

(No Model.)

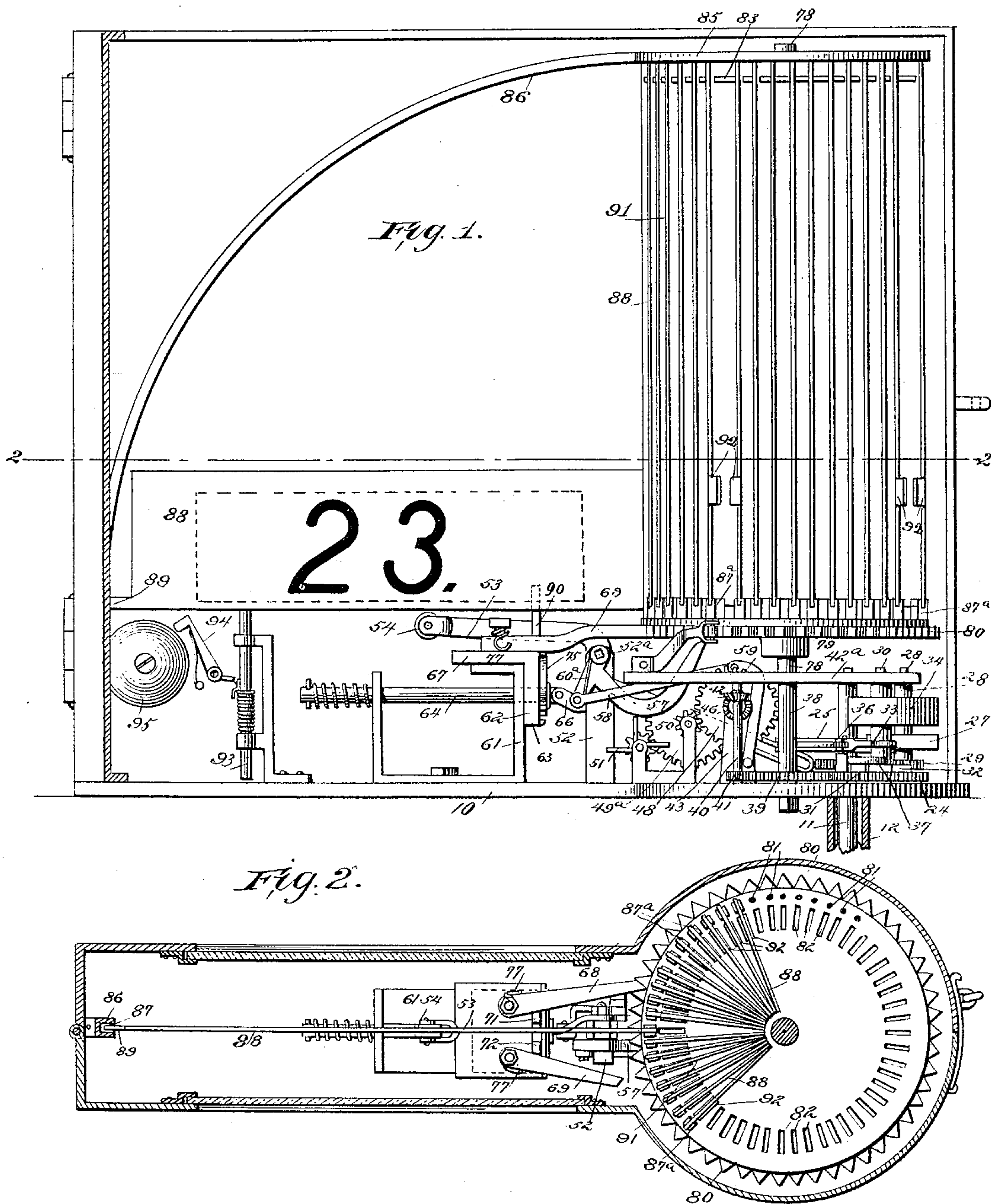
5 Sheets—Sheet 1.

E. BLAMEY.

AUTOMATIC STATION INDICATOR.

No. 389,283.

Patented Sept. 11, 1888.



WITNESSES:

W. R. Davis.
C. Sedgwick.

INVENTOR:

E. Blamey.
BY *Munn & Co.*

ATTORNEYS.

(No Model.)

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Fig. 3.

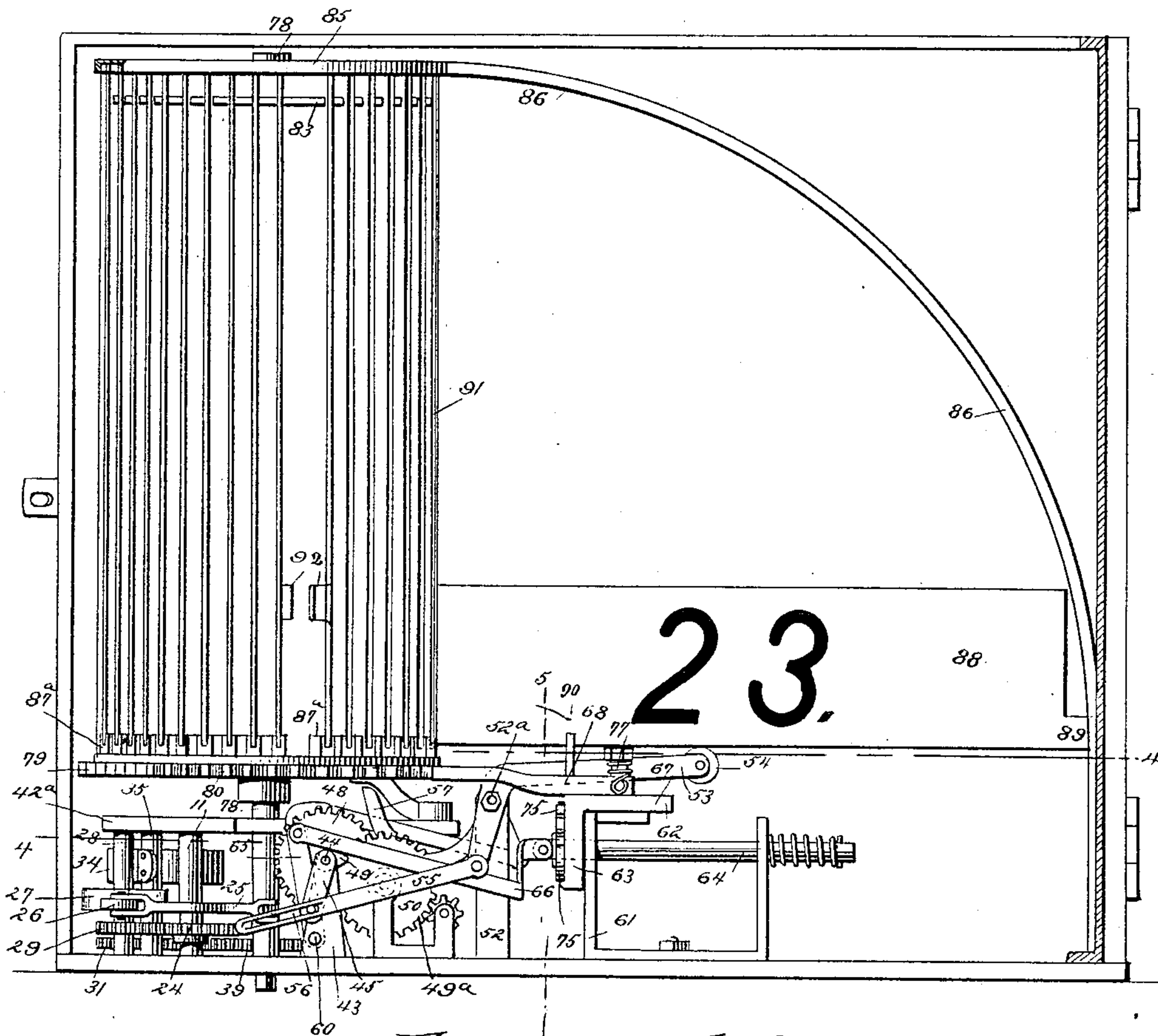


Fig. 8.

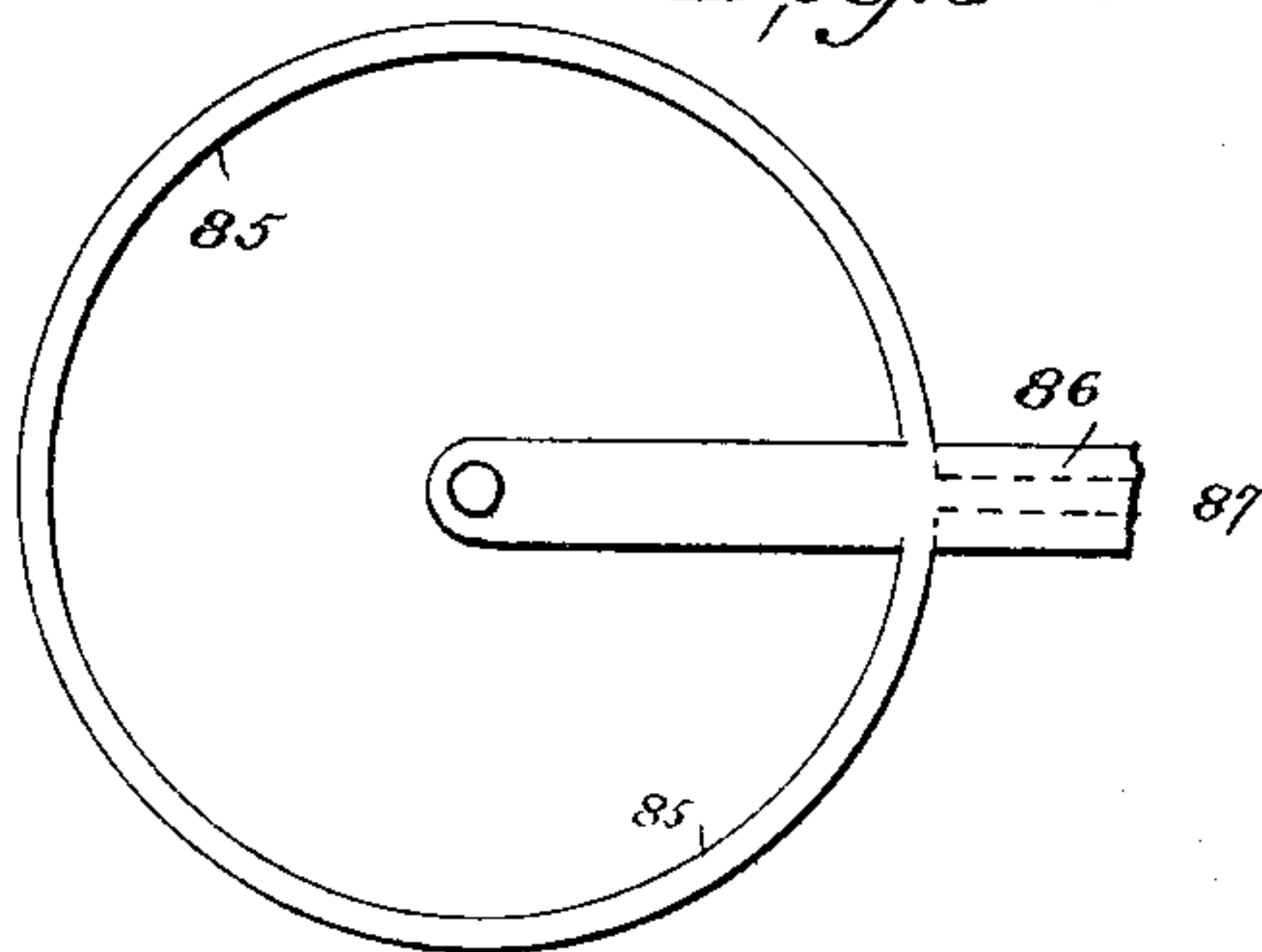
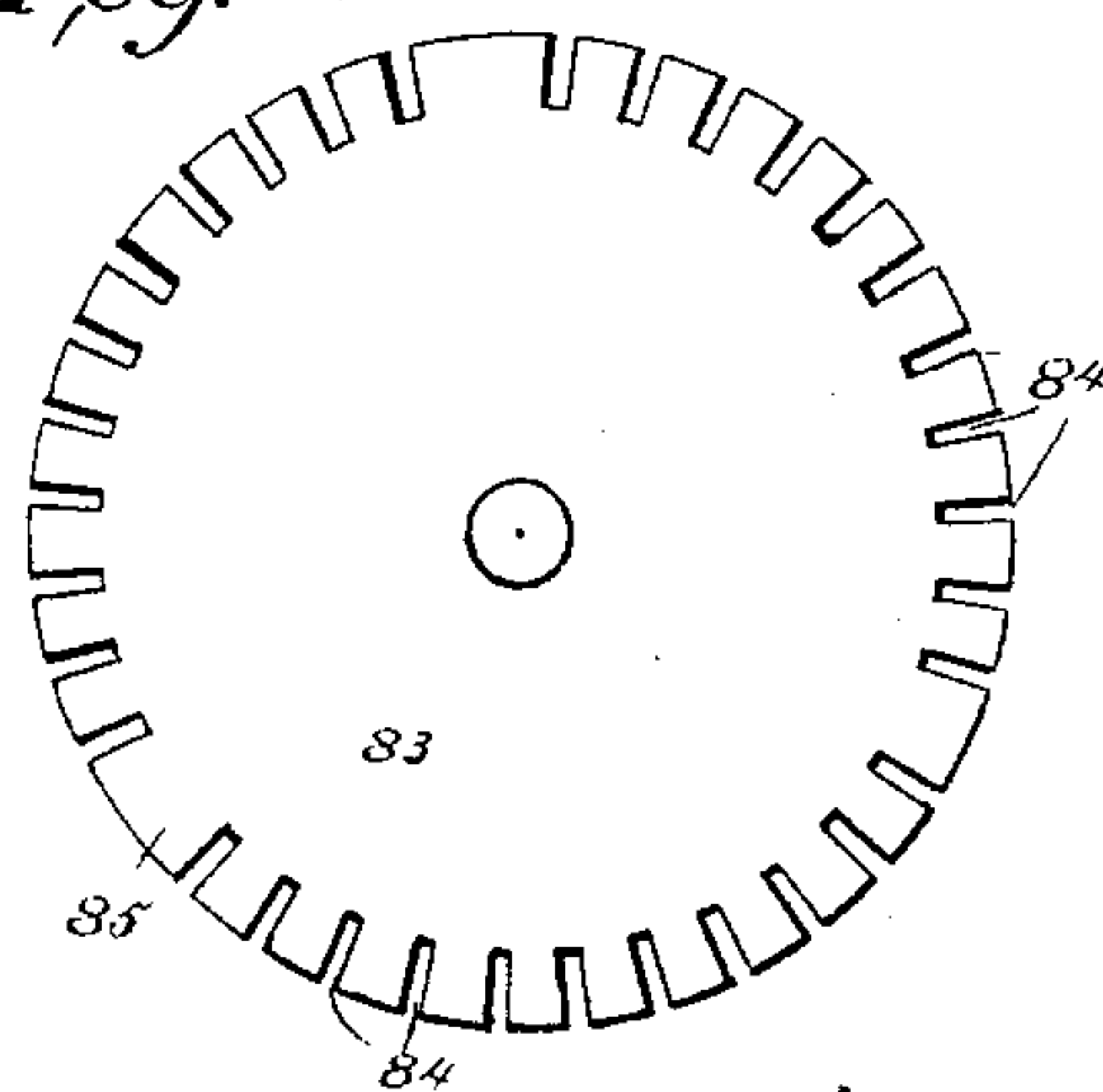


Fig. 9.



WITNESSES:

W. R. Davis.
C. Sedgwick.

INVENTOR:

E. Blamey.
BY Munn & Co.
ATTORNEYS.

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Fig. 4.

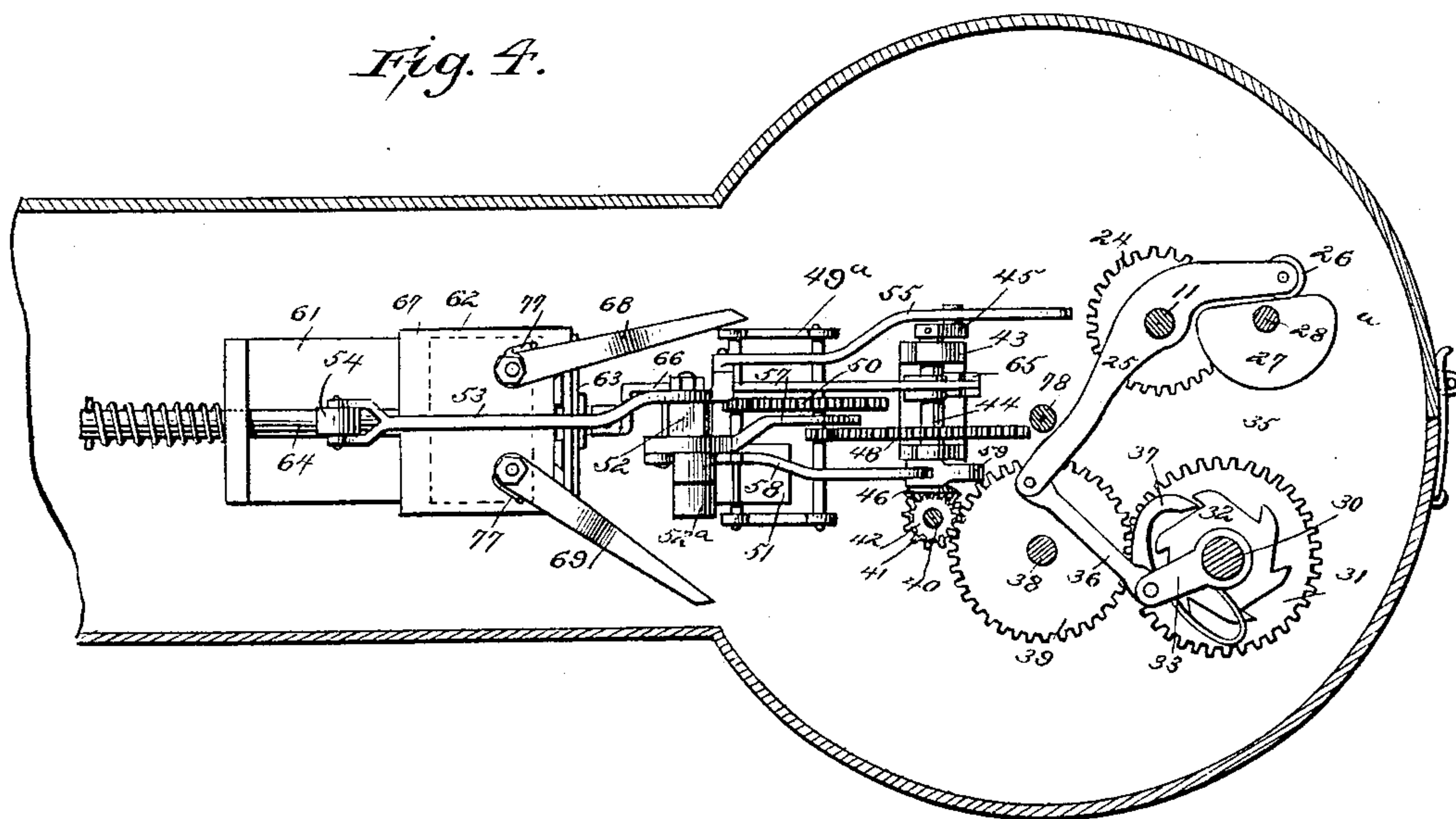
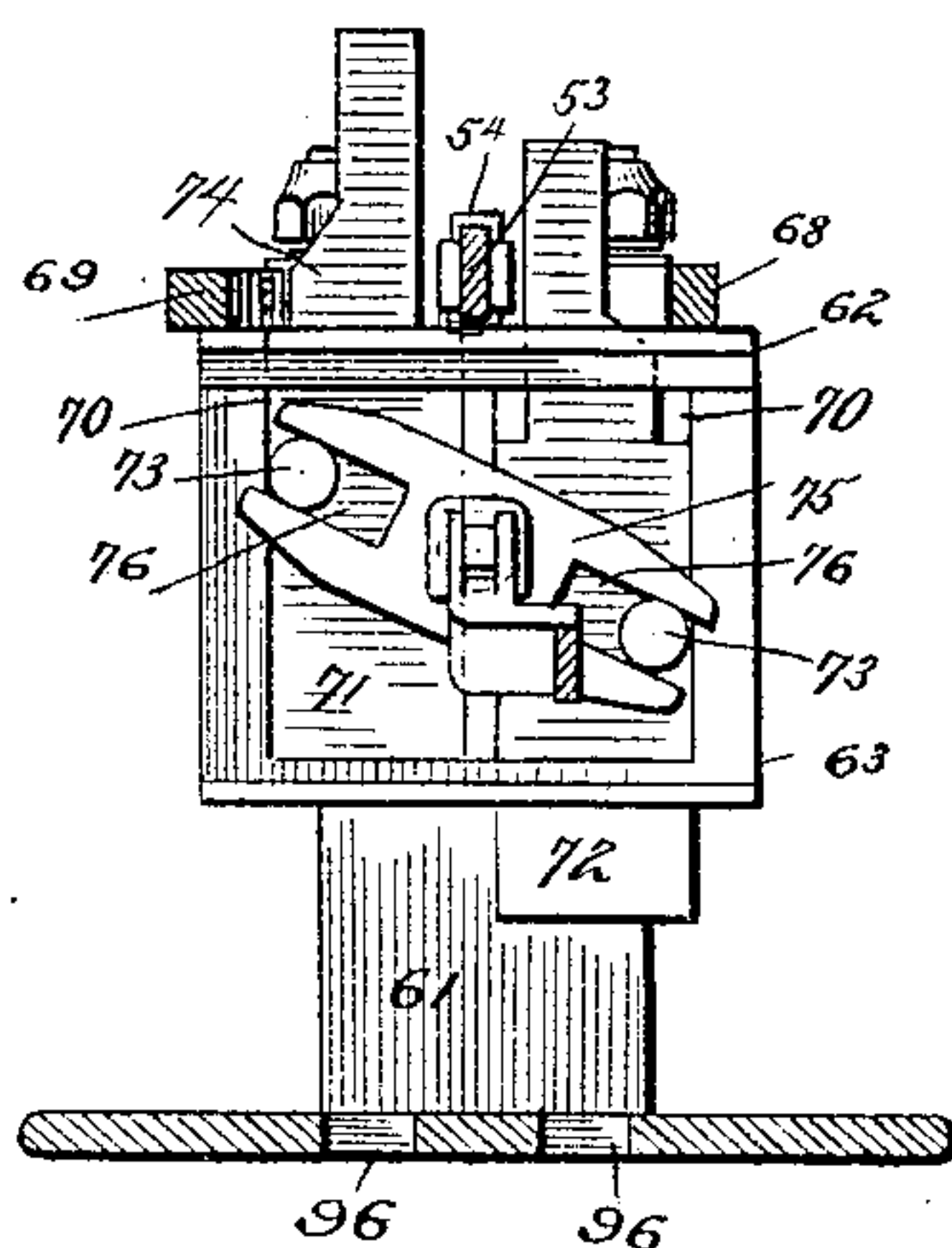


Fig. 5.



WITNESSES:

W. R. Harris.
C. Sedgwick.

INVENTOR:

E. Blamey.
BY *Munn & Co.*
ATTORNEYS.

(No Model.)

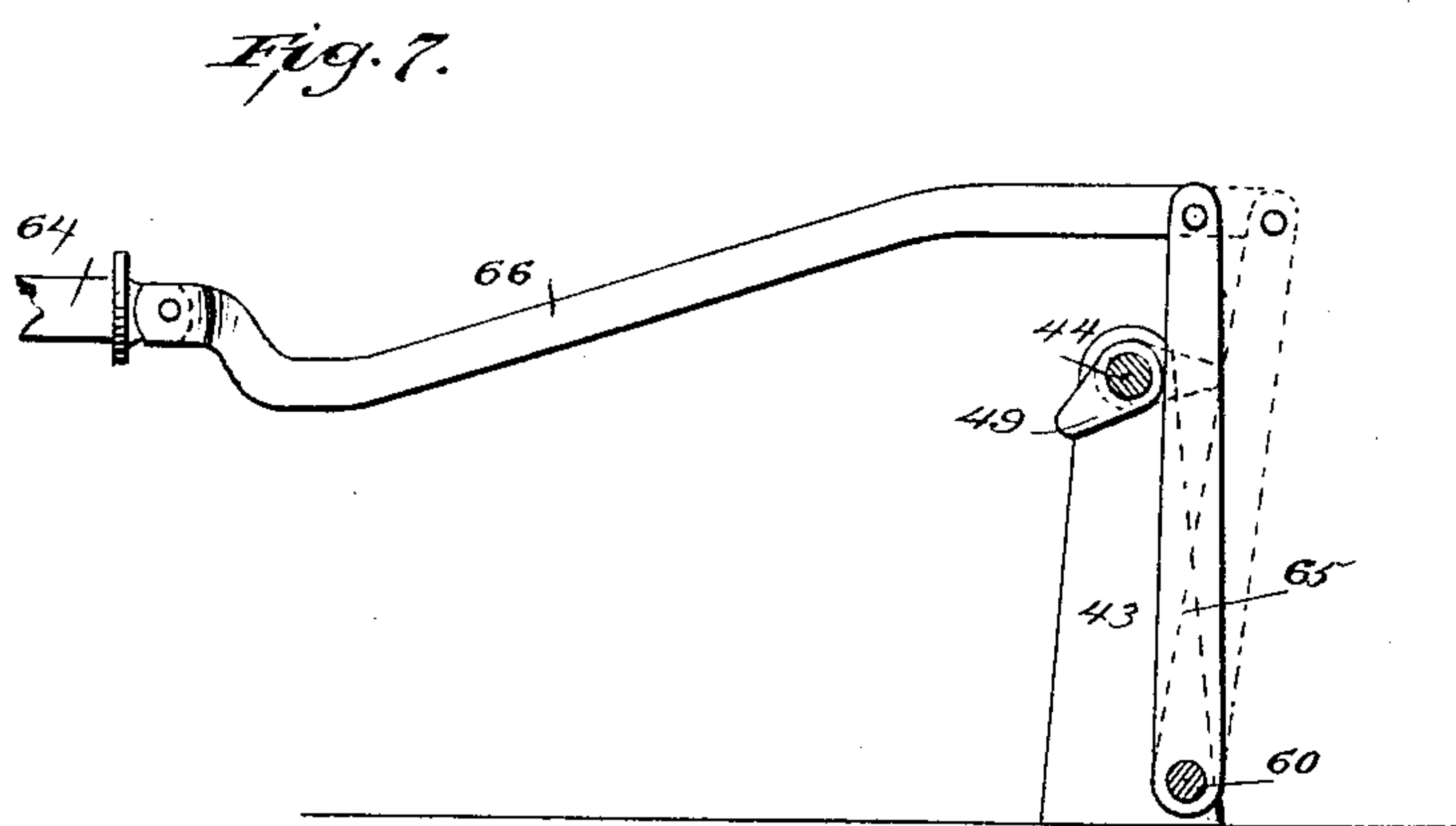
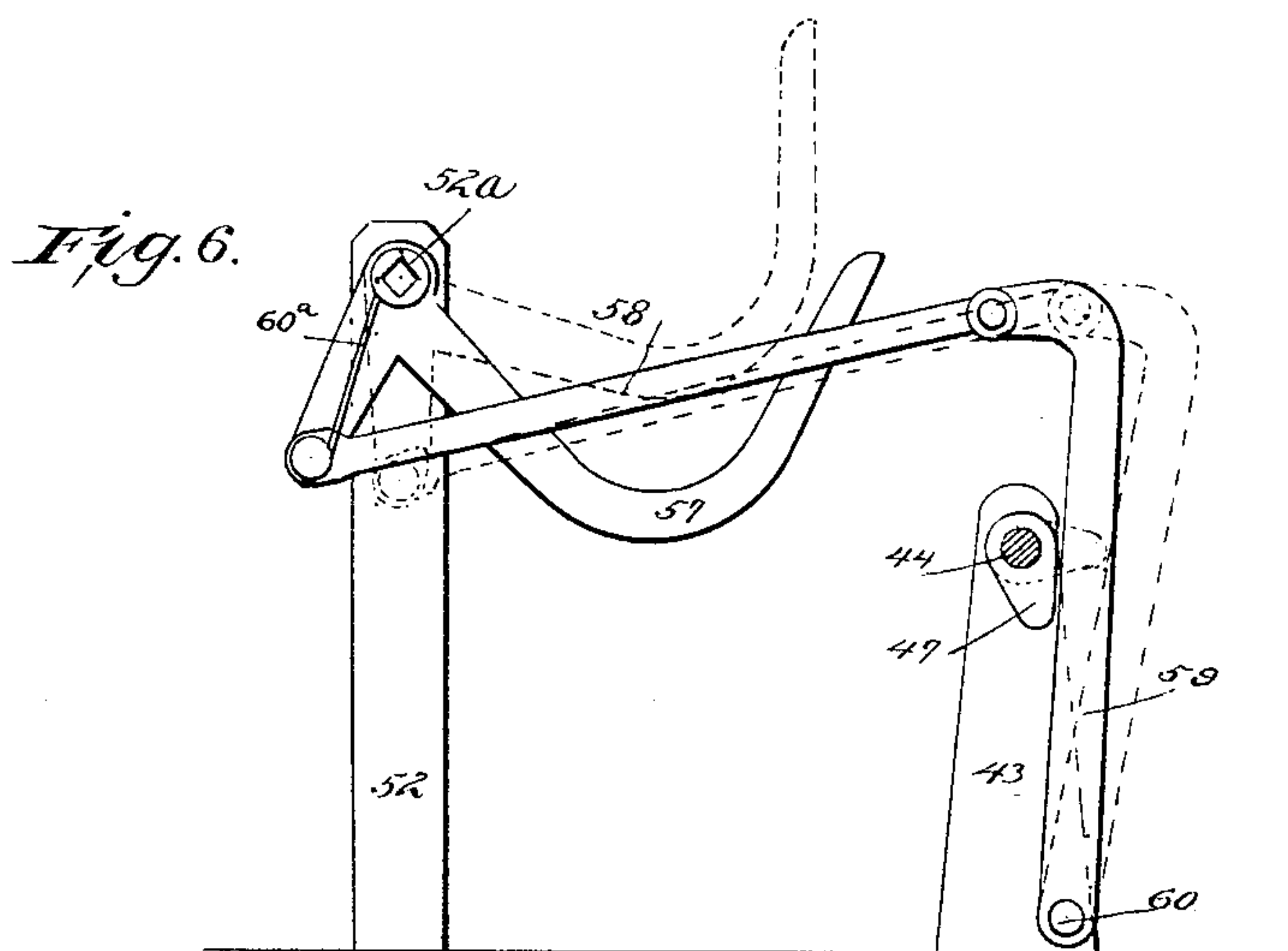
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BY *Munn & Co.*
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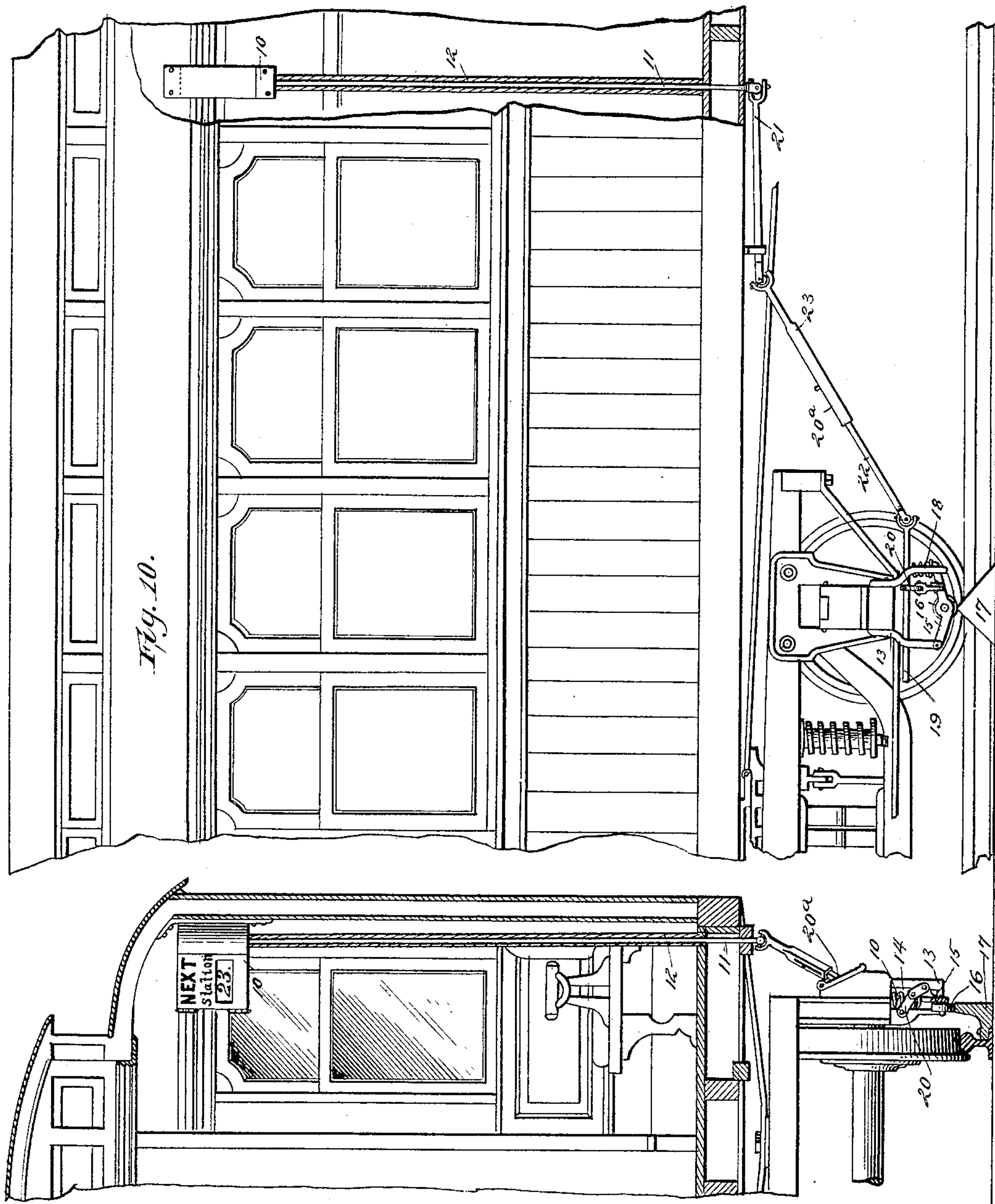
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INVENTOR:

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Munn & Co.

BY

ATTORNEYS.

UNITED STATES PATENT OFFICE.

EDWARD BLAMEY, OF JERSEY CITY, NEW JERSEY.

AUTOMATIC STATION-INDICATOR.

SPECIFICATION forming part of Letters Patent No. 389,283, dated September 11, 1888.

Application filed December 23, 1887. Serial No. 258,809. (No model.)

To all whom it may concern:

Be it known that I, EDWARD BLAMEY, of Jersey City, in the county of Hudson and State of New Jersey, have invented a new and Improved Automatic Station-Indicator, of which the following is a full, clear, and exact description.

My invention relates to an improvement in station or street indicators, and has for its object to provide the means whereby a station or street may be automatically indicated within the car as said station or stations are approached, and wherein, further, in one apparatus the stations upon a main and branch road may be indicated, or any number of stations, or the stations upon a belt course, and wherein, also, the apparatus will automatically advance and reverse, and the station be so indicated as to be read upon both sides of the indicating-arm.

The invention consists in the construction and combination of the several parts, as will be hereinafter fully set forth, and pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar figures of reference indicate corresponding parts in all the views.

Figure 1 is one side elevation of the device, the casing being in section. Fig. 2 is a horizontal section on line 2 2 of Fig. 1. Fig. 3 is an elevation of the side, the reverse of that shown in Fig. 1. Fig. 4 is a horizontal section on line 4 4 of Fig. 3. Fig. 5 is a vertical section on line 5 5 of Fig. 3. Figs. 6, 7, 8, and 9 are detail views. Fig. 10 is a partial side elevation of a car containing my apparatus, illustrating the tripping mechanism; and Fig. 11 is a partial transverse vertical section of the same.

In carrying out the invention the frame is made up of a platform, 10, and a rectangular or other suitable body having the side provided with a glass upon each side at that point occupied by the indicating arm when said arm has been dropped. From the frame, at one side and near one end, a shaft, 11, is projected vertically downward through the base and within a proper tube, 12, and also through the bottom of the car. To the axle-box or any convenient point, preferably adjacent to the

wheels, a hanger, 13, is secured, open at the bottom, and provided with a slot, 14, in that side approaching the aforesaid shaft. To one extremity of the hanger, at the base, one end of a horizontal trip-bar, 15, is pivoted, the other end of said bar being projected through the aforesaid hanger-slot 14, and at the center of the trip-bar 15 a friction-roller, 16, is pivoted, adapted to ride over a block, 17, secured adjacent to the track just beyond or at the several stations, which block has a triangular or otherwise inclined face. The free end of the bar is normally held in contact with the lower wall of the hanger-slot by a spring, 18, engaging the bar and the upper wall of the slot. A rod, 19, is journaled horizontally in the upper portion of the hanger projecting out beyond each member, and a link-connection, 20, is made between the roller-carrying trip-bar 15 and the rotary bar, near the free end of the former, which connection is preferably so timed as that when the trip-bar is raised by contact with the rail-blocks it will impart to the rod 19 an eighth-turn.

The connection between the rotating shaft 19 and the indicating-shaft 11 is effected through the medium of an extension-bar, 20^a, and a horizontal connecting-rod, 21, the extension-bar and the connecting-rod being united by a universal joint; likewise the connecting-rod and indicator-shaft and the extension-bar and the rotary shaft. The connecting-rod 21 is supported horizontally beneath the car, and the extension-rod is constructed with two members, 22 and 23, the former being preferably a square in cross section and the latter provided with a rectangular longitudinal bore to receive the square member. If the member 22 is made round or circular in cross-section, it is provided with a pin, as shown in Figs. 10 and 11, which pin engages a slot in the other member, in order that longitudinal play may be obtained, yet laterally both members will move as one.

The use of the extension-rod allows for the oscillating and vertical motion of the car-body—such as is found in street-cars—and its utility will be even more apparent when applied to cars having pivoted trucks, permitting their free motion when rounding curves, the extension and construction of the rod adjusting it-

self to the position, whether outward or inward, without affecting the relative positions of the working parts.

In the construction of the indicator proper the shaft 11 extends vertically a distance above the base, being provided near said base with a fixed gear-wheel, 24, and above said gear a curved horizontal lever, 25, is fulcrumed, extending, preferably, a greater distance inward from the shaft than outward, as shown more clearly in Fig. 4, and having journaled in the extremity of its outer or short projection a friction-roller, 26. The roller 26 is adapted to bear normally upon the flap or straight edge of a segmental cam, 27, which latter is keyed or otherwise secured upon a vertical spindle, 28, adjacent to the shaft 11, the said spindle carrying below the cam a gear, 29, of about one-half the diameter of the aforesaid gear 24, the two gears being adapted to interlock.

Upon that side of the base opposite to that upon which the spindle 28 is journaled a second vertical spindle, 30, is held to revolve, having journaled upon its lower end a gear, 31, upon the upper face of which gear a ratchet-wheel, 32, having six teeth, is secured. Above the combined ratchet and gear the spindle is provided with an outwardly extending arm, 33, at right angles thereto, and around the upper end of said spindle a barrel-spring, 34, is coiled, having one end secured to the spindle and the other end fastened to a suitable standard, 35.

The inner end of the curved lever 25 and the spindle-arm 33 are pivotally united by a pitman-connection, 36, the pivotal pin of the pitman and arm being provided at its extremity with a spring-actuated pawl, 37, which pawl is adapted to engage the ratchet 32. Thus when the shaft 11 has been given its eighth of a turn, as heretofore described, the cam is given sufficient throw, through the medium of the gears 24 and 29, to carry the roller-carrying extension of the lever outward to such an extent that the said roller will engage the segmental surface of the cam at a point marked *a* in Fig. 4, or just beyond the outer horn, the lever 25 thus being carried outward at its outer end. The inner end is carried rearward, which causes the pitman to swing the arm 33 through one-sixth of a circle, carrying the pawl 37 forward into engagement with the next tooth of the ratchet 32 and correspondingly winding the spring 34, whereby the tension of the spring is brought into action to revolve the gear 31, and at the same time return the lever 25 to its former position, the gear 24, shaft 28, and cam 27 having been returned to their normal positions by the action of the spring 18.

In front of the spindle 30 another vertical spindle, 38, is journaled in the base, carrying a gear, 39, meshing with the gear 31 upon the spindle 30, and a fourth spindle, 40, is pivoted in front of the spindle 38, carrying a pinion, 41, at the lower end, meshing with the gear 39, and a small bevel-gear, 42, at the upper end. The spindles 29, 30, and 38, likewise the

shaft 11, are journaled at their upper ends in a suitable plate, 42^a, spaced from the base of the frame by proper posts, as shown in Fig. 1.

In front of the lever 25, parallel and spaced vertical standards 43 are secured to the base, near the top of which standards a horizontal shaft, 44, is journaled, the ends projecting beyond their bearings, one end being provided with a crank-arm, 45, and the other with an attached beveled gear, 46, meshing with the similar gear, 42, on the spindle 40, whereby motion is imparted to said shaft.

Integral with the shaft 44, between the standard and the bevel-gear 46, a cam, 47, is provided, and between the standards nearest the one adjacent to the cam 47 a toothed wheel, 48, is keyed, while between the other standard and the said toothed wheel a second cam, 49, is made integral with shaft 44, one cam being adapted to project vertically beneath the shaft when the other cam is at right angles thereto. The toothed wheel 48 is made to mesh with a balance-train, 49^a, consisting of two parallel transverse shafts mounted in suitable bearings, one carrying a pinion gearing with the said toothed wheel 48, and a master-wheel, 50, meshing with a pinion upon the other shaft, which is also made to carry a fan, 51, the combined train serving as a balance or regulator for the toothed wheel 48.

Immediately in front of the train of gearing 49^a a perpendicular post, 52, is secured to the base, provided with a fixed horizontal shaft, 52^a, at the upper end. Upon one projecting arm of said shaft an angular lifting-arm, 53, is pivoted, the shorter member whereof is adapted to normally extend downward a distance parallel with the post, the long member being projected at right angles to the post away from the aforesaid train and provided at its extremity with a friction-roller, 54. The shorter member of the lifting arm is pivotally connected with a laterally curved pitman, 55, in which pitman, at its other end, a horizontal slot, 56, is cut, and a connection is effected at said slotted end with the crank-arm 45 of the cam-shaft 44 by means of a pin passing through the slot into the said arm. Thus, when the shaft 44 is revolved and the crank-arm assumes a vertical downward position, the pin, acting upon one end of the slot 56, throws the pitman forward, which in turn, carrying the short member of the angular lifting-arm in the same direction, forces the long member to a vertical position in substantially the same plane with the post 52. When the crank-arm assumes a vertical upward position, and the pitman thereby left free to slide upon its connecting-pin, the weight of the roller causes the long member of the angular lifting-arm to drop again to its normal position.

Upon the side of the post opposite to that near which the angular lifting-arm is pivoted an angular hook-shaped lever, 57, is fulcrumed upon the fixed shaft 52^a, the longer or hook-shaped member being adapted to project upward over the train of gearing, and the short

member is pivotally united by a connecting-rod, 58, with an L-shaped bar, 59, pivoted upon a fixed shaft, 60, secured transversely in the lower ends of the standards 43, the vertical member of which L-shaped bar is carried upward in alignment with the cam 47, by which cam the bar is adapted to be actuated. A spring, 60^a, is secured at one end to the fixed shaft 52^a and made to bear at the other end against the pivotal pin of the hook-shaped lever and the connecting-rod 58, whereby the former is held normally with the finger end approximately in the same plane with the top of the post 52. It is evident that when the shaft 44 is revolved the cam 47 will act upon the L-shaped bar to throw the same outward, which motion, through the medium of the connecting-rod 58, draws the short arm of the angular hook-shaped lever in the same direction, causing the fingered member to rise upward, to be again carried to its normal position by the spring 60^a when the actuating bar 59 is released from the cam 47, which operation is illustrated in Fig. 6.

To the front of the post 52 an essentially U-shaped bracket, 61, is secured longitudinally to the base of the frame, the member whereof nearest the said post is provided with an inwardly-extending horizontal flange, upon which flange an angular block or table, 62, is held to slide, having attached to its vertical arm 63 a rod, 64. The rod 64 is projected through the members of the bracket 61, adapted to slide therein, and the vertical arm of the table is normally held in contact with the bracket by a spring wound upon the rod having bearing against one member of aforesaid bracket, as illustrated in Fig. 1.

The rod and table are both actuated by means of a vertical reciprocating arm, 65, pivoted by its lower end to the fixed shaft 60, which arm is reciprocated by contact with the cam 49, the said vertical arm being united to the sliding table-rod 64 by a connecting-rod, 66. As the shaft 44 revolves, the cam 49 first engages the reciprocating arm 65, drawing forward the table, as shown in Fig. 7. Almost immediately after the cam 47 engages the reciprocating L-shaped bar 59, for a purpose hereinafter set forth.

Upon the horizontal arm 67 of the table 62, at each side of the center, horizontal fingers or pawls 68 and 69 are pivoted, projecting beyond the table at each side of the post 52.

In the vertical arm of the table 62, at each side of the center, perpendicular ways 70 are formed, in which slide gates 71 and 72, having pins 73 integral with their outer faces, as illustrated in Fig. 5, and having their outer edges at the upper ends provided with an angular recess, whereby said ends are of less width than the remaining portions, and wherein, also an inclined shoulder, 74, is obtained. A reciprocating plate, 75, is pivoted centrally to the rib formed in the table by the ways 70, the opposing ends of which plate are provided

with aligning longitudinal slots 76, adapted to receive the pins 73 of the gates.

The fingers or pawls 68 and 69 are made to bear at all times against the outer edges of the gates by means of a spring, 77, suitably applied. Therefore when one gate—for instance, 71—is pressed down the pawl upon that side, coming in engagement with the reduced surface of the gate, moves automatically inward, while the gate 72 is at the same time elevated and the pawl upon that side riding down the inclined shoulder is simultaneously carried outward, and vice versa.

Upon a rotary vertical shaft, 78, below the center, a cylindrical plate, 79, is secured, provided with peripheral teeth 80, a series of spaced apertures, 81, upon the face near the periphery, and between said apertures and the center the plate is further provided with a series of slots, 82, one slot being provided for each aperture 81. The plate 79 is of sufficient diameter to admit of the engagement of the pawls 68 and 69 with the peripheral teeth.

The shaft 78 is journaled in the base of the main frame and likewise in the top. Below the upper end the shaft is provided with an attached upper circular plate, 83, (shown in Fig. 9,) having a number of slots, 84, cut in the periphery, and above said top plate a second plate, 85, is secured to the frame, through which the shaft 78 revolves. This second plate 85 is of greater diameter than the plate 83, and is provided with a downwardly-extending peripheral flange, as shown in Figs. 1 and 3. The flange of the plate 85, however, is broken in front of the shaft 78 upon that side facing the lifting-arm located between the pawls 68 and 69. From this point a segmental guide-bar, 86, is projected downward to a connection with the base, provided upon the under side with a groove, 87, as shown in dotted lines in Fig. 8 and positive lines in Fig. 2. The guide-bar 86 may either constitute an integral portion of the plate 85 or be attached thereto, as found in practice most desirable.

In the various apertures 81 posts 87^a are secured, projecting upward from the outer face of the plate 79, in which the outer lower corners of rectangular frames 88 are pivoted, the said frame being adapted to carry a card, glass, or other material, upon each side of which the name of a station or street is produced. Each frame is provided at the outer upper end with a lug, 89, aligning the outer longitudinal edge of the frames, which lugs, when the frames are in their normal position, enter the slots in the lower upper plate, 83, being held in such position by the flange upon the uppermost plate, 85, as shown in Figs. 1 and 3. These plates may be arranged in sets, as shown in Fig. 3, or they may constitute one set, as desired. In either event the first and last frame of a set is provided upon the outer longitudinal edge, upon one side, with a lip, 90, so located that when the frame falls the

lip will engage the corresponding gate, 71 and 72, and reverse the action of the leaf-carrying cylinder 91 by changing the position of the pawls. This action only takes place at the end of a route or predetermined section of a route. The lips 90 are preferably made detachable, in order that they may be placed upon other leaves, necessitated, for instance, by obstructions on the road, or when one portion of a given route only is to be run. Upon the lower end of each leaf a flange, 92, is provided, registering with the slots upon the lower head of the cylinder.

In operation, the shaft 11 having been manipulated, as heretofore stated, likewise the connections with the shaft 44, the said shaft is given one complete revolution, during which the crank-arm 45, through the medium of the pitman 55, causes the friction-roller 54 to engage the leaf that is down and the lifting-arm 53 to raise the said leaf upright and deposit the same vertically in the cylinder 91. This having been accomplished, the continued revolution of the shaft 44 brings the cam 49 in contact with the reciprocating bar 65, as shown in dotted lines in Fig. 7, whereupon, through the medium of the connecting rod 66, the pawl-carrying table is brought forward, and its acting pawl, engaging the peripheral teeth on the plate 79, moves the cylinder one tooth, the table returning to its normal position. Immediately following the engagement of the cam 49, the cam 47 is brought in contact with the L-shaped bar 59, whereupon, as soon as the cylinder has been turned, the hook-shaped lever 57 is thrown up, and the finger, entering the slot 82 under the leaf next the one thrown up and engaging the flange 92 thereon, throws said leaf down to a horizontal position, guided by the grooved segmental bar 86 to the position illustrated in Fig. 1, bringing the name opposite the opening in the case, which name may be seen plainly from either end of the car, the device being preferably placed at or near the center.

In Fig. 1 I have shown a spring-actuated bar, 93, held vertically in the track of the falling leaf, which, when struck by the leaf, manipulates a hammer, 94, in such manner as to ring a bell, 95, and call attention to the displayed name; but I do not confine myself to this exact construction.

When the end of the route is reached, the last falling leaf engages one of the gates, 71 or 72, thereby disengaging one pawl and engaging another, as heretofore stated. When this has been accomplished, the cylinder will revolve in a reverse direction. If, however, a car is stopped before the route is completed and obliged to return, any approved instrument may be inserted in the apertures 96, provided in the base below the gates, as shown in Fig. 5, and the pawls be thereby reversed.

While the cam 27 when engaged by the lever 25 at *a* will impart the required turn to shaft 30, in order to make the motion more positive and to provide for the possible wear

of the fixed stops or blocks in the road-bed, the cam may be and is preferably made to pass the point *a*, and may continue to turn the entire distance of its segmental face, and as the distance traveled beyond the point *a* is semicircular it does not affect the throw of the lever 25, the said lever remaining passive after the cam is turned beyond the point *a*.

As heretofore stated, the device may be operated upon a belt course. In this instance the cylinder is provided with a fixed number of teeth corresponding with the number of streets or stations to be indicated. Thus it will be observed in this event that but one pawl only will be needed. Further, if the road should by any means be obstructed, or if it should be found necessary to use part of it, the shifting lips can be placed upon any of the leaves, so that only that portion which is desired to be used will be operated automatically.

I desire it distinctly understood that all the operating mechanism beneath the car may be dispensed with and a suitable lever be attached to the shaft 11, having an attached cord extending through the car, which cords may be connected throughout the train in order that the device may be operated by pulling the cord at any point throughout the train.

Above or below the opening through which the indicating card is viewed I preferably produce upon the case the words "Next station." If found desirable, other matter may be produced upon the indicating card in addition to the name of the street or station—for instance, advertising matter or figures indicating distances.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a station and street indicator for railways, the combination of a rotary carrier, a series of pivoted leaves or frames on the said carrier, having the name of the street or station thereon, and a trip for throwing the said leaves or frames from a vertical to a horizontal position, substantially as described.

2. In a station and street indicator for railways, the combination of a rotary carrier, a series of pivoted leaves or frames on the carrier, having the names of the street or station thereon, a trip for throwing the leaves from a vertical to a horizontal position, and a lifting-arm for returning the leaves to a vertical position in the carrier, substantially as described.

3. In a station and street indicator, the combination of a rotary carrier, a series of pivoted leaves on the carrier, having the names of the station or street thereon, a segmental guideway projected from the upper end of the carrier for guiding the leaves or frames, and a trip for throwing the leaves from a vertical to a horizontal position, substantially as described.

4. In a station and street indicator for railways, the combination, with a rotary carrier and a segmental guideway projected from the upper end of the carrier, of a series of indicating leaves or frames pivoted at their lower corners

on the carrier and provided with extensions at their upper ends adapted to slide in the said guideway, and a tripping-arm for engaging the lower end of the leaves or frames to throw them from a vertical to a horizontal position, substantially as herein shown and described.

5 The combination, with a rotary leaf-carrier, a series of indicating-leaves vertically pivoted in the carrier, and a segmental guide-
10 bar projected from the carrier, of a drive-shaft, a transverse secondary shaft provided at one end with a crank-arm, connections between said main and secondary shafts, substantially as described, an angular lifting-arm
15 pivoted in front of said carrier, provided with a friction-roller at one end, and a pitman-connection between said angular lifting-arm and the crank-arm, essentially as shown and described, whereby the leaf when in a horizontal
20 position is automatically thrown to a vertical position, as set forth.

6. In a station and street indicator, the combination, with a rotary carrier and a series of vertical leaves or frames pivoted on the carrier and adapted to be thrown to a horizontal
25 position, of an angular lifting-arm pivoted at its angle in front of the carrier and adapted to be turned on its pivot to return the leaves or frames to a vertical position, substantially as herein shown and described.
30

7. In a station and street indicator, the combination, with a rotary carrier having an apertured bottom and posts secured thereon, of leaves or frames pivoted in said posts and
35 having the names of the street or station thereon, and a bent tripping-lever adapted to be thrust through the apertures of the bottom of the carrier to throw the leaves or frames to a horizontal position, substantially as described.
40

8. In a station-indicator, the combination, with a revolving leaf-carrier, posts secured thereon, and a segmental guide-rod projected from the upper surface of the carrier, of indicating-leaves pivoted in said posts, adapted to
45 consecutively assume a horizontal position, and means for actuating the carrier, substantially as shown and described.

9. The combination, with a rotary leaf-carrier having a series of peripheral teeth, a segmental guide-bar projected from the upper
50 end, and a series of indicating-leaves pivoted in said carrier, of a table held to reciprocate in front of the carrier, a pawl pivoted upon said table, adapted to engage said teeth, and means
55 for reciprocating the table from the driving mechanism, substantially as herein shown and described.

10. The combination, with a rotary leaf-carrier having a series of peripheral teeth, a segmental guide-bar projected from the upper
60 end, and a series of indicating-leaves pivoted in said carrier, of a table held to reciprocate in front of the carrier, a spring-actuated pawl pivoted at each side of the table, vertical gates sliding in the table engaging said pawls, a pivotal
65 reciprocating plate connecting said gates, and means, substantially as described, for actuat-

ing the table from the driving mechanism, whereby either pawl may be made to engage the carrier, as desired, as set forth. 70

11. The combination, with a rotary leaf-carrier having a series of indicating-leaves pivoted therein, provided with flanged lower edges, and having slots cut in the lower head, corresponding in number to the leaves, and a
75 segmental guide-rod projected from the upper end of said carrier, of an angular hook-shaped lever pivoted beneath the carrier, and connections, substantially as shown and described, between the said lever and the driving mechanism, whereby the finger end of the hook-shaped lever will automatically enter the consecutive slots, engage the flanged surface of the leaf, and throw said leaf to a horizontal position, as set forth. 80
85

12. The combination, with the main shaft of a street or station indicator for railroad-cars, essentially as herein shown and described, and angular blocks secured at intervals in the tracks, of a spring-actuated reciprocating arm
90 pivoted beneath the car, provided with a friction-roller adapted to engage said block, a horizontal rotary shaft connected with said arm, a second rotary shaft universally connected with the main shaft of the indicator, 95
and an extensible connecting-rod united to the two rotary shafts by a universal joint, substantially as shown and described, and for the purpose herein set forth.

13. In a station-indicator, the combination, 100
with the main shaft 11 and the shaft 28, geared with the shaft 11 and provided with a cam, 27, of the shaft 30, provided with the arm 33, the combined gear and ratchet wheel 31 32, loose on the shaft 30, the lever 25 on the shaft 105
11 and having one end engaging the cam 27, the rod 36, pivoted to the end of the lever 25 and to the arm 33, and the pawl 37, pivoted to the arm 33, substantially as herein shown and described. 110

14. In a station-indicator, the combination, with the main shaft 11 and the shaft 28, geared with the shaft 11 and provided with the cam 27, of the shaft 30, provided with the arm 33, the combined gear and ratchet wheel 31 32, 115
loosely mounted on the shaft 30, the lever 25 on the shaft 11 and having one end engaging the cam 27, the rod 36, pivoted to the lever 25 and to the arm 33, the pawl 37, pivoted to the arm 33, and the spring 34, having one end secured to the shaft 30 and its other end to a fixed support, substantially as herein shown and described. 120

15. In a station-indicator, the combination, with the shaft 11, the shaft 44, and intermediate mechanism for operating the shaft 44 from the shaft 11, of the reciprocating table 62, the cam 49 on the shaft 44, the pivoted arm 65, and the rod 66, pivoted to the table and to the arm 65, substantially as herein 125
shown and described. 130

16. In a station-indicator, the combination, with the shaft 11, the shaft 44, and intermediate mechanism for operating the shaft 44

from the shaft 11, of the angular tripping-lever 57, the pivoted bar 59, the rod 58, pivoted to the short arm of the tripping-lever and to the bar 59, and the cam 47 on the shaft 44, substantially as herein shown and described.

17. In a station-indicator, the combination, with the shaft 11, the shaft 44, provided with a crank-arm, 45, and intermediate mechanism for operating the shaft 44 from the shaft 11, of the angular lifting-arm 53 and the pitman 55, connected to the short arm of the lifting-arm and provided with a slot, 56, for receiving the crank-arm 45, substantially as herein shown and described.

18. In a station-indicator, the combination, with a carrier provided with peripheral teeth and a series of pivoted leaves or frames on the carrier and adapted to be lowered into a horizontal position, of a reciprocating frame and pawls pivoted on the said frame and alternately thrown in and out of engagement with the teeth of the carrier by the falling of the leaves, substantially as described.

19. In a station-indicator, the combination, with a carrier provided with peripheral teeth and a series of pivoted leaves or frames adapted to be thrown into a horizontal position, the first and last leaf or frame being provided with a laterally-projecting lip, of a reciprocating frame, spring-pressed pawls pivoted on the frame, slides working in ways in the reciprocating frame and provided with beveled

shoulders for engaging the pawls, and a connection between the slides, substantially as herein shown and described.

20. In a station-indicator, the combination, with a carrier, a series of pivoted leaves or frames on the carrier, and a trip for throwing the leaves or frames into a horizontal position, of a spring-actuated bar arranged in line with the falling leaf, a bell, and a hammer operated by said spring-actuated bar, substantially as herein shown and described.

21. The combination, with a rotary leaf-carrier having a series of peripheral teeth, a segmental guide-bar projected from the upper end, a series of indicating-leaves arranged in sets pivoted in said carrier, and detachable lips secured to the edges of the first and last leaf of each set, of a table held to reciprocate in front of the carrier, a spring-actuated pawl pivoted at each side of the table, vertical gates sliding in said table engaging said pawls, a pivotal reciprocating plate connecting said gates, and means, substantially as described, for actuating the table from the driving mechanism, whereby the carrier is automatically reversed at the end of the route by the engagement with the gates of the lips upon the leaves, as set forth.

EDWARD BLAMEY.

Witnesses:

J. F. ACKER, Jr.,
C. SEDGWICK.