

(No Model.)

E. D. ROCKWELL.
BICYCLE BELL.

2 Sheets—Sheet 1.

No. 547,807.

Patented Oct. 15, 1895.

Fig. I.

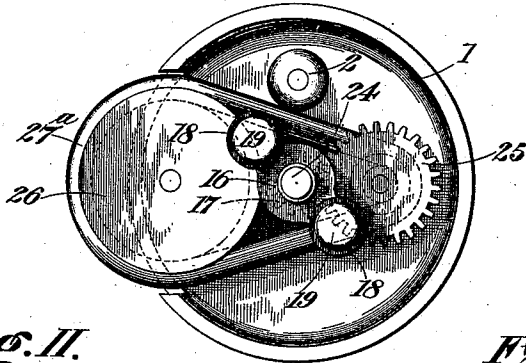


Fig. II.

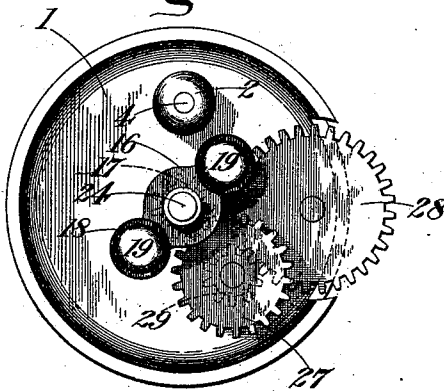


Fig. III.

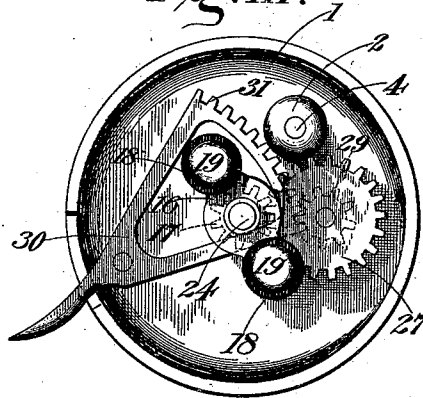


Fig. IV.

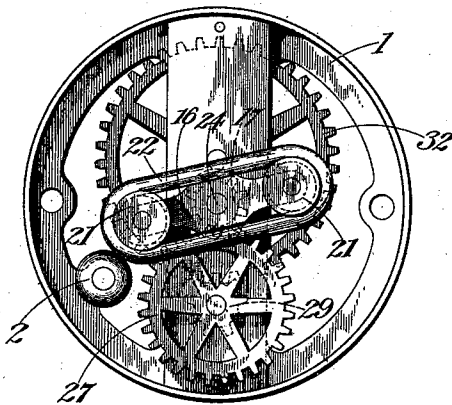
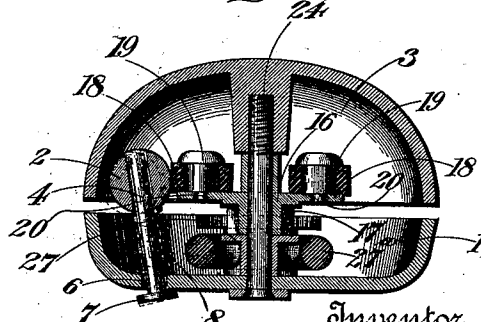


Fig. V.



Witnesses

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(No Model.)

2 Sheets—Sheet 2.

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Fig. VI.

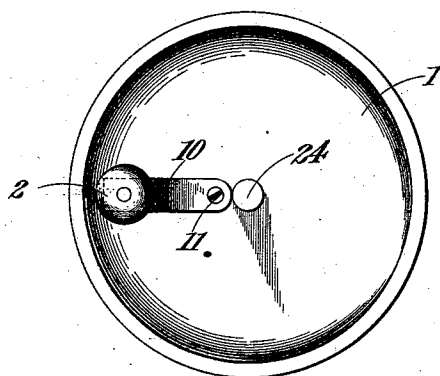


Fig. VII.

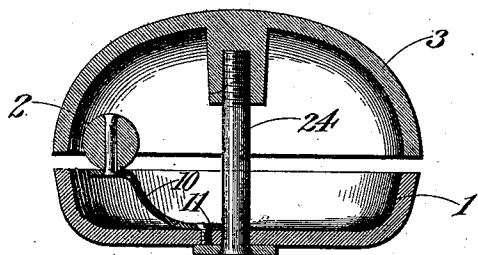


Fig. VIII.

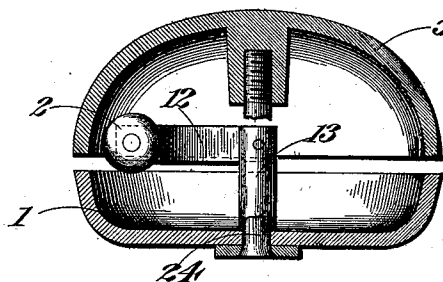


Fig. IX.

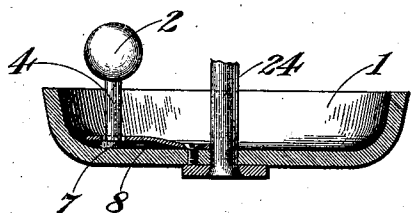
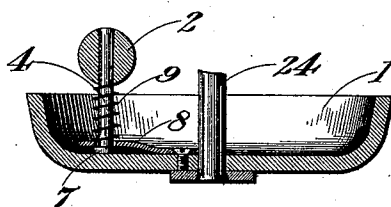


Fig. X.



Witnesses

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UNITED STATES PATENT OFFICE.

EDWARD DAYTON ROCKWELL, OF BRISTOL, CONNECTICUT.

BICYCLE-BELL.

SPECIFICATION forming part of Letters Patent No. 547,807, dated October 15, 1895.

Application filed June 7, 1895. Serial No. 551,987. (No model.)

To all whom it may concern:

Be it known that I, EDWARD DAYTON ROCKWELL, of Bristol, county of Hartford, State of Connecticut, have invented certain new and useful Improvements in Bells, of which the following is a specification, reference being had to the accompanying drawings.

The object of my invention is to produce an improved bell-striker and one that is adapted to strike a direct blow against the inside of a gong. With respect to the mechanism for actuating the bell-striker my invention is without limitation; but such mechanism is designed generally to employ an element, which may be called a "bumper," for actuating or driving the bell-striker against the gong, and may consist of any of the well-known kinds of rotary mechanism now commonly used in bells.

Heretofore in bells employing rotary actuating mechanism the striking mechanism or sounding mechanism actuated thereby has usually consisted of a striker incorporated in the actuating mechanism or carried on a revolving part thereof and thrown by centrifugal force against the inside surface of the bell-gong, thereby delivering a glancing blow, or of a striker that impinges upon a lug or projection cast upon the inside of the gong, or when a loose striker has been employed it has been necessary to set the bell in a particular position to secure its operation. In none of said varieties of rotary bells is a direct blow against a smooth surface obtained. In the first place if a glancing blow against the side of the gong is struck the best results in tones are not obtainable, and the wear of the parts by the abrasion of the striker against the gong is considerable. In that class in which a lug is cast upon the inner rim of the gong the expense of production is increased, owing to the fact that the gongs must be made heavier in order to sustain the lug without breaking the rim and without causing the bell to emit a hollow sound. Moreover, the weight of the metal required for the gong limits the range of tone attainable, especially in bells of the smaller class, such as bicycle-bells or the like.

By my invention bells of all classes may be produced at comparatively small cost, the gongs may be made of all varieties, shapes,

and sizes, and the tones of bells of all different varieties, shapes, and sizes are materially improved.

In the accompanying drawings, Figure I is a top plan view of one form of my bell with the gong removed. Fig. II is a similar view of another form thereof. Fig. III is a similar view of a third variety. Fig. IV is a similar view of a fourth variety designed especially to illustrate a modified form of bumper. Fig. V is a transverse sectional view through the striker and bumpers of that form of my invention shown in Fig. I, parts of the bell being shown in elevation. Fig. VI is a top plan view of a base and modified form of striker. Fig. VII is a sectional view of the same with gong without actuating mechanism. Fig. VIII is a similar view of another modification. Fig. IX illustrates a modification in which the striker is carried wholly within the base by a single spring. Fig. X is a somewhat similar modification, in which the striker is shown as provided with both a flat and a helical spring.

Referring to the figures on the drawings, 1 indicates the bell-base. It may be of any suitable and ordinary construction, such, for example, as shown in Figs. I, II, and III, or in Fig. IV, or of any of the forms in general use in bells designed for alarms, bicycles, doors, or calls or the like. The base constitutes any suitable frame assembling the operative parts of a bell.

2 indicates a striker, and in the characteristics, broadly considered, of that element resides mainly the gist of my invention. It consists of a movable body adapted to be driven directly and preferably in a radial direction against the inside of a gong 3. The means employed for imparting motion to the striker are susceptible of great variations, of which some of the forms are shown in the drawings, and will be hereinafter specified in detail. The striker is preferably confined within fixed limits and is preferably susceptible of motion only in radial direction. In form it may be globular, as illustrated in most of the figures, disk-shaped, as illustrated in Fig. IV, or of any suitable shape, size, and dimensions which may by use or experiment suggest themselves as adaptable for its purpose. In order to prevent rattling and to insure clearness and sweetness of tone in opera-

tion, the striker is preferably spring-mounted or yieldingly carried normally out of contact, but within reach of the gong. For this purpose it may be provided with a stem 4, which pierces the base or other part of the frame, as indicated at 6, and which is provided with a retaining head or flange 7. The aperture in the base through which the stem passes is sufficiently large to admit of the vibratory movement within it of the stem. The striker, which may be movably mounted on the stem, is supported yieldingly with respect to the base by a helical spring 8, surrounding the stem 4 and bearing at one end against the striker and at the other end against the base or supporting part.

The stem may be made so as not to pierce the base, as illustrated, for example, in Figs. IX and X, in which the head 7 is shown as resting on the base and tiltingly confined thereto by a flat spring 8. If the striker be loose on the stem, a second helical spring 9, around the stem, bearing at one end against the striker and at the other against the spring 8, may be employed, as shown in Fig. X. Instead of an axial stem for supporting the striker it may be mounted upon a flat spring 10, (see Figs. VI and VII,) bent to conform to the shape of the base and the distance of the gong from the base and riveted or otherwise secured, as indicated at 11, to the base.

In Fig. VIII the flat spring 12 is shown as bent to conform to the shape of the gong and is supported as upon a split post 13, projecting from the base toward the gong.

In large bells a plurality of strikers for each bell may be employed, if desirable.

With respect to mechanism for actuating the striker, as has been previously intimated, it is not my purpose to restrict myself to the employment of any special variety. In its broad aspect such mechanism may consist of any element or combination of elements that is adapted to drive the striker against the gong. I have, however, illustrated different forms of mechanism for accomplishing the purpose and shall proceed to describe them in detail.

In Figs. I, II, III, IV, and V, for example, 16 indicates a revoluble cross-head or bumper-carrier, and, as illustrated in those figures, is provided upon the side next to the base with a pinion 17, secured to it. It carries, preferably on both ends, suitable bumpers 18. The character and construction of the bumpers is a matter of some importance. In small bells the bumpers are preferably made of rubber, each being secured, as by a disk 19, fastened, as by a pin 20, to the cross-head 16, as shown in Figs. I, II, III, and V. In Fig. IV the cross-head is shown as provided with grooved pulley-shaped blocks 21 upon its opposite ends, around both of which a single cylindrical rubber band 22 is passed. This, like the bumper shown in the other figures, furnishes a suitable resilient noiseless impact-surface for delivering the blow against the striker. Al-

though a noiseless bumper, as described, is necessary for smaller bells in order to preserve their purity of tones, yet in large bells having heavy gongs capable of producing a large volume of sound it is not necessary to employ a noiseless bumper, and metal rings or pieces may be substituted for the rubber bumpers illustrated and just described. The cross-head 16 is designed to be rotated upon a pivot 24, and it may be accomplished through the employment of a multiplying gear 25, shown in the different figures of the drawings and meshing with the pinion 17. The multiplying gear may be driven as by a thumb-wheel 26 and cylindrical rubber belt 27, connecting the wheel 26 with the gear 25, (shown in Fig. I,) or by a thumb-gear 28, meshing with the pinion 29 on the gear 27, as shown in Fig. II, or by a spring-actuated lever 30, having a segmental gear 31, meshing with the pinion 29, as shown in Fig. III, or by a main wheel 32, meshing with the pinion 29, as shown in Fig. IV. The wheel 32 may be actuated in the ordinary way through its projecting arbor. Such actuating mechanism, being in familiar use, is not illustrated. The form of actuating mechanism shown in Fig. I is on some accounts preferable, since the rubber belt 27, presented upon the periphery of the wheel 26, affords means of imparting motion to the actuating mechanism.

All of the above-suggested different forms of mechanism for actuating the striker and the special form of striker itself may be modified and varied at will without departing from the scope of my invention.

What I claim is—

1. In bell mechanism, the combination with a base and vibratory stem loosely secured at one end to the base at right angles thereto, and striker head upon the stem, of a bumper adapted to actuate the striker, and rotary bumper actuating mechanism, substantially as set forth.

2. In bell mechanism, the combination with a base or frame, radially movable vibratory stem loosely secured at one end to the base and at right angles thereto, and a striker head upon the stem, of rotary striker actuating mechanism, substantially as set forth.

3. In bell mechanism, the combination with a base or frame, of a vibratory stem loosely secured at one end to the base and at right angles thereto, a striker head upon the stem, a yielding bumper, and rotary bumper actuating mechanism, substantially as set forth.

4. In bell mechanism, the combination with a base or frame, of a vibratory stem loosely secured at one end to the base and at right angles thereto, a striker head upon the stem, a gong, mechanism for supporting the striker head out of contact with the gong, and rotary striker actuating mechanism, substantially as set forth.

5. In bell mechanism, the combination with a base or frame, and striker actuating mechanism, of a vibratory stem loosely secured at

one end to the base and at right angles thereto, a striker head thereon, and a spring supporting the striker head movably in the upright position, substantially as set forth.

5 6. In bell mechanism, the combination with a base or frame, and striker actuating mechanism, of a striker, a pin loosely securing the striker to the base, and a spring between the striker and the base, supporting the pin in a perpendicular position to the base, and forcing the striker toward the extremity of the pin, substantially as set forth.

10 7. In bell mechanism, the combination with a base or frame and striker actuating mechanism, of a striker, pin and head thereon, the pin projecting movably at right angles to the base, and a spring securing the head of the pin against the inside of the base, substantially as set forth.

15 20 8. In bell mechanism, the combination with a base or frame, stem secured thereto, striker carried by the stem, and striker actuating mechanism, of a bumper included in the striker actuating mechanism, and consisting of a grooved wheel or pulley having a pro-

jecting periphery of rubber, or the like yielding material, and bumper actuating mechanism substantially as set forth.

9. In bell mechanism, the combination with a base or frame and gong, of a centrally located gong sounding rotary element, a peripherally grooved pulley on one side thereof operatively connected with the gong sounding element, a second grooved wheel or pulley located on the other side thereof, extending beyond the outside of the base and gong, and an endless rubber belt working in the grooves of the two pulleys, affording means for operating the gong sounding mechanism, and presenting at the same time upon the periphery of the projecting wheel a soft frictional contact driving surface, substantially as set forth.

In testimony of all which I have hereunto subscribed my name.

EDWARD DAYTON ROCKWELL.

Witnesses:

LOUIS L. BEACH,
ARTHUR G. BEACH.