(No Model.)

J. W. DORR, Sr.

STRIKING MECHANISM FOR TIMEPIECES.

No. 525,978. Patented Sept. 11, 1894.

FIG. 1.

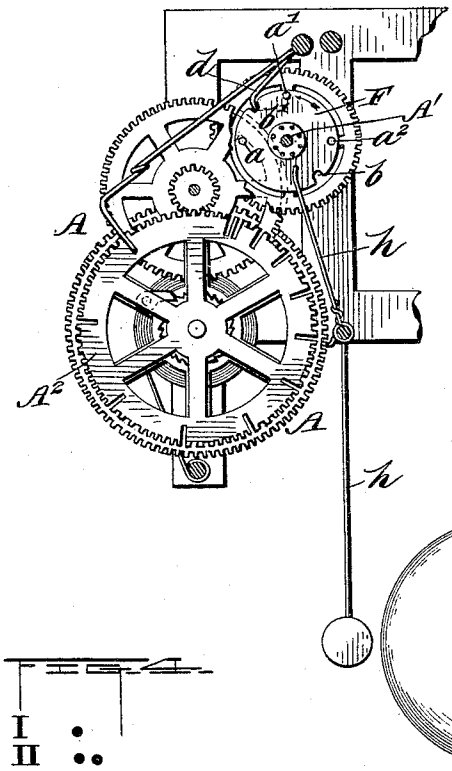


FIG. 2.

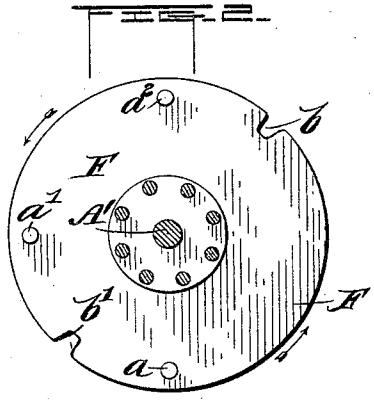


FIG. 3.

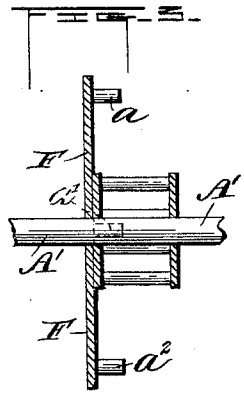
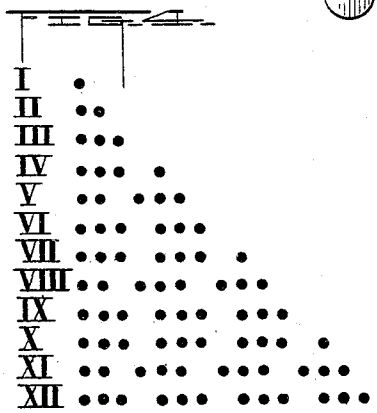


FIG. 4.



Witnesses:

Severance.

C. Calvert Kines.

Inventor:

James W. Dorr Senior
by his Attorneys
Mason, Fennwick and Lawrence

UNITED STATES PATENT OFFICE.

JAMES W. DORR, SR., OF PENSACOLA, FLORIDA, ASSIGNOR OF ONE-HALF TO EBEN DORR MORENO, OF BAYOU SARA, LOUISIANA.

STRIKING MECHANISM FOR TIMEPIECES.

SPECIFICATION forming part of Letters Patent No. 525,978, dated September 11, 1894.

Application filed December 23, 1892. Serial No. 456,149. (No model.)

To all whom it may concern:

Be it known that I, JAMES W. DORR, Sr., a citizen of the United States, residing at Pensacola, in the county of Escambia and State of Florida, have invented certain new and useful Improvements in Means for Striking the Hours of the Day, so that they may be sounded in volleys and fractions of volleys; and I do hereby 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.

My invention relates to a striking mechanism for clocks and other analogous time keepers, and the object of the same is to enable and insure easier and more accurate counting of the strokes of the hammer upon the bell; and it consists in a new means for effecting the striking of the hour in volleys, and fractions of volleys where necessary for the completion of the hour stroke, with intervals of silence between the volleys.

This invention obviates the necessity of close attention in counting the strokes by units, especially the greater number of strokes in the later hours; and it also avoids the frequently annoying and sometimes damaging and even calamitous results caused by uncertainty as to whether the counting has been accurate or the correct time ascertained. Sometimes loss of life, of property, and a multitude of minor troubles are experienced from the old method. By way of remedy a method was practiced many years ago of having clocks repeat the hour strokes, and this may be practiced up to the present day. A decrease of these troubles will result from the hour being struck in volleys of strokes in accordance with my invention; and this can be illustrated to the eye, which counts objects as the ear does sounds. For example: If the number twelve be made up of four clusters of three black dots each, with distinct intervals between the clusters, the whole number can be counted at a glance of the eye; but twelve equidistant dots in a continuous line have to be counted in detail, with close attention, to ascertain their number with certainty. With like ease the ear will count volleys of sounds produced in clusters, but have like trouble in counting the single sounds.

My invention almost, if not quite, does away with the mental process of counting strokes, the effect being rather that of an involuntary impression upon the brain, conveyed direct from the ear, of the true quantity of the time told off. Few persons count even four objects that come simultaneously into view, for the eye instantly takes in the number as though the cluster was but a single object. But beyond the number four enumeration begins with the vast majority of persons, and they count, unconsciously, or purposely, before the brain can know the number.

In the introduction of my invention into practice it will be found that volleys of four and even five are a great improvement on the single number method, but I prefer to count in volleys of three, as will be hereinafter described.

In the drawings Figure 1. is a sectional view of an ordinary striking mechanism of a clock or time keeper, with my improvement. Fig. 2. is a sectional view showing my improved wheel for effecting the striking with the hammer in volleys. Fig. 3. is a sectional view of the parts shown in Fig. 2, and Fig. 4. is a diagram of a time index illustrating my improved method of striking from three to twelve in volleys.

A in the drawings designates an ordinary clock striking mechanism which may be modified as hereinafter described to adapt it for use with my invention, which invention I will now describe as follows: F is the third wheel or revolving disk carrying striking pins, and may be a solid wheel as in drawings, or an open one, carrying the pins on the rim or on three of the arms, and thus be adapted to some clock movements in use. This wheel in one of the old movements in general use was heretofore provided with two pins placed opposite each other and said pins tripped the hammer wire twice in each revolution of the wheel. As shown in the drawings the wheel F, in disk form, is provided with three striking pins, a, a', a^2, and these pins are located upon one half of the disk, equally distant from one another. The disk is also provided with two peripheral stop notches b, b', and these notches are arranged so as to provide for checking the hammer after either the first

or third strokes of the volleys, illustrated by three black dots in Fig. 4. of the drawings, are accomplished; and this is the case whether a full volley or a fractional volley is being struck, as it will never be necessary to check after the second stroke. The disk F in revolving continuously will trip the hammer three times in rapid succession during one half of each revolution, and during the other half revolution will not effect it at all, thus giving in each revolution a volley of three strokes and a silent interval of like duration, which silent interval is illustrated by the long space between the volley three and the single dot, or between the fractional volley two and three dots, or between the volleys three and three; and so on as illustrated in said diagram to the number twelve. As the improved wheel or disk carries three pins instead of two it must revolve more slowly in relation to the rack wheel A^2 in order to supply the seventy-eight strokes during one revolution of the latter. The wheel with two pins in the old method had to revolve thirty-nine times during one revolution of the rack wheel, which occupied twelve hours, and in that time produced the seventy-eight strokes of the hours; whereas the improved volley wheel with its three pins must only revolve twenty-six times during one revolution of the rack wheel, and cause, in twelve hours, seventy-eight strokes; and therefore the gearing represented must be constructed so as to reduce the speed of the wheel to the extent just stated. The wheel, as usual, is arranged on a shaft A′, and all the other parts of the mechanism occupy their ordinary positions relatively to it.

The operation of the movement is as follows: As hour one is struck, the drop wire *d* will fall into notch *b* and the striker will stop, leaving two pins of the three still to trip the hammer wire *h*. When the next stroke comes, the two remaining pins will give the stroke of the hour two, represented by two black dots in Fig. 4., and the drop wire will fall into notch *b′*. At the hour of three the whole volley will be given, represented by three black dots in the aforesaid figure, and the drop wire will again fall into notch *b′*. At the hour four the full volley will first be given, and the wheel will continue to revolve until pin *a* has tripped the hammer wire, giving the volley represented by three dots, an interval space and a single dot, in aforesaid figure, the drop wire falling into notch *b*. At the hour of five the volley commenced in finishing four will be completed, and a full volley given besides before the striker is stopped, making a partial volley of two and a full volley of three, the drop wire falling into the notch *b′*. The hour six will be two full volleys as shown, and the wire will drop into the notch *b′*. The hour seven will be two full volleys and one stroke, as shown, and the wire will drop into the notch *b*. The hour eight will be two strokes and two full volleys, as shown, and the wire will drop into the notch *b′*. The hour nine will be three full volleys and the wire will drop into the notch *b′*. The hour ten will be three full volleys and one stroke as shown, and the wire will drop into the notch *b*. The hour eleven will be two strokes and three volleys as shown, and the wire will drop into the notch *b′*. The hour twelve will be four full volleys, and the wire will drop into the notch *b′*, and at this stage everything will stand ready to repeat the operation just given.

In practical use even the fractions of volleys will add value to the method, for whenever an hour stroke is begun with two taps an accustomed listener will instantly know that it is either five o'clock, eight o'clock or eleven o'clock, as the part of the day may be, and need keep no count of the ensuing full volleys of those hour strokes.

The rack wheels as now in use will serve in this movement whether constructed with gear teeth or made smooth on their peripheries, but the deep notches to receive the pawl at the end of hour stroke must be provided.

As my invention depends for its successful operation upon the pins arranged to operate as herein described, it is apparent to those skilled in the art, that other equivalent known controlling means than those shown, may be adopted without departing from my invention.

What I claim as my invention is—

1. In a time keeping mechanism for striking the hours in volleys and fractions of volleys, a pin wheel constructed with three tripping pins, *a*, *a′*, a^2, so placed in said wheel that the space between pins *a*, and *a′*, and that between pins *a′*, and a^2, is shorter than the space between pins a^2, and *a*, substantially as and for the purpose specified.

2. In a clock mechanism striking the hours of the day in volleys and fractions of volleys, a plurality of tripping devices so grouped on a wheel that said tripping devices are separated from each other by spaces of different lengths and thus when the wheel is revolved, in the action of the striking train movement, the requisite intervals will occur between strokes to produce the units of the hours in volleys and fractions of volleys, as set forth.

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

JAMES W. DORR, SENIOR.

Witnesses:
B. JONES,
JAMES JOHNSON.