

No. 705,967.

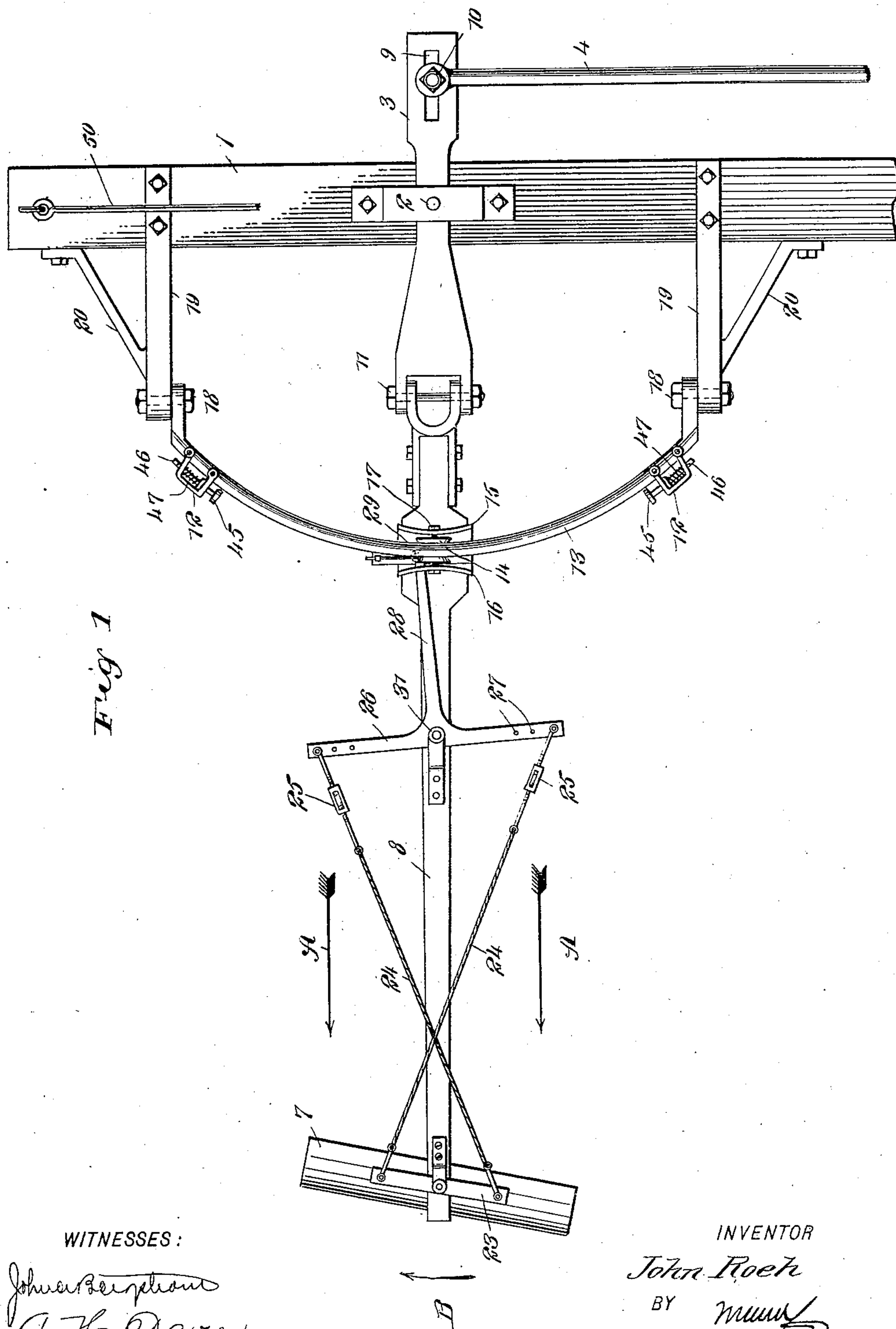
Patented July 29, 1902.

J. ROEH.
AUTOMATIC CURRENT MOTOR.

(Application filed July 12, 1901.)

(No Model.)

2 Sheets—Sheet 1.



WITNESSES:

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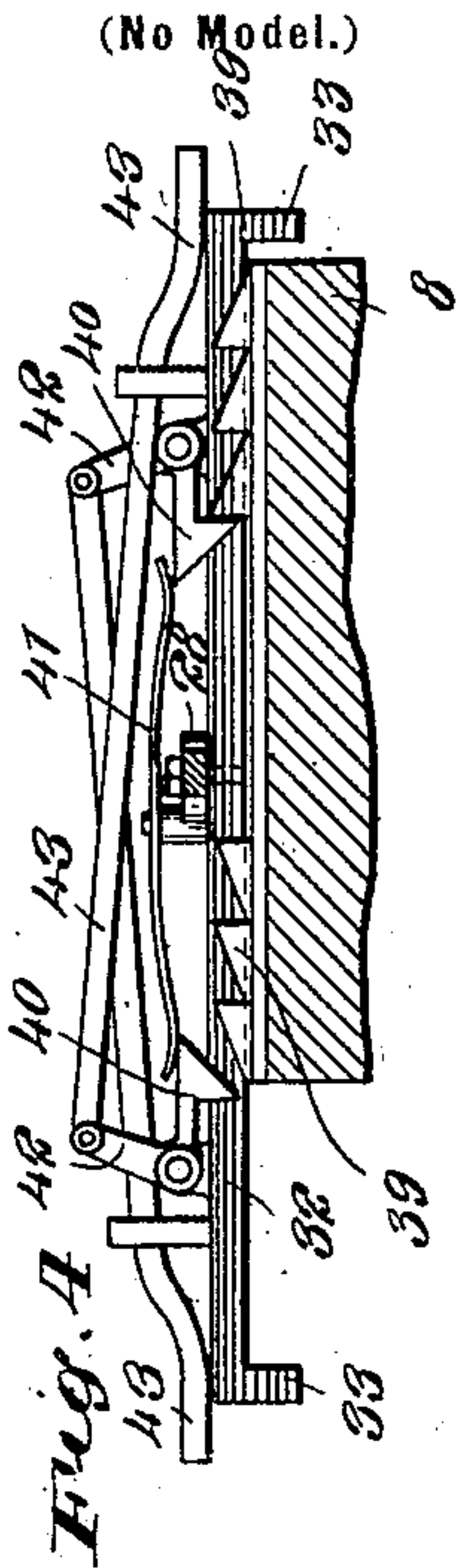


Fig. 1

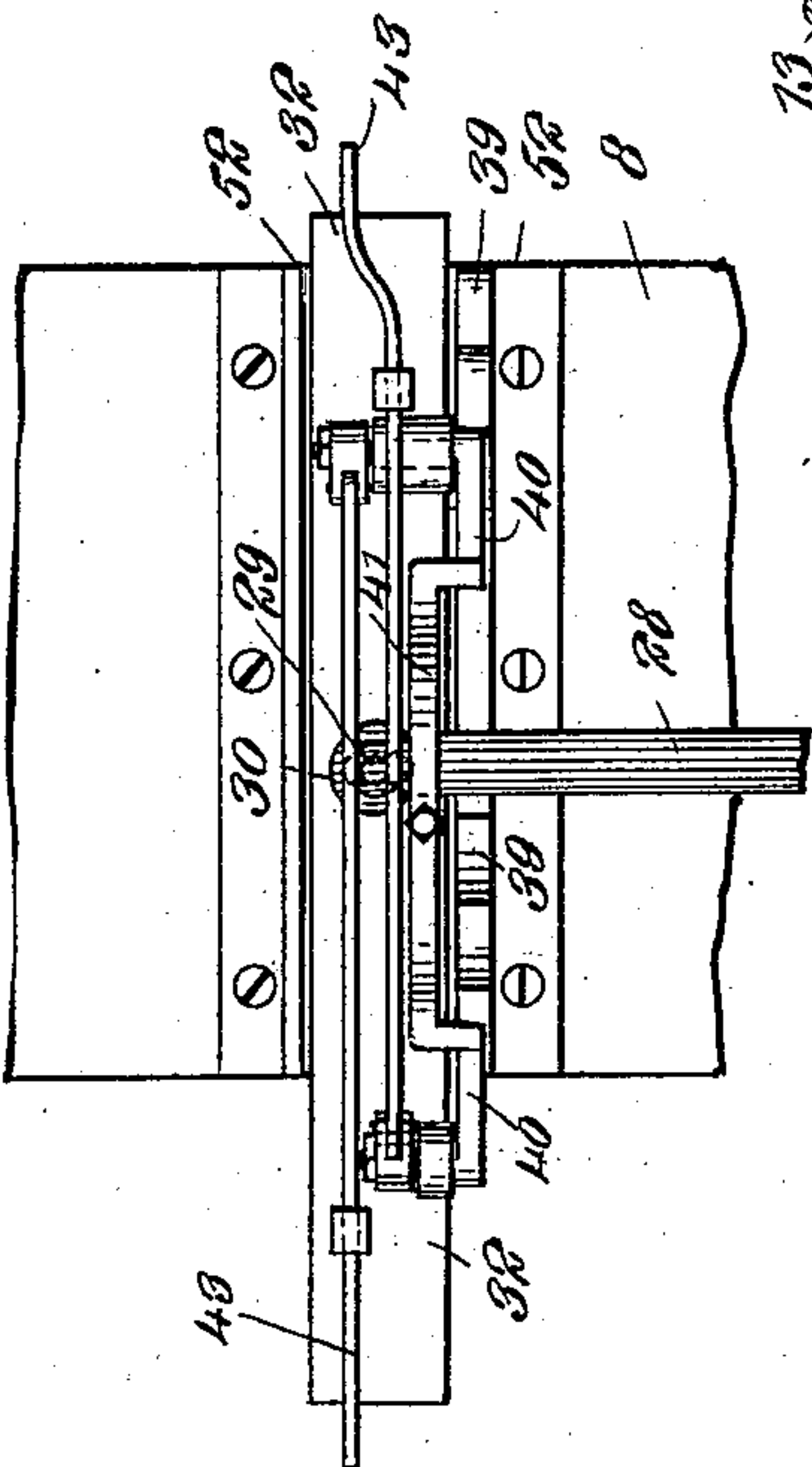


Fig. 2

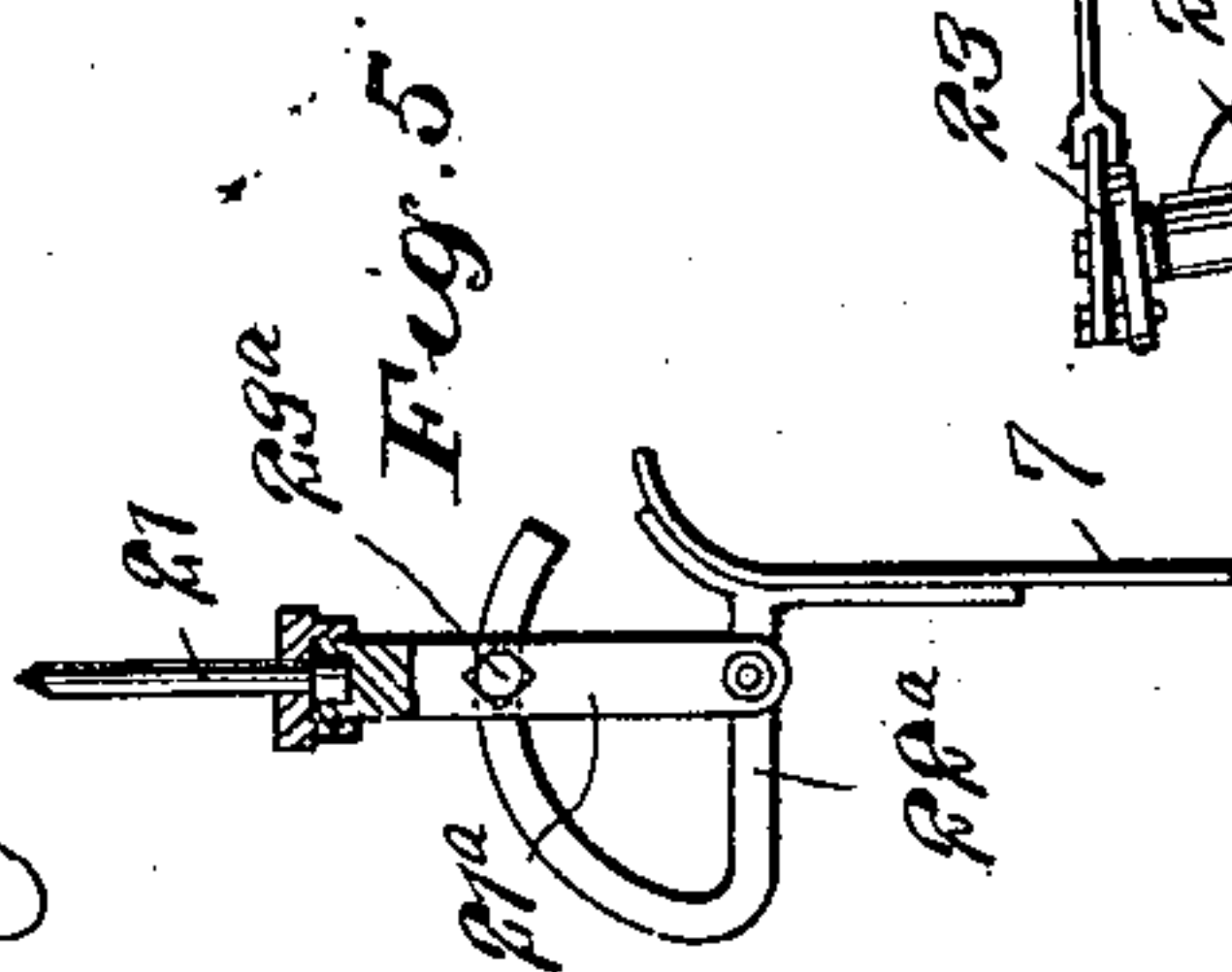


Fig. 3

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UNITED STATES PATENT OFFICE.

JOHN ROEH, OF OROVILLE, WASHINGTON.

AUTOMATIC CURRENT-MOTOR.

SPECIFICATION forming part of Letters Patent No. 705,967, dated July 29, 1902.

Application filed July 12, 1901. Serial No. 67,990. (No model.)

To all whom it may concern:

Be it known that I, JOHN ROEH, a citizen of the United States, and a resident of Oroville, in the county of Okanogan and State of Wash-
5 ington, have invented a new and Improved Automatic Current-Motor, of which the following is a full, clear, and exact description.

The object of my invention is to provide a simple and convenient current-motor to con-
10 vert the energy of a flowing stream into reciprocating or rotary motion to drive a pump or other mechanism.

A further object is to provide a motor which can be used in shallow streams as well as in
15 streams of considerable depth and one in which all of the working parts are located above the surface of the water, readily accessible by the mechanic, whereby the controlling parts may be easily adjusted.

20 Further improvements and advantages will appear from the description of my invention.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indi-
25 cate corresponding parts in all the views.

Figure 1 illustrates a top view of the current-motor. Fig. 2 illustrates a side view and a section of the supporting and guiding parts for the current-motor. Figs. 3 and 4 illus-
30 trate top and side views of the tripping device used in connection with the motor, and Fig. 5 is a detail sectional view of a modification hereinafter more fully described.

A supporting-beam 1, held by a tension
35 member 50 over a stream 6, carries a swinging member 3 by the pin 2, the said swinging member having at one end a slot 9, in which is adjustably fastened a connecting-rod 4 by a bolt 10. At the other end of the said
40 swinging member is hinged by the bolt 11 a pendulum 8, carrying at its farther end a blade 7. The blade is supported on one end of a rod 21, which is held firmly by a brace 22, which permits the rod and the blade to rotate
45 by the operation of the tension members 24, acting upon the cross-piece 23, firmly fastened to the upper end of the rod 21. The members 24 are fastened at either end of the cross-piece located on the rod 21 and also to a
50 swinging member 26 in such a way that the tension members 24 cross each other at the

center, so that the parts of the cross-piece 23 and the swinging member 26, located on opposite sides of the pendulum 8, move in unison with each other. To provide means for
55 adjusting the blade 7, the tension members 24 have turnbuckles 25 25, and the swinging member 26 has a series of holes 27 27, which are adapted to receive the ends of the said turnbuckles.

The swinging member 26, which is pivoted at 31 on the pendulum 8, carries an arm 28, which is adapted to slide over a pin 29, located in a slot 30 in the arm 28 and carried
60 by a slide 32. This slide 32 has at either end limiting portions 33 33 and carries a pair of pawls 40 40, pivoted thereto and adapted to move over racks 39 39, which are mounted upon the swinging pendulum 8, the pawls being pressed upon by a spring 41. The slide
65 32, movable in the groove formed by the rectangular pieces 52 52, also carries tripping devices 43 43, which operate upon arms 42 42, thereby moving the pawls 40 40 into and out of operating position relative to the racks 39 39.
75

Located above the slide 32 is the trolley 14, supported on the pin 17, which is carried by the brackets 15 and 16, the brackets 16 spreading over the arm 28 and permitting free play
80 of the same. The trolley 14 is carried upon a track 13 as the blade and pendulum swing back and forth in the current of the stream. At either end of the arc-shaped track 13 are located bumpers 12 12, which are supported
85 on said track and have bumper-heads 45 45, carried by rods 46 46 and controlled by springs 47 47. The track 13 at either end is hinged at points in line with the bolt 11 by which the pendulum 8 is swung. This permits the pen-
90 dulum to give its vertical motion to the track. Supporting the track are the braces 19 and 20, located upon the supporting-beam 1.

In Fig. 5 is shown a modified construction of the means of attachment for the blade 7. In this view the rod 21 carries an extension
95 21^a, to the lower end of which is pivoted a brace 22^a, attached at one end to the blade 7 and having a curved member which plays in a slot in the extension 21^a and which may be held as adjusted by a set-screw 23^a.
100

The operation of the current-motor is as follows: The current coming in the direction

of the arrows A (shown in Fig. 1) strikes the blade 7 at an angle. This resolves the force into two components, one in the direction of the swinging pendulum 8, which is received by the pin 2, and the other at right angles to the said pendulum, which causes the same to swing in the direction indicated by the arrow B until the trip 43, carried by the slide 32, comes in contact with the bumper 12. (Shown in the upper part of Fig. 1.) The bumper-head 45, striking against the said trip, causes the same to lift the pawl 40 against the spring 41 and away from the rack 39, carried upon the pendulum 8, and thereby allows the pendulum 8 to swing underneath the slide 32 until the said pendulum strikes against the limiting portion 33 of the said slide. This movement swings the arm 28 to the opposite side of the pendulum 8 and also the other pawl 40, carried by the said slide, to the center of the rack, which is then held by the pawl, thereby maintaining the arm 28 in its changed position until the pendulum again swings to the opposite bumper, when the operation again repeats itself. Upon the trip and slide striking the bumpers and the arm 28 being thrown over to the other side of the pendulum the links 24 24, attached to the other end of the swinging member 26, cause the blade to swing in the opposite direction and to a reversed position to that it had prior to the time when the slide strikes the bumper. This always presents the blade to the stream in such an angular position that the force of the stream will be resolved into such components as will cause the blade and the pendulum to swing back and forth. The swinging motion is communicated to pumping mechanism or other machinery by means of the connecting-rod 4, connected to the pendulum by the pivoted member 3.

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

1. In a current-motor, the combination of a track, an oscillatory member engaging the said track, bumpers located on either end of said track, and a slide on said oscillatory member and adapted to strike the said bumpers as the oscillatory member moves along the said track, a blade pivoted upon said oscillatory member, and flexible connections between said blade and said slide for the purpose of shifting the angle of said blade when said slide engages said bumpers.

2. In a current-motor, the combination of an oscillatory member, a pivoted track engaging the said oscillatory member, a trolley adapted to move on said track and connect the same with the said oscillatory member, bumpers located on either end of said track, and a slide having a tripping mechanism positioned so as to meet said bumpers.

3. In a current-motor, the combination of

a blade, an oscillatory member carrying the said blade, a swinging member mounted on the said oscillatory member and connected to the said blade, a slide also mounted on the said oscillatory member and connected to the said swinging member, a pivoted track engaging the said member, and bumpers located on either end of the said track and adapted to cooperate with the said sliding member to control the position of the said blade.

4. In a current-motor, the combination of a blade, an oscillatory member carrying the said blade, a swinging member connected to the said blade, a slide carried on the said oscillatory member, a pivoted member connected to the said oscillatory member, a support therefor, and a pair of bumpers adapted to control the position of the said slide.

5. In a current-motor, the combination of a blade, a slide connected thereto, pawls carried by said slide, and a rack moving under said pawls, whereby the position of the said blade is controlled.

6. In a current-motor, the combination of an oscillatory member, a swinging member mounted on the said oscillatory member, a slide connected to said swinging member and having pawls, a pair of bumpers adapted to operate on the said pawls, and a rack carried by the said oscillatory member, whereby the position of the said swinging member with respect to the said oscillatory member is controlled.

7. In a current-motor, the combination of an oscillatory member, racks and a slide carried by the said oscillatory member, pawls mounted on the said slide, and bumpers adapted to cooperate with the said pawls to control the position of the said sliding member.

8. In a current-motor, the combination of an oscillatory member, a movable member carried thereby, pawls mounted on said movable member, trips connected to said pawls, racks to be engaged by said pawls, and a pair of bumpers adapted to operate upon the said trips and the said movable member to control their position with respect to the said oscillatory member.

9. The combination in a current-motor, of a blade, a swinging member connected to said blade, a slide having pawls and trips adapted to control the position of the said swinging member, racks to be engaged by said pawls, a pivoted track, and bumpers mounted on said track whereby the blade is swung into a different position at each end of its stroke.

10. An automatic current-motor, comprising a swinging arm pivoted upon a center and provided with a trolley, an arc-shaped track concentric to said center and engaging said trolley, a blade mounted upon said swinging arm and movable relatively thereto, and means for periodically shifting the position of said blade relatively to the said arm.

11. An automatic current-motor, compris-

ing a swinging arm pivoted upon a center, a
blade mounted upon said arm and movable
relatively thereto, levers and connections for
periodically moving said blade relatively to
5 said arm, and bumpers for actuating said le-
vers and connections.

In testimony whereof I have signed my

name to this specification in the presence of
two subscribing witnesses.

JOHN ROEH.

Witnesses:

N. SABOURIN,
GEO. H. NOYES.