

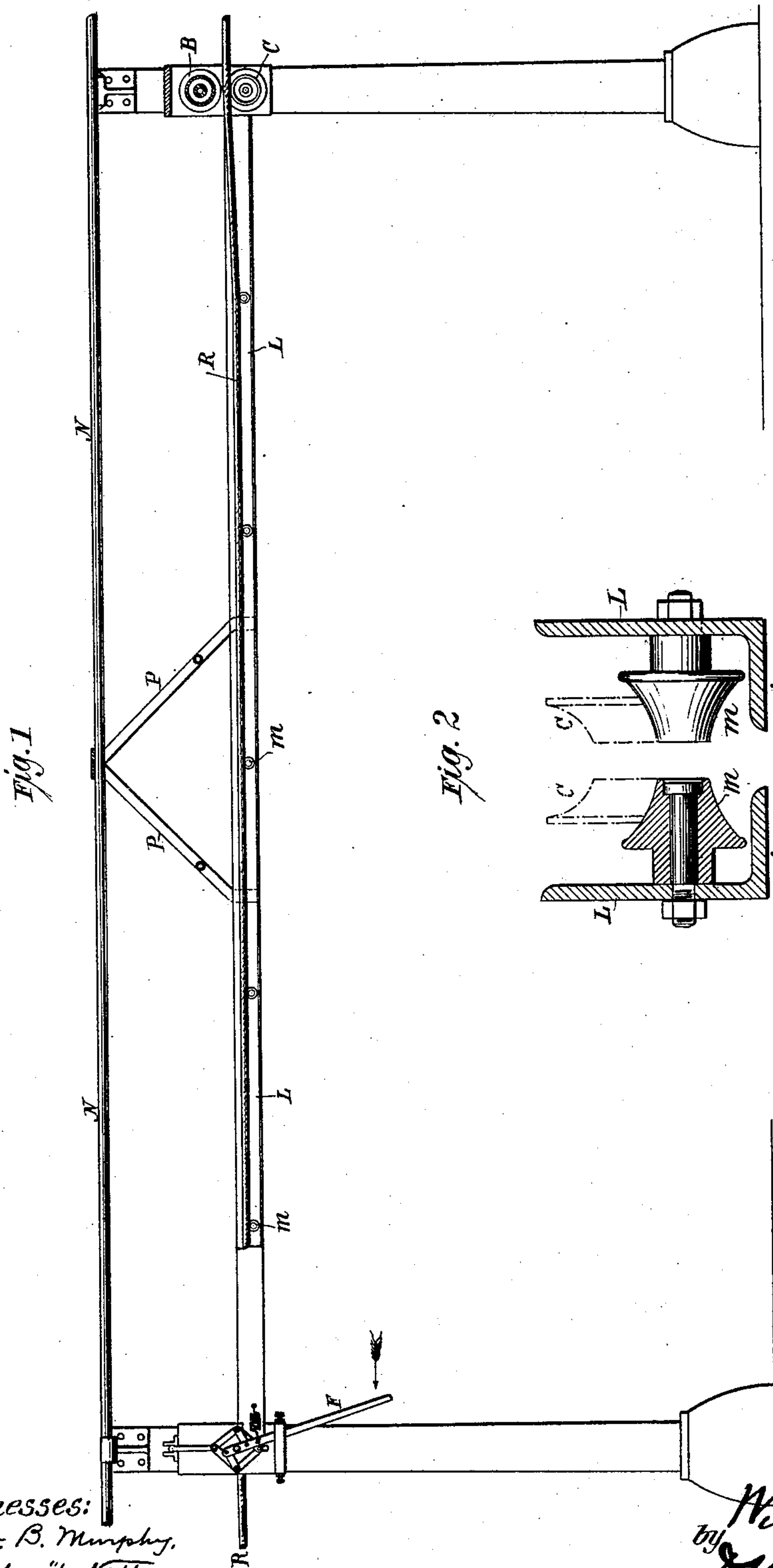
(No Model.)

3 Sheets—Sheet 1.

W. A. BUTLER.
MECHANISM FOR CABLE TRACTION.

No. 478,046.

Patented June 28, 1892.



Witnesses:
Frank B. Murphy.
Raphaël Netter

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(No Model.)

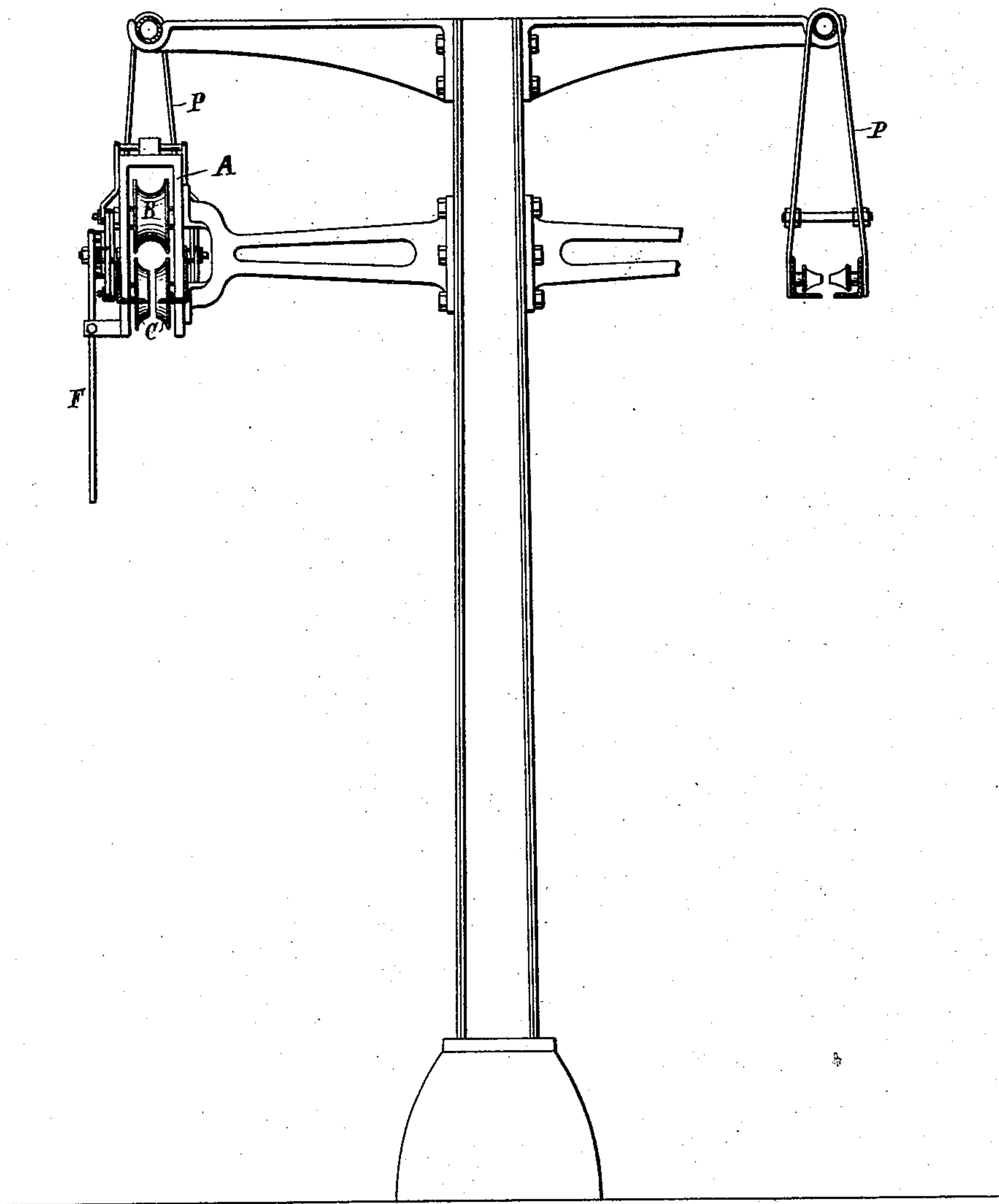
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Fig. 3



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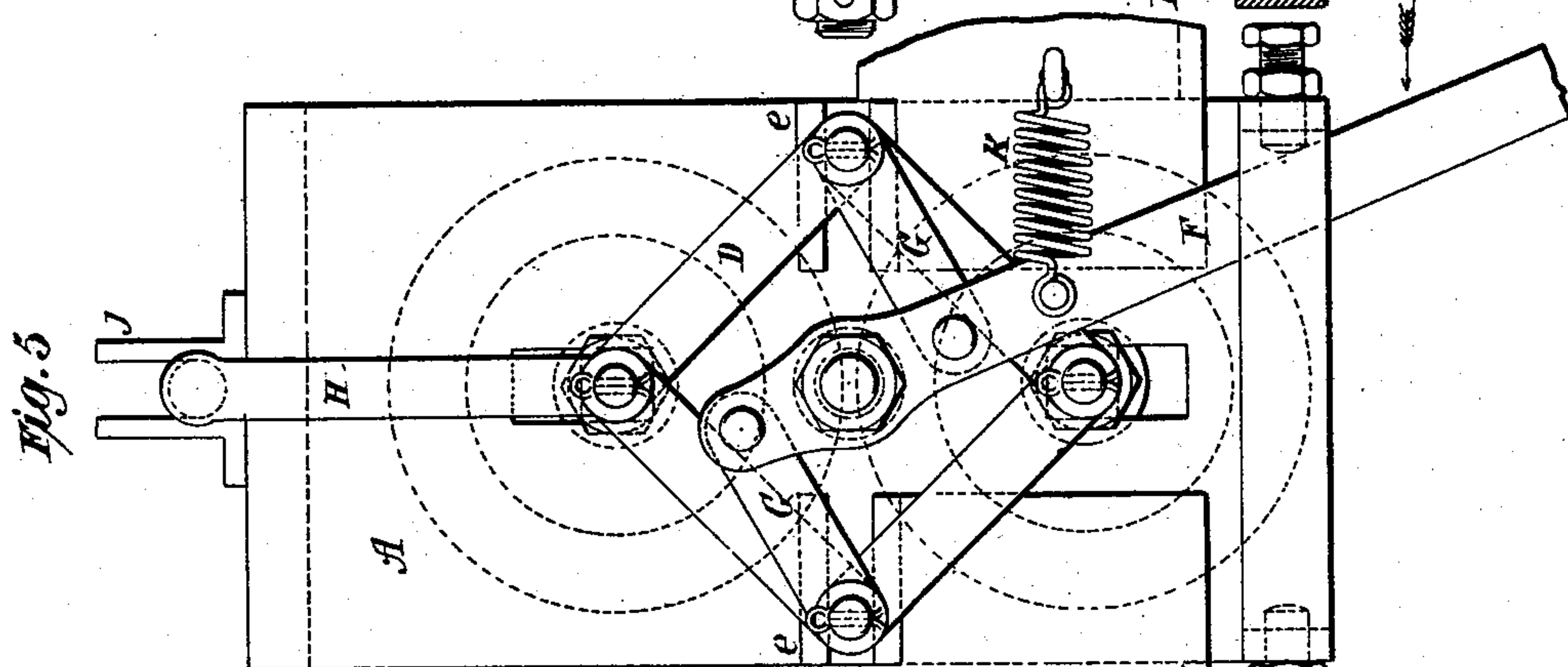
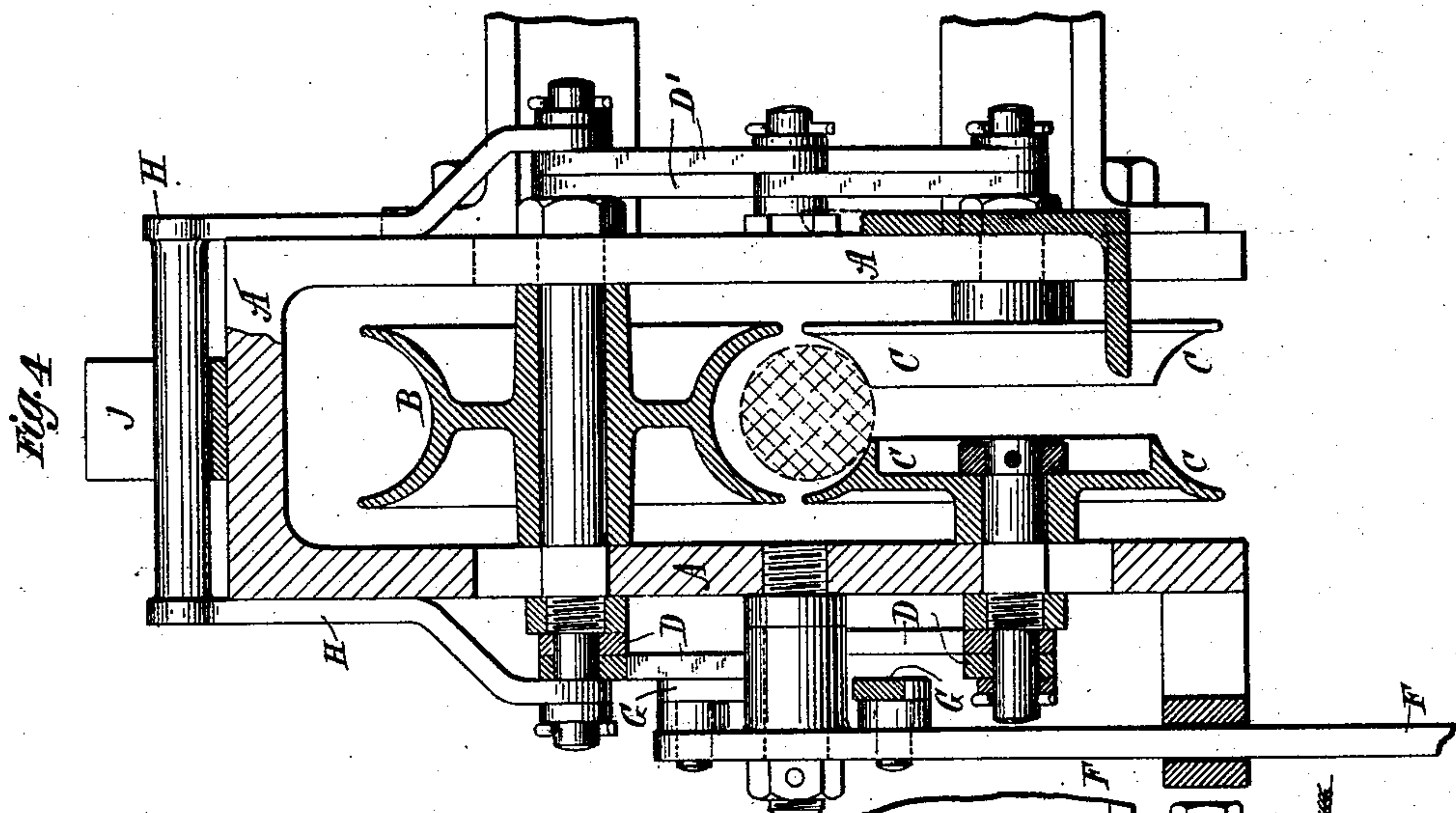
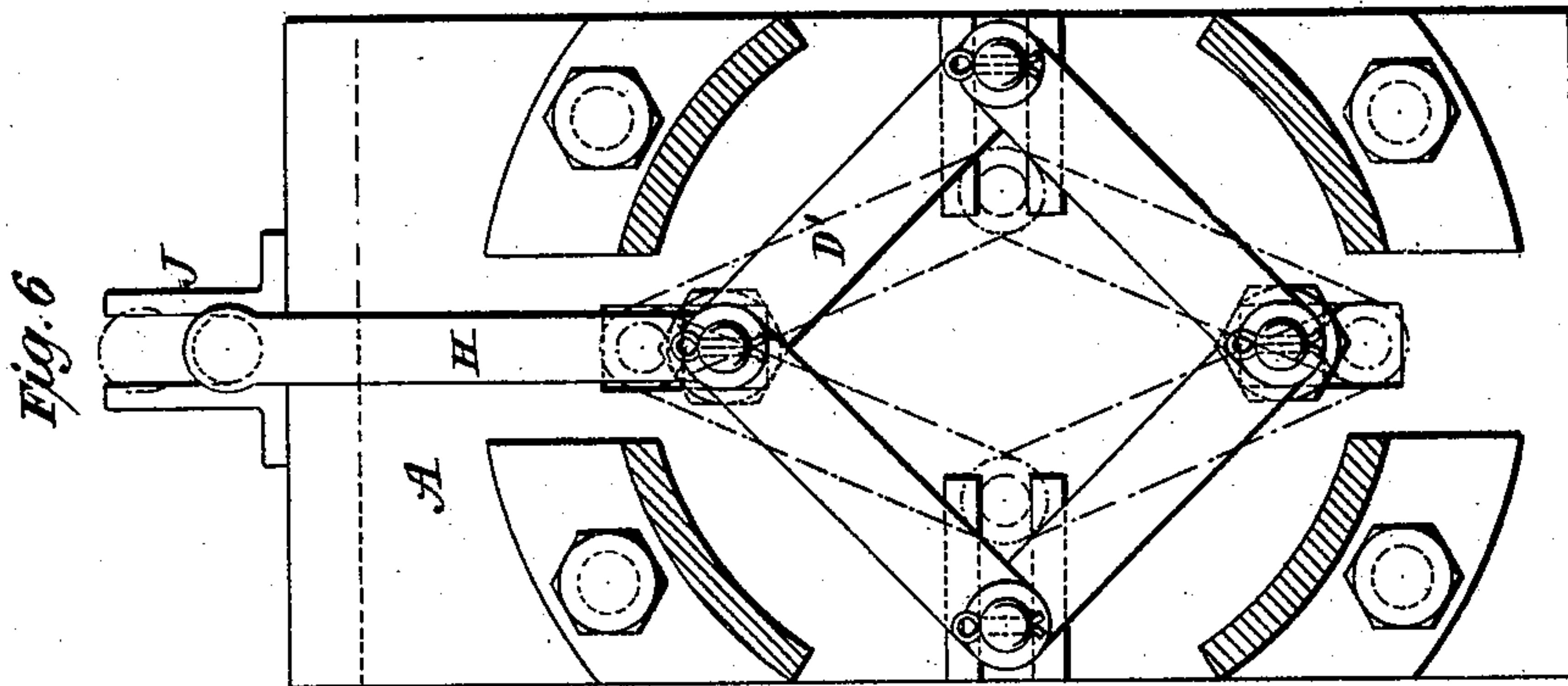
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UNITED STATES PATENT OFFICE.

WILLIAM A. BUTLER, OF NEW YORK, N. Y., ASSIGNOR TO JOHN H. HAAR AND JOSEPH A. CASSIDY, OF SAME PLACE.

MECHANISM FOR CABLE TRACTION.

SPECIFICATION forming part of Letters Patent No. 478,046, dated June 28, 1892.

Application filed October 13, 1891. Serial No. 408,629. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM A. BUTLER, of the city of New York, in the county and State of New York, have invented a new and useful Improvement in Mechanism for Cable Traction, of which the following is a specification.

The present invention relates in general to that mode of propelling cars and similar vehicles in which a grip mechanism firmly attached to the vehicle is made to engage with a traction-cable. The general arrangement of the cable in this method of car propulsion has been to place it in a trough or channel in or below the road-bed; but the object of the present invention is to provide for the arrangement of the cable above the roofs of the cars; and it consists in a general way in the mode of supporting and guiding an overhead cable. This must be effected in such way that the grip will pass freely through the cable-supporting devices and also so that the cable will not sag, but will at all times be substantially horizontal, or at least parallel with the surface of the track on which the car is traveling.

The invention is fully illustrated in the accompanying drawings, in which—

Figure 1 is a general view of an overhead traction-cable carried by supports constructed and arranged in conformity with the invention. Fig. 2 is a cross-section, on an enlarged scale, of the slotted guide, which is provided with friction-pulleys and spans the space between the supporting-columns. Fig. 3 is an elevation view of one of the supporting-columns, showing also the transverse arms and the arrangement of the boxes or housings which carry the main friction and supporting pulleys, as well as the connected mechanism. Fig. 4 is a vertical section, on an enlarged scale, of one of these boxes with the contained pulleys and connected devices. Figs. 5 and 6 are views of jointed frames arranged on the two sides of the box, by means of which the pulleys are spread apart to permit of the passage of the grip.

As shown in the drawings, a series of columns are provided with cross-arms, upon the outer extremities of which are secured boxes or housings A, and within each of these hous-

ings is arranged a pair of the main carrying and guiding pulleys B and C C. The lower one of each pair of these pulleys is divided, as shown in Fig. 4, to permit of the passage through it of the arms which carry the grip-jaws, each portion of the divided pulley being mounted on its own independent axle. The function of this lower pulley is to take the weight of the cable as it passes through the housing.

The main function of the upper pulley B is to hold the cable down and prevent it from drawing too far up and off from the lower pulley, as would be the tendency whenever the track lies along a depression in the surface if the upper pulley were not used.

In order to permit the grip-jaws (not shown in the drawings) to pass readily between said pulleys B and C C, it is deemed desirable that the pulleys be so mounted that they will move apart with the approach of the grip. This is effected by extending the axles of the pulleys in both directions through vertical slots in the two sides of the housing and connecting them with the upper and lower angles of the four-sided or parallel-motion frames D D', arranged upon the two opposite exterior faces of the housing. The rods or bars composing these frames are pivoted together at all the angles, the lateral pivots moving in guides *e e*. By this construction whenever the frames are compressed laterally they are elongated vertically, and such action separates the pulleys within the housing. Such movement is effected automatically upon the approach of the grip-jaws, as follows: A lever F, pivoted upon the outside of the housing, extends down far enough for its lower end to come within the path of the advancing car or of some device carried by it, and this lever is connected by links G G with the frame D. The yoke H H, moving in the guide J, Fig. 4, connects the frame D with the companion frame D', so that the latter will conform itself to the movements of the former. As the approaching car, moving in the direction indicated by the arrow in Figs. 1 and 5, strikes the lower end of the lever F the frames D and D' will be elongated vertically and the pulleys B C will be carried, respectively, up and down, thus enlarging the space between

them, so as to permit the grip-jaws to pass. As soon as the grip-jaws pass the pulleys, the lever F is released from the pressure of the passing vehicle and the spring K restores the lever and the pulleys to their normal positions.

To prevent the cable from sagging between the columns, and thus unduly varying its distance from the roof of the car, a horizontal slotted guide L, consisting of two angle-irons, is stretched between the columns. The ends of these angle irons may be bolted firmly to the cheeks of the housings A A, and the two pieces making up the guide should be arranged at such distance apart that the longitudinal opening between them will permit of the easy passage lengthwise through it of the arm or arms which carry the grip-jaws. At suitable distances along the inner vertical faces of these angle-irons friction-rolls are arranged, such rolls preferably being constructed and arranged as shown in Fig. 2.

It is to be noted that the flanges L' L' of the angle-irons L turn inwardly toward each other, leaving a longitudinal slot between them about the width of the grip-carrying arm. These flanges serve to guide the grip-arm and hold it against lateral movement or vibration.

In order the better to support the guide L, which carries the weight of the cable between the columns, an auxiliary supporting rod or bar N may be used. This rod or bar may be solid or tubular, or, if preferred, a cable may be used for this purpose. It is supported on cross-arms on the columns, and at suitable points along its length hangers or stirrups or braces P will connect with the guide L, and thus transfer a part of its weight to the upper cable or rod N, at the same time giving strength and stiffness to the entire structure.

In the drawings the cable is indicated at R; but it has not been thought necessary to show the grip mechanism, as this forms no part of the present invention.

What is claimed as new is—

1. In combination with an overhead traction-cable, a pair of vertically-adjustable pulleys, the lower one of which is divided to permit of the passage of the grip-supporting arm or arms and the upper one of which is arranged above the cable, substantially as and for the purpose described.

2. In combination with an overhead traction-cable, a pair of friction-pulleys made adjustable vertically, so as to permit of the free passage between them of the gripping devices.

3. In combination with the pulleys B C, the parallel-motion frame D for varying the relative distance apart of the pulleys.

4. In combination with the pulleys B C, the parallel-motion frame D and the lever F, substantially as and for the purpose described.

5. In combination with an overhead traction-cable, the supporting-guide L, provided with the flanges L' L', separated by a longitudinal slot-space of approximately the thickness of the arm or arms that carry the gripping devices, and divided cable-carrying rolls M M, pivotally supported in said guide, substantially as and for the purpose set forth.

6. In combination with the slotted longitudinal guide above described, an auxiliary supporting rod or cable with connecting hangers or braces, substantially as and for the purpose stated.

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