

UNITED STATES PATENT OFFICE.

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BELL.

SPECIFICATION forming part of Letters Patent No. 578,253, dated March 2, 1897.

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To all whom it may concern:

Be it known that I, ROWLAND H. MAYLAND, a citizen of the United States, residing at Freeport, in the county of Queens and State of New York, have invented certain new and useful Improvements in Bells, of which the following is a specification, reference being had therein to the accompanying drawings.

My invention relates to improvements in bells, and more particularly to improvements in that class of bells wherein a purity of tone is the most desirable quality, such as staff-bells, hand-bells, chimes of all kinds, &c.

The object of my invention is to provide an improved bell-action by which the force of the hammer-blow can be better regulated and also a rebound or return of the hammer against the shell can be guarded against, and at the same time have the arrangement of parts such that the bell, when in its normal position, shall rest upon a flexible cushion that prevents any possible vibration from sympathetic resonance or other causes.

My invention consists of the novel features of construction hereinafter set forth and described, and more particularly pointed out in the claims hereto appended.

Referring to the drawings, Figure 1 is a side view of a bell in position of rest embodying my invention, partly broken away. Fig. 2 is a sectional view of the same, showing the position of the several parts immediately after a blow has been struck. Fig. 3 is a sectional view, front elevation. Fig. 4 shows a modification of my invention applied to a hand-bell.

In the drawings, A denotes a standard which is forked at its upper end to receive the lever B, which is fulcrumed between prongs *a a* of the fork.

b is a T-shaped spring-check, preferably secured to the standard, its upper part being curved, so as to fit the periphery of the shell, and padded on its inner surface to stop all vibration on the part of the bell while in repose through sympathetic resonance or other cause. This spring-check receives the recoil of the bell and gradually restores it to its normal position.

C is a stationary brace, preferably made hollow at one end to receive the plug *c*, which

may, however, be made integral with it, if desired, the outer end of the said brace being screw-threaded and secured to the standard, preferably by means of the nut *d*. 55

e is a collar securely fastened to the brace C, which collar serves to hold the said brace perfectly rigid when the nut is screwed up tightly, and at the same time is preferably used to secure the check *b* to the standard. 60

f is a vibratile shell of light construction, and *g* a stem secured thereto, preferably by means of the threaded projection *h*, made integral with it, a suitable non-metallic washer being interposed between it and the shell. 65 This stem *g* is provided with downwardly-projecting lugs *g' g'* and intermediate shoulders or bearing-surfaces *g² g²*.

i is a lever-tongue fulcrumed between the lugs *g' g'* and provided with two arms *i' i²*. 70 These arms *i' i²* are so constructed that when the lever *i* is moved in either direction the upward movement of the lever is checked by one of said arms coming in contact with one of the shoulders *g²*, thus limiting the swing- 75 ing movement of the lever *i*.

k is a spring-tongue, made of spring-steel or other suitable material, and attached to the lever *i* by means of rivets or screws and provided with a hammer *k'*, which is secured 80 to its free end.

l is a yoke having its upper portion pivoted to the arm *i'* of the lever *i* and its lower portion attached to the plug *c*, preferably by means of a threaded projection *l'*, nut *l²*, and 85 suitable non-metallic washers *l³ l³*. This yoke is held nearly stationary, its upper end only being subject to a slight oscillating movement when the bell is swung, which movement, as hereinafter described, throws the lever *i* back- 90 ward, thereby sounding the bell.

m is a set-screw attached to the arm *i²* of the lever *i* for regulating the length of the stroke of the lever-tongue *i*, thereby governing the force of the hammer blow. 95

n is a set-screw for regulating the tension on the spring-check *b* in order that bells of different weights may be properly checked and brought to their normal position of rest.

The end of the lever-tongue *i* and all auxiliary parts which come in contact when the bell is in motion are provided with mufflers 100

or non-metallic washers to avoid any vibration on their parts.

The bell or vibratile shell *f* is attached to the short arm of the lever B, preferably by means of the threaded projection *h* passing through said lever, the rest-plate *o*, and a thumb-nut *p*.

The connection between the yoke and the brace C may also be used for adjusting the several parts to each other.

In the modification shown in Fig. 4 of the drawings the parts A B and connections, the brace C and auxiliary parts, the check *b*, and yoke *l* are dispensed with. The principal and action in the modification are essentially those of my invention, a handle D being used instead of those parts dispensed with, the device being operated by hand instead of mechanically, and a padded table being used in place of the spring-check *b*.

The operation of my improved bell in so far as has not already been disclosed is as follows: Pressure being brought to bear upon the long arm of the lever B, (the standard A, check *b*, and brace C remaining fixed,) the bell is thrown slightly upward and away from the check *b*. This motion causes the yoke *l*, secured to the brace C, to exert a downward pressure on the arm *i'*, which in turn throws the actuating lever-tongue *i*, supporting the spring-tongue *k* and hammer *k'*, backward. The set-screw *m*, coming in contact with the shoulder *g*², checks this movement, thereby throwing the hammer attached to the spring-tongue against the bell. The weight of the bell will restore it to its normal position, the spring-check receiving the recoil and permitting the bell to assume that position gradually, causing no jar or sudden check of vibration and bringing the bell to a condition, while in that position, of complete rest. The arms *i' i*² being so constructed that they come in contact with the shoulders *g*² *g*², thereby limiting the hammer-stroke, make it impossible for the hammer to give a dead blow and at all times keep the lever-tongue *i* a fixed distance from the bell. Thus a return or rebound of the hammer against the shell is prevented unless pressure is again exerted on the lever, and the tongue is still allowed a sufficiently long stroke.

By the means heretofore disclosed the objects of my invention are attained. It is obvious that with the means of controlling the force of the hammer blow the necessity for constructing the bell so as to withstand any blow is obviated, it being necessary to make a bell of the desired tone only strong enough to withstand a blow which will bring forth the best tones, the force of the hammer blow being regulated to correspond with the strength of the shell and that blow always the same. This improvement not only results in a saving of forty per cent. in material, but greatly improves the tone of the bell.

What I claim as my invention, and desire to have protected by Letters Patent, is—

1. The herein-described improvement in bells, consisting of a vibratile shell capable of oscillating movement, a lever-tongue pivotally supported therein, means for checking the backward movement of the said lever-tongue when the bell is oscillated, and a spring-tongue supported on the lever-tongue, and carrying a hammer, all substantially as specified.

2. The herein-described improvement in bells, consisting of a vibratile shell capable of oscillating movement, a lever-tongue supported therein, also capable of oscillating movement when the bell is oscillated, means for regulating and checking the backward movement of the said lever-tongue, and a spring-tongue supported on the lever-tongue and carrying a hammer, all substantially as specified.

3. A bell comprising a vibratile shell provided with shoulders *g*² *g*² in combination with an actuating tongue-lever provided with arms *i' i*², and a spring-tongue supporting a hammer, substantially as described.

4. A bell comprising a vibratile shell provided with shoulders *g*² *g*² in combination with an actuating lever-tongue provided with arms *i' i*², the set-screw *m*, and a spring-tongue supporting a hammer, substantially as described.

5. A bell comprising a vibratile shell capable of oscillatory movement with means for oscillating the same, a lever-tongue pivotally supported therein, deriving operative movement from the movement of the shell, means for checking the backward movement of the said lever-tongue and the upward movement of the shell, and a spring-tongue borne upon the lever-tongue, carrying a hammer, all substantially as specified.

6. In a bell, the combination with a standard A, and a lever B, of a vibratile shell, an actuating lever-tongue, means for checking the upward movement of said shell and the backward movement of the said lever, consisting substantially of the shoulders *g*² *g*², the arms *i' i*², and operative connections between one of said arms and the standard A, and a spring-tongue supporting a hammer, substantially as described.

7. In a bell, the combination with a standard A, and lever B, of a vibratile shell, an actuating lever-tongue, means for checking the upward movement of said shell and the backward movement of the said lever, consisting substantially of the shoulders *g*² *g*², the arms *i' i*², the yoke *l*, connections between the said yoke and the standard A, and a spring-tongue supporting a hammer, substantially as described.

8. In a bell, the combination with a standard A and lever B, of a vibratile shell, an actuating lever-tongue, means for checking the upward movement of said shell and the backward movement of the lever, consisting substantially of the shoulders *g*² *g*², the arms *i' i*² the yoke *l*, brace C, and a spring-tongue

supporting a hammer, substantially as described.

9. In a bell, the combination of a vibratile shell with means for moving the shell, an actuating lever-tongue, means for checking the upward movement of said shell and the backward movement of the lever, a spring-tongue supporting a hammer, and a spring-check for the bell, substantially as described.

10. In a bell, the combination of a vibratile shell, with means for moving the shell, an actuating lever-tongue, means for checking the upward movement of said shell and the backward movement of the lever, a spring-tongue supporting a hammer, a spring-check for the bell provided with a muffler, and means

for adjusting said spring-check, substantially as described.

11. A bell comprising a vibratile shell in combination with a lever-tongue pivotally supported therein, means for checking the backward movement of the said lever-tongue, and a spring-tongue actuated by the said lever-tongue, and supporting a hammer, substantially as specified.

In witness whereof I have hereto affixed my signature, this 29th day of April, 1896, in the presence of two witnesses.

ROWLAND H. MAYLAND.

Witnesses:

W. L. LAND,

F. T. WENTWORTH.