

(No Model.)

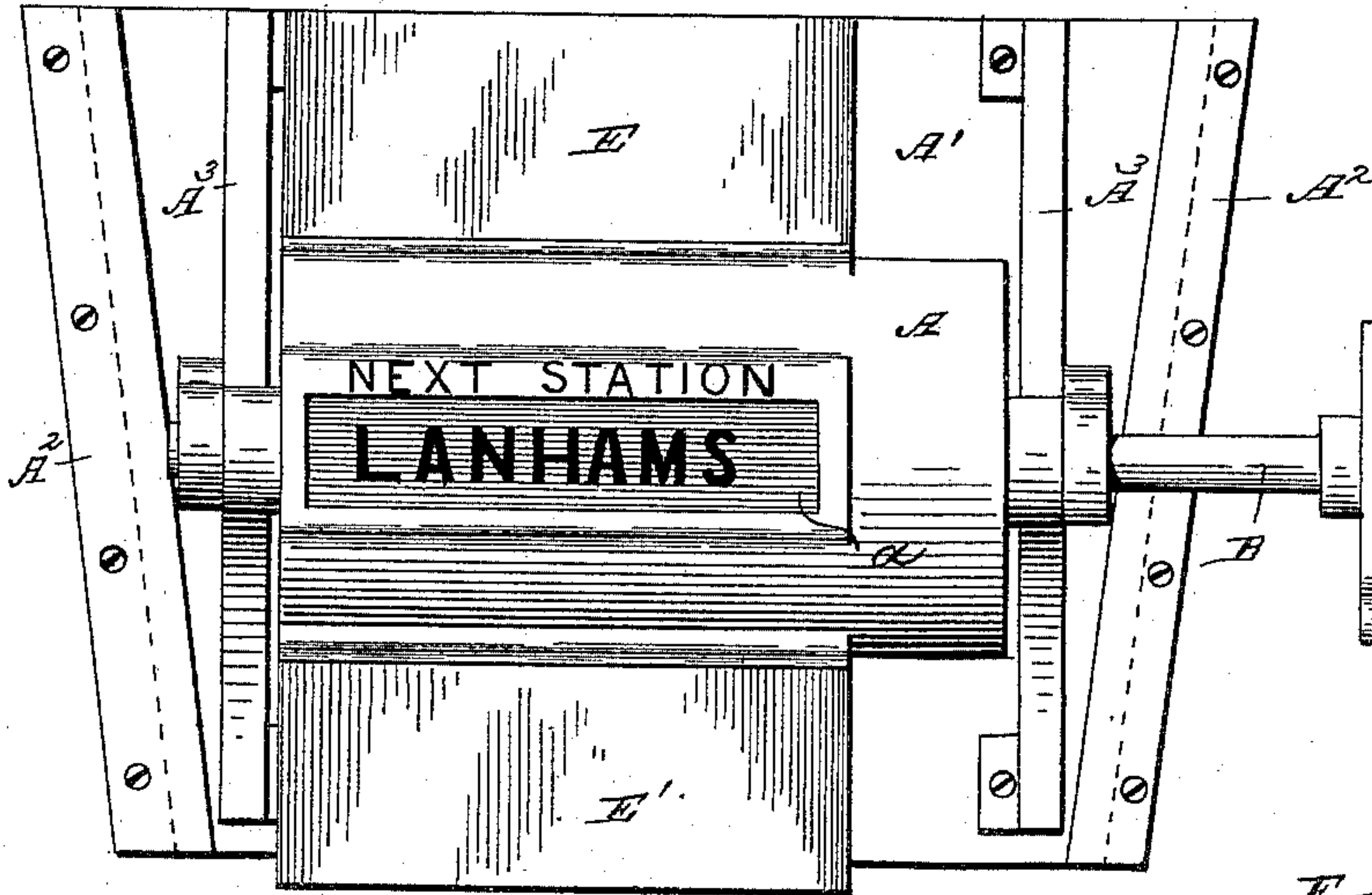
2 Sheets—Sheet 1.

J. F. HARTIGAN.  
STATION INDICATOR.

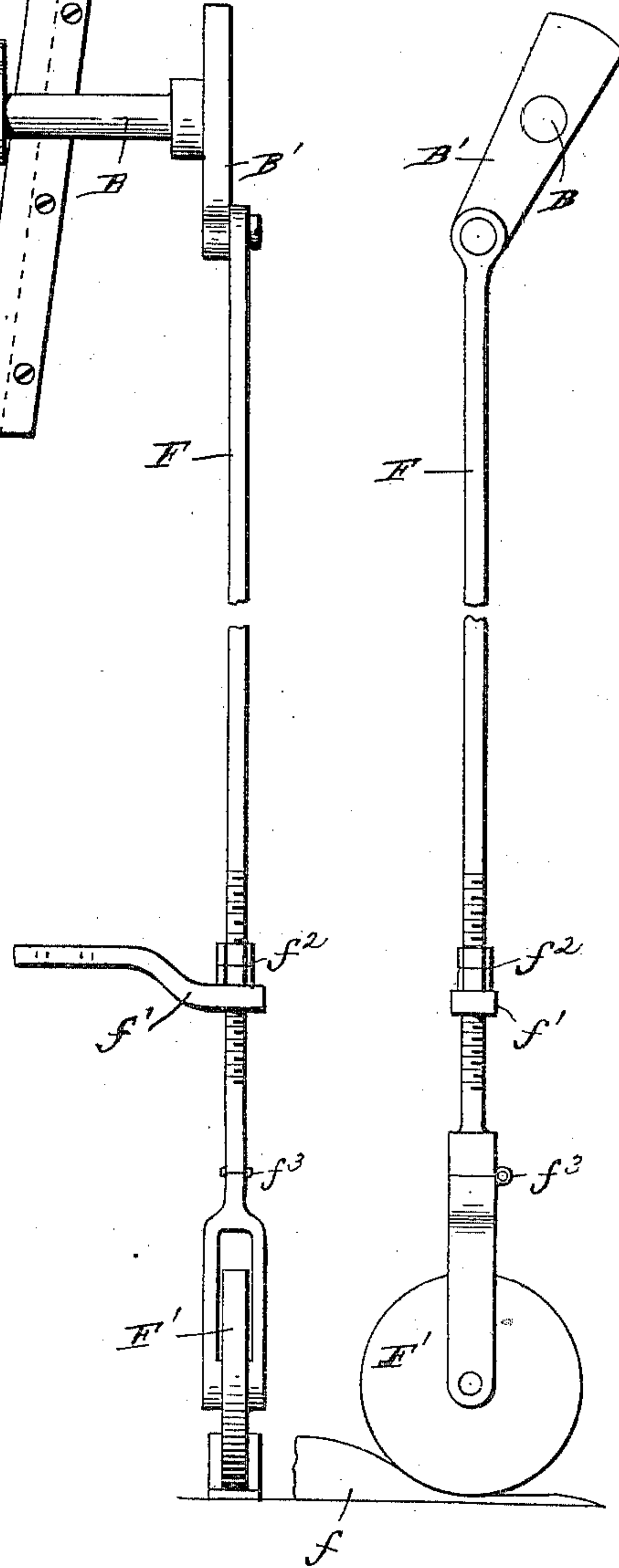
No. 448,147.

Patented Mar. 10, 1891.

*Fig. 1.*



*Fig. 2.*



Witnesses

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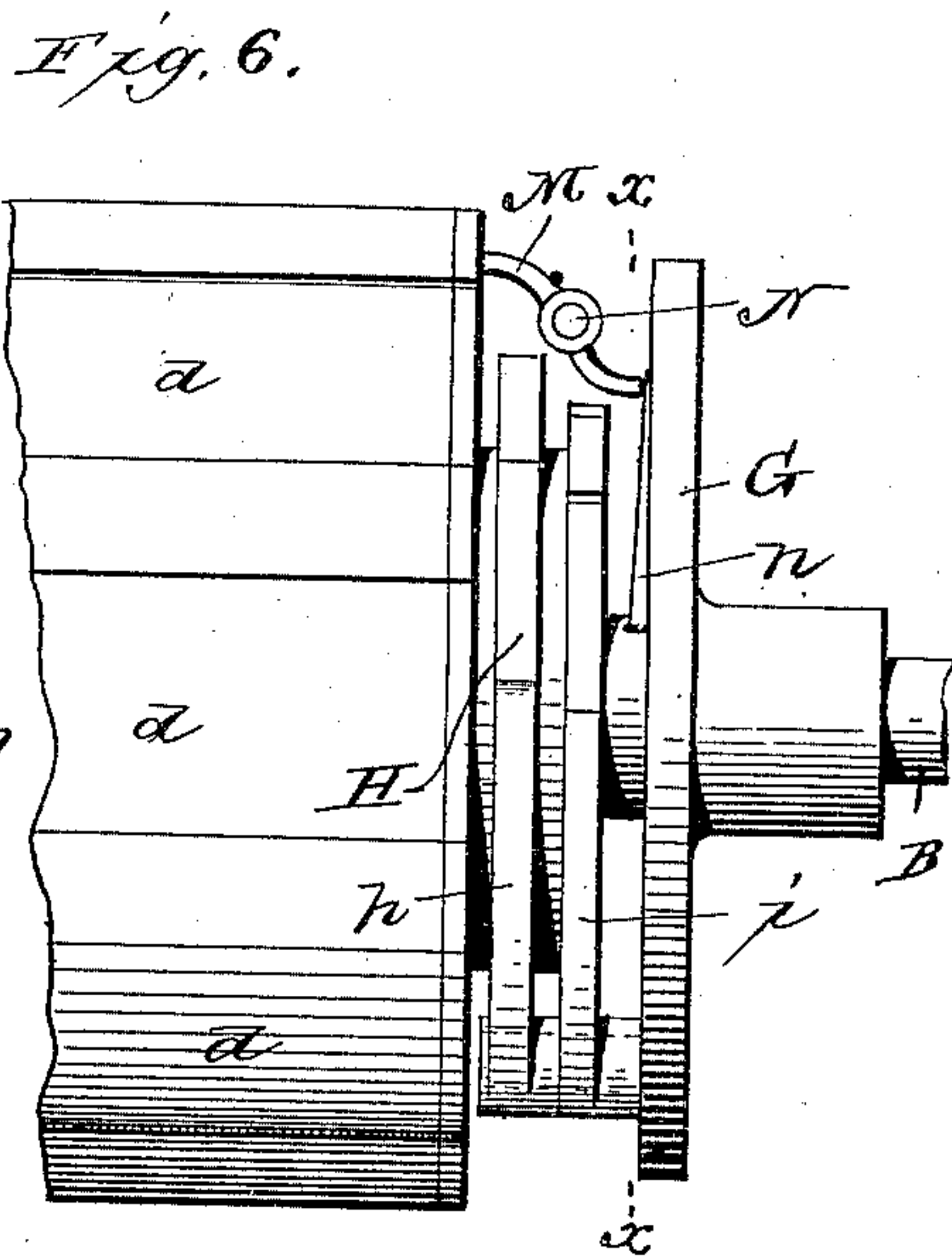
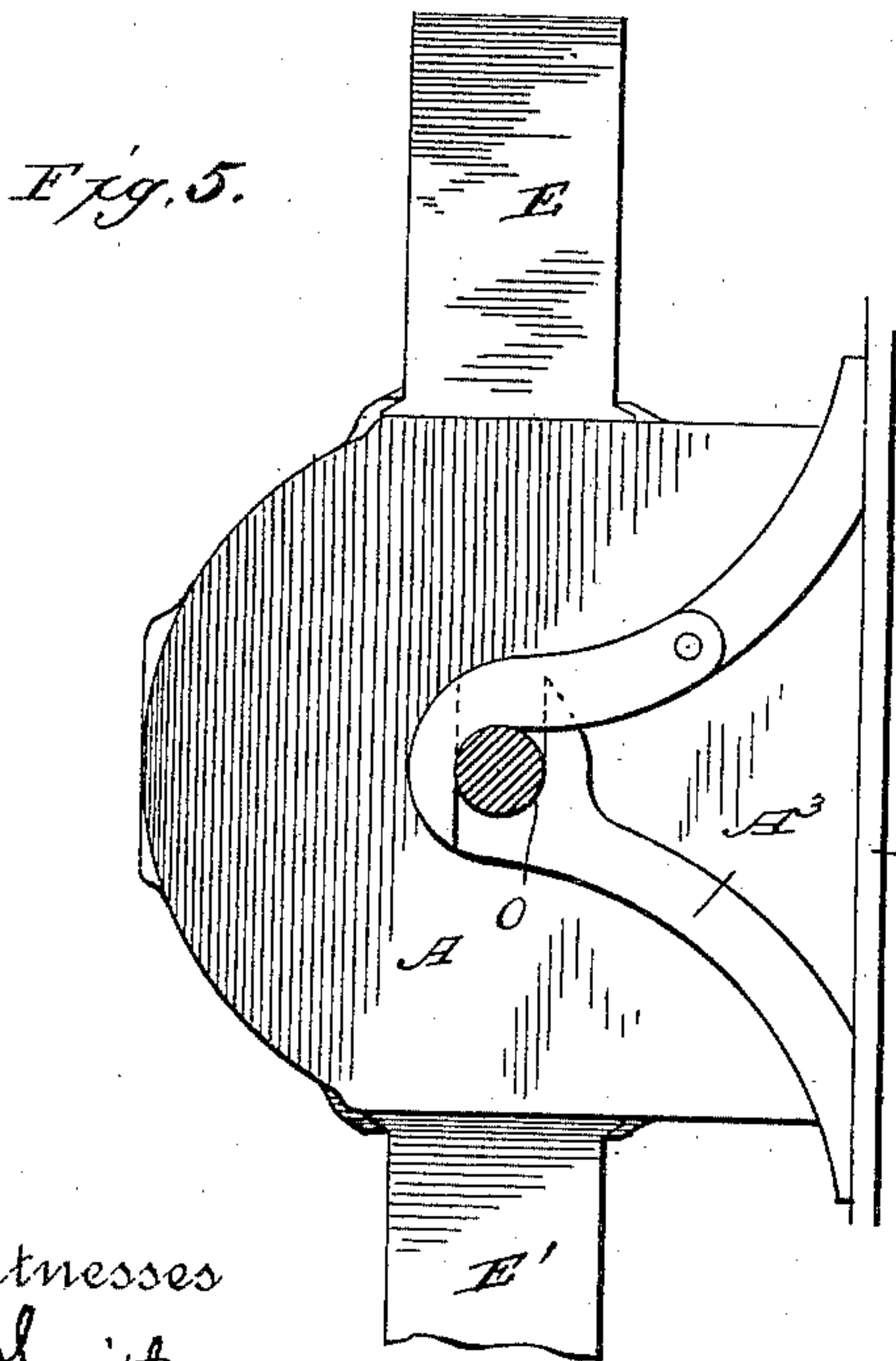
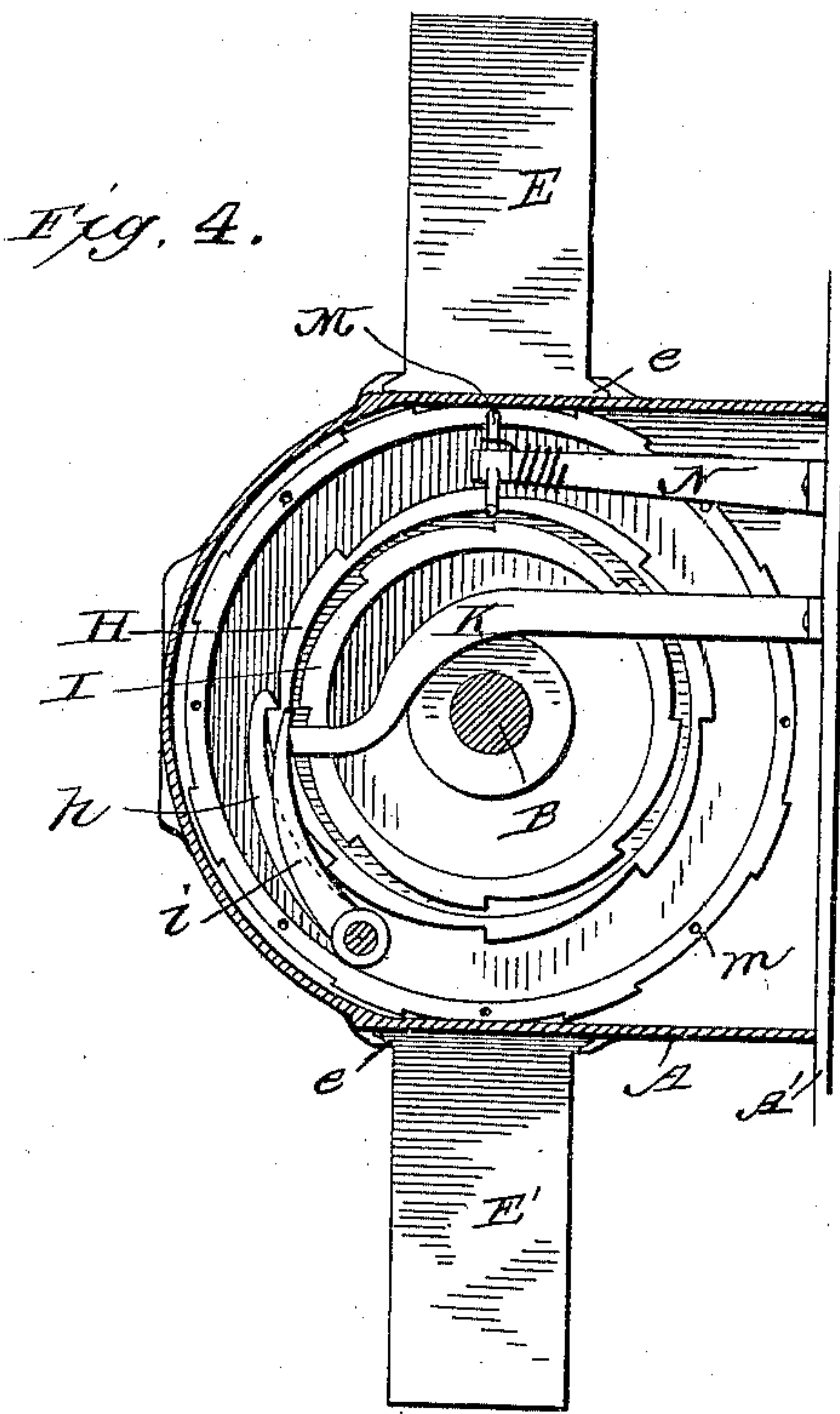
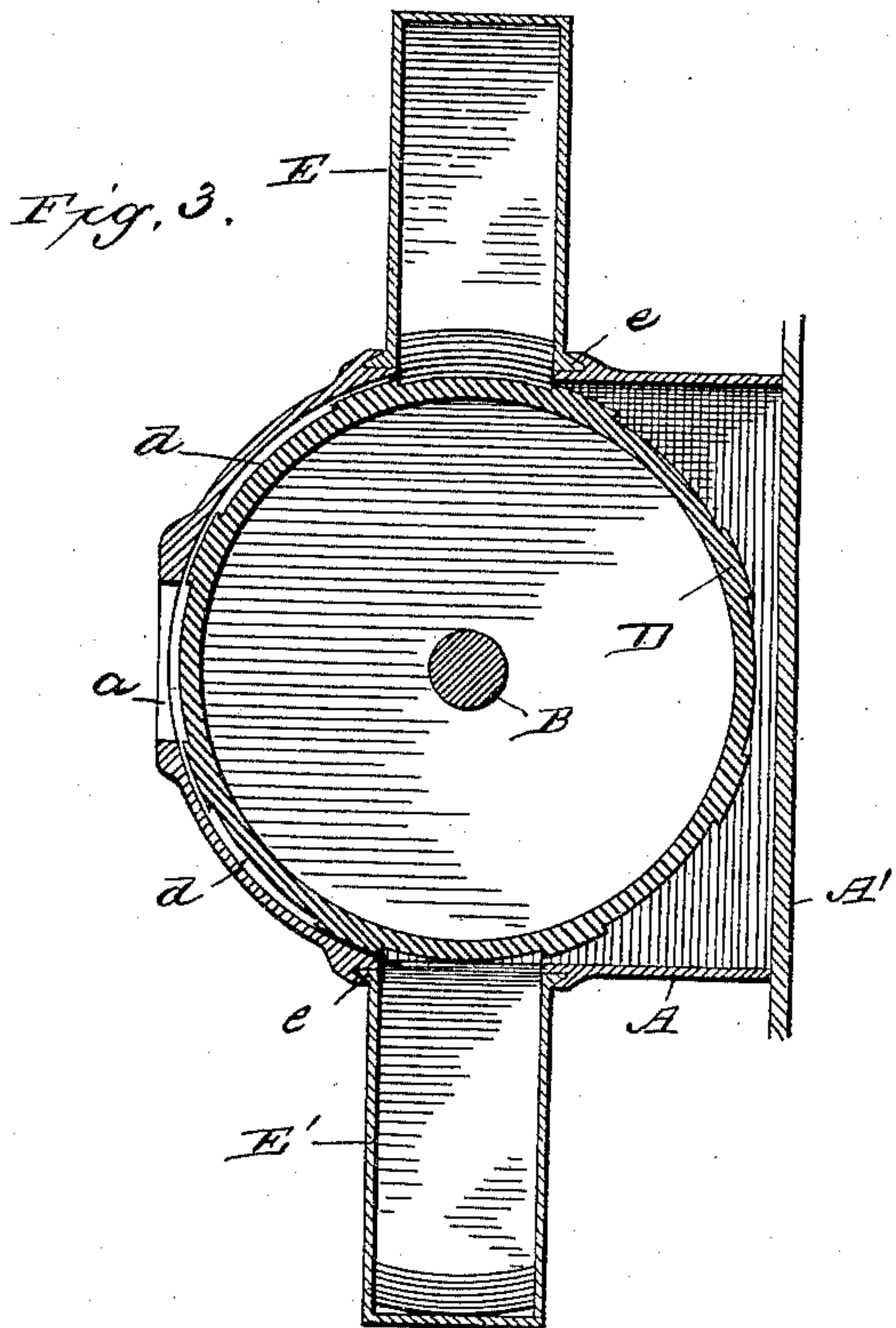
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# UNITED STATES PATENT OFFICE.

JOSEPH F. HARTIGAN, OF SALEM, ASSIGNOR OF TWO-THIRDS TO M. A. RIFFE & CO., OF ROANOKE, AND G. W. ARGABITE, OF LYNCHBURG, VIRGINIA.

## STATION-INDICATOR.

SPECIFICATION forming part of Letters Patent No. 448,147, dated March 10, 1891.

Application filed April 5, 1890. Serial No. 346,653. (No model.)

*To all whom it may concern:*

Be it known that I, JOSEPH F. HARTIGAN, of Salem, in the county of Roanoke and State of Virginia, have invented certain new and  
5 useful Improvements in Station-Indicators; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming a part of this specification, and to the letters of reference marked thereon.

This invention relates to improvements in that class of station-indicators in which a series of individual tablets, each bearing the  
15 name of one station or street-crossing, are employed, said tablets being successively brought into view by means of a drum which receives them from an upper hopper or box, exposes them, and deposits them into a lower  
20 hopper or box in inverse order.

The objects of the invention are to simplify and improve the construction of the mechanism employed, whereby the efficiency and ease of manipulation are increased, and, further, to  
25 provide a machine which may be shifted from one end of the car to the other, and the hoppers or boxes of which are interchangeable, whereby they may be transposed to do away with the necessity of changing the tablets  
30 independently.

A further object is to so construct the indicator as that it may be operated by a projection or cam on the track with great certainty and precision, irrespective of the load  
35 on the car or the change of position of the body incident to jolting or change of load.

Referring to the accompanying drawings, Figure 1 is a front elevation of an indicator and its operating mechanism constructed in  
40 accordance with my invention. Fig. 2 is an end elevation of the actuating rod and wheel. Fig. 3 is a cross-section through the center of the device. Fig. 4 is a section on the line  $x$ , Fig. 6. Fig. 5 is an end elevation, and  
45 Fig. 6 is a front elevation, of one end with the casing removed.

Similar letters of reference indicate the same parts.

Referring particularly to Fig. 1, it will be  
50 seen that the indicator proper is located within a casing A, carried by a base-plate or

frame A', which latter is wedge shape and fits in dovetail grooves formed by side pieces A<sup>2</sup>, secured rigidly to the end wall of the car, making it possible to readily remove the  
55 whole indicator and place it in position elsewhere—as, for instance, in the opposite end of the car.

On the base-plate A' are secured forwardly-extending brackets A<sup>3</sup>, preferably of a  
60 construction to be presently described, and in the ends of these brackets the operating-shaft B is journaled, said shaft serving as the support for the drum D, which is loosely journaled thereon.

In the surface of the drum are formed a series of recesses or depressions  $d$ , each of which at one time in the revolution of the drum comes directly in front of the sight-opening  $a$  in the casing. Tablets or cards having the  
70 names of the stations or crossings thereon are fed into these depressions from a hopper E at the top of the casing, and are dropped out of the same into a hopper E' at the bottom of the casing. Thus if the tablets are properly  
75 arranged the name of each station or crossing may be brought into view and the tablets deposited in inverse order in the lower hopper. In order, now, that it may not be necessary to remove the tablets and arrange them  
80 in the upper hopper, both hoppers are made removable and interchangeable. Thus when the end of the route is reached it is only necessary for the hoppers to be exchanged or substituted one for the other to present the  
85 tablets in their proper relative order for the return-trip. The preferred method of attaching the hoppers is to form flanges or dovetail projections  $e$  at each side of opening, which engage co-operating recesses or grooves in the  
90 casing. (See Figs. 3 and 4.)

The mechanism for rotating the drum to advance the tablets is as follows: At one end of the shaft B a balanced crank B' is mounted, and to this crank is removably connected the  
95 upper end of the vertical operating-rod F, passing down through the car-floor and carrying a wheel or roller F', which is adapted to come in contact with suitable cams or projections  $f$ , arranged at suitable points along  
100 the road, and thus elevate the rod and reciprocate the shaft, the weight of the rod and



wheel being relied upon to return the parts to normal position. The rod F passes through a guide  $f'$  on the car, an adjustable stop, such as lock-nuts  $f^2$ , being provided to limit the downward movement, and a hinge-joint  $f^3$  to permit the rod to fold up if it encounters a projection when moving in the wrong direction or to permit it to be folded and held entirely out of the way, if desired.

10 A disk (or equivalent) G is mounted rigidly on the shaft within the casing and carries two pawls  $h$ , mounted, preferably, on a common pivot and engaging ratchet-wheels H I, secured rigidly on the drum. The pawls are  
15 formed to operate in different directions—that is to say, one will operate to turn the drum in one direction and the other to turn it in the opposite direction—and the teeth on the ratchet-wheels are correspondingly  
20 formed, one tooth being provided in each wheel for each depression or tablet-recess, said teeth being so arranged with relation to each other and to the pawls as that the pawl which turns the drum forward will engage its  
25 tooth before the pawl working in the opposite direction engages its tooth. Thus should the shaft be turned too much and the pawls elevated farther than necessary, the pawl  $i$  will turn the drum back and prevent the pawl  $h$   
30 from moving two teeth at one stroke, and consequently advancing the drum far enough to indicate the wrong station, thus making it practically impossible for the tablets to be advanced out of their proper order. To re-  
35 lease the pawl  $i$  at the bottom of its stroke, as is necessary to permit of another independent upward movement, an arm K is secured to the base-plate and passes over the shaft and down behind the pawl in position to trip the pawl  
40 out of engagement with its ratchet-wheel just as it reaches lowest position.

The drum itself is locked in position when the tablet is exposed by a small spring-pressed catch or latch M, pivoted on the end of a forwardly-projecting stud N on the base-plate,  
45 and which engages recesses or depressions  $m$  in the end face of the drum. The catch is released by a cam or wedge projection  $n$  on the disk, which passes under the rear end of the  
50 catch as the disk rotates upward and before the pawls engage, as clearly shown in Fig. 6.

Variations in the load of the car might under some circumstances cause the operating-rod to be moved upward farther than the  
55 circle described by the crank would permit, and unless some provision were made to prevent it the shaft or rod could be bent or some part of the apparatus destroyed. In order to overcome this difficulty, I propose, if desired,  
60 to support the casing and complementary parts directly on the shaft, with a bearing against the base-plate, the shaft in this instance being mounted in bearings and capable of a vertical movement, as illustrated in Fig. 5, in  
65 which it will be seen that the lower arm of the brackets have open and vertically-elongated bearings O, and the upper arm serves merely

as a retainer to hold the shaft in place. With this arrangement it will now be seen that any upward movement of the rod farther than 70 permitted by the sweep of the crank-arm will simply elevate the shaft and prevent any injury to the operating mechanism.

When in operation, the base-plate carrying the indicator is slipped into its guides at the 75 forward end of the car, the tablets, of course, being arranged in their proper order in the upper hopper. The connection with the operating-rod is then made and when it rides up over the first cam or projection the pawl 80  $h$  is caused to advance and engage a tooth on the drum and advance the same the distance necessary to bring a tablet indicating the next stop into view, the pawl  $i$  preventing any excessive upward movement of the pawl  $h$  85 with relation to the drum and the cam projection  $n$  releasing the latch and holding it out of engagement until the drum has started in its forward rotation. At the end of the route the attendant simply has to remove the 90 hoppers and substitute one for the other to present the tablets in proper order for the return-trip, and if the car is not turned bodily around he may disconnect the operating-rod, lift the whole device out of its supports, carry 95 it to the other end of the car, and make the proper connections with the duplicate operating-rod at that end, thus dispensing with the necessity of employing two indicators for each car. 100

While I have particularly described the indicator as operated by a rod moved by stationary cams or projections alongside the track, it is obvious that any of the ordinary well-known mechanisms may be employed to 105 give the necessary movement at the proper times, or the conductor or brakeman may operate the same by hand in the ordinary manner.

Having thus described my invention, what 110 I claim as new is—

1. In a station-indicator, the combination, with the rotary drum having the tablet-recesses therein, mechanism for rotating the drum, and the casing having the sight-opening, 115 of the interchangeable hoppers dovetailed into the casing above and below the drum, substantially as described.

2. In a station-indicator, the combination, with the rotary drum and the ratchet-wheels 120 on said drum, having oppositely-arranged teeth, of the independently-movable operating-pawls engaging said teeth to rotate the drum in opposite directions, and a stationary stop for holding one of said pawls out of en- 125 gagement at one extreme of its stroke, substantially as described.

3. In a station-indicator, the combination, with the rotary drum and the ratchet-wheels on said drum, having oppositely-arranged 130 teeth, of the independently-movable operating-pawls mounted on a common carrier to rotate the drum in opposite directions, and a stationary stop for holding one of said pawls



out of engagement at one extreme of its stroke, substantially as described.

4. In a station-indicator, the combination, with the rotary drum and the ratchet-wheels thereon having the oppositely-arranged teeth, of the rotary disk carrying independently-movable pawls for engaging said teeth, and a stationary stop for holding one of said pawls out of engagement at one extreme of its stroke, substantially as described.

5. In a station-indicator, the combination, with the central shaft having the drum mounted loosely thereon, the ratchet wheels on the drum, and the disk fixed on the shaft and carrying the pawls engaging the ratchet-wheels, of the pivoted catch engaging the drum to hold it in locked position, and the wedge-shaped projection on the disk engaging the catch to release the same, substantially as described.

6. In a station-indicator, the combination, with the shaft having the drum mounted loosely thereon, and pawl-and-ratchet connections between said drum and shaft, of the crank on the shaft, the vertical operating-rod connected to the crank, the roller on the lower end of the rod, and the cam or projection with which the roller engages to reciprocate the shaft, substantially as described.

7. In a station-indicator, the combination, with the support having the side pieces forming dovetail grooves, of the indicator-casing having the base fitting in said grooves, whereby the casing may be removed, substantially as described.

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Witnesses:

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