June 11, 1929. A. CORSO 1,716,575

AUTOMATIC STATION INDICATOR

Filed Oct. 28, 1926 2 Sheets-Sheet 1

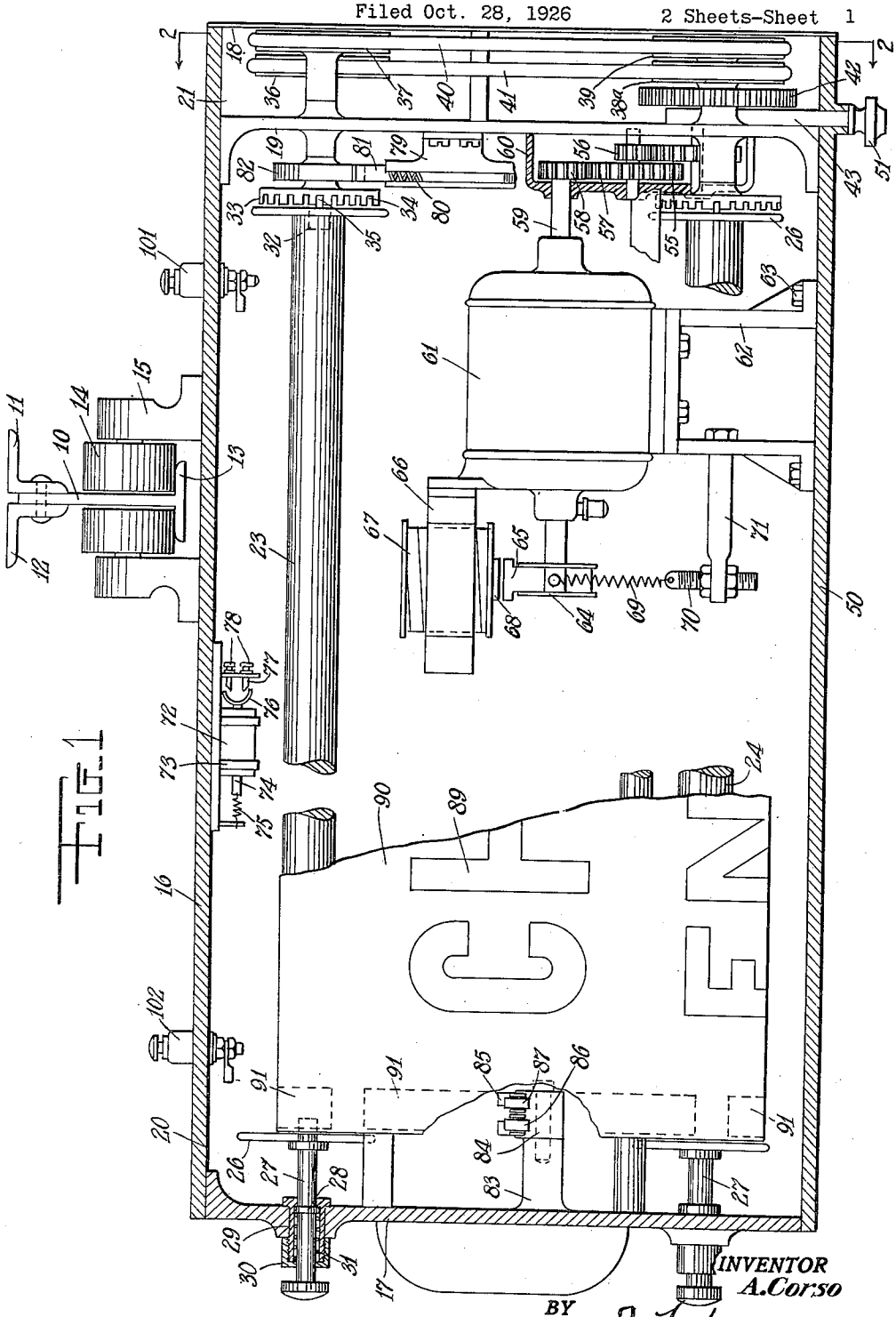


FIG. 1

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FIG. 3

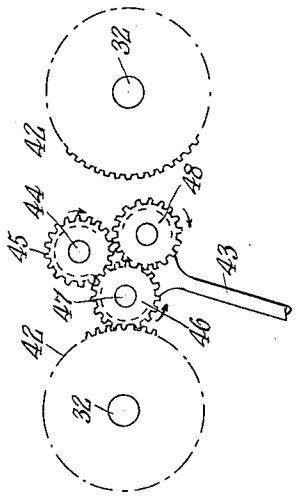


FIG. 4

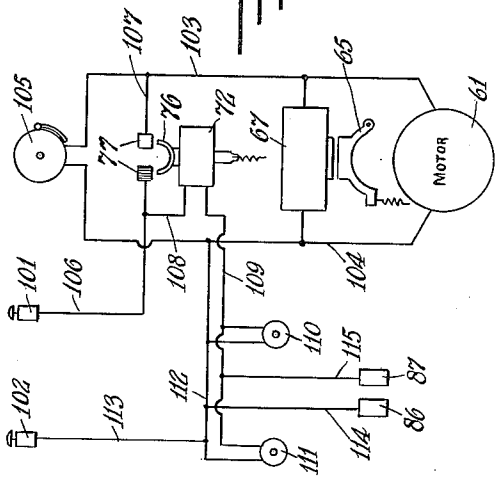
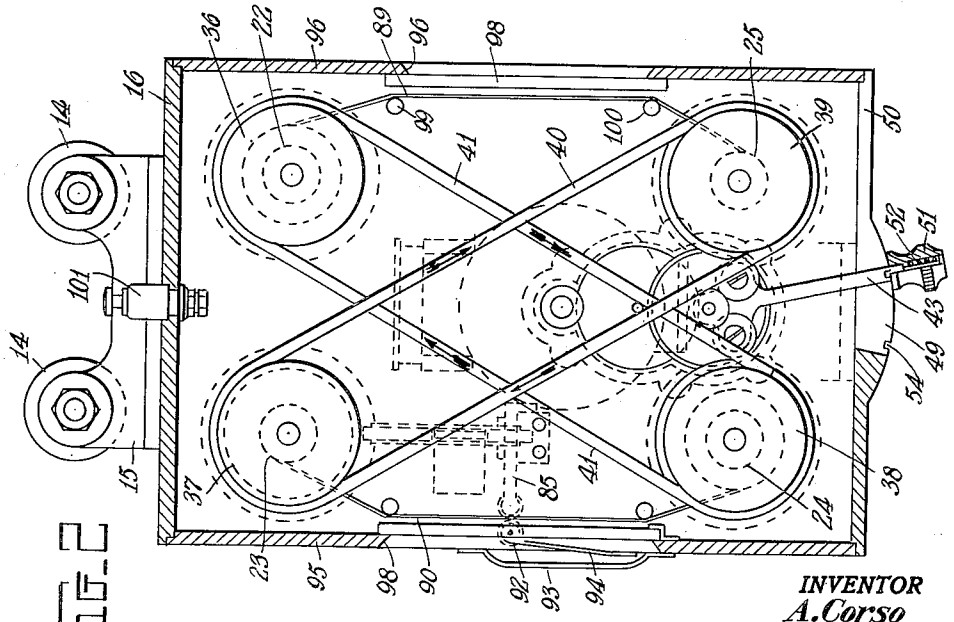


FIG. 2



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Patented June 11, 1929. 1,716,575

UNITED STATES PATENT OFFICE.

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AUTOMATIC STATION INDICATOR.

Application filed October 28, 1926. Serial No. 144,716.

The main object of this invention is to provide a station indicator adapted for use in subways or in railroad trains or street cars, to indicate to the passengers the next station. The mechanism is entirely self-contained and functions automatically. It comprises a dual indicating means driven by a single motor and is further provided with an electrical wiring circuit, which causes the mechanism to automatically stop at a predetermined position to indicate the next station.

Another object is to provide a station indicator which has a mechanism for automatically shifting a lettered curtain a predetermined distance by means of an electrical circuit.

Still another object is to provide a station indicator having a dual mechanism which may be alternated so that as one of the units is paying out on one roll, the opposite unit is taking up on an opposite roll.

The above and other objects will become apparent in the description below, in which characters of reference refer to like-named parts in the drawing.

Referring briefly to the drawing, Figure 1 is a sectional elevational view of the station indicator.

Figure 2 is a cross sectional view taken on line 2—2 of Figure 1.

Figure 3 is an elevational view, showing the system of gearing employed to alternate the winding rolls.

Figure 4 is a wiring diagram of the device.

Referring in detail to the drawing, the numeral 10 indicates an inverted T-shaped track which is installed and runs thru the length of a car or pullman. This T-shaped track is suspended from angle irons 11 and 12 which have one of their arms attached to the roof or other convenient portion of the car in which the station indicator is to be installed. The flange 13 of the T-shaped track serves as a runway for a pair of rollers 14 which are mounted on a shaft between brackets 15, the latter being secured to the roof 16 of a casing in which the entire station indicator mechanism is contained. An end wall 17, an additional end wall 18, and an intermediate wall 19, separate the chamber of the casing into a relatively long compartment 20 and a smaller one 21. Within the larger compartment 20, two pairs of rolls indicated by the numerals 22, 23, 24, and 25, are situated. These rolls are demountably fastened in place and at both ends are provided with flanges 26. One of the ends of each of these rolls is supported on a slidable spindle 27, which has a shoulder 28 intermediate its length. The shoulder is slidable in the chamber of a shell 29 closed at one end by a cap 30. Within the chamber a coil spring 31 is provided which engages the shoulder 28 and yieldably urges the spindle 27 toward the roll. The spindles enter into recesses provided in the ends of the rolls for the purpose of rotatably positioning said rolls. The opposite ends of the rolls are mounted by being slipped upon the ends 32 of additional spindles. These spindles have disks 33 mounted rigidly on their ends in which radial grooves 34 are provided. Any of these grooves are adapted to receive a pin 35 which is mounted on the face of the flanges 26 adjacent the disks 33. The spindles 32 are of sufficient length to extend from both sides of the intermediate wall 19 and rotatably pass thru lugs integral with this wall. These spindles extend into both chambers 20 and 21, one end being used to support the rolls 22, 23, 24, and 25, while the opposite ends have pulley wheels 36, 37, 38, and 39, secured rigidly thereto. The pulleys 37 and 39 are connected by an endless belt 40 and the remaining two pulleys 36 and 38 are connected by a belt 41.

The spindles to which the pulleys 38 and 39 are attached also have gear wheels 42 secured thereto. These gear wheels 42 are spaced apart from each other a small distance and in this space existing between the gear wheels, a driving alternating mechanism is located. This alternating mechanism consists of an arm 43 which is pivoted on a stud 44. The stud 44 also carries rigidly therein a pinion 45 which meshes with an additional pinion 46 mounted on the stud 47 and this pinion 46 in turn meshes with a third pinion 48, the latter meshing only with the pinion 46. These pinions are positioned as a pyramid and the teeth of the pinion 48 engage the teeth of the gear wheel 42 when the arm 43 is swung toward this gear 42 and the opposite pinion 46 engages and meshes with the teeth of the opposite gear wheel 42 when the arm 43 is urged in an opposite direction. It is to be noted that the direction of rotation of the pinion 46 is reversed to that of the pinion 48 so that when they are in mesh with their respective gears, they rotate these gear wheels 42 in opposite directions. The arm extends downwardly thru a slot 49 in the bottom 50 of the casing projecting beyond a lower

curved surface. This projecting portion of the arm 43 has a slidable nut 51 thereon in which an annular chamber is provided, which chamber receives a coil spring 52 which yieldably urges member 51 into contact with the curved surface of the bottom 50. A pin engages in recesses 54 and the cooperation of the pin on member 51 with the recesses locks the arm in position so that either of the pinions 46 and 48 engage and mesh with their respective gears 42.

The stud 44 on which the pinion 45 is rigidly mounted, extends thru the intermediate wall 19 and has a gear 55 rigidly mounted thereon. This gear meshes with an intermediate pinion 56 on another shaft, and adjacent this pinion, a gear wheel 57 is mounted on the same shaft. Said gear wheel 57 meshes with a pinion 58 mounted on the end of a motor shaft 59. All of the gears indicated by the numerals 55, 56, 57, and 58, are enclosed in a housing 60 within the chamber 20. The motor 61 is mounted upon a stand 62 which latter is secured to the floor 50 of the casing by bolts 63.

The opposite end of the motor shaft 59 is provided with a grooved pulley 64 and the periphery of said pulley normally has, when no current is passing thru the circuit and energizing the mechanism, a semi-circular yoke 65 formed of magnetic iron seated thereon. Straps 66 position a solenoid 67 above the yoke 65 and the plunger 68 of said solenoid is adapted to lift the yoke clear of the periphery of the pulley 64 against the tension of a spring 69, which has its respective ends connected to said yoke and to an adjustable screw 70 projecting upwardly from a bracket stud 71.

An additional solenoid 72 is mounted in straps 73 and suspended from the roof 16 of the casing. This solenoid has a plunger 74 which is normally retracted by a spring 75. The opposite end of the plunger has a curved plate 76 which contacts with pins 77 and closes a circuit thru terminals 78.

A housing 79 is mounted beneath the roll 23 and is provided with a hollow chamber in which a spring 80 is retained. Said spring urges a plunger 81 upwardly into contact with the periphery of a collar 82, which is mounted upon the spindle 32 supporting one end of the roll 23.

A lug 83 extends inwardly from the wall 17 in a horizontal direction and has attached to its end a bracket 84 from which an arm 85 projects toward one side of the casing. This arm 85 is bifurcated at its end, forming a double pair of forks between which rollers 86 and 87 are rotatably mounted. The rolls 22 and 25 are connected by a curtain 88 upon which literal characters, indicative of the stations, are printed or painted. The rolls 23 and 24 are similarly joined by a curtain 90 having the same characters in their same relation or accordingly as needs require. The marginal edge of the curtain 90 has a plurality of metallic conducting strips 91 fixed to its underside. These strips are placed end to end and are separated from each other by spaces upon which the peripheries of the rollers 86 and 87 may contact. One of these strips is attached to the underside of the curtain 90 opposite each row of characters 89 to retain the underside of the curtain 90 in contact with the periphery of the rollers 86 and 87. An additional roller 92 is provided in a housing 93 and is flexible on the end of a tongue 94, which latter is secured at its lower end to a side wall 95 of the casing and is adapted to yieldably urge the curtain toward the rollers 86 and 87. The side walls 95 and 96 comprise part of the casing and have rectangular openings 97 therein which are covered by a transparent glass 98. Guide rods 99 and 100 are provided behind each curtain 88 and 89 and serve as a means for guiding the intermediate surface of the curtain across the area of the transparent glass 98. A pair of terminals 101 and 102 are fixed on the roof 16 of the casing and lead a line current into the casing so that a circuit may be formed between the various electro-mechanical elements contained therein.

The electrical wiring of the apparatus is indicated in Figure 4. Line current is supplied at the exterior terminals 101 and 102. From the exterior terminal 101 a wire 106 leads to one pole 77 of the circuit closer 76—77; the opposite pole 77 is connected thru leads 107 and 103 to one side of the motor 61; the other side of this motor is connected thru leads 104, 112, and 113 to the other line terminal 102. It is therefore apparent that the motor will be energized upon bridging of the poles 77. This is accomplished thru the bridge 76 attached to the core of the solenoid 72; the latter is connected across the line terminals thru leads 108 and 106 on one side, and lead 109, push buttons 110 and 111 (in parallel) and lead 113. Upon depression of either push button, the solenoid is energized, thereby urging the bridge 76 in contact with the poles 77 and energizing the motor 61. At the instant the motor circuit is energized by the current passing thru the wires 103 and 104, the solenoid 67 is energized and its core 68 lifts the yoke 65 against the tension of the spring 69 releasing said yoke from braking contact with the drum 64. At such time when the device is at rest, an area of paper lies between the rollers 86 and 87. As soon, however, as the motor begins to rotate, the paper is moved and one of the metal strips 91 is brought into contact with said rollers. At the instant this occurs, the button may be released, and the circuit thru the solenoid 72 is kept closed by means of the shunt circuit thru the rollers 86 and 87, the latter circuit being parallel with the

button shunt circuits. Thus the motor continues rotation until the metal strip 91 has passed the rollers, and as soon as the next paper area arrives between said rollers, the solenoid circuit is opened, the bridge 76 is withdrawn from contact with the poles 77, and the motor is de-energized.

The rolls 22 and 24 constitute one pair and the remaining rolls 23 and 25 constitute a second pair. The rolls 22 and 23 are mounted in the upper portion of the housing, and as either of the upper rolls pay out, which they do alternately, the lower rolls, to which the upper rolls are connected, take up. The roll 23 cooperates with the roll 24 by being joined by the curtain 90 which passes across the opening in the wall 95. The opposite rolls 22 and 25 have the same organization. As the roll 23 is rotated by the belt 40 in the direction indicated by the arrow, the curtain is taken up on this roll 23 and is paid out from the roll 24 immediately below it. The roll 24 having the pulley 38 thereon communicates a paying out rotation to the roll 22, as indicated by the directional arrow shown on the belt 41. When either of the upper rolls 22 or 23 take up or pay out, which they do alternately, the lower rolls, either 24 or 25 pay out in an alternate manner. Reversal of these rolls is made possible thru the mechanism illustrated in Figure 3. This mechanism consists of a pivoted arm upon which the trio of pinions 45, 46, and 48, are rotatably mounted. The pinions 45 and 48 are intermeshed thru an intermediate pinion 46. The pinions 46 and 48 are adapted to alternately mesh with the teeth of either one of the gears 42, which latter are mounted on the lower shafts supporting the rolls 24 and 25. As the arm is moved toward the left of the device, the intermediate gear 46 rotating in one direction meshes with the gear 42 mounted on the stud supporting the roll 24 and when the arm is moved in an opposite direction, the pinion 48 which revolves in a direction in reverse to the pinion 46 engages the opposite gear 42 mounted on the stud supporting the roll 25. In this manner by simply releasing the catch 51 exterior of the casing and moving the arm in either direction, reversal of the rotation of the rolls is possible. When the electrical circuit energizing the mechanism is open and the rollers 86 and 87 locate themselves in the spaces between the strips 91, the device would continue to rotate were not the brake provided. This brake consists of member 82, which is contacted with by a plunger 81, forming a spring tensioned track, constantly in contact with the disk 82. The motor is also effectively braked when the circuit has been opened thru the device by permitting the spring 69 to pull the yoke 65 downwardly.

It is to be noted that certain changes in form and construction may be made without departing from the spirit and scope of the invention.

I claim:

1. In a station indicator, a casing, a pair of sets of rolls rotatable in said casing, each set comprising an upper and a lower roll, pulleys mounted on the ends of said rolls, belts connecting diagonally opposed pulleys, said belts connecting the upper roll of one set with the lower roll of the opposite set for simultaneously taking up on the lower roll of one set and taking up on the upper roll of the opposite set, gears mounted on the lower rolls of both sets, swinging means between the gears for reversing the rotation of the lower rolls of both sets and a motor operatively connected to said gears.

2. In a station indicator, a pair of sets of rolls rotatable in said casing, pulleys on said rolls, belts extending diagonally from the upper roll of one set to the lower roll of the opposite set, gears mounted on the lower rolls of both sets, a pivoted member adapted to swing between said gears, a gear on said swinging member adapted to mesh with either of said gears of the rolls.

In testimony whereof I affix my signature.

CORSO, ANTONIO.