To all whom it may concern:

Be it known that I, ABRAHAM A. NEWMAN, a citizen of the United States of America, and a resident of Chicago, county of Cook, and State of Illinois, have invented certain new and useful Improvements in Watchmen's Clocks, of which the following is a specification.

My invention relates to portable watchmen’s clocks that are carried about from station to station, and at those stations a dial within the clock-case is marked by keys located at the stations.

The object of my invention is to make improvements in the devices used in the marking operation.

In the accompanying drawings, Figure 1 is a plan of a plate supported within the clock-case, a dial to be marked being shown in its proper position with respect to this plate.

Fig. 2 is an elevation of Fig. 1.

Fig. 3 is a plan of the lower face of the same plate and the attached key-box.

Fig. 4 is a projection in elevation of Fig. 2.

Fig. 5 is a section on line 5 5 of Figs. 1, 2, and 3 and in a position corresponding to that of Fig. 4.

Fig. 6 is a bottom view of Fig. 5 with the covering-spring removed. Fig. 7 is a perspective view of one of the keys used in marking the dial, and Fig. 8 is an enlarged plan of the marking-die of the key shown in Fig. 7.

In the said drawings, A is a plate secured in any suitable manner in a clock-case and serving to support the devices used in marking the dial. Extending through the center of the plate A is a shaft or spindle B, which is connected to and driven by a clock mechanism.

On the upper end of the spindle B is secured a graduated dial D, which is supported near the plate A and which is rotated in the ordinary manner by the said spindle.

Secured to the upper face of the plate A is a bracket C, which has an arm C', that projects over the graduated part of the dial and toward its center. In the under face of the arm C' is a groove in which is secured a matrix-plate C'', which is provided with intaglio characters C'. Opposite the matrix-plate C'' is a slot A in the plate A, which serves as a means of communication between the matrix and the key supporting and guiding devices lying on the opposite side of the plate A.

It is between this slot A' and the matrix-plate C' that the dial D is rotated by the spindle B.

secured to the lower face of the plate A is a key-box formed of side plates G and G', which side plates are preferably in one piece, with a uniting bottom G'. Supported so as to rotate in the side plate G and G' is a slotted shaft E, and to this shaft is secured a block F. The block F is of a length equal to the distance between the plates G and G' and when secured in place prevents the shaft from axial movement in the said side plates.

The key K has a large L-shaped flange on one side and a smaller flange K' on the other side. The slot in the shaft E is made to receive the smaller flange, and to permit the key to be inserted the plate G has a slot G' of a size and shape to correspond with the larger flange of the key. The slot G' unites with the slot in the shaft E, so that when the said shaft is in its normal position the two slots form an opening corresponding to a cross-section of the key through both flanges.

The slot G' is of course stationary, while the slot in the shaft E is movable by the rotation of said shaft. To make one extreme position of the shaft E come at a position in which these two slots will unite to make a suitable key-opening, the block F is made into a stop that butts against the plate G' of the key-box.

Secured to the plate A is a block H, and on this block is a stiff spring H', having a projection or boss H', which comes directly under the center of the shaft E. Formed on one part of the block F is a cam-surface F', which is arranged to engage the projection H' on the spring H'. These parts are so arranged that the tension of the spring H' normally holds the block F against the plate G', and consequently normally maintains the slot G' and that in the shaft E in a position ready to receive the key K. When the key is inserted in the opening thus prepared for it and is turned, it rotates the shaft E and moves the cam F' over the face of the projection H'. As soon as the apex of the cam passes the apex of the projection the tension of the spring H'
then forces the rotation forward. The center of the shaft E is displaced laterally from the matrix-plate C, a distance equal to the distance between the two flanges of the key K. As a consequence of this, the spring H forces the key against the matrix-plate C, or rather against the dial D, which lies between the matrix and the slot A', through which the larger flange of the key passes.

On the larger flange of the key K is a projection K', on which is formed a male character, which corresponds in size, form, and position to one of the female characters C in the matrix-plate C. Each one of the other keys (of which there is one at each station to be visited by the watchman who carries the clock) also has a male character that similarly corresponds to some other character of the matrix-plate C. In Patent No. 688,326, issued December 10, 1901, there is shown a similar key arranged to cooperate with a similar matrix-plate. In that patent there is a spring arranged to resist the forward movement of the key with a force sufficient to cause the marking of the dial when the spring is released. In the present case there is not only a resistance to the forward movement, but there is added the arrangement by which the resistance of the initial part of the movement is transferred to a forward force during the latter part of the movement. The result of this is that the spring resistance to the turning of the key may be reduced about one-half, because the tension of the spring itself operates to furnish part of the force required to mark the dial. In the patent referred to the key is rotated in a stationary receiver. In the present case the key goes into a movable receiver, which is the slotted shaft E, and this receiver rotates in journals of its own. The result of this change in construction is increased accuracy in operation and increased ease and cheapness of construction.

What I claim is—

1. The combination with means for supporting a dial or sheet to be marked and a key provided with an indicating character for marking it, of a device engaged by said key, said device being arranged to at first resist and subsequently to assist the marking movement of said key.

2. The combination with means for supporting a dial or sheet to be marked and a key provided with an indicating character for marking it, of a key-receiver in which said key is inserted and by which it is guided for such marking; and a spring arranged to first resist and subsequently to assist the marking movement of said key.

3. In a device of the class described, the combination with a marking-key provided with an indicating character, of a movable key-receiver, a cam carried by said receiver, and a spring engaging said cam and serving to force said receiver to either of its extreme positions.

Signed at Chicago, Illinois, this 23d day of September, 1903.

ABRAHAM A. NEWMAN.

Witnesses:

FRANCIS W. BARNES,
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