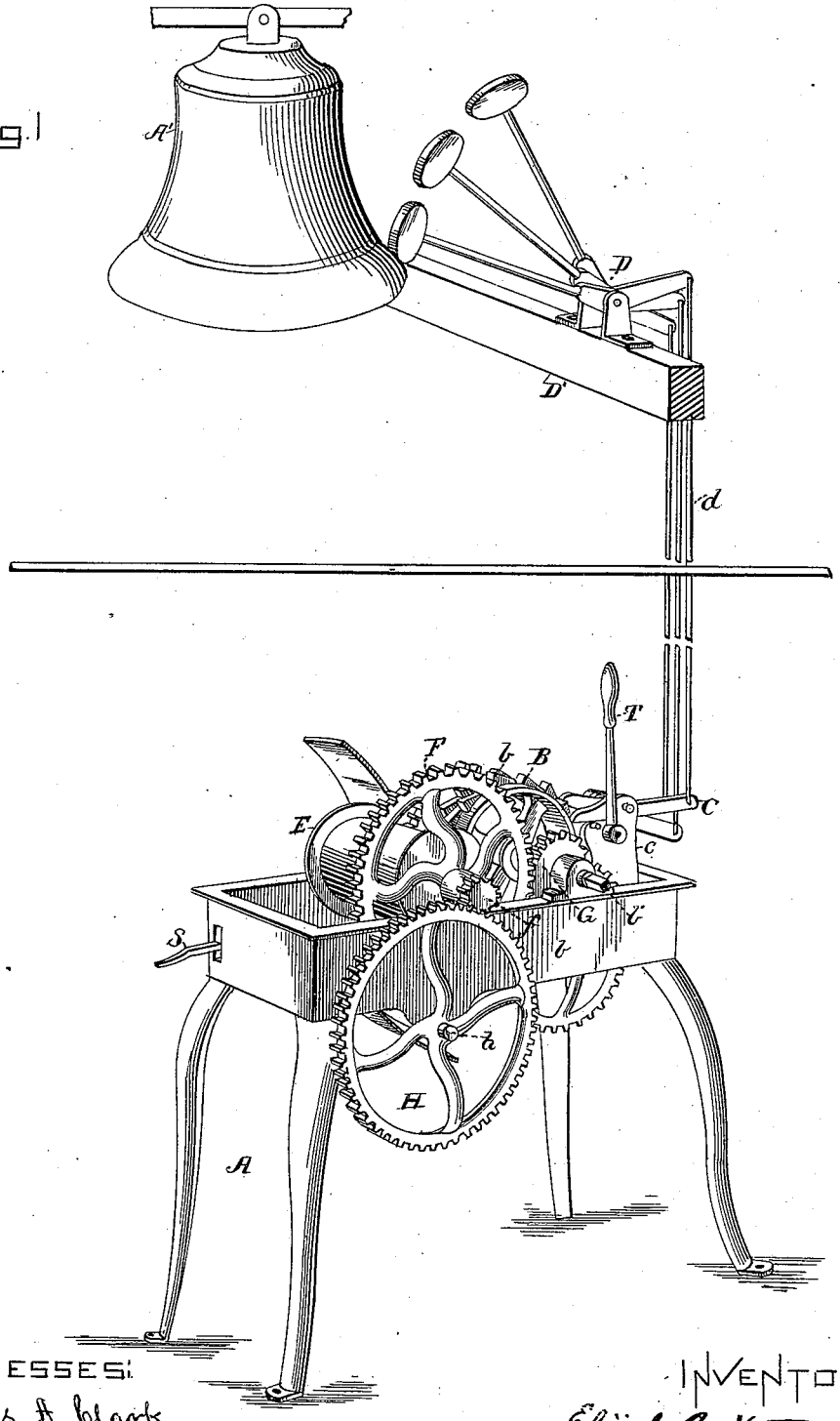
(No Model.) 3 Sheets—Sheet 1.

E. G. NUTTING.

BELL RINGER.

No. 343,059. Patented June 1, 1886.

Fig. 1



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(No Model.) 3 Sheets—Sheet 2.

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Fig. 2.

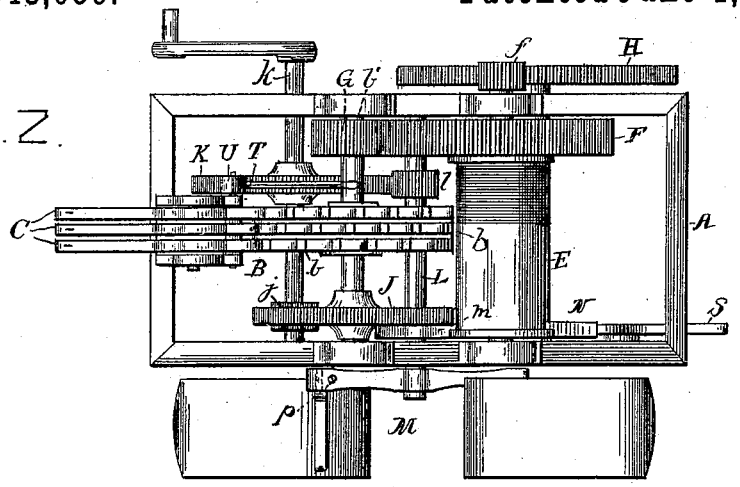
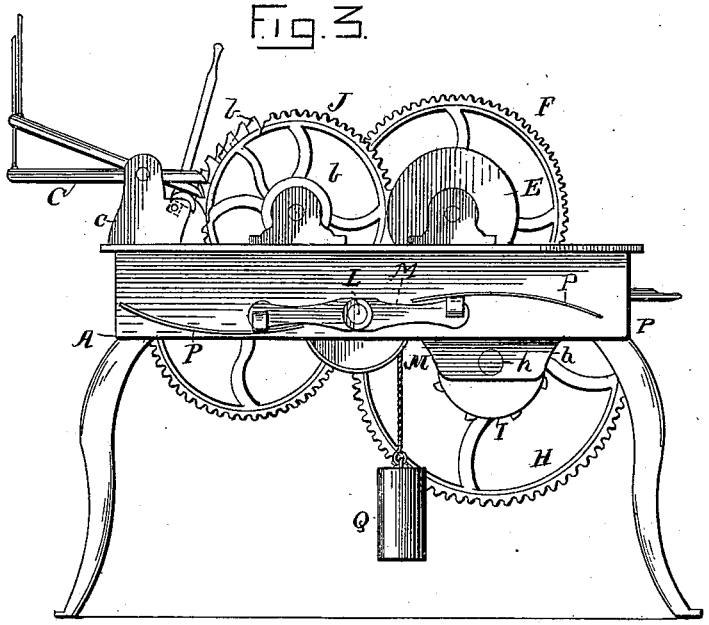


Fig. 3.



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(No Model.) 3 Sheets—Sheet 3.

E. G. NUTTING.

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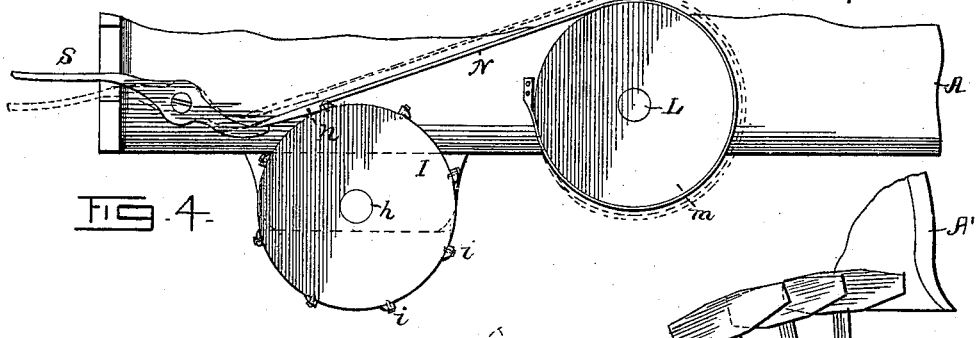


Fig. 4.

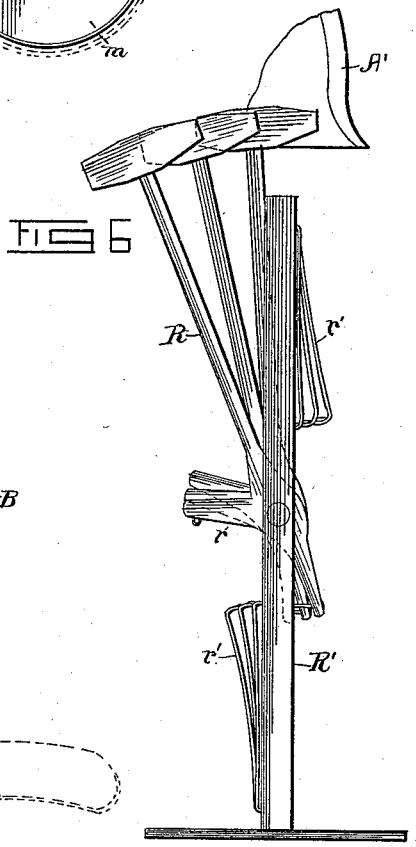
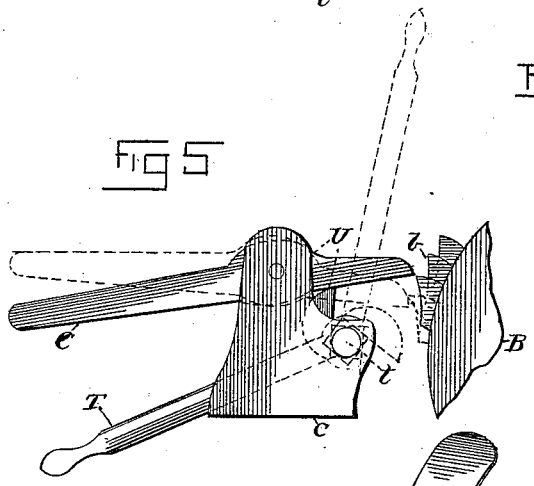


Fig. 6

Fig. 5



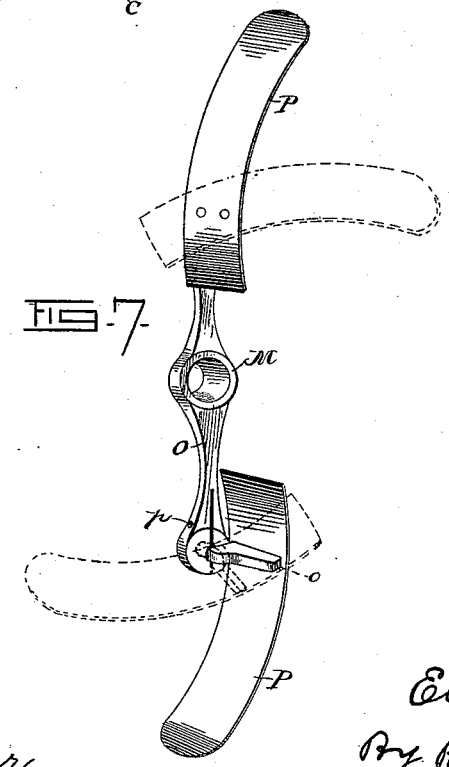


Fig. 7.

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UNITED STATES PATENT OFFICE.

ELIJAH G. NUTTING, OF FARIBAULT, MINNESOTA.

BELL-RINGER.

SPECIFICATION forming part of Letters Patent No. 343,059, dated June 1, 1886.

Application filed June 27, 1885. Serial No. 170,022. (No model.)

To all whom it may concern:

Be it known that I, ELIJAH G. NUTTING, a citizen of the United States, residing at Faribault, in the county of Rice and State of Minnesota, have invented certain new and useful Improvements in Bell-Ringers; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, which form a part of this specification.

This invention relates to improvements in bell-ringers, and has for its object to provide a machine for operating a series of bell strikers or hammers to sound a general alarm on the release of a trigger from a time-wheel by electricity or other mechanical means; and it consists in combining with such machine a cam-lever for throwing the harness out of the path of the tappet-wheel, a time-wheel and spring-brake lever for starting and stopping the machine, and a fan for governing the motion of the machine, said fan being adapted to be enlarged or contracted in diameter, to offer more or less resistance to the movement of the machine.

The invention further consists in the peculiar construction of hammers, and in the details of construction, arrangement, and combinations of parts, as more fully hereinafter set forth and claimed.

In the drawings, Figure 1 represents a perspective view of a machine constructed according to my invention, and shown placed in an operative position. Fig. 2 is a plan view of the same. Fig. 3 is a side elevation, with a portion of the gearing broken away. Fig. 4 is a detail view of the spring-brake, brake-pulley, time-wheel, and releasing-trigger. Fig. 5 is a detail view of the hammer-operating mechanism, showing the cam-lever for throwing the same in and out of gear. Fig. 6 is a modified form of a group of hammers. Fig. 7 is an enlarged perspective view of the fan-governor.

The frame A has suitably journaled thereto a tappet-wheel, B, provided with a series of tappets, *b*, projecting from its periphery and arranged in groups across the face of the wheel. The number of tappets in each group correspond to the number of hammer-operating levers C which are mounted in the bracket *c*. The tappets of each group are arranged slightly in advance of each other, to operate the levers C successively. The space between the last tappet of one group and the first of the next succeeding group should equal the space between the tappets of a group, in order that the levers C may be actuated during equal intervals of time to produce a harmonious ringing of the bell. While the construction just described is preferred, it is evident that the tappets may be varied and spaced to suit the requirements without departing from the spirit of my invention. This tappet-wheel is driven by a suitable train of gearing, and as it revolves the tappets *b*, impinging against the ends of the levers C, operate the same and the bell-hammers D, which are connected to the outer ends of the levers C by wires or cords *d*.

A windlass or drum, E, mounted in the frame A, has keyed to its shaft a gear-wheel, F, and a pinion, *f*. The former meshes with a pinion, G, on the tappet-wheel shaft *b'*, and the latter with a gear-wheel, H, on the shaft *h*, journaled in the frame. On the latter shaft is keyed a time-wheel, I. To one side of the tappet-wheel on its shaft is keyed a gear-wheel, J, which wheel meshes with a pinion, *j*, on the spindle *k*, to the latter of which is keyed a gear-wheel, K, meshing with a pinion, *l*, on the fan-shaft L, the outer end of which projects through the frame A, and on which is secured the fan-governor M.

The governor-shaft L has keyed thereon a brake-pulley, *m*, around which passes a spring-brake band, N, having a hook, *n*, on its extreme end, which bears on and is adapted to engage one of a series of stops, *i*, on the time-wheel I. These stops *i* have threaded shanks, and are intended to be removably secured to the wheel I, in order that the space between any two stops may be increased or diminished, for the purpose hereinafter set forth.

The fan-governor consists of an arm, O, centrally recessed or apertured to fit over the shaft L. The outer ends of this arm are provided with eyes, through which the rounded shank of laterally-projecting arms *o* pass. Each of said arms are provided with curved wings P. The outer ends of the arms O are

split for a portion of their length in a direction passing longitudinally through the eye. A set-screw, *p*, passing through the separated ends, serves to clamp the same around the shank of the arm *o*, which may be thus adjusted to hold the wings P in any desired position, to increase or diminish the space of the wings and their consequent resisting surface to the surrounding medium.

Around the windlass E passes a suitable cord, to which a weight, Q, is attached to give motion to the train of gearing.

The machine may be located at any suitable point and connected to the bell-hammers by cords or wires, as already described.

The bell-hammers shown in Fig. 1 are supported by suitable brackets on a beam, D′, of the bell-tower, and are arranged to strike upon the outside of a bell, A′, and are preferably arranged to fall and strike the bell by their gravity. In Fig. 6 is shown a form of hammer principally designed to strike upon the inside of a bell. (Indicated in dotted lines.) Said hammer consists of the lever-arm R, pivotally supported between upright posts R′, and provided on its outer ends with the usual hammer. From its pivotal point an arm, *r*, projects, designed to be connected with the lever-arms C of the machine. Springs *r*′ project from opposite sides of the supporting-frame, and are connected to the lever at points above and below its pivotal point, to return the same to its normal position. While the two sets of springs shown are preferred, it is manifest that one set may be dispensed with. It is also manifest that the form of the hammer may be arranged to strike either the in or out side of the bell, although the outside application is deemed preferable.

In operation, when it is designed to sound an alarm, the parts being arranged as described, a trigger, S, is depressed by any suitable means—either electrical, mechanical, or by hand—when the hook *n* of the spring-band is disengaged from a stop of the time-wheel, and the band by its resiliency becomes disengaged from the brake-pulley *m*, when the machine is free to operate, as already described, sounding a continuous alarm till the succeeding stop of the time-wheel engages the hook of the spring-band brake and causes the same to closely embrace the brake-pulley, when the machine will stop till the trigger is again depressed. The speed of the machine is regulated by adjusting the wings of the fan, so as to present more or less of their surface to the resistance of the atmosphere. When it is desired to throw the hammer-operating levers out of the path of the tappet-wheel, during the winding of the machine or for other purposes, the lever T, attached to the end of a shaft, *t*, journaled in the bracket *c*, is operated, as shown in full lines, Fig. 5, when a cam, U, attached to the shaft *t* is thrown under the levers C, causing them to assume the position indicated in full lines, Fig. 5, when their inner ends will be free of or out of path of the tappets of the wheel B.

To throw the levers in an operative position, the lever T is turned in the position shown in dotted lines, Fig. 5, when the cam U will be withdrawn and the machine in readiness for sounding an alarm.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In a bell-ringer, the combination of a series of bell-operating levers with a tappet-wheel having tappets arranged in groups across its periphery, the number of tappets in each group corresponding to the number of levers, and each tappet being arranged equally in advance of the other, whereby the levers are actuated sucessively, substantially as and for the purposes described.

2. The combination, with the bell-operating levers, the tappet-wheel, and brake-pulley, of a brake-band and a time-wheel to engage such band and draw it round the brake pulley, substantially as and for the purposes described.

3. The combination of the bell-operating levers, the tappet-wheel, and mechanism for imparting motion to said tappet-wheel, with the herein-described means for controlling the movement of said tappet-wheel, consisting of a brake-pulley, L, spring-brake-band having a hooked end, and a time wheel provided with stops to engage the end of the band, substantially as described.

4. The combination of the bell-operating levers, the tappet-wheel, and mechanism for imparting motion thereto, with means for controlling and regulating the movement of the tappet-wheel, consisting of a brake-pulley, a brake-band, a time-wheel, and adjustable stops arranged thereon to engage the band, substantially as set forth.

5. In a bell-ringer, the combination of a brake-pulley, a spring-brake band having a hooked end, a time-wheel provided with adjustable stops around its periphery to engage the hook of the band, and a trigger for disengaging the hooked end of the band from a stop of the time-wheel, as and for the purposes specified.

6. In a bell-ringer, the combination, with the bell-operating levers and the operating train of gearing therefor, of a governor consisting of a fan-shaft, an arm mounted thereon, a second arm provided with a wing of rigid material fixedly fastened thereto, said arm being adjusted securely to the outer end of the arm on the fan-shaft to present a greater or less surface of the wing to the resisting influence of the atmosphere, substantially as and for the purposes set forth.

7. The combination, with the bell-operating levers and the tappet-wheel and its driving mechanism, of the fan-shaft provided with an arm branching therefrom in opposite directions, and having split ends, lateral arms provided with fan-wings, said lateral arms being

adjustably held in the split ends of the aforesaid arm, and a set-screw for clamping the split ends about the shank of the lateral arms, whereby the latter may be held in an adjusted position to present a greater or less fan-surface to the atmosphere, as and for the purposes described.

8. The combination, with the bell-operating levers and a tappet-wheel, of a cam-lever, substantially as described, to throw the levers out of contact with the tappet-wheel, as and for the purposes set forth.

9. The combinaton of the fan-shaft, a brake-pulley secured thereto, a brake, and a time-wheel provided with stops to apply said brake, the parts being arranged and operating substantially as shown and described.

10. The herein shown and described bell-hammer, consisting of the lever R, pivotally supported between upright posts, and provided with a lateral arm projecting from its pivotal point and a hammer on its outer end, in combination with springs attached to the opposite sides of the lever, on either side of its pivotal support, and attached to the lever-supporting frame, substantially as shown, and for the purposes described.

In testimony whereof I affix my signature in presence of two witnesses.

ELIJAH G. NUTTING.

Witnesses:
R. A. MOTT,
W. R. BALDWIN.