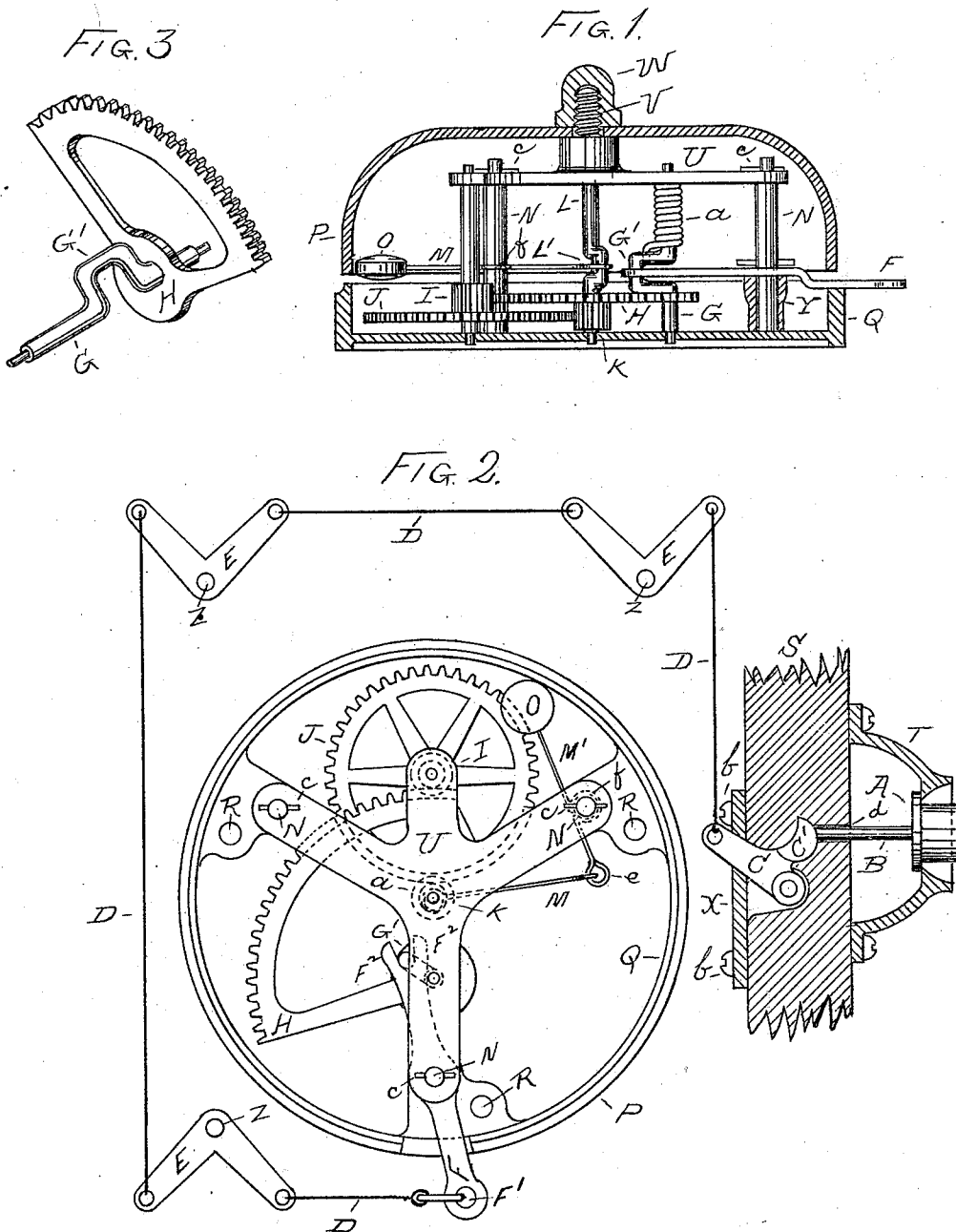


(No Model.)

I. L. GARSIDE.
DOOR BELL, &c.

No. 513,499.

Patented Jan. 30, 1894.



WITNESSES.
Lawton B. Garride
Minnie A. Garride

INVENTOR.
I. L. Garride

UNITED STATES PATENT OFFICE.

IRAD L. GARSIDE, OF PATERSON, NEW JERSEY.

DOOR-BELL, &c.

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To all whom it may concern:

Be it known that I, IRAD L. GARSIDE, of Paterson, New Jersey, have invented a new and useful Improvement in Door-Bells and Similar Apparatus, of which the following is a description, referring to the accompanying drawings, which form a part of this specification.

My invention relates to the class of bells in which rapid vibration of a hammer or hammers against a gong is produced by mechanical devices, the sound being similar to that of the usual vibrating electric bells.

My invention is adapted to be used for door bells, bicycle bells, alarm bells, and many other purposes, it being only necessary to suitably arrange and connect the bell directly or by the well known bell hanger's connections in order that the bell may be operated either directly or from a distance, according to requirements.

My improvements relate more particularly to the construction of the hammer and the motion for vibrating it; the motion by which a direct pull of the hand or wire for operating the bell is transmitted to the striking mechanism; and the construction and arrangement of the striking mechanism.

My purposes are to produce a bell simple, durable, reliable, and inexpensive, which may give a maximum number of strokes for a minimum effort and which will not easily get out of order and may be readily repaired.

To these and certain other incidental ends and purposes, my invention is embodied in the apparatus and its several parts and features, constructed, arranged, combined, and used, substantially in the manner, hereinafter described, illustrated, and claimed.

The hammer of my bell is mounted upon the end of a flexible striking lever pivoted to the frame of the bell. To the end of this lever remote from the hammer is attached a short connecting link, secured at its other end to the crank pin of a rapidly rotating crank or bent shaft. This is driven through suitable speed-gearing from a sector gear. The sector gear is mounted upon an arbor or shaft which is bent or otherwise provided with a crank. This crank works in a slot in the end of an operating lever pivoted at about its center and actuated at its other end by means of the wire or other hand connection

for ringing the bell. By this construction a slight movement of the actuating lever will cause the hammer to vibrate rapidly striking the bell a great number of times. When released, a spring upon one of the shafts of the gearing returns the mechanism to its normal position causing the hammer again to vibrate in the same manner during the return motion.

Such briefly is my invention. The details of one embodiment of it are shown in the accompanying drawings.

Figure 1 is an elevation of the bell showing the gong and back plate of the bell in central section to expose the operating mechanism. Fig. 2, is a plan view of the mechanism of the bell with the gong removed showing the parts in full, and showing a push button connection and wiring with suitable quarter-turn levers or bell cranks for operating the bell from a distance, and Fig. 3, is a detailed view of the sector with its bent shaft or actuating crank.

Throughout the figures like letters of reference indicate like parts.

The back plate Q of my bell is provided with screw holes R by which it may be attached wherever desired and firmly secured in position. A frame or plate U secured as at c or in any other desired manner to the shouldered supports N forms the bearings of one end of the arbor of the bell mechanism, the other bearings being formed in the plate Q. The bell or gong P may be mounted and secured by a screw stud V and nut W. The hammer O mounted upon a light flexible spring lever M' is pivoted to one of the supports N as shown. The other end of the lever M' is connected by a short connecting rod or link M with the crank pin of a bent shaft or double crank L, as shown at L'. This shaft L carries a small pinion which meshes with the gear J carried by the intermediate speed shaft of the mechanism. This shaft is likewise provided with a small pinion I which meshes with the sector gear H carried on the shaft G as clearly seen in detail in Fig. 3. The shaft G is bent or otherwise provided with a double crank G' and is surrounded by a helical or coiled spring a, fixed at one end, and connected with the crank G' or sector H at its other end. The spring tends to turn the parts into the position shown in the figures, which is the normal position of the bell.

The crank pin G' works in a slot F² in the end of a lever F pivoted to one of the supports N between sleeve Y and a pin as clearly seen in Fig. 1. The motion of the lever F rotates the sector H and transmits the power with increased speed to the shaft L. The crank L' converts the rotation into a reciprocating motion of the hammer lever M', vibrating the hammer against the bell. The elasticity of the lever M' permits the ready rebound of the hammer O after impact against the gong so that the energy of impact is largely saved instead of being lost as in the case of a rigid lever. Where the lever F is arranged as shown in Fig. 2, the sector H may be turned nearly one hundred and eighty degrees by a slight throw of the lever. If however, the crank projects toward instead of from the lever so that the lever and sector gear turn in opposite directions, instead of the same direction as in the figure, the angle will necessarily be somewhat more restricted. I therefore prefer the arrangement as shown although it necessitates a bent shaft to permit the play of the lever, instead merely of a pin upon the sector, which might be used in the other instance. By the term crank, however, as used in the claims, unless otherwise restricted, I mean to include the double crank shown and all its equivalents such as pins and other well known substitutes. The lever F projecting from the bell as shown at F' may be operated directly by hand or may be connected by the quarter-turn levers E with pivots Z arranged wherever required and connected one to another by suitable wiring D. The wire D may be pulled in the first instance by means of a push button A and pin B pressing against one end C' of a bell crank lever C. The wire D may be secured to the other end of the bell crank C and the crank may be mounted in a door or partition S in the manner shown by means of a supporting plate *x* held in place by small screws *b*. The push button A may be mounted in an ornamental rosette T which restricts the outward movement of the button. The coiled spring *a* holding the mechanism in the position shown in the figure keeps the wire D tight and holds the push button in its outer position against the rosette, as in the figure. When the button is pressed in, however, the pull upon the wire is transmitted to the lever F, which in turn actuates the gearing and vibrates the bell hammer. When the push button is released the spring *a* reverses the movement of the part and restores the whole apparatus to the position shown in the figures.

With the gearing shown, one thrust of the push button A is designed to give about fifty strokes of the bell, and when the push button is released the recoil of the spring gives fifty more during the reverse operation. Of course the gearing may be modified to give a greater or less number. The intermediate shaft with its gear and pinion may be dispensed with and a more powerful and direct action with a less number of strokes obtained. Such a construction is desirable where great length of wire is employed between the push button and the bell. It must be understood also that some parts of the invention may be used without the others, or with substitutes, and that various modifications may be made in the forms, proportions, and details of the parts to adapt the bell to particular uses.

I have now set forth one embodiment of my invention, and the way in which it may be employed.

I have purposely omitted all description and enumeration of the many changes that may be made without departing from the principles of my invention, because to set forth these at length would obscure rather than make clear the more essential features of my device.

Having, however, clearly explained my invention in one embodiment, I claim and desire to secure by these Letters Patent, together with all such changes and modifications as may be made by mere skill in the art, and with only the restrictions and limitations expressed or necessarily implied, the following:

1. In combination in a bell, an actuating lever F provided with a forked or slotted end F², a vibratory crank G' working in the fork or slot of the said lever, a bell hammer for the said bell, and a train of gearing or other operating mechanism for the said hammer driven by the said vibratory crank G', substantially as and for the purposes set forth.

2. In combination for the purposes described, a bell hammer O, a flexible lever carrying the said hammer and suitably fulcrumed, a shaft provided with a double crank or bend L', a connecting rod or link M connected at one end to the said lever and at the other end to the crank pin of the said crank, and means for rotating the said shaft substantially as, and for the purposes, set forth.

IRAD L. GARSIDE.

Witnesses:

LAWTON B. GARSIDE,
JOHN JENKINS, Jr.