

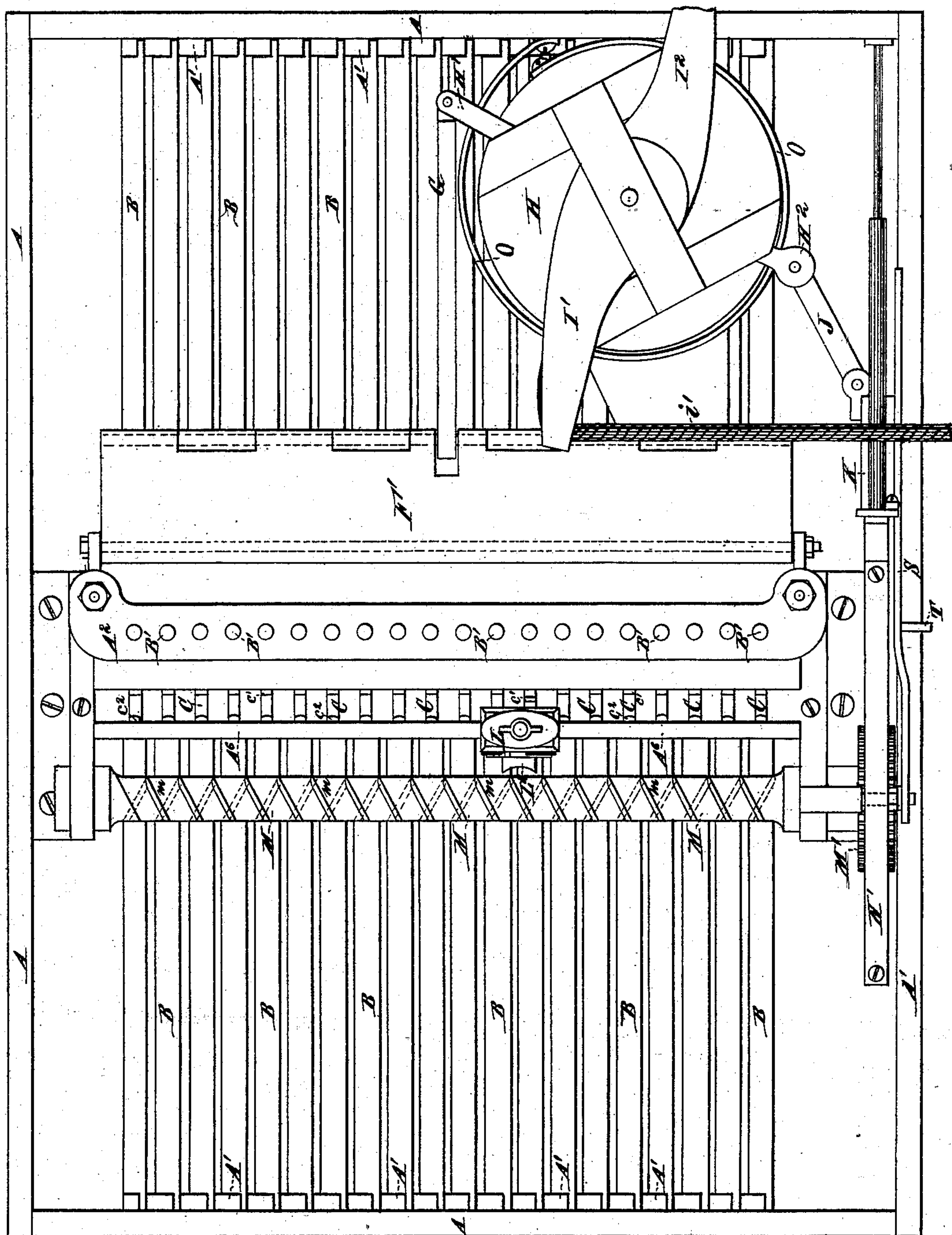
(No Model.)

4 Sheets—Sheet 1.

W. EWEN.
Station Indicator.

No. 239,321.

Patented March 29, 1881.



WITNESSES

Benz. E. Stafford
Charles C. Stetson

Fig. 1.

INVENTOR

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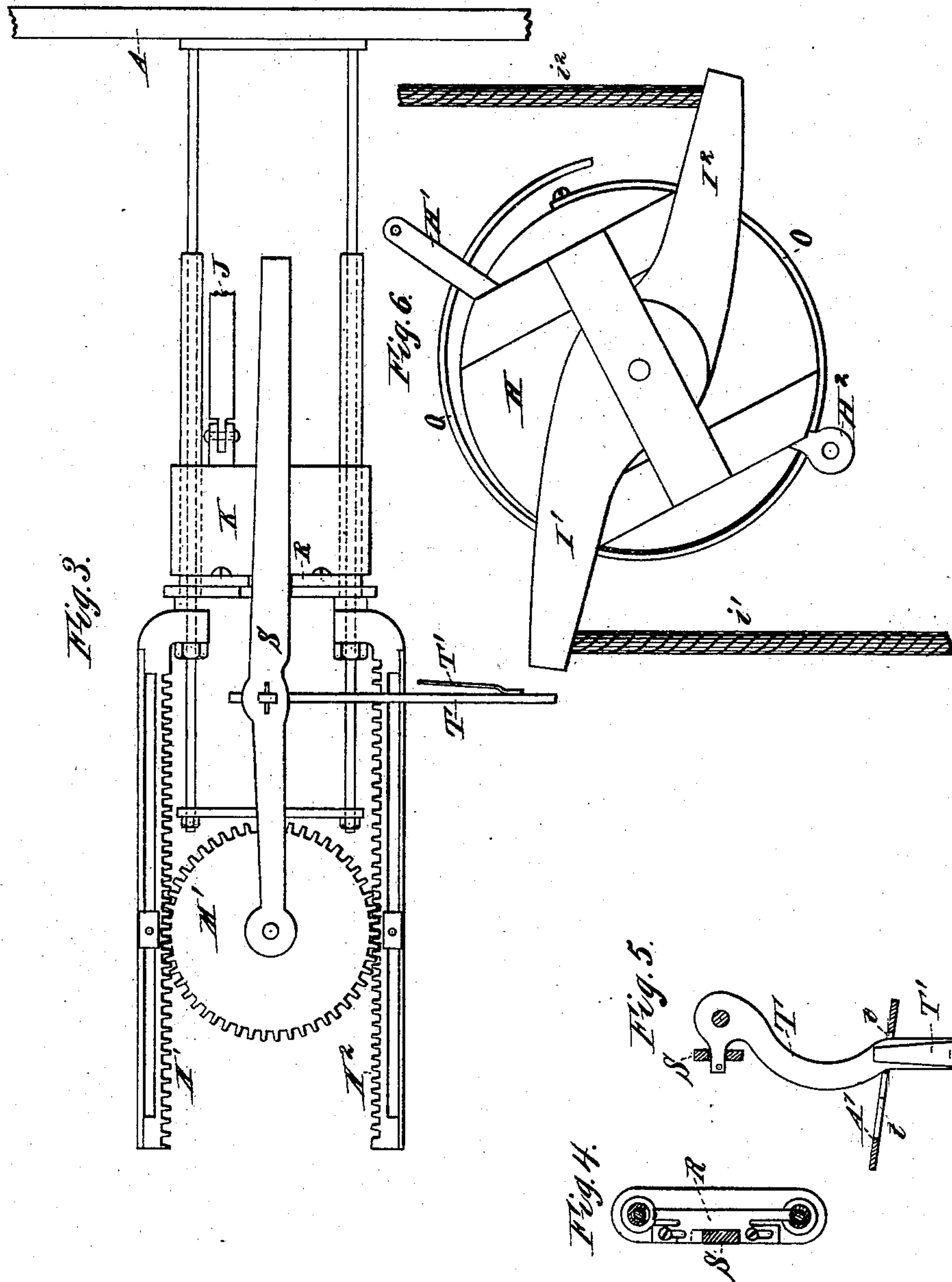
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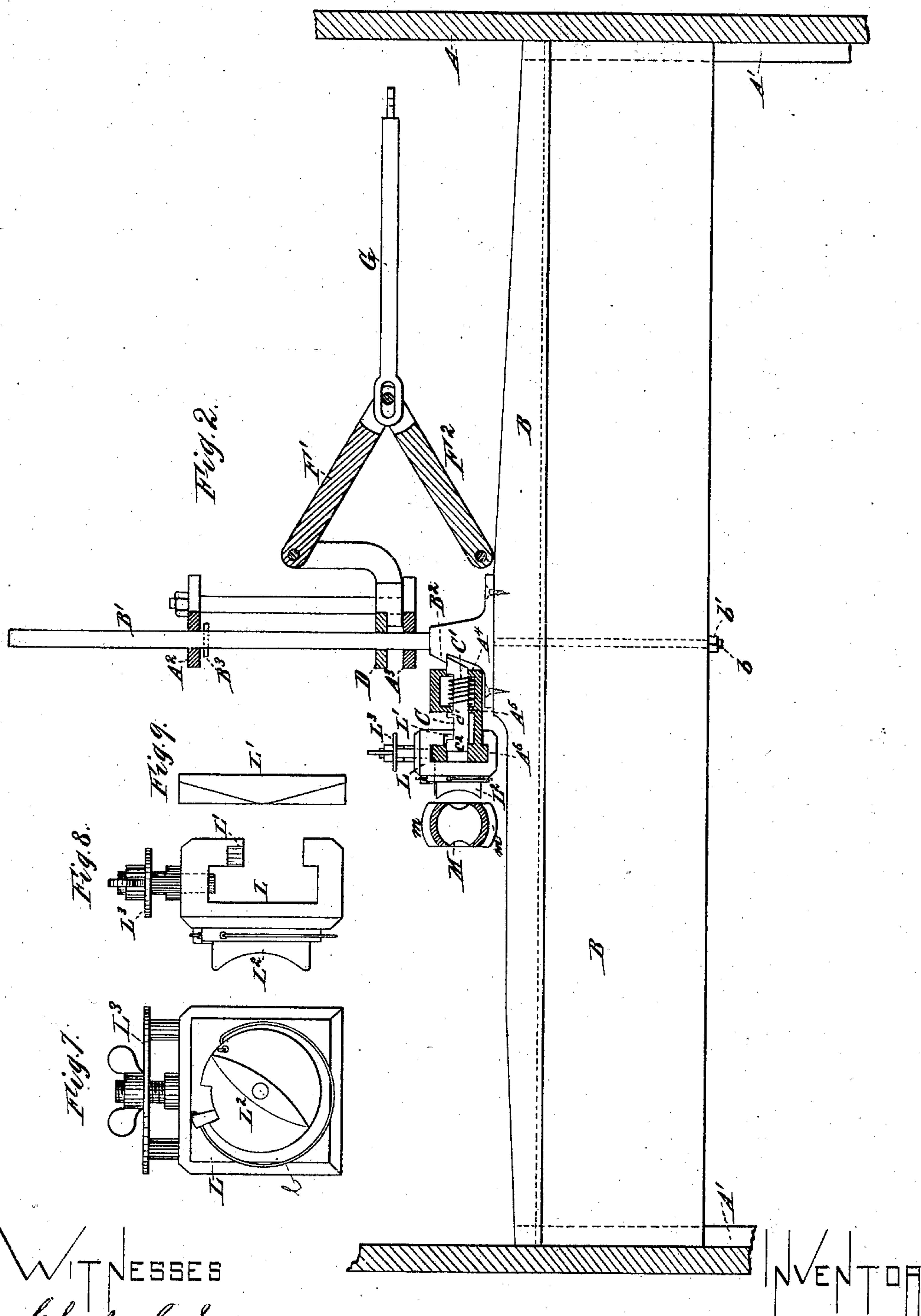
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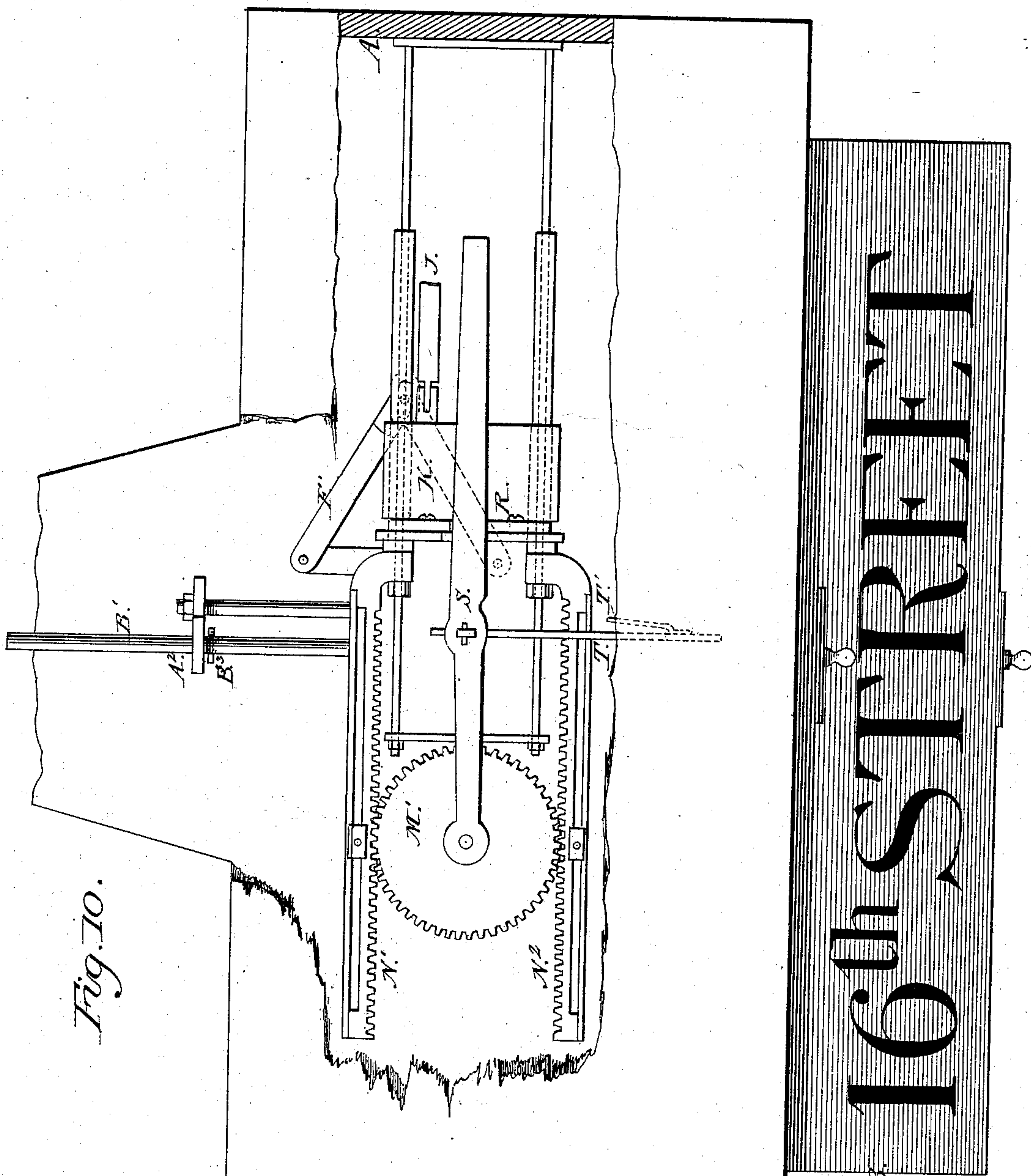
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UNITED STATES PATENT OFFICE.

WARREN EWEN, OF FLUSHING, NEW YORK.

STATION-INDICATOR.

SPECIFICATION forming part of Letters Patent No. 239,321, dated March 29, 1881.

Application filed December 9, 1880. (No model.)

To all whom it may concern:

Be it known that I, WARREN EWEN, a citizen of the United States, residing at Flushing, Queens county, in the State of New York, have invented certain new and useful Improvements in Station-Indicators, of which the following is a specification.

I have devised a compact apparatus in which the proper indicating-signs are represented in succession on a simple pull of a cord by an attendant. It allows the motion to be easily reversed on the change of the direction of the car, either at the end of the route or at any intermediate station. The signs, having been previously prepared by printing or otherwise, of sufficient thickness to secure durability, are mounted side by side within a case, and are dropped successively into view and withdrawn. The mechanism for withdrawing or lifting the signs acts in a manner which would lift the whole, but is, of course, only effective on the one which has been previously down. One is dropped immediately after. The selection is effected by a sliding piece which is operated by a series of inclined surfaces analogous to screw-threads formed on the edge of a flattened rocking shaft. This cam-piece is rocked or oscillated by the same mechanism which effects the lifting. To operate in the reverse direction and present the signs carrying the names of the stations in the reverse order it is necessary simply to half-rotate the flattened shaft and make the other edge the effective edge. The two edges have the inclined surfaces, which I have called "cams," arranged in reverse positions. Their action is, consequently, to shift the sliding piece step by step in opposite directions one from the other.

The following is a description of what I consider the best means of carrying out the invention.

The accompanying drawings form a part of this specification.

Figure 1 is a plan of the apparatus with the upper portion of the casing removed. Fig. 2 is a longitudinal vertical section of the same. Fig. 3 is a side elevation of the operating means. Figs. 4 and 5 are detail views of portions of Fig. 3. Fig. 6 is a plan of the wheel with the cords attached. Fig. 7 is a front elevation of the traveling block. Fig. 8 is a side elevation of the same. Fig. 9 is a plan of the

under side of the hanging lip. Fig. 10 is a side elevation view of the indicator with one sign down and a part of the framing broken away to show the interior mechanism.

Similar letters of reference indicate like parts in all the figures.

A is a fixed frame-work, which may be constructed as a part of the car, or formed separately and attached and removed, as required. In either condition it forms a fixed support for the mechanism, and is open-bottomed to allow a series of signs, B B B, occupying nearly the whole base of the casing, to be dropped and presented to the eye in succession. The interior of the casing A is formed with guiding-strips A', arranged parallel and at a sufficient distance apart to receive the narrowed ends of the signs B, and to hold them at a little distance apart to avoid rubbing. I can construct the signs B as light frames of wood or other material carrying a surface of stout paper, pasteboard, parchment, or the like, on which the lettering or figures indicating the town or street may be printed. I can make the frames B of cast or wrought metal, if preferred. Each sign B is formed with a stem or pin, B', extending upward from its center by which it is lifted and dropped. Each sign has a beveled hook, B², which may, as preferred, be formed on the pin B' or on a separate piece adjacent. The hook B² receives a spring-dog, C, of sufficient strength to reliably hold up the sign until it is drawn back by some other force. Each pin B' plays through fixed guides A² A³, and is equipped with a cross-pin, B³.

D is a cross-piece loosely embracing all the pins B', and adapted, by a rising motion, to act on the pins B³ and raise all the signs. A lifting motion is imparted to the cross-bar D by means of a stout toggle, F' F², receiving motion through a link, G, from a pin, H', carried on a horizontal oscillating wheel, H, which latter is worked by the attendant through one of the arms I' or I² and cords i' or i² extending respectively forward and backward to the proper ends of the car where they can be conveniently reached by the brakeman or other attendant. The wheel H carries another pin, H², which, as the wheel oscillates, communicates, by the link J, a reciprocating horizontal motion to a cross-head, K, guided in a

straight reciprocating motion, as will be obvious. This cross-head, by means now to be described, serves to effect the successive changes in the presentation of the signs.

5 The several spring-dogs C work through stationary guides $A^4 A^5 A^6$, and are thrown into engagement with their respective hooks B^2 by spiral springs C' , arranged as shown. The upper surface of each dog C carries two projections $c' c^2$. The former is merely a stop to
10 prevent its being thrown forward too far by the force of the spring C' . The latter, c^2 , is of greater prominence, and performs an important function.

15 The fixed bar A^6 serves as a slide or railway for a traversing piece, L, which is adapted to fit closely thereon and to be traversed from one side of the machine to the other. A lip, L' , extends down therefrom and acts on the
20 several projections c^2 . A spring-arm, L^2 , is mounted on the opposite face of the piece L. The arm L^2 acquires its elasticity by means of the spring l , attached at one end to a lug on the traveler L and at the other in a disk on
25 which the arm L^2 is formed. Too great action of the spring is prevented by the lug to which it is attached at one end operating in a channel in the rim of the disk on which the arm L^2 is formed. This channel extends only a
30 short distance in the rim of the disk.

M is a stout flattened shaft. It may be open-work, as shown, but it is important that it be of sufficient metal to afford strength and rigidity. The edges are formed with bold and
35 prominent screw-threads, as indicated by m . On the end of the shaft M is a spur-gear wheel, M' , engaging with two movable rack-bars, $N' N^2$, so mounted that they may reciprocate endwise and impart motion to the wheel M' , according as the car is to be run in one direction
40 or the other. They receive motion from the cross-head K, which latter is actuated in one direction by the link J from the wheel H, and in the other direction from the spring O. The
45 arrangement insures that the screw M shall be oscillated or partially turned in one direction and back again by each corresponding oscillation of the wheel H. At each operation the wheel H is oscillated uniformly in a certain
50 direction and back again. My mechanism provides that the resulting reciprocation of the cross-head K may impart a corresponding partial rotation of the flattened shaft M in either direction and back again, the direction of the
55 first part of each oscillation depending on which way the car is running. This important end is determined by the aid of a latch, R, which is mounted on the cross-head, K, and can be raised or lowered by means of a corresponding rising or lowering of the guide-bar
60 S, which latter is controlled by a hand-lever, T, and locked by the force of the spring T' in one of the two notches in the housing or keeper A^7 in which the latter is adjusted. The latch
65 R, when in its highest position, engages with the uppermost rack, N' , and leaves the lowermost rack, N^2 , to reciprocate idly. Thus con-

ditioned the wheel M' , and consequently the flattened shaft M, will oscillate in one direction during the first (the positive) part of the
70 motion. This will shift the piece L one step in the required direction. The next operation of one or other of the cords i' or i^2 will impart a corresponding motion and return, and the piece L will be correspondingly shifted
75 along another step, each step being sufficient to liberate the next sign. When, on the return journey, it is desired that the shifting shall be done in the reverse order, it is simply necessary to contract the spring T' , and by shifting
80 the lever T, and consequently the guide-bar S, to depress the latch R, so that it shall become disengaged from the uppermost rack, N' , leaving that to be reciprocated idly, and shall engage with the lowermost rack, N^2 . Thus con-
85 ditioned the rack N^2 is the medium of communicating the motion from the cross-head K to the wheel M' , and consequently to the flattened shaft M. It follows that the first portion (the
90 positive portion) of the motion of M, will be always in the reverse direction, thus acting upon the spring-arm L^2 in the opposite direction, and imparting a step-by-step movement to the piece L in the direction the reverse of that before imparted.
95

The fixed cross-bar A^6 , which I have termed the "railway," is accurately finished, and the moving piece L is formed to fit snugly thereon. The accuracy of its position is promoted
100 by a friction-spring, L^3 , and I take every care in workmanship and adjustment to insure the correct performance of its important function. The inner face (the working-face) of this lip L' , is beveled from the center outward, as indicated in Fig. 9, so that it is sure to engage
105 properly with the successive projections c^2 and to draw back and hold one, and only one, at a time.

In what I esteem the preferable construction of the signs B, and have represented (see
110 Fig. 2) the main body of the sign, is in a separate piece from the top, and may be of a different and cheaper material, or a material more easily printed upon. For example, the upper part may be metal, to avoid warping,
115 and the lower portion may be wood, paste-board, or the like.

I attach much importance to the provision for detaching any given sign, B, from its connected stem b without disturbing the other
120 mechanism. Each stem b is passed down through the body of the sign B and secured, by a nut, b' , on the lower end.

When, in consequence of any imperfections or for any other reason, I desire to remove and
125 exchange the sign, all that is necessary is to take off the nut b' , drop the sign out of connection with the stem b , substitute another, and replace the nut. This provision makes it
130 easy to exchange the whole series of signs when such becomes necessary by the transference of a car from one road to another, or from one service to another—as from express to accommodation, or the reverse.

It will be understood that the wheel H and its connections, after a partial rotation has been imparted to it by the cord i' or i'' acting on the corresponding lever I' or I², is promptly returned to its original position by the force of a spring. O indicates such spring coiled in the form of a stout ribbon of steel or hard brass, wound after the manner of a clock-spring. By pulling either one of the strings i' or i'' the wheel H is turned, and through the pin H², link J, cross-head K, cog-bars N' N², and cog-wheel M' the shaft M is partially revolved, and the grooves m brought into engagement with the arm L² on the traveler L. This acting on the dogs C at each partial revolution of the shaft M disengages it from connection with the sign-pins B' B² and drops one sign. Another pull of the string will move the traveler L along to engagement with another dog, and another sign is dropped. By pulling the string and moving the wheel H, the connection G F' F² operates the yoke D up and down the pins B', and when a sign is dropped and the string is pulled for the dropping of another sign the yoke D is moved up the pins B', and, engaging with the cross-pin B³, hoists the sign into the box, and the dog C engages with the lip B² to hold it up, so that it is readily seen how the same operation which disengages one sign and drops it into view, hoists the one already down and restores it to its normal position.

Modifications may be made in many of the details. The thickness of the signs B and their distance apart is capable of great variation; but it must be understood that in such case the other parts must be modified accordingly. The spring-dogs C being evenly spaced, the pins B' and hooks B² must be correspondingly spaced, and the number and obliquity of the partial screw-threads m formed to correspond. The spring-arm L² may be modified in form. A roller mounted on a pin carried on a spring-lever or spring-bearing may, I believe, be substituted with good effect where the expense will be warranted.

Instead of the tubular form of the rack-bars N' N², guided on fixed bars standing within them, I can employ other obvious means of guiding these parts. So, also, the means of operating and locking the guiding-bar S may be varied. The force of the hand or any adjusting instrument may be applied directly to the bar S, and the catches or locking means corresponding to the notches t and spring T' may be made to apply directly to the lever T.

Instead of the volute spring O to actuate the wheel H directly, as shown, I can employ a spiral spring or other suitable force acting on the cross-head K; or a spring of gentle force may be applied in each situation.

The forms of the spring-dogs C and their actuating-springs may be varied within wide limits.

Instead of forming the wheel M' with teeth and forming the bars N' N² as racks, the wheel may be smooth, and connected, by flexible straps, to the bars. It is only necessary that

the wheel shall be capable of receiving motion from either bar, and that the bars are moved in opposite directions by the pulling of the cords i' or i'' .

The several parts of the mechanism and of the fixed frame-work may be, and preferably are, adapted for easy separation and replacement in order to allow the repairing and exchanging of the signs B, as occasion may require. On long roads the cars of express-trains running continuously from Boston to St. Louis will require different lettering on the signs B from the cars of local trains; but the whole number of stoppings in any journey can be provided for by a moderate width of my apparatus.

When, from any chance, a car is temporarily detached from its regular mission to run in another service, my station-indicator cannot be used; but if a car is permanently changed from one service to another, it involves but little labor or skill to take out the previous signs B and substitute a new set.

It will be observed that the shifting of the lever T can be effected at any point in the journey without waiting for the journey to be completed.

When, from any cause, a car is left at any station, if its next movement is forward on the same route, no change in my apparatus is required; but if its next movement is backward in the reverse direction, it is only necessary for the conductor or some attendant to shift the lever T.

No intelligence is required to operate the device further than the simple instruction to give the cord i' or i'' one strong pull, and then immediately relax it on starting from each station.

Some of the advantages due to certain features of the invention may be separately enumerated, as follows:

First, by reason of the fact that the signs B occupy the lower portion of the apparatus, and are equipped with stems b , hooks B², cross-pins B³, in combination with the cross-piece or lifter D and spring-dogs C, I am able to store a sufficient number in a limited space, to drop any one by simple mechanism, and to lift it and retain it in the lifted position with certainty when the period for its use is past.

Second, by reason of the reversible oscillating shaft M with the inclined cams or partial screw-threads m on its edges acting on the spring arm L² on the movable piece L operating, as shown, on the spring-dogs C, I am able to move the piece L a single step in the required direction at each operation of the device, and thus to insure the dropping of the proper succeeding sign.

Third, by reason of the horizontal oscillating wheel H, levers I' I², and cords i' i'' , combined, as shown, both with the link G and toggle F' F² and cross-bar D for lifting the depressed sign B, and also with the link J and cross-head K for initiating the movement to effect the successive dropping, I am able to

withdraw the sign previously used, and present the next succeeding one by simple and reliable mechanism.

Fourth, by reason of the opposite-moving bars $N' N^2$, operated from the uniformly-reciprocated cross-head K in the one direction or the other, according as the latch R is adjusted, I am able to insure the proper motion of the reversible oscillating shaft M, and to induce the dropping of the series of signs B in the proper order with the car traveling in either direction.

I claim as my invention—

1. In a station-indicator, the series of signs or name-plates B, cross-bar or lifter D, and spring-dogs C, combined and arranged to serve relatively to a movable detaching means L, as and for the purposes herein specified.

2. In a station-indicator, the reversible oscillating shaft M, having the inclined cams m , in combination with the spring-arm L^2 , movable piece L, spring-dogs C, and the series of signs B, arranged for joint operation, as herein specified.

3. In a station-indicator, the oscillating

wheel H and means for operating it at will from either end of the car, in combination with the series of independently-moving signs B and with mechanism $G F' F^2$ and their connections for lifting the sign which is already down, and also with mechanism J K and their connections N', N^2, M', M, L , and C for liberating and dropping the next succeeding sign, all arranged for joint operation, substantially as herein specified.

4. In a station-indicator, the combination of the cross-head K and its operating means reciprocated uniformly with the latch R and its operating means S T, and with the bars $N' N^2$, and with the wheel M' and its connections L C, arranged to serve relatively to the series of signs B, as herein specified.

In testimony whereof I have hereunto set my hand, at New York city, New York, this 1st day of December, 1880, in the presence of two subscribing witnesses.

WARREN EWEN.

Witnesses:

CHARLES C. STETSON,
CHARLES R. SEARLE.