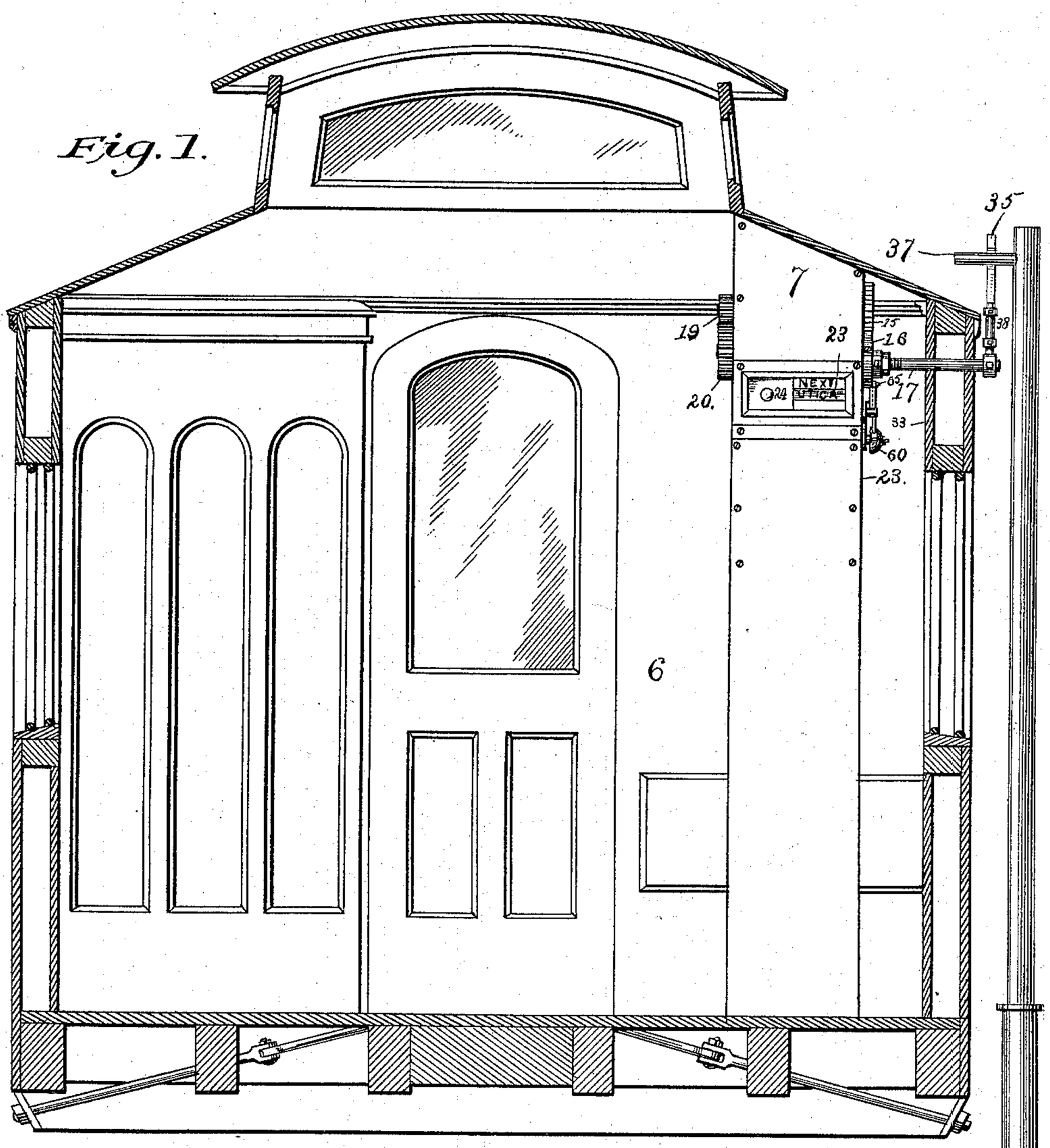
(No Model.) 3 Sheets—Sheet 1.

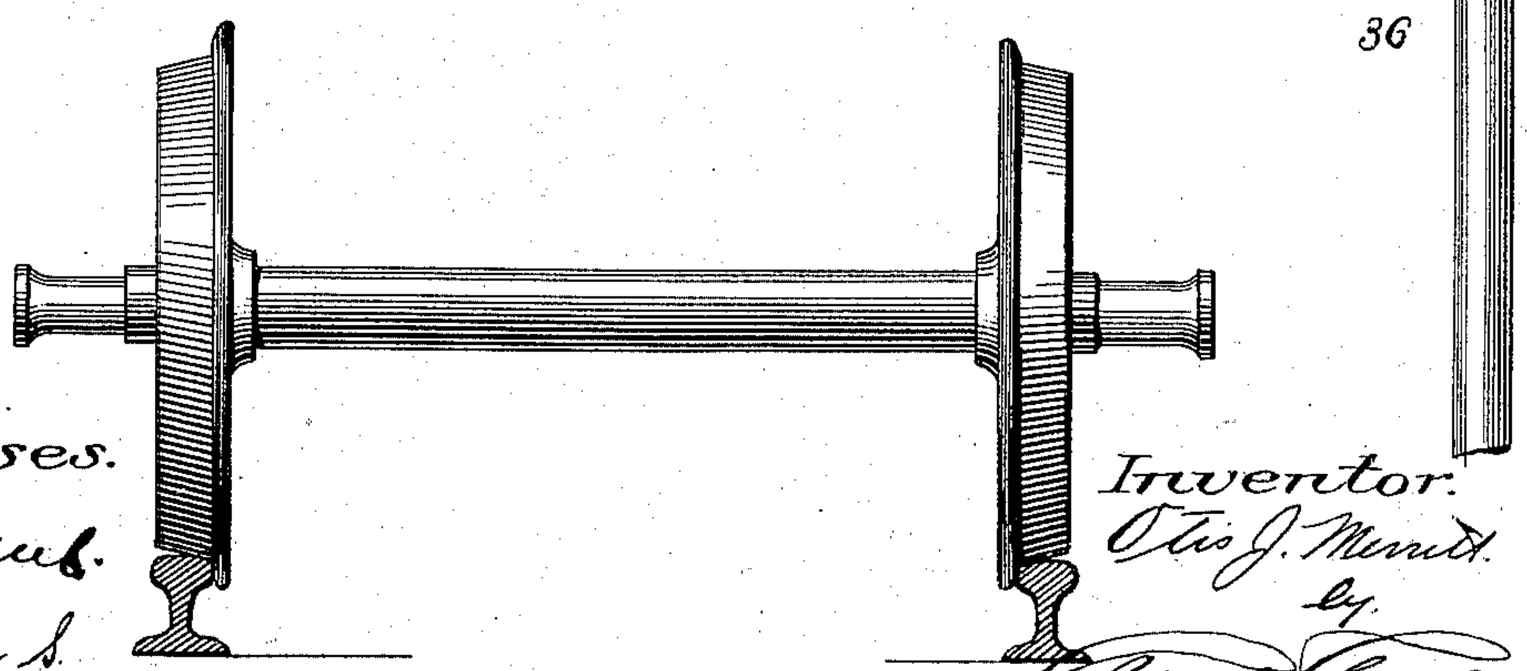
O. J. MERRITT.

STATION INDICATOR.

No. 567,911. Patented Sept. 15, 1896.

Fig. 1.





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3 Sheets—Sheet 2.

O. J. MERRITT.

STATION INDICATOR.

No. 567,911. Patented Sept. 15, 1896.

Fig. 2.

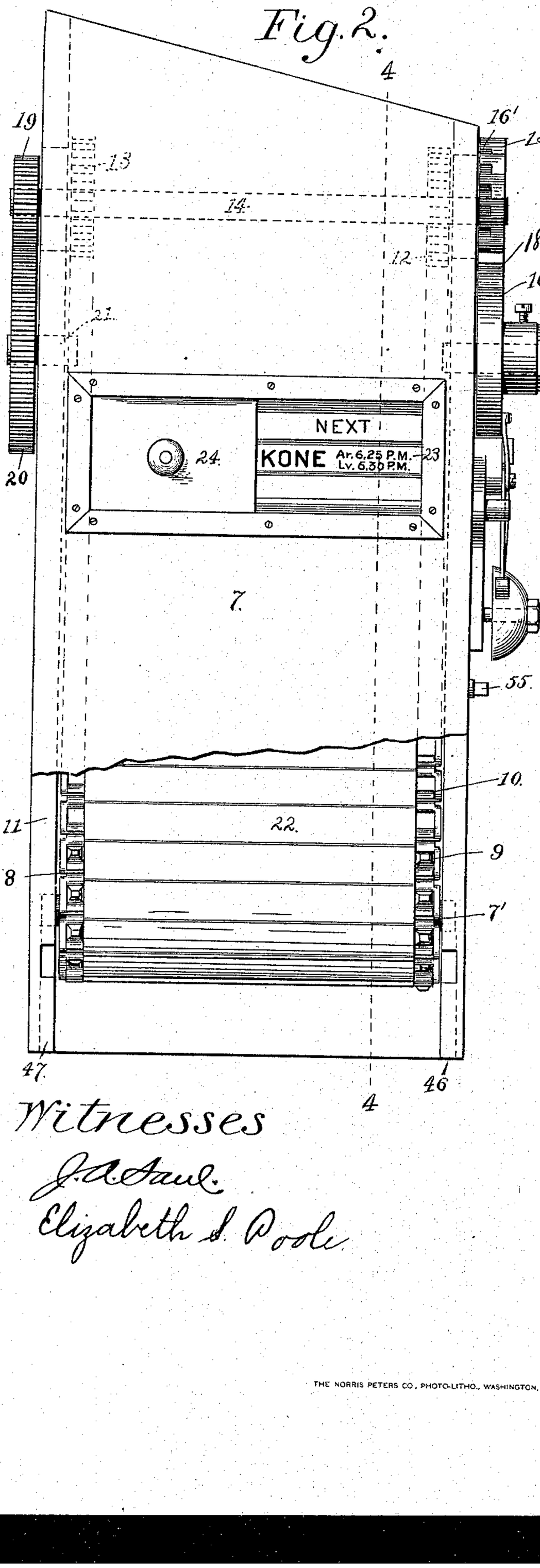
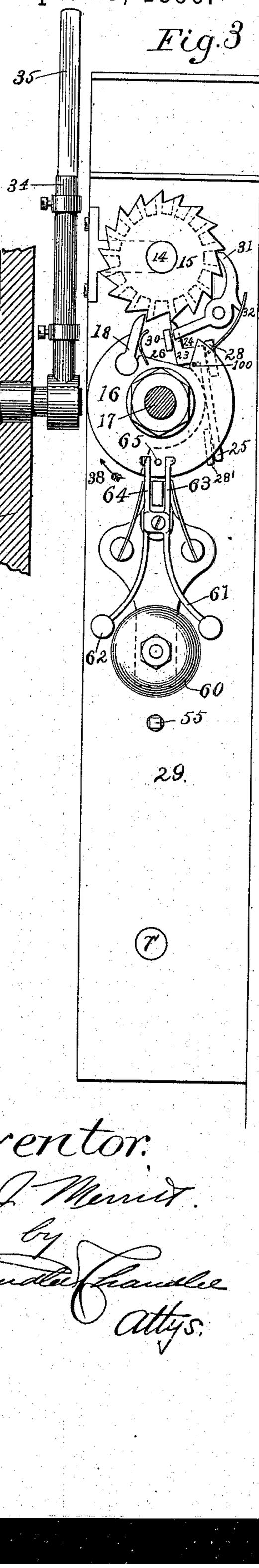


Fig. 3.



Witnesses

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(No Model.) 3 Sheets—Sheet 3.

O. J. MERRITT.

STATION INDICATOR.

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Fig. 4

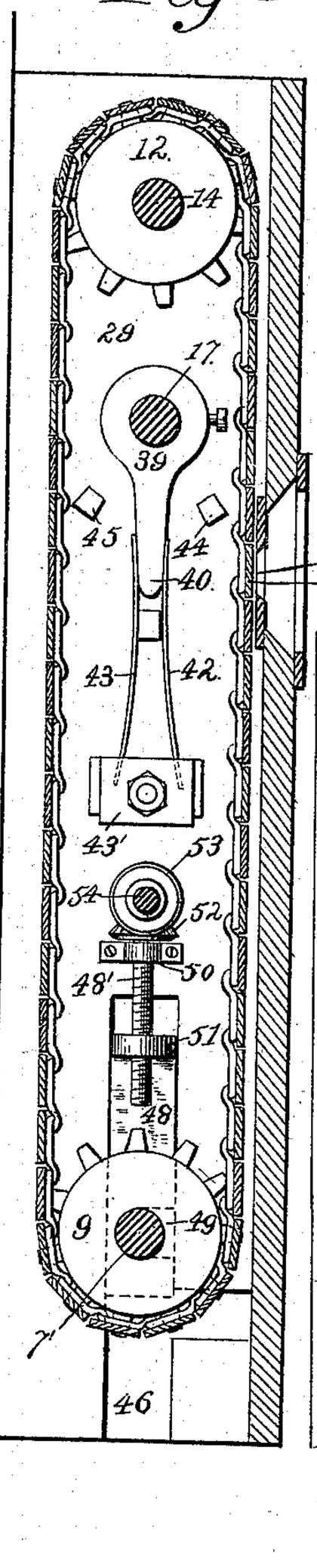


Fig. 5.

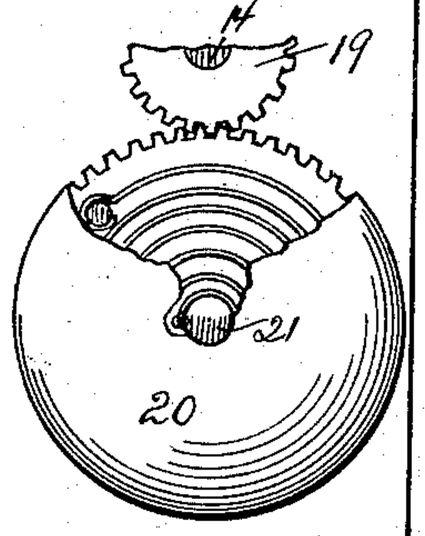
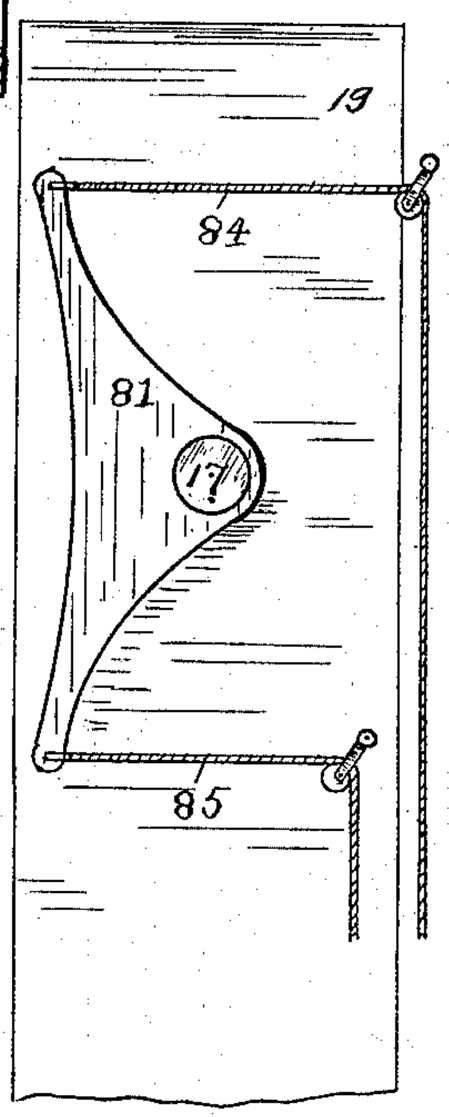


Fig. 6.



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UNITED STATES PATENT OFFICE.

OTIS J. MERRITT, OF SENEAGUOTEEN, IDAHO, ASSIGNOR OF ONE-HALF TO JOHN J. COSTELLO, OF CŒUR D'ALENE, IDAHO.

STATION-INDICATOR.

SPECIFICATION forming part of Letters Patent No. 567,911, dated September 15, 1896.

Application filed April 11, 1895. Serial No. 545,322. (No model.)

To all whom it may concern:

Be it known that I, OTIS J. MERRITT, a citizen of the United States, residing at Seneaguoteen, in the county of Kootenai, State of Idaho, have invented certain new and useful Improvements in Station-Indicators for Railway-Cars; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to automatically-operated station-indicators, and has for its object to provide a device of this nature which may be operated exteriorly of the car or coach within which it is placed.

A further object of my invention is to provide adjustable means exterior of the car and arranged at predetermined intervals along the railway for operating the indicating mechanism, and a final object of my invention is to provide particular mechanism to accomplish the indication of the several stations, which said mechanism shall be simple of construction and accurate of operation.

Referring now to the drawings forming a part of this specification, and in which like numerals refer to similar parts in the several views thereof, Figure 1 is a lateral section of a car, showing the location and arrangement of my device thereon and the position of an adjacent pole provided with an arm to operate the indicator. Fig. 2 is a front elevation of a casing provided with an indicator on its face and having a portion of the latter broken away to show the location and arrangement of the series of slats forming the visual portion of my device. This view furthermore shows the striker-lever and its connection with the indicator mechanism and alarm. Fig. 3 is a section on line 3 3 of Fig. 2. Fig. 4 is a section on line 4 4 of Fig. 2. Fig. 5 is a detail view of the gears 19 and 20, showing the arrangement of the spiral spring within the gear 20. Fig. 6 shows a variation in which manually-operated cords are substituted for the striker-arm as a means for manipulating the indicator.

Referring now to the drawings, 6 represents a car or other vehicle, within which and at the forward end is placed a casing 7, within which is arranged a shaft 7', bearing sprocket-wheels 8 and 9 at its opposite ends, over which are passed chains 10 and 11, extending upwardly and taking over sprocket-wheels 12 and 13, arranged on a shaft 14 in the upper portion of the casing. The shaft 14 projects through the sides of the casing 7, and at one end is provided with a ratchet-wheel 15, having radial recesses 16' in its periphery adjacent its inner face. Below the wheel 15 is a disk 16 on a shaft 17, provided with a spring retaining-pawl 18, adapted to engage the teeth of the ratchet-wheel 15 and impart motion to it when the shaft is oscillated from its normal position in one direction. As the pawl 18 revolves the ratchet 15 and its shaft 14, motion is communicated from the said shaft through the medium of a gear 19 on its opposite end and a gear 20, mounted loosely on a pin 21 in the side of the casing 7, said gear 20 being hollow and containing a spiral spring, one end of which is fixed to the inner periphery of the gear and the other end is attached to the pin 21. Thus it will be seen that as the ratchet 15 is revolved the spring within the gear 20 is wound up and at the same time the several slats 22, whose extremities are attached to their respective links of the chains 10 and 11, are passed successively by the opening 23 in the front of the casing 7. The spring above referred to serves to actuate the indicating devices on the return movement of the guard, as will be further explained. This opening 23 extends entirely across the face of the casing and is provided with a laterally-slidable door 24 of such dimensions as to cover one-half of the opening. Thus it will be seen that when the said door is slid to either extremity of the opening but one-half of a slat 22 is shown, the upper and lower sections of the opening 23 being closed to allow only a lateral open slot approximately the width of a slat. The upper portion of this closing medium is marked with the word "Next," and each slat as it appears therebelow is marked with the name of one of a series of successive stations along the railroad, with the time of arrival and departure of the train. The opposite extremity of each slat—*i. e.*, that portion now covered by the door 24—is marked with the same matter, arranged on the slats,

however, in reverse order, and is uncovered by a movement of the door 24 when the train is run in the opposite direction. It, however, being necessary to operate the slats in the opposite direction in accordance with the movement of the coach upon which the indicator is located, it is essential that an opposite direction be given the ratchet 15. This is accomplished through the medium of the same shaft 17 and the disk 16 thereon, which latter is provided with a peripheral slot, in which is placed an angular stop comprising a horizontal central portion 23 and the extremities 24 and 25, extending at right angles thereto in opposite directions. The exterior angle of the parts 23 and 24 bears upon the flat base of a recess 26, formed in the upper face of the disk 16, which recess is bounded at one side by the pawl 18 and at the other side by a shoulder 27. Blocks 28 and 28′, secured to the side 29 of the casing 7, prevent the stop from dropping from the peripheral slot in the disk 16, and also act in conjunction with the block 30 on the side 29 to form a guide for the stop and cause the extremity of the portion 24 to move into and out of the radial recesses in the periphery of the ratchet 15 when motion is imparted to said stop by the oscillatory movement of the disk 16 through the medium of a pin 100, passed through the disk 16, which engages part 23. Pivoted also to the side 29 of the casing 7 is a pawl-lever 31, the engagement end of which is maintained in contact with the ratchet portion of the periphery of the ratchet 15 by means of a spring 32. The power end of the lever 31 is extended into the path of the shoulder 27 of the disk 16, whereby, when said disk is moved to elevate the stop carried thereby, the pawl 31 will operate to release the ratchet 15.

To communicate motion to the disk 16, I have secured to the extremity of the shaft 17, which is passed through the side 33 of the car, a striker-lever 34, having a contact-spring 35 in its extremity. Arranged at predetermined intervals along the railway are a series of posts 36, each having projecting therefrom at a proper height a striker-arm 37 in the path of the contact-spring 35 of the contact-lever 34.

The cars being at a standstill at a certain station, there is on exhibition in the indicator the name of that station, with the time of arrival and the time of departure. As the car leaves the station the contact-spring 35 engages the arm 37 and the lever 34 is moved rearwardly from a vertical position, and when its spring is passed beneath the arm 37 the said lever is returned to its upright position. This motion, as will be readily seen, imparts an oscillatory movement to the shaft 17, causing the disk 16 thereon to move first in the direction indicated by the arrow 38 in Fig. 3, and to then return to its original position. As the disk 16 moves in the direction named the pawl 18, carried thereby, engages the ratchet 15 and revolves it one tooth. This revoluble motion is communicated by the axle 14 to the sprockets 12 and 13 thereon, causing an equal movement of the chains 10 and 11 and sprockets 8 and 9 on the shaft 7′. This movement to the chains 10 and 11 is equal to the width of one slat 22, carried thereby, and results in the substitution of the next succeeding slat, bearing the name and data connected with the next station on the line, for the slat then on exhibition. Moreover, as the shaft 14 is moved, motion is contributed therefrom to the gear 20 by means of the gear 19, causing a gradual winding of the aforesaid spring within the gear 20. This operation is continued to the end of the route. The train being now ready for the return trip, the door 24 is slid to a position opposite to that shown in Fig. 2 and the train is started, the contact-spring 35 coming successively into engagement with the arms 37 of the pole 36, arranged at each station. In this return movement, however, the shaft 17 is oscillated with an initial movement opposite to that in the former instance, at which time the disk 16 is oscillated in a like direction. This movement of the disk 16 causes the shoulder 27 to engage the adjacent end of the pawl-lever 31 and causes it to release the ratchet 15. At the same time, however, the pin 100 in disk 16, adjacent the base of the recess 26, acting upon the impinging portion of the stop, causes the latter to rise and its end to enter a radial recess 16′ of the ratchet, thus limiting the movement of said ratchet to one tooth, which movement is contributed by kinetic energy of the spring contained within the gear 20, acting through the medium of said gear, gear 19, and shaft 14. This movement causes movement of the chains 10 and 11 and the substitution of the next succeeding slat for the one then on exhibition, as in the former instance, said movement being in an opposite direction, however. To maintain the lever 34 and spring 35 in their normal upright positions, I have secured to the inner end of the shaft 17, which passes through the side of the casing 7, a ring 39, provided with a lug 40, yieldingly held between the springs 41 and 42, secured to a block 43, pivoted to the casing below the shaft. Oscillatory movement of the lug, contributed by the shaft 17, is limited by the stops 44 and 45, arranged on either side thereof. Thus it will be seen that as the lug 40 is moved to the right the spring 42 will be moved in a like direction to an extent limited by the stop 44, and when the contact-spring 35 passes from engagement with an arm 37 the spring 42 will act to return said lug to the position shown in Fig. 4 and cause the lever 34 and its spring 35 to resume an upright position, at the same time throwing the different elements of my device into their normal positions.

In order to maintain the proper tension of the chains 10 and 11, I have formed a slot 46 and 47 in each side of the casing, in which is placed an adjustable journal-block 48, each

provided with a recess 49 to receive an extremity of the shaft 7'. Longitudinal movement of the blocks 48 is contributed by a screw 48', journaled in bearings 50, (shown in Fig. 4,) the threads of which are in engagement with the threads of a perforation formed in a projection 51 of the block 48. The screw 48' is provided at one end with a bevel-gear 52, meshing with a similar gear 53 on a shaft 54, passed laterally through the casing 7 and provided at one extremity 55 with means for the attachment of a key. Thus it will be seen that as the shaft 54 is revolved the screws 48', operating upon the projections 51, will contribute longitudinal movement to the journal-blocks 48 and will adjust the sprockets 8 and 9 with respect to the sprockets 12 and 13, and simultaneously the tension of chains 10 and 11.

In order that attention may be called to the indicator at each operation, I provide an alarm which is secured to the side of the casing 7, which alarm comprises a bell 60, having spring-hammers 61 and 62, whose extremities 63 and 64 are adapted to be engaged alternately by the pin 65 on the disk 16, in accordance with the direction of movement of said pin due to oscillation of the disk, to accomplish which object the extremities 63 and 64 are separated to a sufficient extent to allow the insertion of the pin 65 between them.

It will be readily understood that I may vary the particular construction and arrangement described without departing from the spirit of my invention and that instead of providing the lever 4 on the shaft 17 exteriorly of the car I may arrange a rocking lever 81 on said shaft, as shown in Fig. 6, to one end of which lever is attached a cord 84, adapted to operate the indicator in one direction, the opposite end of said lever having a cord 85, whereby the indicator may be manipulated in the opposite direction.

Having now described my invention, what I claim is—

1. A device of the class described, comprising a casing, shafts journaled in the casing and carrying sprockets, chains on the sprockets, a series of visual elements carried by said chains, an opening in the casing through which said elements are adapted to be exhibited, a contact-lever for moving said chains in one direction, a pinion on one of said sprocket-shafts, a gear adapted to be driven by said pinion and inclosing a spring arranged to be wound thereby under the influence of the striker-arm, and means for releasing the spring to move the chains in the opposite direction.

2. In a device of the class described, the combination with the chains, their carrying-sprockets and sprocket-shafts, of a pinion carried by one of said shafts, a gear in mesh with the pinion and adapted to wind a spring inclosed thereby, a contact-lever, mechanism between the lever and chain for transmitting motion from the former to the latter in one direction to wind the spring, and connections between the lever and spring for releasing the latter to contribute opposite motion to the chains.

3. In a device of the class described, the combination with the chains, their carrying-sprockets, and a contact-lever adapted to impart motion thereto, of a spring adapted to be wound under the influence of the contact-lever as the chains are moved in one direction, and connections between said spring and lever for releasing said spring to move the chains in the opposite direction when the contact-arm is reversely operated.

4. In a device of the class described, the combination with the ratchet-disk having positive connection with the visual elements, of an oscillatory disk provided with a contact-lever adapted to move it, a pawl carried by said disk and adapted to engage the ratchet-disk to move it in one direction, a second pawl normally in engagement with the ratchet-disk to prevent backward movement, a spring tending to move the ratchet-disk against the pawl and means carried by the oscillatory disk adapted to engage the last-named pawl to cause it to release the ratchet-disk.

5. In a device of the class described, the combination with the operating-shaft, of an operating contact-lever adapted to stand normally in a predetermined position, of a lug on said shaft, means for limiting the lateral movement of said lug under influence of pressure contributed to the contact-lever, a pivoted block adjacent said lug, and springs carried by said block and exerting opposite pressure on the said lug to return it to its normal position.

6. In a device of the class described, the combination with the visual elements of a ratchet-disk having connections therewith and provided with radial recesses in its periphery, of an oscillatory disk adjacent said ratchet-disk provided with a pawl adapted to engage the ratchet-disk and contribute motion thereto when the oscillatory disk is moved in one direction from its normal position, a ratchet-lever adapted to engage the ratchet-disk and retain it against return movement when the influence of the pawl is removed, means for removing the influence of the ratchet-lever, and means for limiting the movement of the ratchet-disk when the influence of the ratchet-lever is removed.

7. In a device of the class described, the combination with the ratchet-disk having connections with the visual elements, of an oscillatory disk provided with a pawl adapted to contribute motion to the ratchet in one direction, means for simultaneously storing up retrograde energy, a ratchet-lever adapted to retain the ratchet against retrograde movement, a shoulder on the oscillatory disk adapted to operate the ratchet-lever to release the ratchet, and a stop carried by the oscillatory disk to engage the ratchet after its release by the ratchet-lever to limit its movement.

8. In a device of the class described, the combination with the visual elements of a ratchet-disk having connections therewith, of an oscillatory disk adjacent said ratchet-disk adapted to contribute motion to the ratchet-disk, said oscillatory disk having a pin upon its face, and an alarm having operating mechanism extending into the path of the said pin and adapted to be operated by the latter when it is moved in either direction due to oscillation of its disk.

In testimony whereof I affix my signature in presence of two witnesses.

OTIS J. MERRITT.

Witnesses:
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ROBT. S. BRAGAM.