(Model.)

2 Sheets—Sheet 1.

C. S. LEWIS.

STRIKING MECHANISM OF REPEATING CLOCKS.

No. 248,935. Patented Nov. 1, 1881.

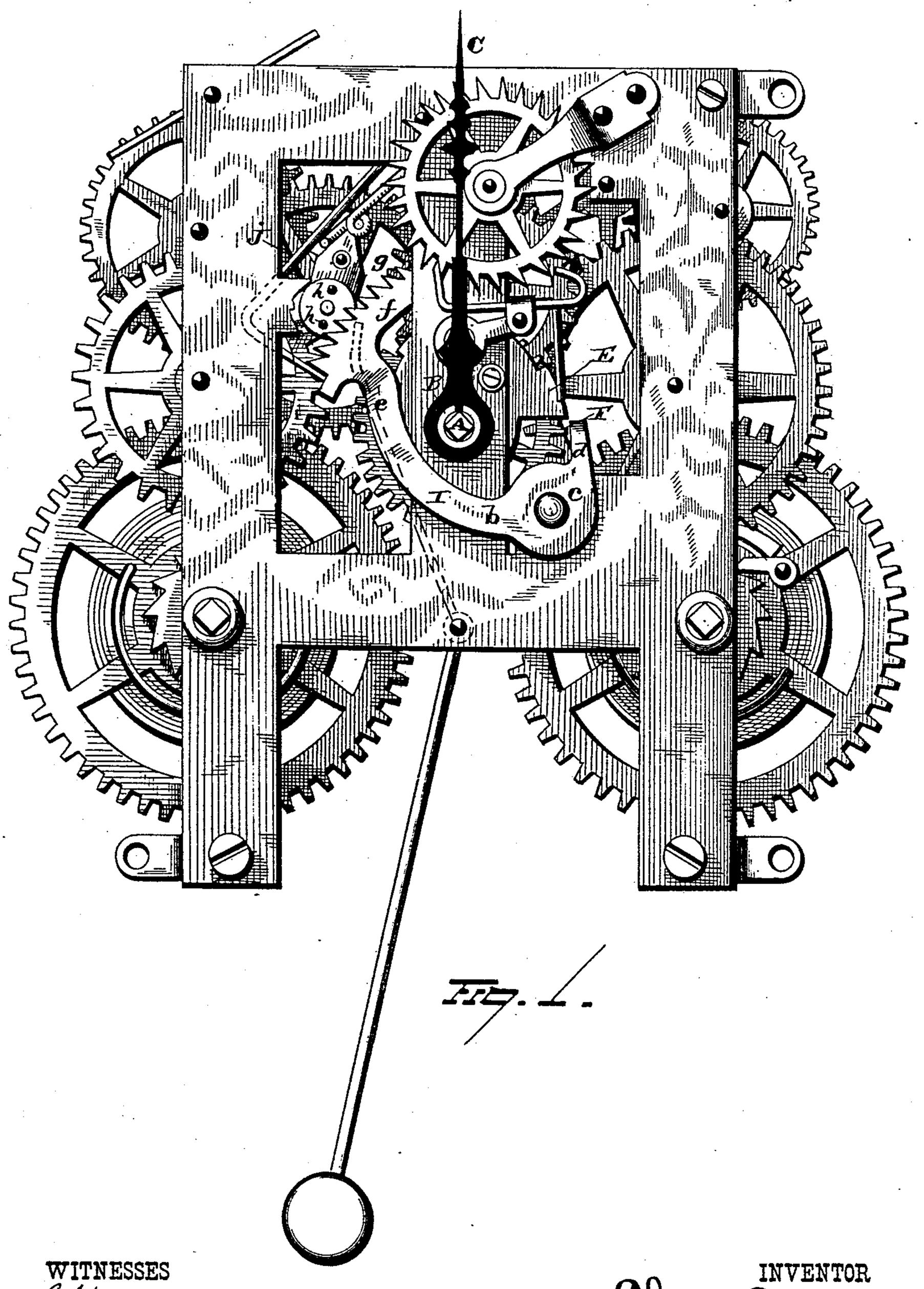

Fig. 1.

WITNESSES

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(Model.) 2 Sheets—Sheet 2.

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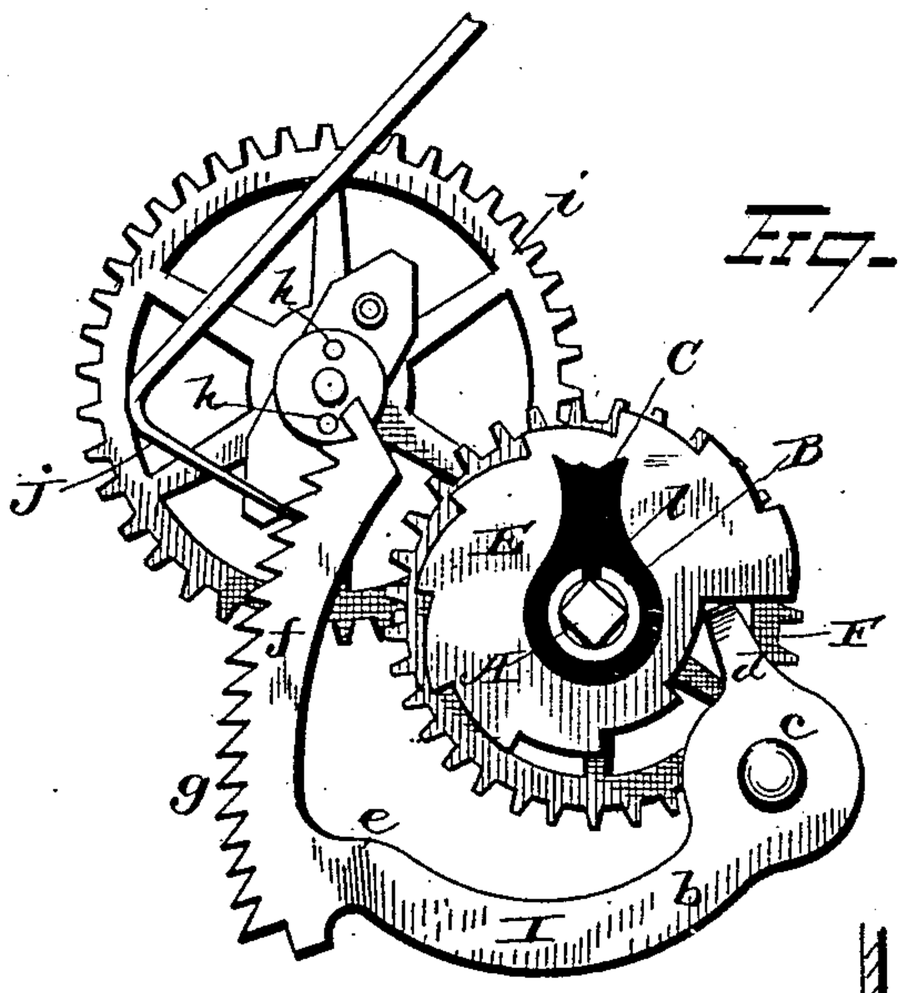

Fig. 2.

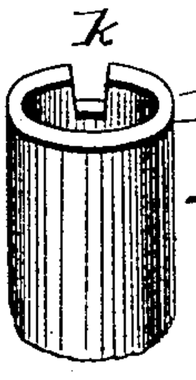

Fig. 4.

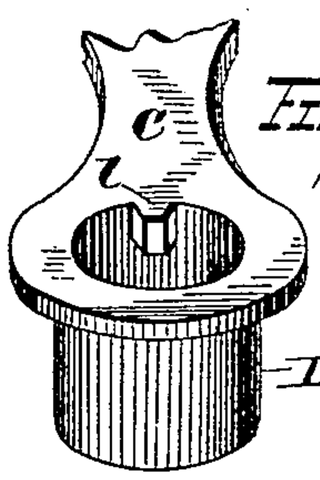

Fig. 5.

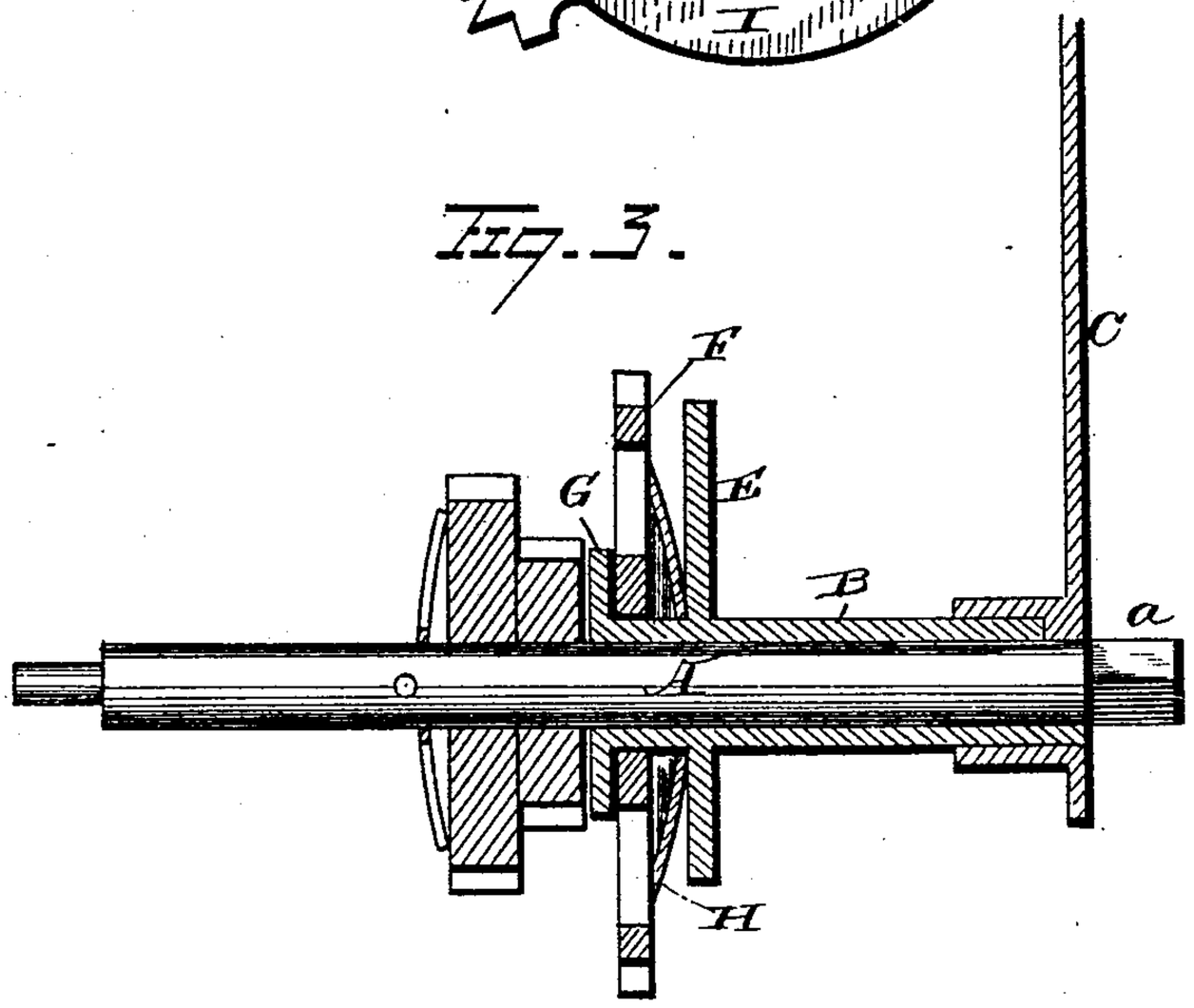

Fig. 3.

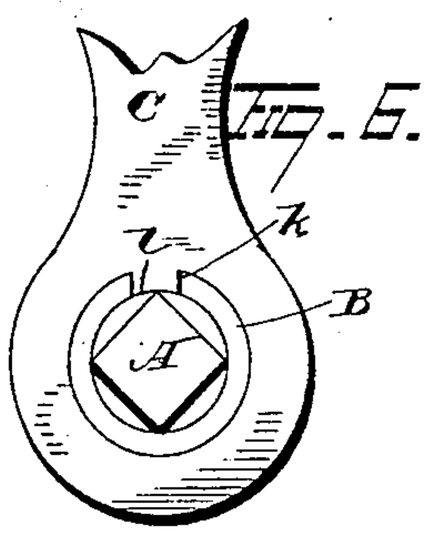

Fig. 6.

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UNITED STATES PATENT OFFICE.

CHARLES S. LEWIS, OF WATERBURY, CONNECTICUT.

STRIKING MECHANISM OF REPEATING-CLOCKS.

SPECIFICATION forming part of Letters Patent No. 248,935, dated November 1, 1881.

Application filed December 13, 1880. (Model.)

To all whom it may concern:

Be it known that I, CHARLES S. LEWIS, of Waterbury, in the county of New Haven and State of Connecticut, have invented certain new and useful Improvements in the Striking Mechanism of Repeating-Clocks; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it pertains to make and use it, reference being had to the accompanying drawings, which form part of this specification.

My invention relates to an improvement in the striking mechanism of repeating-clocks, the object being to provide clocks of the type in question with striking mechanism or devices which shall be simple in construction, positive and accurate in operation, and of small initial cost; and with these ends in view my invention consists, first, in a repeating strike-movement, in the combination, with a toothed rack, of a cam or snail secured to the hour-hand socket and a twelve-hour wheel loosely mounted on the socket, but made friction-tight therewith by means of a plate-washer or other spring, whereby the hour-hand is adapted to be freely adjusted and yet always retained in proper position with relation to the cam or snail.

My invention further consists, in a repeating strike-movement, in the combination, with a snail attached to the hour-hand socket, of a rack adapted to oscillate between the escape-wheel shaft and dial-pinion.

My invention further consists, in a repeating strike-movement, in the combination, with a snail attached to the hour-hand socket and a socket-wheel loosely mounted on the socket and retained in place by friction imparted by a plate-washer or equivalent device, of a rack provided with a short arm, which engages with the snail and with a toothed portion that moves between the front frame and dial-pinion.

My invention further consists in certain other details in construction and combinations of parts, as will hereinafter be explained, and pointed out in the claims.

In the accompanying drawings, Figure 1 is a plan view of a repeating strike-movement provided with my improvement. Fig. 2 is an enlarged detail view, showing the improvement in the striking mechanism. Fig. 3 is a transverse vertical section taken through the center skaft. Fig. 4 is a detached view of the hour-hand socket. Fig. 5 is a similar view of the hour-hand, and Fig. 6 a view showing the hour-hand secured in place.

A represents the center shaft of an ordinary strike-clock movement.

B is the hour-hand socket, to which the hour-hand C is secured.

The minute-hand is attached to the projecting end *a* of the center shaft.

To the rear end of the hour-hand socket is permanently secured the snail or cam E, which is of ordinary form and construction. Upon the hour-hand socket is loosely mounted the socket or twelve-hour wheel F, which is placed between the snail E and collet G on the rear end of the hour-hand socket.

Between the snail and socket-wheel is placed a plate-washer, H, which serves to force the wheel F in snug contact with the collet G on the hour-hand socket, and thereby form a frictional engagement between such parts, so that when the wheel F is revolved by the time-train it will transmit motion to the hour-hand socket and rotate the same. This construction and arrangement of parts enables the hour-hand and snail to be secured to the hour-hand socket in proper relative position, which need not and will not be disturbed or disarranged when desired to adjust the hands, and, further, allow of the ready adjustment of the hands without interfering with the time-train, as the snail can be rotated without moving the socket or twelve-hour wheel.

I represents the rack, the arm *b* of which is pivoted at *c* to the front frame of the movement.

A short arm, *d*, is attached to or made solid with the arm *b* of the rack. This short arm has its free or outer end bent at right angles to its length, the bent portion engaging with the periphery of the snail and regulating the descent of the rack. The outer end of the arm *b* of the rack is bent, as at *e*, to bring the toothed portion *f* below the frame and cause the teeth *g* to mesh with the gathering-pins *h* on the third strike-pinion *i*.

The lock-work may be of ordinary construc-

tion, the count-hook *j* thereof striking between the teeth of the rack until the latter has been carried up to its extreme limit of travel, when the count-hook drops over the end of the rack and allows the stop-wire to engage the stop-pin on the third strike-wheel and arrest the movement of the strike-train. When the count-hook and stop-wires are lifted by the center-shaft staple, as in ordinary strike-movements, the rack will drop and fall a distance regulated by the position of the snail—as, for instance, at the hour of one the snail will be in such position that the rack will drop a distance equal to only one tooth, so that the clock will strike but once, while at the hour of twelve the snail will be in proper position to allow the rack to drop a distance equal to twelve teeth and cause the clock to strike twelve. The gathering-pins on the third wheel serve to engage with the teeth of the rack and carry it up to its extreme limit of travel.

Many different methods may be adopted for securing the hand to the hour-hand socket. In the drawings I have illustrated one form of attachment. The end of the socket is provided with a notch, *k*, in which is inserted a projection, *l*, formed on the hand, whereby the latter is prevented from rotating independent of the socket.

The rack is pivoted to the clock-frame so that the toothed portion may oscillate below the crown-wheel shaft and above the center shaft, and have a full oscillation without coming in contact with the main strike-arbor. By locating the rack substantially in the manner shown and described I am enabled to apply it to nearly, if not all, the ordinary eight-day strike-movements without making any change in the location of either the strike or time train or interfering with their operation.

From the foregoing it will be observed that my improvement is very much simpler and more economical in construction than the ordinary strike mechanism, as I am enabled to dispense with the ordinary count-rim, count-spring, count-stud, and not only avoid the expense and labor incident to such construction of parts, but obviate the complex arrangement of devices incident to such type of striking mechanism.

It is evident that many slight changes in the construction and arrangement of parts might be resorted to without departing from the spirit of my invention, and hence I would have it understood that I do not limit myself to the exact construction and arrangement of parts shown and described; but

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

1. In a repeating strike-movement, the combination, with a rack, of a snail secured to the hour-hand socket, and a twelve-hour wheel loosely mounted on the socket and made friction-tight therewith by means of a plate-washer or other equivalent spring, substantially as set forth.

2. The combination, with a striking clock-movement, having a snail located between the two plates and connected with the hour-hand, of a rack pivoted to the front plate of the clock-movement, said rack having its toothed portion located on one side of its pivotal bearing, arranged to engage with gathering-pins connected with the clock-movement, and that portion of the rack on the opposite side of its pivotal bearing being provided with an arm arranged to engage with the snail, substantially as set forth.

3. In a repeating strike-movement, the combination, with gathering-pins attached to one of the pinions of the strike-train, of a rack pivoted to the outside of the frame and formed so that the toothed portion shall oscillate below or within the frame, substantially as set forth.

4. In a repeating strike-movement, the combination, with a rack and gathering-pins for actuating the same, of a snail attached to the hour-hand socket and a twelve-hour wheel loosely mounted on the socket and made friction-tight therewith by means of a plate-washer or equivalent spring, substantially as set forth.

5. The combination, with an oscillating rack, gathering-pins on one of the pinions of the strike-train, and a count-hook, of a snail attached to the hour-hand socket, a short arm on the rack adapted to engage said snail, and a twelve-hour wheel loosely mounted on the hour-hand socket and made friction-tight by means of a plate-washer or other equivalent device, substantially as set forth.

6. The combination, with a rack, of an hour-hand socket, having a snail and hour-hand secured thereto against rotary displacement, and a twelve-hour wheel loosely mounted on the socket and made friction-tight by means of a plate-washer, or equivalent device, substantially as set forth.

7. The combination, with an hour-hand socket, having a recess formed therein, of an hour-hand formed with a projection adapted to enter such recess and secure the same to the socket, substantially as set forth.

In testimony that I claim the foregoing I have hereunto set my hand and seal this 29th day of November, 1880.

CHAS. S. LEWIS. [L S.]

Witnesses:
H. B. FIELD,
F. B. FIELD.