D. SHIVE.

WATCHMEN'S REGISTER.

No. 169,378. Patented Nov. 2, 1875.

Fig. 1.

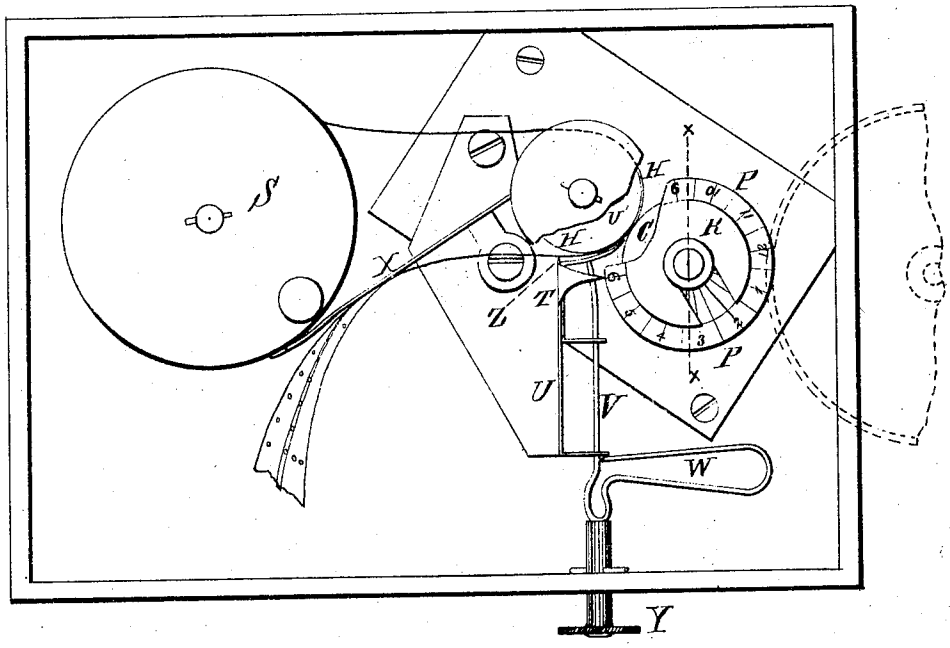


Fig. 2.

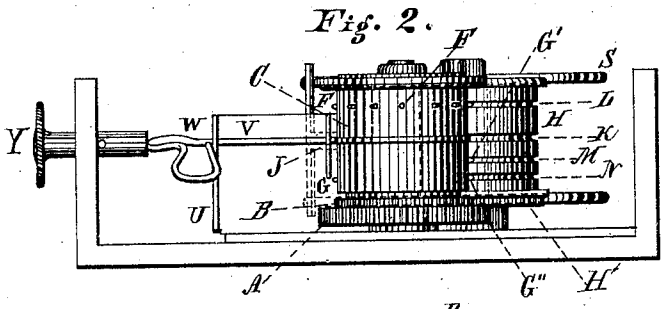


Fig. 3.

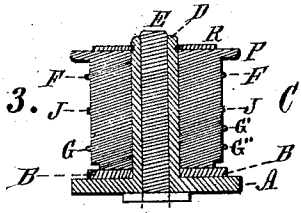
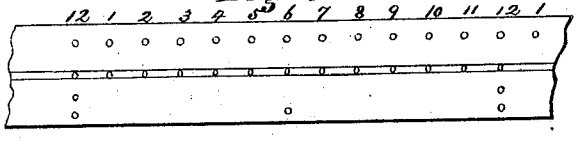


Fig. 4.



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UNITED STATES PATENT OFFICE.

DAVID SHIVE, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO THE SHIVE GOVERNOR COMPANY.

IMPROVEMENT IN WATCHMEN'S REGISTERS.

Specification forming part of Letters Patent No. **169,378**, dated November 2, 1875; application filed October 10, 1873.

To all whom it may concern:

Be it known that I, DAVID SHIVE, of the city and county of Philadelphia and the State of Pennsylvania, have invented a new and useful Improvement in Watchmen's Registers; and I do hereby declare the following to be a clear and exact description of the nature thereof, sufficient to enable others skilled in the art to which my invention appertains to fully understand, make, and use the same, reference being had to the accompanying drawings, making part of this specification, in which—

Figure 1 is a face view of the device embodying my invention. Fig. 2 is an end view thereof. Fig. 3 is a central vertical section in line *x x*, Fig. 1. Fig. 4 represents a ribbon, band, or slip of paper or other material, employed by me, and showing the time registered or recorded.

Similar letters of reference indicate corresponding parts in the several figures.

The object of this invention is to register or record, at appointed hours, the faithfulness with which a watchman attends to his duties; or, in other words, his wakefulness or presence. The invention consists in marking mechanism, operated by the direct action of the clock or piece, in combination with means for setting the register with the clock. It also consists in the combination, with a piercer adapted to be operated by the watchman, of cylinders so constructed that the marking or registering band shall indicate the hours, the starting-point, and intermediate points. It also consists in constructing the marking-cylinders that the band cannot slip in the interval when the marking-studs are not in contact with the band. It also consists in an arm forming a guide for the band as it passes from the marking-cylinder, and a tension for the reel.

Referring to the drawings, A represents a pinion, which engages with the main wheel of a clock or time-piece, and is operated thereby, said wheel being shown by dotted lines, Fig. 1. B represents a pinion, with which is formed, or to which is connected, a cylinder, C, which is placed on a sleeve, D, attached to the pinion A, and fitted on an axial pin or post, E. (See Fig. 3.) From the surface of the cylinder C there project studs or spurs F, which are in number equal to the twelve hours of the clock; and, if desired, also of fractions of the hours. There are also arranged on the surface of the cylinder, at a point different from that of the studs F, and at certain intervals, studs or spurs G G′ G″, of which the spur G is single, and the spurs G′ G″ are grouped. H represents a cylinder, which is arranged parallel with the cylinder C, and connected to a pinion, H′, with which meshes the pinion B of the cylinder C. At or about the center of the surface of the cylinder C there is formed a continuous circumferential bead, J, which enters a groove, K, on a corresponding portion of the cylinder H. The latter cylinder is also grooved at L for the entrance of the studs F, at M for the spurs G′, and at N for the spurs G″ and spur G. The upper or outer side of the cylinder C carries a dial, P, on which are marked minutes and hours corresponding to the dial of the clock or time-piece. A key or clamp, R, is fitted over the dial, and catches in a notch or groove on the end of the sleeve D for tightly connecting the pinion A, pinion B, cylinder C, and sleeve D, so that they may move as one, yet permitting the cylinder C and pinion A a motion independent of each other.

The paper employed by me will be in the form of a ribbon or band, and placed on a reel or drum, S, which is located in proper position for directing the paper between the two cylinders C H, the cylinder H and the reel S being flanged for properly guiding the paper in its movements. T represents an index, which is attached to a frame, U, and points toward the numbers on the dial P of the cylinder C, and the end U′ of said frame U is curved, and projects laterally between cylinders C H, so as to bear, or nearly bear, against the cylinder C, and leave a space between the cylinder H and said curved end of the frame.

V represents a sliding piercer, which has bearings on the frame U, and is located, in relation to the cylinder H, so as to be brought in contact therewith, and a spring, W, is arranged with the piercer, for forcing the latter from the cylinder H. X represents an arm, which has one end bearing, or nearly bearing, against the cylinder H, and the other end against the reel of the ribbon or band of paper. The portion of the frame U which is adja-

cent to the cylinder H is formed with a transversely-cutting edge, Z, for purpose to be stated. The various parts thus set forth are properly placed in the casing of the clock or time-piece under lock and key, for preventing tampering with the register by unauthorized persons, and located where the watchman may operate the piercer V, which is accomplished on the outside of said box or casing by means of the headed spindle Y, which, being attached to the piercer on the inside of the box or casing, projects through the same.

The operation is as follows: The dial is set with the time of the clock or time-piece by turning it until the index T points at a number, mark, or characteristic on said dial corresponding with that of the dial of the clock or time-piece. In this movement or adjustment the cylinder C, which carries the dial P, may be rotated without disturbing the main wheel of the clock or time-piece, since, while the pinions are held in contact by the action of the key or clamp R on the sleeve D, the friction between the pinions is readily overcome by moving the cylinder C in the required direction, the main wheel holding the pinion A.

The paper, ribbon, or band is passed in between the cylinders C H, and the clock or time-piece being in motion the ribbon is drawn forward and subjected to the marking operation of the cylinders C H. The spurs G and G′ G″ are so disposed that the former will impress the paper at intervals—say, every six hours, and the latter, say, every twelve hours—so that when the spurs F make their impression every hour or fraction thereof the time of the latter impressions may be reliably read off by noticing the relative positions of the marks or impressions of the spurs G and G′ G″—a matter of importance in cases where the paper is not or cannot be daily or often inspected, since the marking or impressions continue, and thus each night or day, or both, stands recorded by itself, and a continuous record may be had.

Suppose the watchman goes on duty at six o'clock in the evening; then, as the paper moves along, one of the spurs F presses against the paper and leaves its mark, said spurs being arranged on the cylinder C to correspond with the marks on the dial, and consequently with the dial of the clock or time-piece, so that when the latter indicates six o'clock the dial P will likewise the same, and one of the studs F then makes an impression, and so with the other hours, and, if desired, with the fractions of the hours. The spur G, indicating the starting-point or six o'clock, makes its mark simultaneously with that of the spur F; but while these marks are at different points they are in the same right line.

The watchman must press the headed spindle Y at six o'clock, and thus produce a mark, impression, or perforation on the paper at a point between the longitudinal line of the other marks, but in the same right line with the marks of the stud F and stud G.

The operation continues the same the next hour, excepting that the stud G will not mark again until six o'clock in the morning, and when twelve o'clock is reached then the studs G′ G″ make their mark.

If, however, the watchman neglects his duty, or is absent at the time he should be at the register, the paper moves on; but the absence of the man's mark or appearance of a mark at a point not timely or registering with the mark of the relative studs F will indicate the absence or lateness of the man, which is apparent on inspection of the paper.

When the paper is cleared of a stud it is liable to slip; but this is prevented by the action of the bead J, which presses the paper into the groove K, and, taking hold of the same, carries it forward.

The paper cannot pass between the piercer and cylinder C, owing to the interposition of the guiding end U′ of the frame U, and the paper cannot return to the cylinder H, in consequence of the arm X.

Should it be desired to remove the registered or recorded paper, the edge Z of the frame U affords ready means of cutting said paper from the remainder thereof by simply drawing it against the edge.

In Fig. 4 there is shown a strip exhibiting the register of the watchman for twelve hours, the central line of marks indicating that the man was at his post promptly every hour.

If the registered ribbon is not removed in the morning when the watchman goes off duty, it will continue unwinding from the reel S, and be marked only by the spurs, (without that of the piercer,) the ribbon accumulating in the clock-casing, the spurs G and G′ G″ making their marks as usually, and indicating the hours off duty, and thus assisting the reading of the register when the man is again on duty, whereby his time may be registered or recorded continuously for awhile without removal of the ribbon or erasing the marks thereof.

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

1. In a watchman's time-register, wherein marking mechanism is operated by the direct action of the clock, the cylinder C and cylinder H, in combination with the sleeve D of the pinion A, substantially as and for the purpose set forth.

2. The combination, with the piercer V, of the cylinder C, formed with the hour-spurs F, the single spur G, and the grouped spurs G′ G″, and the cylinder H, formed with the series of grooves L M N, as set forth.

3. In a watchman's register, the combination, with the cylinders C and H, and their marking-studs F, of the continuous circumferential bead J, and the groove K, substantially as and for the purpose set forth.

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