

March 9, 1937.

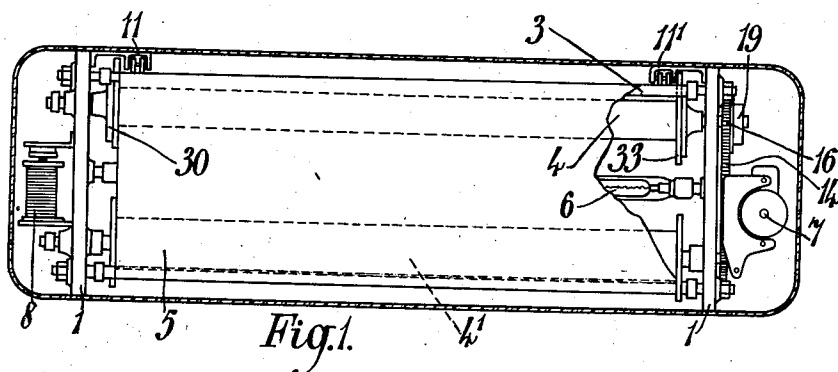
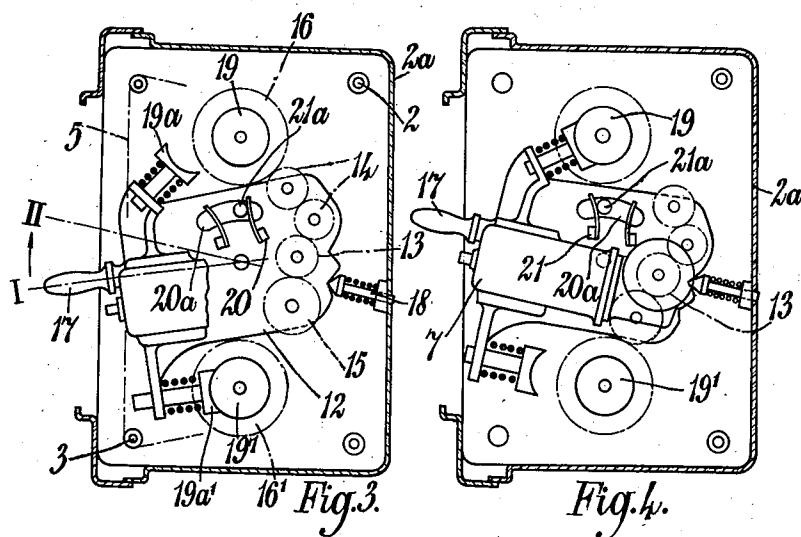
R. ZINTER

2,073,437

STOPPING PLACE INDICATOR FOR VEHICLES

Filed Oct. 25, 1935

2 Sheets-Sheet 1



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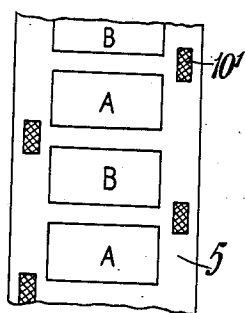
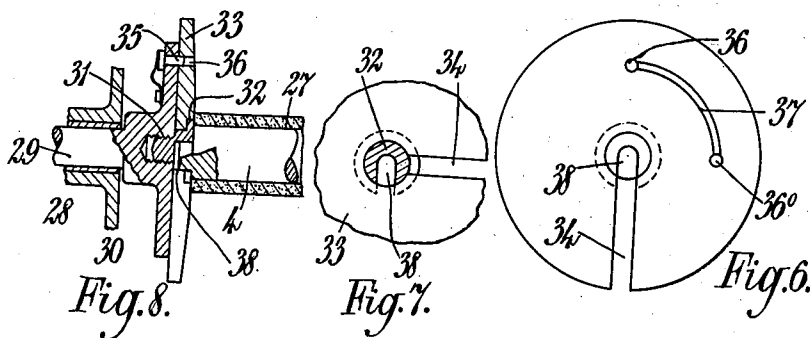
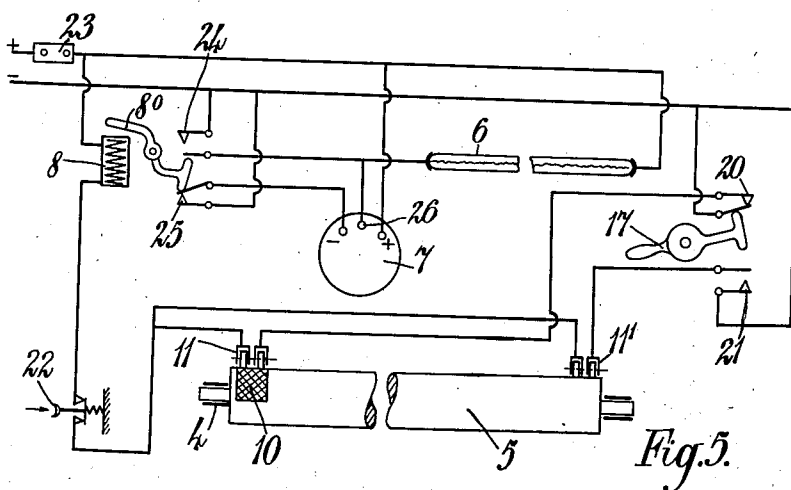
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**2,073,437**

# STOPPING PLACE INDICATOR FOR VEHICLES

Filed Oct. 25, 1935

2 Sheets-Sheet 2



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## UNITED STATES PATENT OFFICE

2,073,437

STOPPING-PLACE INDICATOR FOR  
VEHICLES

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6 Claims. (Cl. 40—53)

This invention relates to a stopping-place indi-  
cator, more particularly for large public vehicles,  
such as railway trains, tram cars and omnibuses,  
in which a band bearing the names of the stop-  
ping places is advanced stepwise, preferably by  
electrical means, after each halt, so that the  
name of the next stopping place appears in a  
window aperture in the casing that encloses the  
apparatus. Devices of this kind hitherto known  
exhibit defects which prevent them from being  
extensively adopted. In particular the known  
devices are comparatively complicated, the oper-  
ation thereof is troublesome, and they are not  
sufficiently adaptable to the requirements of  
traffic operation.

Thus for example the same series of inscrip-  
tions can only be used for the outward and re-  
turn journeys with such an indicator when the  
route and the stopping places for both directions  
of travel are identical, which, however, is very  
frequently not the case. In order to obviate this  
difficulty it has been proposed to provide upon  
the band two series of inscriptions one after the  
other, one for the outward journey and the other  
for the return journey, the band being fed for-  
ward during the return journey in the same  
direction as during the outward journey. Under  
these circumstances, however, after returning to  
the starting point of the journey, this double  
length has to be rewound, which occupies a good  
deal of time and causes considerable inconven-  
ience. In many cases, for instance circular routes  
or reversing loops, there is not the requisite time  
available for winding back the name bands at the  
terminal stations. Frequently, particularly dur-  
ing rush hours or on holidays, only a part of the  
route is traversed. It is then necessary, in the  
case of bands with successive rows of inscriptions,  
when turning back, to run the unwanted inscrip-  
tions past the window aperture before restarting.

Even where the stopping-place indications for  
the outward and return journeys are the same,  
however, the known devices are found disadvan-  
tageous when each stopping-place indication is  
combined with an advertisement, for then the  
same advertisement appears at each stopping  
place in both directions of travel.

In the indicating apparatus according to the  
present invention all the difficulties hereinbefore  
set forth are overcome and the disadvantages  
mentioned are obviated. This result is primarily  
attained by providing all the inscriptions or a  
portion of them for both directions of travel or  
winding devices alternately one after the other

upon the winding band, and so constructing the  
controlling means for the drive that the whole of  
the band, or the portions thereof required, is fed  
forward in double steps. For the controlling of  
the band there serve according to the invention  
metallic fittings provided along one margin and  
along the other margin of the band alternately,  
these fittings co-operating with stationary con-  
tacts.

The indicating apparatus incorporating the  
features indicated can be so constructed by simple  
means that upon starting the return journey,  
irrespective of whether the entire distance or  
only a portion thereof is traversed, it is merely  
necessary to throw over a switch lever. The same  
applies on circular routes after traversing half  
the distance. The band then runs in the opposite  
direction, but stops at the inscriptions pertain-  
ing to the return journey in the correct sequence.  
In the event of any stoppages being omitted the  
metallic fitting corresponding thereto is removed  
or is covered over by an insulating strip of paper,  
without any difficulties arising in the winding in  
the latter case, even when a group of metallic  
mountings are covered, for the spaces for the  
names of the stops give ample clearance at the  
margins of the moving band for the provision of  
as many cover strips as may be required. In  
particular, the adoption of the metal contacts  
mounted upon the band, which are considerably  
more advantageous than the known slots, is only  
rendered possible by the arrangement of the  
name spaces, and particularly by the alternating  
sequence thereof. With the ordinary arrange-  
ment the contacts would have to be aligned along  
one side, which would result in winding the band  
askew. Where the same inscriptions are to be  
employed for both directions of travel, two con-  
trolling devices are provided, that is to say, two  
metallic mountings, opposite the inscriptions in  
question.

Further features and advantages of the inven-  
tion will be gathered from the constructional  
examples hereinafter described and illustrated in  
the accompanying drawings, in which

Figure 1 is a general view of indicating ap-  
paratus according to the invention;

Figure 2 shows on a smaller scale a portion of  
a winding name band for use therewith;

Figures 3 and 4 show on a larger scale end  
views of the apparatus from the driving side,  
with the reversing gear in two different positions;

Figure 5 is a circuit diagram of the electrical  
apparatus, and

Figures 6, 7 and 8 show on a larger scale the

means for securing the removable winding roller.

As will be seen from the drawings, the construction of the apparatus is comparatively simple and clear. Two end plates 1 are held at the correct distance apart and in the correct relative positions by cross bars 2 and by a casing 2<sup>a</sup>, preferably pressed out of sheet metal, to which they are screwed. In the neighbourhood of the two front corners the end plates carry connecting rods or deflecting pulleys 3 for the band.

Between the two end plates are fitted two rollers 4 and 4', which serve for winding up and unwinding the moving band or strip 5. Between the two winding rollers 4 and 4' there is a source of light 6, which illuminates the name band 5 from behind, and which may consist for example of a soffit lamp or strip of light or of a row of lamps. The mechanical and electrical appliances are arranged mainly on the outer sides of the end plates 1, in sections of the casing 2<sup>a</sup> projecting laterally beyond the end plates. From Figure 1 it will be seen that a motor 7 and wheel gearing are arranged at one end of the apparatus, and a switch relay 8 and other electrical appliances, for instance a series resistance or potentiometer, not shown, on the other side of the apparatus.

This mounting of all the important parts on the end plates enables the parts to be easily and accurately fitted together.

The construction of the winding band, which is not illustrated in Figure 1, is shown in Figure 2. Upon this moving band, which preferably consists of a sort of thin tracing linen, the sections or compartments 9 bearing the inscriptions that indicate the names of the stopping places are arranged in alternating sequence, so that the compartments A pertain to one direction of travel, and the compartments B to the other direction. On both sides of the inscription sections there are metallic fittings, 10 and 10', which are preferably stuck on in the form of thin foil, or else applied by a spraying process. They are arranged alternately beside the spaces between the adjacent edges of the inscription compartments. The metallic mountings co-operate with pairs of contact rollers 11, 11', shown in Figure 1, and form a conducting bridge for one of the pairs of rollers at a time, which is switched into the circuit according to the direction of travel.

Figures 3 and 4 show how the driving of the winding rollers 4, 4' is effected. The motor 7 is mounted upon an oscillatable plate 12, and drives, through a reducing worm gear, a spur wheel 13, likewise mounted upon the oscillating plate 12, this spur wheel 13 meshing, in the position I, through a pair of intermediate wheels 14, with a driving wheel 16 of the roller 4, or, in the position II, through an intermediate wheel 15, with a driving wheel 16' of the winding roller 4'. In this manner either the upper or the lower winding roller can be driven, the direction of rotation being opposite in the two cases, as soon as the plate 12 is thrown over by means of a handle 17 and secured in the operative position by an automatically engaging catch 18. Upon the swinging plate are also mounted resilient brake blocks 19<sup>a</sup>, 19<sup>a'</sup>, which co-operate with brake discs 19, 19' fitted to the ends of the winding rollers. In the position I the lower braking appliance is in operation, and in the position II the upper one, so that the roller from which the moving band is being unwound has to overcome a certain frictional resistance, whereby the band is kept taut between the rollers. Furthermore there are upon the swinging plate two contacts 20, 21, which bear

alternately, according to the position into which the plate is shifted, on a fixed coating contact, illustrated by way of example as a pin 21<sup>a</sup> extending through a slot 20<sup>a</sup>, and serve to switch one or other of the pairs of contact rollers 11, 11' into the circuit.

The method of working of the apparatus can be most easily followed by referring to Figure 5. By depressing a button switch 22, which is preferably located within reach of the driver of the vehicle, the current, obtained for instance through a resistance 23, for the relay 8, which is attracted when in a state of rest is interrupted, so that its armature 8<sup>c</sup> falls off. The armature thereby opens contacts 24, and thus interrupts the circuit for the source of light 6, while at the same time it closes contacts 25, and thereby switches on the electric motor 7. The motor, in the position of the handle 17 shown in Figure 5, now drives the upper winding roller 4, through the medium of the wheels 13, 14 and 16, while the lower roller 4' is rotated by the band, its movement being braked by the brake shoe 19<sup>a'</sup>. When the push button 22 is released, the circuit for the relay 8 is at first still not closed, because both pairs of rollers 11 and 11' are out of contact. The advancing movement waits until the next name space but one has reached the window aperture of the apparatus. At the same moment the particular pair of contact rollers that is in circuit touches the next succeeding metallic coating—in the position of the reversing device 20, 21 represented in Figure 5 the pair of rollers 11 is working—as a result of which the circuit for the relay 8 is closed again, and its armature is attracted. The switch contact 25 of the motor circuit is opened, while at the same time the contact 24 is closed again. The light 6 is hereby switched on, and at the same time a short-circuiting device for the motor, connected at 26, is put into operation, which brakes the motor and brings it to a standstill without delay, so that the inscription appears exactly in the centre of the window aperture. This short-circuiting braking has the advantage that no intervening spaces are needed between the inscription fields or sections, and the length of the band can therefore be fully utilized.

At each depression of the switch button 22 this series of operations is repeated, and the band is fed one double step forward. The contact rollers 11, 11' are secured to resilient carriers, not shown.

When at the end of the journey or at any selected stopping place the return journey is to be started, all that is necessary is to rock the lever 17 out of the position I into the position II, as shown in Figures 3 and 4. The contact 20 is then opened, and the contact 21 closed. Since, however, the pair of rollers 11' is not bridged over, the relay circuit is interrupted by the reversal, so that the armature falls off, and changes over from the lighting to the motor. The travelling band is set in motion, the roller 4' being now driven in the opposite direction through the medium of the toothed wheels 15 and 16', and the roller 4 being braked. As soon as the band has moved one division back, the rollers 11', which are now operative, run on to a metallic element, whereby the band is stopped in the manner previously described. The further return movement is effected at each depression of the switch button in double steps as before.

If a stopping place is to be regularly skipped, the driver would have to depress the switch button twice at the appropriate interval of time,

which would seriously distract his attention and might even mislead the passengers. It is preferable to take away the associated metallic elements, or cover them by sticking a strip of paper over them, which can be done without difficulty. If a stopping place is shifted, or its name changed, it is only necessary to exchange the corresponding name section. These possibilities of alteration are of course only important when the band does not have to be drawn off the winding rollers, which remain in the apparatus, but can be taken out, along with the roller, after opening the casing, without any further dismantling of the apparatus.

In Figures 6, 7 and 8 a construction is illustrated by the aid of which that one of the winding rollers which carries the band at the end of the journey can be released in a simple manner from its end discs, which serve to guide the band. At both ends of the roller 4, which is provided with a coating 27, are provided axle journals 29, which are rotatable in bearing bushings 28, and which are integral with discs 30. In the axle journals 29 are inserted separate carrying sheaths or tubular linings 31, which are provided on the free end with a small flange 32. The aforementioned end discs 33 of the winding rollers are rotatable upon this tubular sheath and are also held by the flange 32. The sheath 31 also serves for the reception of a pin 38, which is provided on the end face of the roller and which is square, polygonal or suitably flattened on two sides, and fits accurately into a cavity in the sheath, which is shown in Figure 7. The end disc 33 is provided with a slot 34, through which the pin 38 can be inserted. It can be clamped in two different positions by means of a spring pin 35 arranged in the disc 30 and two bores 36 and 36' preferably connected by a groove 37. In one position, shown in Figures 3 and 6, the slot 34 registers with the slot-shaped cavity of the sheath 31, so that the pin 38 can pass through the slot. In the other position, shown in Figure 7, the pin 38 that has been introduced into the sheath is locked, so that the roller is now irreplaceably connected for rotation with the axle journal 29 and the end discs 33.

Although the method of fastening of the inscription panel or section to the moving band need not cause any excessive thickening of the band at the connecting positions, and does not affect the roundness of the wound-up roll, particularly when the latter has attained a rather large diameter, the connecting places might cause some disturbance in the first few layers, and produce humps, which would then be reproduced throughout the entire roll. The coating 27 is provided, as shown in Figure 8, in order to obviate this, the said coating consisting of a particularly soft and resilient material, such as sponge rubber for example. When the band is being rolled up, the raised places, under the action of the braking pull, press into this readily yielding mass, so that the cylindrical form of the roll is preserved. In particular, the yielding coating, to which, moreover, the end of the band can easily be secured, prevents the winding of the band from going askew, and any distortion, such as might lead to tearing, is resiliently taken up.

It will be immediately obvious that the inscription fields or panels may contain advertising matter in addition to the names of the stopping places. The apparatus may indeed, if desired, be utilized for other indications also.

Many modifications of the constructional example described and illustrated are possible, and

in many cases are advantageous. Thus for example it is an advantage, for journeys with terminal stations, to provide at the end of the band a special inscription, which will remain visible during the stoppage at the terminal station, and which contains either indications concerning the route, or advertising matter chargeable at a relatively high rate. Furthermore, as already mentioned, it is not universally necessary to provide different labels or inscriptions for the two directions of travel, the controlling members, for instance the metal mountings, then being fitted on both sides of the inscriptions serving for both directions of travel. Even in the case of the terminal inscriptions it is preferable to proceed in this way, in order to be able to change over immediately after reaching the terminal station, without the motor moving the band one step further in the reverse direction of rotation.

The associated stopping-place and advertising inscriptions are preferably carried by separate strips, which are secured upon the moving band in the correct relative positions. By this means it is possible to change the advertising matter without taking off the stopping-place indications. By the provision of different inscription fields for the two directions of travel, it is possible to show different advertisements for the same stopping place according to the direction of travel.

I claim:

1. In a station indicator for vehicles, a pair of rollers, means for mounting said rollers adjacent to and parallel with each other, a band mounted on said rollers to be wound from one to the other, said band being marked off into equal spaces adapted to bear inscriptions, electrical means for winding said band from one to the other of said rollers by steps each step being equal to two of said spaces, said winding means comprising means for reversing the direction of said winding and said winding means being so constructed and arranged that the band is wound a distance equal to one of said spaces upon reversal and thereafter a distance of two spaces at each step whereby the units of one set of alternate strips are held between the rollers when wound in one direction and the units of the other set are held between the rollers when wound in the opposite direction.

2. In a station indicator for vehicles, a casing having a longitudinal opening therein, a pair of rollers mounted in said casing one above and one below said opening and parallel to each other, a band mounted on said rollers to be wound from either one to the other, said band being marked off into equal spaces, manually operated electrical means for winding said band on said rollers a distance equal to two of said spaces at each operation thereof, said winding means including reversal mechanism so constructed and arranged as to cause the band to be fed the width of one of said spaces when operated whereby the units of one set of alternate spaces are exposed at the opening of said casing when wound in one direction and the units of the other set of alternate spaces exposed when wound in the other direction.

3. In a station indicator for vehicles, the device as claimed in claim 1, in which the winding means includes metal contacts along both margins of the band separated a distance equal to two of said spaces in the direction of winding, said metal contacts on one side alternately placed with reference to the metal contacts on the other side, a motor, a circuit in which said motor is included, a second circuit including said metal contacts and

means for opening said first circuit when said metal contacts close said second circuit.

4. In a station indicator for vehicles the device as claimed in claim 1, in which the winding means includes an electrical winding motor a circuit therefor and means for opening and closing said circuit comprising two circuits connected in parallel each comprising a pair of contact rollers, a row of metal contacts on opposite margins of said band, a predetermined distance apart and adapted to electrically connect said contact rollers said metal contacts of one circuit alternating in position on the band with the metal contacts of the other circuit.

5. In a station indicator for vehicles, a pair of rollers, means for mounting said rollers adjacent to and parallel with each other, a band mounted on said rollers to be wound from one to the other, said band being marked off into equal spaces adapted to bear inscriptions, electrical means for winding said band from one to the other of said rollers by steps each step being equal to two of said spaces, said winding means comprising means for reversing the direction of said winding and

said winding means being so constructed and arranged that the band is wound a distance equal to one of said spaces upon reversal and thereafter a distance of two spaces at each step whereby the units of one set of alternate strips are held between the rollers when wound in one direction and the units of the other set are held between the rollers when wound in the opposite direction, said winding means including an electrical winding motor, a circuit therefor and means for opening and closing said circuit comprising two circuits connected in parallel each comprising a pair of contact rollers, a row of metal contacts on opposite margins of said band, a predetermined distance apart and adapted to electrically connect said contact rollers, said metal contacts of one circuit alternating in position on the band with the metal contacts of the other circuit, braking means for each roller and means for applying said braking means to the idle roller.

6. The device as claimed in claim 5 in which an electric light is mounted behind the band.

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