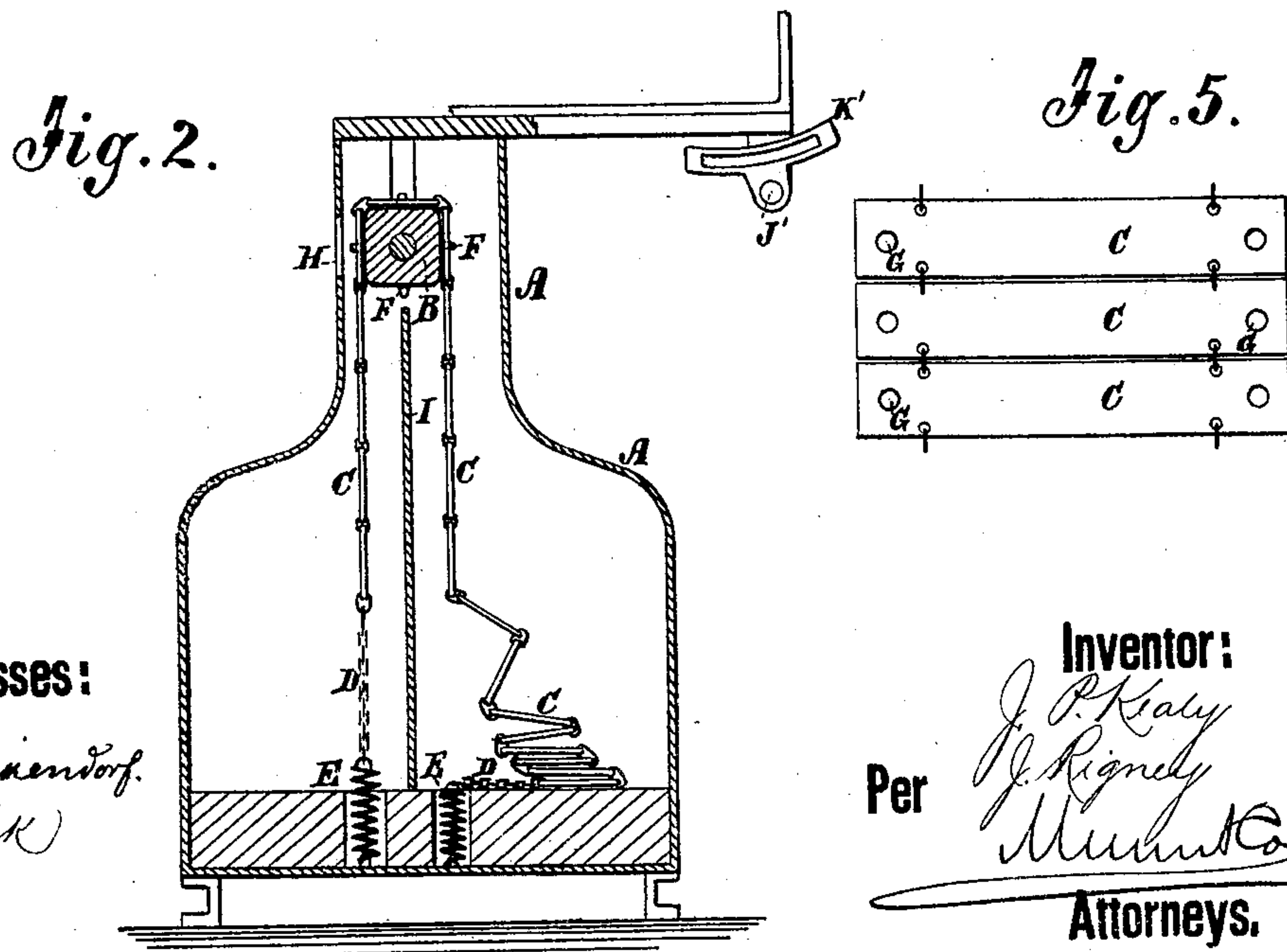
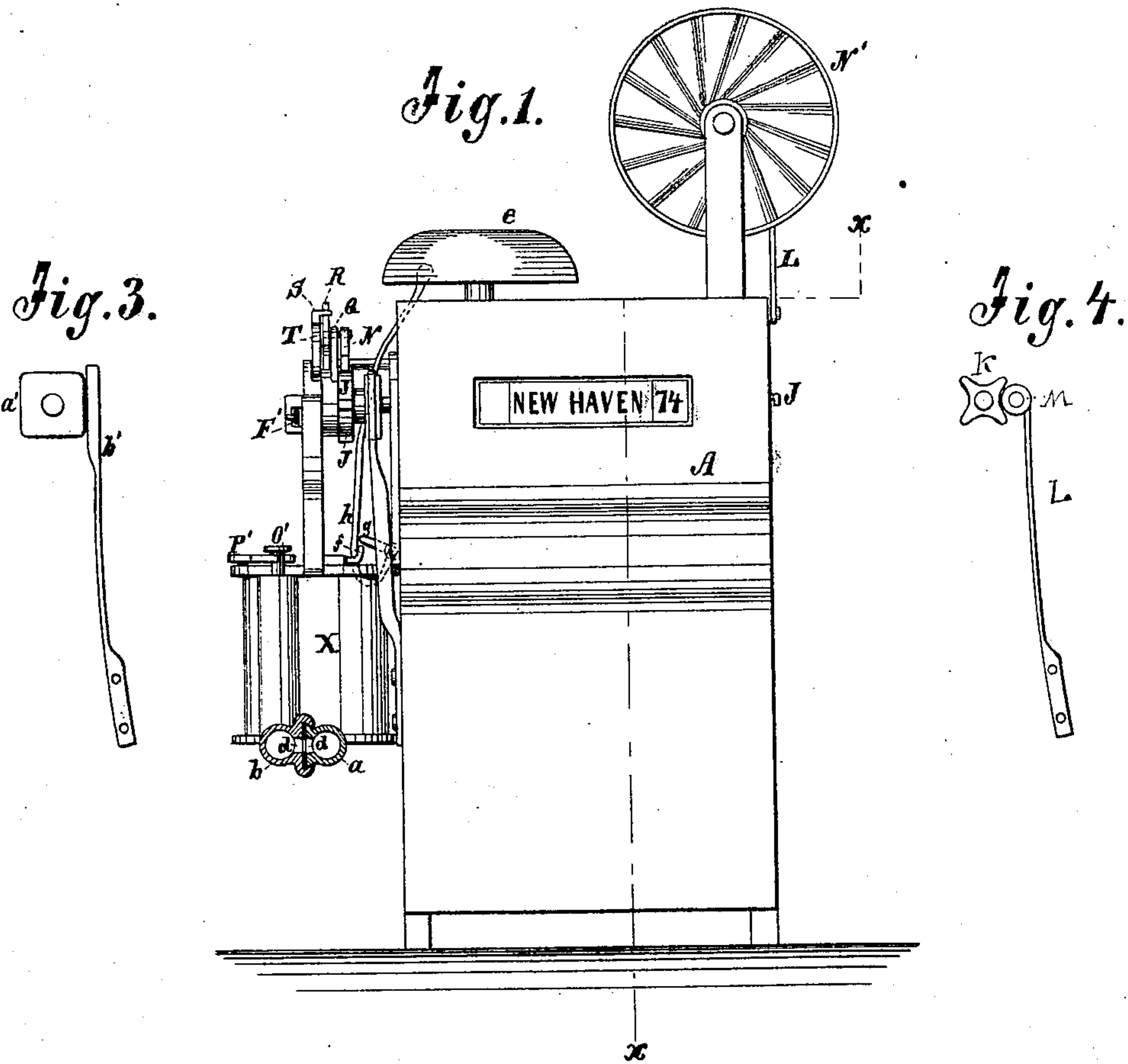


J. P. KEALY & J. RIGNEY.
Pneumatic Station-Indicators.

No. 144,909.

Patented Nov. 25, 1873.



Witnesses:

A. Benneken
Notary

Inventor:

Per

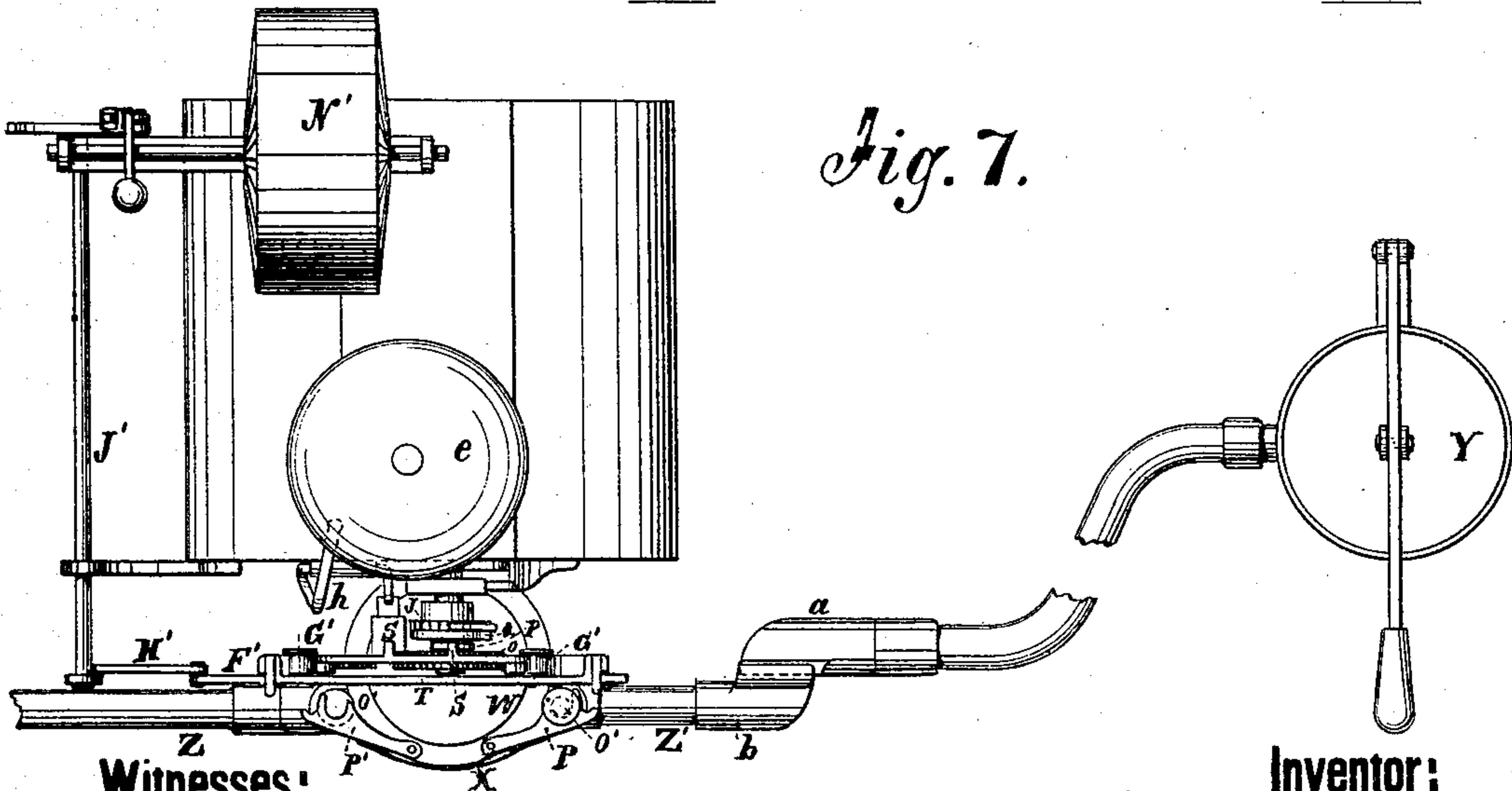
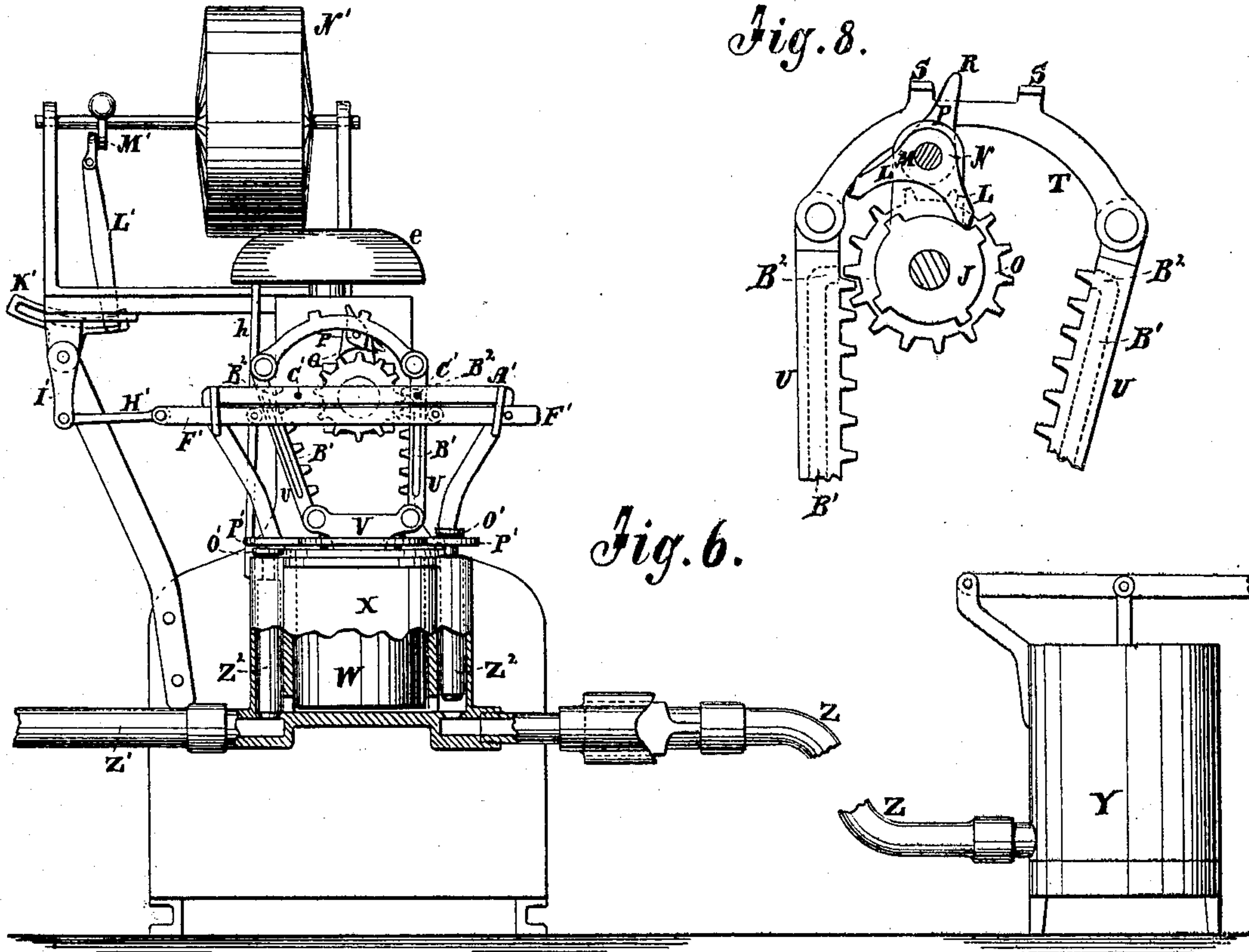
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UNITED STATES PATENT OFFICE.

JAMES P. KEALY AND JOSEPH RIGNEY, OF BRIDGEPORT, CONNECTICUT.

IMPROVEMENT IN PNEUMATIC STATION-INDICATORS.

Specification forming part of Letters Patent No. **144,909**, dated November 25, 1873; application filed August 9, 1873.

To all whom it may concern:

Be it known that we, JAMES P. KEALY and JOSEPH RIGNEY, of Bridgeport, in the county of Fairfield and State of Connecticut, have invented a new and Improved Pneumatic Station-Annunciator, of which the following is a specification:

The invention will first be fully described, and then pointed out in the claims.

Figure 1 is a front elevation of our improved annunciator. Fig. 2 is a sectional elevation taken on the line *xx* of Fig. 1. Figs. 3 and 4 represent different forms of cam-plates and spring-holders that may be employed to control the roller which shifts the chain of name-plates. Fig. 5 is a front elevation of a section of the chain of name-plates. Fig. 6 is a side elevation of the machine with a portion of the air-engine sectioned. Fig. 7 is a plan view of the machine, and Fig. 8 is a side elevation of a portion of the reversing mechanism for operating the chain of rollers.

Similar letters of reference indicate corresponding parts.

A represents the case containing the roller B and the chain of name-plates C. This case is divided into two compartments under the roller by a partition, I, and the chain hangs down from the roller—which is in the upper part—each side of the partition, and is connected to the floor at each end by a small chain, D, and a spring, E. The roller, having plain sides the width of the name-plates, and stud-pins F projecting from the sides, and engaging the plates by the holes G, to prevent the chain from slipping, is turned the width of one face at each station to present the plates having names of the stations in front of the sight-opening H, and takes the chain up from one compartment and drops it into the other. The chains D and springs E prevent the name-plate chain from being carried beyond the point of showing the name of the last station on the route, in case the car should be run beyond its route on another section or division, and hold it ready for running back on its own route. The springs are employed to allow the roller to turn in case the mechanism for turning it is kept in operation after passing beyond the terminal station, and pull the roller back each time. This will be found desirable in case the

car should get coupled, in a train for a road or station to which it does not belong, with cars having annunciators for that road, so that its annunciators would of necessity be coupled with the others, and so have to be worked that the others may be.

In practice we propose to have the partition I pivoted at the top, and the floor of the case constructed on a curve struck from said pivot, so that, as the chain piles up in one side and diminishes in the other, the partition will be moved aside by the pressure of the pile against it, and thus make nearly the whole space inside of the case available for the chain of name-plates when accumulated in one pile on either side of the partition. The roller-shaft projects out through the case at the end J, and is fitted for the application of a wrench for re-adjusting it, when by any cause it happens to get shifted, so that the name-plates do not correspond with the stations. At the other end it has a long extension beyond the case, on which is a cam-plate, *a'*, having as many sides as the roller has, with which a strong spring, *b'*, acts to stop and hold the roller after each movement. In practice we will have this plate notched, and the spring provided with a friction-roller, *d'*, as represented in Fig. 4. This portion of the shaft also has a ratchet-wheel, K, of four teeth or notches, corresponding to the number of sides to the chain-roller, by which the roller is to be shifted to the extent of the width of one side just before coming to each station by a pawl, L, which is made double, and arranged to shift on a pivot, M, for reversing the motion of the roller. This pawl is pivoted to the pawl-arm N of a toothed wheel, O, fitted to turn loosely on the shaft, and it is provided with a little cam, P, on its pivot, with which a spring, Q, acts, so as to hold it in either position for turning the roller either way. Said cam also has an extension, R, projecting from the top up between the two studs S of a yoke, T, which is shifted each time the motion of the roller is to be reversed, and shifts the pawl by the studs striking the said projection of the cam and shifting it. This yoke T connects two toothed rack-bars, U, at their upper ends, which are pivoted at their lower ends to a cross-head, V, on the top of a piston, W, in an air-cylinder, X, to be forced

up to turn the roller by air forced into it from the impelling-pump Y through the pipe Z. These two toothed rods U are arranged in the same plane as the wheel O, and on opposite sides of it, so that one gearing with it when the piston is forced up will turn the roller one way, and the other will turn it the other way. They range alongside of a stationary bar, A', and have a groove, B¹, in the side next to said bar, in which a stud-pin, C', projecting from said bar, works, to hold the bar in gear with the wheel O as the bar slides up to turn the wheel. These slots turn out through the side of the bars at the top, as shown by the dotted lines B², so that, when the piston is down, one bar can be shifted away from its pin, and the other can receive its pin in its groove without obstruction, as required to change the bars to reverse the speed. To make these changes of the toothed bars automatically, another bar, F', is arranged alongside of the toothed bars, like the bar A'; but, instead of being stationary, it is arranged to slide, and has a roller, G', for each bar U, on a stud-pin projecting from its side, so arranged that, whichever way the bar is shifted, one of the rollers will come against one of the toothed bars, and push them both in the same direction, throwing one out of gear with the wheel and the other in gear. Said rollers also hold the bars with which they act in gear with the wheel during its start upward, and until the stud-pin C' has come into action in the slot B¹, below the horizontal part B², at the top, through which the pin enters and escapes. The sliding bar F' is connected, by a rod, H', with an arm, I', of a rock-shaft, J', which, at its other end, has a slotted arm or link, K', attached, at its middle, to it, and this link is connected, by a rod, L', with an arm, M', on the shaft of a wind-wheel, N', which is mounted on the car in any position, so that the air, against which it is rapidly carried by the car when in motion, will turn it, and cause it to shift the sliding bar F' through the medium of the above-described connections, and, through said bar, shift the toothed bars U.

Going in one direction, the action of the air on the spiral vanes of the wheel will turn it one way, and, going the other way, it will be reversed, and will reverse the motion of the roller carrying the name-plates.

Should the car happen to be reversed, so that the same end of the wheel will be presented to the air in going both ways on the road, so that its motion will not be reversed, it can still be caused to reverse the roller by shifting the connecting-rod L' from one end to the other of the slotted link or arm K'.

Each air-engine has two pipe-connections, Z and Z¹, and a valve, Z², for each. One pipe-connection admits the air from the pump Y to the engine, and the other communicates with the engine in the next car. Both the valves will be open when the engine is intermediate with the pump and other engines behind; but when it is in the last car, the valve of the pipe-connection will be closed to prevent the escape of the air. In this case the valves are opened by being raised up by the head O', and they are held up by swinging hooks P', which are pivoted to the engine, so as to swing under the head of the valves, and thus prevent them from falling.

Having thus described our invention, we claim as new and desire to secure by Letters Patent—

1. The chain of name-plates, arranged on a single roller, to be transferred from one side of the case to the other, and vice versa, and attached at each end by an expanding and contracting connection, substantially as and for the purpose specified.

2. The case containing the roller and the chain of name-plates, divided into two compartments by a partition, I, either stationary or pivoted, substantially as specified.

3. The slotted toothed bars U, pivoted to the piston of the air-engine, connecting-yoke T, stationary bar A', and stud-pins C, combined with the loose wheel O, double pawl N, cam R, and the ratchet-wheel J on the name-plate roller-shaft, substantially as specified.

4. The combination of the shifting-cam R and lugs S of yoke T with the double pawl R, substantially as specified.

5. The combination of a spiral wind-wheel, mounted on the car so as to be subject to the atmosphere, with the reversing toothed bars U, when connected to them by a sliding bar, F', rock-shaft J', connecting-rods H' L', and arms I' and K', or any equivalent connecting apparatus, substantially as specified.

6. The spiral wind-wheel, connected to the rock-shaft J' by a reversing-link, K', substantially as specified.

7. The series of annunciators, connected together and to the air-forcing pump Y by pipes Z and Z¹ and valves Z², substantially as specified.

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JOSEPH RIGNEY.

Witnesses:

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MICHAEL EBERHARD.