which is to be subsequently described.

The object of my present invention is to construct a hinge which will be simple and durable and at the same time be susceptible of such perfect and accurate adjustment that the door to which it is secured may open and close without jar or friction, and whereby the door can be carefully adjusted within the door-frame. The construction of the hinge too is such that in case any object should accidentally come between the leaves while the door is closing, the leaves will not snap off and break or be torn from the door or jamb to which they are respectively secured. In detail the hinge may be described as follows:

Referring to the drawings, 1 represents the leaf secured to the jamb by means of screws passed through screw-holes 2. The exposed edge of the leaf is provided with the ears 3 and 4, the upper ear 3 being provided with a suitable depression or socket 5 from which leads a cylindrical opening 6. The lower ear 4 is provided with a suitable depression or socket 7. The leaf 8 which is secured to the door is provided with an ear 9 on the upper portion of which is formed an extension 10 which, when the leaves are placed in proper position, fits in the socket 5 of the leaf 1. When the leaves are placed together the screw-threaded bolt 11 is passed through the several ears; and before insertion of the bolt the adjusting nut 12 is placed in line with the openings 6, 7, and 13 of the several ears, the said nut being adapted to support the ear 9 being interposed between the latter and the ear 4. The nut 12 is provided with a socket 14 which embraces the projection 15 of the lower ear 4, so that when the several parts are in their proper relative position they will appear as seen in section in Fig. 4, or in elevation in Fig. 5, the screw-threaded bolt being always concealed from view. The nut 12 is provided with radial openings 16 and the head 17 of the bolt is provided with openings 18 for the insertion of a suitable lever or pin. If it be desired to slightly raise or lower the door on its hinge for purposes of accurate adjustment, the operator by inserting a pin or lever into one of the openings 18 can hold the bolt 11 stationary, and can by inserting a second pin or lever into one of the openings 16 turn said nut 12 upon the screw-threaded portion of the bolt 11 and in a proper direction for either raising or lowering the door as necessity demands, the nut 12 of course raising or lowering the ear 9 whose extension 10 plays within the socket 5, and the extension 15 of the ear 4 playing within the socket 14 of the nut 12.

As seen from the drawings the hinge joint is thoroughly compact, only enough metal being removed from the several aligning ears as is necessary to allow for the variable adjustments incident to the ordinary door. The nut 12 too from its relation to the remaining parts need not be of greater diameter than the general diameter of the hinge joint, so that the complete joint when the hinge is assembled will be a true cylinder. The hinge is therefore compact, and possesses superior strength.

Within a suitable socket of the door frame and in the rear of the leaf 8 is secured a plate 19 having a screw-threaded stem 20 the said stem projecting through an opening in the leaf 8. The leaf 8 has a socket or depression 21 which receives a disk or plate 22 adapted to be screwed on the stem 20, and when screwed

fully into said depression the disk will be flush with the outer surface of the leaf 8. When the door is closed the stem 20 passes into or is received within an elongated opening 23 in the leaf 1, the jar of the closing door being taken up by an elastic strip or plate 24 placed opposite said opening 23 within a suitable depression 25 in the jamb. Of course the resilience of the spring 24 is made variable according to circumstances by varying the position of the plate 22 on the stem 20, the said plate 22 being the first to strike the surface of the leaf 1, and thus limiting the extent or degree to which the plate 24 shall be depressed by the stem 20 in the act of closing the door. By the above arrangement the door closes with a certain amount of elasticity and without a jar.

To prevent the leaves from being snapped or torn off from the door or jamb in case an object accidentally comes between the leaves, I provide each leaf on either side of the main hinge joint with supplemental hinge joints 26 of ordinary construction, this form of hinge being best illustrated in the modification shown in Fig. 5. Of course it is essential that the leaves of the inner joint shall be comparatively narrower than the outer leaves, as fully shown in the drawings; otherwise this modification could not subserve any practical purpose, as the door would have a tendency to work off its hinges.

The details of the hinge can be changed of course without departing from the spirit of my invention.

Having described my invention, what I claim is—

1. A hinge comprising a leaf, upper and lower terminal aligning ears for the same, a socket in the upper ear, an opening communicating with said socket, a socket in the lower ear, a second leaf, a central perforated ear on the same, a projection on said ear adapted to play within the socket of the upper terminal ear of the first leaf, a projection on the lower ear of the first leaf, a bolt having a smooth and a screw-threaded portion, passed through the several aligning ears, an adjusting nut passed over the screw-threaded portion of the bolt below the lower edge of the central ear of the second leaf, a socket in the lower portion of said nut, the latter being adapted to support the second leaf, and its socket to simultaneously embrace the projection of the lower ear of the first leaf, and means on said nut for turning the same, substantially as set forth.

2. In a hinge, a leaf adapted to be secured to the door, a plate in the rear of said leaf, a screw-threaded stem on said plate passing through the leaf, a depression on said leaf, a disk or plate adapted to be screwed on the stem and pass into said cavity, a second leaf adapted to be secured to the jamb, an opening in said leaf, a suitable spring or elastic plate in the rear of said opening, the said stem adapted to come in contact with the elastic plate, and the said disk adapted to limit the depth to which the stem will penetrate, substantially as set forth.

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

JOHN B. KNITTEL.

Witnesses:

WALTER G. THIELECKE,

EMIL STAREK.