

J. A. MILLER.  
Clocks and Watches.

No. 220,724.

Patented Oct. 21, 1879.

Fig. 2.

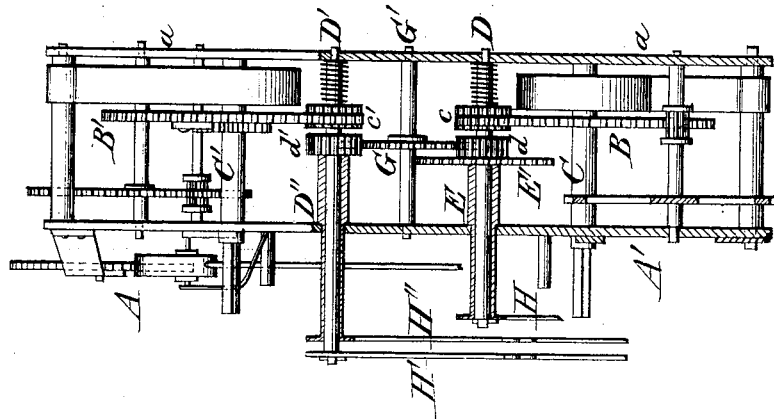
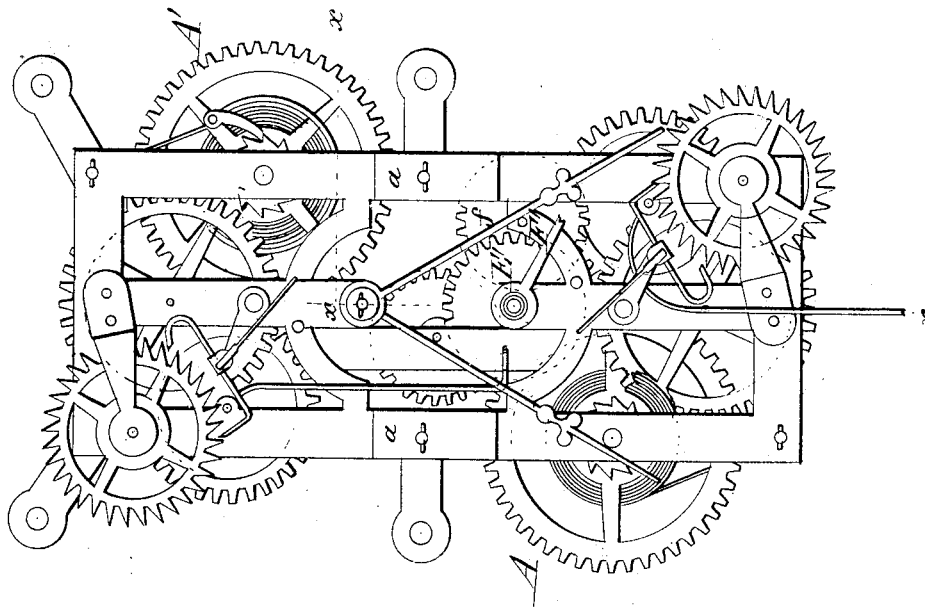


Fig. 1.



Attest:  
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# UNITED STATES PATENT OFFICE.

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## IMPROVEMENT IN CLOCKS AND WATCHES.

Specification forming part of Letters Patent No. **220,724**, dated October 21, 1879; application filed June 26, 1879.

*To all whom it may concern:*

Be it known that I, JOHN A. MILLER, of the city of Paducah, in the county of McCracken and State of Kentucky, have made certain Improvements in Clocks and Watches, of which the following is a specification.

All time-keepers are subject to be deranged or obstructed, or even stopped in their movements, hence the time is lost; and to avoid liability of such difficulty, and to have such a construction and arrangement of the moving parts as to completely overcome such defect, is the object of this invention.

The invention consists in the construction and arrangement of the moving parts of time-keepers so that the time will always be kept, as will be fully hereinafter described.

In the drawings, Figure 1 represents a front view of the invention in a clock. Fig. 2 is a side view of the same.

A and A' represent two clock-movements in one framing, *a*, of the usual form of construction, each having the usual trains of wheels, actuated by a coiled spring, and means of regulating the movements of the trains as is usual in clocks or watches.

B and B' are the driving-wheels in the movement, respectively, on winding-shafts C and C', wheel B gearing into pinion *c*, that is fast on the hour-hand shaft D. Wheel B' gears into pinion *c'*, that is fast on the minute-hand shaft D'.

*d* is a pinion on shaft D, and *d'* is a like pinion attached to sleeve-shaft D'', that may freely revolve around shaft D', or with it, as circumstances may control.

G is a spur-gear transfer-wheel, fast on shaft G', which gears into pinion *d* on shaft D and pinion *d'* on sleeve D'', around shaft D', and is an intermediate gear between sleeve-shafts B and D'', and transfers motion from train A to the minute-hand on sleeve D''.

H is the hour-hand, and is driven in the usual manner. H' is a minute-hand, firmly attached to and revolving with shaft D'; and H'' is another minute-hand, attached to and revolving with sleeve-shaft D''. With this construction and arrangement of two trains of

time-movements, properly adjusted and regulated to indicate the same time, the two minute-hands H' and H'' will be coincident and appear as but one; but if one of the movements should stop or be damaged, the minute-hand connected with that train would either stop or slow its movement, and the discrepancy would be seen at once. Consequently by connecting two trains of time-movements in the manner above described the loss of time is remedied or prevented, as either one of the movements would keep the time if the other should stop.

This invention can be applied to watches as well as clocks, the principle being the same, and be applied to clocks where a weight is used instead of a spring, or to a pendulum or other regulating device.

I am aware that two time-movements have been applied to certain devices in clocks for the purpose of avoiding a disaster if but one were employed and that should stop; but I am not aware that two such movements are in use in a watch or clock to indicate time through minute or hour hands.

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

1. In a clock or watch, the combination of two independent time train-movements with two independent minute-hands revolving around a common center, substantially as described.

2. The combination of the two trains A and A' of time-movements with the intermediate transfer spur-wheel G, pinion *d'*, shaft D', sleeve D'', and two minute-hands, H' and H'', as and for the purposes described.

3. In a time-indicator, such as a clock or watch, the combination of two time-movements, A and A', intermediate transfer spur-wheel G, shafts D and D', sleeves D'' and B, hour-hand H, and minute-hands H' and H'', with their intermediate gear connections, as and for the purposes described.

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Witnesses:

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