

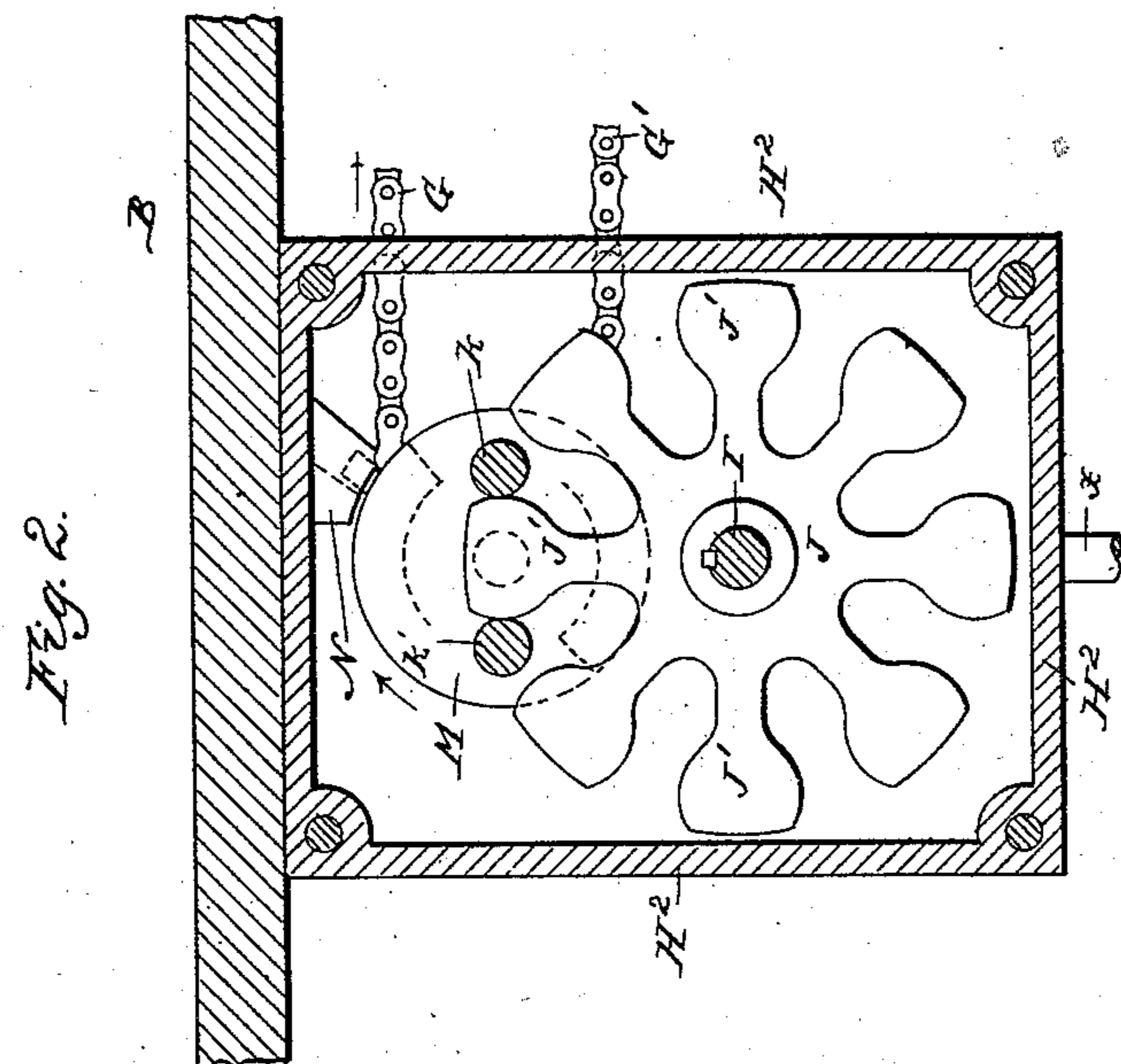
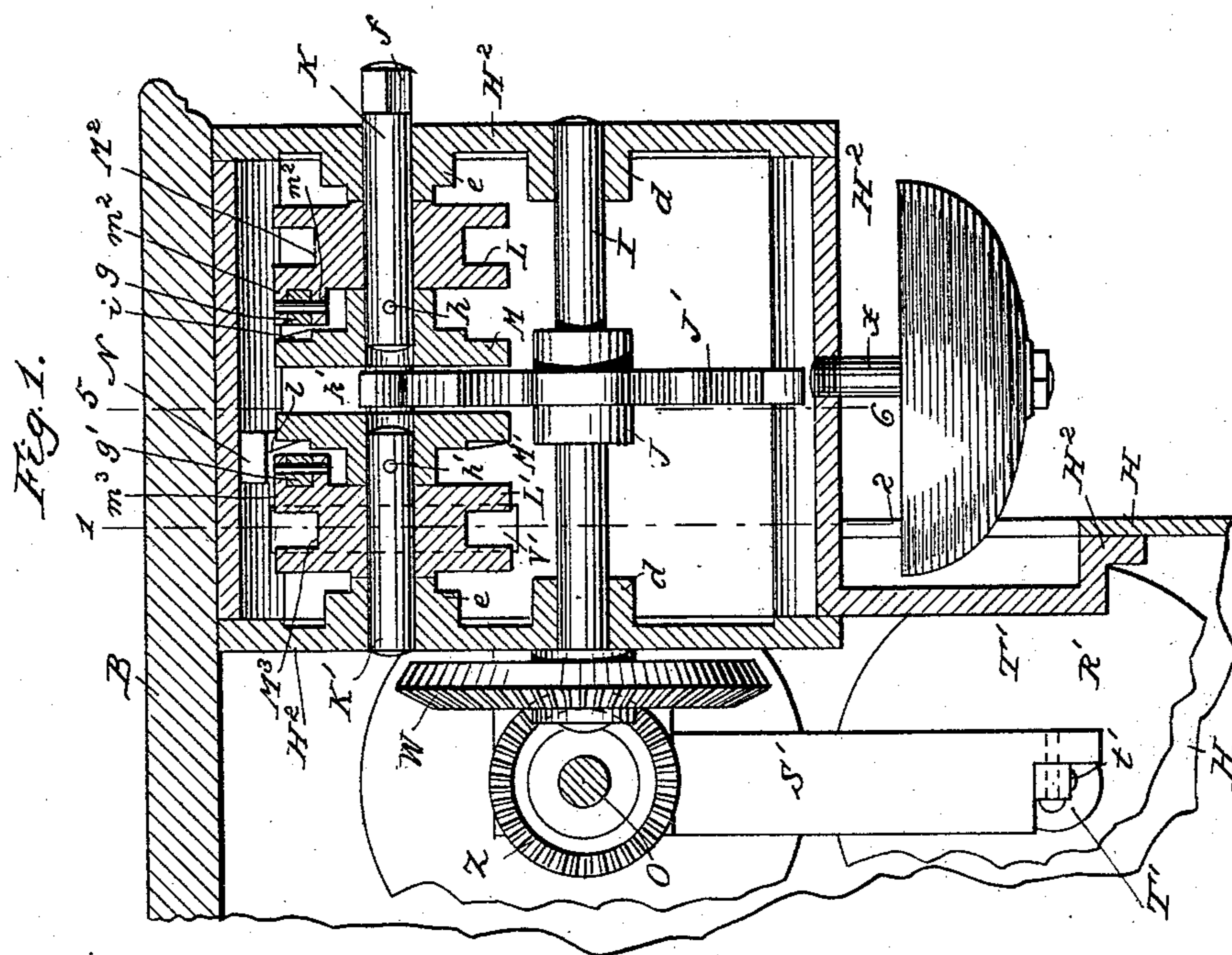
(No Model.)

2 Sheets—Sheet 1.

F. ROCHOW.
STATION INDICATOR.

No. 455,360.

Patented July 7, 1891.



WITNESSES:

D. C. Reusch.
J. M. Rochow.

INVENTOR

Freidman Rochow

BY

Joseph R. Reusch
ATTORNEY

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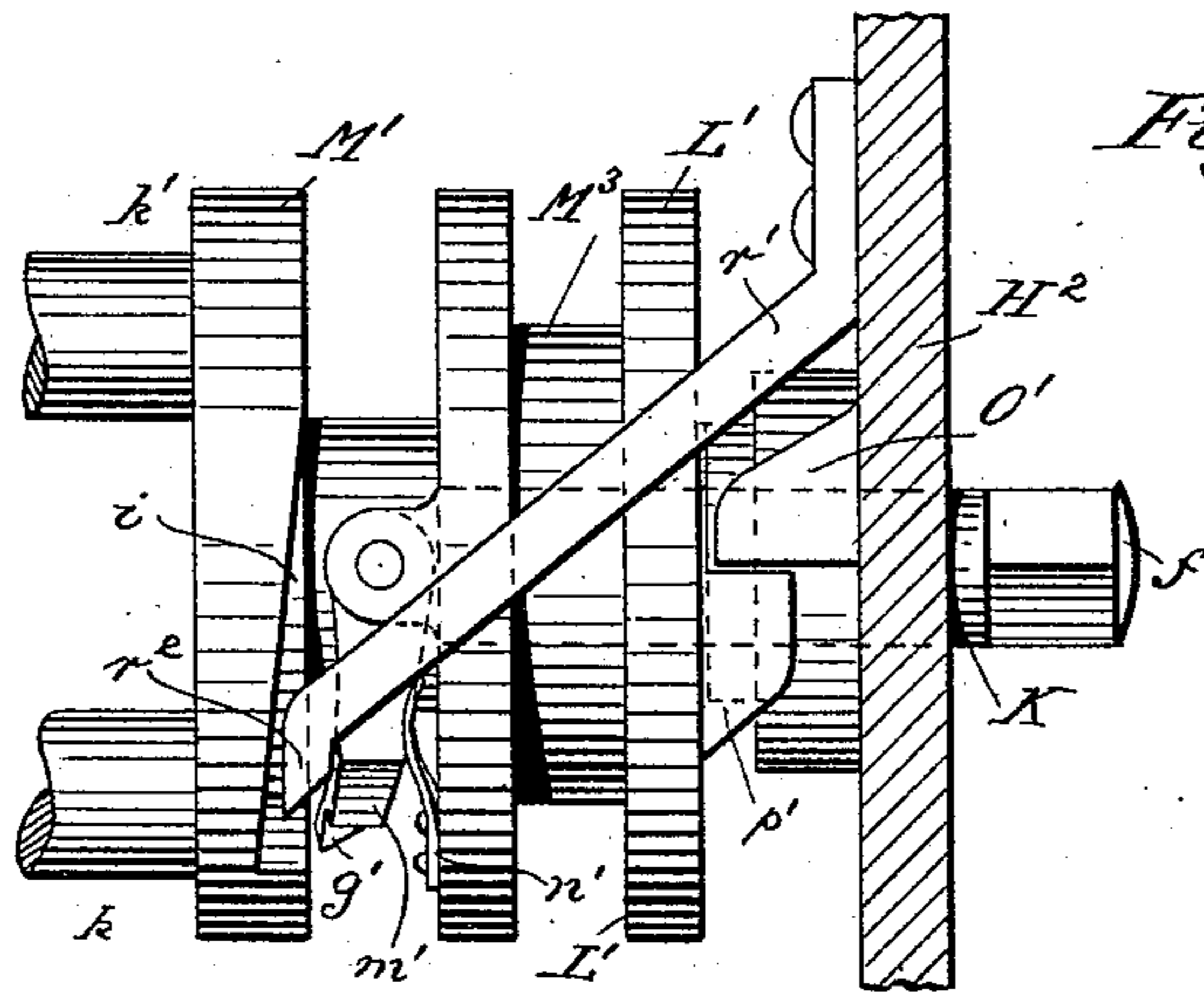


Fig. 5.

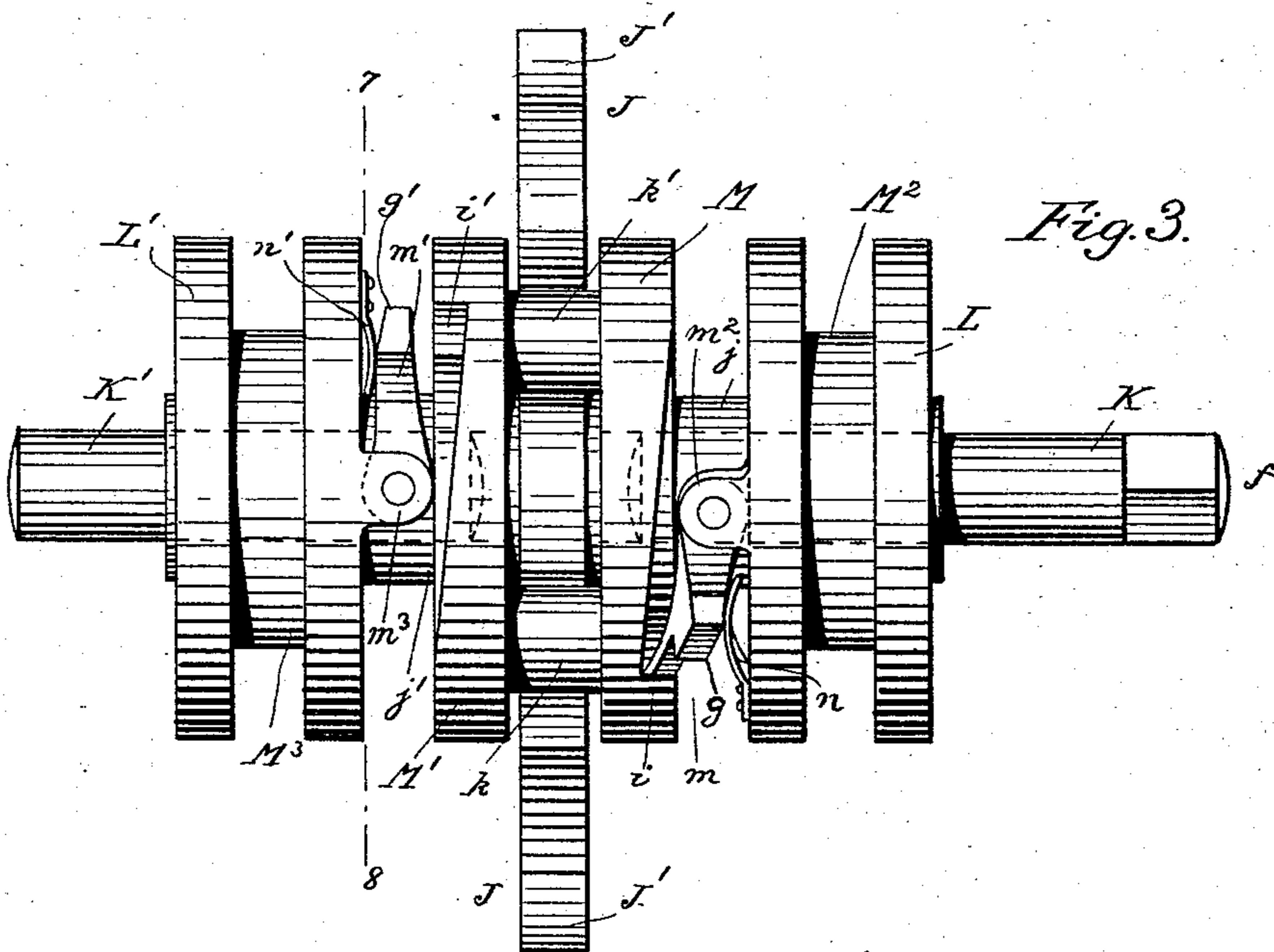


Fig. 3.

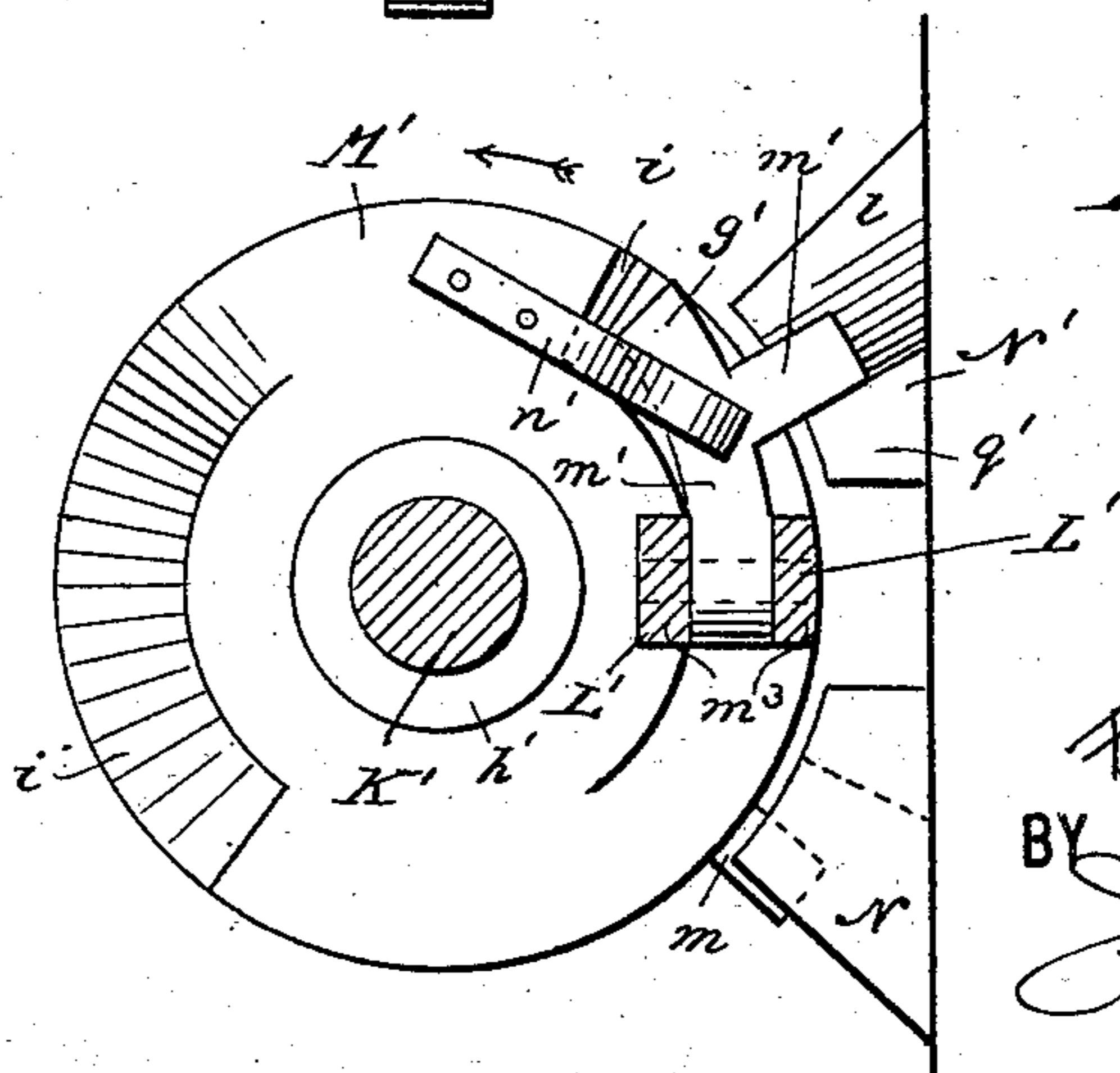


Fig. 4.

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UNITED STATES PATENT OFFICE.

FERDINAND ROCHOW, OF BROOKLYN, NEW YORK, ASSIGNOR TO ROBERT
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STATION-INDICATOR.

SPECIFICATION forming part of Letters Patent No. 455,360, dated July 7, 1891.

Application filed June 26, 1890. Serial No. 356,775. (No model.)

To all whom it may concern:

Be it known that I, FERDINAND ROCHOW, a subject of the Emperor of Germany, and a resident of Brooklyn, in the county of Kings and State of New York, have invented a certain new and useful Improvement in Station-Indicators, of which the following is a specification.

My invention has for its object the automatic indication by means of an indicator in which rolls having printed or otherwise produced upon their exposed surface the names of the stations and which is to be placed conspicuously in a car or other vehicle of the station to which said vehicle is approaching, either as it departs from or arrives at a station on the line, as may be desired, and for other purposes of like nature to which it may be advantageously applied.

My invention essentially consists of the combination of two specific devices, each separate device having its own sub-combinations, and therefore, for the better identification of such specific devices, I shall in the following description term them, respectively, the "striking" and "indicator-operating" mechanism, and as such they will be known in the description and claims.

In my application filed January 9, 1890, Serial No. 336,441, will be found a full, clear, and exact description of my station-indicator, to which reference is hereby made.

In this specification I shall describe and claim the mechanism used to operate the rolls upon which the names of the stations are produced. This mechanism is by me termed the "indicator-operating" mechanism. I attain the before-mentioned objects by the mechanisms herein described and claimed, and further illustrated by the accompanying drawings, forming part of this specification, in which—

Figure 1 is a transverse cross-section through the indicator, showing the indicator-operating mechanism in section and a portion of the ends of the indicator-rolls; Fig. 2, a like view on the line 5 6, Fig. 1; Fig. 3, a front elevation of the pawl and ratchet and detent of the indicator-operating mechanism; Fig. 4, a view, partly in section, taken on the line 7 8, Fig. 3; Fig. 5, a plan view of a de-

tached portion of the indicator-operating mechanism, showing a modified construction.

The same letters of reference that were used to indicate corresponding parts in the application before referred to are, for the sake of exactness, here used to indicate the same parts, with the exception that the numerals of the figures are changed.

The indicator-operating mechanism consists of devices for operating the rolls bearing the necessary inscriptions and a detent for staying and regulating any inopportune action of the rolls.

By reference to Fig. 1 it will be seen that the case H^2 is provided with bearings $d d$, through which a spindle I is passed and which is free to turn therein. Upon this spindle is rigidly and preferably centrally affixed a detent-wheel J , having radial teeth J' with segmental surfaces on their ends, which serves both for the purpose of holding the rolls in the position assumed after their operation and for actuating them. Directly above the bearings $d d$ are bearings ee , in which are mounted to rotate spindles $K K'$, the spindle K being squared, as at f , for engagement with a key, as will be hereinafter set forth. Upon the spindles $K K'$ are rotatably mounted two wheels $L L'$, having outwardly-extending lugs $m^2 m^3$, carrying pawls $g g'$, and which will be called "pawl-wheels." The pawl-wheels have the peripheral grooves $M^2 M^3$, in which the chain G' rests. Upon the same spindles are rigidly secured by pins $h h'$ two wheels $M M'$, which have ratchets $i i'$, which are inclined inwardly and are concentric with the periphery of its respective wheel, formed within their inner peripheries for engagement with the pawls, and which will be called "ratchet-wheels." There are two ratchets, formed diametrically opposite each other, on each wheel. The ratchet-wheels or the pawl-wheels are provided with hubs $j j'$, which serve to keep them the requisite distance apart.

The spindles K and K' , carrying the pawl and ratchet wheels, are united together by the pins $k k'$, which not only serve to unite the two sets of pawl and ratchet wheels into one integral system, but act intermittently as the detent and roll-propelling mechanism, and they will be hereafter known as the "detent."

Located at any convenient place, either on the case H^2 or on the spindle I , are two deflectors $N N'$, used for deflecting the pawls g and g' out of contact with the corresponding ratchets, and having an inclined surface l , Fig. 1, upon which the arms m and m' of the pawls slide, the said arms when moving over the deflector-surface withdrawing the pawl from its ratchet against the pressure of a spring $n n'$, located on the pawl-wheels.

In combination with the last-stated arrangement the following may be used, thus insuring absolute certainty of operation and relieving the parts of undue strain: On the walls of the case H^2 , Fig. 5, are produced stops $o o'$, (but one set being shown,) which are intended to engage like stops $p p'$ (but one set being shown) on the pawl-wheel and prevent, in conjunction with a like engagement of the arms $m m'$ of the pawls with the stops $q q'$, Fig. 4, on the deflectors $N N'$, the farther rotation of the pawl-wheels in the direction opposite to that in which the indicator-rolls are being moved.

Instead of the foregoing arrangement of stops and deflectors being used, I can use separately that shown in Fig. 5, in which but one set of pawl and ratchet wheels is shown. In this modification it will be seen that the construction of the pawl and ratchet wheels is the same, and that the stops o' and p' are used in the same manner as before set forth, but instead of using the deflectors before shown and described a deflector constructed as here shown at r' , fastened to the wall H^2 , may be used. It is provided with an inclined face r^2 , by which the pawl is removed from the ratchet. Instead of the arm m' of the pawl being used to assist the stops $o' p'$ in arresting the motion of the pawl-wheel, as before described, the stops o' and p' may be set in advance in relation to the deflector r' and arm m' , so that the rotation of the pawl-wheel will be entirely arrested before the deflector and arm m' come together, thus relieving the pawl of any undue strain.

The linked chains $G' G'$, Fig. 1, pass up into the car from the striking mechanism over the pulleys $c c$, then through the slots $V V'$ in the case H^2 , around the ratchet-wheels $L L'$, to which they are rigidly secured by the pin w , Fig. 2, thence out through the same slots, and are linked to the retracting-springs $V' V^2$, Fig. 1, which are held at one end by brackets $w' w^2$. Turn-buckles V^3 are placed in the linked chain G' to adjust its length. By this means the striking and indicator-operating mechanism are operatively connected.

The indicator-operating mechanism and the indicator-rolls are connected in the following manner: On the end of the shaft I of the indicator-operating mechanism is rigidly secured the large bevel gear-wheel W , which meshes with the smaller bevel-pinion Z on the shaft O of the upper indicator-rolls, and in this way the indicator-operating mechanism

and the indicator-rolls are operatively connected together. The ratchet-wheels $M M'$ require two operations in order to give them a complete revolution, the detent-wheel J eight. The gear W makes one revolution to two of the pinion Z . This movement of the chain, which passes around the pawl-wheels and is fastened to them at w , Fig. 2, gives the pawl-wheels one-half a revolution, and in turning, the pawls being freed from the deflectors N or r' , Figs. 4 and 5, are forced by the springs n on the pawl-wheels into the ratchet i in the ratchet-wheel, carrying the ratchet-wheel with it, thereby giving it one-half a revolution. The two ratchet-wheels being connected together by the pins $k k'$, both ratchet-wheels and but one pawl-wheel move together, the pawl-wheel which the chain G' does not rotate by reason of its not having been actuated by its respective striking-lever coming in contact with the projection on the track being held in its normal position (it being loose on its shaft) by the springs V' . The release of the striking-lever from the block C' and the recoil of the striking mechanism releases the strain on the retracting-springs V' , which then retract and rotate the pawl-wheels in a direction opposite to that which they previously had been moved. This return rotation of the pawl-wheels brings the stops o' and p' or the arm m on the pawl and stops q in contact, thereby arresting the further rotation of the latter mechanism. At the same time the arm m on the pawl passes over the inclined deflector-surface l or r^2 , and thereby removes the pawl from contact with its ratchet. In Fig. 5 the stops $o' p'$ arrest the motion of the mechanism before the arm m comes in contact with the deflector r' , and, as before stated, the same can be done in the other arrangement. There being two ratchets on each ratchet-wheel diametrically opposite each other, so that as the wheel makes one-half turn each time it is operated a ratchet will be presented in the proper position for co-operation with its respective pawl. The rotation of the pawl-and-ratchet system brings the pins $k k'$ in contact with the segmental surface of the teeth J' of the detent-wheel J , and as the pin k moves farther into the space between the respective teeth J' it rotates the detent-wheel J in the opposite direction, and before the pin k' has entirely left the segmental surface opposite to that which the pin k is operating on and on the same tooth the pin k has entered the space between that tooth and the one following it, thus locking the mechanism and holding it until the pin k' has rotated and entered another space between the teeth, when it is more firmly held by both, besides rotating the wheel J . It will be seen that the segmental surfaces of the teeth J' are parts of a circle struck from the same center as the spindles K or K' , the same point being the center of the circle from which the pins $k k'$ are struck, thereby insuring the absolute certainty of co-operation of the pins $k k'$ with

the teeth J' at all times and securing the double function of operation and detention for one and the same device. The rotation of the wheel J rotates the shaft I, and with it the gear W, fast on it, which in its turn rotates the pinion Z, fast upon the shaft O, thereby winding up the indicator-rolls.

When the device has been operated and the recoil of the indicator-operating mechanism has taken place, the detent-wheel J, in combination with the pins *k k'* and ratchet-wheels, will hold or detain the rolls from further rotation, and any slack which may have been caused in the ribbons will be taken up by the springs in their respective spools. In this way a complete and automatic indication of the station will be made.

If at any time it should be found necessary to turn the spools by hand without vibrating the striking-lever D, a key or other tool may be placed on the squared end of the spindle K and the rolls turned or operated, as desired.

What I claim, and desire to secure by Letters Patent, is—

1. In a station-indicator, a pawl-wheel loosely mounted upon a rotating shaft, a ratchet-wheel fast suspended and rotating with said shaft, pins extending from said ratchet-wheel, and a detent-wheel provided with radial arms upon which said pins operate, in combination with means for operating the same, substantially as described.

2. In a station-indicator, a pawl-wheel loosely mounted upon a rotating spindle, a pawl pivotally attached to the pawl-wheel, a spring for actuating the pawl, a ratchet-wheel fast upon and rotating with said shaft, a ratchet formed in said ratchet-wheels, pins extending from said ratchet-wheels, and a detent-wheel provided with radial arms upon which said pins operate, in combination with means for operating the same, substantially as described.

3. In a station-indicator, a pawl-and-ratchet mechanism comprising a disk fast upon a rotating shaft having concentric and inwardly-extending grooves formed in its periphery and side, and another wheel loose upon the same shaft carrying a pawl pivotally suspended thereon, the axis of said pawl being at right angles to the said shaft, and a spring acting on the pawl, the said pawl and concentric groove engaging when the pawl-carrying wheel is rotated, substantially as described.

4. In a station-indicator, the combination, with a rotating disk provided with pins arranged in said disk diametrically opposite each other, of a wheel having radial teeth provided with segmental surfaces for engagement with said pins, and means for operating said disk, substantially as described.

5. In a station-indicator, a detent mechanism comprising a disk mounted upon a spindle, pins extending axially from said disk, the centers of which are concentric with said spindle, and a wheel having teeth extending

radially therefrom, said teeth being provided with segmental surfaces at their ends, such segmental portion being concentric with the said disk-spindle, the said pins and teeth being adapted for co-operative engagement, substantially as described.

6. In a station-indicator, a ratchet-wheel comprising a disk having concentric and inclined inwardly-extending channels or grooves, pins extending axially from said disk, and means for rotating said disk, in combination with a wheel having radial teeth for engagement with said pins, substantially as described.

7. In a station-indicator, a ratchet-wheel comprising a disk having concentric and inclined inwardly-extending channels or grooves, pins extending axially from said disk, and means for rotating said disk, in combination with a wheel having radial teeth provided with segmental surfaces at their ends for engagement with said pins, substantially as described.

8. In a station-indicator, a pawl-wheel comprising a disk, a pawl pivotally secured in said disk, and a spring in contact with the pawl and carried by the disk, a detent-wheel having radial teeth provided with segmental surfaces at their ends, a wheel having ratchets, and axially-extending pins interposed between the pawl and detent wheels, in combination with means for operating the pawl-wheel, substantially as described.

9. In a station-indicator, a pawl-wheel loosely mounted upon a rotating spindle, a pawl pivotally attached to the pawl-wheel, a spring for actuating the pawl, an arm on said pawl, and a deflector provided with a stop and inclined surface for coaction with the arm of the pawl, in combination with means for rotating the pawl-wheel, substantially as described.

10. In a station-indicator, a pawl-wheel loosely mounted upon a rotating spindle, a pawl pivotally attached to the pawl-wheel, an arm on said pawl, a deflector having an inclined face for coaction with the arm of the pawl, a stop on the pawl-wheel, and another suitably located to engage with it, in combination with means for rotating the pawl-wheel, substantially as described.

11. In a station-indicator, a pawl-wheel loosely mounted upon a rotating spindle, a pawl pivotally attached to the pawl-wheel, a spring for actuating the pawl, an arm on said pawl, a deflector provided with an inclined surface, a stop on the pawl-wheel, and another suitably located to engage with it, in combination with means for rotating the pawl-wheel, substantially as described.

12. In a station-indicator, a pawl-wheel loosely mounted on a rotating spindle, a pawl pivotally attached to the pawl-wheel, a spring for actuating the pawl, an arm on said pawl, and a deflector provided with an inclined surface, in combination with means for rotating the pawl-wheel, substantially as described.

13. In a station-indicator, the pawl-wheel L, loosely mounted upon the spindle K, which pawl-wheel comprises a disk, a central peripheral groove M², an outwardly-extending lug m², a pawl g, pivotally secured in said lug, and a spring n in contact with the pawl, in combination with a ratchet-wheel M, mounted on the spindle K, which ratchet-wheel comprises a disk and concentric and inclined inwardly-extending channels or grooves i, substantially as described.

14. In a station-indicator, a pawl-wheel L, loosely mounted on a rotating spindle K, a pawl g, pivotally attached to the pawl-wheel, a spring n for actuating said pawl, an arm m on said pawl, a deflector N, provided with a stop g, and inclined surface l for coacting with the arm of the pawl, in combination with means for rotating the pawl-wheel, substantially as described.

15. In a station-indicator, the combination of a pawl-wheel loosely mounted on a spindle, a pawl on the pawl-wheel having a projecting arm, a spring for actuating the pawl, a ratchet-wheel fast to the said spindle and having a ratchet for co-operation with said pawl, with devices for deflecting the said pawl out of contact with the said ratchet, and means for rotating the pawl-wheel, substantially as described.

16. In a station-indicator, the combination of the pawl-wheel loosely mounted on a spindle, a pawl on the pawl-wheel having a projecting arm, a ratchet-wheel fast to said spindle and having a ratchet for co-operation with the said pawl, with devices for simultaneously arresting the rotation of the pawl-wheel and for withdrawing the pawl from contact with the ratchet, and means for rotating the pawl-wheel, substantially as described.

17. In a station-indicator, a pawl-and-ratchet mechanism comprising disks M M', united by pins k k' and fast upon the spindles K K', and having a concentric and inwardly-extending channel i, and another disk L, loose upon either of said spindles and having a pawl g pivotally secured thereto, and a spring n, acting on the said pawl, the pawl and inwardly-extending channel engaging when the pawl-wheel is rotated, substantially as described.

Signed at New York, in the county of New York and State of New York, this 23d day of June, A. D. 1890.

FERDINAND ROCHOW.

Witnesses:

JOSEPH L. LEVY,
HERBERT F. DURBUR.