

No. 633,257.

Patented Sept. 19, 1899.

G. W. ADAMS.
CLOCK.

(Application filed Oct. 19, 1898.)

(No Model.)

3 Sheets—Sheet 1.

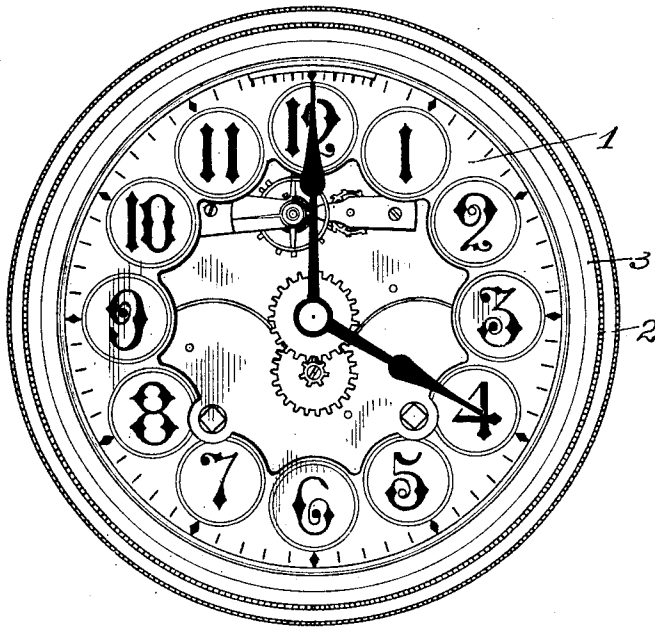


Fig. 1.

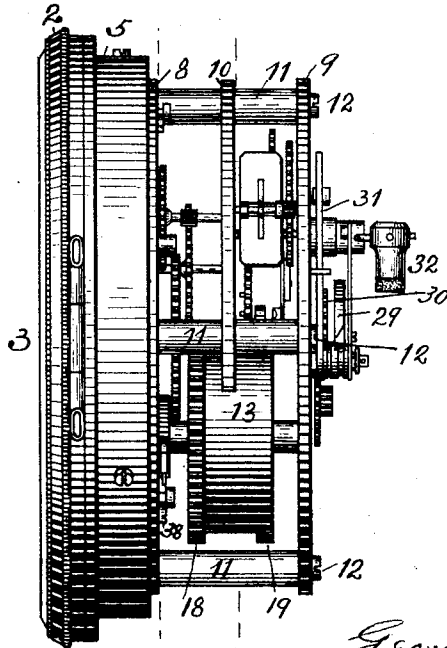


Fig. 2.

WITNESSES

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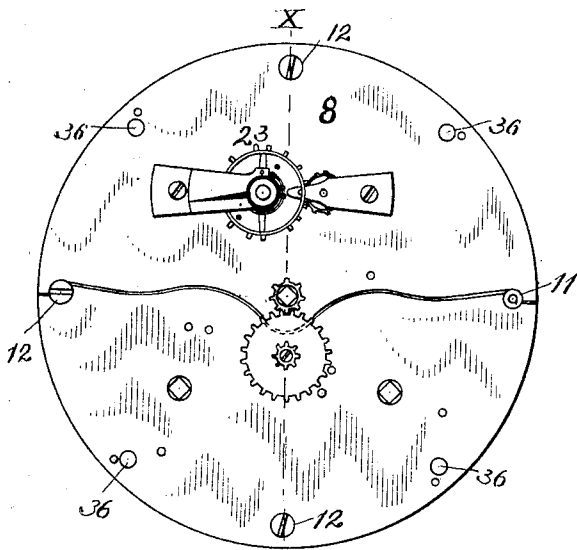


Fig. 3.

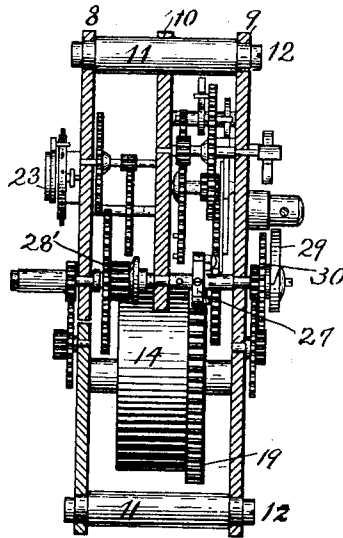


Fig. 4.

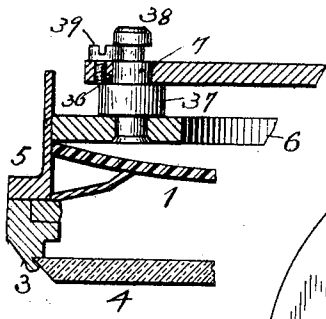


Fig. 5.

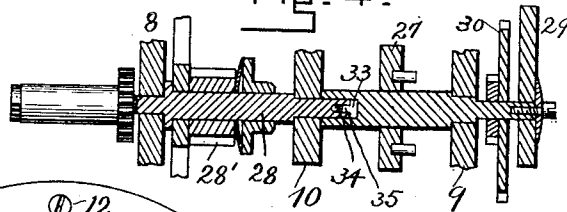


Fig. 6.

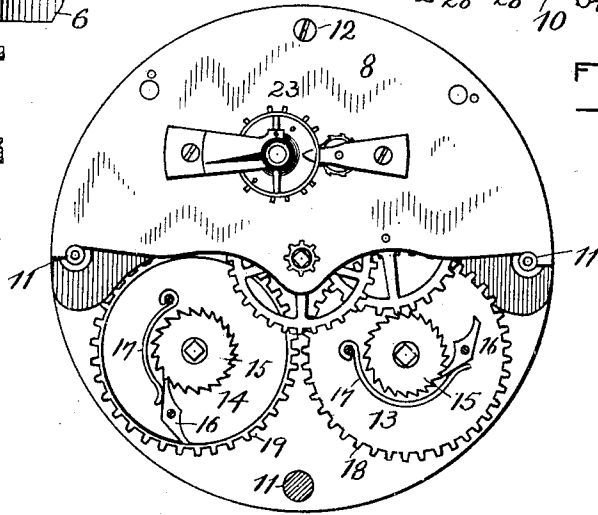


Fig. 7.

WITNESSES

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(No Model.)

3 Sheets—Sheet 3.

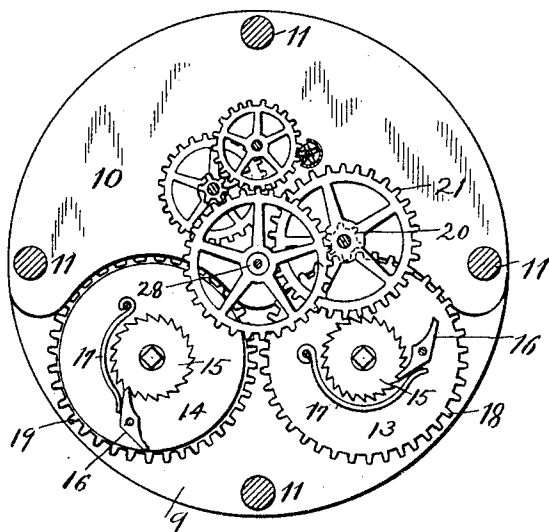


FIG. 6.

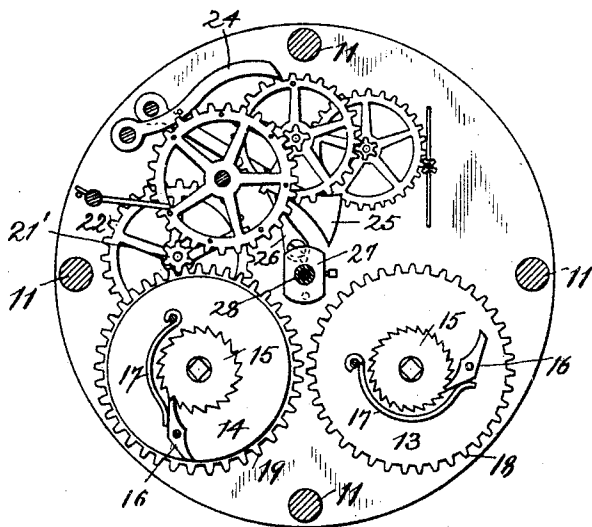


FIG. 7.

WITNESSES

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UNITED STATES PATENT OFFICE.

GEORGE W. ADAMS, OF STOUGHTON, MASSACHUSETTS, ASSIGNOR TO
CHARLES H. PEARSON, OF BROOKLINE, MASSACHUSETTS.

CLOCK.

SPECIFICATION forming part of Letters Patent No. 633,257, dated September 19, 1899.

Application filed October 19, 1898. Serial No. 694,017. (No model.)

To all whom it may concern:

Be it known that I, GEORGE W. ADAMS, a citizen of the United States, residing in Stoughton, in the county of Middlesex and State of Massachusetts, have invented certain new and useful Improvements in Clocks, of which the following, taken in connection with the accompanying drawings, is a specification.

This invention relates to that class of clocks in which there is a spring-operated time-train, a spring-operated striking-train, and a balance-wheel and of which class of clocks what are known as "French" clocks are examples.

The principal objects of my invention are, first, to diminish the cost of manufacture by the employment of a less number of parts than heretofore required in the construction of such clocks and to effect a simpler and more compact and convenient arrangement of the several parts; second, to facilitate the making of repairs by affording ready access to the several parts and permitting the removal of certain specific parts without disturbing the remaining mechanism or rendering it inoperative. In this manner the striking-movement may be separated from the time-movement and either barrel may be removed without disturbing or affecting the other barrel or its train, the novel arrangement of the several parts making it possible to accomplish these results without requiring the complicating devices and enlarged space between the plates employed in other clocks where these objects are sought to be attained.

Other important advantages secured by my improvements are that less space is required between the front and back plates, thus permitting the use of a smaller case, and that the clock can be made dust-proof. These with other advantages will be hereinafter more fully set forth and described.

I attain these ends by placing the barrels side by side between a front and a back plate, the said barrels being in the same plane and their great wheels in parallel planes at opposite ends of said barrels, respectively, by supporting the time-train between a front plate and a segmental middle plate and the striking-train between the said segmental middle plate and the back plate, by making the front plate in two independently-removable seg-

ments separable on the medial line, and by constructing and arranging the other parts of the clock as hereinafter more fully set forth in this specification and as shown in the drawings accompanying the same.

In the drawings, Figure 1 is a front view of a clock constructed in accordance with and embodying the principle of my invention. Fig. 2 is a side view in elevation of the same, showing the works. Fig. 3 is a front view of the front plate and shows the escapement, the hands, the cannon-pinion, the hour-wheel, the minute-wheel, and its pinion. Fig. 4 is a sectional view of the works through the line *xx*, Fig. 3. Fig. 5 is a front view of the works, showing the lower segment of the front plate removed. Fig. 6 is a front view of the works, showing the front plate removed to show the time-train. Fig. 7 is a front view of the striking-train. Fig. 8 is a longitudinal sectional view of the center arbor and the center pinion and a side view of the arbor of the hour-hand.

In the several figures similar numerals and letters refer to similar parts.

Referring to the drawings, 1 is the dial, which is shown in the form of a ring, but may be an entire plate.

2 is the bezel, made in two parts, the bezel proper, 3, supporting the glass 4 of the door, and the bezel-ring 5, to which the dial is suitably attached, and 6 is a ring attached at right angles to the bezel-ring 5 and supporting the pin 7, which pin passes through a perforation in the front plate. This front plate is made in two segments, an upper half-segment 8 and a lower half-segment 8', the division being substantially on the horizontal medial line of the clock.

9 is the back plate, and 10 is the middle plate, made in the form of a segment. These plates are connected by pillars 11, passing through the middle plate, and these pillars may be arranged in any suitable manner, and for the purpose of obtaining a convenient means for locking together the two segments of the front plate in such a manner as to hold them firmly together and firmly binding together the other parts of the clock I use in the clock shown four pillars at equal distances apart—one at the top, one at the bot-

tom, and one on each side and on the medial line of the plate. Upon the ends of the pillars are the usual screws 12, by which the plates are secured to the pillars. The segmental middle plate 10 has preferably a double curve on its lower edge, as shown, to accommodate the barrels and insure a bearing for the center arbor.

13 is the barrel of the spring-operated time-train, and 14 is the barrel of the spring-operated striking-train, and these barrels are supported between the front and back plates, below the middle plate, and are in the same plane and are wound from the front of the clock. 15 is the ratchet, 16 the pawl, and 17 its spring, of the time-train, and 15', 16', and 17' the corresponding parts of the striking-train. The great wheels 18 and 19 of these barrels are disposed, respectively, at opposite ends thereof, as shown in Fig. 5. In this case the great wheel 18 of the time-barrel is disposed toward the front plate and the great wheel 19 of the striking-barrel is disposed toward the back plate. This arrangement of the great wheels at opposite ends of the barrels enables said barrels to be placed closer together. Furthermore, by this arrangement the intermediate pinions of the respective time and striking mechanisms may be disposed on opposite sides of the middle plate, and the intermediate pinion of the striking mechanism, for instance, is in the same relation to the rest of said mechanism and to the great wheel for operating it that the intermediate pinion of the time mechanism is to the rest of the time mechanism and its operating great wheel, one of said pinions and its shaft being interchangeable with the other pinion and its shaft. Thus the time and striking mechanisms are disposed in corresponding relations to said barrels and wheels. In the drawings the intermediate pinion 20 on the shaft of the intermediate wheel 21 of the time mechanism is in mesh with the great wheel 18 of the time-barrel and the intermediate pinion 20' on the shaft of the intermediate wheel 22 of the striking mechanism is in mesh with the great wheel 19 of the striking-barrel. By this arrangement of parts a fourth plate usually employed in such clocks is dispensed with and the thickness of the clock is reduced and the necessity of extending the shaft of one of the intermediate pinions through the middle plate is obviated. As the other parts of the time-train are well known and this train, as shown as used in this clock, is of the usual form, it need not be further described. The arbors of these parts are supported between the middle plate and the upper segment of the front plate.

23 is the escapement, which may be of any suitable form, but is shown as the ordinary lever-escapement and is placed on the front face of the front plate.

The striking-train may be of any suitable form, but is shown as of a form invented by me, but which I do not here claim, as it is

described and claimed in an application for Letters Patent of the United States filed August 31, 1897, Serial No. 650,204. In this train, 24 is the stop-lever, 25 the lifting-lever, 26 the lifting-spring, and 27 the lifting-block, on the center arbor 28. The other parts of the striking-train are of the usual construction, 29 being the snail, 30 its wheel, 31 the rack, and 32 is the striking-hammer.

The arbors of the parts of the striking-train are supported between the back plate and the segmental middle plate.

The segments of which the front plate is composed may be locked together in any suitable manner, but the following is a convenient means which I have devised and whereby any movement or slip may be prevented. The upper segment 8 has at diametrically opposite points downward extensions *a* and *b*, which extend outside the pillars 11 below the diametrical line passing through said pillars, and these extensions have hook-shaped shoulders *c* and *d* on their inner faces, which engage mainly the outer faces of said pillars. The lower segment 8' extends upward between the pillars 11 at points adjacent thereto above a diametrical line extending through said pillars. This segment is provided with hook-shaped shoulders *e* and *f*, which engage the inner sides of said pillars. The segments are slid over the outer ends of the pillars, and these hook-shaped shoulders serve to lock the segments and pillars together. A single screw for each segment, as 12, entering the pillar at the top of the upper segment and a similar screw entering the pillar at the bottom of the lower segment are sufficient to hold the parts together, although screws may be inserted in the side pillars 11, if desired.

By removing the side screws and the lower screw the lower segmental plate can easily be removed, thus permitting the removal of either or both of the barrels without disturbing the other parts of the works. If the center arbor is in one piece, as it may be made, and it is desired to disconnect the striking part, this may be done by taking out the screws in the pillars on that side, taking off the hands, and pulling the center arbor through the middle plate. This will of course break up the time-train.

It is desirable to provide means whereby when the striking-train has been removed the time-train may continue to be operative, and this I effect by making the center arbor in two separable parts connected by a coupling, which allows the separation of the two parts, but insures the rotation of the same as one part when connected. Various means may be used for accomplishing this result; but a convenient means (shown in the sectional view, Fig. 9) is obtained by carrying through the middle plate that part of the center arbor 28 which carries the center pinion 28' and making a part of its end of less diameter than that part of the arbor which car-

ries the lifting-block, so that this end can fit into a recess 33 in the end of the part on the striking side. The parts of the center arbor are connected so as to rotate together by means of a transverse pin 34 in the recess 33, which pin fits into a slot 35 on the end of the other part of the arbor.

In order to secure the bezel to the works, holes 36 at suitable distances apart are provided in the front plate. Upon the back side of the ring 6 of the bezel are secured blocks 37, corresponding to these holes, and on the face of each of these blocks is a pin 7, having a head 38 equal in diameter to the holes of the face-plate and having a neck of less diameter. By the side of each of these holes is inserted a half-screw 39, which when turned fits into the neck and thus holds the bezel to the plate. The bezel can be easily removed by turning these screws. It is obvious that this means for connecting a bezel can be used with any form of clock.

Having thus described my invention, what I claim, and desire to secure by Letters Patent of the United States, is—

1. In a clock the combination of a frame comprising front and back plates and a middle plate, and two spring-barrels for the time and striking mechanisms respectively disposed side by side between the front and back plates, the great wheel of one barrel being at the outer front end thereof and the great wheel of the other barrel at the outer rear end thereof, and time and striking mechanisms respectively disposed principally in the one case between the front plate and the middle plate and in the other case between the back plate and the middle plate, the intermediate pinions of the time and striking mechanisms engaging said great wheels respectively on opposite sides of the middle plate.

2. A clock-frame having pillars and a plate composed of segments, having hook-shaped shoulders engaging said pillars and serving to lock said segments and pillars together, the adjacent hook-shaped shoulders of the respective segments engaging the same pillar in the same plane.

3. A clock-frame having pillars and a plate composed of segments, one segment having hook-shaped shoulders which mainly engage the inner faces of the pillars and the other segment having hook-shaped shoulders which mainly engage the outer faces of the pillars, whereby the segments and pillars are locked

together, the adjacent hook-shaped shoulders of the respective segments engaging the same pillar in the same plane.

4. In a clock the combination of a frame, the front plate of which is provided with stud-holes near its periphery, and screw-holes adjacent to said stud-holes, a bezel-ring provided with blocks having headed studs adapted to project through said holes, and screws adapted for insertion in said screw-holes and provided with truncated heads adapted to engage the headed studs for locking and releasing the bezel-ring.

5. In a clock of the class described, the combination, substantially as set forth, of a front plate made in two independently-removably segments separable on the medial line of the front plate, means for locking these segments together and preventing sidewise movement of the same, a back plate, a segmental middle plate, pillars connecting the front and back plate one at the top and one at the bottom and one on each side on the line of separation between the segments of the front plate, a pillar connecting the segmental middle plate to the front and back plate respectively, an independently-removable time-train supported between the front plate and the middle plate, a minute-wheel and cannon-pinion on the front of the front plate, a center arbor, an escapement on the front of the upper segment of the front plate, a striking-train supported between the middle plate and the back plate, two independent removable mainspring-barrels supported in the same plane between the lower segment of the front plate and the back plate, one barrel having its great wheel toward the front plate and gearing with the time-train, and the other barrel having its great wheel toward the back plate and gearing with the striking-train.

6. In a clock the combination, substantially as set forth, of the front plate of the holes 36, in the same, the bezel-ring, 5, the ring, 6, the headed pin, 7, and the half-screw, 39, inserted in the plate by the side of the hole, 36, and shoulder 37.

In testimony whereof I have hereunto subscribed my name this 17th day of October, A. D. 1898.

GEORGE W. ADAMS.

Witnesses:

ALEX. L. HAYES,
M. H. YOUNG.