J. E. BUERK.

Watchmen's Time-Detectors.

No. 156,532. Patented Nov. 3, 1874.

Fig. 1.

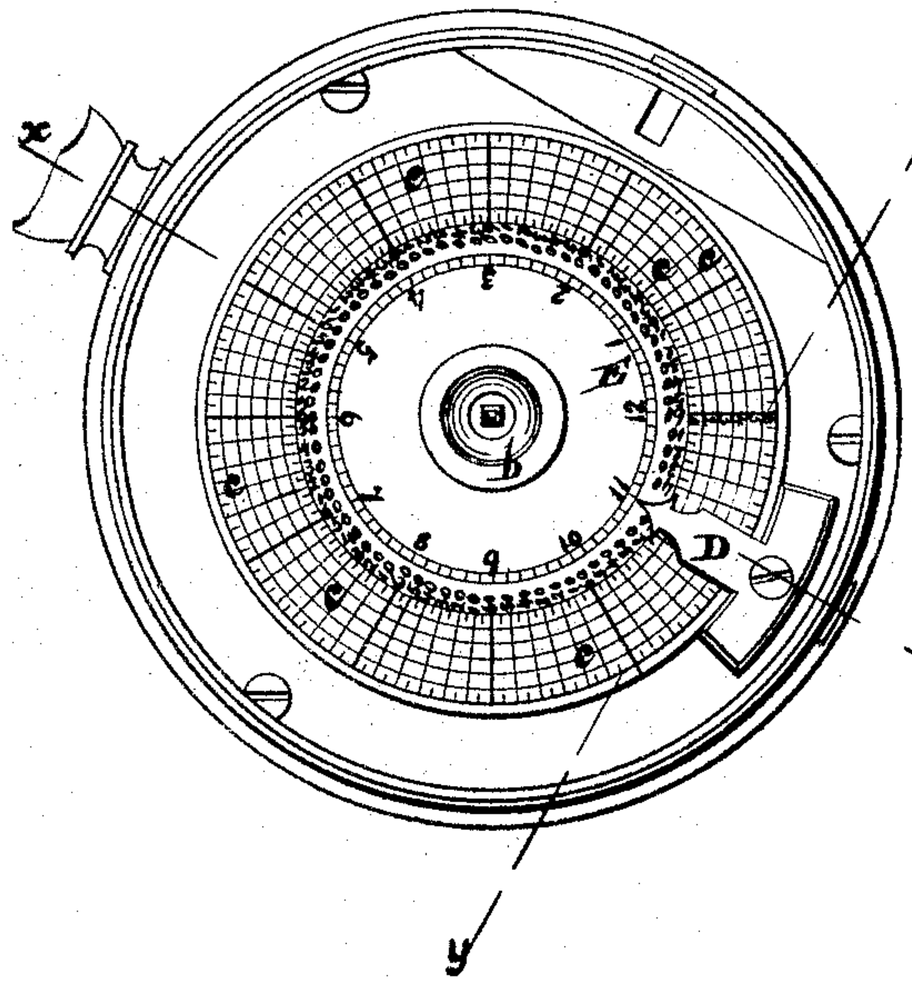


Fig. 2.

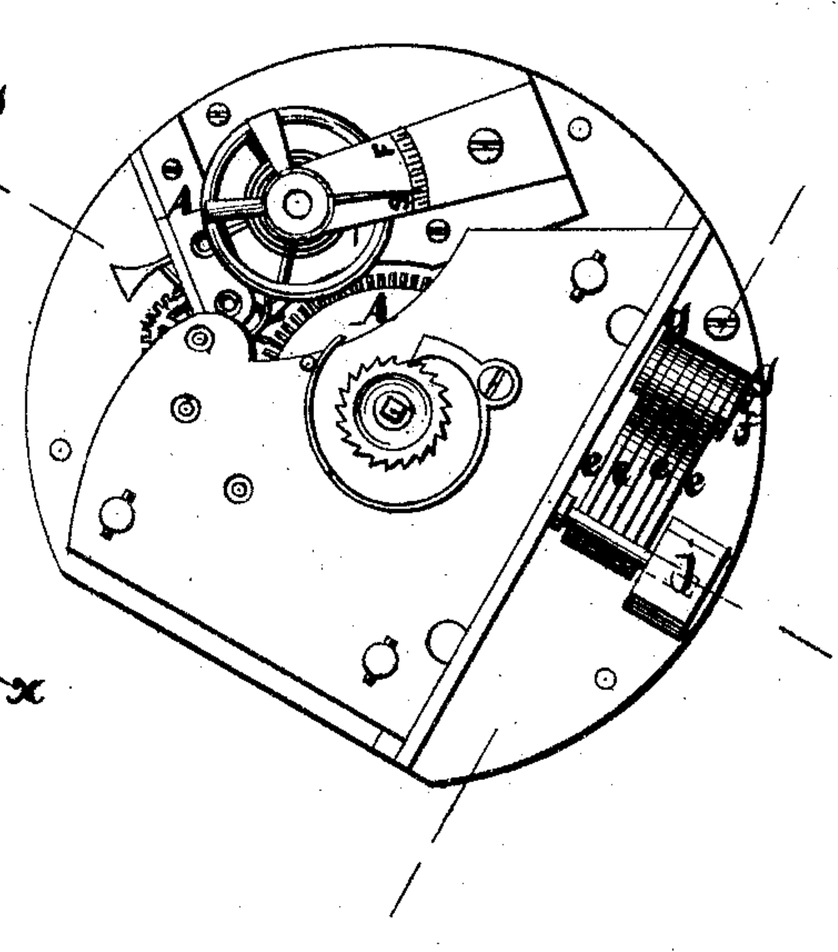


Fig. 3.

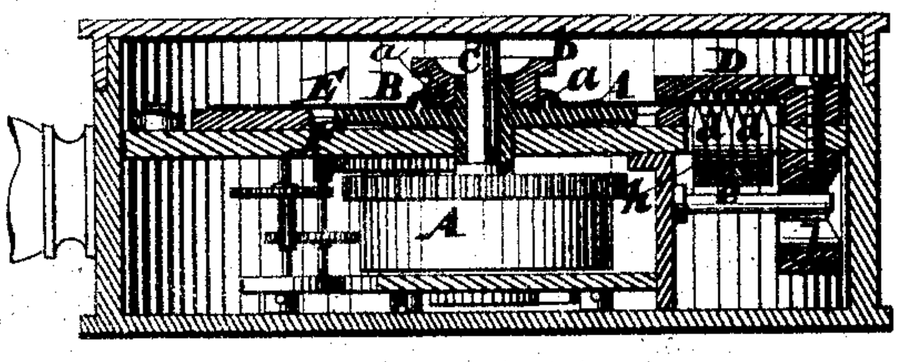


Fig. 4.

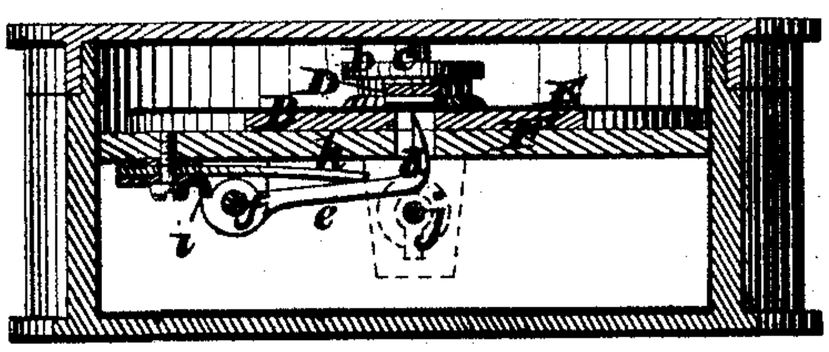
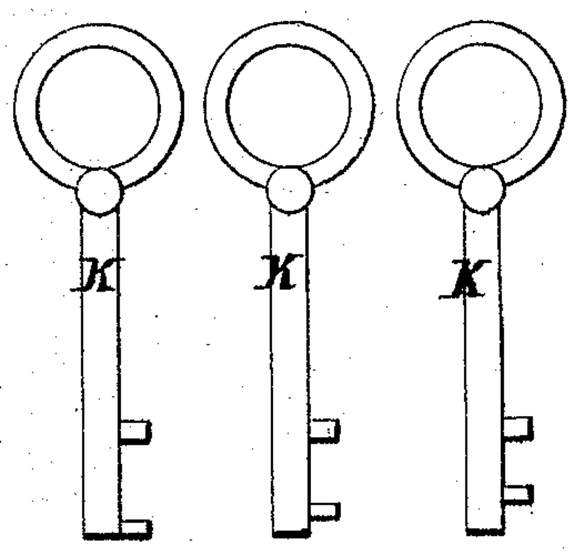


Fig. 5.



Witnesses

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UNITED STATES PATENT OFFICE.

JACOB E. BUERK, OF BOSTON, MASSACHUSETTS.

IMPROVEMENT IN WATCHMEN'S TIME-DETECTERS.

Specification forming part of Letters Patent No. **156,532,** dated November 3, 1874; application filed September 21, 1874.

To all whom it may concern:

Be it known that I, JACOB E. BUERK, of Boston, in the county of Suffolk and State of Massachusetts, have invented a new and useful Improvement in Watchmen's Time-Detecters, of which the following is a specification:

This invention relates to an improvement on that class of watchmen's time-detecters for which Letters Patent have been granted to me, June 6, 1865, No. 48,048. In these detecters a series of spring-points are used, which are caused to perforate a paper dial secured to the watch-arbor, and said spring-points were made of flat pieces of spring-steel, wide enough for all the points required. If one of the spring-points became broken or injured the entire series had to be taken out and replaced by a new set, whereby much trouble and expense were occasioned.

My present improvement consists in combining, with each of the perforating-points, a lever detached from the rest, all said levers being exposed to one common spring and mounted on one and the same pivot in such a manner that each point is supported by a stiff and comparatively stout lever, which is not liable to break, and that, if one of the points should break, its lever can be readily removed and supplied with a fresh point or replaced by another lever without much loss of time or expense.

This invention is illustrated in the accompanying drawing, in which—

Figure 1 represents a face view. Fig. 2 is an inverted plan of the mechanism detached from the case. Fig. 3 is a vertical section of the same in the plane *x x*, Fig. 1. Fig. 4 is a similar section in the plane *y y*, Fig. 1. Fig. 5 shows the keys.

Similar letters indicate corresponding parts.

In these drawings, the letter A designates a clock or watch movement made in the ordinary manner, and provided with a revolving disk, B, which is mounted on the watch-arbor C in place of the ordinary hour and minute hands. Said disk revolves once in twelve hours, and it is provided with two or more points, *a*, Fig. 3, which serve to retain the dial E. This dial is made of paper or other suitable material, and it is secured by a sleeve, *b*, that slips over the watch-arbor, and is provided with little holes or sockets to correspond in number and position to the points *a*. Said dial is marked with figures from 1 to 12, and with a series of concentric rings, *c*, which occupy the outer zone of the dial, and when the dial revolves said rings move under a stationary index, D. The annular spaces between the rings *c* correspond in number and position to a series of points, *d*, which are secured in levers *e* beneath the stationary index D, said levers being hung on a common pivot, *f*, which is secured in lugs *g* fastened to the under surface of the stationary face-plate F of the clock-movement, said face-plate being provided with a slot, through which the points *d* can be forced up, so that the same perforate the dial E; and, in order to permit the points to pass clear through said dial, the index D is provided on its under surface with a series of grooves, which correspond in number and position to the points *d*. The levers *e*, which carry the points *d*, are exposed to the action of a common spring, *h*, which depresses the levers, so that the points will not interfere with the revolving motion of the dial, each of the levers being provided with a shoulder or stop, *i*, Fig. 4, so that it cannot be depressed beyond the desired point. For the purpose of operating the points *d* a series of keys, K, are provided, the bits of which are of different shape, so that, when the same are inserted through a key-hole, *j*, in the case which incloses the clock-movement, each of them, on being turned around, forces up one or more of the points *d*, and thus by the action of the first key the first point may be raised, by the action of the second key the second point, and so on to the sixth key, if the number of points is six. A seventh key may be made to raise the first and second points, an eighth the first and third points, and so on, according to the number of stations which the watchman has to visit. The clock-case is locked, and the clock, after having been wound up and provided with a fresh dial, is handed to the watchman. In each station is secured one of the keys. As the watchman reaches each station he inserts the key

which he finds, and, by turning it around, he produces a perforation in the dial, and, since each perforation is situated in one of the zones between the rings *c*, the motions of the watchman are perfectly controlled.

By means of the levers *e* the points *d* are firmly supported, said levers being made sufficiently thick for this purpose; and the levers themselves can be readily made of such strength that they cannot be broken by the action of the keys; and, if one of the points should be broken, the corresponding lever can be readily taken out and replaced by another, causing comparatively little expense and requiring no particular skill.

In the detecter described in my patent No. 48,048 the points *d* were fastened in the ends of springs emanating from a common head. These springs are liable to get broken, and if one of them breaks the entire set has to be removed and replaced by another, and great skill is required to bring all the points in the correct position, so that they come opposite to their grooves in the stationary index.

In my present detecter a plain flat spring acts on all the levers *e*, the construction of these parts is simplified, and their durability is materially increased.

I disclaim everything shown and described in my patent No. 48,048.

What I claim as new, and desire to secure by Letters Patent, is—

In a watchman's time-detecter, the combination, with the dial, its clock-work, and the registering-index D, of the series of independent levers *e*, each carrying a point, *d*, said levers being subjected to the action of a spring, *h*, substantially as described, for the purpose specified.

In testimony that I claim the foregoing I have hereunto set my hand.

Witnesses: J. E. BUERK.

W. HAUFF,

E. F. KASTENHUBER.