

E. F. HERSCHEDE.

CLOCK.

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934,913.

Patented Sept. 21, 1909.

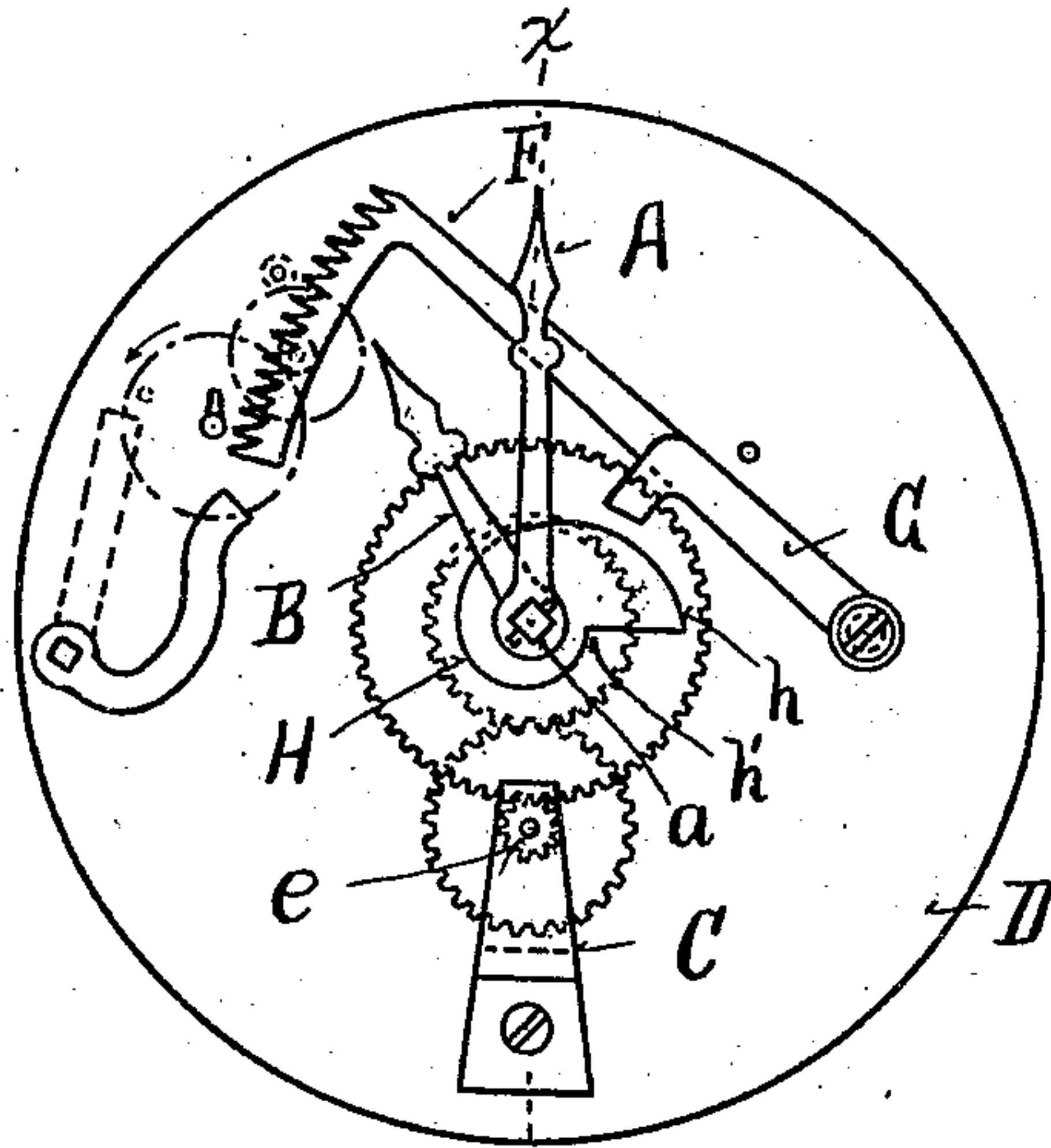


Fig. 1.  
X

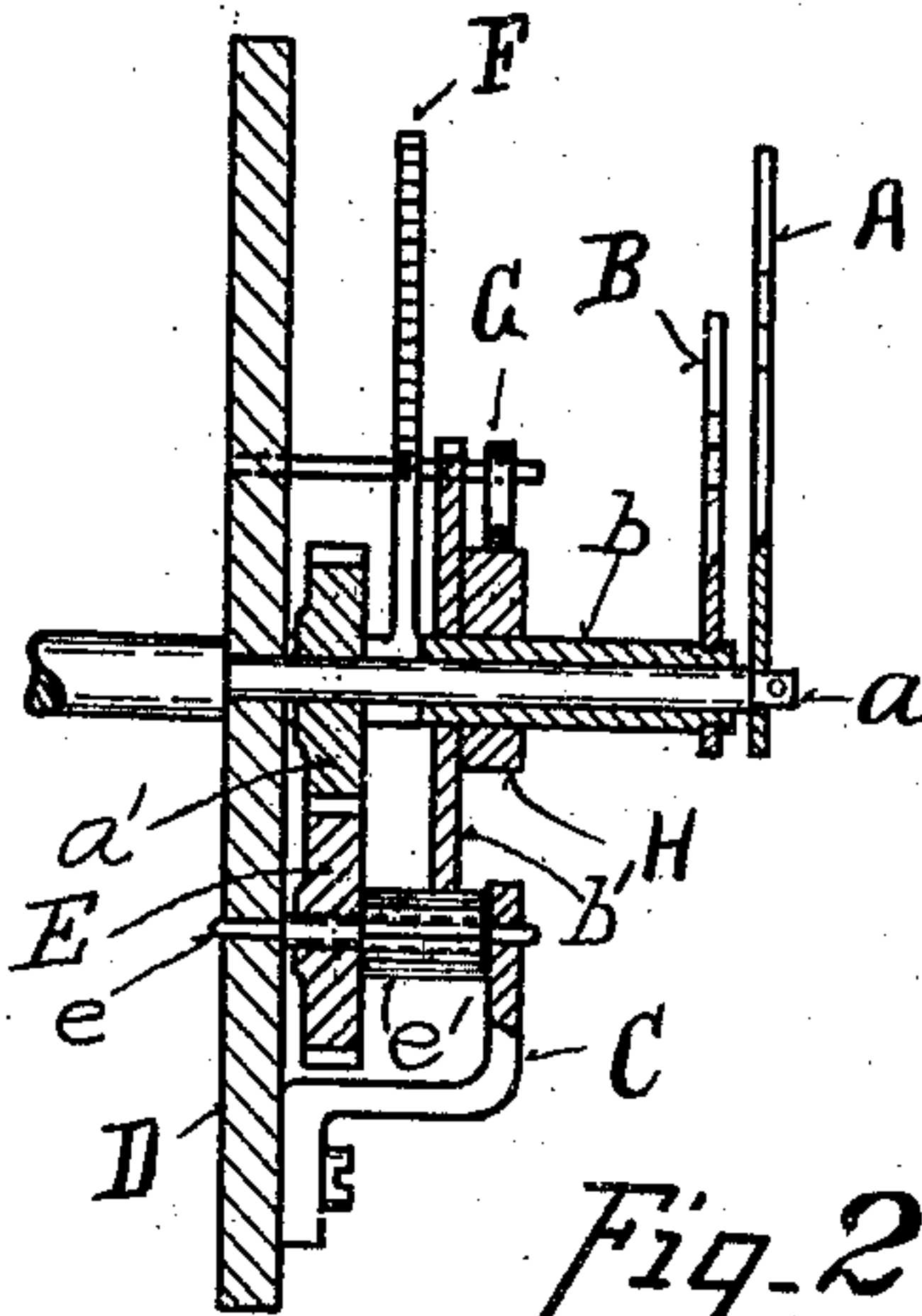


Fig. 2.

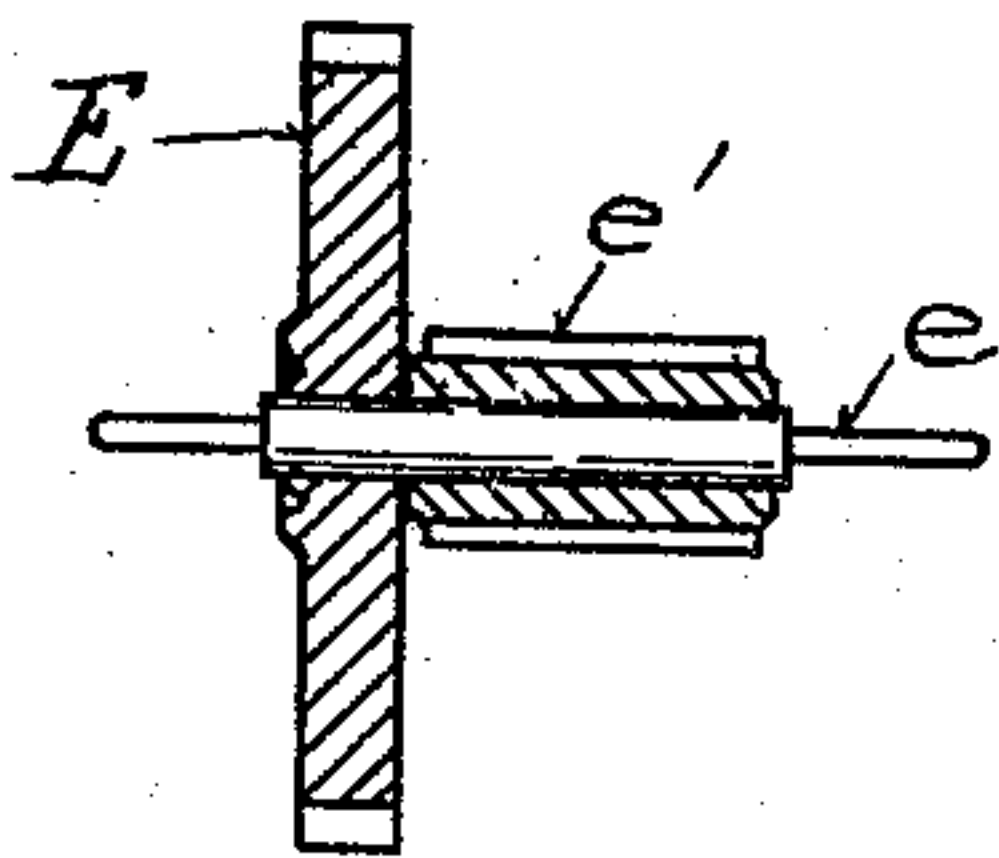


Fig. 3.

Witnesses

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# UNITED STATES PATENT OFFICE.

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## CLOCK.

934,913.

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*To all whom it may concern:*

Be it known that I, EDWARD F. HERSCHEDE, a citizen of the United States of America, and resident of Cincinnati, county of Hamilton, State of Ohio, have invented certain new and useful Improvements in Clocks, of which the following is a specification.

My invention relates especially to clocks which strike the hour and it is in such clocks that its advantages are more apparent.

In clocks, it is customary to have the shaft, or arbor, upon which the minute hand is mounted, connected to the shaft of the hour hand by exchange gears of a character such that one revolution of the minute hand produces but one twelfth of a revolution in the hour hand. Because of the character of the gearing, it is easy to cause a rotation in the hour hand, by moving the minute hand, but it is difficult to cause a movement of the minute hand by moving the hour hand, upon the same principle that little force applied to the long end of a lever will move the short end, while it takes a great force applied at the short end of the lever to move the long end. For this reason it is necessary in clocks as now constructed to set them by moving the minute hand. Thus, if a clock stopped at one o'clock and it is twelve o'clock when it is desired to set it again, since it is considered injurious to the clock to reverse it, it would be necessary to rotate the minute hand about the face of the clock eleven times. This is inconvenient enough in a clock which does not strike. The inconvenience is greatly increased with clocks that strike for the reason that these clocks are constructed in a manner such that when the minute hand reaches the numeral twelve, it actuates the striking mechanism of the clock. The number of times the clock will strike is regulated by a device which moves with the hour shaft.

The object of my invention is a clock which may be set to the proper hour by the movement of the hour hand.

In the accompanying drawings, I have shown so much of a clock as is necessary to illustrate my invention.

Referring to the drawings: Figure 1 is a view in elevation of the hour and minute hands, the gears connecting the same and so much of the strike controlling mechanism as is necessary to illustrate my invention. Fig. 2 is a sectional view upon line  $x-x$  of Fig.

1. Fig. 3 is a detail view of the exchange gears.

Referring to the parts: A, indicates the minute hand.  $a$ , the shaft of the minute hand. B, is the hour hand.  $b$ , the sleeve secured to the hour hand and mounted rotatably upon the shaft,  $a$ . Secured upon the shaft,  $a$ , is the minute wheel,  $a'$ , and secured upon the sleeve,  $b$ , is the hour wheel,  $b'$ . Mounted between a bracket, C, and the face disk, D, is an auxiliary shaft,  $e$ . Secured upon shaft,  $e$ , is a change pinion, E, and mounted friction-tight upon the shaft,  $e$ , is a small pinion,  $e'$ . Change pinion, E, meshes with the minute wheel,  $a'$ , and the small pinion,  $e'$ , meshes with the hour wheel,  $b'$ . The friction with which the pinion,  $e'$ , is fixed upon the shaft,  $e$ , is great enough to convey a rotation of the shaft,  $e$ , to the hour wheel,  $b'$ , but is much less than the force which is necessary to rotate shaft,  $a$ , by rotating the sleeve,  $b$ . Thus the hour hand may be rotated without causing a rotation of the minute hand, since the pinion,  $e'$ , will then rotate upon the shaft,  $e$ , without causing any rotation in the shaft. By thus making the exchange gears, E, and  $e'$ , friction-tight in relation to each other, I am enabled to move the hour hand easily, thus enabling one to set the hour hand to the proper hour much more quickly than in clocks wherein the change gears are fixed in relation to each other, so that the setting can be had by the movement of the hour hand.

I will now describe the convenience of the device as it relates to the striking of the clock. Since my invention does not relate to the mechanism by which a clock is caused to strike, it will not be necessary to go into details in regard to this mechanism and I have therefore illustrated only parts of one kind of striking mechanism as is necessary to an understanding of the relation of my invention to the same.

In Fig. 1 the arm which controls the number of strokes is marked F. This arm is released just before the minute hand reaches the numeral twelve on the face of the clock. The distance which this arm, F, drops, is in proportion to the number of strokes the number of hours the clock will strike. This drop of the arm, F, is checked by the arm, G, coming into contact with the cam, or "snail", H, which is mounted upon the sleeve,  $b$ , of the hour hand, the cam, H, being mounted on the sleeve of the hour hand in a manner



such that when the hand, B, is at the numeral one the longest side,  $h$ , is beneath the arm, G, and that when the hand, B, is at the numeral twelve the shortest part,  $h'$ , of the cam is beneath the arm, G. In striking the hours, the arm, F, is raised one step for each stroke, so that at the end of the strokes the arm always comes back to its normal raised position, such as shown in Fig. 1. Since it is the position of the minute hand which releases the arm, F, and since the cam, H, moves with the hour hand, it is obvious that by setting the hour hand to the proper hour, with my construction, the cam or "snail" is likewise carried to the proper position, so that the number of strokes will be in the proper amount and that this change of position is accomplished without causing the clock to strike.

What I claim is:

In a clock the combination of a minute shaft for the minute hand, a minute gear rigidly mounted on said shaft, an hour shaft for the hour hand, an hour gear rigidly mounted thereon and a stroke controlling mechanism mounted on said hour shaft, an auxiliary shaft, a pinion rigidly mounted thereon and meshing with said minute gear, a second pinion meshing with said hour gear and mounted friction tight on said auxiliary shaft so that the minute shaft will transmit rotation to the hour shaft but the hour shaft will not transmit rotation to the minute shaft.

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Witnesses:

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