

O. KATZENBERGER.
FLOOR HINGE.
APPLICATION FILED NOV. 8, 1910.

996,413.

Patented June 27, 1911.

2 SHEETS—SHEET 1.

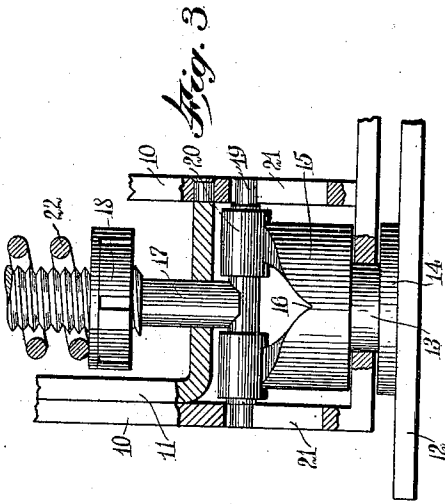


Fig. 3

Fig. 4

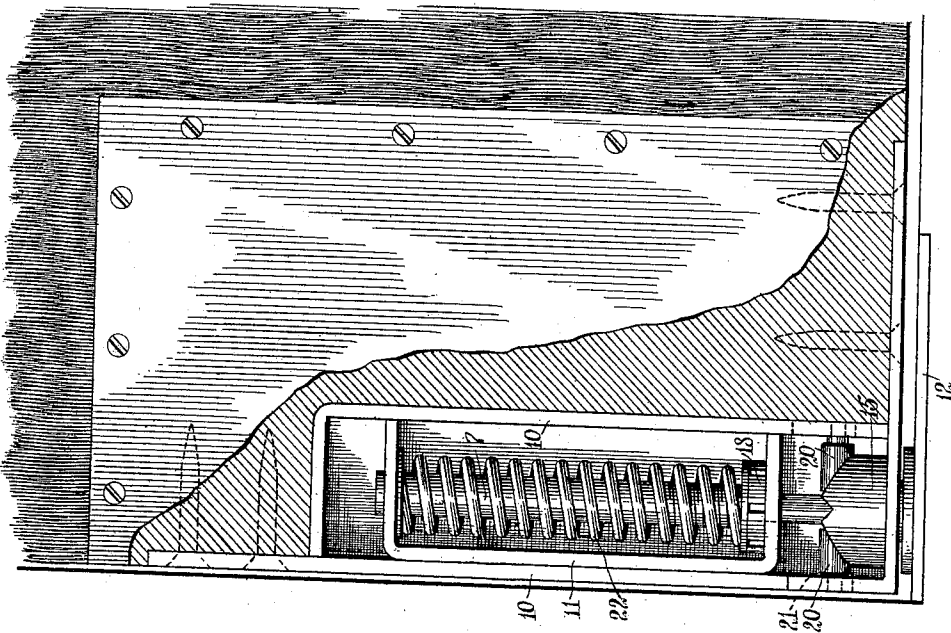
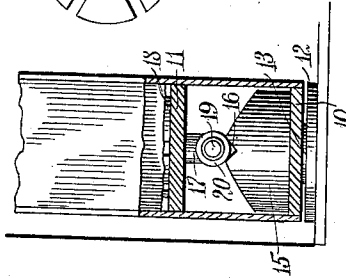
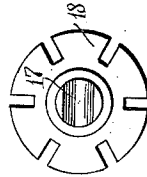
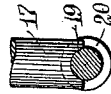


Fig. 8

WITNESSES

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2 SHEETS—SHEET 2.

Fig. 8

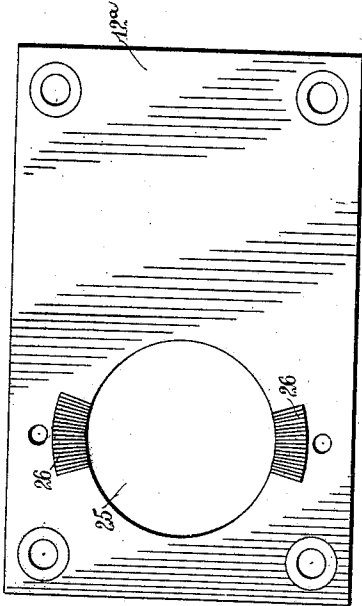


Fig. 10

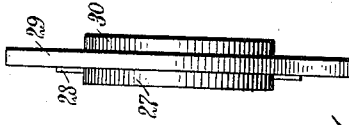


Fig. 11



Fig. 9

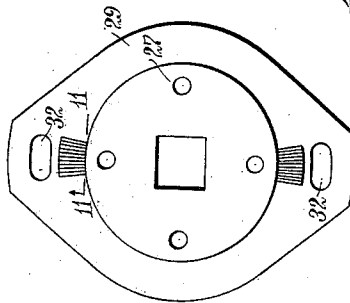


Fig. 6

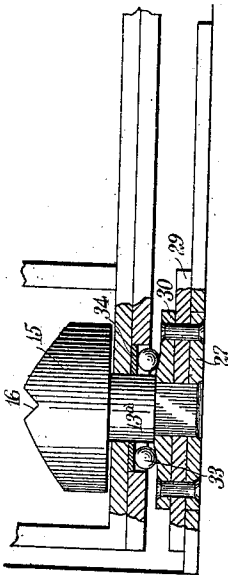
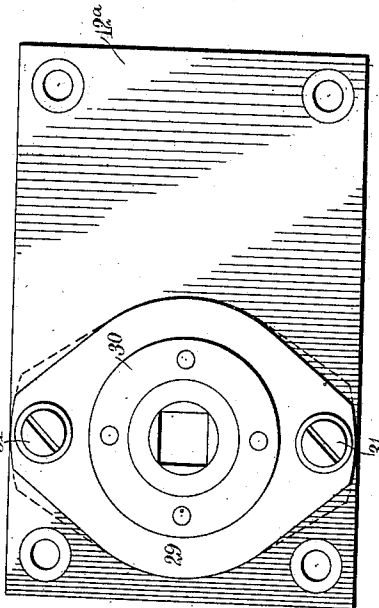


Fig. 7



WITNESSES

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UNITED STATES PATENT OFFICE.

OSCAR KATZENBERGER, OF CHICAGO, ILLINOIS.

FLOOR-HINGE.

996,413.

Specification of Letters Patent. Patented June 27, 1911.

Application filed November 8, 1910. Serial No. 591,306.

To all whom it may concern:

Be it known that I, OSCAR KATZENBERGER, a citizen of the United States, and a resident of Chicago, in the county of Cook and State of Illinois, have invented a new and Improved Floor-Hinge, of which the following is a full, clear, and exact description.

The invention is an improved hinge, belonging to that class of spring hinges employed to hinge a door or other closure to the floor. Hinges of this type ordinarily have torsional springs which are necessarily so small in diameter that they will not stand for any considerable length of time the strains to which they are subjected. To overcome this in my improved hinge, I have provided a vertically-movable bolt actuated by the hinge cam and forced to the cam to return the closure to closed position by a resilient compression member or spring, in this manner producing a strong, simple and compact hinge structure.

Reference is to be had to the accompanying drawings forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the views.

Figure 1 is a view illustrating my improved floor hinge as applied to a door; Fig. 2 is a sectional view of the hinge, with the door fully opened, and at right-angles to the position shown in Fig. 1; Fig. 3 is a fragmentary sectional view of the hinge on an enlarged scale, the parts being in the position shown in Fig. 2; Fig. 4 is a detail view of the adjusting nut for the spring; Fig. 5 is a fragmentary sectional view of the cross-head at the lower end of the bolt; Fig. 6 is a fragmentary side view of the modified form of construction, showing the lower portion of the hinge frame and floor plate partly in vertical section; Fig. 7 is a plan of the floor plate shown in Fig. 6, with the adjustable cam-carrying member attached; Fig. 8 is a plan of the modified form of floor plate; Fig. 9 is an inverted plan of the cam-carrying teeth; Fig. 10 is an edge view of the same; and Fig. 11 is a fragmentary section on the line 11-11 of Fig. 9.

Referring to Figs. 1 to 5 inclusive, the construction of my improved hinge requires a suitable vertically-disposed frame, the frame shown having side bars 10, the inner side bar turned outwardly at the top and secured to the outer side bar, and the outer side bar

of L-form to extend along the inner and lower edges of the door a substantial distance beyond the inner side bar, where it is provided with suitable screw openings for securing the hinge to the door, the hinge frame being let into the door, as is the usual practice, so that the outer side bar 10 will be flush with the edge of the door. A U-shaped bar 11, constituting a part of the frame, is secured between the side bars 10, and is substantially shorter than the rectangular portion of the hinge frame formed by the side bars 10, and is substantially symmetrically disposed so as to leave a space at each end. A floor plate 12 is provided with a vertical pintle or stud 13, at the base of which, adjoining the plate, is a wear-plate or collar 14. The pintle 13 is journaled in the lower horizontal arm of the side bar 10, and at the inner side thereof is provided with an operating cam 15, the upper cam edge of which inclines downwardly to each side of diametrically opposite points, the lowest points of the cam being arranged in a diametrical vertical plane at right-angles to a line extending between the highest points of the cam. The lowest, as well as the highest, points of the cam are provided with V-shaped notches 16, with the notches at the highest points disposed at the opposite sides of the floor plate 12, and of the lower points arranged in a line extending lengthwise of this plate. In the arms or cross members of the U-shaped frame member 11 is vertically slidable a bolt 17, the bolt being screw-threaded adjacent to its lower end, where it is provided above the lower arm of the frame member 11, with an adjusting nut 18. The portion of the bolt extending below the frame member 11 is provided with a cross-head or pin 19, each arm of which is provided with a roller 20 arranged to respectively bear at opposite sides of the center on the cam 15, the ends of the pin or head passing through vertical guide slots 21, formed in the side bars 10 of the frame. The bolt is normally forced downwardly to press the rollers 20 against the cam, by suitable resilient means, such as a compression spring 22, surrounding the bolt and bearing on the upper arm of the frame member and the nut 18.

With the hinge thus constructed, when applied to the door, the bolt and rollers 20 will be at their lowest position when the door is closed, as shown in Fig. 1, the door being

retained in this position until moved under substantial pressure by the engagement of the rollers 20 in the lowest notches 16 of the cam. When the door is swung open against the action of the compression spring to stand in a fully opened position at right-angles to the position shown in Fig. 1, the rollers 20 engage in the notches 16 at the highest point of the cam and retain the door until the latter is moved sufficiently to release the rollers from the cam notches, when the spring pressure on the rollers causes the door to swing closed.

In Figs. 6 to 11 inclusive, I have shown a modification of that part of the construction comprising the floor plate and the connection of the cam therewith. In this form of my invention I aim to secure registry between the free vertical edge of the door and the central portion of the door jamb when the door is in closed position, without depending on the screws in the floor plate for the proper adjustment. In arriving at this, and also lessening the friction between the floor plate and hinge frame in so far as possible, I provide a floor plate 12^a having the usual screw openings for fastening it in place, and also provided with a large opening at the point where the cam stem or stud is to be applied, this opening having at each side a roughened portion or teeth 26. A cam-carrying member, as shown in detail in Figs. 9 and 10, is constructed with a boss 27 at the lower side, of a size to exactly fit within the opening 25, and having oppositely-arranged teeth or roughened portions 28 adapted to mesh or engage with the teeth 26. The cam-carrying member further comprises an intermediate adjusting plate 29 and a bearing plate 30, the adjusting plate being secured to the floor plate by machine screws 31, which pass through slots 32 formed in the adjusting plate 29 and threaded into the floor plate, the slots 32, when the screws are slightly loosened, giving the cam-carrying member a limited turning adjustment. The boss 27, adjusting plate 29 and bearing plate 30 may be made of a single piece, but, as shown in Fig. 6, are made of separate plates riveted together. The cam-carrying member is provided with a central angular opening through which passes the angular portion of the stem or stud 13^a of the cam 15, the stem or stud being of sufficient length above the bearing plate to pass through a double thickness of the hinge frame carried by the door, the lower plate of this frame being cut out to form a bearing recess to receive the bearing rollers or balls 33, which are interposed between a bearing plate 34 at the bottom of the recess and the upper bearing face of the

bearing plate 30. The stem or stud 13^a is riveted or otherwise secured to the cam-carrying member. By this construction of the floor plate it is apparent that the cam can be adjusted to cause the door to stop, when closed, at the required point without molesting the screws in the floor plate, the cam-carrying member when secured in place being prevented from moving relatively to the floor plate by reason of the teeth or roughened surfaces.

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

1. A hinge having a floor plate provided with a vertical pintle, a frame journaled on the pintle, a cam arranged centrally over the pintle, having an upper cam edge inclining downwardly to each side at diametrically opposite points, a vertically movable bolt having horizontally disposed members bearing on the cam respectively at each side of the center, and a resilient compression member forcing the bolt to the cam.

2. In a hinge, a vertical pintle having a cam provided with an upper cam edge inclining downwardly to each side of diametrically opposite points, with the highest and lowest points of the cam provided with notches, a vertically movable bolt having a cross-head seating on the cam and adapted to pass into the notches, and a spring forcing the bolt in a direction to press the cross-head to the cam.

3. In a hinge, a pintle, a hinge frame journaled on the pintle, a cam fixed relatively to the pintle and arranged within the frame, the cam having an upper cam edge inclining downwardly to each side of diametrically opposite points, a bolt vertically movable in the frame, having a cross member at its lower end provided with rollers seating on the opposite sides of the cam, and a compression spring forcing the bolt in a direction to press the rollers to the cam.

4. In a hinge, a pintle, a hinge frame journaled on the pintle, the pintle having a cam fixed relatively thereto, a vertically movable bolt having a cross-head arranged to bear on the cam at each side of a central position, with the ends of the cross-head guided vertically in the hinge frame, and a compression spring forcing the bolt in a direction to press the cross-head to the cam.

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

OSCAR KATZENBERGER.

Witnesses:

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ALBERT J. HECKEL.