

(No Model.)

W. H. FAUBER.
DOOR BELL.

No. 555,366.

Patented Feb. 25, 1896.

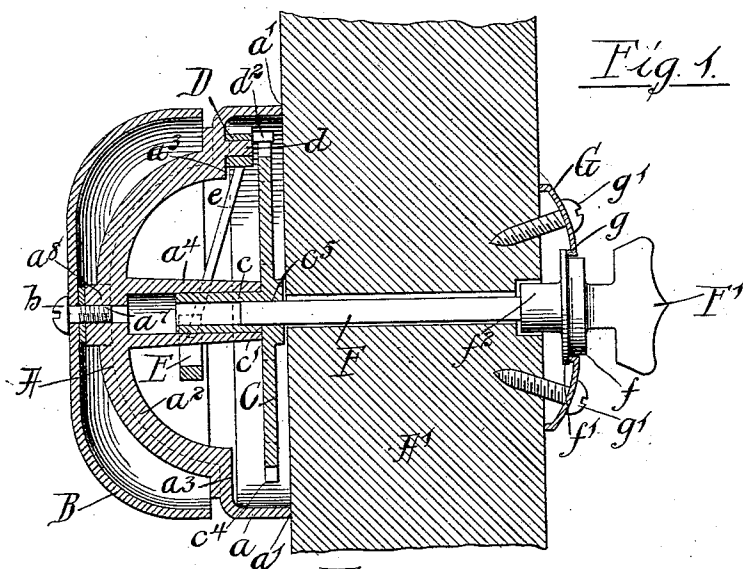


Fig. 1.

Fig. 5.

Fig. 2.

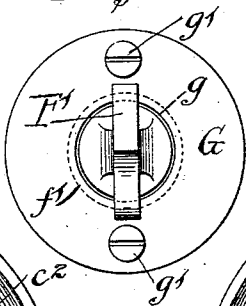


Fig. 3.

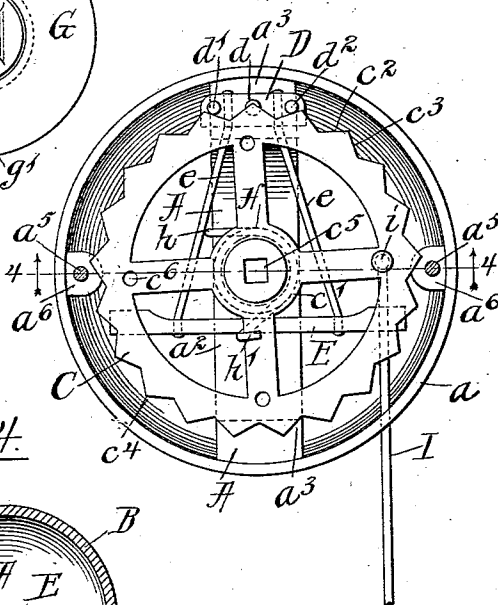
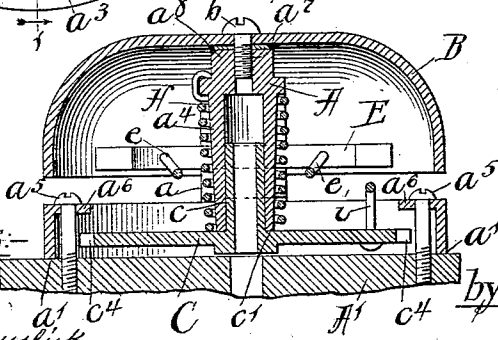


Fig. 4.



Witnesses:-

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UNITED STATES PATENT OFFICE.

WILLIAM H. FAUBER, OF CHICAGO, ILLINOIS.

DOOR-BELL.

SPECIFICATION forming part of Letters Patent No. 555,366, dated February 25, 1896.

Application filed December 13, 1894. Renewed January 25, 1896. Serial No. 576,891. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM H. FAUBER, of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Door-Bells; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

This invention relates to door-bells or annunciators of that class in which the bell is operated by the movement, as by turning or pulling, of a movable part or handle having mechanical connection with the striking mechanism of the bell.

The object of the invention is to provide an improved construction in devices of the character referred to whereby the number of parts and cost of producing the same are reduced to a minimum, and whereby the action of the striking mechanism is under the direct control of the operator.

A further object is to provide a bell capable of use in various ways and under a variety of circumstances.

The invention consists in the matters hereinafter described and more particularly pointed out in the appended claims.

It will be more readily understood by reference to the accompanying drawings, in which—

Figure 1 is an axial section, taken on line 1 1 of Fig. 2, of a bell embodying my improvement, showing the manner of applying the same directly to the inner face of a door or outer wall. Fig. 2 is a rear elevation showing the back of the bell, which is placed in contact with the door or wall. Fig. 3 is a view similar to Fig. 2, showing the bell equipped with attachments by which it may be located in any part of the house. Fig. 4 is an axial section taken on line 4 4 of Fig. 3. Fig. 5 is an outer face view of the operating-knob and escutcheon-plate shown in Fig. 1.

Referring to said drawings, A designates, as a whole, the main frame or casting, the same comprising a circular rim a designed to be secured to and to rest at one edge, as a' , against the wall, and an outwardly-extending cross-bar a^2 , preferably cast integral with

said rim and extending diametrically across the same. The bar a^2 is provided at each end adjacent to its juncture with the rim a with straight portions a^3 a^3 , the inner faces of which are arranged in a plane parallel with the plane of the rim as a whole. A hollow tubular hub or part a^4 is cast centrally upon the inner side of the bar a^2 , said hub having a central bore or socket arranged axially of the bell. The frame A is designed to be secured to the wall A' , as herein shown, by means of screws a^5 a^5 passing through lugs a^5 a^5 cast on the inner surface of the rim a , as clearly shown in Figs. 3 and 4.

B is the bell or gong, which is of the usual circular concavo-convex form and preferably of the same diameter as that of the rim a . The bell is mounted upon the cross-bar a^2 , at the rear or outer side thereof, concentrically with the rim a , by means of a screw b passing therethrough and engaging a suitable screw-threaded socket a^7 formed in a boss a^8 provided on said cross-bar and against which the central portion of the bell is clamped by the screw b . Preferably a metallic washer will be interposed between the parts, as shown.

C is a cam-wheel provided with a spindle c adapted to fit and rotate within the tubular or socketed hub a^4 . The latter is of proper length to embrace the spindle c throughout its full length, so that its end bears against the central or hub portion c' of the cam-wheel, and to hold said wheel in a plane parallel with the rim a and with its outer surface, or that adjacent to the wall, nearly flush with the edge a' of the rim.

The diameter of the cam-wheel C is somewhat less than that of the rim a , and its outer periphery is formed into a series of cam-surfaces c^2 c^3 arranged at opposite equal angles with the radii of the wheel and joining each other in such manner as to form a series of obtuse V-shaped or pointed cam projections or teeth c^4 .

D is an oscillatory bar pivoted midway of its length by means of a pivot-stud d upon one of the shoulders a^3 , and provided at each end with cam-studs d' d^2 , which engage at their sides with the cam-surfaces of the wheel C. The distance between the studs d' and d^2 is such and the bar D is so mounted that when one of said studs, as d^2 , is at the point of one

of said cam projections the other will rest in the depression between the adjacent cam projection and the following one. Thus arranged it will be obvious that when the cam-wheel has turned in either direction the length of one cam-surface the above-described relations will be exactly reversed, and the continued movement of the wheel C in either direction will impart a positive oscillatory movement to the bar D.

E is a double-faced hammer or clapper rigidly secured to and carried by the bar D. The connection between the hammer and bar is shown as formed by means of two arms *e e*, which are secured to the bar D and hammer E conveniently by being inserted through suitable apertures formed in each of said parts and riveted therein. The bars are arranged to diverge so as to pass on each side of the tubular hub *a*⁴, the distance between the bars being such as to avoid striking of the bars against the said hub in the vibration of the hammer. In order to bring said hammer in proper position to play upon the inner rim of the gong they are bent or inclined outwardly from their point of attachment with the bar D, as shown clearly in Fig. 1. The length of the hammer is such that it will reach and come into contact with the bell at the end of each vibration in either direction, thus tapping or ringing the bell twice during the passage of each cam projection past a given cam-stud.

In order to turn the cam-wheel C so as to ring the bell in the manner described, said wheel is provided with a rectangular socket *c*⁵ in its center, which is engaged by the end of a square spindle F, which extends through a suitable aperture in the wall A'. At its outer end exterior to said wall the spindle F is provided with a suitable cross-bar or knob F', by which it may be turned.

The spindle F may be held in position in any suitable or desired manner, but is herein shown as provided with a novel and improved form of mounting, which also forms part of the present invention.

As herein shown, said spindle is provided at a short distance exterior to the face of the wall with an annular cylindrical-sided shoulder *f*, upon which is formed an annular flange *f'*. G is an escutcheon-plate provided with a central aperture *g* of suitable size to fit around the annular shoulder *f* and engage at its inner margin with the flange *f'*. The plate G is adapted to rest at its outer margin against the face of the wall A', and is secured thereto by screws *g'* *g'*.

It will be obvious that when constructed as above described the spindle F will not only be held accurately in axial alignment with the bell, but will also be prevented from outward movement and consequent disconnection from the bell, while at the same time a desirable bearing is provided within which it may be rotated. The inward movement of the spindle is herein shown as limited by

means of an annular shoulder *f*², formed at the juncture of the spindle with the neck of the thumb-nut, which engages a countersunk recess in the wall. Obviously this shoulder *f*² may be enlarged and arranged to rest directly against the surface of the wall, if desired.

In assembling the parts the escutcheon-plate will be placed upon the spindle by inserting the cross-bar of the latter cornerwise through the plate before the spindle is placed in the wall, the contracted or neck portion of the spindle permitting the parts to be thus assembled, although the cross-bar itself is greater in length than the diameter of the opening in the escutcheon-plate.

In Figs. 3 and 4 the bell is shown as provided with additional features by which it is adapted for use as a pull-bell or annunciator, which may be located in any desired part of the house. As shown in these figures, H designates a coiled spring adapted to be placed upon the tubular hub *a*⁴. One end of the spring H is secured to the frame A conveniently by means of a hook *h*, which engages the cross-bar *a*², so as to be held from rotation, while at its other end it is provided with a second hook *h'*, adapted to engage one of the spokes or radial members of the cam-wheel C.

I is a rod or bar arranged to extend through the opening between the bell and rim *a* and provided at its end with a bent or angled portion *i*, which engages one of the apertures *c*⁶ in the wheel C. The bell will be hung or mounted upon any suitable support—as the side of a wall, casing, or the like—in the desired location, and a wire or cord will be connected with the outer end of the rod I and trained from thence to an ordinary bell-pull located adjacent to the outer door, or in any other desired position. The rod I will be so arranged as to extend outwardly from its point of connection with the cam-wheel in a tangential direction when the bell-pull is in its normal or innermost position, so that a pull on the latter will rotate the wheel in opposition to the tension of the spring H. Upon the release of the bell-pull the spring will obviously return the wheel to its normal position, thus sounding the bell during both the outward and inward movement of the door-pull.

It will be obvious that in place of the bell-pull the operating wire or cord may be attached to the door itself in such manner that the opening of the door will cause a pull upon the cord. The bell may thus be employed as a shop-bell or annunciator to announce the entrance of customers or for various other analogous uses.

A bell constructed as above described has many and obvious advantages. The construction is such that the number of parts is reduced to a minimum and all of the main parts may be readily made of cast metal. By reason of the peculiar construction of the frame a single casting provides all of the required

bearings and supports for all parts of the bell proper. The actuating mechanism of the bell is extremely strong and simple, while at the same time the ringing of the bell is under perfect control of the operator. By turning the cam-wheel slowly a very soft ringing is produced, and by increasing the rapidity of its movement any desired degree of loudness may be produced. When the cam-wheel is turned at an ordinary speed the rebound of the hammer at the end of each stroke aids very materially in carrying the cam projection of the oscillatory bar up the next incline of the cam, thereby producing an exceedingly smooth and powerful action at the expense of a very slight effort.

The novel construction in the operating-spindle herein shown is extremely simple, practical and efficient, and capable of use in connection with devices other than that herein illustrated.

It is to be noted that various modifications may be made in the construction of the device from that illustrated herein without departure from the invention. It will be obvious, for instance, that a segment only of the cam-wheel herein shown would operate equally well if not rotated too far in either direction. Said cam-wheel might also be provided with curved or undulating cam-surfaces instead of having straight-sided teeth, as herein shown, and said cam-surfaces might readily be formed interiorly of the rim by a slight modification of the wheel in cross-section. These and other analogous changes I claim as being within the scope and spirit of my invention.

I claim as my invention—

1. An annunciator-bell comprising a main frame of annular form provided with a cross-bar the central part of which projects outside of the frame and which has a central hub projecting inwardly therefrom, a gong mounted upon said cross-bar concentrically with the frame, a cam-wheel mounted on the said hub, a hammer-carrying member pivoted on the frame adjacent to the cam-wheel and provided with two cam projections engaging said cam-wheel, and a double-ended hammer mounted on the hammer-carrying member and located and adapted to swing in a plane between the cross-bar and the cam-wheel, said hammer being adapted to strike the opposite sides of the gong when the pivoted member is oscillated by rotation of the cam-wheel, substantially as described.

2. An annunciator-bell, comprising a main frame of annular form provided with a cross-bar, the central part of which projects outside of the frame and which has a central, inwardly-projecting hub, a gong attached to the cross-bar, a cam-wheel mounted on said hub, a hammer-carrying member pivoted upon the end portion of the cross-bar within the annular frame, and a double-ended hammer rigidly connected with the hammer-carrying member, said hammer being located in a plane outside the annular frame with its ends in posi-

tion for contact with the bell, substantially as described.

3. An annunciator-bell, comprising a main frame of annular form provided with an outwardly-extending cross-bar having an inwardly-projecting socketed hub at its center, a gong secured to the cross-bar concentrically with the main frame, a cam-wheel having a central spindle which engages the socketed hub, a hammer-carrying member pivoted on the inner surface of the bar within the frame and engaging the cam-wheel, and a hammer connected with the hammer-carrying member in position to engage the bell, substantially as described.

4. An annunciator-bell comprising a main frame of annular form provided with a cross-bar the central part of which projects outside of the frame and which has an inwardly-projecting, socketed hub, a gong mounted upon said cross-bar, a cam-wheel provided with a central spindle which enters the socket-hub and with annularly-arranged cam projections or teeth, a hammer-carrying member pivoted on the frame and provided with projections engaging the cam-wheel, and a double-ended hammer attached to the hammer-carrying member between the cross-bar and the cam-wheel and adapted to strike opposite sides of the gong when vibrated by the action of the cam-wheel, substantially as described.

5. An annunciator-bell, comprising a main frame of annular form provided with a cross-bar the central part of which extends outside of the frame, and provided with an inwardly-extending hub, a gong attached to the cross-bar, a cam-wheel mounted on the said hub and provided with annularly-arranged cam teeth or projections, a hammer-carrying member pivoted on the frame and provided with two projections engaging the cam-wheel, and a double-ended hammer consisting of a bar located at the side of the hub opposite to that at which the hammer-carrying member is located, and connected with said hammer-carrying member by means of arms extending at opposite sides of said hub, substantially as described.

6. An annunciator-bell, comprising a main frame of annular form provided with a cross-bar having a socketed hub, a gong mounted on said cross-bar, a cam-wheel provided with a central hub which engages the socketed hub on the cross-bar and which is provided with a square socket or aperture to receive an actuating-spindle, a hammer-carrying member pivoted on the frame and provided with two projections which engage the cam-wheel, and an actuating-spindle having a cross-bar handhold at its outer end and having a squared end which engages the socket of the cam-wheel, substantially as described.

7. The combination, with an annunciator-bell provided with a rotating part by which the same is actuated, of an actuating-spindle the body portion of which extends through the wall or door and which is provided at its

outer end with a head having a cross-bar or handle, and an annular bearing-surface provided with a flange at its side nearest the door or wall, and an escutcheon-plate provided
 5 with a central bearing-aperture which fits upon the annular bearing-surface of the spindle-head outside of the flange thereon, said spindle-head having a reduced part or neck between the handle and the annular bearing-
 10 surface whereby the said head may be inserted through the bearing-aperture of the escutcheon, substantially as described.

8. An annunciator-bell, comprising a frame of annular form having a cross-bar provided
 15 with a socketed hub, a gong attached to the cross-bar, a cam-wheel provided with a central hub which enters the said socketed hub, a hammer-carrying member pivoted on the frame and engaging the cam-wheel, a hammer
 20 attached thereto, and means for actuating the cam-wheel comprising a spindle the body portion of which passes through the door or wall and is provided with a squared end which enters a square socket in the cam-wheel and has
 25 at its outer end a head provided with a cross-bar or hand-hold and with an annular bearing-surface having a flange or shoulder at its side nearest the door or wall, and an escutcheon-plate having a bearing-aperture which en-

gages the annular bearing-surface of the spindle-head whereby the spindle is held from outward movement by its engagement with the escutcheon-plate, substantially as described.

9. An annunciator-bell comprising a main frame having a cross-bar provided with an inwardly-projecting hub, a gong mounted thereon, a cam-wheel mounted on the hub, said cam-wheel having annularly-arranged cam projections or teeth, a hammer-carrying member pivoted on the frame and provided with
 40 two projections which engage the said cam-wheel, a double-ended hammer attached to the said hammer-carrying member and adapted to swing in a plane between the cross-bar and cam-wheel, and a spring engaging the main
 45 frame and the cam-wheel and acting to turn the same in one direction, and an actuating device connected with the cam-wheel by which it may be turned in opposition to the spring,
 50 substantially as described.

In testimony that I claim the foregoing as my invention I affix my signature in presence of two witnesses.

WILLIAM H. FAUBER.

Witnesses:

HENRY W. CARTER,
 ROBT. W. TAYLOR, Sr.