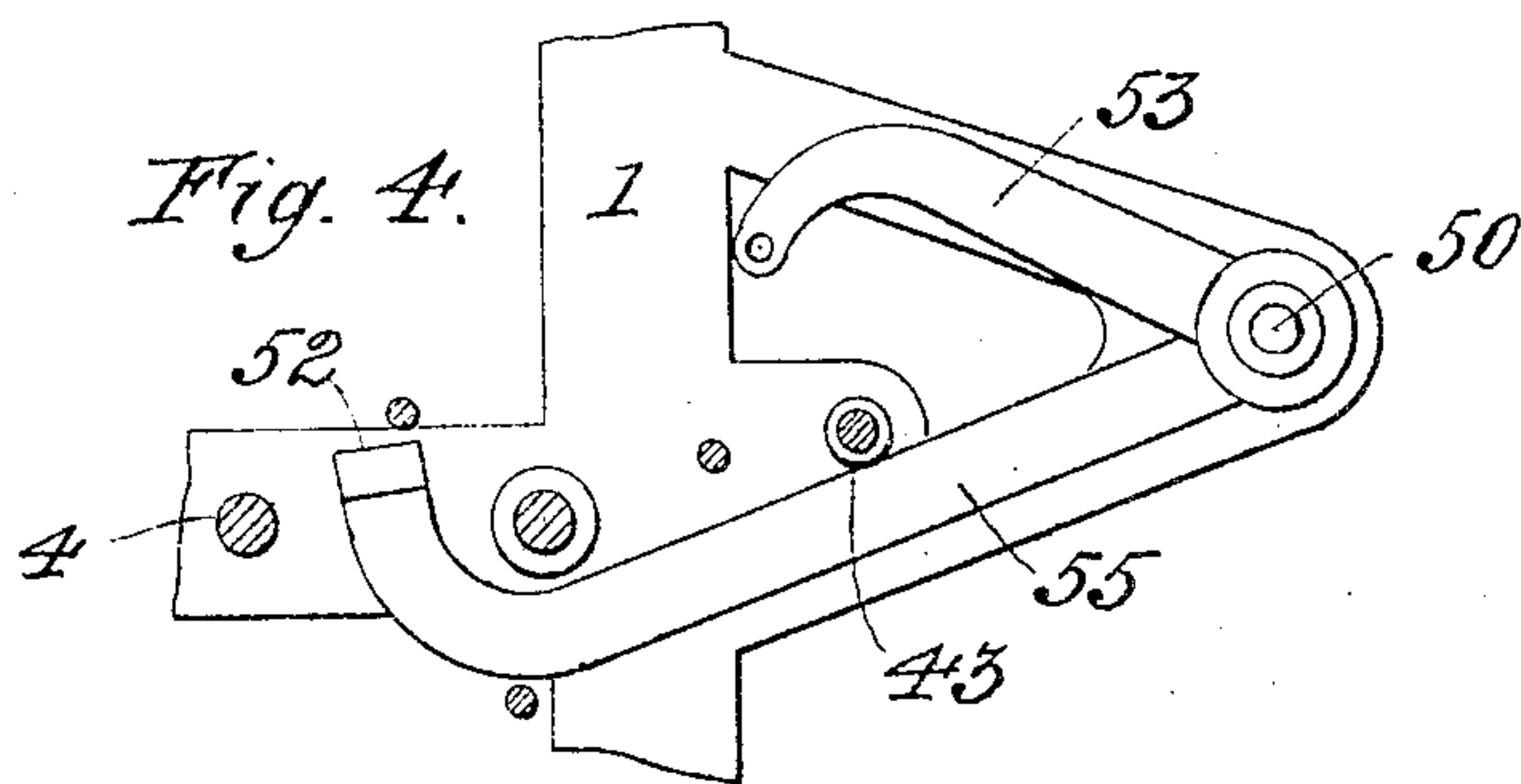
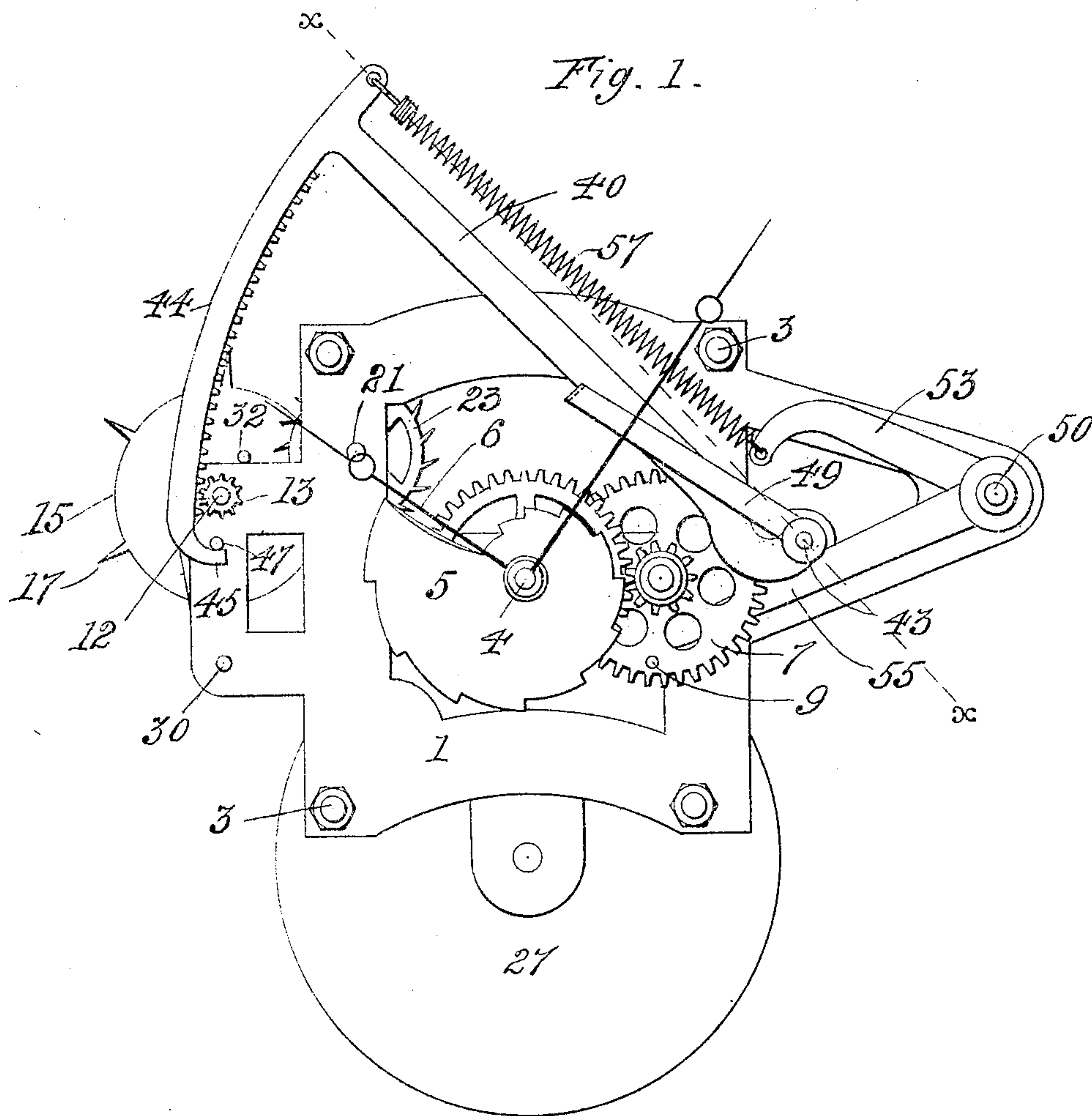


H. T. GAY.  
CLOCK STRIKING MECHANISM.

APPLICATION FILED AUG. 24, 1904.

3 SHEETS—SHEET 1.



WITNESSES:

J. H. Hoffman

A. D. Bayley.

INVENTOR.

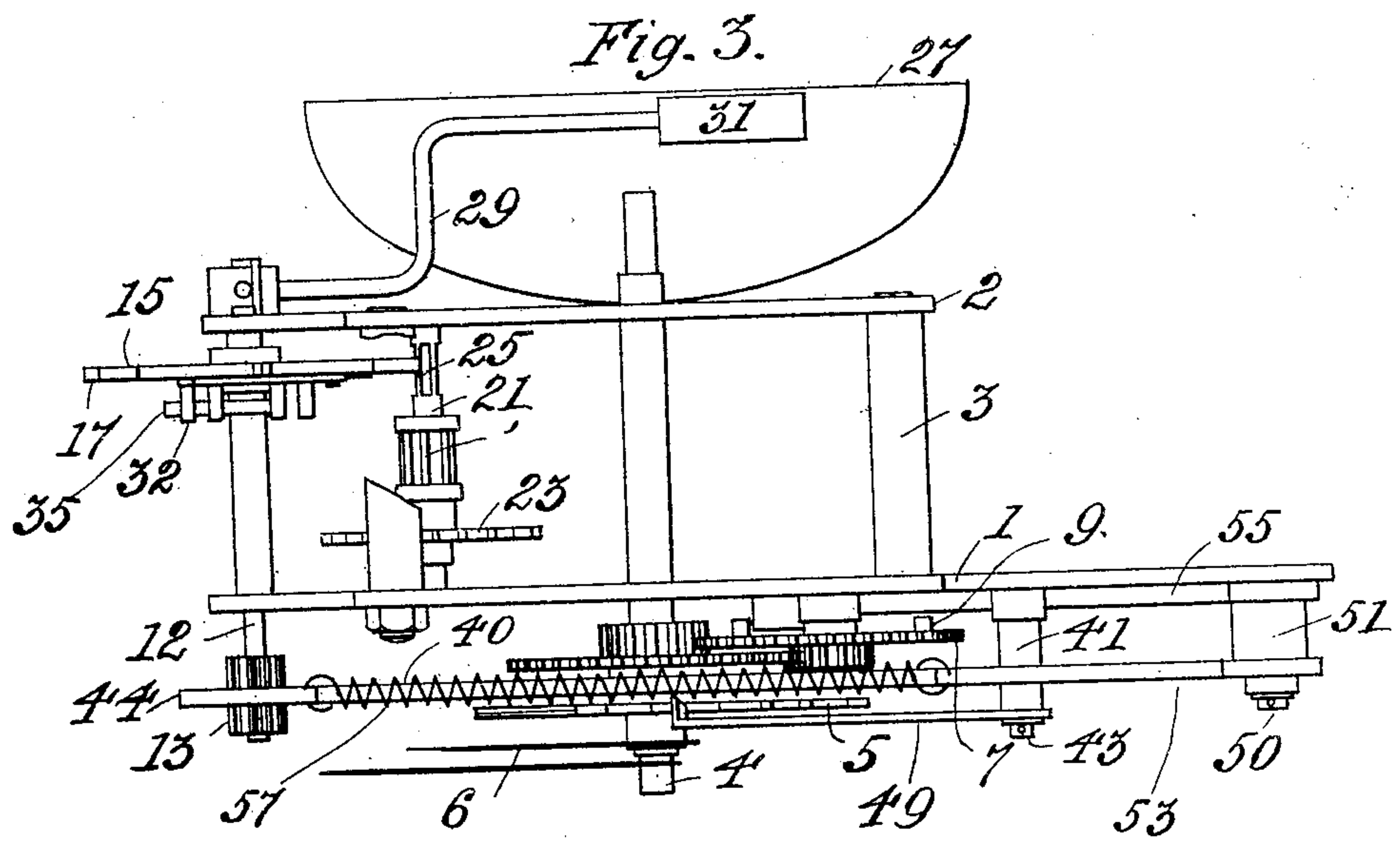
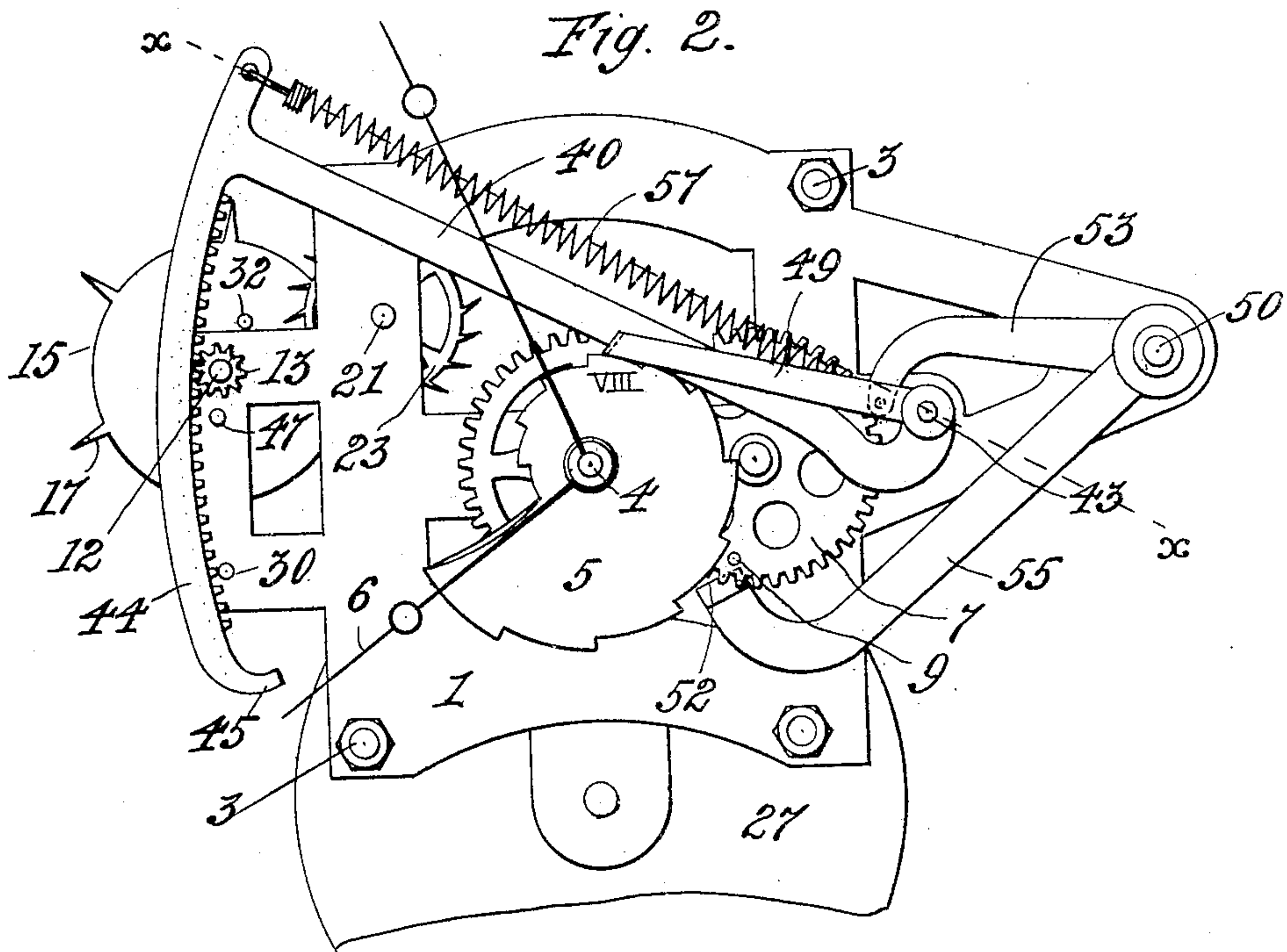
Herman T. Gay.

BY

*G. H. T. Howard,*  
ATTORNEYS

H. T. GAY.  
CLOCK STRIKING MECHANISM.  
APPLICATION FILED AUG. 24, 1904.

3 SHEETS—SHEET 2.



WITNESSES.

*J. M. Koffman*  
*A. O. Bayley.*

INVENTOR.

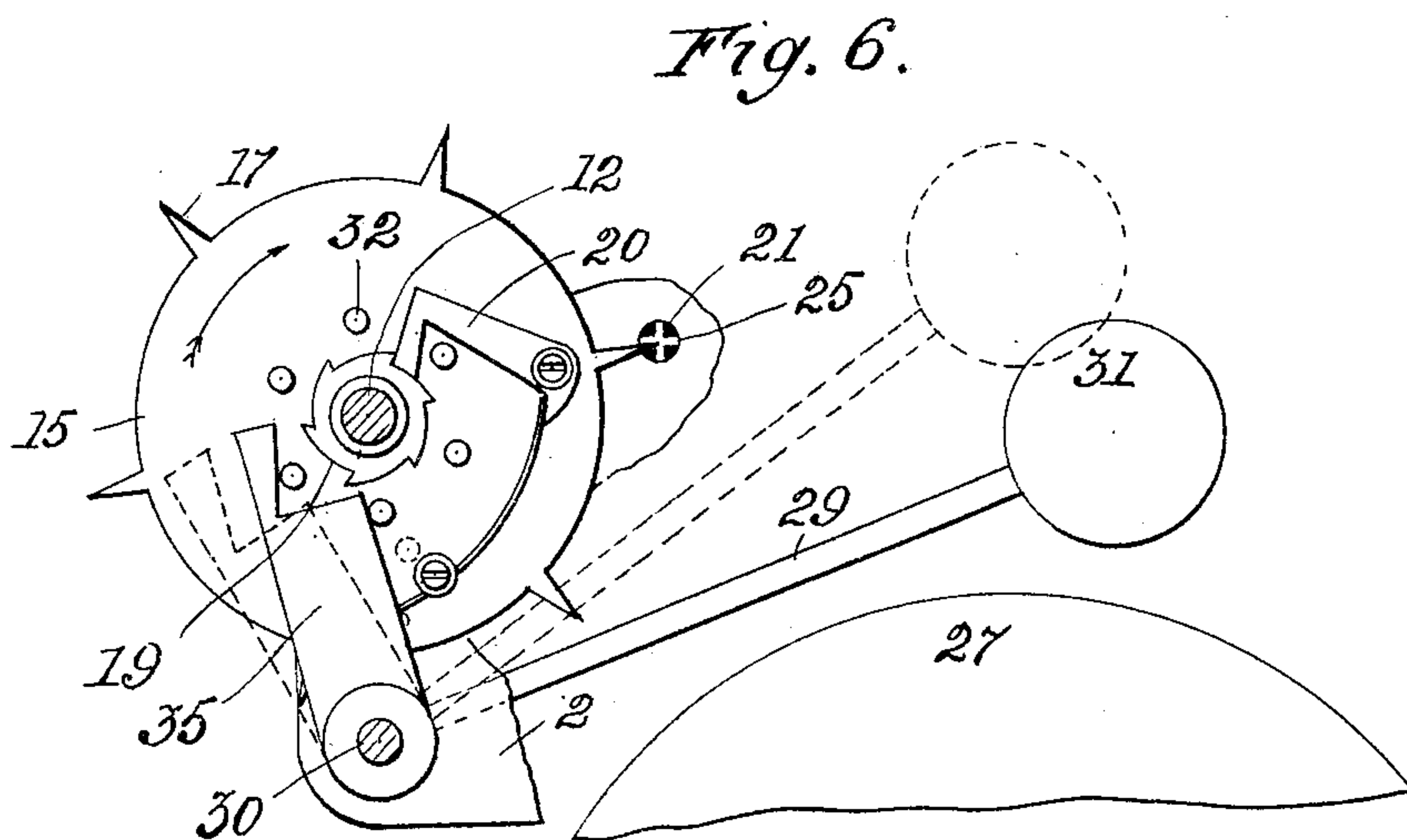
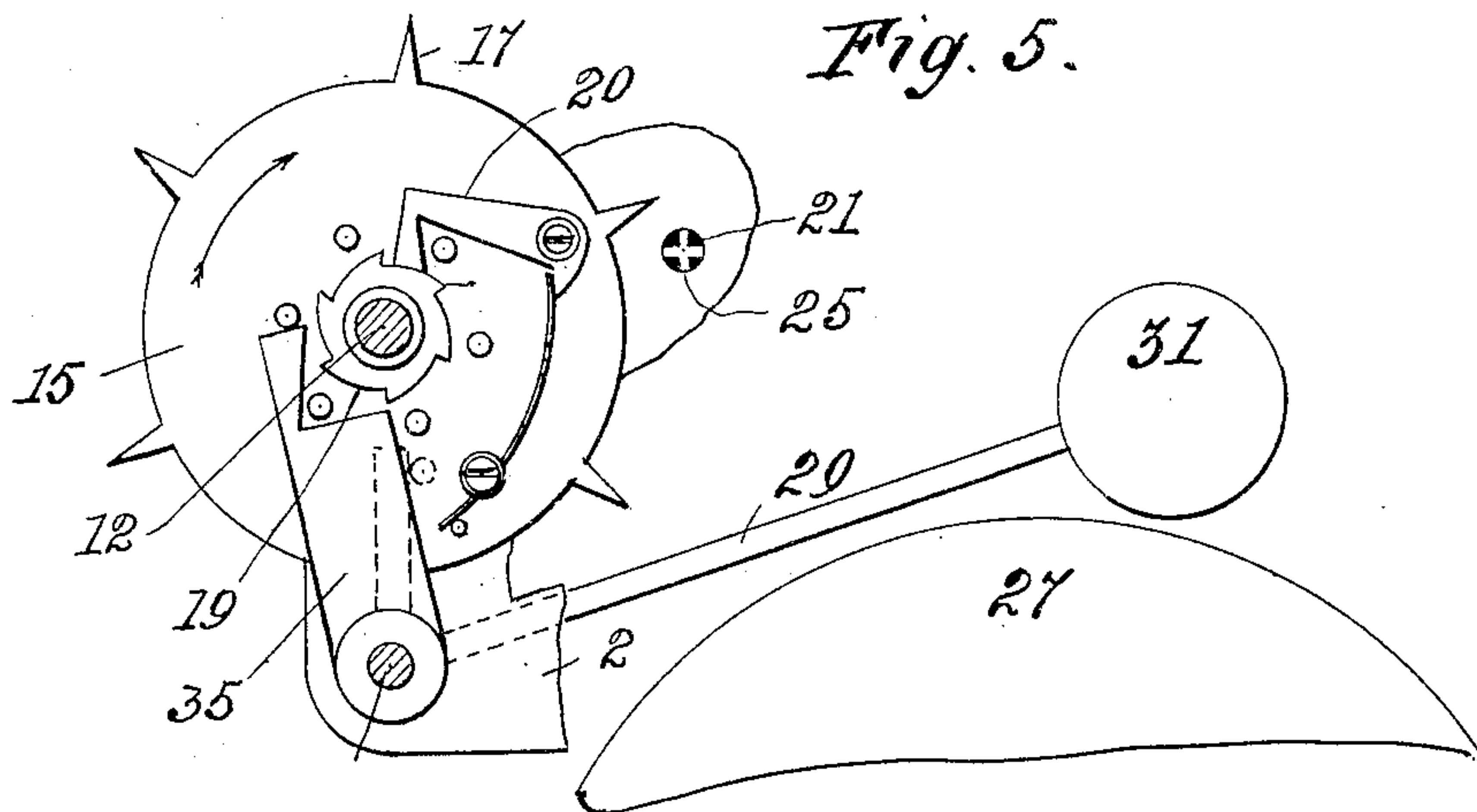
*Herman T. Gay.*  
BY *W. H. T. Howard,*  
ATTORNEYS

No. 806.336.

PATENTED DEC. 5, 1905.

H. T. GAY.  
CLOCK STRIKING MECHANISM.  
APPLICATION FILED AUG. 24, 1904.

3 SHEETS—SHEET 3.



WITNESSES.

*J. H. Hoffman*

*A. D. Bayley.*

INVENTOR.

*Herman T. Gay.*

BY

*Wm. H. J. Howard.*

ATTORNEYS



# UNITED STATES PATENT OFFICE.

HERMAN T. GAY, OF BALTIMORE, MARYLAND, ASSIGNOR, BY MESNE ASSIGNMENTS, OF ONE-FOURTH TO JADWIGA WELZANT.

## CLOCK STRIKING MECHANISM.

No. 806,336.

Specification of Letters Patent.

Patented Dec. 5, 1905.

Application filed August 24, 1904. Serial No. 221,940.

*To all whom it may concern:*

Be it known that I, HERMAN T. GAY, of the city of Baltimore and State of Maryland, have invented certain Improvements in Striking Mechanism for Clocks, of which the following is a specification.

This invention relates to certain improvements in striking mechanism for clocks which is operated from the time-movement, as will hereinafter fully appear.

In the further description of the said invention which follows, reference is made to the accompanying drawings, forming a part hereof, and in which—

Figure 1 is an exterior front view of certain parts of a clock mechanism embracing the present invention and illustrating the relative positions of the striking devices during the striking operation and near its close. Fig. 2 is a view similar to Fig. 1 except that the striking devices are shown immediately before the striking operation begins. Fig. 3 is a top view or plan of Fig. 2. Figs. 4, 5, and 6 are enlarged details of the apparatus.

Referring now to the drawings, 1 and 2 are respectively the front and the rear plate of the clock-frame, connected, as is usual, by the bars 3.

4 is the minute spindle or arbor, which is rotated once each hour, and 5 the ordinary striking cam or snail, which rotates once in twelve hours and to the hub of which the hour-hand 6 is attached.

7 is a gear-wheel forming a part of the clock-movement, which makes one-third of a full rotation each hour, and it is provided with three pins 9, which extend from its rear side and are at equal distances apart. With this arrangement one of the said pins is brought to a certain point or position each hour, and is thus utilized to primarily effect the operation of the striking mechanism hereinafter described.

12 is a rotary shaft journaled in the frame-plates 1 and 2, having at its outer end a tight pinion 13 and near its rear end a loose disk 15, provided at its circumference with six pointed teeth 17 at a common distance apart. To communicate rotation in one direction from the shaft 12 to the toothed disk 15, the said shaft is furnished with a tight ratchet-wheel 19 (see particularly Figs. 5 and 6) and the disk with a spring-held pawl 20, which

merely clicks should the shaft 12 be rotated in the reverse direction.

21 is a shaft of the escapement-wheel 23, which wheel is part of the clock-movement, having four slots or depressions 25 therein, as shown in Figs. 5 and 6, into which as the said shaft rotates the teeth 17 of the disks 15 will successively enter and admit of the rotation or partial rotation of the shaft 12 and its disk 15 in the operation of the apparatus, as hereinafter described.

27 is a gong or bell, and 29 the striking-arm, the hub of which is fastened to the rear end of a vibratory shaft 30, journaled in the frame 1 and 2. The hammer at the end of the striking-arm is denoted by 31.

The inner surface of the disk 15 is provided with six pins 32, which in the rotation of the disk in the direction indicated by the curved arrows in Figs. 5 and 6 trip a finger 35, fastened to the shaft 30, and cause the striking of the gong, as is usual in clocks.

In order that the disk 15 when at rest may be maintained in such position that the tooth 17 immediately above the escapement-wheel shaft 21 will not bear on or come in contact with a part of the said shaft between any two of the said slots until the time has arrived for the operation of the striking mechanism and at the same time adapt it to freely enter one of the said slots at the proper time, one of the said pins is arranged to rest on the end of the said finger, as shown in Fig. 5.

40 is an arm with its hub 41 loose on a stud 43, projecting from the front plate 1 of the frame, and 44 a toothed segment at the free end of the said arm. The teeth of the segment 44 are in mesh with those of the pinion 13. Consequently in raising the arm 40 the shaft 12 would be continuously rotated, provided the teeth 17 of the disk 15 did not engage with and strike the escapement-wheel shaft 21; but owing to the slots 25 in the said shaft, into which the points of the teeth 17 of the disk enter as the shaft rotates, an intermittent rotation of the disk 15 is effected, which continues until the said segment has reached its highest point or position. The hook 45 by coming in contact with a pin 47 serves as a stop to limit the upward motion of the toothed segment.

49 is a finger fastened to the hub of the arm 40 with its end which is turned toward the



rear, as shown at Fig. 3, arranged to bear on the edge of the cam or snail 5, and the position of the snail with respect to the hour-hand is such that at twelve o'clock the end of the finger 49 when held down by a spring, hereinafter described, will rest on the smallest part of the snail and at one o'clock on the largest or highest point of the same.

50 is a stud on the plate 1 of the frame which serves as a pivot for the hub 51, carrying the arms 53 and 55. The end of the arm 53, which is turned downward, is connected by a coiled spring 57 to the upper end of the toothed segment 44, and the end of the arm 55, which is turned upward, is held by the said spring in the path of the pins 9, which, as before stated, project from the gear-wheel 7, so that in one-third of a full rotation of the said wheel the arm 55 is gradually moved outward to its extreme limit once in an hour.

Immediately before the expiration of each hour the active pin 9 passes from the face 52 at the end of the arm 55 and the arm flies back to its original position, (shown in Fig. 4,) where it is stopped by the hub carrying the arm 40 and the finger 49.

It will be understood that the spring 57 has at all times a tendency to keep the arm 55 in the position shown in Fig. 4 and that while the arm is in the said position the end of the arm 53, to which the said spring is attached, is above the dotted line  $xx$ , extending from the center of the stud 43 to the end of the toothed segment 44, to which the spring is connected. Consequently the spring influences the toothed segment to assume its highest position, or that illustrated in Fig. 1; but in the outward movement of the arm 55 the said end of the arm 53 moves downward and crosses the said line, and the spring 57 has then the effect of drawing the toothed segment down and the end of the finger 49 in contact with the edge of the snail, as shown in Fig. 2.

Supposing the time to be 7.55, or five minutes to eight, the various parts of the clock will be in the position shown in Fig. 2—that is to say, the arm 55 will have nearly reached its extreme outward position with the pin 9 about to pass from the face 52 at the said end of the arm, and the arm 53 will be near its lowest position with its end below the dotted line  $xx$ , which, as before stated, extends from the center of the stud 43 to the end of the toothed segment which causes the spring 57 to retain the end of the arm 49 in contact with the portion of the snail marked VIII and the toothed segment is stationary. At the completion of the hour the pin 9 will pass from the face 52 at the end of the arm 55, and that device will instantly assume the position shown in Fig. 4. At the same time the arm 53 will be elevated to the position shown in Fig. 1, wherein its end will be above the dotted line  $xx$  and the spring 57 will cause the toothed segment to ascend. In the ascent

of the toothed segment the toothed disk 15 is set in motion, and intermittent partial rotations of the same take place as the teeth in succession pass the shaft 21 of the escapement-wheel, and as the finger 49 at the beginning of this operation rested on the part of the snail denoted by VIII the disk 15 will perform eight partial rotations, during each of which the gong will be struck by the hammer. Soon after the operation just described another one of the pins 9 comes in contact with the face 52 of the arm 55, and that device is again moved outward and finally tripped at the expiration of the next hour, as above described.

In the foregoing description of my improved striking mechanism I have specified certain wheels and shafts of the clock-movement as well adapted to produce the various operations set forth; but it is evident that others could be used and the striking devices modified in construction to conform with the change without materially affecting the invention as described.

I claim as my invention—

1. In a striking mechanism for a clock, a snail having rotation in common with the hour-hand of the clock-movement, a wheel carrying a lifting-pin forming a part of the clock-movement, and an intermittently-rotating shaft also forming a part of the clock-movement, the said shaft having diametrical depressions therein, combined with an arm having an attachment which is adapted to bear with a yielding pressure on the said snail, and which, in the rotation of the said wheel is lifted by its pin, a toothed segment forming a part of the said arm, a shaft provided with a pinion in mesh with the toothed segment carrying a loose disk with ratchet mechanism which admits of the rotation of the said disk in one direction only, the said disk having teeth which engage with the shaft having diametrical depressions, and means actuated primarily from the said toothed disk to effect the striking of a gong, substantially as specified.

2. In a striking mechanism for clocks, a snail having a rotary motion in common with the hour-hand, a shaft carrying a pinion which, when in rotation, effects the sounding of the gong or bell, combined with a pivoted arm having a toothed segment at its end, the teeth of which segment are in mesh with those of the said pinion, a finger having a motion in common with the said arm adapted to rest on the edge of the snail, a second pivoted arm, a spring to connect the end of the second arm with the upper end of the toothed segment, and mechanism actuated by the time-movement to carry the end of the second arm to a position alternately above and below a line extending from the pivotal point of first arm to the point of connection of the said spring with the end of the toothed segment, and so cause the finger to rise from, or bear upon



the said snail, and in the former motion to actuate the said pinion through the medium of the toothed segment and effect the sounding of the gong or bell, substantially as, and  
5 for the purpose specified.

3. In a striking mechanism for clocks, a snail having a rotary motion in common with the hour-hand, a shaft carrying a tight pinion and a loose tooth-disk and a ratchet mechanism whereby the tooth-disk moves in one direction only, pins projecting from the said disk, a gong-sounding appliance which is set in motion by the said pins in the rotation of the tooth-disk, a shaft constituting an element  
10 of the clock-movement having depressions therein into which the teeth of the disk enter and effect intermittent partial rotations of the said disk, combined with a pivoted arm having a toothed segment at its end, the teeth of  
15 which segment are in mesh with those of the said pinion, a finger having a motion in common with the said arm adapted to rest on the

edge of the snail, a second pivoted arm, a spring to connect the end of the second arm with the upper end of the toothed segment, a  
25 rotary wheel carrying projecting pins forming a part of the time-movement adapted to bring the said pins successively to a certain position at stated times, a third arm having a motion in common with the second arm, the  
30 end of which is in the path of the pins in the said rotary wheel and in the vibratory movement of the third arm, to alternately carry the end of the second arm to a position above and below a line extending from the pivoted  
35 center of the first arm to the upper end of the segment, and a spring to connect the upper end of the said toothed segment with the end of the second arm, substantially as, and for the purpose specified.

HERMAN T. GAY.

Witnesses:

OREGON MILTON DENNIS,  
WM. T. HOWARD.