No. 625,670. Patented May 23, 1899.

J. H. GOSS & G. W. EDDY.

ROTARY BELL.

(Application filed Sept. 14, 1898.)

(No Model.) 2 Sheets—Sheet 1.

Fig. 1.

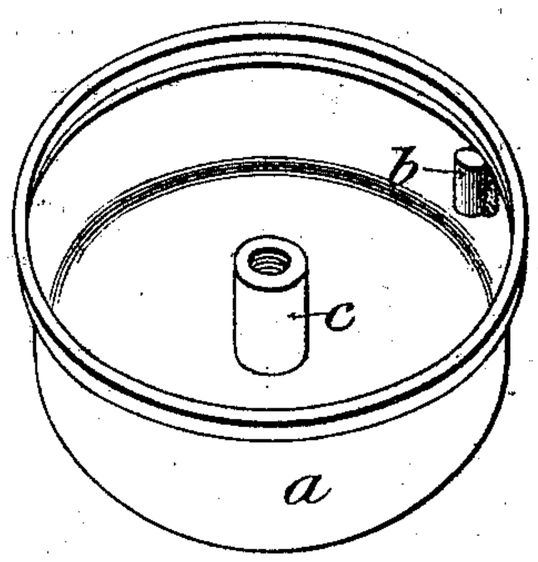


Fig. 2.

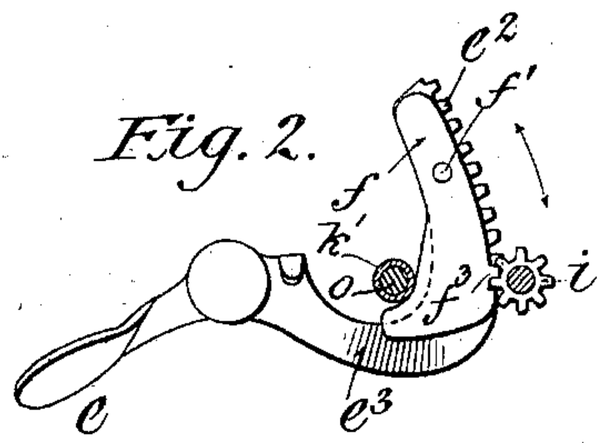


Fig. 3.

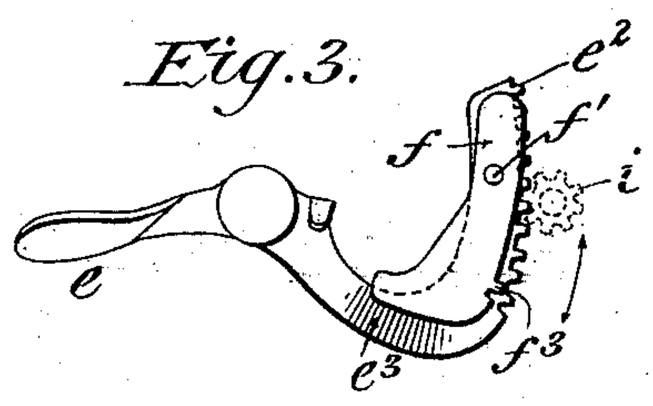


Fig. 4.

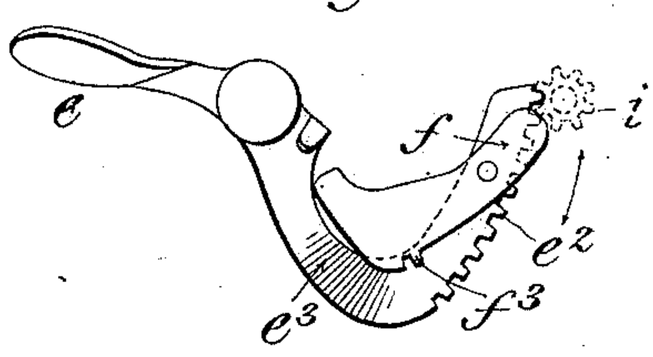
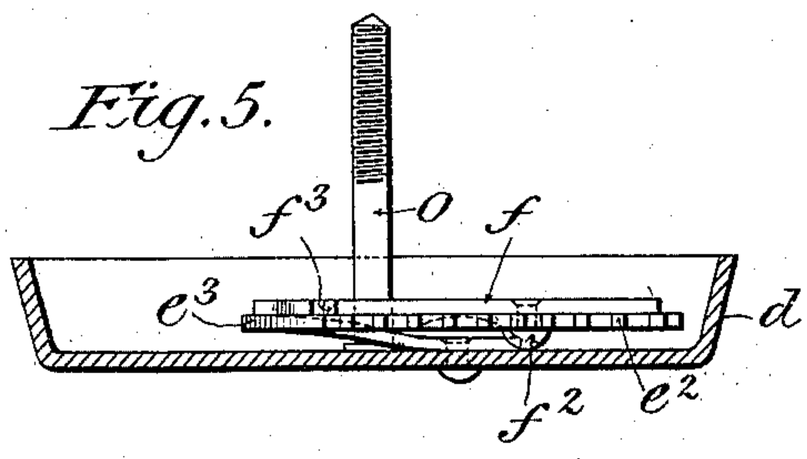


Fig. 5.



Witnesses:
Howell Battle.
Nellie Callahan.

Inventors.
John H. Goss.
George Wesley Eddy.
by W. W. Fincher.
Atty.

No. 625,670. Patented May 23, 1899.

J. H. GOSS & G. W. EDDY.

ROTARY BELL.

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(No Model.) 2 Sheets—Sheet 2.

Fig. 8.

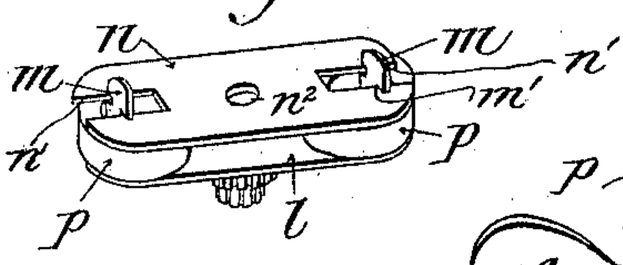


Fig. 6.

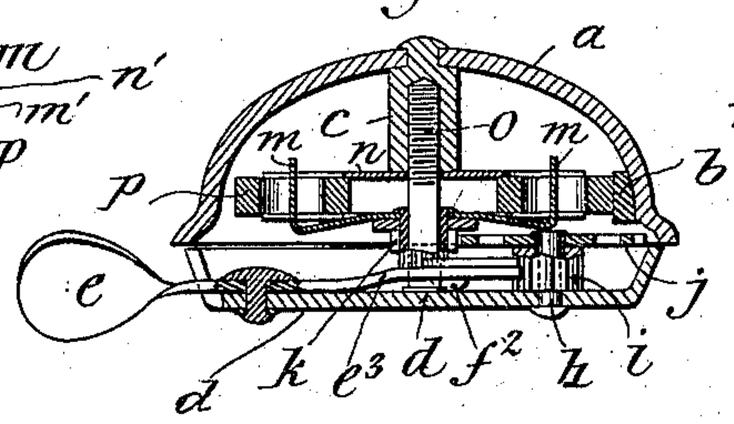
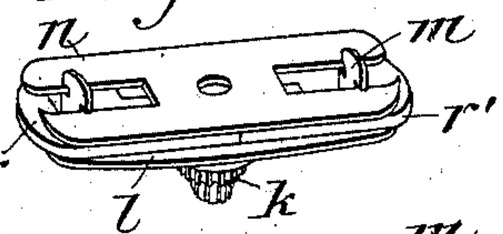


Fig. 12.



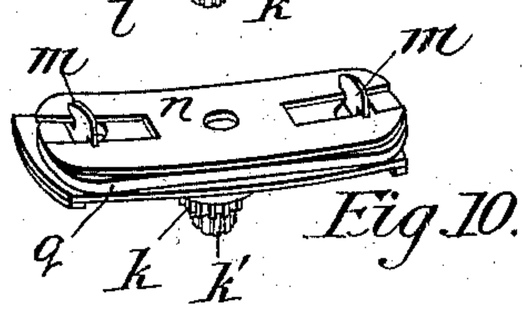
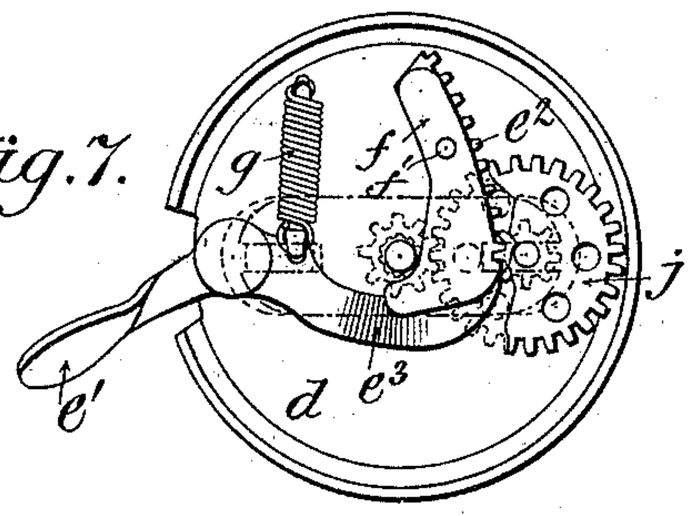


Fig. 10.

Fig. 7.



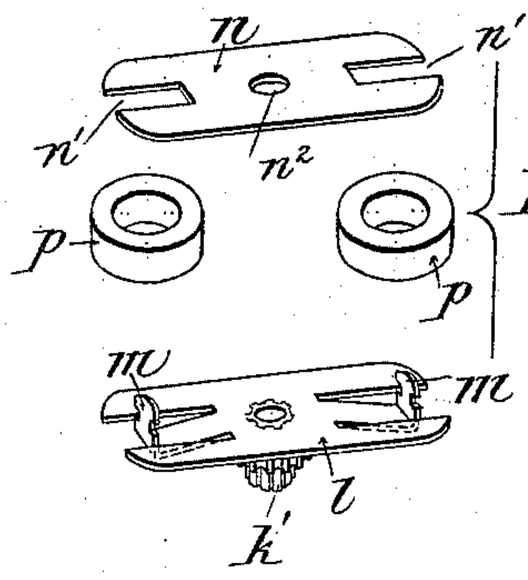


Fig. 9.

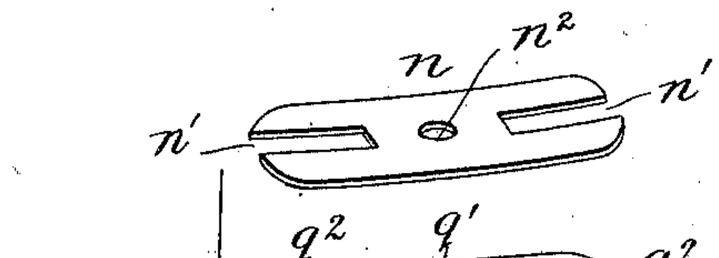


Fig. 11.

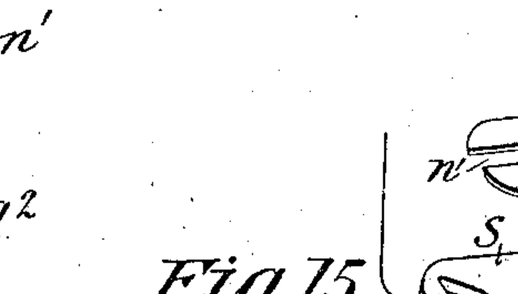


Fig. 15.

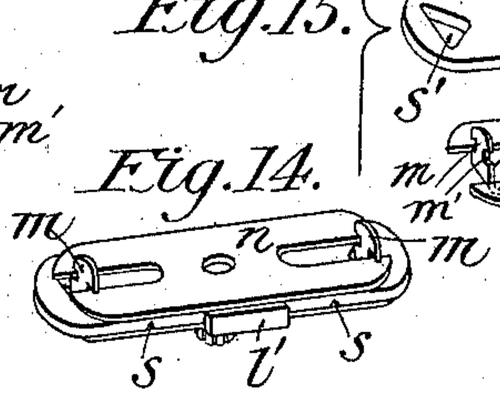


Fig. 14.

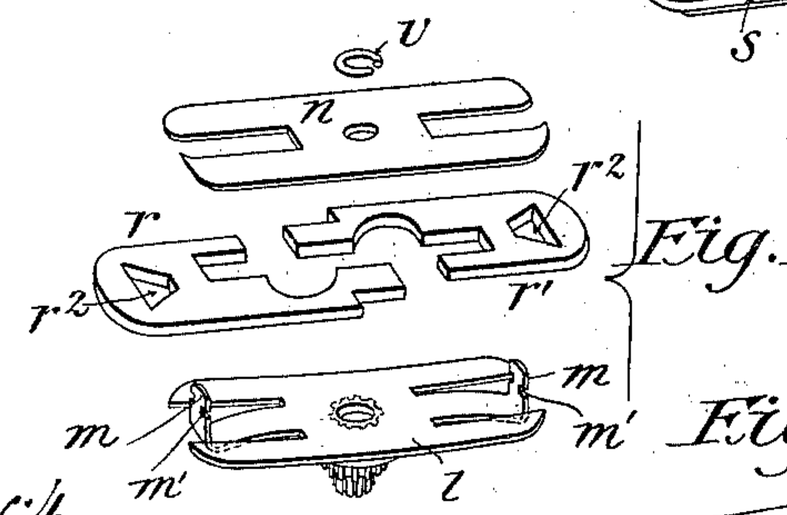


Fig. 13.

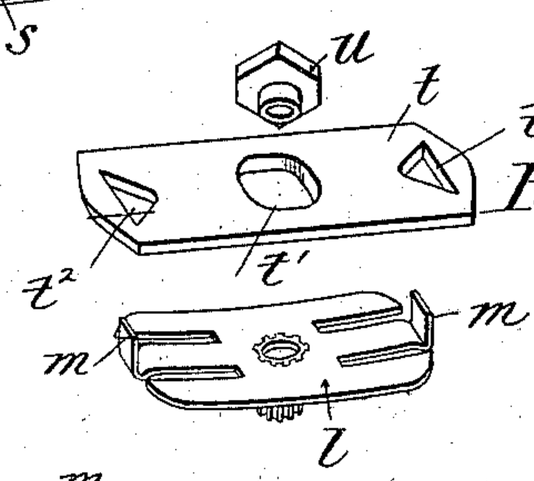


Fig. 17.

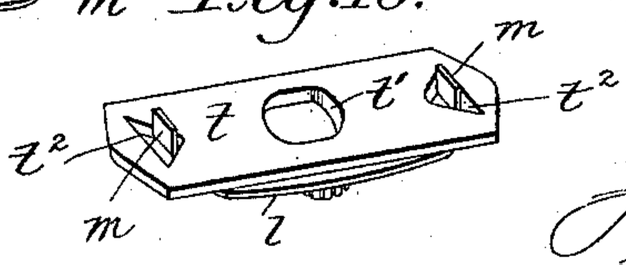


Fig. 16.

Witnesses:
Howell Battle.
Nellie Callahan.

Inventors.
John H. Goss.
George Wesley Eddy.
by Wm. H. Finckel Atty.

UNITED STATES PATENT OFFICE.

JOHN H. GOSS AND GEORGE WESLEY EDDY, OF WATERBURY, CONNECTICUT, ASSIGNORS TO THE SCOVILL MANUFACTURING COMPANY, OF SAME PLACE.

ROTARY BELL.

SPECIFICATION forming part of Letters Patent No. 625,670, dated May 23, 1899.

Application filed September 14, 1898. Serial No. 690,962. (No model.)

To all whom it may concern:

Be it known that we, JOHN H. GOSS and GEORGE WESLEY EDDY, citizens of the United States, residing at Waterbury, in the county of New Haven and State of Connecticut, have invented a certain new and useful Improvement in Rotary Bells, of which the following is a full, clear, and exact description.

This invention relates to that class of bells or gongs most largely employed on bicycles and commonly known as "rotary" bells, inasmuch as the preferred form of hammer or clapper has a rotary motion.

The present invention comprises, among other things, a bell, preferably made of sheet metal stamped up, provided with a hard-steel lug brazed or otherwise affixed to one side, means to prevent rattling of parts when the bell is not being rung, comprising a bell-lever having an upward bend and a wedge carried by the bent end of said bell-lever and adapted to be crowded between the mechanism by which the motion of the lever is transmitted to the hammer, a support to hold the bell-lever from displacement, an antirattling hammer, and other parts and combinations of parts, as hereinafter more particularly set forth and finally claimed.

In the accompanying drawings, illustrating our invention, in the several figures of which like parts are similarly designated, Figure 1 is a perspective view of a stamped-up sheet-metal bell embodying our invention. Figs. 2, 3, and 4 are plan views of the bell-lever and wedge in various positions. Fig. 5 is an end elevation of the bell-lever and wedge in position in the base of the bell. Fig. 6 is a cross-section of the parts of the bell assembled. Fig. 7 is a top plan view with the bell proper and hammer removed. Fig. 8 is a perspective view of the hammer or clapper of Fig. 6, and Fig. 9 is a perspective view of the parts of said hammer detached. Fig. 10 is a perspective view of another form of hammer, and Fig. 11 is a perspective view of the parts thereof detached. Fig. 12 is a perspective view of another form of hammer, and Fig. 13 is a perspective view of its parts detached. Fig. 14 is a perspective view of another form of hammer, and Fig. 15 a perspective view of its parts detached. Fig. 16 is a perspective view of still another form of hammer, and Fig. 17 a perspective view of its parts detached.

The bell *a* may be of any usual form and produced in any usual way; but we prefer to strike up the said bell from sheet metal and braze or otherwise affix thereto the striking-lug *b*, preferably of hard steel, the better to resist wear from the blows of the hammer, which fall upon it in rapid succession. This lug may be constructed of a piece of steel rod hardened in position or otherwise, and when constructed thus its use upon a sheet-metal or cast bell is found to be very satisfactory in durability and structural economy.

The post *c* may be clenched within an opening, as shown in Fig. 6, or brazed or otherwise applied to the bell.

The base *d* of the bell may be of any usual construction, and to it is pivoted a bell-lever *e*, which has the finger-piece *e'* and the segmental arm e^2, provided with gear-teeth. In order to elevate the segmental arm above the base to a height sufficient to clear said base and enable it to coöperate freely with the gearing to be described, we offset the arm at e^3, as shown more especially in Figs. 5 and 6. The provision of the offset bend in the lever also serves to prevent the lever from being wholly or partially disengaged from the teeth of the pinion to be described when the bell is carried upside down, as it often is by bicycle-riders.

To the arm e^2 is pivoted a wedge *f* of substantially the shape shown in detail in Figs. 2 to 4 and which forms part of Patent No. 608,478, granted August 2, 1898, to the Scovill Manufacturing Company as assignees of Herbert S. Pullman. The rivet *f'* used as a pivot for said wedge has its head, as shown more especially at f^2, Figs. 5 and 6, interposed between the bottom of the segment and the top of the base, so as to hold the bell-lever up from the base and thereby prevent it from sagging down and always keeping it in proper alinement with the gearing. This wedge *f* is provided with one or more teeth f^3, as in the patent referred to, for a purpose presently appearing.

The bell-lever is normally held in retracted position by an ordinary spring *g*, Fig. 7.

A stud *h* is secured to the base and rises

therein to receive the usual pinion i, which has fixed to it the usual gear-wheel j, the two turning together, and the gear-wheel j meshes with the pinion k, which with its rigidly-affixed hub k' is secured in suitable manner to the base l of the hammer or clapper.

The toothed segment e^2 meshes with the pinion i and rotates the same upon its stud h, and the consequent rotation of the gear-wheel j rotates the pinion k, and the latter carries and rotates the base l of the hammer.

As the lever is moved back and forth the hammer is given the usual rotary reciprocating motion, and when the lever is retracted by the spring g the wedge f comes into contact with the hub k', and thereby its widest portion is jammed between the pinion i and the hub k' with sufficient firmness to prevent any rattling of the parts. In this operation the tooth f^3, meshing with the teeth of the pinion, prevents marring thereof when forcing itself in between the pinion and the hub k'. This wedging action of part f is shown in Figs. 2, 6, and 7. In Figs. 3 and 4 it will be observed that the wedge is loose in the intermediate positions, these views being purposely exaggerated in order to show clearly this capacity of motion in the said wedge.

In all of the various forms of hammers herein shown the spring-base l has arms m to receive and limit the movement of the hammers proper. In the forms shown in Figs. 8, 9, 12, 13, 14, 15, 16, and 17 the arms m have more or less springiness, and in the form shown in Figs. 8, 9, 12, 13, 14, and 15 the sides of these arms are notched, as at m', and a spring friction-plate n, having longitudinal notches n' in its ends, is placed over the hammer proper and its notched ends interlock with the notched arms m, so as to give just that degree of friction against the hammer which will effectually prevent its rattling, while still allowing the hammer to move with freedom enough to operate against the bell-lug. This plate may be flat or slightly curved or it may have its ends curled up, as in Fig. 13. The said plate n also is provided with a hole n^2 to engage the post o.

In the form shown in Figs. 10 and 11 the base l may be springy and the arms, of an inelastic material, attached thereto.

The post o, which rises from the base, receives the parts of the hammer and forms a shaft upon which the said hammer rotates, the said post further serving to receive and support the bell proper through engagement with its post c.

Various forms of striking devices are shown. In Figs. 6 to 9 we illustrate metal rings p, and in Figs. 10 and 11 there is a single plate q, having an elongated slot q' to allow the necessary motion about the post o, and the openings q^2 for engagement with the arms m, which openings are triangular in order to insure the proper centering of the plate in its movement as the hammer is rotated. In Figs. 12 and 13 the striker is shown as composed of two plates $r\,r'$, which are complemental one to the other and cut out or dovetailed, so as to match one another when assembled upon the post and the base l and at the same time allow the necessary longitudinal movement in order effectually to sound the bell. These plates $r\,r'$ are provided with the triangular openings r^2 to coöperate with the arms m in returning the plates to proper position. In the form shown in Figs. 14 and 15 a striker is made of two complemental pieces $s\,s$, having the triangular openings s', as and for the purpose already described with reference to Figs. 11 to 13. In this form of our invention the base l may be provided with the side flanges l' to assist in keeping the striker parts in place. In Figs. 16 and 17 the striker is a one-piece plate t, substantially like that shown in Fig. 11, having the post-opening t' and triangular openings t^2; but instead of using a friction-plate n to hold the striker in place we may employ a hubbed nut u, threaded on the post o and the hub whereof forms the center about which the striker works. As this hub is screwed down it displaces the spring-base l, and thus applies the required friction to the striker.

The provision of the triangular or V shaped holes in the ends of the striker results in causing the hammer or striker to center itself at each stroke, and being so centered at every stroke it will not miss any stroke.

As shown in Figs. 13 to 15, a split ring v may encircle the post o above the friction-plate to hold the plate in place and to increase its efficiency.

In assembling the parts of the hammer the striker is laid on the base with its perforations engaging the arms m, and then in those forms of our invention in which the notched friction-plate n is used said plate has one end engaged with one of the notched arms m and then by longitudinal movement of said plate toward the arm so engaged until the opposite end of the plate is in the rear of the opposite arm a reverse movement of the plate is made until that end and arm are engaged, and thus the two ends of the plate are engaged or interlocked with the two arms, and the hammer then is ready to be applied to post o.

We do not limit our invention of a dovetailed striker or hammer to the form of dovetailing shown in Fig. 13, but wish to be understood as including within our invention other forms of dovetailing, by means of which otherwise independent hammers may be combined. Neither do we limit our invention to the use of any particular kind of rotary hammer.

A one-piece hammer is advantageous in that it always rings the bell, no matter how feeble or slow the impulse on the bell-lever may be; but a divided hammer usually requires the full centrifugal force of a violent action of the bell-lever in order to insure ringing of the bell. The divided hammer, however, is preferred by some. In Figs. 13

and 15 we illustrate how the advantages of the two forms may be and are combined.

Various combinations of base *l*, striker, friction-plate, and other means to connect the striker and base other than those herein shown and specifically described may be employed within the scope and principle of our invention.

A hammer-base made as a spring has advantages over a solid base from the fact that it can be constructed of lighter or thinner, and consequently cheaper, material. It also enables us to divide the springiness necessary to the required friction upon the strikers between the friction-plate and the hammer-base, and consequently the liability of setting the temper, either by wear or ill-usage, is greatly reduced. The hammers or strikers rattle if a certain amount of friction is not used on them when the bell is not being rung—the more friction the less liability to rattle—and the amount of friction that can be used is limited where the friction-plate alone exerts all of it, since the hammers will not operate under overmuch friction. When both the hammer-base and the friction-plate are bent and each has an amount of available springiness, the centrifugal force has twice the resultant effect in reducing the friction on the hammers or strikers when the bell is being rung, and this enables us to use more friction on the hammers when at rest and still have them sufficiently free when in motion.

We are aware that bell-hammers have been provided with bushings in order to offset them, but in our invention the bell-lever itself is offset, and its construction, therefore, is cheaper and simpler than the other and the wear from use has less effect, because the large bearing-surface and points of contact would still confine it to its working territory no matter how loose the pivot became from wear, and the wear due to dirt and grit is considerable.

What we claim is—

1. A bell, provided with an attached striking-lug, of hard steel, substantially as described.

2. A bell, having a base, a hammer, a train of gearing by which it is operated, and a bell-lever for actuating said gearing, the said bell-lever pivoted in direct contact with the base and having its active end offset and elevated above the base, substantially as and for the purpose described.

3. A bell, having a base, a hammer, gearing for operating said hammer, a lever for actuating said gearing pivoted in direct contact with the base and having its active end offset, and a wedge pivoted to said offset end with the head of its pivot interposed between the bell-lever and the base of the bell, substantially as described.

4. A bell-hammer, having an inherent spring-base, arms projecting therefrom, a striker applied to said arms, and means to apply said striker to said base frictionally, substantially as described.

5. A bell-hammer, having an inherent spring-base, arms or lugs rising from at or near the ends thereof, a striker applied to said arms, and a friction-plate engaging said arms above said striker, substantially as described.

6. A bell-hammer, comprising an inherent spring-base, arms rising from at or near the ends thereof, a striker made in parts having ends adapted to meet, and applied to said arms, and means to hold the said striker to the base, substantially as described.

7. A bell-hammer, comprising a base, arms rising from at or near the ends thereof, a striker made in parts dovetailed together and applied to said arms, and means to hold the said striker to the base, substantially as described.

8. A bell-hammer, having an inherent spring-base provided with arms projecting upwardly therefrom, a striker applied to such base and arms, and a longitudinally-movable friction-plate interlocked with said arms and bearing upon the striker, substantially as described.

9. A bell-hammer, having an inherent spring-base provided with integral arms projecting upwardly therefrom and having lateral notches, a striker applied to such base and arms, and a longitudinally-notched plate whose notched ends movably engage the notched arms, substantially as described.

10. A bell-hammer, having an inherent spring-base provided with integral spring-arms projecting upwardly therefrom and having lateral notches, a striker applied to such base and arms, and a spring-plate having longitudinally-notched ends which interlock with the notched arms, substantially as described.

11. A bell-hammer, having an inherent spring-base provided with laterally-notched arms rising therefrom, a striker applied to such base and arms, and a spring-plate having notched ends in engagement with the notched arms above the striker, substantially as described.

In testimony whereof we have hereunto set our hands this 9th day of September, A. D. 1898.

JOHN H. GOSS.
GEORGE WESLEY EDDY.

Witnesses:
T. R. HYDE, Jr.,
GEO. F. HODGES.