No. 736,918. PATENTED AUG. 25, 1903.

G. W. ADAMS.

ANGELUS CLOCK.

APPLICATION FILED NOV. 20, 1902.

NO MODEL. 3 SHEETS—SHEET 1.

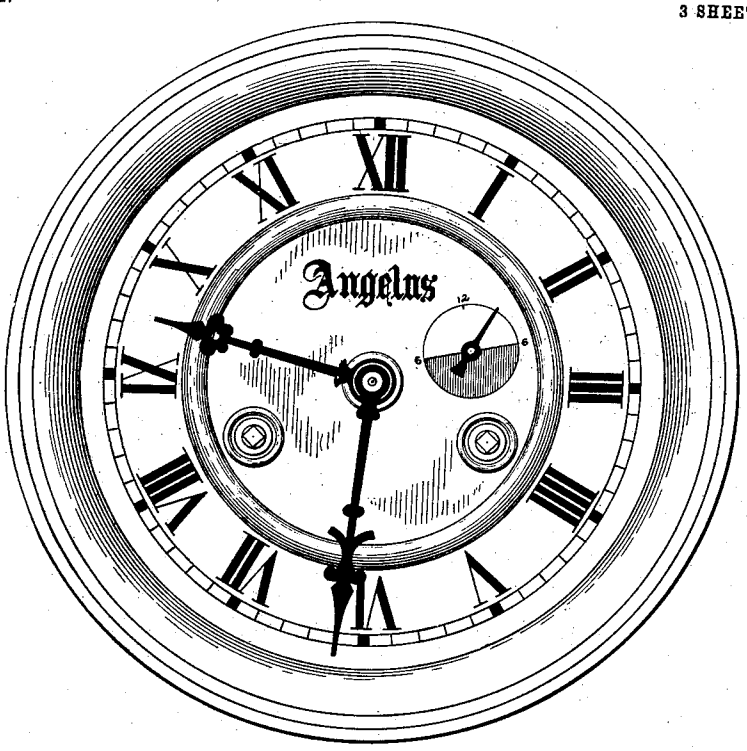

Fig. 1.

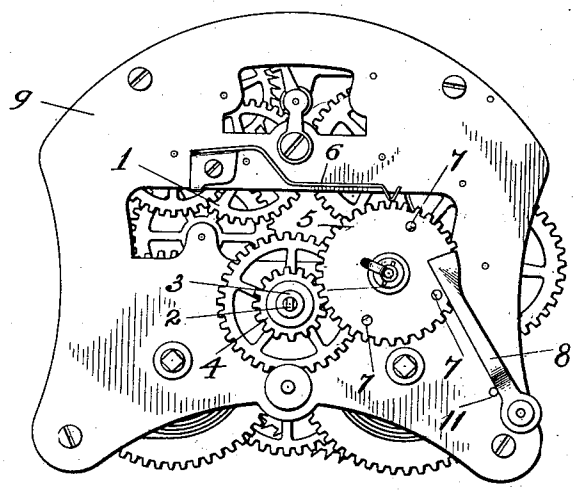

Fig. 2.

WITNESSES:

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NO MODEL. 3 SHEETS—SHEET 2.

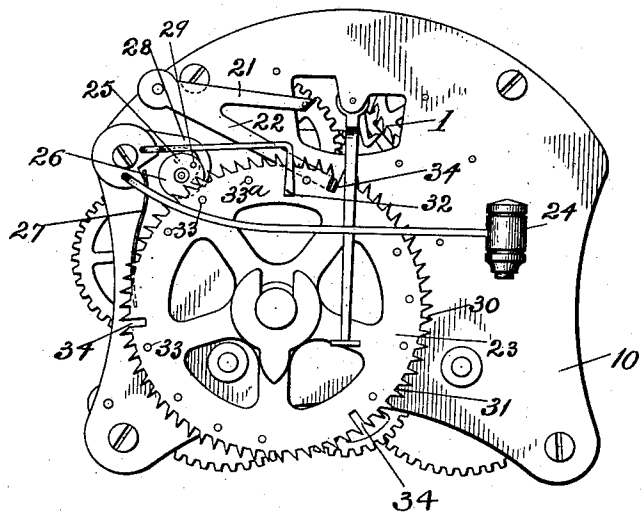

Fig. 3.

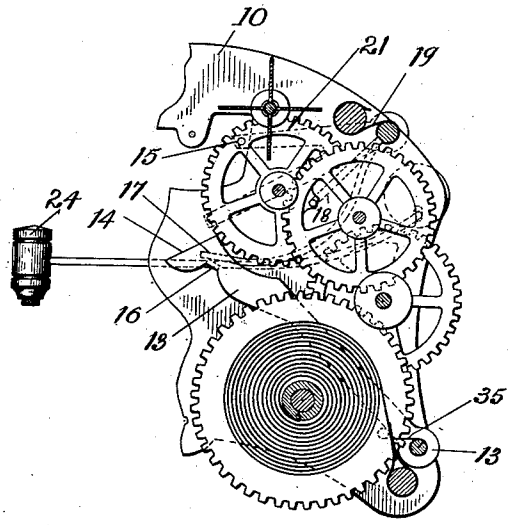

Fig. 4

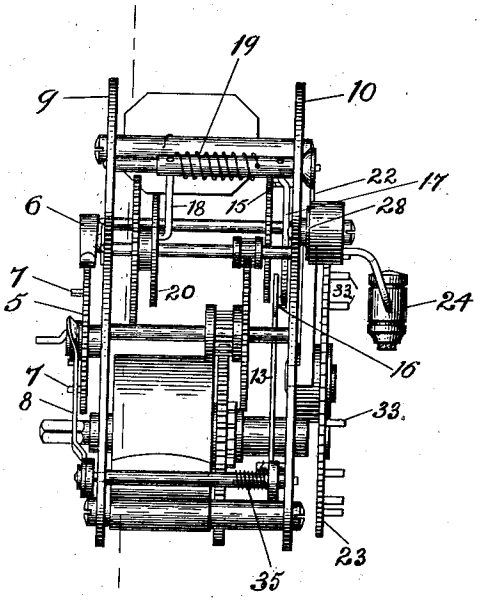

Fig. 5.

WITNESSES

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No. 736,918. PATENTED AUG. 25, 1903.

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ANGELUS CLOCK.

APPLICATION FILED NOV. 20, 1902.

NO MODEL. 3 SHEETS—SHEET 3.

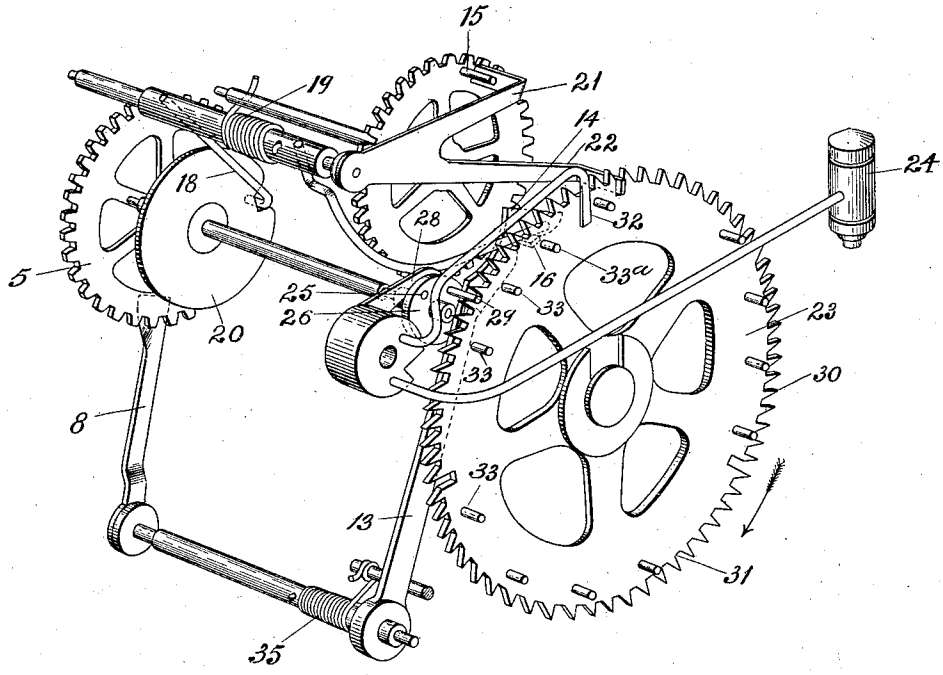

Fig. 6.

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No. 736,918. Patented August 25, 1903.

UNITED STATES PATENT OFFICE.

GEORGE W. ADAMS, OF STOUGHTON, MASSACHUSETTS.

ANGELUS-CLOCK.

SPECIFICATION forming part of Letters Patent No. 736,918, dated August 25, 1903.

Application filed November 20, 1902. Serial No. 132,175. (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 Norfolk 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.

My invention in clocks relates to devices connected with the striking mechanism.

There is an increasing demand for clocks arranged to strike at the proper time in the same manner as the bells of the parish churches to call attention to the times set apart for reciting the angelic salutation known as the "Angelus," so that those beyond the sound of the church-bells will be reminded of the time for that devotion. The prayer referred to should be recited at six in the morning, twelve at noon, and six o'clock at night each day, and the devotion consists of four parts, and it is customary for the church-bell to be sounded three strokes while each of the first three parts of the prayer are being recited, with an interval of rest after each of the three groups of three strokes each. Then while the fourth prayer is being recited the bell sounds nine times, followed by intervals of rest again, and finally the bell sounds a single stroke to terminate the prayer. All this requires considerable time, and as clocks are usually made the striking mechanism runs so fast sufficient time would not elapse to properly render the prayer. I have adapted my clock to this long-established custom, and during the entire time necessary to recite the prayer the clock sounds in imitation of the church-bell. I am acquainted with the efforts that have been made to devise a timepiece for this purpose, and although some constructions have been suggested they have appeared like crude adaptations of ordinary clock-movements originally intended to strike all the hours of the day, as usually practiced. This has resulted in complicated constructions and heterogeneous mixing of the parts of the time and striking mechanisms, so that, although in the hands of a skilled mechanician such devices might strike at the proper times the intended number of strokes, in the hands of the public such devices would often fail to indicate at the correct interval, perhaps strike inaccurately, allow insufficient time while striking to recite the prayer, or otherwise fall short of what a timepiece ought to be able to accomplish.

It has been my object to overcome the faults of previous constructors of clocks intended for the special purpose referred to, and I have selected useful features wherever available and have arranged them in combinations that effect results not before actually produced.

To this end my invention consists of a clock having an ordinary time-movement controlling a striking-movement with but three striking intervals in twenty-four hours, so that at the precise time the exact number of strokes of the gong will be slowly indicated, particular features being an arrangement of a light spring bearing on the periphery of the lifting-wheel in place of the stiff friction-disk commonly used that requires much more power to drive, and hence may affect the timekeeping of the clock; arranging the stop-lever and warn-lever to act on the stop-pin on a wheel of the striking-train, so that but a small part of a revolution from the position of rest is necessary to position the stop-pin on the warn-lever at a striking interval, this acting to diminish the shock and enabling me to use thin light levers; arranging the warn-lever and lifting-wheel so if the clock is turned backward the lifting-wheel acts in the line of the lever to prevent bending the lever, which tends to disturb the correct adjustment of the parts; specially shaping the warn-lever, lifting-blade, count-lever, and stop-lever and arranging them with regard to each other and associated parts to act most effectively; a time mechanism arranged apart from the striking-movement, so when the clock strikes nothing inteferes with the sensitive parts of the time mechanism; doubling the number of blades of the fan to cause the clock to strike slowly to allow time for the prayer; arranging the rounds of the "Angelus" signal on the count-wheel, so a single revolution of the count-wheel controls the rounds for an entire day, and other devices and their combinations, which will be more particularly referred to.

In the drawings, Figure 1 shows the face

of my clock. Fig. 2 shows an elevation of the movement from the front. Fig. 3 shows an elevation of the movement from the rear. Fig. 4 shows the arrangement of the striking-train in section. Fig. 5 shows an edge view of the striking-train. Fig. 6 shows the striking mechanism grouped alone.

The time-movement 1 drives the center arbor 2 one revolution each hour, and upon the center arbor is a sleeve 3, geared to the center arbor to revolve once in twelve hours, which sleeve carries the hour-hand, and a pinion 4, meshing with the toothed periphery of the lifting-wheel 5, the velocity ratio being arranged so the lifting-wheel revolves once in twenty-four hours, a light spring 6 resting on the edge of the wheel to render the motion of the wheel regular. The wheel carries on its outer face three pins 7, arranged ninety degrees apart, so they may pass a fixed point at intervals of twelve or six hours. From the lifting-wheel a wire projects outward and is bent so its extremity lies in the center line of the said wheel, the wire extending through the usual dial-plate to carry a hand moving with the lifting-wheel and indicating on an auxiliary dial, one-half of which is darkened to show night from day time.

The striking mechanism, acting in connection with the above-described time mechanism, is illustrated as having a thin sheet-metal lifting-blade 8, fast on an arbor pivoted in the frame-plates 9 and 10 and normally resting on a pin 11, fast in the frame. The lifting-blade is arranged so its extremity, which is slightly twisted at one corner, reaches into the path traveled by the pins 7, each of which will press against the edge of the blade and act to turn it slightly on its pivot in the plates 9 and 10. Then as the pins 7 leave the blade at its end a spring 35 causes the blade to return into position, touching the fixed pin 11 in the frame. It will be noticed that the lifting-blade extends from its pivot directly to the point of contact with the pins 7 in a straight line, so that when the clock is turned backward the pins 7 move into contact with the blade at the twisted corner in the direction of the extension of the blade from its pivot instead of transversely thereto. This prevents injury to the blade if the blade should fail to yield in its plane, even if the hands of the clock are turned backward by a careless person. Between the plates the usual striking-train, driven by a spring, is arranged, the shaft of the second wheel of which carries a rocker-cam having a circular edge with one notch, an edge of which notch is curved for part of its extent to permit a rocker when not at the bottom of the notch to rise to the edge of the cam, and the third wheel of which train bears a pin to stop the striking-train.

On the same arbor with the lifting-blade is a warn-lever 13, the acting face 14 of which lies about one-quarter of a revolution from the position of the rest of the stop-pin 15 in the third wheel, the warn-lever usually resting out of the path of the stop-pin, but shortly before the clock is to strike being positioned by the lifting-blade 8 to temporarily hold the stop-pin and prevent the striking-train from running. A projection 16 is bent out backward from the warn-lever, that as the warn-lever rises lifts the release-lever 17 of the striking-train, the release-lever being pivoted on an arbor carrying the rocker 18, which is pressed by the spring 19 to the edge of the rocker-cam 20, mounted on the arbor of the second wheel. Fastened to the arbor of the release-lever is a stop-lever 21, that may at times intercept the stop-pin 15 to hold the train at rest, and a count-lever 22 is also fastened to the same arbor, the count-lever acting in connection with a count-wheel 23, having a circular periphery that may determine the position of the count-lever while the clock is striking, and three deep notches 34, that position the count-lever when the striking mechanism is at rest.

The hammer 24 is actuated by a pin 25 in a disk 26 on the arbor of the second wheel, the pin 25 lifting the hammer against the pressure of the spring 27 by means of the lever 28, attached to the hammer. In the disk 26 is a gathering-pallet 29, that at each revolution of the second wheel advances the count-wheel one step by means of the teeth 30, projecting from its periphery 31. To enable me to interrupt the continuity of the strokes of the hammer, I attach a lever 32 to the hammer-hub and put pins 33 on the count-wheel 23, projecting into the path of the lever 32, so that although the hammer is lifted and released it will not sound the gong, as the pins 33 will not permit sufficient motion of the hammer.

Under normal conditions the stop-lever 21 holds the train at rest. As the time for striking approaches some pin 7 will turn the lifting-blade 8, causing the projection 16 of the warn-lever to raise the release-lever 17 and lift the rocker 18 from the notch in the cam 20, at the same time lifting the count-lever 22 from a deep notch 34 and lifting the end of the stop-lever 21 out of the path of the stop-pin 15 to allow the train to come to starting position with the stop-pin resting on the acting face 14 of the warn-lever. When the pin 7 passes the lifting-blade 8, it falls till it rests on the pin 11, and the warn-lever also falls to permit the stop-pin to pass its acting face 14, so the train may begin to run. Each time the second wheel turns the gathering-pallet 29 advances the count-wheel 23 one tooth, and as the rocker 18 enters the notch in the cam 20 the count-lever 22 falls to the periphery 31 of the count-wheel, which is not sufficient motion to position the end of the stop-lever 21 in the path of the stop-pin, and as the side of the notch in the cam 20 touches the rocker the count-lever will be lifted beyond the teeth of the count-wheel, so the train may continue running. As long as this condition exists the ham-

mer will strike the gong at every revolution of the second wheel, till at the fourth revolution the hammer will be prevented from striking the gong, as the lever 32 will rest on the pin 33ª. Continued motion of the train sounds three strokes of the gong again, and at the eighth revolution of the second wheel the lever 32 again touches a pin 33 to cause a dwell between the groups of strokes of the hammer on the gong. Succeeding revolutions of the second wheel cause three more strokes, and at the twelfth revolution the lever again touches a pin 33 to cause a pause. The second wheel, still turning, now causes the hammer to strike nine times, and at the twenty-second revolution of the second wheel the lever 32 again touches a pin 33 to indicate a rest, and at the next revolution of the second wheel a single stroke of the hammer occurs. At the same time the count-lever falls into a deep notch 34 of the count-wheel, which carries the rocker 18 into the bottom of the notch in the cam 20 and positions the stop-lever 21 in the path of the stop-pin 15 and brings the train to rest after having given a succession of strokes of the hammer, graphically represented as below by hyphens:

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I have followed out one round of my clock when striking as above, corresponding to one-third of a revolution of my count-wheel. Further motion of the wheel repeats the same order of strokes and intervals of rest twice more, so an entire revolution of the count-wheel is sufficient to strike the gong one complete day. This arrangement renders it possible to adapt the striking mechanism to an "eight-day" time-movement without using a very long driving-spring for the striking-train.

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

1. In a clock, a lifting-wheel sleeved on a pivot, combined with a support fast to the wheel and bent into the center line of the wheel, so the support may carry a hand to indicate the position of the wheel, substantially as described.

2. In a clock, a lifting-wheel actuated by a time-train; a lifting-blade and a connected warn-lever; a release-lever and a connected rocker, stop-lever, and count-lever; a striking-train and a stop-pin; a hammer; a count-wheel and mechanism to advance it step by step; devices to actuate the warn-lever from the lifting-wheel and means to actuate the release-lever from the warn-lever; a cam to actuate the rocker; and devices on the count-wheel to keep the stop-lever out of the path of the stop-pin, to intercept strokes of the hammer and to position the count-lever to stop the train, substantially as described.

3. In a clock, the combination with a pivoted hammer and means to actuate the hammer in uniform strokes, of a count-wheel, devices to move the count-wheel step by step and to stop its motion, and pins arranged in groups on the count-wheel acting on devices connected with the hammer to intercept certain strokes of the hammer, substantially as described.

In testimony whereof I have hereunto subscribed my name this 22d day of July, A. D. 1902.

GEORGE W. ADAMS.

Witnesses:
CHAS. F. HOWE,
A. E. LEVY.