

No. 762,318.

PATENTED JUNE 14, 1904.

D. KEMPT.

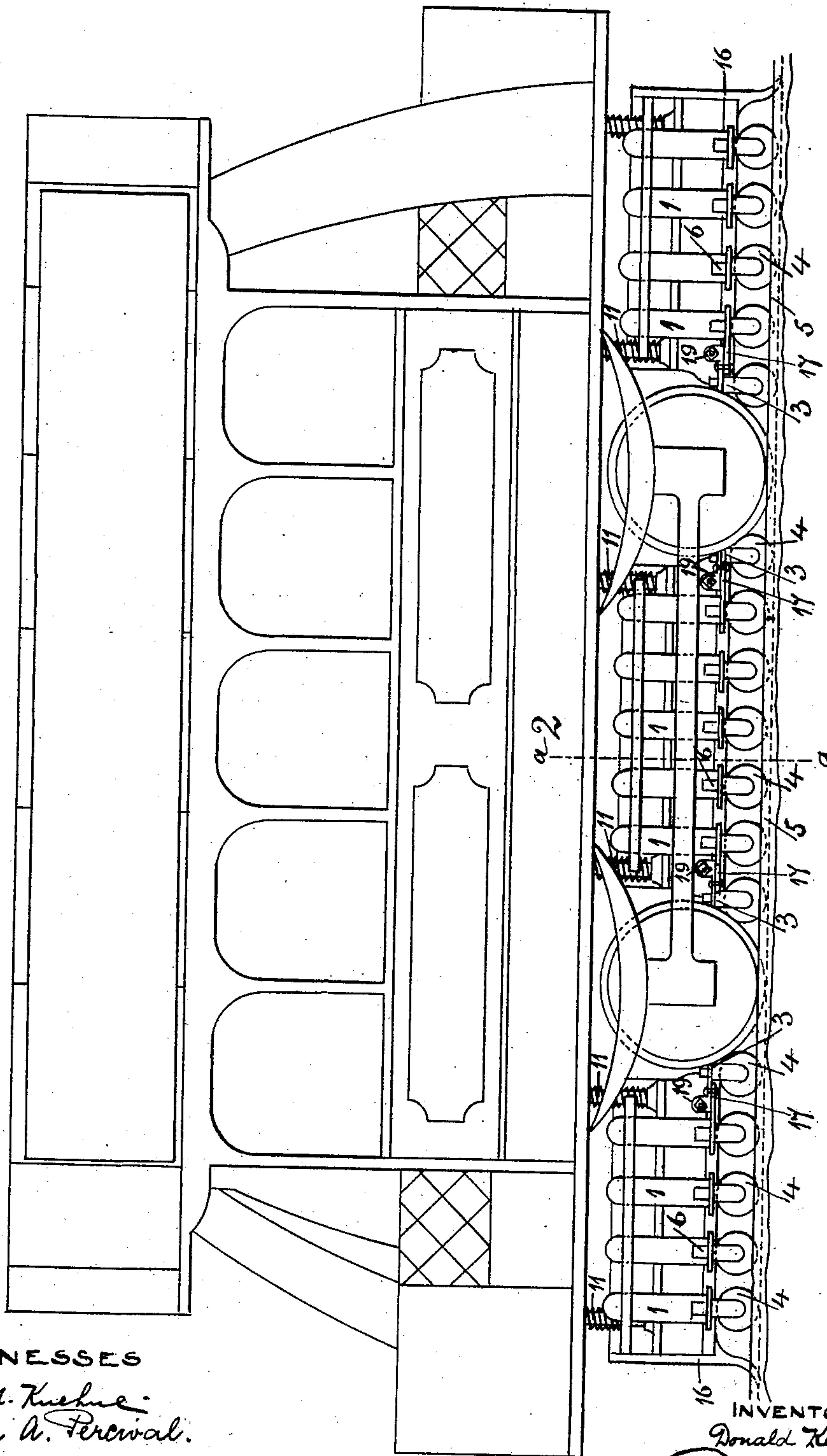
CONDUCTOR AND COLLECTOR FOR ELECTRIC RAILWAYS OR TRAMWAYS.

APPLICATION FILED MAR. 11, 1903.

NO MODEL.

4 SHEETS—SHEET 1.

FIG. 1.



WITNESSES

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John A. Percival.

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BY *Richardson*  
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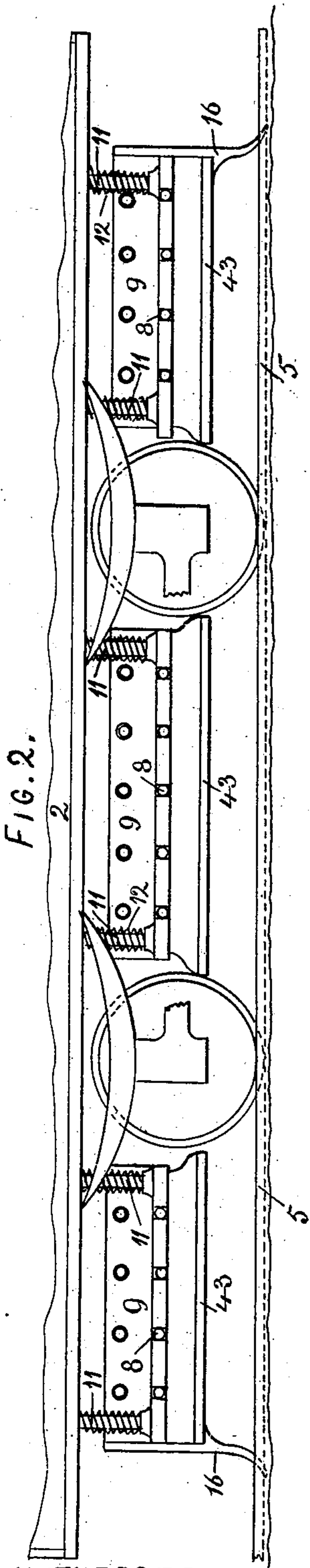
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4 SHEETS—SHEET 2.



WITNESSES  
J. M. Kuchner  
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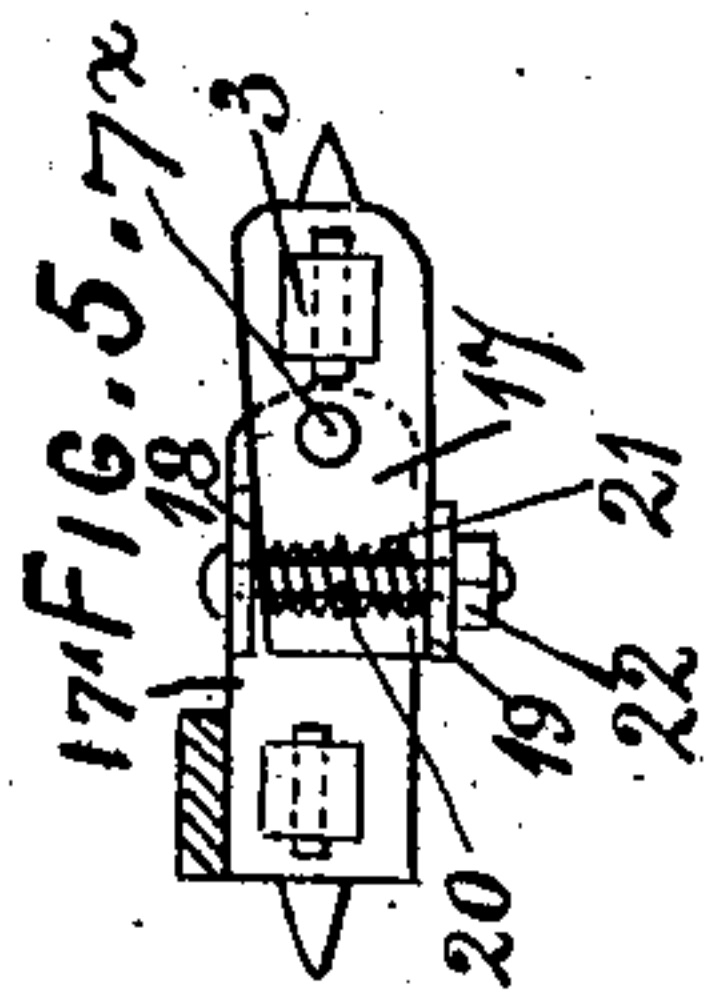


FIG. 4.

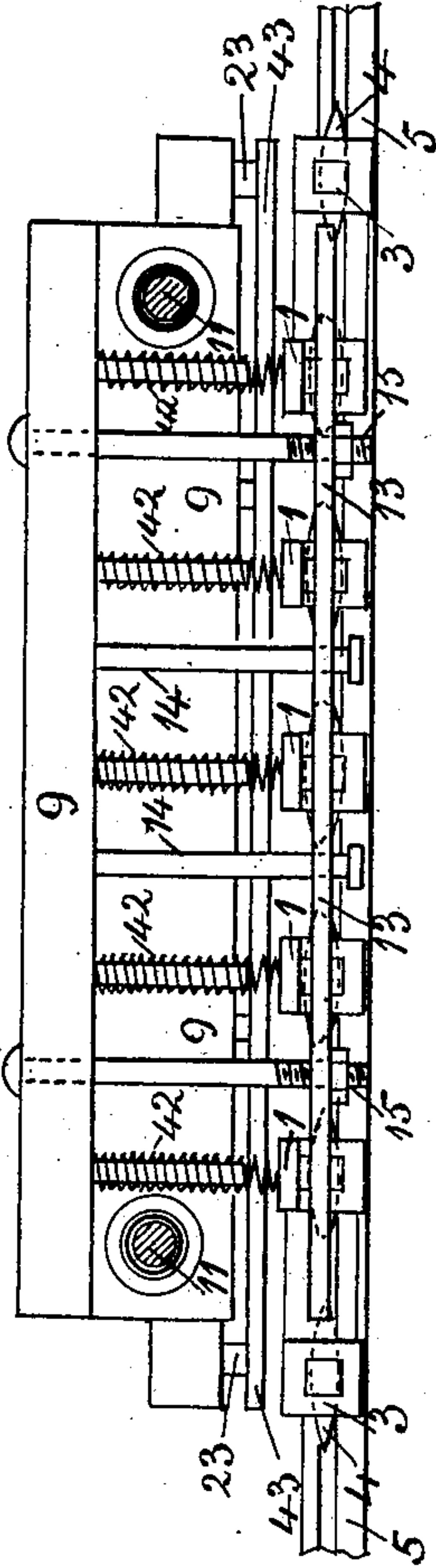
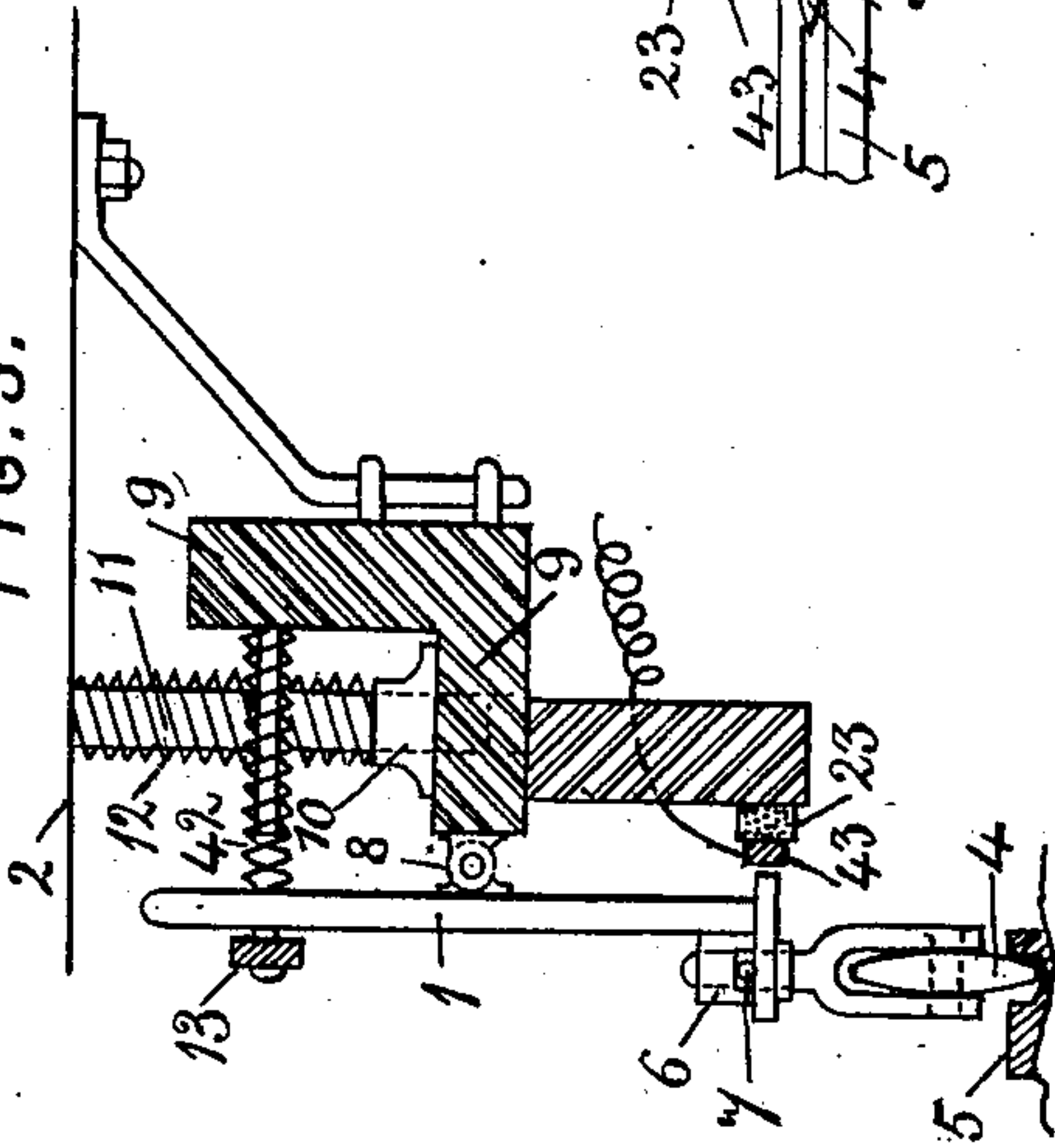


FIG. 3.



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4 SHEETS—SHEET 3.

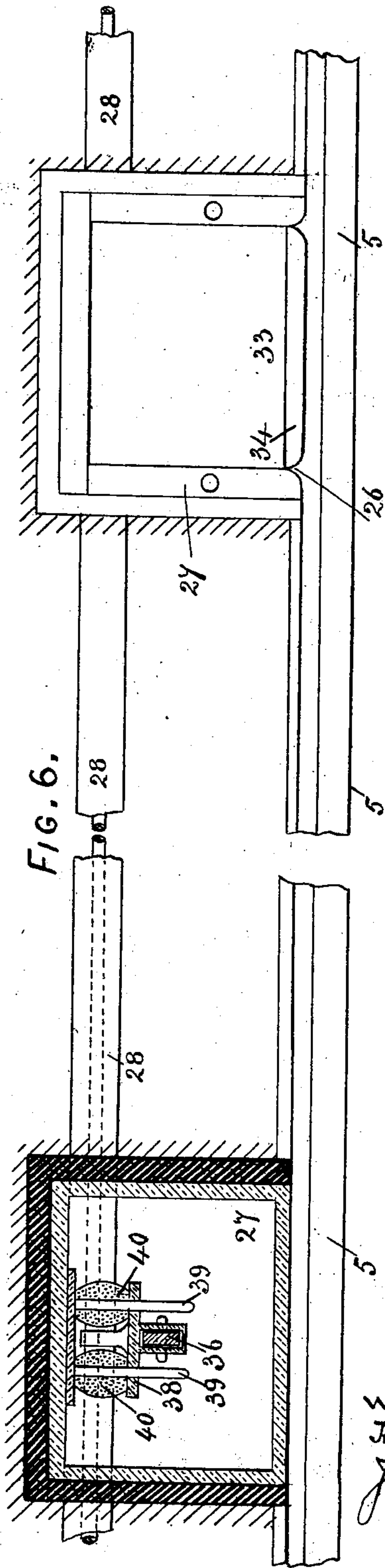


FIG. 8.

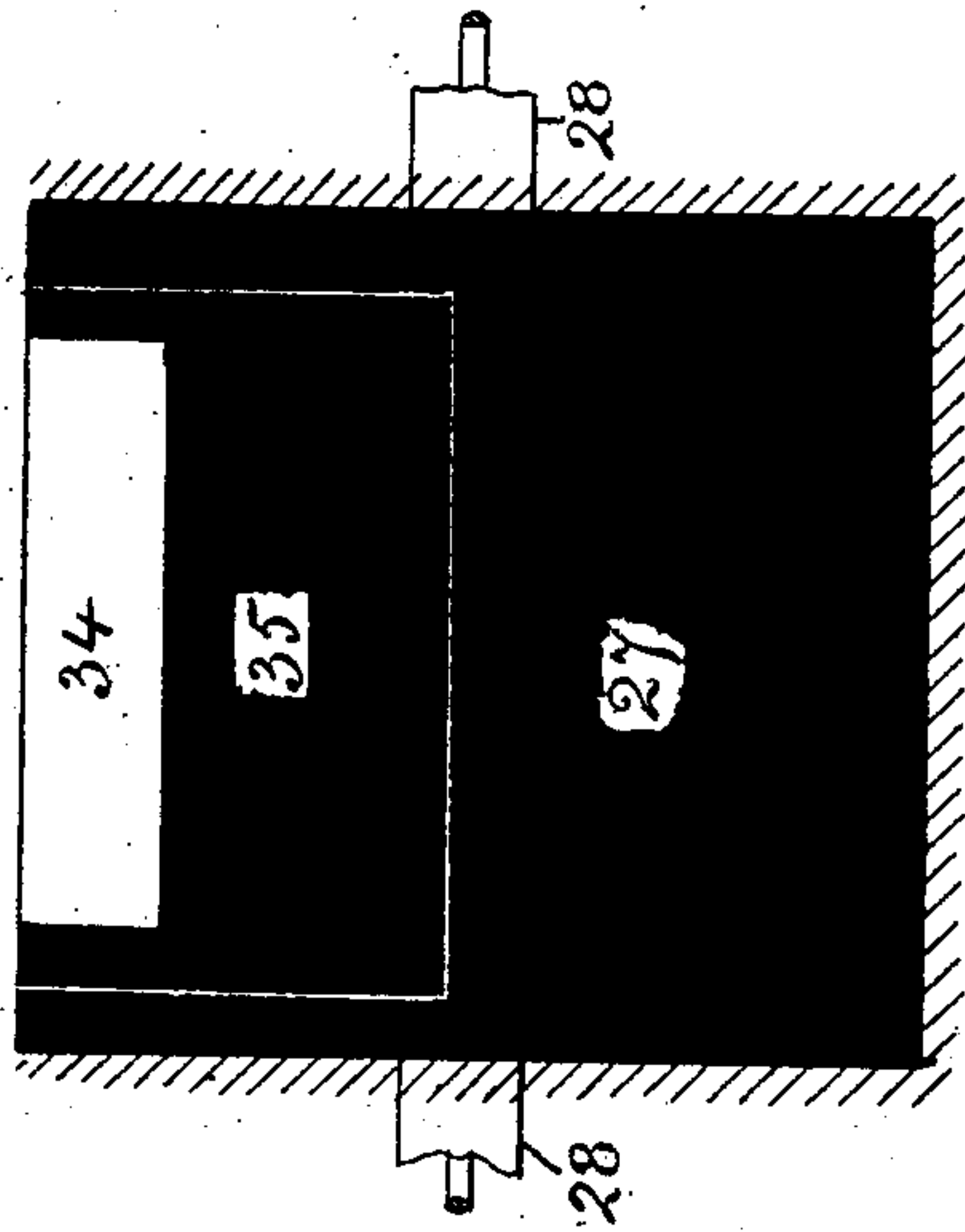


FIG. 9.

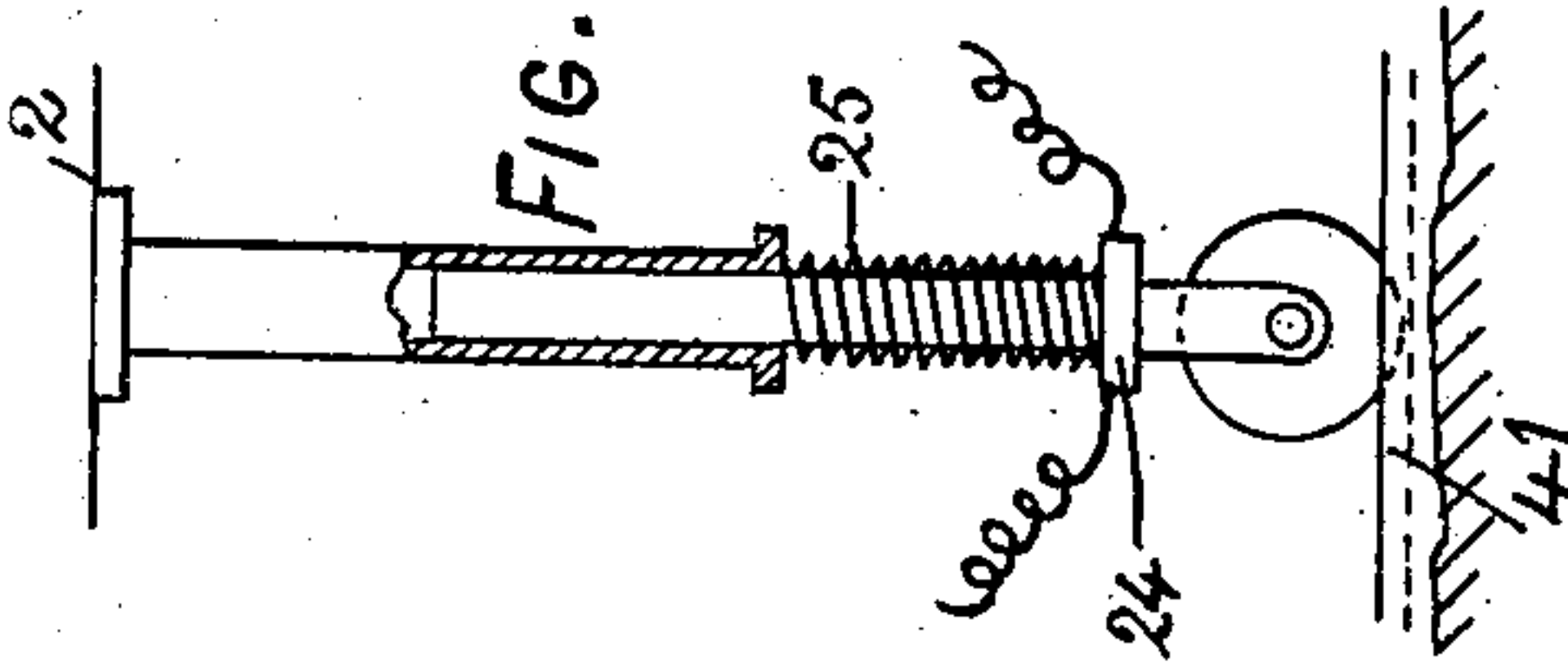
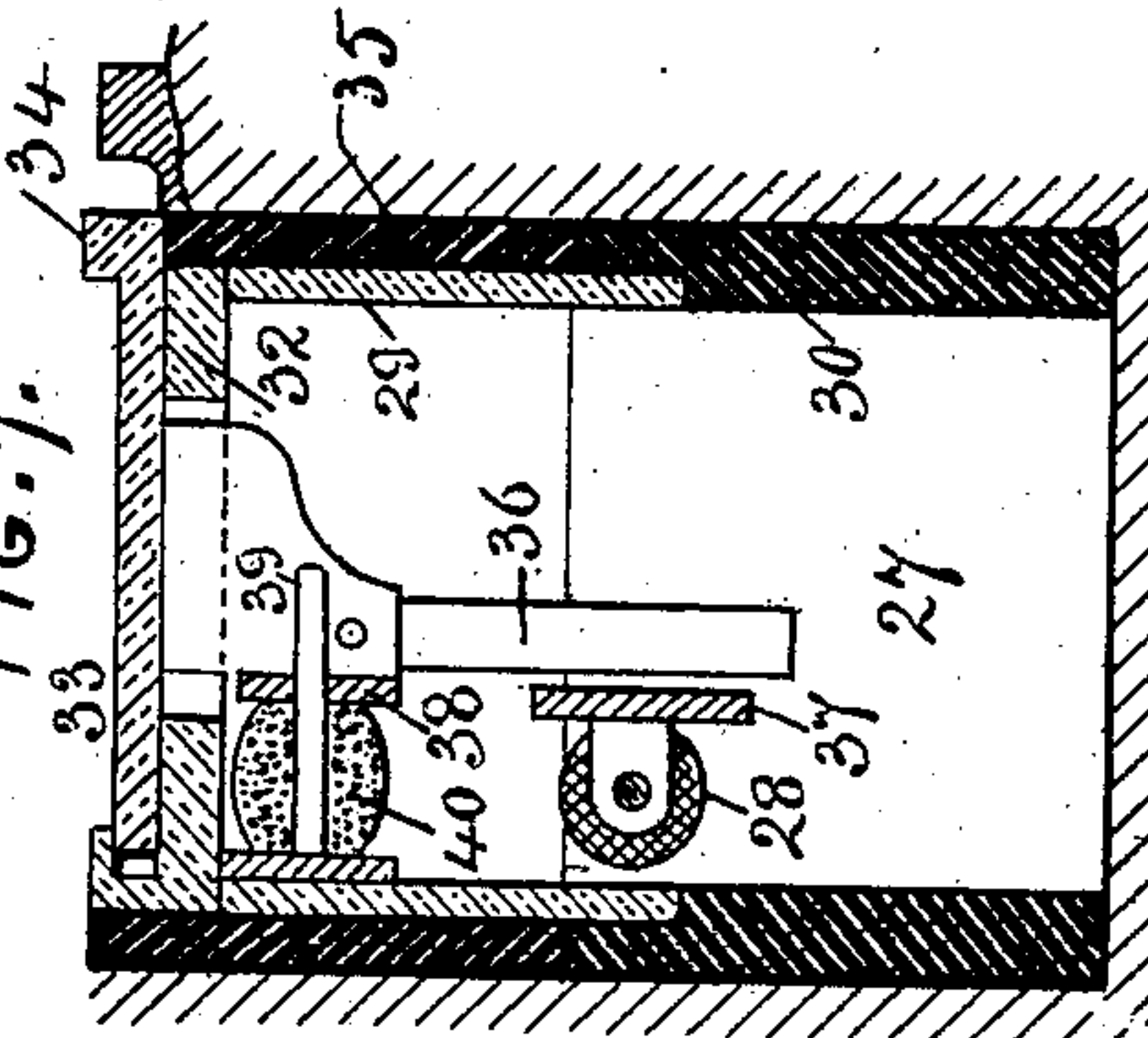


FIG. 7.



WITNESSES

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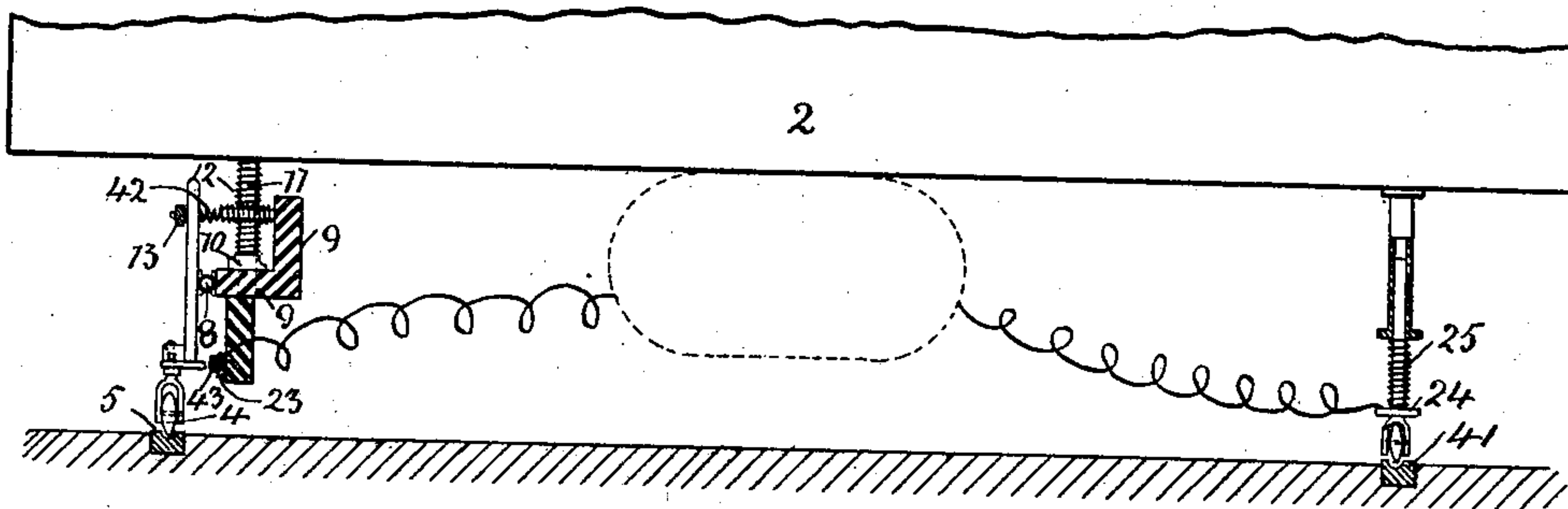
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APPLICATION FILED MAR. 11, 1903.

NO MODEL.

4 SHEETS—SHEET 4.

FIG. 10.



WITNESSES

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# UNITED STATES PATENT OFFICE.

DONALD KEMPT, OF BUENOS AIRES, ARGENTINA.

CONDUCTOR AND COLLECTOR FOR ELECTRIC RAILWAYS OR TRAMWAYS.

SPECIFICATION forming part of Letters Patent No. 762,318, dated June 14, 1904.

Application filed March 11, 1903. Serial No. 147,295. (No model.)

*To all whom it may concern:*

Be it known that I, DONALD KEMPT, surgeon dentist, a subject of the King of Great Britain and Ireland, and a resident of Buenos Aires, Argentina, have invented certain new and useful Improvements in Conductors and Collectors for Electric Railways or Tramways, of which the following is a specification.

This invention has reference to and comprises improvements relating to conductors and collectors for electric railways and tramways; and it consists of the application of means for making successive contacts with the main conductor or conductors, preferably placed under ground, (but it may be in any other convenient position,) as the car progresses, for the purpose of obviating the dangers and inconvenience of the overhead-trolley system.

In order that others skilled in the art to which my invention relates may understand the nature of my improvements, I have hereto appended three sheets of explanatory drawings, in which—

Figure 1 is a diagrammatic side elevation of a tramway-car fitted with my improvements. Fig. 2 is a similar view of the lower part of the car with part of the appliances removed. Fig. 3 is a transverse sectional view on the line *a a* in Fig. 1 of the collecting and transmitting appliances, and Fig. 4 is a plan of same, while Fig. 5 is a plan showing the flexible connection of the smaller collectors to the adjacent larger ones. Fig. 6 is a plan of part of a tramway-line, showing the arrangement of the contact-boxes and their internal fittings in plan. Fig. 7 is an end sectional view of one of the contact-boxes, while Fig. 8 is an elevation of the side placed next the rail, and Fig. 9 shows the appliance for conveying the return-current from the motor to the rail. Fig. 10 is a sectional view showing both rails.

Referring to the drawings, in carrying into practice the improvements of this invention a series of perpendicular staves or levers 1, hereinafter called the "conductors," of metal or other suitable material and of a length to suit the car or other vehicle to which they

are applied, are fitted along one side of the car 2 from end to end, those next the wheels having shorter supplementary conductors 3 secured to them, in the manner to be described, to render the gaps in the series caused by the wheels to be as short as possible. The conductors 1 and 3 are rounded at their lower ends or are fitted with wheels 4 of, say, four or five inches in diameter, and preferably thicker in the center than at the edge to run in the groove of the rail 5. These wheels 4 are attached to the lower ends of the conductors 1 by sockets 6, having a pin 7 and a slot in the socket to allow for the lateral movement required for rounding curves. The conductors 1 are hinged at 8, as shown in Fig. 3, to the projecting rim of a wooden frame 9, carried by eyes 10 on rods 11, secured to the car, on which are mounted spiral or like springs 12 to press the frame down, so that the wheels 4 of the conductors 1 will always run in the groove of the rail. Springs 12, Fig. 3, are fitted between the upper ends of the conductors 1 and the frame 9, carrying same in order to press the upper ends outward, and consequently the lower ends inward, and there is attached to the frame 9 a bar 13, sliding on rods 14, which passes along the outside of all the conductors 1, and the distance of this bar from the frame is regulated by one or more screws 15 in order to limit the outward movement of the top of the conductors 1. Attached to the end of the frame 9 at front and rear of the car are two stationary rods 16 to clear the groove in the rails. Each short supplementary conductor 3 is attached to the conductor 1 next it by two bars 17 17', overlapping each other, as shown in Fig. 5, and being secured together by a pivot 7<sup>x</sup>, which passes through the middle of bar 17 and through the end of bar 17'. A flange 18 is made on one side of bar 17, and a flange 19 is made on the opposite side of the bar 17. A rod 20 passes through holes in said flanges, on which is a spiral spring 21, which by means of the flanges 18 and 19 tends to force the rear end of bar 17 away from the flange 18. A nut 22 on the end of rod 20 regulates the amount of movement of the



bar 17. A wooden board is secured to or forms part of the lower side of each frame 9 carrying the conductors, the lower edge of which may be situated about six inches above the rail, and a copper or other metal bar 43 or conductor electrically connected to the commutator and motor by means of suitable wiring is secured to the lower edge of the board 9 and which is fitted with rubber or other suitable springs 23 in order to yield slightly to pressure. The whole is fitted in such a manner that while the wheels 4 at the lower end of the conductors 1 and 3 are traveling in the groove of the rail 5 the conductor is out of contact with the conductor-bar 43; but when the lower end moves inward, as will be described, the conductor comes into contact with the conductor-bar and makes electrical connection with same. At the other side of the car for the return-current and attached by suitable wiring to the motor on the car is a single conductor 24, Fig. 9, attached to the car between the wheels and having at its lower end a four or five inch wheel to run in the groove of the rail and at its upper end a spiral or other spring 25, pressing downward to retain it in the groove of the rail.

Referring to Figs. 6, 7, and 8, at spaced distances apart—say about two-thirds of the length, more or less, of the car to which the improvements are being applied—breaks 26 are formed in the inside edge of one of the rails 5 by cutting away part of the inner edge—say about thirteen inches in length. At each of these breaks and close to the rail, but separated from it by fiber or other suitable insulating material, contact-boxes 27 are placed, through the center of which one of the main conductors or cables 28 passes, the rail on the other side of the track being used as the return-conductor. Each contact-box 27 is of a size to nearly fill the space of the break 26 in the rail and is hollow and rectangular and divided into upper and lower sections 29 and 30. The lower one, 30, is put down first, and after passing the main conductor 28 through the upper part of it the upper section 29 is bolted or otherwise secured onto it. The upper section has a removable top 32, which is secured to the part 29, so that it can be easily removed for cleaning or repair. In this top 32 is fitted a sliding plate 33, running in grooves in each side, having a raised edge 34 to correspond with the inner side of the rail, and the gap caused by the break 26 is nearly filled by the edge 34, the front of the contact-box 35 being formed of or covered with non-conducting material. Through the center of the top 32 and attached to the sliding plate 33 is a prong 36, which makes the contact with a metal plate 37, attached to the main conductor or cable 28 inside the box. To the upper end of this prong 36, but underneath the top, is attached a plate 38 with two rods 39, running through it, on which are springs 40, which

may be of rubber, to keep the prong just out contact till the slide 33 is forced by the pressure of one of the conductors on the car to move inward.

The action of the whole is as follows: As the car progresses the wheels of the conductors 1 and 3 run in the grooves of the rail 45 and keep them out of contact with the metal bar 22 on the car. When the conductors come opposite each break 26 in the rail, the springs 42 at the top of the conductors force their lower ends inward and cause the conductor to make contact with the metal bar 43 on the car. At same time the wheels 4 at the ends of the conductors 1 and 3 come into contact with the sliding plate 34, which is thus forced inward, causing the prong 36 to make contact with the metal plate 37, attached to the main conductor 28 within the box, and thus the circuit is completed from the main conductor 28 to the motor on one side and from the motor to the rail 41, carrying away the return-current, on the other.

It will be understood that when the plate 33 has its edge 34 in line with the rails and is capable of being touched by the car-wheels there is no electrical connection between the plate and main conductors. When the plate 33 is pressed in to make electrical connection, the car-wheels are not in a position to touch it.

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

1. In conductors and collectors for electric railways, the combination of the frame attached to the car, springs 12 for pressing it downwardly, conductors attached to said frame, springs 42 for pressing the upper ends of said conductors away from the frame and the conducting-bar 43 attached to the frame and electrically connected to a suitable motor on the car, the lower ends of the staves coming in contact with the bar 43 as these upper ends are pushed outwardly.

2. In conductors and collectors for electric railways, the combination of a frame attached to the bottom of the car, springs for pressing the frame downwardly, staves hinged to said frame, springs for pressing the upper ends of the staves away from the frame, a conducting-bar 43 carried by the frame and electrically connected to a suitable motor on the car, the lower ends of the staves coming in contact with the bar 43 as their upper ends are pushed outwardly and springs 23 for said conducting-bar.

3. In conductors and collectors for electric railways, the combination of the frame yieldingly secured to the car, staves hinged thereto, wheels carried by the staves, a conducting-bar secured to the frame and normally out of contact with the staves, said bar being electrically connected to the motor of the car, and means for bringing the staves into contact with the bar.

4. In conductors and collectors for electric railways, the combination of the frame a main

stave secured thereto, a supplemental stave,  
bars 17 and 17' connecting said main and sup-  
plemental staves, said bars being pivoted to-  
gether, and a spring for pressing the bar car-  
5 rying the supplemental stave laterally in re-  
lation to the other bar, substantially as de-  
scribed.

In testimony whereof I have signed my name  
to this specification in the presence of two sub-  
scribing witnesses.

DONALD KEMPT.

Witnesses:

N. GROVES,  
M. ALLEN.