

(No Model.)

2 Sheets—Sheet 1.

T. R. MERCEIN & E. R. PORTER.
TOWER STRIKE.

No. 549,205.

Patented Nov. 5, 1895.

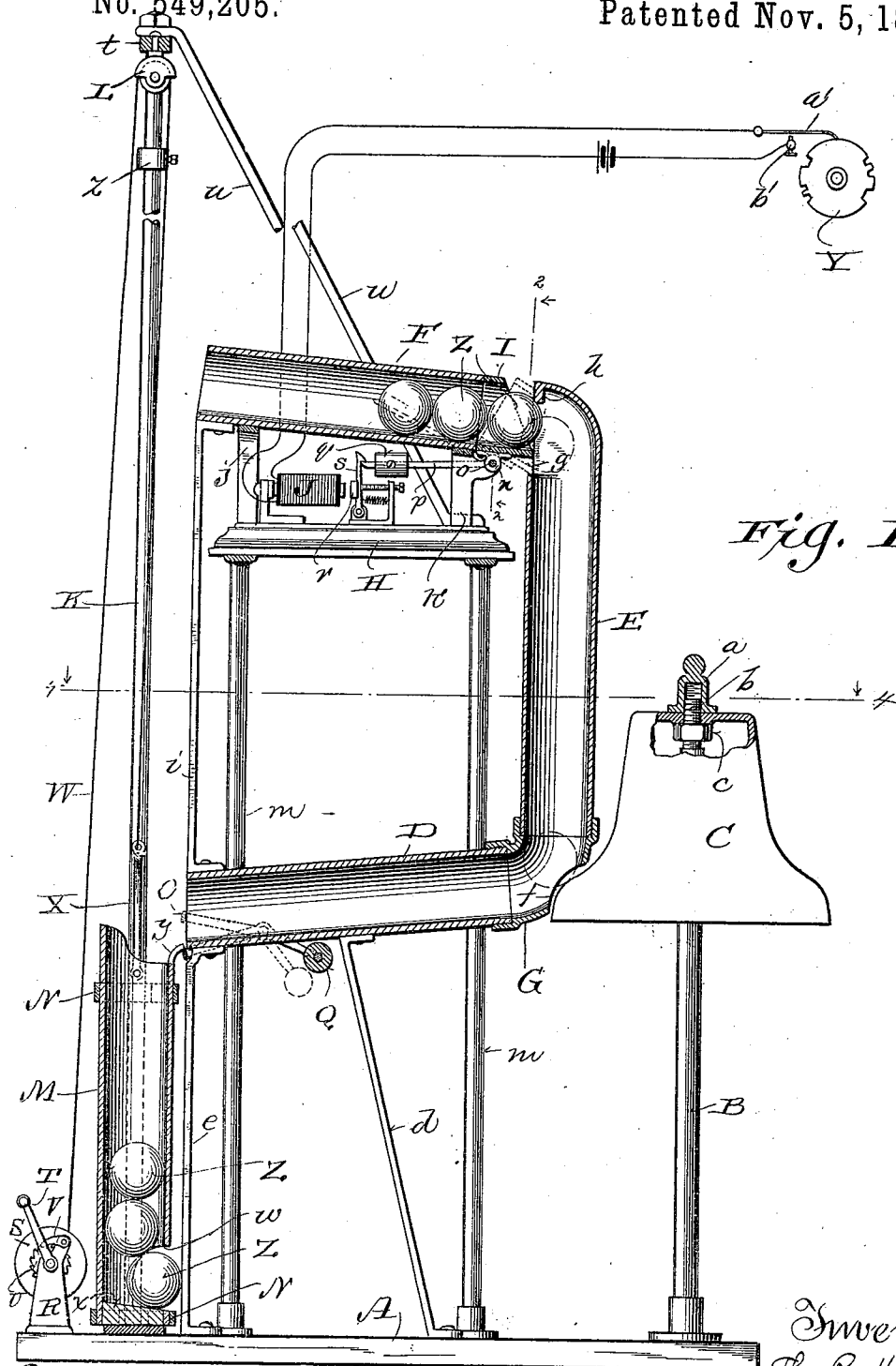


Fig. 1.

Witnesses:
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Henry Blankert.

Inventors
Thos. R. Mercein
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By H. G. Underwood
Attorney

(No Model.)

2 Sheets—Sheet 2

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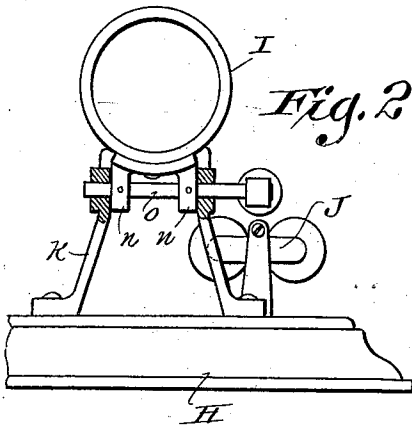


Fig. 2

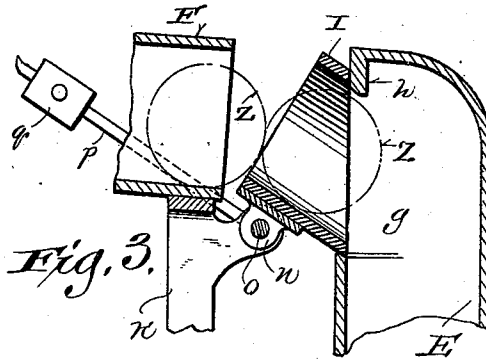


Fig. 3.

Fig. 4.

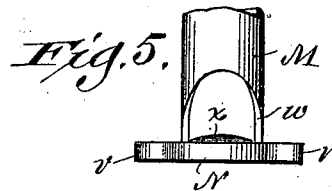


Fig. 5.

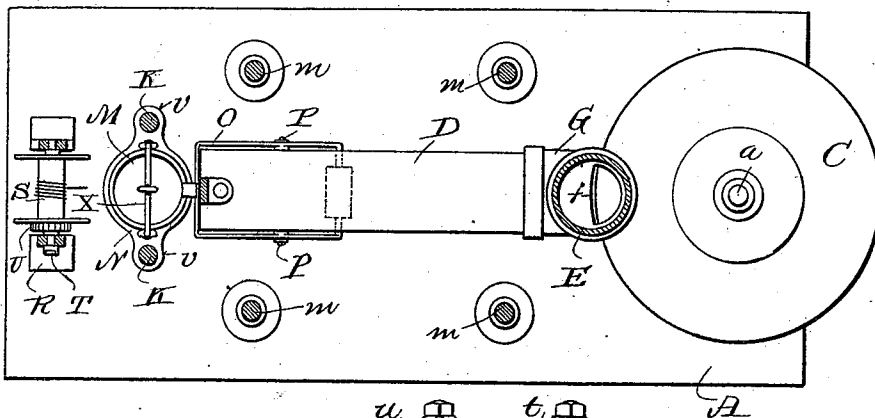


Fig. 6.

Witnesses:
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UNITED STATES PATENT OFFICE.

THOMAS R. MERCEIN AND EDWARD R. PORTER, OF MILWAUKEE,
WISCONSIN.

TOWER-STRIKE.

SPECIFICATION forming part of Letters Patent No. 549,205, dated November 5, 1895.

Application filed March 23, 1895. Serial No. 543,003. (No model.)

To all whom it may concern:

Be it known that we, THOMAS R. MERCEIN and EDWARD R. PORTER, citizens of the United States, and residents of Milwaukee, in the county of Milwaukee and State of Wisconsin, have invented certain new and useful Improvements in Tower-Strikes; and we do hereby declare that the following is a full, clear, and exact description thereof.

Our invention relates to that class of devices known as "tower-strikes," which are placed upon elevated structures to sound an alarm and to specify the location of the same; and the present invention consists in certain peculiarities in the construction and arrangement of the said device, as well as in the employment of loose balls as the striking medium, and in the combination of parts and the construction and connections of the electric operating mechanism employed, all as will be more fully set forth hereinafter and subsequently claimed.

In the drawings, Figure 1 represents our said device in side elevation and partly in vertical section. Fig. 2 is a detail sectional view on the line 2 2 of Fig. 1. Fig. 3 is a detail sectional view of portions of the device shown in Fig. 1, but drawn to an enlarged scale and in different relative positions, illustrating the operation thereof. Fig. 4 is a horizontal sectional view on the line 4 4 of Fig. 1. Figs. 5 and 6 are detail views of portions of said device.

Heretofore "tower-strikes," so called, have been constructed which comprised a bell placed in an elevated position, and means for sounding an alarm thereon either by an arrangement of hammers or levers, or, in some instances, where said bell has had a movable tongue, by devices for controlling the movement of said tongue; but in our present invention we employ a tongueless bell and sound an alarm thereon by the contact therewith at predetermined intervals of independent balls traveling through a tubular guideway, our invention being especially designed for use in villages and small towns that have no regular fire-alarm system.

Referring to the accompanying drawings, A represents the base of our device, placed

preferably upon a roof or other elevated structure.

B represents a rod rising from said structure and carrying at its upper end a tongueless bell C. The upper end of this rod B is preferably screw-threaded, as shown at *b*, to pass through a correspondingly screw-threaded bore in the top of the said bell, by means of which and the nuts *a c* the said bell may be vertically adjusted and secured at the desired elevation.

D E F designate stationary tubes, forming part of the tubular guideway hereinbefore referred to. The tube D is supported by suitable braces, as *d e*, and inclines from the front to the rear. The tube E is vertical and is shown connected to the tube D by elbow or coupling G, the outer corner of this elbow G being cut away, as shown at *f*, to receive the adjacent edge or lower part of the bell C, and the upper part of the tube E is cut away on the inner or rear side, as shown at *g*, while above this there is a depending inset shoulder *h*. The tube F inclines from the rear to the front and is suitably supported by brace *i* at the rear, said brace being connected at its lower end to the rear end of the tube D and by brackets *j k* rising from platform H, which latter is in turn supported upon rods *m m*, rising from the base A.

I represents a tilting tube-section, having secured rigidly thereto on the under side a pair of trunnions *n n*, which in turn are secured rigidly to a journal *o*, turning in bearings in the bracket *k*. To one end of this journal there is secured a latch-lever *p*, having a weight *q* adjustably secured thereon.

J represents a pair of magnets, supported, as shown, on the platform H, and *r* an armature mounted on a pivoted spring-controlled hook-bar *s*, said hook being normally in engagement with the free end of the latch-lever *p*, as shown in Fig. 1.

K K represent vertical rods rising from the base A and united at the top by a cross-bar *t*, there being also shown inclined braces *u u* extending from the top of these rods to the platform H, while from said cross-bar there is suspended a sheave-block L.

M represents the receiving-tube, provided

adjacent to its ends with the rings N N, each ring being formed with lateral lugs *v v*, perforated for the reception of the rods K K, which form guideways therefor. The tube M has an opening *w* in its front lower end and an inclined bottom *x* and an open top inclined toward the front, where it is provided with a lip *y*. The vertical guide-rods K K are provided with adjustable stops or collars *z z*.

The tube D has an open rear end guarded by a yoke O, trunnioned to the outside of said tube, as shown at P P, said yoke extending forward of the trunnions in the form of a downwardly-bent double lever, having a weight Q beneath the tube.

R represents the frame of a winch or windlass, having a crank T and ratchet U and pawl V, the drum S having connected thereto one end of a rope or cable W, which passes up around the pulley in the sheave-block L and down to the bail X of the receiving-tube M.

Y designates a break-wheel, and Z Z the balls hereinbefore referred to which sound the alarm.

The operation of our device will be readily understood from the foregoing description of its construction, taken in connection with the accompanying drawings.

Let it be understood that an alarm is being sent in from the station or locality where the break-wheel marked Y is situated. The number of this station is "12," and in the illustration given in Fig. 1 this number is repeated by the construction of the break-wheel shown, the first alarm having been already sent in and sounded by the tower-strike. The general construction and operation of a break-wheel in alarm systems is too well known to require elaborate explanation, and it will be sufficient to state that break-wheels are disks having their peripheries indented and are usually revolved by clockwork mechanism, whenever a detent is removed the unbroken portions of the periphery of the said wheel serving to keep a contact-spring *a'* away from a binding-post *b'*, said spring and post being electrically connected to the magnets J. As the break-wheel revolves in the direction of the arrow, the curved free end of the spring *a'* drops into the first adjacent break or indentation on the wheel Y, and the body of said spring immediately makes contact with the binding-post *b'*, completing the circuit shown and energizing the magnets J. This serves to attract the armature *r* to said magnets, and as said armature is secured to the pivoted spring-controlled hook-bar *s* the latter is drawn away from engagement with the latch-lever *p*, and the weight of the first ball Z, which rests beyond the center of gravity on the tilting tube-section I, instantly causes said section I to tilt forward from the position shown in full lines to the position shown in dotted lines in Fig. 1, permitting the said ball Z to drop down through the tubular guideway E G D to the receiving-tube M, said

ball as it passes through the elbow G striking the interposed edge of the bell C and sounding one stroke of the alarm. As the curved free end of the spring *a'* emerges from the first break in the wheel Y, by reason of the continued rotation of the latter, and rests on the unbroken part of the periphery of said wheel again, the electrical circuit is broken, the magnets J are de-energized, and the spring draws the hook-bar *s* forward to its former position, away from said magnets, and at the same time the weight *q* draws the latch-lever *p* back to its former position, its free end snapping under the hook of the bar *s*, and the action of said lever *p* restores the tilting tube-section I to its former position, in line with the tube F, and permits the second ball Z to take the place of the ball that has just dropped. As soon as the next break in the wheel Y receives the end of the spring *a'*, the electrical circuit is again completed, and the operation first described is repeated, this second ball dropping down the tubular guideway and sounding, *en route* to the tube I, the second stroke on the bell C, and so on, the break-wheel illustrated being indented to permit one stroke, followed after an interval by two strokes in quick succession, indicating "12," as stated.

The various tubes may be of any suitable length to contain as many balls as desired, and when the receiving-tube M is full the same is raised, as by means of the hoisting mechanism described. When the top of the tube M reaches the stops *z z* on the guide-rods K K, the opening *w* in said tube is in line with the open rear end of the tube F, and the bottom of said tube M being inclined, as shown at *x*, the contents of the tube M are instantly unloaded into the tube F. In the upward movement of the tube M the braces *e i* serve as guard-strips to prevent the balls on said tube from dropping out of the opening *w*, and the moment said tube M starts to rise the lip *y* is thereby raised from engagement with the yoke O and the weight Q forces said yoke O into the position shown in dotted lines in Fig. 1, thereby preventing the lower ball in the tube M from escaping into the otherwise open end of the tube D and preventing any ball that may be in said tube from dropping out until the receiving-tube M is again lowered to place, when the lip *y* will again draw down the yoke O to its former position, (shown in full lines,) thereby automatically opening the end of the tube D. The adjusting devices on the upper end of the bell-rod B enable the edge of the bell C to be projected the proper distance within the opening *f* of the elbow G, according to the size of the balls Z employed, to insure the proper contact in the downward passage of the latter.

It will be understood that we do not confine ourselves to the exact details of construction hereinbefore described, and illustrated in the

accompanying drawings, as we may modify the described tubular construction of the passage or guide way and employ other detached striking devices instead of the balls shown and may employ a different sounding device from the bell illustrated without departing from the spirit of our invention; but in practice we have found the form of our device herein set forth to be most satisfactory in results and economical and convenient in construction and arrangement.

One of the advantages of our construction is best illustrated in Fig. 3, wherein the tilting section I is shown dropped forward by the weight of the first ball Z, as described, and the rear edge or "heel" of said tilting section I thereby raised to prevent the second ball from following the first, as thereby it is impossible for said second ball to move forward until the tilting section I has been restored to place by the described weighted lever p.

If desired, the weighted lever-arms of the yoke O may extend above the tube D instead of below, as shown, as the effect would be the same in either instance.

Having thus described our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. A tower-strike, comprising a passage or guide way, a sounding device interposed at an intermediate point within said passage way, and a series of detached striking devices arranged to travel through said passage way and make contact during such travel with said sounding device, substantially as set forth.

2. In a tower-strike, the combination with a tubular passage way, of a bell or analogous sounding device interposed at an intermediate point within said passage way, a journaled tilting section interposed in said passage-way, a series of balls or analogous devices arranged to travel through said passage way and make contact during such travel, with said sounding device, and a weighted lever connected to the journal of said tilting section, substantially as set forth.

3. In a tower-stroke, the combination with a tubular passage way, of a bell or analogous sounding device interposed at an intermediate point within the latter, a journaled tilting section interposed in said passage way, a series of balls arranged to travel therethrough, a latch-lever connected to the journal of the said tilting-section, a pivoted spring-controlled hook-bar for engagement with said

latch lever, an armature secured to said hook-bar, and a pair of magnets arranged adjacent to said armature and means for energizing the same at predetermined intervals, substantially as set forth.

4. In a tower-strike, the combination with a suitable supporting frame of a tubular passage way, a bell or analogous sounding device interposed at an intermediate point within the latter, a journaled tilting-section interposed in said passage-way, a series of balls arranged to travel therethrough, a latch-lever connected to the journal of the said tilting-section, a pivoted spring-controlled hook-bar for engagement with said latch-lever, an armature secured to said hook-bar, a pair of magnets arranged adjacent to said armature and means for energizing the same at predetermined intervals, and a receptacle, vertically movable within said frame, for receiving the balls from the passage way and reloading the latter therewith when required, substantially as set forth.

5. In a tower-strike, the combination with a suitable supporting frame, of a tubular passage way comprising an upper stationary open-ended tube inclined from rear to front, a vertical stationary tube having an upper opening adjacent to the front end of the first named tube, a journaled tubular tilting section interposed between the two, and a lower stationary open-ended tube inclined from front to rear, and coupled to the vertical tube, said coupling being provided with an opening, a bell or analogous sounding device projecting within said last named opening, a series of balls arranged to travel through said passage way, a pivoted yoke provided with weighted lever arms for normally closing the rear end of the lower tube, and a vertically movable receiving tube provided with a front lower opening, inclined closed bottom adjacent thereto, and an open top with an adjacent forward projecting lip for engagement with the described yoke, substantially as set forth.

In testimony that we claim the foregoing we have hereunto set our hands, at Milwaukee, in the county of Milwaukee and State of Wisconsin, in the presence of two witnesses.

THOMAS R. MERCEIN.
EDWARD R. PORTER.

Witnesses:

H. G. UNDERWOOD,
HENRY DANKERT.