No. 708,214. Patented Sept. 2, 1902.

C. H. FOSTER.

HINGE.

(Application filed Mar. 8, 1902.)

(No Model.) 2 Sheets—Sheet 1.

Fig.1.

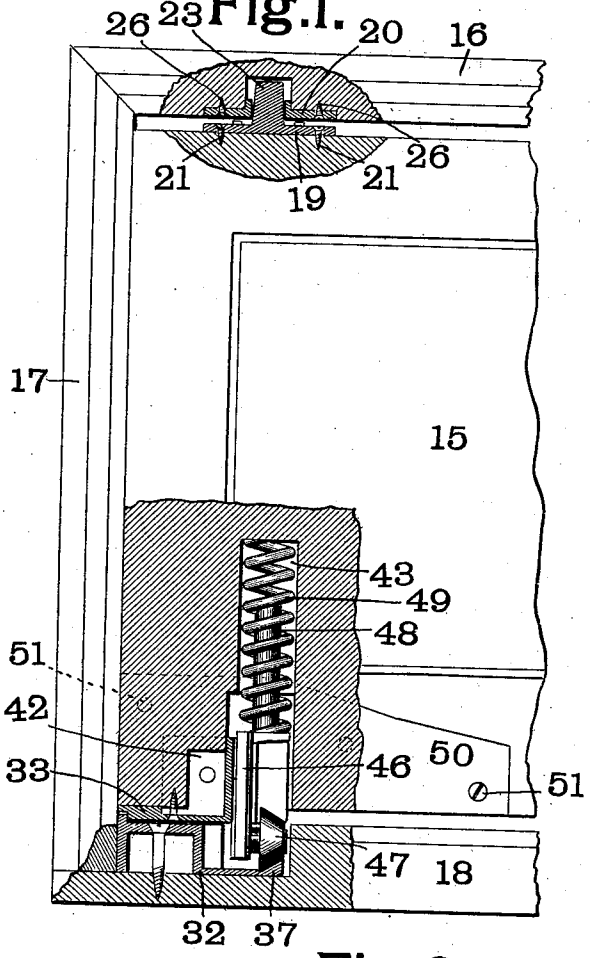


Fig.2.

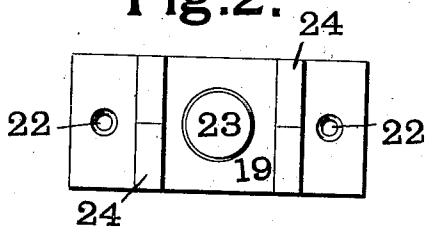


Fig.3.

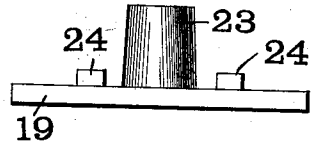


Fig.4.

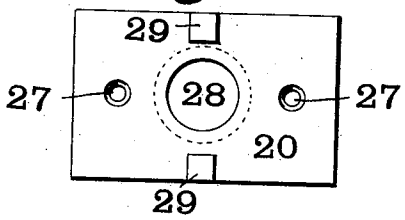


Fig.5.

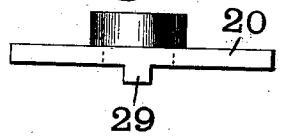
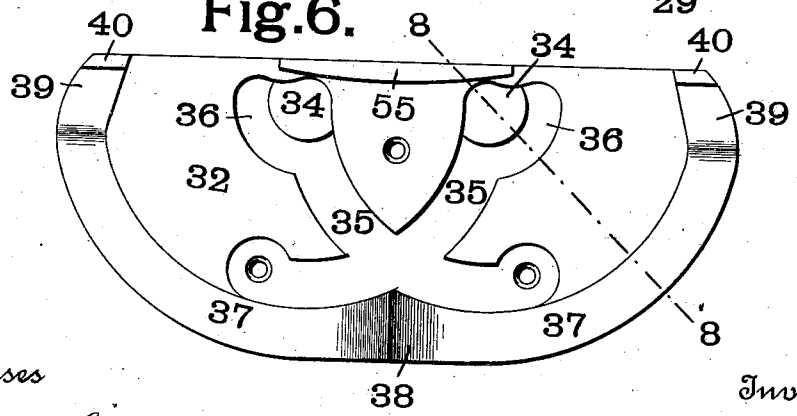


Fig.6.



Witnesses

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(Application filed Mar. 8, 1902.)

(No Model.) 2 Sheets—Sheet 2.

Fig.7.

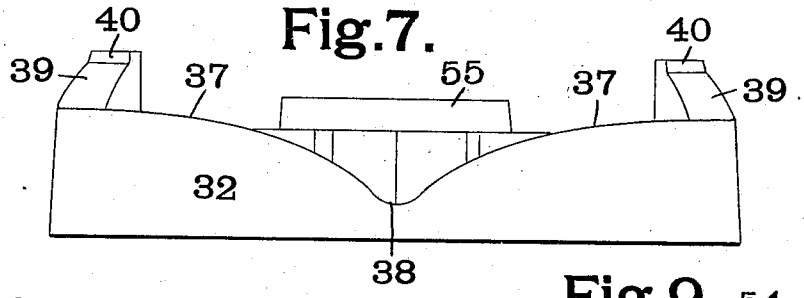


Fig.8.

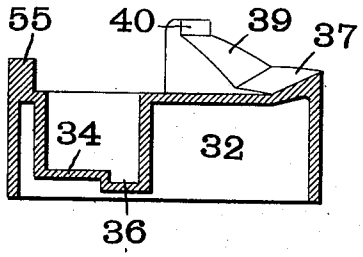


Fig.9.

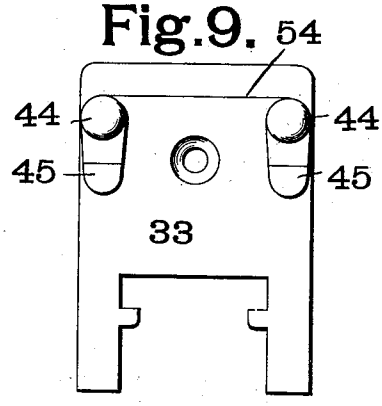


Fig.10.

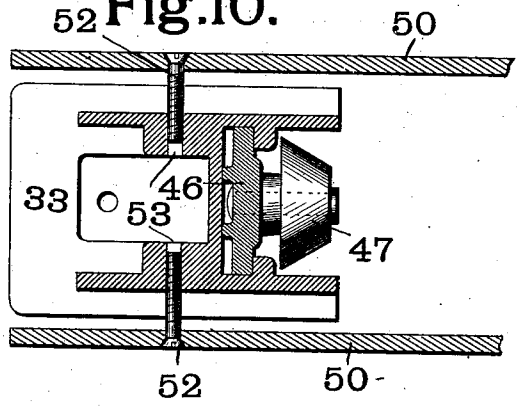
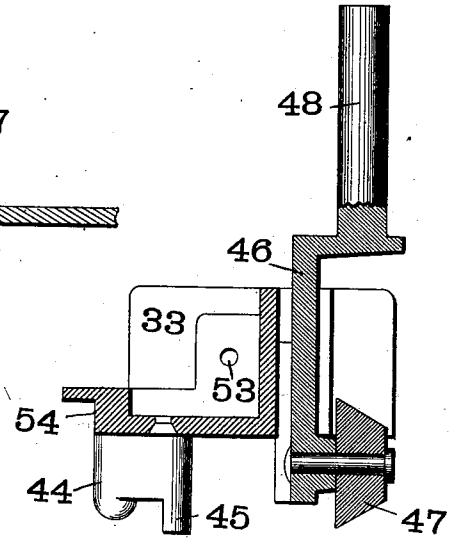


Fig.11.



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UNITED STATES PATENT OFFICE.

CHARLES H. FOSTER, OF OMAHA, NEBRASKA.

HINGE.

SPECIFICATION forming part of Letters Patent No. 708,214, dated September 2, 1902.

Application filed March 8, 1902. Serial No. 97,212. (No model.)

To all whom it may concern:

Be it known that I, CHARLES H. FOSTER, a citizen of the United States, residing at the city of Omaha, in the State of Nebraska, have invented a certain new and useful Hinge for Doors, of which the following is such a full, clear, and exact description as will enable any one skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, forming part of this specification.

My invention relates to hinges for doors, and more particularly to hinges which cause the door to close by gravity.

The object of my invention is to improve the construction of such hinges and to cause the door to be brought to a stop without jar or noise.

My invention consists in part in the combination of a fixed part, a movable part, a beveled track carried by one of said parts, and a member carried by the other of said parts and traveling on said track.

My invention also consists in various other novel features and details of construction, all of which are described in the following specification and pointed out in the claims affixed hereto.

In the accompanying drawings, which illustrate one form of hinge made in accordance with my invention and a portion of a door to which the same is attached, Figure 1 is a view on a reduced scale, partly in elevation and partly in section, showing my hinge applied to a door. Figs. 2 and 3 are a top plan view and a side elevation, respectively, of the movable part of the upper hinge. Figs. 4 and 5 are a bottom plan view and side elevation, respectively, of the fixed part of the upper hinge. Fig. 6 is a top plan view of the fixed part of the lower hinge. Fig. 7 is a front elevation of the fixed part of the lower hinge. Fig. 8 is a section on the line 8 8 of Fig. 6. Fig. 9 is a bottom plan view of the body of the movable part of the lower hinge. Fig. 10 is a horizontal section through the movable part of the lower hinge, and Fig. 11 is a vertical section through the movable part of the lower hinge.

Like marks of reference refer to similar parts in the several views of the drawings.

15 represents the door, 16 the lintel, 17 the rear jam, and 18 the sill, all of the usual construction.

The upper hinge consists of a movable part 19 and a fixed part 20, the body of each of said parts consisting of a rectangular metallic plate. The movable part 19 of the upper hinge is secured to the top of the door 15 by means of screws 21, passing through screw-holes 22 in the plate forming the body of the part 19. The part 19 is provided with a bearing-pin 23, preferably slightly tapered, as shown in the drawings, so as to admit of the door being readily inserted in position. The upper face of the part 19 is also provided with a pair of inclined rub-strips 24, which are thickest at the central portion, tapering toward the edges of the plate. The fixed part 20 is preferably mortised into the lintel 16, as shown in Fig. 1, and held in position by means of screws 26, passing through screw-holes 27 in the part 20. The part 20 is provided with an opening 28, through which the bearing-pin 23 of the movable part passes. The lower face of the part 20 is also provided with a pair of projections 29, which are adapted to come into contact with the inclined rub-strips 24 of the movable part when the door is opened, as will be hereinafter described.

The lower hinge consists of a fixed part 32 and a movable part 33. The fixed part 32 is preferably set into the sill 18, as shown in Fig. 1. The fixed part 32 is provided with a pair of bearings 34, from which extend a pair of intersecting curved guideways 35. The part 32 also has formed in it adjacent to the bearings 34 a pair of auxiliary curved guideways 36. Formed on the part 32 is a track 37. The track 37 has a depression 38, formed at its central portion, as best shown in Fig. 7. The track 37 gradually rises from the depression 38 toward its ends, as shown in this figure. The track 37 in addition to being thus inclined is beveled, as best shown in Figs. 1 and 8, so as to coöperate with a conical wheel, as will be hereinafter described. At the ends of the track 37 are arranged inclines 39, which are adapted to coöperate with the body of the movable part of the lower hinge. The inclines 39 terminate in stops 40 for limiting the movement of the door.

The movable part of the lower hinge is preferably placed in the door, as shown in Fig.

1, the door being sawed or mortised out, as at 42, to receive the body of the movable part, and having bored in it a hole 43 to receive a coil-spring, as will be hereinafter described. The movable part 33 is provided on its bottom with a pair of bearing-posts 44, having rounded ends which coöperate with the bearings 34, hereinbefore described. Adjacent to the bearing-posts 44 are lugs 45, which travel in the auxiliary guideways 36.

46 is a member slidingly mounted in the part 33 and provided with a conical wheel 47, adapted to travel on the beveled track 37. The upper end of the member 46 is provided with a pin 48, which is surrounded by a coil-spring 49, projecting into the hole 43, formed in the door. This spring 49 holds the wheel 47 against the track 37.

50 represents a pair of side plates which are secured to the sides of the door by means of wood-screws 51. These plates 50 are connected to the movable part of the lower hinge by means of machine-screws 52, passing through the side plates and entering threaded openings 53 in the movable part 33 of the hinge. At the rear edge of the part 33 is an offset 54, which is adapted to bear against a curved strip 55, carried by the fixed part 32 of the hinge.

The operation of my hinge is as follows: When the door is opened, it turns upon one of the bearing-posts 44, the opposite post passing along one of the curved guideways 35 and the lug 45 of the bearing upon which it turns passing around the auxiliary curved guide 36. This auxiliary guide 36 and lug 45 help to retain the bearing-post 44 in position on the bearing 34. This result is also secured by means of the conical wheel 47 running on the beveled track 37, as the wheel is held down firmly against the track by means of the coil-spring 49, and thus tends to force the movable part of the bearing against the rear of the fixed part. As the door moves open the wheel 47 and sliding member 46 are moved upwardly because of the inclination of the track 37, thus compressing the spring 49 and tending to move the door back to its closed position. This tendency is also increased by the fact that the upper bearing is placed farther from the rear post 17 than the lower bearing, thus throwing the outer end of the door upward as the door turns on its pivot. When the wheel 47 reaches the end of the track 37, one edge of the movable part 33 of the hinge strikes against the upward incline 39, thus further raising the door. At the same time the inclined rub-strips 24 come in contact with the projections 29 on the plate 20, thus stopping the door without any noise or jar. In case the door should be moved with such force that this would fail to stop it the edge of the part 33 will come in contact with the stops 40 at the ends of the inclines 39, thus positively limiting the movement of the door. As soon as the door is released it will return to its normal position, owing to its outer end being raised and also owing to the fact of the spring 39 forcing the wheel 47 against the inclined track 37. When the door has reached a closed position, the wheel 47 will drop into the recess 38, thus holding the door in its closed position until considerable pressure is brought to bear upon it.

Having fully described my invention, what I claim as new, and desire to secure by Letters Patent of the United States, is—

1. In a hinge for doors and the like, a fixed part, a movable part, a beveled track carried by one of said parts, and a member carried by the other of said parts and traveling on said track, said track and member being arranged to force the said movable part toward the rear.

2. In a hinge for doors and the like, a fixed part, a movable part, a beveled track carried by one of said parts, and a conical wheel carried by the other of said parts and traveling on said track, said track and conical wheel being arranged to force the said movable part toward the rear.

3. In a hinge for doors and the like, a fixed part, a movable part, one of said parts being provided with a pair of bearings and the other with a pair of bearing-pins, a beveled track carried by one of said parts, and a conical wheel carried by the other of said parts and traveling on said track, said track and wheel being arranged to force the said movable part toward the rear.

4. In a hinge for doors and the like, a fixed part, a pair of bearings carried by said fixed part, a movable part, a pair of bearing-pins carried by said movable part, a beveled track carried by said fixed part, and a conical wheel carried by said movable part and traveling on said track, said track and wheel being arranged to force the said movable part toward the rear.

5. In a hinge for doors and the like, a fixed part, a movable part, a beveled track carried by one of said parts, a member slidingly mounted on the other of said parts, a conical roller carried by said member and traveling on said track, said track and roller being arranged to force the said movable part toward the rear and a spring for forcing said roller against said track.

6. In a hinge for doors and the like, a fixed part, a movable part, a track carried by one of said parts, a yieldingly-mounted member carried by the other of said parts and traveling on said track, and a pair of inclines at the ends of said track for contacting with the part carrying said yieldingly-mounted member.

7. In a hinge for doors and the like, a fixed part, a movable part, a track carried by one of said parts, a yieldingly-mounted member carried by the other of said parts and traveling on said track, a pair of inclines at the ends of said track for contacting with the part carrying said yieldingly-mounted mem-

ber, and a pair of stops at the ends of said inclines for limiting the movement of said movable part.

8. In a hinge for doors and the like, a fixed part, and a movable part, one of said parts being provided with a pair of bearings, a pair of intersecting curved guideways extending therefrom, and a pair of auxiliary guideways adjacent thereto, and the other of said parts being provided with a pair of bearing-posts coöperating with said bearings and traveling in said intersecting guideways, and a pair of lugs adjacent to said posts and traveling in said auxiliary guideways.

9. The combination with a door, of an upper hinge consisting of a fixed part and a movable part, one of said parts being provided with a pair of projections and the other of said parts being provided with a pair of inclined rub-strips for contacting with said projections, and means for raising said door when it is opened.

In testimony whereof I have hereunto set my hand and affixed my seal in presence of the two subscribing witnesses.

CHARLES H. FOSTER. [L. S.]

Witnesses:
J. H. BRYSON,
W. A. ALEXANDER.