C. H. BUSCH.

DOOR CHECK HINGE.

APPLICATION FILED JULY 14, 1914.

1,134,510.

Patented Apr. 6, 1915.

2 SHEETS—SHEET 1.

Fig. 1.

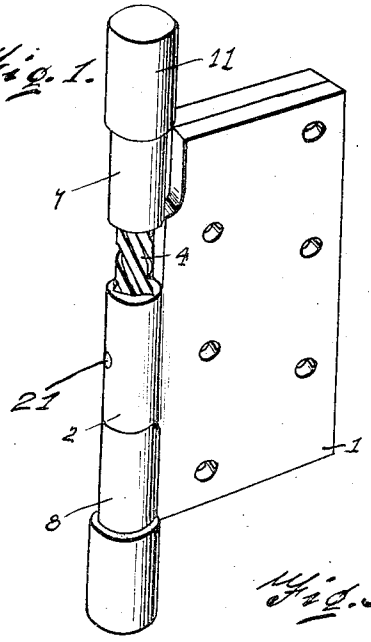


Fig. 2.

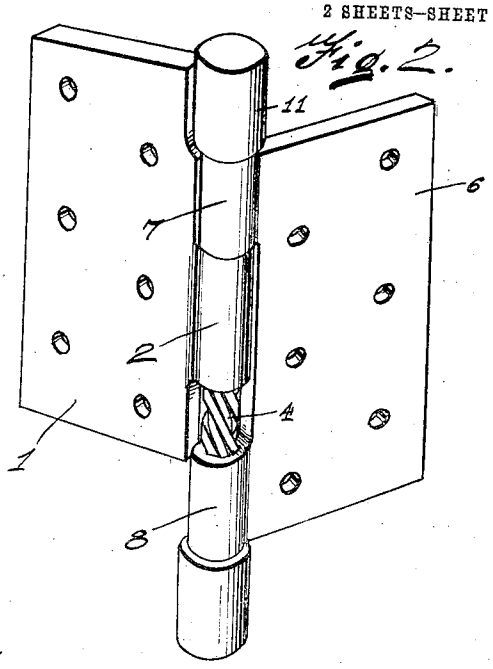


Fig. 3.

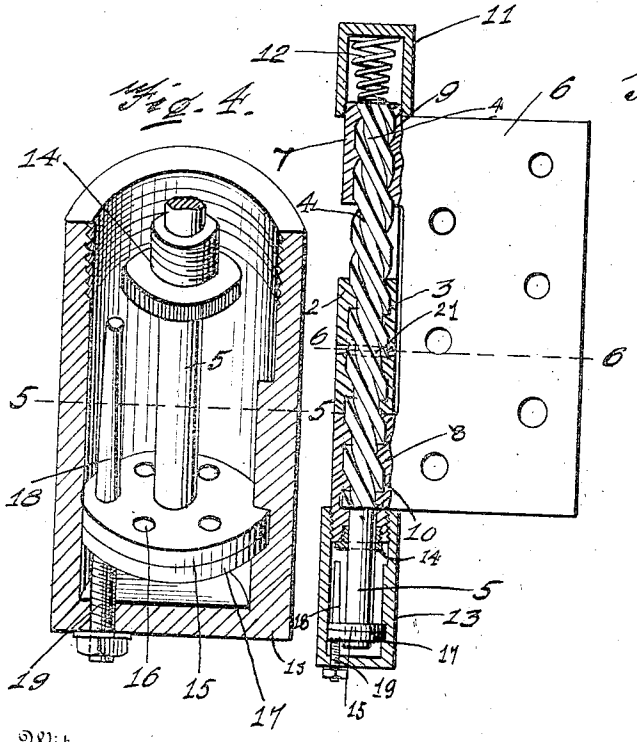


Fig. 4.

Fig. 5.

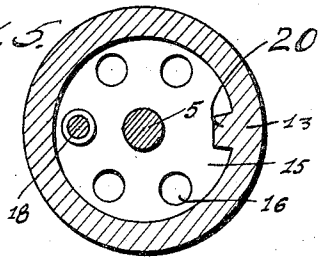
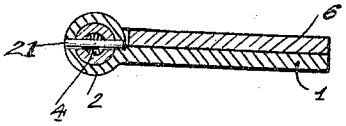


Fig. 6.



Witnesses

J. F. Hauke.

D. C. Morris

Inventor

C. H. Busch

By Pendleton & Pendleton

Attorneys.

C. H. BUSCH.

DOOR CHECK HINGE.

APPLICATION FILED JULY 14, 1914.

1,134,510.

Patented Apr. 6, 1915.

2 SHEETS—SHEET 2.

Fig. 7.

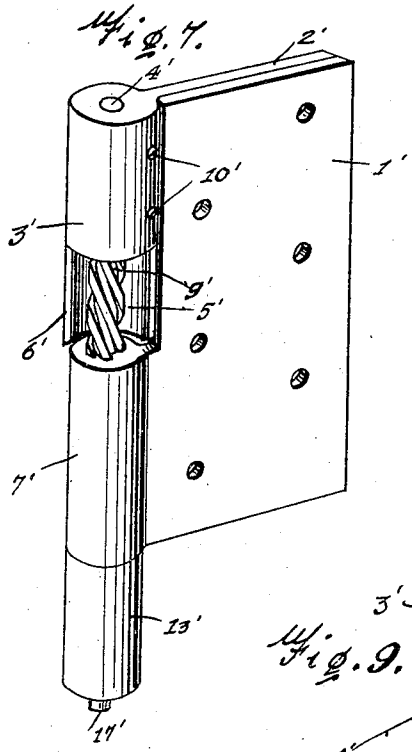


Fig. 8.

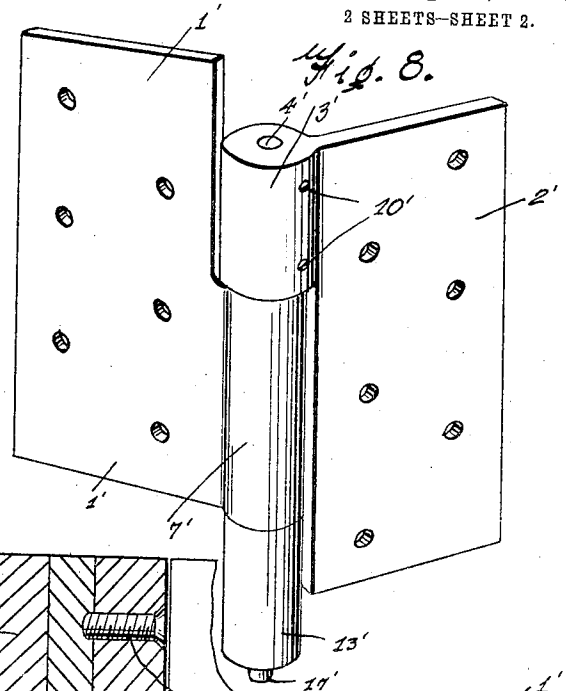


Fig. 9.

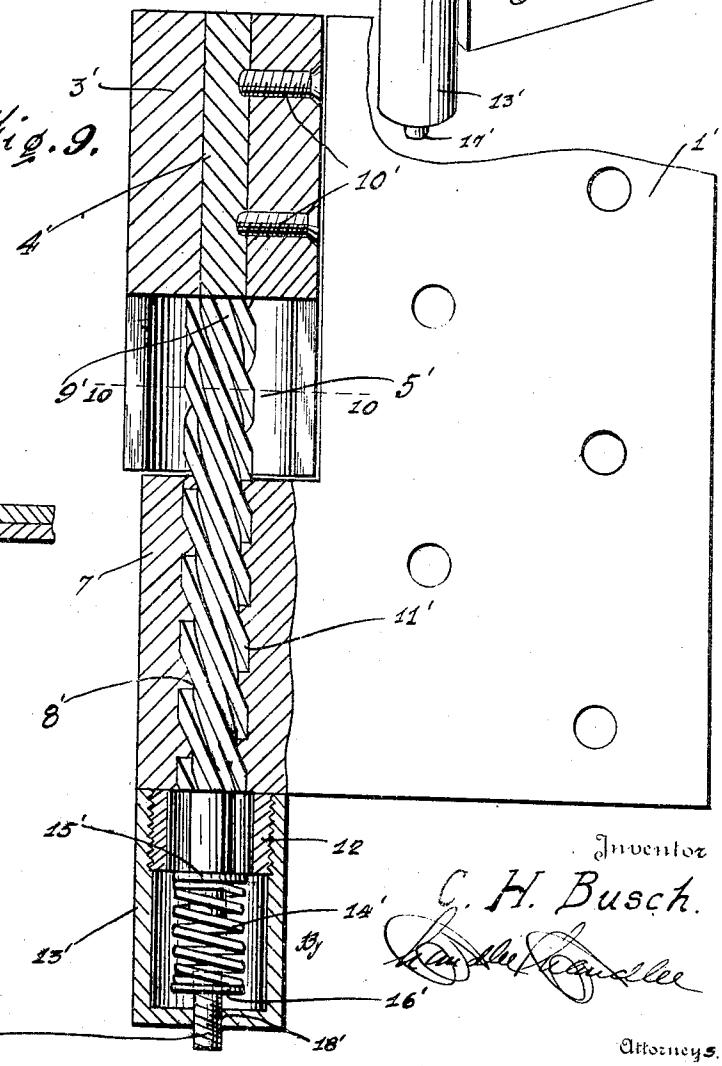
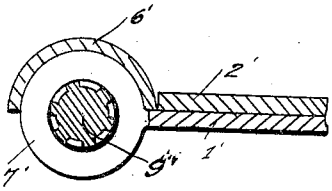


Fig. 10.



Witnesses

G. F. Hauke.

D. A. Morris.

Inventor

C. H. Busch.

Attorneys.

UNITED STATES PATENT OFFICE.

CHARLES H. BUSCH, OF NEW YORK, N. Y.

DOOR-CHECK HINGE.

1,134,510. Specification of Letters Patent. Patented Apr. 6, 1915.

Application filed July 14, 1914. Serial No. 850,929.

To all whom it may concern:

Be it known that I, CHARLES H. BUSCH, a citizen of the United States, residing at New York, in the county of New York, State of New York, have invented certain new and useful Improvements in Door-Check 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.

This invention relates to a door check hinge.

An object of the invention is to provide a door hinge of such character that the door will be automatically closed and yet one by means of which the slamming of the door will be obviated.

With this and other objects in view, such as will appear as the description progresses, my invention comprises the combination and arrangement of parts as herein set forth and subsequently claimed.

Referring to the drawing: Figure 1 is a perspective view of the hinge closed. Fig. 2 is a similar view, showing the hinge in open position. Fig. 3 is a longitudinal sectional view of the hinge in the position as shown in Fig. 1. Fig. 4 is a detail showing the plunger. Fig. 5 is a section on line 5—5 of Fig. 4. Fig. 6 is a section on line 6—6 of Fig. 3. Fig. 7 is a perspective view of a modification of my device, showing the same in its closed position. Fig. 8 is a similar view, showing the same in its open position. Fig. 9 is a longitudinal sectional view. Fig. 10 is a horizontal sectional view of the form of the device shown in Fig. 8.

Referring to the drawing by reference characters wherein like parts are indicated by like characters throughout the several views: The device comprises a hinged plate 1 having an outwardly extending tubular socket member 2 which has internal helical grooves 3. Extending through this member 2 is a rod 4 having helical projections 5 thereon, which are slidable in the aforementioned grooves. This rod extends considerably above and below the said member 2. A second hinged plate 6 is provided which has a tubular member 7 at its upper end and a similar member 8 at its lower end, which have helical grooves 9 and 10 therein in which the projection 5 of the rod 4 is slidably mounted.

Screwed on the end of the upper member 7 is a casing 11 having a spiral spring 12, one end of which presses against the upper end of the casing 11 and the lower end of which presses against the upper end of the shaft 4. Screwed on the lower member 8 and extending downwardly therefrom is a casing 13. The grooves 10 within the member 8 terminate a short distance above the lower edge of the said member as do the projections 5 on the rod 4. A packing ring 14 is screwed into a threaded aperture in the lower end of the member 8 below the grooves therein so that the rod 5 extends therethrough. On the lower end of this rod within the casing 10 is rotatably mounted a disk 15 having a plurality of holes 16 therethrough and a cap 17 loosely mounted on the lower end of the said rod, which cap has one hole therein registering with one of the holes 16 but closes the remaining holes. A tapered rod 18 extends upwardly through one of the holes 16 and the lower end of said rod is screw threaded, as at 19, and adjustably mounted in the lower end of the casing 13. At a diametrically opposite point in this casing is a fixed guide 20 which extends into a groove in the periphery of the disk 15. The casing 13 contains gylcerin or the like which when the hinge is closed is located below the disk 15.

The member 2 on the hinged plate 1 is secured to the rod 4 by a pin 21 so that when the hinge is in such position as disclosed in Fig. 1, and the plate 1 which is fixed to the door is rotated the rod 4 is likewise rotated by virtue of the engagement of the projections 5 with the internal grooves 9 and 10, the said rod is raised and with it the hinged plate 1 and the door to which it is secured. This action compresses the spring 12 and raises the disk 15. When the door is released the weight thereof will naturally swing the door closed, but since there is considerable friction between the grooves in

the members 7 and 8 and the projections 5 on the rod 4 I have deemed it advisable to provide the spring 12 which overcomes the retarding of the door by this friction. As the door is swung closed the rod 4 moves downwardly with the disk 15 and as the door approaches its closed position one of the holes 16 in which the rod 18 is located passes down over this rod. During the downward movement of the disk 15 the liquid in the casing 13 below the said disk is forced upwardly through the hole 16 in which the rod 18 is located and the rapidity with which this liquid passes through the said hole is gradually decreased because of the fact that the hole is gradually closed by the tapered rod 18. Thus the motion of the plate 1 to which the door is attached is gradually arrested so that the door will be prevented from slamming. By making the rod 18 adjustable it is obvious that the motion may be arrested at different points for it may be some times desirable to arrest the motion of the door so that the hinged plates 1 and 6 will lie at angles to each other.

In the modified form of my device as shown in Figs. 7 to 10 inclusive, the hinge comprises two plates 1′ and 2′ pivotally secured together. Formed on the upper end of the plate 2′ is a sleeve 3′ having a longitudinally extending hole 4′ therethrough. At the lower end of this sleeve is formed a socket 5′ having a semi-cylindrical wall 6′. On the lower end of the plate 1′ is a sleeve 7′ having a longitudinally extending threaded hole 8′. The upper end of this sleeve 7′ terminates adjacent the lower edge of the wall 6′ of the socket 5′ when the hinge is in its adjusted position. A rod 9′ is secured in the hole 4′ of the socket 3′ by screws 10′ and extends downwardly and is threaded between its ends, as at 11′ which threads engage in the threaded hole 8′ of the sleeve 7′. Formed on the lower end of the sleeve 7′ is a downwardly extending externally threaded boss 12′ on which is mounted a casing 13′. The rod 9′ extends downwardly from the sleeve 7′ and into the casing 13′. Encircling the lower end of the rod 9′ in the casing 13′ is a coil spring 14′ which bears against a collar 15′, on the rod 9′, at its upper end and against a circular plate 16′ at its lower end so as to retard the closing motion of the hinge in a manner to be described. In order that the tension of the spring 14′ may be varied, I have adjustably mounted the plate 16′ by forming the same on the upper end of a screw 17′ which is adjustable in a threaded hole 18′ in the bottom of the casing 13′.

In operation the plate 1′ is secured to the door and the plate 2′ to the jamb. When the door is opened the sleeve 7′ rides upwardly on the rod 9′ and within the socket 5′. At this time the spring 14′ is extended and when the door is released gravity causes the door and plate 1′ to move downwardly about the threads on the rod 9′. During this downward movement the spring 14′ is compressed and finally to such an extent that the motion of the door is entirely arrested before the door slams.

In the preferred embodiment of my invention it is necessary to bevel the top of the door to which it is attached so as to allow the same to open while the lower end of the door may be made straight and will normally engage the floor or carpet thereon when closed, but immediately upon its opening will be raised therefrom. The latter embodiment of my invention is designed to be used on light doors such as toilet doors.

From the foregoing description it may be seen that I have provided a hinge which will automatically close the door and yet one which will prevent the door from slamming.

I do not wish to be limited to the particular embodiment of my invention shown, for it is obvious that numerous changes may be made within the scope of the invention as defined by the claims.

What is claimed is:—

1. A device of the class described comprising, a hinged plate having an outwardly extending tubular member, helical grooves within said member, a rod having helical projections thereon secured in said tubular member and projecting upwardly and downwardly therefrom, a second hinged plate having spaced tubular members mounted on said rod and having grooves therein engaging the projections thereon, a casing secured to the upper end of the uppermost of the tubular members on the second hinged plate, a spring within said casing bearing against the end of the rod, a casing secured to the lowermost of the tubular members on the second hinged plate, said rod extending into said casing and having a disk loosely mounted on the end thereof, said disk having a plurality of holes therein and a groove in its periphery, a guide extending into said groove, a tapered rod extending through one of said holes and adjustably mounted in the casing.

2. A device of the class described, a plate, a sleeve having an internal helical groove therein formed on said plate, a rod having a helical projection thereon arranged to engage the groove in the sleeve, a second plate mounted on the rod in hinged relation to the first mentioned plate, a casing on the lower end of the sleeve, means within the casing to retard the movement of the plates with relation to each other, and means for adjusting said first mentioned means.

3. A device of the class described, a plu-

rality of hinge plates pivoted on a common rod, means on said rod for raising one plate with relation to the other during its pivotal movement, means to return the said plate to its initial position, and means for varying the stopping point of the last mentioned plate.

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

CHARLES H. BUSCH.

Witnesses:
ALBERT LAHZ,
HENRY SAMPSON.

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