

No. 766,864.

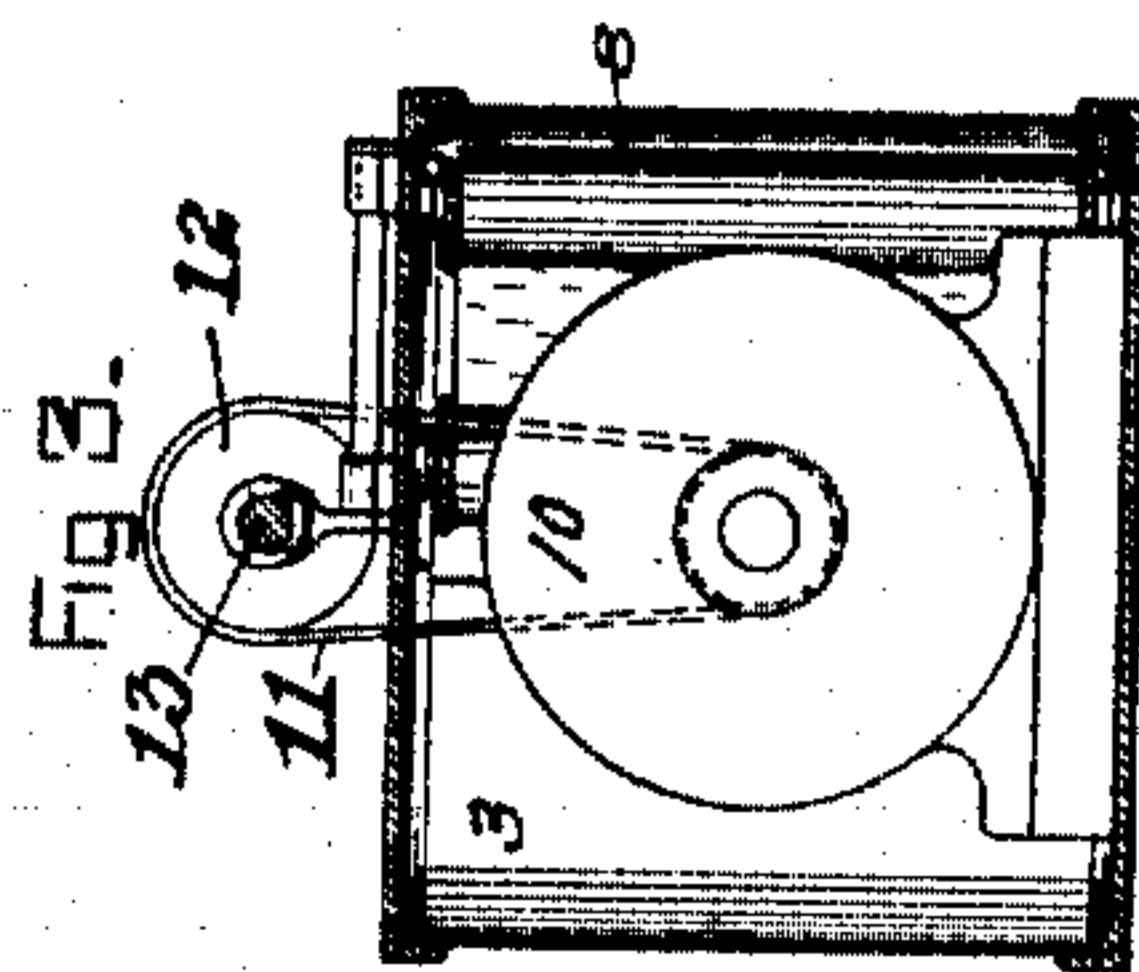
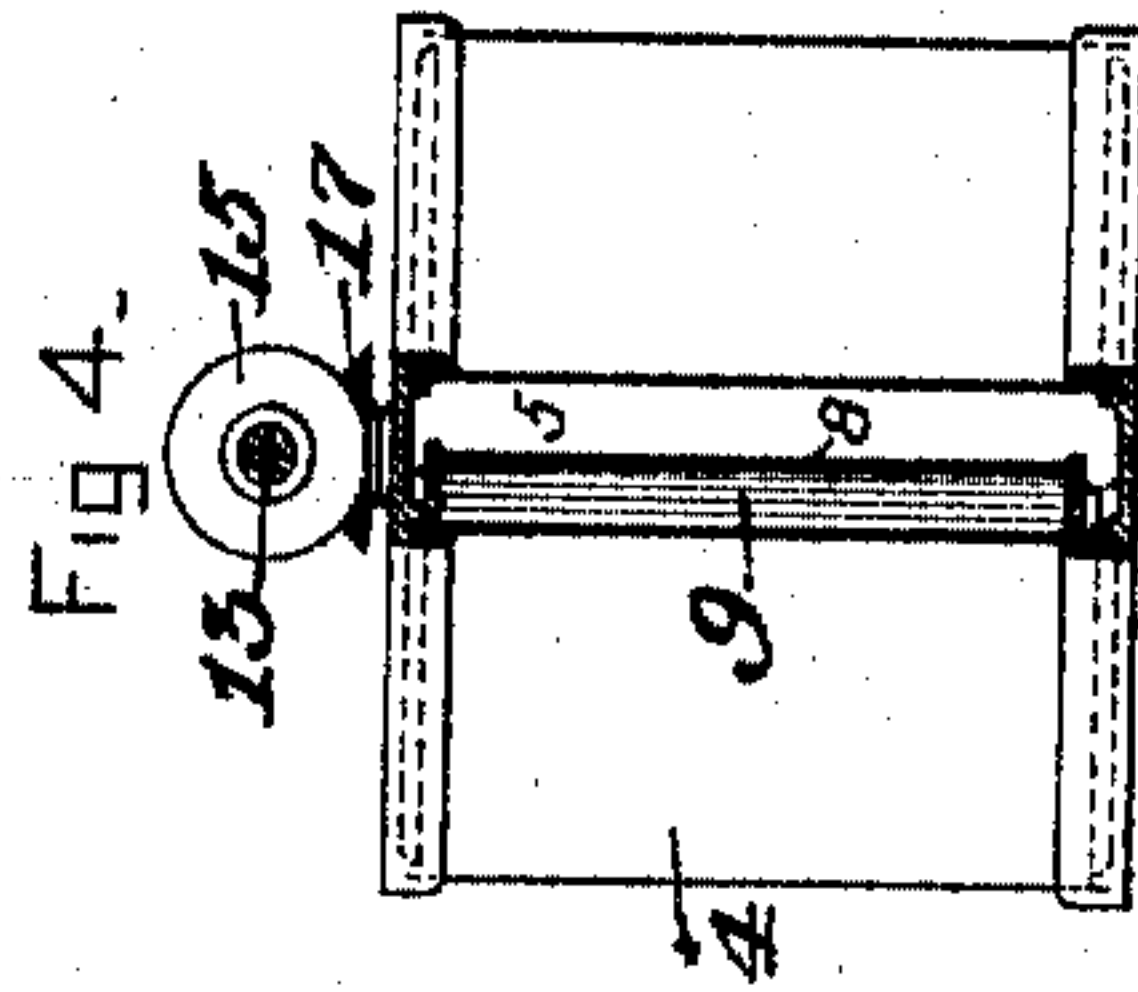
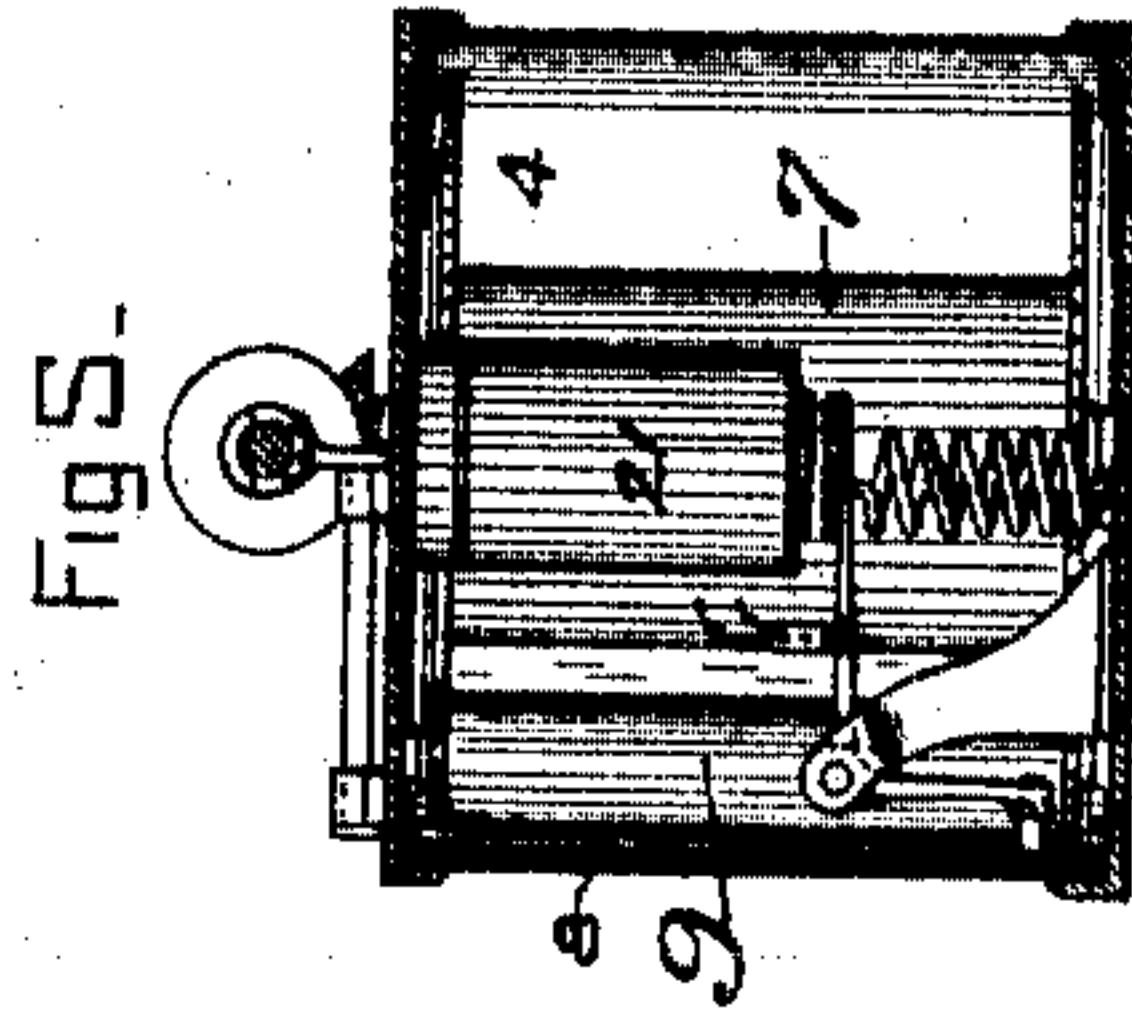
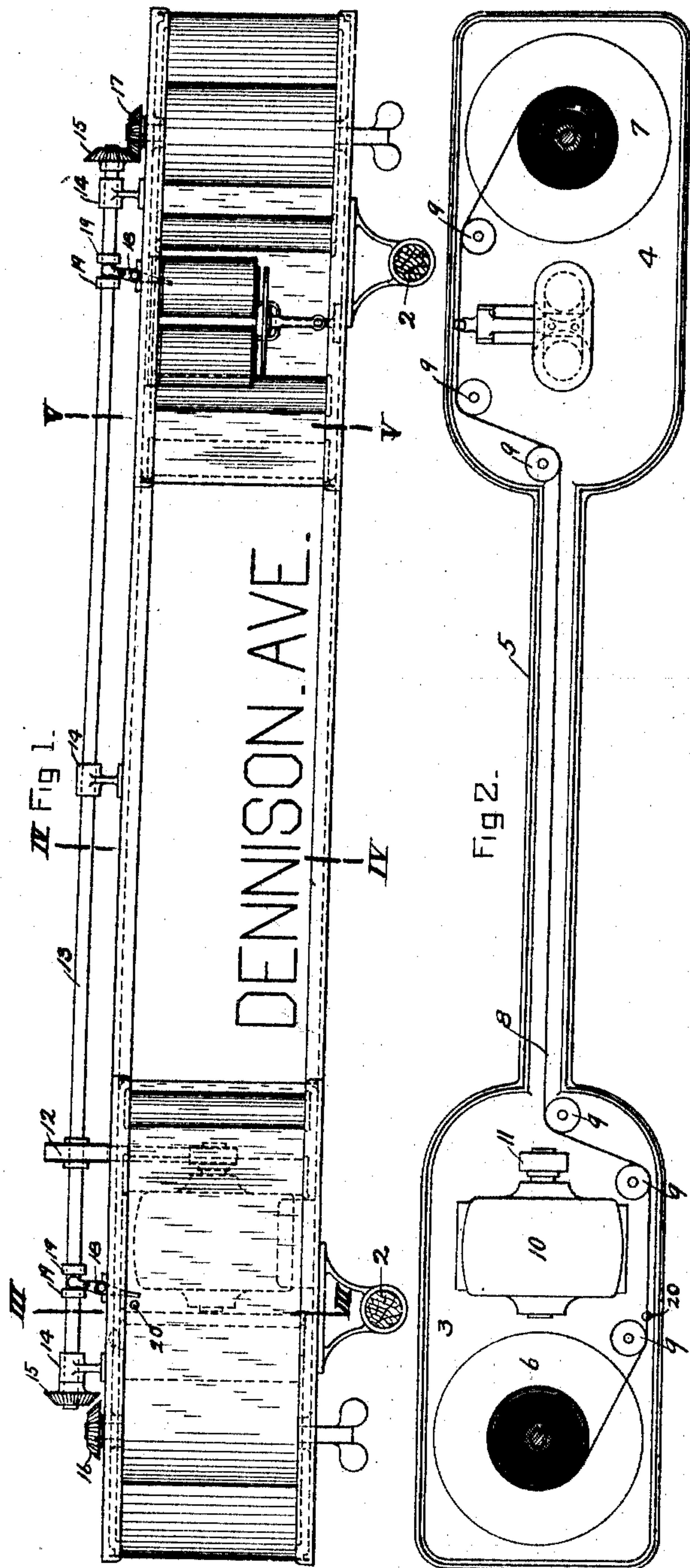
PATENTED AUG. 9, 1904.

L. C. ALLEN.
ELECTRICAL STREET AND STATION INDICATOR.

APPLICATION FILED DEC. 7, 1903.

NO MODEL.

2 SHEETS—SHEET 1.



WITNESSES

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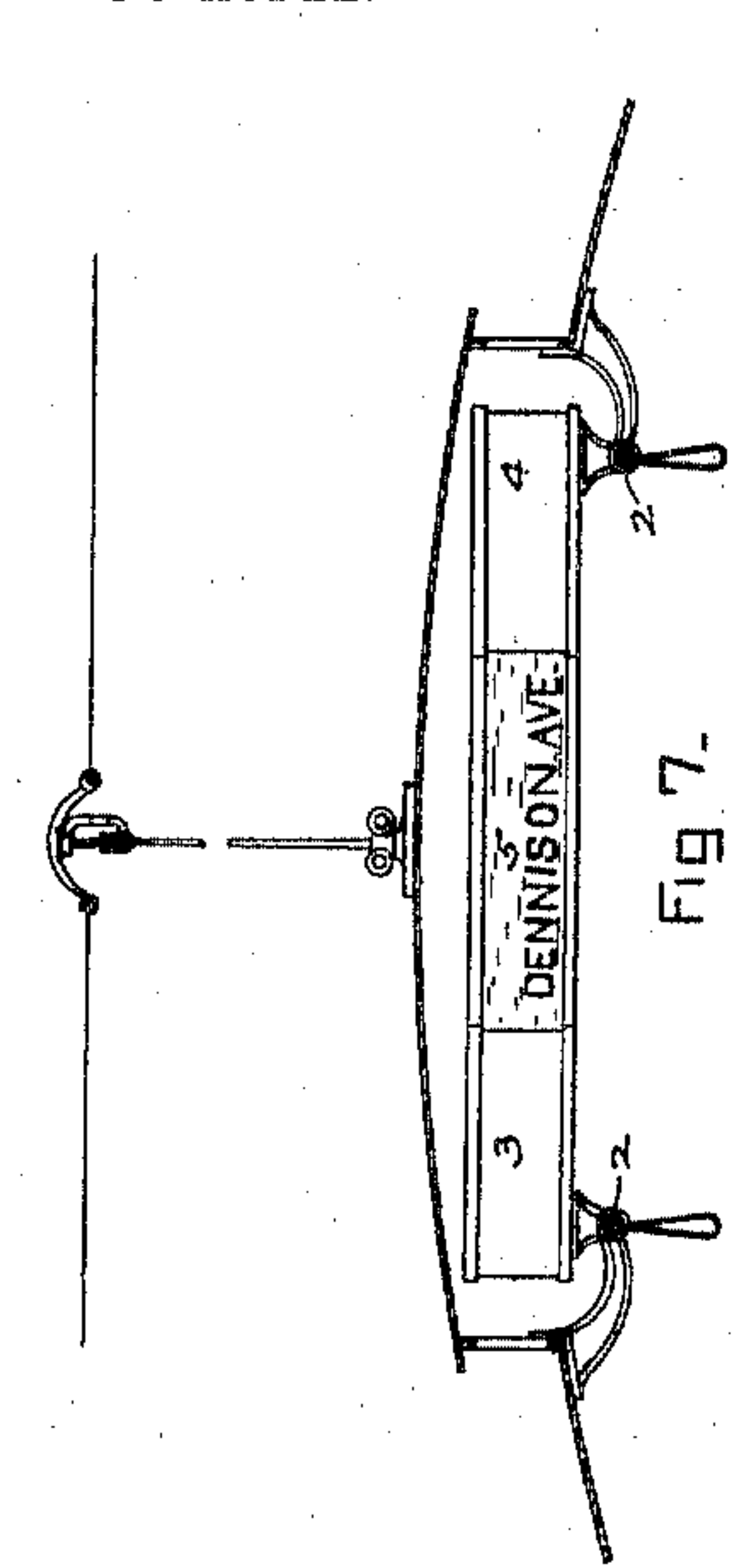


Fig 7.

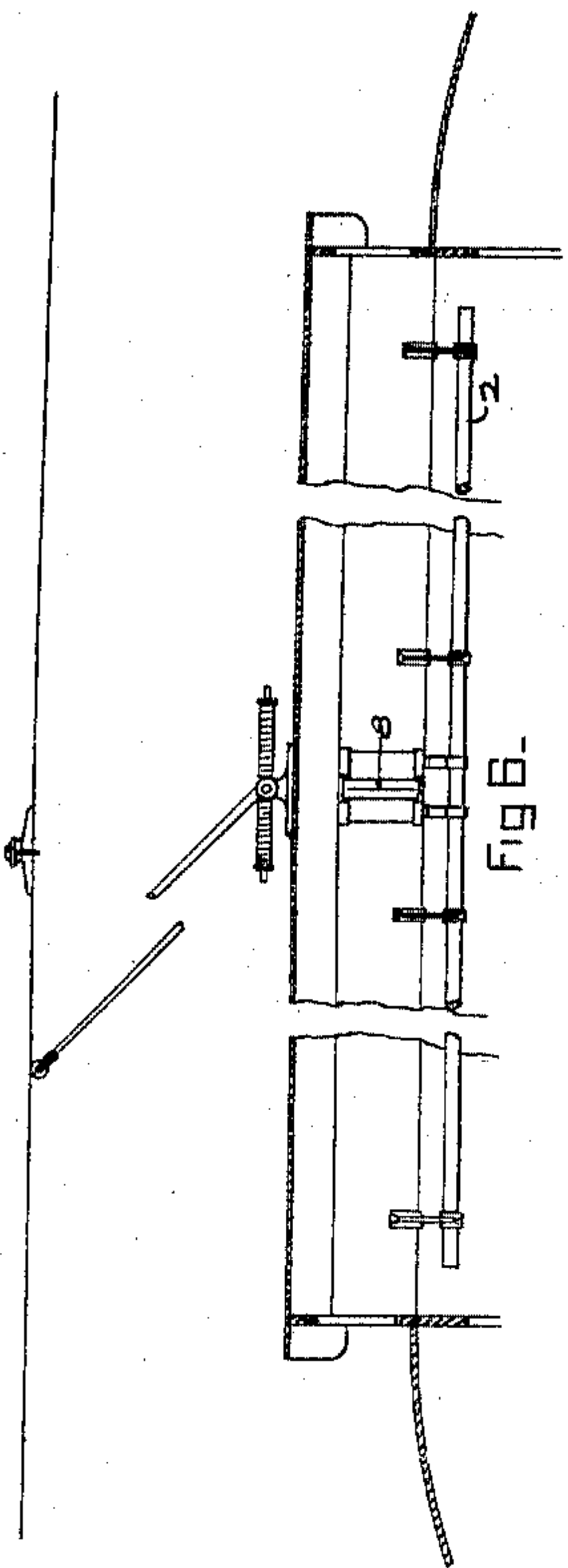


Fig 8.

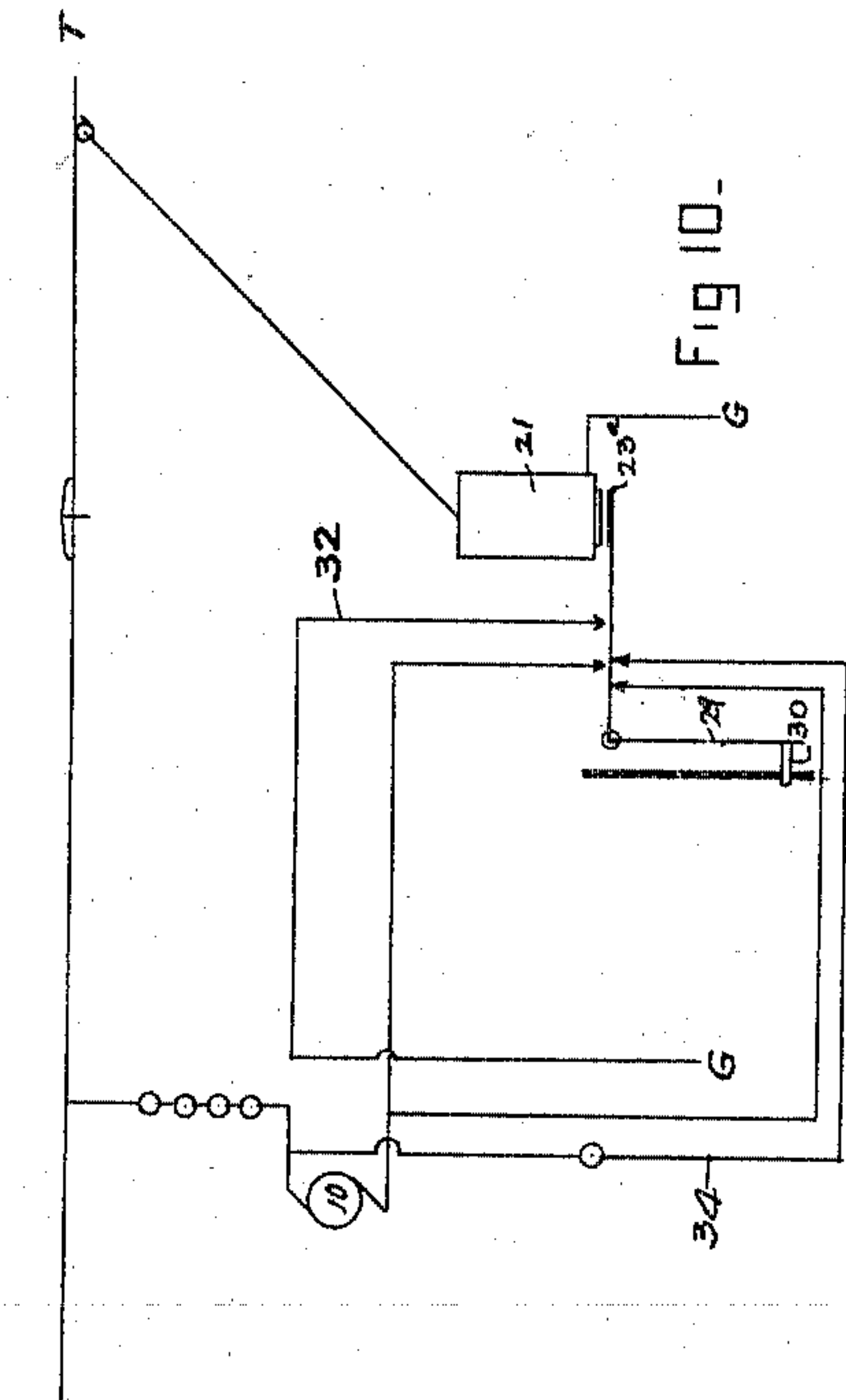


Fig 10.

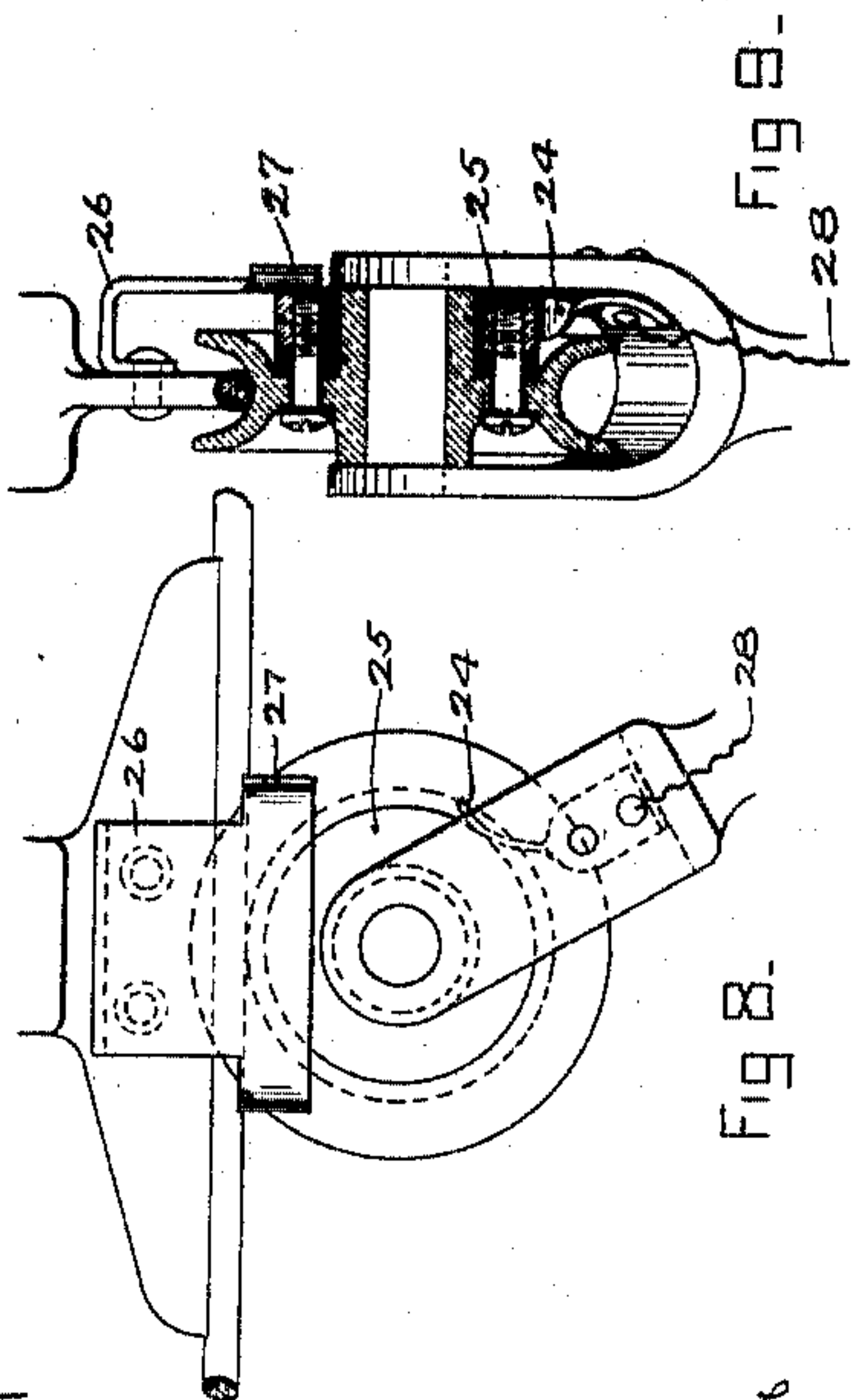


Fig 9.

Fig 8.

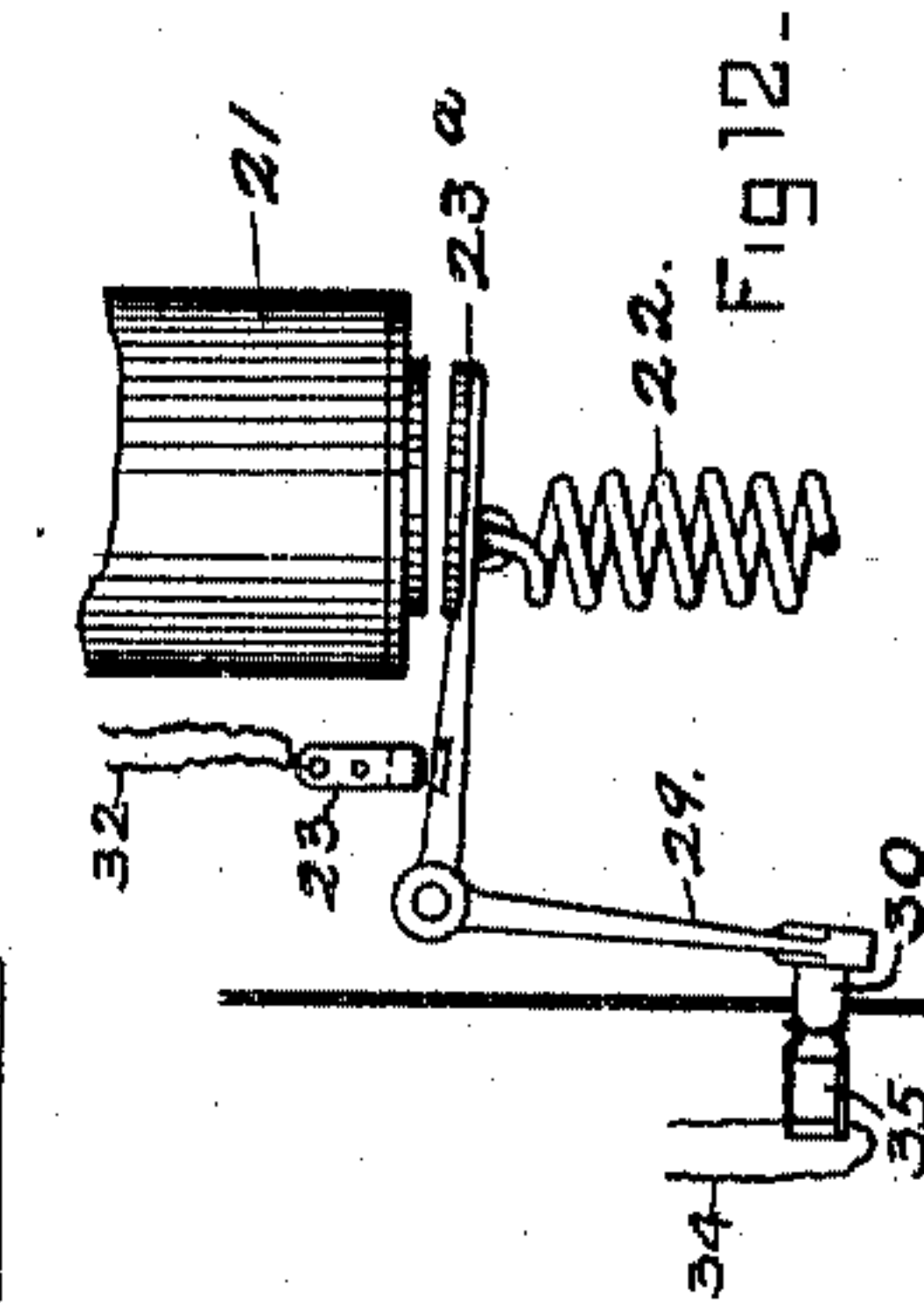


Fig 12.

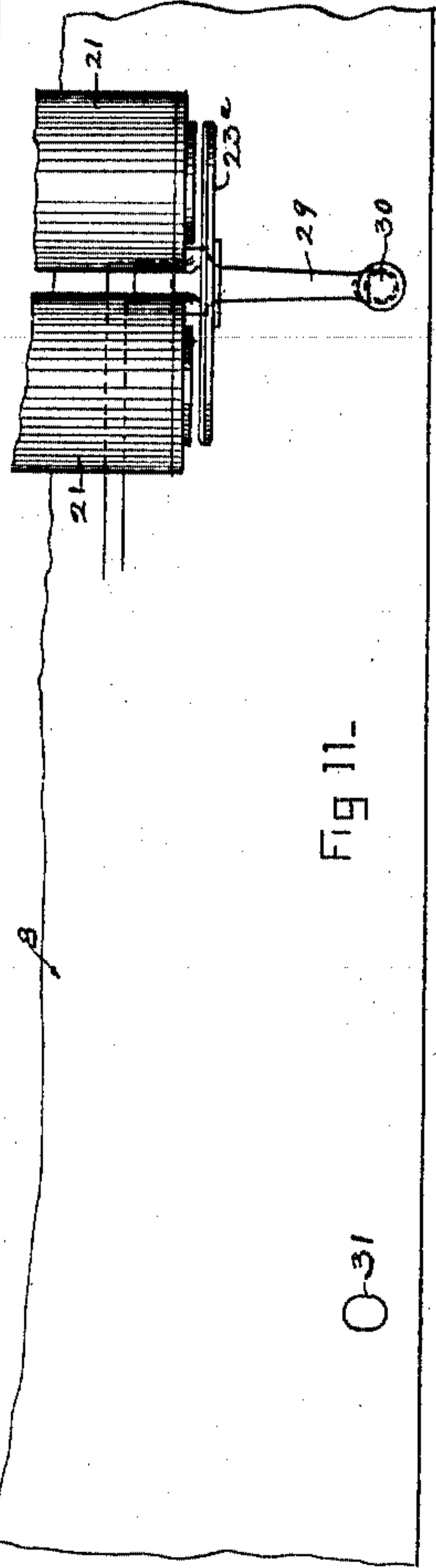


Fig 11.

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UNITED STATES PATENT OFFICE.

LEWIS C. ALLEN, OF PITTSBURG, PENNSYLVANIA.

ELECTRICAL STREET AND STATION INDICATOR.

SPECIFICATION forming part of Letters Patent No. 766,864, dated August 9, 1904.

Application filed December 7, 1903. Serial No. 184,019. (No model.)

To all whom it may concern:

Be it known that I, LEWIS C. ALLEN, of Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented a certain new and
5 useful Improvement in Electrical Street and Station Indicators, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification, in which—

10 Figure 1 is a front elevation of my improved indicator. Fig. 2 is a plan view of the same, the top portion of the indicator-casing and the mechanism carried thereby being removed and the shafts of the reels being shown
15 in section. Figs. 3, 4, and 5 are vertical sectional views on the lines III III, IV IV, and V V, respectively, of Fig. 1. Fig. 6 is a longitudinal vertical sectional view showing the indicator mounted in an electric trolley-car.
20 Fig. 7 is a vertical cross-sectional view of the same. Fig. 8 is a side elevation of a portion of the trolley-wire and a trolley-wheel provided with the indicator-contact. Fig. 9 is a vertical sectional view of the same. Fig. 10
25 is a diagrammatic view showing the electric circuits. In this figure a modified arrangement of the motor stopping or braking circuit is shown. Fig. 11 is a detached view of a portion of the electromagnet which serves to
30 close the motor-circuit and the belt which serves to carry the signs and also acts to keep the motor-circuit closed during the shifting of the signs; and Fig. 12 is an end view of the same, the belt being shown in vertical section.
35 Like symbols of reference indicate like parts wherever they occur.

My invention relates to an improvement in automatic street and station indicators adapted to be placed in trolley-cars and other vehicles;
40 and it consists in apparatus adapted to be operated by an electric current and to automatically display the names or numbers of the streets or stations along the route at or in advance of the arrival of the car at such points.

45 I will now describe my invention; so that others skilled in the art may manufacture and use the same.

In the drawings I show an indicator box or case which is adapted to be supported cross-
50 wise in the middle portion of the car below

the roof of the same, and it may be of such size and shape as to be supported by the longitudinal bars 2, to which the hand-straps of the car are attached, as is shown in Figs. 1 and 7 of the drawings. This casing is composed
55 of two boxes 3 and 4, one at each end, and a narrower or central portion 5, which extends between the two boxes and opens into the same. This portion 5 is provided with glass or transparent side pieces on both sides of the casing,
60 so that the street-sign may be read from either side of the indicator. In the boxes 3 and 4 are two reels 6 and 7, on which is wound the belt or apron 8, which passes from the reel 6 through the box 3 over the rollers 9 into the middle
65 portion 5 of the casing to the rollers 9 in the box 4 and to the reel 7. By turning the reels 6 and 7 the belt may be unwound from one reel to the other, and as this belt is provided with the names of the streets or stations
70 or the numbers of the streets or stations on both sides of the belt these names or numbers will be displayed through the glass or transparent sides of the middle portion 5 of the indicator-casing. Within the box 3 is an
75 electric motor 10, provided with a wheel and a belt 11, which belt passes up through the top of the casing to a belt-wheel 12 on the longitudinal shaft 13. This shaft 13 is loosely mounted in bearings 14, so as to be capable of
80 a longitudinal movement. To permit of this movement the belt-wheel 12 may be fitted on the shaft 13 by a feather and spline, which will permit of the movement of the shaft without interfering with the position of the belt-
85 wheel. At the two ends of the shaft 13 are miter-wheels 15, which are arranged to engage alternately with miter-wheels 16 and 17 on the ends of the shafts of the reels 6 and 7. Pivoted to the upper part of the casing are
90 two arms 18 18, the upper ends of which extend between and engage with the collars 19, which are keyed to the shaft 13. The lower ends of the arms 18 18 extend down in the casings in the path of projections or lugs 20,
95 fastened at any desired positions along the belt 8, whereby when the belt is unwound from one reel to the other one of the projections 20 strikes the end of one of the pivotal arms 18 and moves the same on its pivot, so
100

that the upper end of the arm bearing against the collars 19 will shift the power-shaft 13 and cause the miter-wheel 15 on one end of the shaft to be disengaged from the miter-wheel of one reel and the miter-wheel 15 at the other end of the shaft to become engaged with the miter-wheel of the other reel, thereby reversing the movement of the belt or apron 8 and causing the names or numbers of the streets or stations to be again indicated in reverse order as the car or other vehicle retraces its route. Although this feature of reversing the movement of the belt is an important one in my invention, yet I do not desire to limit myself thereto, as other arrangements of the belt may be substituted, as where the car or other vehicle is to be used on a belt-line.

In order that the names or numbers of the streets or stations may be displayed at intervals, the motor is set in operation at a point in advance of the next street or, preferably, as soon as a street or station has been passed and continues to run until the next name or number on the belt 8 is brought into the middle portion of the casing 5. Thereupon the motor is automatically stopped. To this end I employ an electromagnet 21, the armature of which is normally held open by the spring 22, the magnet when energized being adapted to attract the armature 23^a and close the contact 23. For the purpose of magnetizing the magnet a contact-leaf 24 is secured to the harp of the trolley-wheel, as shown in Figs. 8 and 9, which leaf bears against a sleeve 25, which is bolted to the web of the trolley-wheel, the sleeve being insulated from the web.

At each station, secured to the trolley-wire, is an arm 26, carrying a contact-piece 27, which arm and contact-piece are in electrical connection with the wire. As the trolley-wheel passes this arm the sleeve 25 comes in contact therewith and the current flows from the wire through the arm 26, contact-piece 27, and sleeve 25 to the leaf 24, and thence by a wire 28 to the magnet 21, thereby energizing the same during the period that the sleeve 25 is in contact with the contact-piece 27. While this period is of momentary duration, it is sufficient to attract the armature 23^a of the magnet and operate the bell-crank lever 29, one arm of which is secured to the armature and the other arm provided with a pin 30, which bears against the face of the belt 8 and is adapted to engage with holes 31 therein. When the armature of the magnet is operated as described, the contact 23 is closed. This contact is placed in the electric circuit 32, which is connected with the motor and with the lamp-circuit of the car, as is indicated by the diagram in Fig. 10, and by the closing of this circuit the motor 10 is set in operation. This motor communicates power to the shaft 13 and causes the belt 8 to be wound from one reel, 6, to the other reel, 7, or vice versa. As the

belt moves the hole 31 in the belt 8 passes out of line with the pin 30, which prevents the movement of the bell-crank lever, as the force of the spring 22 merely presses the pin 30 against the face of the belt. Although the magnet 21 is energized only momentarily, yet the contact 23 is kept closed through the inability of the bell-crank lever 29 to move to its normal position, and this continues until the next succeeding hole 31 in the belt 8 comes opposite the pin 30, whereupon the force of the spring 22 will cause the pin 30 to enter the hole and the movement of the bell-crank lever will break the contact 23 and cut the current from the motor. The holes 31 are arranged in the belt 8 at such distances that the movement of the belt will continue until the name or the number of the next succeeding station is displayed in the central portion of the casing 5.

By means of a short circuit 34, leading from a contact 35, adapted to be closed by the pin 30 when it has entered one of the holes 31, mechanism may be actuated for the purpose of braking or stopping the motor 10, so as to prevent it from exerting tension on the belt. Instead of having the braking-circuit 34 closed by means of the pin 30 it may be closed by the withdrawal or downward movement of the armature-lever 23^a and a suitable contact similar to the contact 23. (Diagrammatically shown in Fig. 10.)

The advantages of my invention will be appreciated by those skilled in the art. Instead of having a continuously-moving motor and clutch the motor is at rest, excepting when it is necessary to change the signal, and at the same time the motor is not dependent upon direct intermittent contact with the trolley-wire for the current necessary to maintain a sufficient force to shift the signal.

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

1. In an automatic electrical street and station indicator, the combination of a sign-indicator, a motor adapted to operate the indicator, an electromagnet operating directly, when energized by the movement of its armature, to close the motor-circuit to start the motor, an intermittent contact adapted to close the magnet-circuit, and a device independent of the magnet proper for retaining the closure of the motor-circuit during the movement of the indicator.

2. In an automatic electrical street and station indicator, the combination of a movable belt with signs arranged on both sides of the same, a casing having transparent sides for exposing the signs to view, a motor adapted to move the belt, an electromagnet operating directly, when energized, by the movement of its armature, to close momentarily the motor-circuit to start the motor, and devices independent of the magnet proper for retaining

the closure of the motor-circuit until the sign has been changed.

3. In an automatic electrical street and station indicator, the combination of an indicator having a movable belt provided with signs, a motor adapted to move the belt, an electromagnet operating directly, when energized, by the movement of its armature, to close momentarily the motor-circuit to start the motor, and devices independent of the magnet proper for maintaining the closure of the motor-circuit until the sign has been changed.

4. In an automatic electrical indicator system, the combination of a sign-indicator, an electromotor for operating the indicator, a circuit having a series of contacts thereon, a movable contact adapted to contact with said series of contacts, a separate circuit for the motor, and an electromagnet electrically connected with said movable contact, said magnet operating directly, by the movement of its armature, when energized by the contact of said movable contact with said series of contacts, to close the motor-circuit to start the motor.

5. In an automatic electrical indicator system, the combination of a sign-indicator, an

electromotor for operating the indicator, a circuit having a series of contacts thereon, a movable contact adapted to contact with said series of contacts, a separate circuit for the motor, an electromagnet electrically connected with said movable contact, said magnet operating directly, by the movement of its armature, when energized by the contact of said movable contact with said series of contacts, to close momentarily the motor-circuit to start the motor, and an independent device for retaining the closure of the motor-circuit after the magnet-circuit is broken.

6. In a street and station indicator, a movable sign-belt, reels for holding the belt, mechanism for driving the reels, a single motor for operating said reel-driving mechanism, and means operated positively by the belt for shifting the reel-driving mechanism so as to drive the reels alternately.

In testimony whereof I have hereunto set my hand.

LEWIS C. ALLEN.

Witnesses:

A. M. STEEN,
JAMES K. BAKEWELL.