(No Model.) 4 Sheets—Sheet 1.

H. E. BISSELL.

STATION INDICATOR.

No. 261,825. Patented Aug. 1, 1882.

Fig. 1.

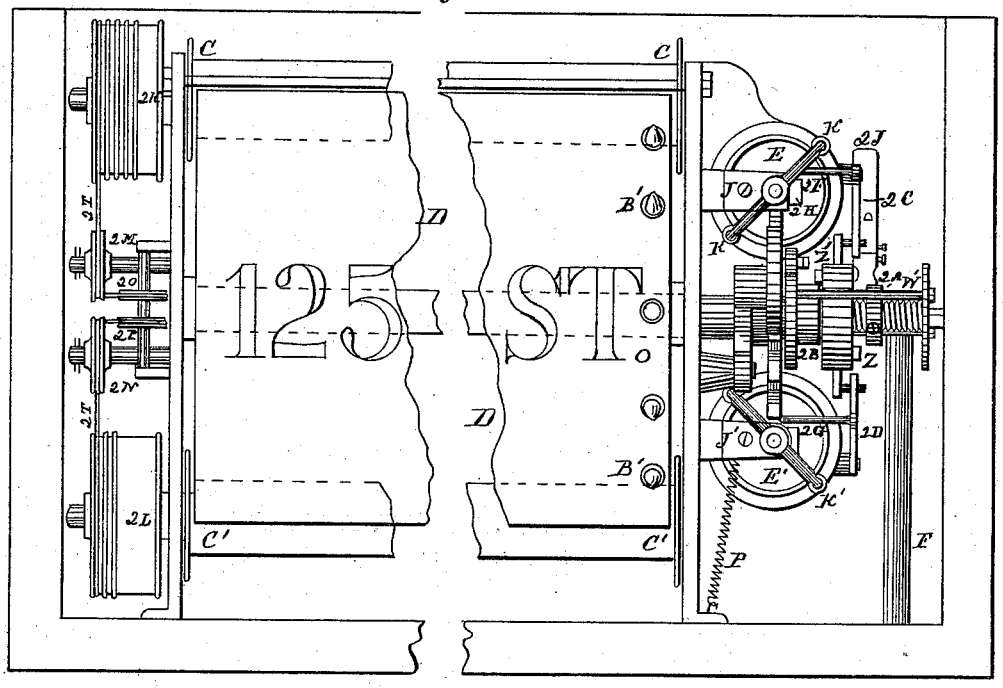
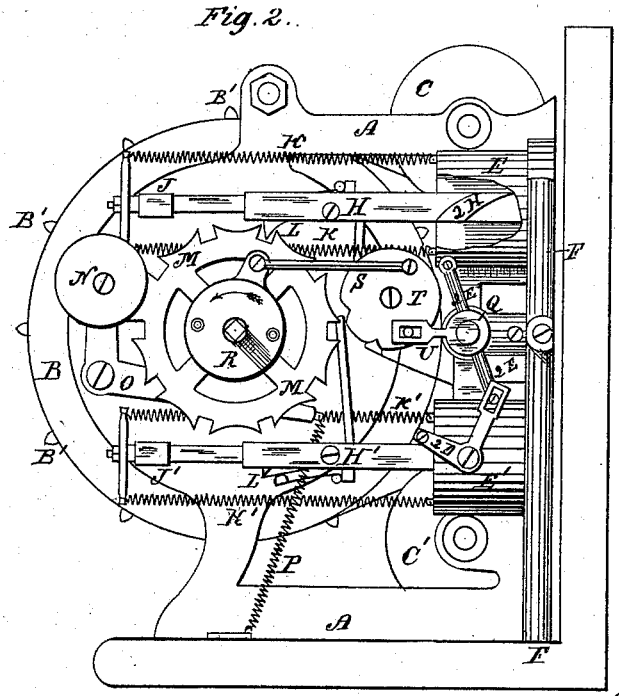


Fig. 2.



Witnesses.

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(No Model.) 4 Sheets—Sheet 2.

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Fig. 3.

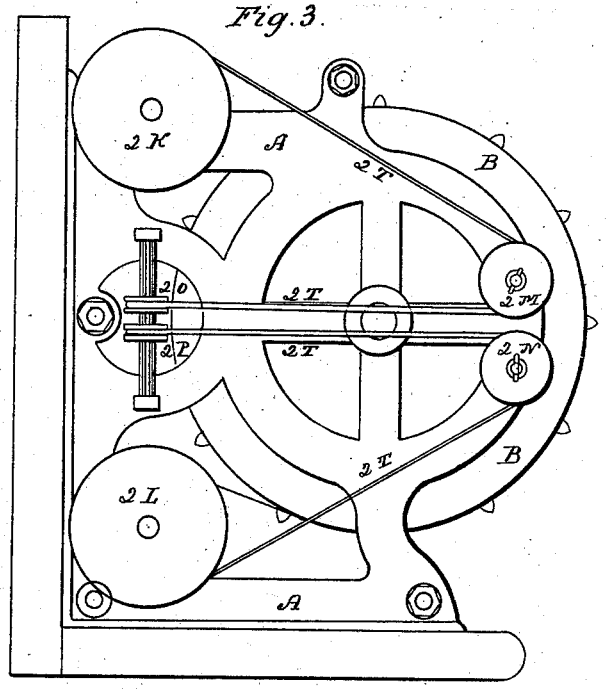
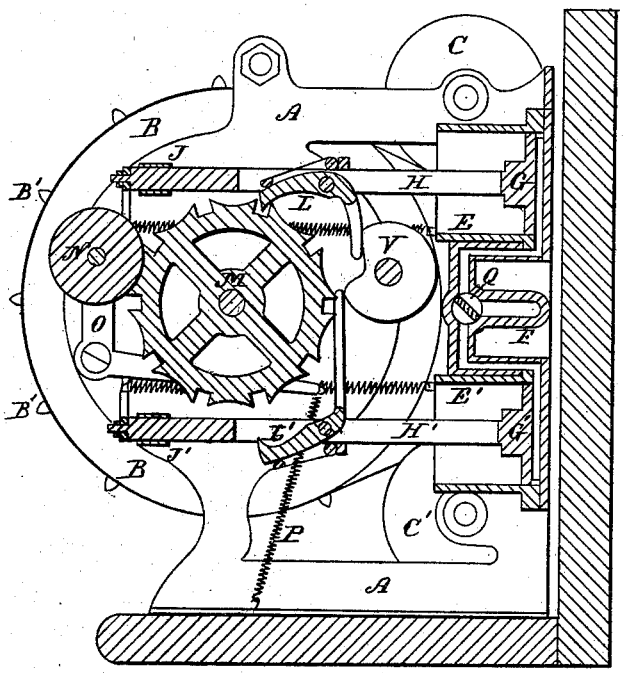


Fig. 6.



Witnesses.

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(No Model.) 4 Sheets—Sheet 3.

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STATION INDICATOR.

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Fig. 4.

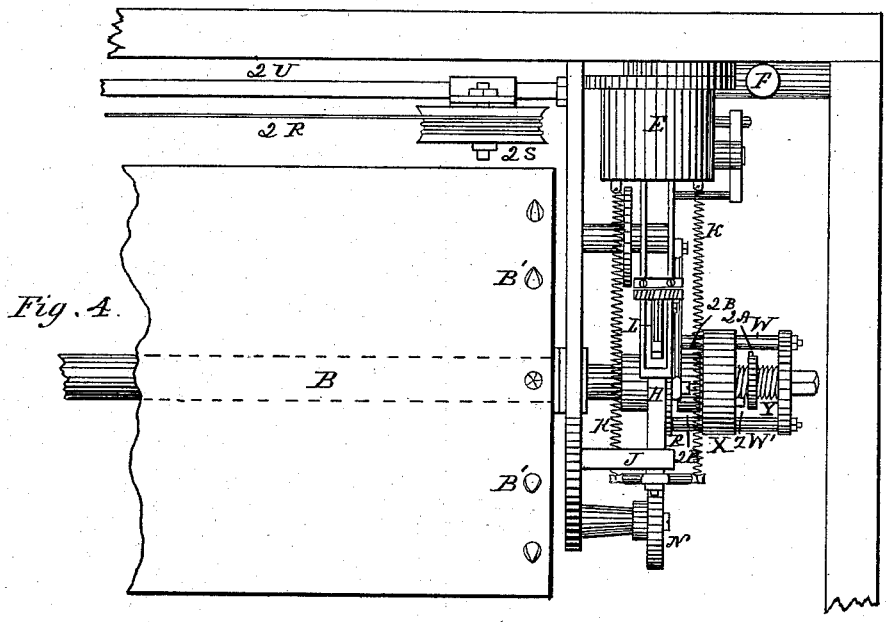
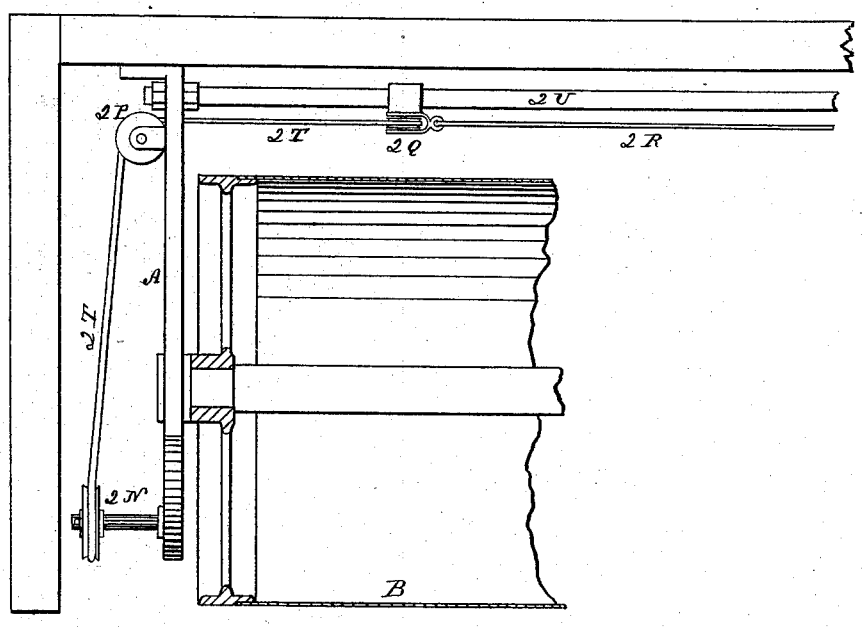


Fig. 5



Witnesses.

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(No Model.)

4 Sheets—Sheet 4.

H. E. BISSELL.

STATION INDICATOR.

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Fig. 7.

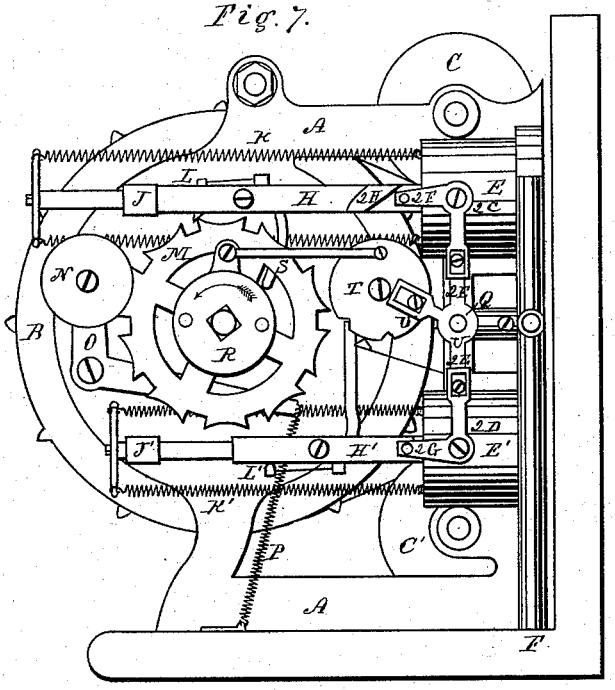
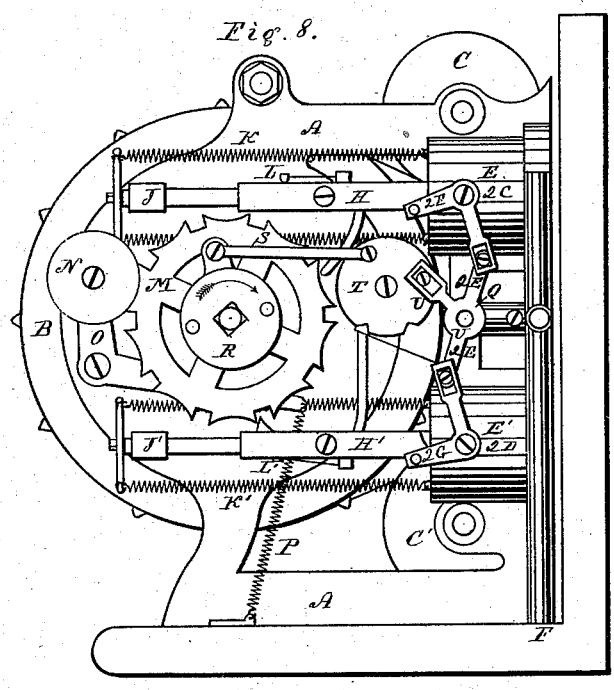


Fig. 8.



Witnesses.

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Edwin F. Dimock.

Inventor.

Henri E. Bissell

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UNITED STATES PATENT OFFICE.

HENRI E. BISSELL, OF HARTFORD, CONNECTICUT.

STATION-INDICATOR.

SPECIFICATION forming part of Letters Patent No. 261,825, dated August 1, 1882.

Application filed March 6, 1882. (No model.)

To all whom it may concern:

Be it known that I, HENRI E. BISSELL, of Hartford, in the county of Hartford and State of Connecticut, have invented certain new and useful Improvements in Station-Indicators; and I do hereby declare that the following is a full, clear, and exact description thereof, whereby a person skilled in the art can make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

Like letters in the figures indicate the same parts.

My improvement relates to mechanism for indicating the station approached by a railway-train by means of exhibiting within each car a printed slip containing the name of such station.

The object of my invention is to provide a mechanism which shall be automatic in its action and not require to be set at each stop by a brakeman or other person in each car, but shall be operated entirely from one end of the train by varying the pressure in air-tubes laid through the train for the purpose.

It also has for its object the automatic reversing of the mechanism when the train has reached the end of its route, so that without any attention the names shown by the indicator will conform to the stations which are approached by the train in running back over the same line.

It also has for its object the providing of a more perfect mechanism for operating by compressed air and for rendering the indicator more perfect and certain in its action.

In the accompanying drawings, illustrating my invention, Figure 1 is a front view of the mechanism of my improved station-indicator, having the outer case removed, and having a portion of the barrel upon which the slip containing the names of stations rolls cut out to shorten the drawing and show the working parts to a larger scale. Fig. 2 is a right-hand end view showing the mechanism for operating the roll which carries the slip containing the names. Fig. 3 is a left-hand end view showing the mechanism for keeping the slip which contains the names closely in contact with the roll which carries it. Fig. 4 is a top view of the right-hand end of Fig. 1. Fig. 5 is a top view of the left-hand end of Fig. 1. Fig. 6 shows a section taken vertically through the working parts at the right-hand end of the indicator, passing through the axes of the air-cylinders which operate the mechanism. Fig. 7 is a view of the right-hand end of the indicator just as the last station is shown and the reversing mechanism is partly thrown. Fig. 8 is a view of the same when the piston has returned and the mechanism is fully reversed and ready to move the opposite way by the action of the lower cylinder.

A is a frame, which supports the working parts of the indicator.

B is a large roller turned by the actuating mechanism one step or interval to change the slip containing the names from one name to another. It is provided with studs or pins B′ at the end, which enter into corresponding holes in the slip to hold it in the proper position on the roll.

C C′ are two smaller rollers, upon which the slip containing the names is alternately wound as it passes from one end to the other.

D is the slip, of cloth or other suitable material, upon which the names of the stations are placed in parallel lines, so that one line comes in front at each movement of the roller B.

E and E′ are single-acting air-cylinders, intended to be operated by compressed air coming through a pipe, F, from a pump, or from any reservoir which can be operated by the engine which draws the train. These cylinders can also be operated by atmospheric pressure against a vacuum produced by pumps, if desired. In the latter case the pipe to the pump would be connected with the opposite end of the cylinder.

G and G′ are pistons acting in the cylinders E E′, and provided with piston-rods H H′, which move freely in suitable guides, J J′, on the fixed frame A of the machine.

K K′ are springs attached to the fixed frame and the piston-rods to press them back after the pistons have been moved out by the force of the compressed air and the air has been allowed to escape, the flow of air into the cylinders and its escape being governed by a cock upon the engine or reservoir at a distance from the indicator, and intended to operate many of them at once.

L and L′ are pawls attached to the piston-rods H H′, and pressed against the wheel M by suitable springs in the customary manner.

M is a ratchet-wheel fixed to the axle of the roller B, and by which it is moved. This wheel is moved one notch at each movement of the cylinder piston and rod. Only one cylinder operates at a time, and only one pawl is engaged with the wheel M at a time, the two cylinders and pawls being to move the wheel opposite ways. One pawl operates till the end of the route is reached, and then the mechanism is automatically reversed to bring the other cylinder into operation.

The wheel M is provided with locking-detents between the notches for the pawls, into which the roller N drops at each movement of the wheel to hold it in position. The roller N is hung upon one arm of a lever, O, the other arm of which is actuated by the spring P, which presses the roller against the wheel M.

The operation of this part of my improved mechanism will now be understood. The cylinder E is in communication with the compressed air, and the pawl L is engaged with the wheel M. The cylinder E′ and pawl L′ are not in action. Each time the air is let on the piston G moves out and turns the wheel M one notch, and when the air is allowed to escape the piston returns, so as to be ready for the next movement.

Q is the valve, the oscillation of which throws the air into the cylinders E and E′ alternately. It is operated at the end of the route by automatic mechanism, which will now be described.

R is a rocking frame upon the shaft of the wheel M. This is connected by the rod S to the disk T, which is provided with a pin for operating the valve-lever U for changing the position of the valve whenever the frame R is oscillated in one direction or the other. Upon the same shaft as the disk T is the cam V for shifting the pawls L and L′ at the same time the valve is moved. This is shown more particularly in Fig. 6. The shifting of the frame R thus performs all the operations required to change the direction of the rotation of the wheel M, and consequently of the movement of the slip which shows the name of the station. In order, however, to have the slip ready to return only after the train has arrived at the last station, the full throw must be given to the frame R only after the mechanism has presented the last name for inspection on the indicator. It is therefore done on the return of the piston from its last movement in running in one direction, while the mechanism for starting and determining this action is operated by the last forward movement of the piston while it is still turning the wheel M. This reversing motion is effected as follows: The rocking frame R is provided with two guides, W and W′, which extend between the end plates of the frame, the end plates turning freely upon the shaft of the wheel M and the roller B.

X is a nut, which slides back and forth upon the guides W W′, and through which turns a screw, Y, cut upon the shaft of the roller B and wheel M.

It will thus be seen that while the frame R remains stationary the revolutions of the roller B move the nut along the thread of the screw.

Z and Z′ are studs upon the nut X, the use of which will be described.

2^A and 2^B are collets firmly set upon the screw in any desired position by means of set-screws. They are furnished with studs or projections which engage with the studs upon the nut X when the said nut has moved along the screw Y so as to come in contact with them. The collets are fixed upon the screw in such a position that the studs will come together and lock the nut to the shaft at the last throw of the wheel M, and thus shift the rocking frame R while the last throw is being made, as shown in Fig. 7. This is not, however, intended to change the valve, as it is necessary for the piston to return; but it moves the frame R sufficiently to operate the bent rocking-levers 2^C 2^D by means of the bar 2^E, and bring the pins 2^F or 2^G opposite the cam 2^H on the connecting-rod, so that the return of the piston-rod causes the cam to engage the pin and finish the throw of the valve. The pawls L and L′ may be wholly thrown by the movement of the valve, or may be completed by the previous movement of the rocking frame R.

In the drawings, Fig. 2, a part of the cylinder E is cut away to show the cam 2^H, attached to the piston-rod. The bent lever 2^C and its pin 2^F are also removed to show the interior parts. These parts will be seen in the other figures, and are exactly the same in construction and operation as the parts 2^D 2^G for the lower cylinder.

In the drawings, Figs. 1 to 6, the upper cylinder and pawl are supposed to be in operation upon the wheel M, and the parts of the reversing mechanism are shown as just before reaching the last station on the route. Now, when the apparatus is set in action by the application of the compressed air the piston-rod H is driven forward and the wheel M turned so as to show the last station on the slip D. At the same time the stud Z′ on the nut X has advanced toward the collet 2^B, so as to be encountered by the stud or projection on that collet and be moved by it, so that the frame R is rocked and the pin 2^F acted upon by the intermediate parts, so as to lower it below the top of the cam 2^H on the piston-rod H, as shown in Fig. 7. The lower side of this cam meets the pin 2^F as the piston-rod returns and forces it downward, so as to shift the valve and change the pawls. The mechanism is then arranged as shown in Fig. 8, so that the next admission of compressed air turns the wheel M in the opposite direction and the stations retrograde back to the commencement when the nut X has moved toward the collet 2^A, and the stud Z encounters the projection on the

collet and again shifts the valve and pawls in the same manner as has been described at the other end of the route.

2^J is a whistle upon the air-pipe leading to the cylinders, which sounds each time the air is admitted and attracts attention to the change in the name of the station exhibited by the indicator.

At the opposite end of the machine from the mechanism hereinbefore described is an improved device for keeping the slip containing the names of the stations tight against the roller B, and at the same time allowing it to be rolled and unrolled easily from the rollers C and C′.

2^K and 2^L are drums fixed upon the same axes as the rollers C and C′. Upon these drums a continuous cord, 2^T, is wound in a direction opposite to that of the slip of names on the rollers C C′. This cord passes over the pulleys 2^M, 2^N, 2^O, 2^P, 2^Q, and is kept tight by the cord 2^R attached to the pulley 2^Q and wound upon a pulley, 2^S, containing a spiral spring similar to a clock-spring. The pulley 2^S is set upon a block which is adjustable upon and clamped to the rod 2^U, so that any required tension can be given to the cord 2^T by moving the pulley 2^S to make the draft of the cord upon the pulley 2^Q greater or less.

The whole of my improved mechanism is inclosed in a case fitted to just include the several parts, and of any customary form, (not fully shown in the drawings,) and to be provided with an opening covered with glass, or otherwise, for the name upon the front of the roller B to show through.

The case is intended to be tight, so as to exclude dust, and to be provided with a door or opening at one end. This door is intended to be habitually shut, as my apparatus, being automatic, does not require any attention whatever, unless it should be desired to adjust it so as to present to view in front a different number of stations or to put in a slip containing different names.

If it is desired to run a train over a portion of the road only, a temporary change can be readily made by shifting the frame R by hand, when the slip will commence to run back; or if it is desired to make a permanent change in the number of stations the collet 2^A or 2^B is changed in position, according as it is wished to cut off names from one end or the other of the slip D.

What I claim as my invention is—

1. The combination of the two cylinders E and E′, provided with pistons, piston-rods, and spring-pawls L and L′, and the counteracting-springs K and K′, with the ratchet-wheel M and the rotating barrel B, substantially as described.

2. The combination of the locking-wheel N, the lever O, and the spring P with the ratchet-wheel M and its operating-pawl L, substantially as described.

3. The combination of the rocking frame R and the sliding nut X, with the screw Y upon the shaft of the wheel M, and the collets 2^A and 2^B, provided with interlocking studs, with the rotating mechanism of a station-indicator, substantially as described.

4. The combination of the rocking frame R, the sliding nut X, the screw Y, and the collets 2^A 2^B, operated by the turning of the wheel M, as described, with the mechanism for operating the valve Q and the pawls L L′, the bar 2^E, the levers 2^C 2^D, and the cams 2^H upon the piston-rods H and H′, whereby said valve and said pawls are operated, substantially as described.

5. In a station-indicator, an automatic reversing mechanism composed of an interlocking device between fixed collets, and a traveling-nut on the shaft of the propelling-wheel, operated by the direct movement of the said wheel, whereby the said reversing is caused to be started, and a cam upon the connecting-rod of the piston, operated by the return of the said rod after moving the propelling-wheel, whereby the said reversing is completed, substantially as described.

6. A station-indicator provided with reversing mechanism, substantially as described, by which it is adapted to run from end to end alternately and reverse automatically by successive impulses of air, as herein set forth.

7. An automatic station-indicator provided with two actuating-cylinders and connecting mechanism, substantially as described, by each of which it is operated in one direction only, as herein set forth.

8. In a station-indicator, the sliding adjustable pulley 2^S, the rod 2^U, the cord 2^R, and the pulley 2^Q, in combination with the tension-cord 2^T for maintaining an exact and equable tension upon the slip containing the names of stations, substantially as described.

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Witnesses:
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EDWIN F. DIMOCK.