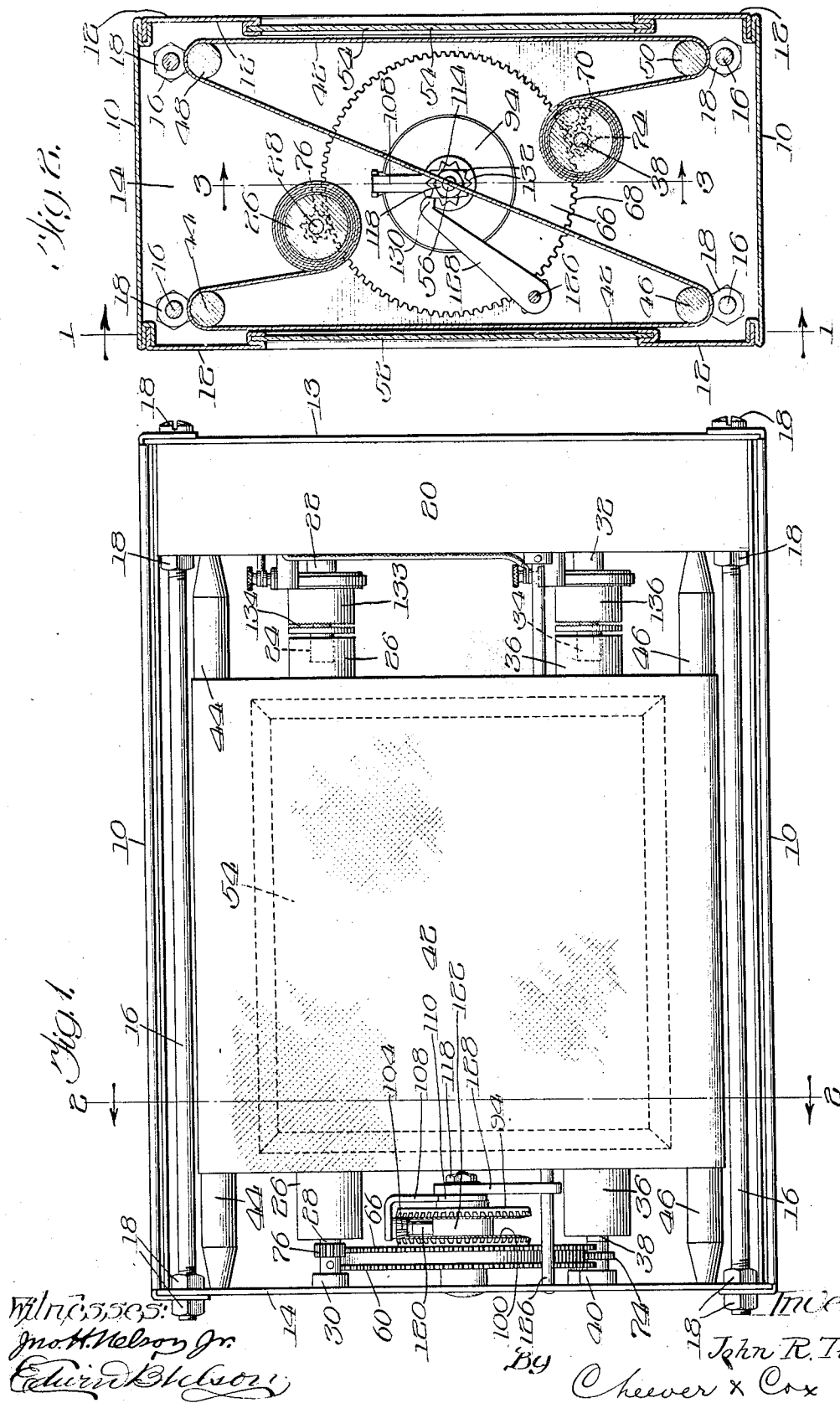


1,024,044.

2 SHEETS—SHEET 1.

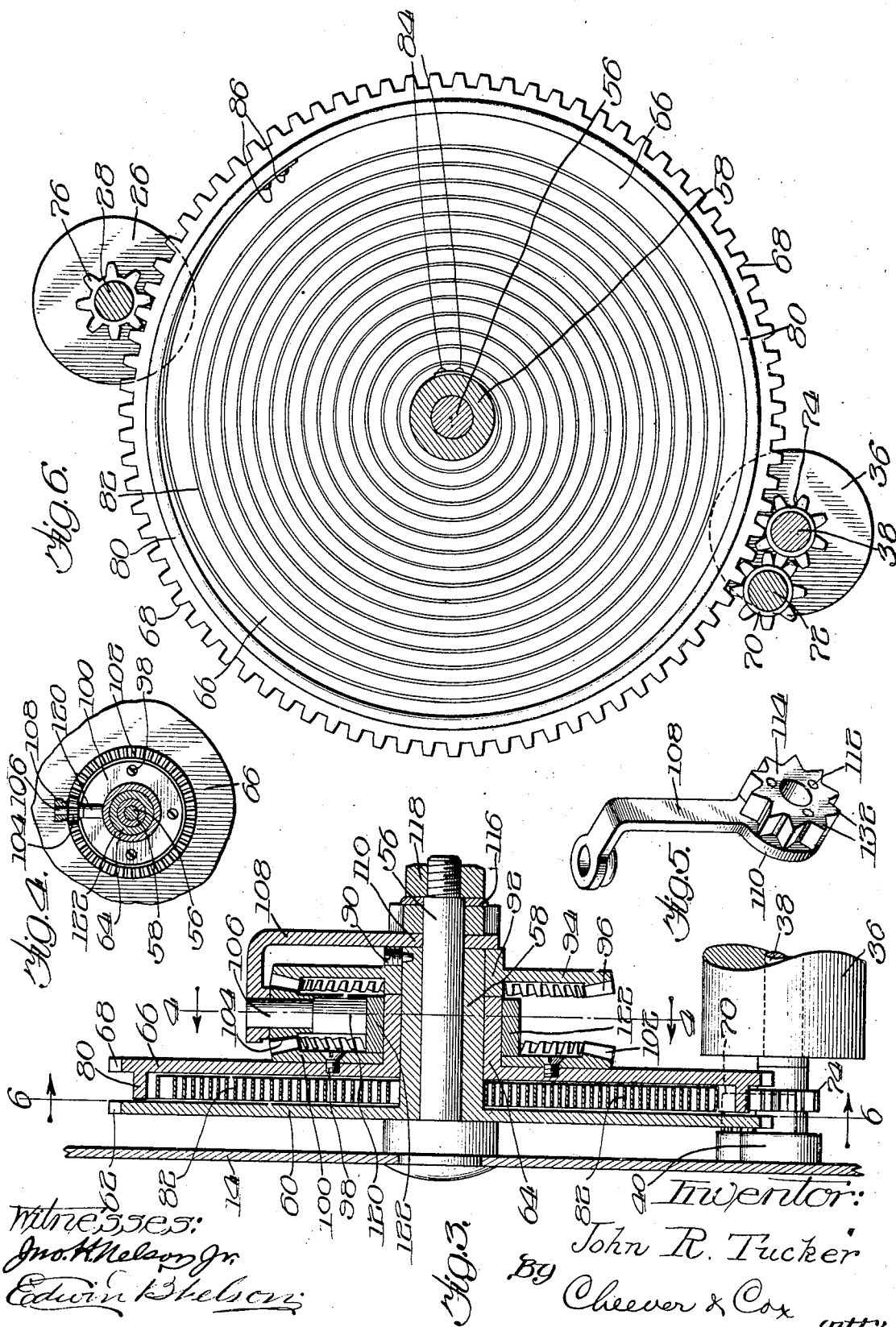


J. R. TUCKER.
STREET AND STATION INDICATOR.
APPLICATION FILED JULY 14, 1911.

1,024,044.

Patented Apr. 23, 1912.

2 SHEETS-SHEET 2.



UNITED STATES PATENT OFFICE.

JOHN R. TUCKER, OF AURORA, ILLINOIS, ASSIGNOR TO IPSON INDICATOR COMPANY,
OF SALT LAKE CITY, UTAH, A CORPORATION OF UTAH.

STREET AND STATION INDICATOR.

1,024,044.

Specification of Letters Patent.

Patented Apr. 23, 1912.

Application filed July 14, 1911. Serial No. 638,465.

To all whom it may concern:

Be it known that I, JOHN R. TUCKER, a citizen of the United States, residing at Aurora, in the county of Kane and State of Illinois, have invented a certain new and useful Improvement in Street and Station Indicators, of which the following is a specification.

This invention relates to devices for use on street cars, railroad trains, and the like, for indicating the station which the traveling vehicle is approaching so that passengers for that station may be ready to alight when the train or other vehicle arrives at that station, also to devices for showing different advertisements in succession. In prior devices in order to economize space a continuous strip of flexible material, such as canvas, or the like, is provided, wound upon two adjacent rolls within a box and the surface of the strip carries a list of consecutive names of streets or stations or advertisements, or both, adapted to be visible one at a time to the passenger in the interior of the car, or otherwise adjacent to the device, and the serious problem has been to cause the name bearing strip to always stop in such a position that one complete name or address, and nothing else, is visible to persons adjacent to the box. In other words, the problem has been to give this flexible material a uniform step by step motion, stopping between each step, whereby the successive street names or advertisements are successively visible to the occupants of the car and to insure the flexible material not stopping at points intermediate between two names, with the result that only a portion of each name is visible, with resulting confusion.

The object of this invention is to provide a device of the class described which is neat and compact in form and can be readily constructed and operated without getting out of order, in which the name bearing strip is within reasonable limits always stopped at the proper point, as described.

The invention consists in the use of a continuous name bearing strip having its opposite ends connected to suitable rolls onto and from which it is wound; in combination with a suitable source of power and an intermediate device controlled by both rollers on which the flexible material is mounted, adapted to shut off the power at the end of

each unit of length of travel of the name strip, with the result that successive signs or advertisements are displayed at the proper time.

More in detail, the invention consists in the specific form of mechanism for doing this work and in other features which will be fully claimed.

In the drawings, Figure 1 is a vertical side view of one preferred form of the mechanism, taken on line 1—1 of Fig. 2. Fig. 2 is a sectional detail end view taken on the line 2—2 of Fig. 1. Fig. 3 is a sectional detail view on substantially the line 3—3 of Fig. 2. Fig. 4 is a contracted detail view on the line 4—4 of Fig. 3. Fig. 5 is a detail view of a lever arm and pinion which will be hereafter described. Fig. 6 is a detail view taken on the line 6—6 of Fig. 3.

A suitable retaining box having top and bottom plates 10 and side walls 12 and end walls 13 and 14 is provided, the same being made of any suitable material desired, the particular form here shown being made of metal, and secured together by rods 16 and nuts 18. At one end of the device is a box 20 containing such suitable motor, mechanical or electrical, as the manufacturer may desire to provide. Its form is immaterial for the purposes of this invention.

Journaled within the box 20 and in a boss 22 extending outside thereof is a short motor shaft 24 connected within the box 20 to the motor. Journaled upon this shaft 24, as shown in dotted lines in Fig. 1, is a winding drum or roller 26, whose opposite end carries a shaft or spindle 28, which rotates in the boss 30 provided upon the inner wall 14 of the end frame. Similarly journaled inside the box 20 and in boss 32 extending therefrom is another short motor shaft connecting inside the box to the motor. Journaled upon the end of the shaft 34 is another winding drum 36 whose opposite end carries a shaft 38 journaled in a boss 40 upon the end frame 14. As clearly appears from the drawing the two rollers 26 and 36 are parallel to each other.

The street signs or advertisements heretofore referred to are placed at equal intervals upon the long strip of canvas or other suitable flexible material 42 provided for the purpose. This will be hereafter called the name strip. One end of this name strip is

secured by any suitable means to the surface of roller 26 and the opposite end is similarly secured to the surface of roller 36. The name strip 42 in passing from one roller to the other passes over a plurality of intermediate idle rollers 44, 46, 48 and 50 which are so arranged and disposed, as shown, that the name strip 42 passes on one side of the box adjacent to a window 52 and when it reaches the other side of the box passes adjacent to window 54. The street signs or advertisements are painted or printed on both sides of the name strip 42 in such a manner that when a given street or advertisement, as, for instance, "State street" appears opposite window 52 looking in one direction and visible to people on that side of the device "State street" will also appear at window 54 and be visible to persons on the other side of the device, this primarily so that the device may be used in the center of a long car and be read by occupants at each end of the car. These street signs or advertisements are placed at equal distances along the name strip 42, and the primary object of this invention is to provide a device which will automatically stop this name strip at equal intervals of travel along its length so that said signs will be successively displayed before the windows 52 and 54 and this is not an easy problem to solve because of the fact that the strip 42 winds onto one roller, as 26, as it winds off from the other roller 36, or vice versa, with the result that the rollers are constantly changing in diameter and consequently tend to irregularly feed the name strip 42 along its path of travel. The object is accomplished by mechanism which will now be described.

In the end frame 14, midway between the centers of the shafts 28 and 38, is rigidly secured by any suitable mechanism, such, for instance, that shown in Fig. 3, a stationary stud or shaft 56. Inclosing and journaled upon this shaft 56 is the hub 58 of a gear 60 provided upon its circumference with gear teeth 62. Journaled upon the outside of the hub 58 is another hub 64 of gear 66 of the same size as gear 60 carrying upon its circumference gear teeth 68 equal in number to teeth 62 on gear 60. The teeth 62 on gear 60 mesh with the teeth of an idle pinion 70 journaled upon a stud 72 secured to end frame 14. The idle pinion 70 meshes in turn with another pinion 74 on shaft 38 which carries roll 36. Similarly teeth 68 on gear 66 mesh with the teeth of a pinion 76 on shaft 28 which carries roll 26. The space between the gears 61 and 66 is closed by an annular flange or rim 80 rigidly secured to wheel 66 and just clearing wheel 60. The inclosed space thus formed between the two gear wheels 60 and 66 and this rim or flange 80 is occupied by a coiled spring 82 having one end secured by any suitable

means, such as pins or rivets 84, to the hub 58 of wheel 61 and the other end secured by any suitable means, such as pins or rivets 86 to the interior of the flange 80. This spring, therefore, makes a flexible connection between the gear wheels 60 and 66 and places a tension upon both of these gear wheels, which tends to hold the flexible name strip 42 tight upon the rollers 26 and 36 irrespective of the bulk of cloth which may be upon either such roller. The gearing heretofore provided and described connecting the gear wheels 60 and 66 permits them to rotate in the same direction and at the same speed when the outside diameters of the rollers 26 and 36 with the name strip 42 thereon is the same and at slightly different speeds in the same direction when such diameters of said rollers and cloth thereon are different for the reasons named. Rigidly secured to hub 58 by any suitable means, for instance, one or more countersunk screws 90 in the hub 92 is a bevel gear 94 having bevel teeth 96. Similarly rigidly secured to gear 66 by one or more screws 98 is a bevel gear 100 having bevel teeth 102 facing teeth 96 heretofore described. Meshing with gear teeth 96 and 102 is a bevel pinion 104 journaled upon a stud 106 upon one end of an L shaped lever 108, whose opposite end 110 has rigidly secured to it by any suitable means, as for instance, pins 112, a cam wheel 114; this end of lever 108 of the ratchet wheel being journaled upon stud 56 heretofore described and held in place thereon by a washer 116 and a nut 118. The stud 106 heretofore referred to is provided with an extension 120 which enters a collar 122 journaled upon hub 64. This collar 122 moves in unison with ratchet wheel or cam wheel 114.

Extending lengthwise of the frame and suitably journaled for the purpose is a rock shaft 126, whose right hand end, as viewed in Fig. 1, enters the box 20 heretofore referred to and is so connected to the starting device of the motor that when the shaft is rocked, as hereafter described, it will stop the motor. There are many means by which this may be done and they form no part of this invention and are accordingly not shown or claimed in detail. On the opposite end of this rock shaft 126 and in the same vertical plane as cam 114 is a lever 128 having a tooth 130 entering the teeth 132 of the cam 114.

On the motor shaft 24 is a clutch 133 adapted to be moved by any suitable means under the control of the operator; that is to say, by hand or by automatic machinery forming no part of this invention between two different positions, in one of which it does not engage roller 26 and the roller may freely rotate on the end of motor shaft 24 and in the other of which this clutch does engage the roller, as for instance, by ser-

rated teeth 134, in which position power applied to shaft 24 causes roller 26 to rotate. Similarly mounted upon motor shaft 34 is another clutch 136 adapted to be thrown into and out of position where it is connected to or disengaged from roller 36, with the result that said roller is rotated by the motor within the box or case 20. The motor shafts 24 and 34 are so connected to the motor in box 20 and arranged with reference to its gearing that whenever the operator throws in clutch 133 and thus rotates roller 26, the opposite clutch being disengaged from roller 36, the roller 26 will rotate and wind name strip 42 thereon, thus simultaneously pulling it off from roller 36, and that when, on the other hand, the operator throws clutch 136 in and clutch 133 out roller 36 will rotate with the opposite result, viz., that the name strip is wound onto roller 36 and pulled off from roller 26.

In the simplest form of operating the device let us assume that the street car, bearing the device, is just beginning its trip along a given street in which position roller 36 should be wound substantially full of name strip 42 and roller 26 should be substantially empty. The operator now throws in clutch 133 and throws out clutch 136, leaving them in this position throughout his trip which the car is about to make. In this position the words indicating the first street to be reached will be upon the name strip 42 and adjacent to the respective windows 52 and 54. As the street car approaches the first intersecting street the conductor starts the motor within casing 20 by any suitable means, either by shoving a lever if the device is mechanical, pushing a button if the motor is electrical, or this may be done by an automatic device upon the track or trolley in a manner well known in the art. As soon as the motor starts roller 26 starts, thereby pulling upon the name strip 42 and tending to draw it off from roller 36. As the quantity of cloth on roller 26 is small the angular speed of the cloth going onto roller 26 will be much higher than that of the cloth coming off from the relatively large roller 36, which will consequently rotate much slower than roller 26. Gear 60 rotates in unison with roller 36, and, therefore, rotates slowly while gear 66 rotates in unison with roller 26, and, therefore, rotates rapidly. The speed of gear 60 is communicated to bevel gear 94 and the speed of gear 66 is communicated to bevel gear 100, both of which gears control opposite sides of pinion 104. As one of these gears is moving faster than the other the pinion 104 rotates on its axis at a speed which is the average of the speeds of the two gears and consequently moves about the center of stud 56 at a uniform angular speed. Whenever the outside diameters of the roller 36 and 26

become equal the pinion 104 does not rotate on its axis but moves at the same speed about the pinion 56. In other words, the rotative speed of the pinion 104 varies from zero to a considerable quantity, depending upon the difference in speeds of the gears 60 and 66 but it always revolves around the shaft or stud 56 at a uniform speed. The teeth 132 of the cam 114 are so spaced and shaped that whenever a quantity of the name strip 42 equal to the window 52 or 54 has passed that window a tooth 132 will engage tooth 130 on lever 128 and thus rock shaft 126 a sufficient amount to stop the motor within the casing 20. During the movement of the name strip 42 which has taken place between the starting of the motor and this movement the wording for the next street which the car is approaching has traveled to a position where it is in front of the window 52 and the corresponding wording has traveled to a position where it is in front of the window 54. As soon as the motor thus stops the machine the signs in front of the respective windows become stationary and remain so until the car approaches the next street, when the motor is again started, thereby again setting in motion roller 26 and repeating the operation and causing it to rotate until the next street name has come in front of the windows, when lever 128 is again operated and the motor is stopped. When the end of the line is reached the operator at the time of reversing his car for the return trip throws in clutch 136 and throws out clutch 133, with the result that each starting of the motor causes a predetermined definite portion of the name strip 42 to move in the opposite direction from that which took place during the first operation just described and the street names are thus consequently shown in succession but in reverse order corresponding to the direction in which the car is moving.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent is:—

1. In a device of the class described, in combination with a name strip, rollers to which opposite ends of the name strip are attached, a source of power for driving one roller, and a device movable by the joint action of said rollers and directly proportional to the movement of the name strip adapted to disconnect the source of power after a predetermined length of name strip has been moved.

2. In a device of the class described, the combination of a name strip, rollers to which opposite ends of the name strip are attached, a source of power for driving one of the rollers, a gear moving in unison with each roller, a rockable lever carrying a pinion meshing with both of said gears in such a manner that its own rotation about its axis

varies in accordance with the relative speeds of the two gears, with the result that the angular movement of the lever is uniform, and means operated by the lever adapted to disconnect the source of power, as and for the purposes set forth.

3. In a device of the class described, the combination with a name strip, rollers to which opposite ends of the name strip are attached, a source of power for driving one roller, a pair of bevel gears rotatable upon a common axis, one gear for each roller and positively rotated thereby, a lever upon the same axis as the bevel gears having pivoted thereto a bevel pinion meshing with each of said bevel gears whereby the rotation of said pinion and consequently the rotation of said lever is influenced by the speed of rotation of the respective bevel gears, and means set in motion by the angular movement of said lever about its center adapted to shut off the source of power from said power driven roller.

4. In a device of the class described, the combination of a name strip, rollers to which opposite ends of the name strip are attached, a spring tension device connecting said rollers adapted to take up any slack in the name strip, a source of power for driving one roller, a device operated jointly by the direct action of each of said rollers and movable proportionally to the name

strip adapted to disconnect the source of power after a predetermined length of name strip has been moved.

5. In a device of the class described, in combination with a name strip, rollers to which opposite ends of the name strip are attached, a source of power for driving one roller a pair of concentric, independently moving gears adjacent to each other, one operated by each roller, a spring between said two gears having one end connected to one gear and the other end connected to the other gear, whereby a spring tension is placed upon the name strip, a pair of bevel gears having their toothed faces toward each other, one driven by each of said first mentioned gears, a bevel pinion meshing with said bevel gears, a lever journaled upon the same axis as said bevel gears and having said bevel pinion pivoted thereto, a cam carried by said lever, and means operated by said cam adapted to disconnect said source of power, whereby the name strip is stopped at the end of each predetermined length thereof, for the purposes set forth.

In witness whereof, I have hereunto subscribed my name in the presence of two witnesses.

JOHN R. TUCKER.

Witnesses:

HOMER J. WEBB,
GEO. CLIFFORD.