

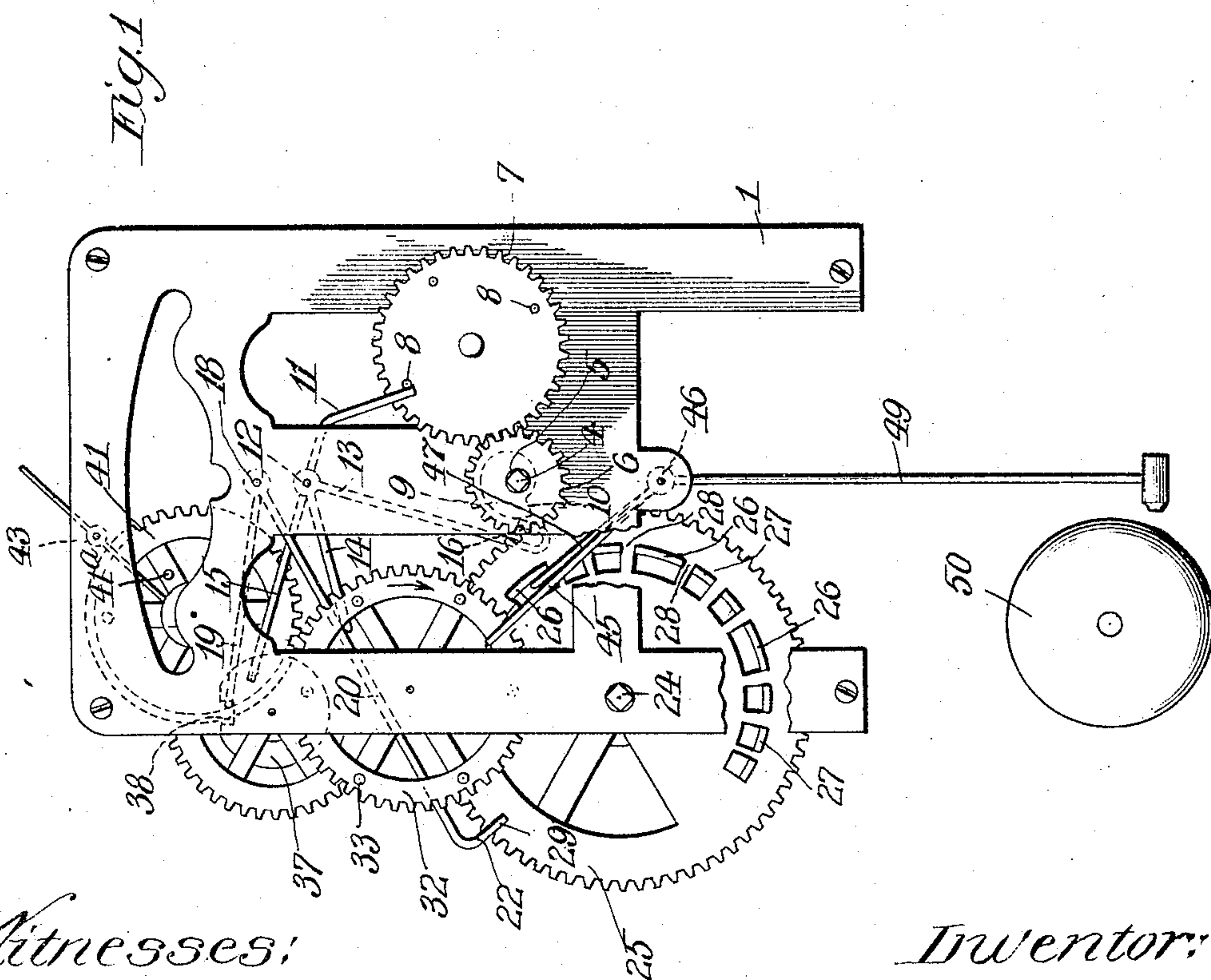
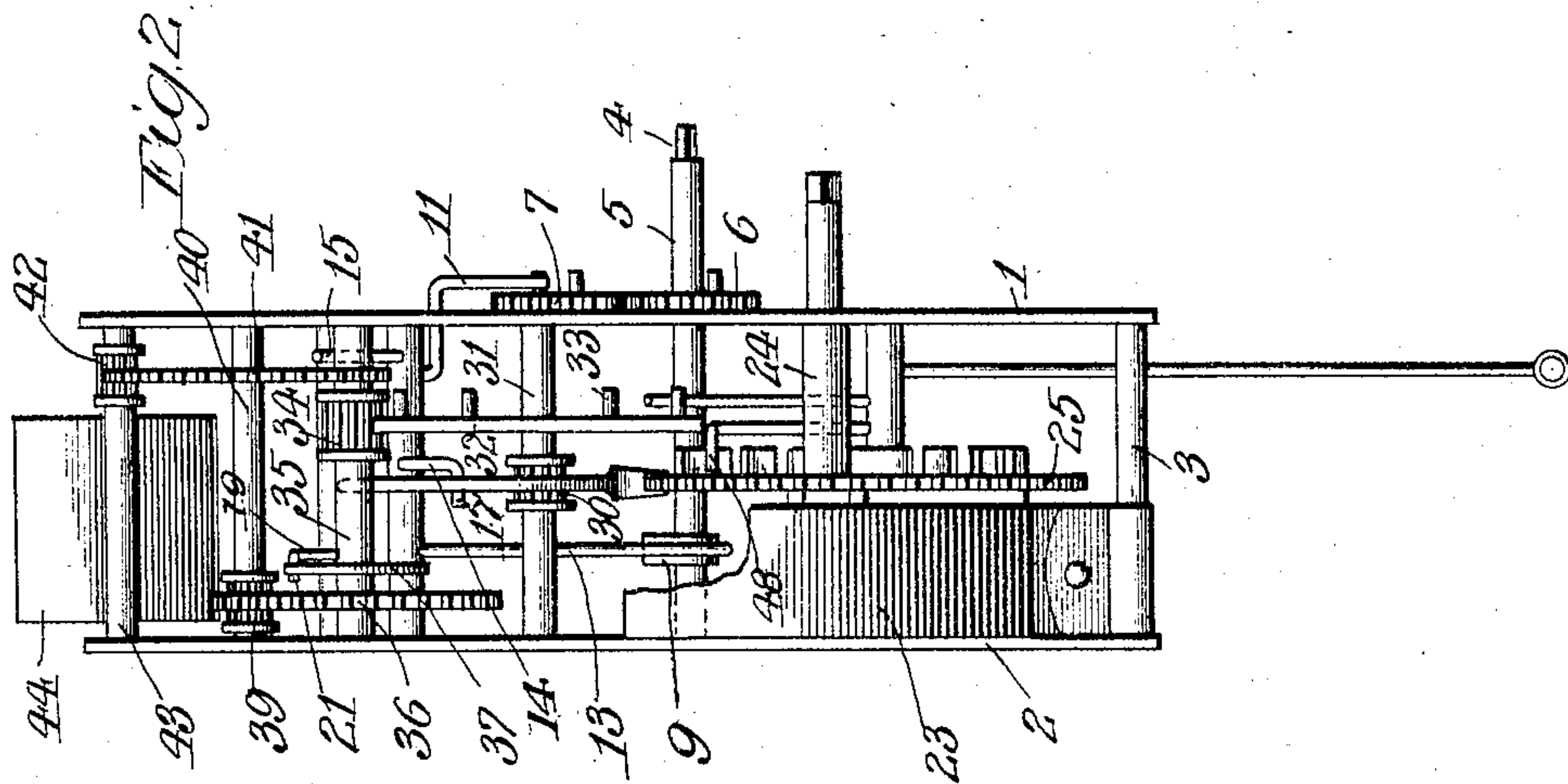
No. 773,585.

PATENTED NOV. 1, 1904.

V. ODQUIST.  
STRIKING CLOCK.

APPLICATION FILED APR. 14, 1902.

NO MODEL.



Witnesses:  
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# UNITED STATES PATENT OFFICE.

VICTOR ODQUIST, OF CHICAGO, ILLINOIS.

## STRIKING-CLOCK.

SPECIFICATION forming part of Letters Patent No. 773,585, dated November 1, 1904.

Application filed April 14, 1902. Serial No. 102,778. (No model.)

*To all whom it may concern:*

Be it known that I, VICTOR ODQUIST, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a certain new and useful Improvement in Striking-Clocks, (Case No. 1,) of which the following is a full, clear, concise, and exact description, reference being had to the accompanying drawings, forming a part of this specification.

My invention relates to striking-clocks, especially to the kind which are adapted to strike the same number of strokes at different predetermined periods in the day.

The object of the invention is to provide a simple, practical, and inexpensive form of clock of this kind. In this specification I will show and describe an Angelus clock—that is to say, a clock which is adapted to strike at six in the morning, twelve at noon, and six at night, rendering at each striking period a series of strokes consisting of three sets of three strokes each and one set of thirty-three strokes immediately thereafter. It will be understood, of course, that I do not intend to limit the invention to this particular form of clock.

In the accompanying drawings, Figure 1 is a front view of the works or mechanism of a striking-clock embodying my invention. Fig. 2 is a side view of the same.

In the mechanism shown in the drawings there are provided front and rear plates 1 and 2, respectively, which are held suitably apart by posts 3 3, secured by screws to such plates in the usual manner. Between these plates is arranged a time mechanism of any suitable or desired form—that is, a mechanism for actuating the hands of a clock to indicate the time. As this forms no part of my present invention, it has not been shown and will not be described herein.

The minute-hand of the clock is understood to be mounted upon a spindle 4 and the hour-hand upon a sleeve 5, both of which are connected with the time mechanism in the usual or any other manner to cause the proper movement of the hands.

In accordance with the manner of carrying out my invention herein shown I provide the hour-spindle 5 with a pinion 6 and also provide a gear 7, meshing with the pinion 6.

The gear 7 is provided with three pins 8 8 8, two of which are arranged diametrically opposite one another and the third on one side of the wheel at a point midway between such two opposite ones. The hour-sleeve 5 is also provided with a cam 9 made with a somewhat spiral-shaped periphery and having an abrupt edge 10. The pins 8 8 on the wheel 7 are arranged to strike against the end of a wire or rod 11, which is secured to a rock-shaft 12, suitably mounted in the plates 1 and 2. The pins 8 8 are so located that they strike the arm 11 at six in the morning, twelve at noon, and six at night, it being observed that the wheel 7 revolves once every twenty-four hours. The rock-shaft 12 is also provided with rods or wires 13, 14, and 15, projecting in different directions, as shown in Fig. 1. The rod 13 extends downwardly and has its lower end bent, as at 16, and this lower upwardly-turned or bent portion is adapted to ride upon the cam 9 on the hour-sleeve 5 and pass over the abrupt edge 10 thereof. The outer end of the rod 14 is bent transversely or laterally of said rod at 17, as shown in Fig. 2. Above the spindle 12 is another spindle 18, and this is provided with two arms or rods 19 and 20, Fig. 1, whereof the rod 19 has its outer end bent backwardly, as at 21, Fig. 2, and the arm 20 is arranged over the bent end 17 of the arm 14 and has its outer end bent downwardly, as at 22, Fig. 1.

A spring 23 for driving the striking mechanism is mounted upon a rotary spindle 24, which is suitably mounted in the plates 1 and 2 and has its ends squared for a key. The spindle 24 is provided with a driven gear-wheel 25, which is driven by a spring in the usual manner, and this wheel 25 is provided with laterally or sidewise projecting lugs or strips 26 26 27 27, having intervening spaces 28 28 between them. The lugs 26 26 are longer than the lugs 27 27, and the arrangement is as shown in Fig. 1, in which there are three lugs 26 26 26 and three sets of lugs 27 27, two in each, two of which sets are between the three lugs 26 26 and the third of which is beyond the endmost lug 26, whereby there are formed three sets of spaces 28 28 28, with three spaces in each set, and then a large space between the end lug 26 and the end lug 27.



The spring-wheel 25 is also provided with a recess or groove 29, into which the bent end 22 of the arm 20 is adapted to fly when such recess comes below it, whereby the end 22 of such arm can engage and lock the wheel 25 against rotation by the spring 23.

Above the spring gear-wheel 25 is arranged a train of mechanism for controlling or governing the movement of the wheel 25 by the spring 23. In this train the gear-wheel 25 gears with a pinion 30 on a spindle 31, carrying also a gear-wheel 32, provided with a plurality of pins 33, arranged at intervals near its periphery, as shown in Fig. 1. The gear 32 meshes with a pinion 34 on a spindle 35, carrying also a gear 36 and a disk or wheel 37, having its periphery recessed at 38. The gear 36 meshes with a pinion 39 on a spindle 40, carrying also a gear-wheel 41, having a pin 41<sup>a</sup>. The gear-wheel 41 meshes with a pinion 42 on a spindle 43, carrying a fan 44. The disk or wheel 37 is so positioned that its recess 38 comes under the bent end 21 of the arm 19, whereby such bent end can fall into the recess 38, and thereby cause the engagement and locking of the wheel 37, and thereby of the controlling-train. The arm 15 is so situated that when elevated it will come into the path of the pin 41<sup>a</sup> on the wheel 41, and thereby prevent rotation of such wheel and of the wheels of the controlling-train. The pins 33 on the gear-wheel 32 are adapted to strike against the end of an arm 45, projecting from a spindle 46, suitably mounted in the plates 1 and 2. The spindle 46 is also provided with an arm 47, having its end bent inwardly, as at 48, Fig. 2. The bent end 48 is adapted to strike against and engage the lugs 26 27 or to pass through the spaces 28 28, according as one or the other is presented. The spindle 46 is also provided with a striker-arm 49, which depends therefrom and is adapted to strike a bell 50, understood to be suitably mounted in the clock-casing.

The operation of the device is as follows: At one of the periods stated—either six in the morning, twelve at noon, or six at night—one of the pins 8 strikes against the arm 11 on the spindle 12, thereby swinging said arm downwardly and swinging the arms 13, 14, and 15 upwardly. The upward movement of the arm 14 lifts the arm 20, thereby withdrawing the bent end 22 thereof out of the recess 29 in the wheel 25 and releasing such wheel, whereby the spring is free to rotate. The upward movement of the arm 20 by swinging the rock-shaft 18 causes the upward movement of the arm 19, whereby the bent end 21 thereof is removed from the recess 38 in the wheel 37, thereby unlocking the said wheel. The wheel 37 thereupon begins to rotate, but is very soon arrested by the pin 41<sup>a</sup> coming into contact with the arm 15. As the wheel continues to rotate the pin 8 becomes released or substantially released from the arm 11, and

such arm, with the arms 13, 14, and 15, would drop back to its original position were it not for the cam 9 on the hour-spindle 5. This cam by rotating with the hour-spindle has come into such position that at this time its enlarged portion is adjacent to the bent end 16 of the arm 13, so that it arrests said arm and prevents it from dropping back to original position, and thereby prevents also the arms 13, 14, and 15 from dropping back. As the hour-spindle continues to revolve, however, the edge 10 of said cam passes by the top of the upturned end 16 and thereupon releases the arm 13, which, with the arms 14 and 15, drops back, the arm 15 in so doing releasing the pin 41<sup>a</sup>, so as to permit the rotation of the wheel 41. This completely unlocks the train controlling spring-wheel 25, thereby allowing the spring to cause rotation of such wheel, it being observed that this final release of the controlling-train after the preliminary release by the pins 8 8 occurs at the exact hour, and thereby insures the striking at the proper time, which might not be the case if actual or final release was brought about by the pins 8 8. The cam 9, it will be seen, acts upon the end 16 of the arm 13 at each revolution of the hour-spindle 5; but this cam is not large enough to cause the arms 14 and 15 to lift the arms 20 and 19 from the wheels 25 and 37, respectively. Consequently the cam 9 alone will not release the striking-train. The action of one of the pins 8 8 is necessary to lift the pins 19 and 20 sufficiently to disengage them from the wheels 37 and 25, respectively, and after this is done the cam 9 will hold the train from action until the proper time by holding the arm 15 high enough to engage the pin 41<sup>a</sup> on the wheel 41. As soon as this release is completely accomplished by the dropping of the end 16 of the arm 13 off the end of the cam 9 the spring-wheel 25 begins to revolve slowly, driving all of the wheels of the controlling-train. The rotation of the gear 32 in this train causes the pins 33 thereon to strike the end of the arm 45, swinging the upper end of the same to the left, Fig. 1, thereby throwing the hammer or striker 49 for the bell 50 outwardly or away from the bell. This swinging movement of the arm 45 is produced by each one of the pins 33 as it passes the end of such arm. The swinging movement of the arm 45 produces a corresponding swinging movement of the arm 47, which is also on the rocking spindle 46. Whenever one of the lugs 26 26 or 27 27 is opposite the upper bent end 48 of the arm 47, such bent end 48 strikes against such lug, thereby intercepting a complete return swing of the arms 45 and 47, and consequently preventing the striker 49 from striking the bell 50. Whenever one of the open spaces 28 28 comes opposite bent end 48 of the arm 47, however, the end 48 is free to pass between the lugs, thereby allowing a full swing of the three arms on the spindle 46 and



permitting the striker 49 to strike the bell. The gearing between the wheels 25 and 32 and the length of the lugs 26 26 and 27 27 are such that the arm 45 is struck by two successive  
 5 pins 33 33 during the time a lug 26 is opposite the end 48 and is struck once while a lug 27 is opposite such end. The spaces 28 28 are such as to allow the end 48 of the arm 47 to swing out and back once. The large open  
 10 space between the end lugs 26 and 27 is such as to allow the arm 45 to be struck and swung thirty-three times by the pins 33 33. In this way it will be seen that as soon as release occurs the bell will be struck once by the pas-  
 15 sage of the end 48 of the arm 47 through the first space 28. Then the striker will be restrained for a period of one stroke, then allowed to pass through the next space 28 and strike again, then restrained for one stroke,  
 20 then allowed to pass through the third space 28 and strike again, then restrained during the period of two strokes, then allowed to strike three times, with intervening periods, then restrained two strokes, then allowed to  
 25 strike three times, and then the final thirty-three, thereby giving the Angelus strike of three successive sets of three strokes each, and then thirty-three strokes. It will be seen that to secure any different number of strokes  
 30 the lugs 26 26, 27 27, and spaces 28 28 can be arranged to produce the desired result.

It will be understood that my invention is capable of much modification and change without departure therefrom, and hence I do not  
 35 desire to be limited to the exact construction herein set forth.

What I claim as my invention is—

1. In a striking-clock, means for producing a continuous actuation of the striker, and  
 40 means for preventing certain of the strokes thereof from striking, as set forth.

2. In a striking-clock, the combination of a striker, means for causing a continuous swinging movement of the same to produce a con-  
 45 tinuous striking, and means for limiting the extent of movement of certain of such swinging movements to prevent striking thereby as desired, substantially as set forth.

3. In a striking-clock, the combination of a  
 50 striker mounted on a rock-shaft, an arm projecting from said shaft, a wheel provided with projections adapted to strike said arm and cause a swinging movement of the striker, and means for limiting the extent of move-  
 55 ment of certain of the swinging movements of the striker to prevent its striking, substantially as set forth.

4. In a striking-clock, the combination of a swinging striker mounted on a rock-shaft, an  
 60 arm projecting from said shaft, a wheel provided with projections adapted to strike said arm one after another, a second arm carried by said shaft and having a bent end, and a wheel having projections adapted to engage  
 65 the bent end of said last-mentioned arm after

it has moved a portion of its stroke and before it has struck, whereby the swinging movement of the striker is shortened to prevent striking when such projections are opposite  
 70 said bent end and are allowed to continue to produce the striking operation when the spaces between said projections are opposite said end, substantially as described.

5. In a striking-clock, the combination of a  
 75 striker 49 mounted on a rock-shaft 46 having arms 45 and 47 whereof the latter has a bent end 48, a spring-wheel 25 having lateral projections with intervening spaces, the projec-  
 80 tions being adapted to come opposite the bent end 48 of the arm 47, and a second wheel 32 gear-connected with the wheel 25 and provided with pins 33, 33, adapted to strike the  
 85 arm 45, the wheel 32 being arranged and rotated so that the arm 47 is swung away from the projection on the wheel 25 when the pins 33 strike the arm 45, substantially as de-  
 scribed.

6. In a striking-clock, the combination with the time mechanism, of a striking mechanism adapted to produce a continuous actuation of  
 90 the striker when released, means in the striking-train for shortening the movement of certain strokes of the striker as desired during such period of continuous actuation, and means for releasing the striking mechanism at  
 95 intervals during the day as desired, substantially as described.

7. In a striking-clock, the combination with the time mechanism, of a gear-wheel driven thereby so as to rotate once in twenty-four  
 100 hours, a striking mechanism adapted when released to produce a continuous actuation of the striker, means in the striking-train for shortening certain of the striking actuations to cause periods of silence, and means for re-  
 105 leasing the striking mechanism from the twenty-four-hour wheel, substantially as set forth.

8. In a striking-clock, the combination with the time mechanism, of a wheel connected  
 110 therewith so as to be rotated once each twenty-four hours, a striking mechanism adapted when released to produce a continuous actuation of the striker, means for shortening certain of such actuations to produce periods of  
 115 silence, means for causing an initial release of the striking mechanism by the twenty-four-hour wheel, and means for causing a final release thereof by the time mechanism, substantially as set forth.

9. In a striking-clock, the combination with the time mechanism, of a wheel 7 driven by the hour-sleeve 5 so as to rotate once in twenty-  
 120 four hours, a striking mechanism comprising a striker 49, means for producing a continuous vibration thereof, means for shortening certain of such vibrations so as to produce periods of silence, and a releasing mechanism for releasing the striking mechanism, said re-  
 125 leasing mechanism comprising means for pro-



ducing an initial release by the twenty-four-hour wheel 7 and a final release by the hour-sleeve 5, substantially as set forth.

10. In a striking-clock, the combination  
5 with the time mechanism having an hour-sleeve 5, of a gear 7 geared with the hour-sleeve 5 and provided with pins 8, 8, a spindle 12 having arms 11, 13, 14 and 15 whereof the arm 13 has a bent end 16 and the arm 14  
10 a bent end 17, a spindle 18 having arms 19 and 20 whereof the arm 19 has a bent end 21 and the arm 20 a bent end 22, a spring 23, a spring-wheel 25 therefor, the spring-wheel 25 having a notch or recess 29 and also having  
15 lugs 26, 26, 27, 27 with spaces 28, 28, between the same, a controlling-train comprising gears and wheels 30, 32 (having pins 33,) 34, 36, 27 (having a notch 38,) 39, 41 (having a pin 41<sup>a</sup>.) and 34, a fan 44, and a rock-spindle 46 having  
20 a striker 49, and also having arms 45 and 47 whereof the latter has a bent end 48 adapted to strike against the lugs 26, 27, and to pass between the same in the spaces 28, 28, substantially as described.

25 11. In a striking-clock, the combination of a striker, means for producing repeated vibrations of the same, and means for shortening certain of such vibrations to prevent striking without interrupting the vibratory movement  
30 of the striker, substantially as described.

12. The combination with a swinging striker, of means for producing repeated vibratory movements thereof, and means in the striking-train for shortening certain of such  
35 movements to prevent striking without interrupting the continuous vibratory action, substantially as described.

13. In a clock striking at irregular intervals, the combination with the striking mechanism, of a releasing mechanism therefor comprising means, operating at regular periods to effect a final release of the striking mechanism, and means operating at some of said periods only, for effecting a preliminary release  
45 of said mechanism, neither of said means being capable of effecting a complete release alone, substantially as described.

14. The combination with the striking mechanism, of the time mechanism, a twenty-four-hour wheel driven by the time mechanism and adapted to rotate once each twenty-four hours, means for effecting a preliminary release of the striking mechanism at approximately the desired time, by such twenty-four-hour wheel,  
55 and means for effecting a final release thereof at substantially the exact desired time by the time mechanism, substantially as described.

15. The combination with the time and the striking mechanisms, of a twenty-four-hour  
60 wheel driven by the time mechanism and adapted to rotate once each twenty-four hours, means for effecting a preliminary release of the striking mechanism by the twenty-four-hour wheel at approximately the desired time,  
65 and means for effecting a final release of such

mechanism by the hour-wheel of the time mechanism, substantially as set forth.

16. The combination with the time and striking mechanisms, of a twenty-four-hour wheel connected with the time mechanism, pins 8, 70 8, on the twenty-four-hour wheel, a preliminary releasing mechanism actuated by the pins 8, 8, a cam 9 on the hour-sleeve, and means actuated by the cam 9 for effecting a final and accurate release of the striking mechanism,  
75 substantially as described.

17. The combination with the time and striking mechanisms, of a twenty-four-hour wheel 7 connected with the time mechanism and arranged to rotate once each twenty-four hours,  
80 pins 8, 8, on said twenty-four-hour wheel, a spindle 12 having arms 11, 13, 14 and 15, whereof the arm 11 is adapted to cooperate with the pins 8, 8, a cam 9 on the hour-spindle adapted to cooperate with the arm 13, a spindle 18 having  
85 arms 19 and 20, whereof the arm 20 is adapted to be actuated by the arm 14, wheels 37 and 41 in the striking-train, whereof the wheel 37 has a notch 38 adapted to engage the arm 19, and wheel 41 has a pin 41<sup>a</sup> adapted to engage  
90 the arm 15.

18. The combination with the striking mechanism, of a releasing mechanism adapted to effect a preliminary release of the striking mechanism, means for actuating such releasing mechanism slightly before the time for striking, a second releasing mechanism adapted to prevent operation of the striking mechanism even after the same has been released  
95 by the first-mentioned releasing mechanism and adapted also to release such striking mechanism when actuated, and means for actuating said second releasing mechanism so as to cause actuation of the striking mechanism at the exact time striking is to begin, substantially as  
100 described.

19. The combination with the striking mechanism, of mechanism for effecting the release of the same, means for actuating such releasing mechanism to cause a partial release of the striking mechanism, and separate mechanism  
110 for actuating said releasing mechanism further to effect the complete release of the striking mechanism, substantially as described.

20. In a clock striking at irregular intervals, the combination with the striking mechanism, of a release comprising releasing mechanism operating at regular intervals, and releasing mechanism operating at some only of said intervals, both of said mechanisms together being capable of effecting a complete  
115 release of the striking mechanism but neither of the same alone being capable of such action, substantially as described.

In witness whereof I hereunto subscribe my  
125 name this 11th day of April, A. D. 1902.

VICTOR ODQUIST.

Witnesses:

P. J. TOTZKE,

A. MILLER BELFIELD.