B. B. LEWIS.

Clock Movement.

No. 113,781. Patented April 18, 1871.

Fig. 1.

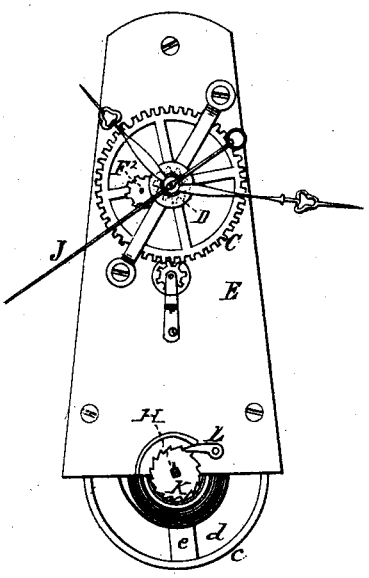


Fig. 2.

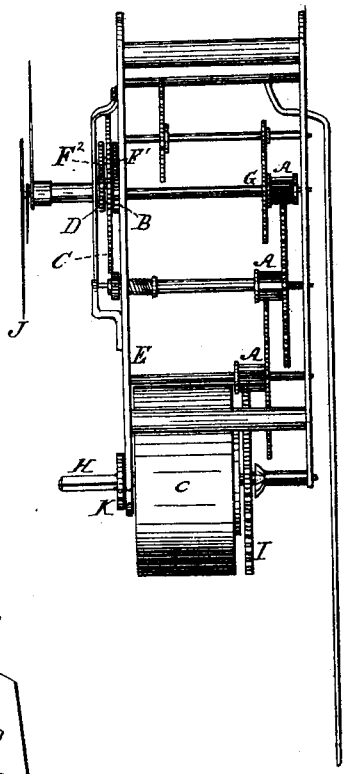


Fig. 3.

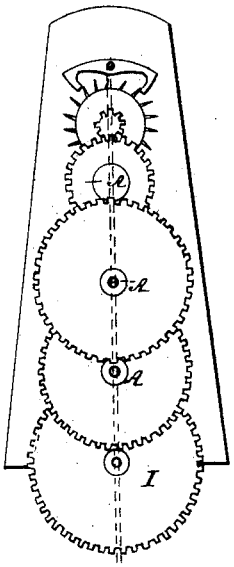
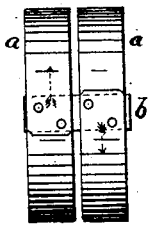


Fig. 4.



Witnesses:

H. C. Beckwith

James Shepherd

Inventor:

Benjamin B. Lewis

UNITED STATES PATENT OFFICE.

BENJAMIN B. LEWIS, OF BRISTOL, CONNECTICUT, ASSIGNOR TO HIMSELF AND SOLOMON C. SPRING, OF SAME PLACE.

IMPROVEMENT IN CLOCK-MOVEMENTS.

Specification forming part of Letters Patent No. **113,781**, dated April 18, 1871.

To all whom it may concern:

Be it known that I, BENJAMIN B. LEWIS, of Bristol, in the county of Hartford, State of Connecticut, have invented a new and Improved Clock; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to make and use the same, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1 is a front elevation of my invention. Fig. 2 is a side elevation of the same. Fig. 3 is a front elevation of the train and verge. Fig. 4 is a side elevation of the spring.

Similar letters of reference indicate like parts.

My invention consists in securing to the front plate of a clock a stationary geared wheel, around which, and meshing into it, another geared wheel revolves, which revolving wheel meshes into another geared wheel which revolves on the center of the stationary gear.

A A A designate what clock-makers term "lantern-pinions." They are made by securing to the pinion wire or shaft two collets, which collets have small holes drilled at equal distances from each other near their outer edges. These holes are then filled with needles made of wire, thus forming an open or lantern pinion. The teeth of the adjoining wheel mesh in between the wires of this pinion and turns it.

B designates the stationary geared wheel, which in this clock is also the base and a part of the stationary hollow socket.

C designates the large dial-wheel, which is secured to a hollow socket carrying the minute-hand, the inside of which socket is fitted to and revolves on the stationary hollow socket B once in sixty minutes.

D designates an hour-wheel with twelve teeth, which wheel D is secured to another hollow socket carrying the hour-hand, the inside of which socket is fitted to and revolves on the minute-socket once in twelve hours. The stationary socket and geared wheel B are soldered or otherwise secured to the front plate, E, near its center, or immediately back of the center of the dial, and contains twelve teeth.

F' F^2 designate geared wheels which are connected and secured together by a short shaft, which shaft has its bearing in the body of wheel C, at such distance from its center that the wheels F' F^2 mesh properly into wheel D and stationary wheel B, the whole forming a double set of sun-and-planet wheels. F' contains twelve teeth, and F^2 eleven. Thus it will be seen that as the wheel C revolves once an hour the wheels F' F^2 revolve with it and around the stationary wheel B, and transmit motion to wheel D, causing it to revolve one-twelfth of a revolution for each revolution of wheel C, or one revolution in twelve hours. If desired, the stationary wheel B could contain but eleven teeth, in which case the wheels F' F^2 could contain any equal number of teeth, and the same results would be accomplished. By making stationary wheel B with twelve teeth and either wheel D or F' with eleven, the same part of a revolution for each revolution of wheel C would be made, but it (wheel D) would move in the opposite direction. By changing the number of teeth in wheels D and B any part of a revolution of wheel D desired for each revolution of wheel C can be accomplished. This manner of reducing motion might be applied with good advantage to many mechanical movements.

G designates a shaft and wheel which revolves once in sixty seconds. The pivot on which it turns at the front of the clock extends through the stationary hollow socket B. To the end of this pivot I attach the second-hand J. The train and escapement of this clock are the same as many in common use.

a a designate two springs. *b* designates a bar of metal, to which I attach the outer ends of each spring *a a* in any proper manner.

c designates a case to inclose the springs *a a* and keep them from coming in contact with the other parts of the clock.

d designates a thin plate between the springs *a a* to prevent them from entangling in each other. To this plate *d*, I attach the case *c*.

e designates a slot in plate *d*, through which the connecting-bar *b* passes, and moves to and from the winding-shaft H when the spring is being wound and in running down. I attach the inside coil of one spring *a* to the winding-shaft H and the other end to a hollow socket or sleeve, which socket is attached to the main wheel I, said socket and wheel I being left loose, so as to turn on shaft H when the movement is in motion.

K designates a ratchet secured to shaft H, and L designates the click secured to plate E. The click L prevents the shaft H from turning backward, and therefore the shaft H revolves only when the spring *a* is wound, and the power of the spring *a* is operating on the movement when the spring *a* is being wound, the same as at any other time.

If desired, a socket might be secured to plate E and extend in length through the first spring *a*, and inside coil of one spring *a* be attached to it, while the wheel I, ratchet K, and click L could be attached to the winding-shaft H in the usual manner, said winding-shaft H running through or into the socket on plate E. If thus attached, the power of the springs *a a* would be taken from the movement when wound. By placing two springs together I double the length of time that they will run without increasing their power.

If desired, more than two springs might be connected in same way by connecting the inside coils of the center springs by metal bars or sockets, and fasten the ends of the outer springs, as before described.

By my invention I produce an article for a good clock with the second-hand describing the whole dial at a moderate expense. I produce a new and cheap manner of reducing motion at the dial-wheels. I lengthen the running time of a mechanical movement without increasing the strain on its parts.

I do not claim the combination of expensive solid steel pinions, stationary socket, and second-hand describing the whole dial; neither do I claim the combination of lantern-pinions, movable socket, and second-hand describing the whole dial; but

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

1. The stationary socket and wheel B, in combination with the front plate, E, substantially as set forth.

2. The combination and arrangement of stationary wheel B, movable and revolving wheels F' F^2, wheel C, and wheel D, all arranged and moving substantially as and for the purpose described.

BENJAMIN B. LEWIS.

Witnesses:

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JAMES SHEPERD.