

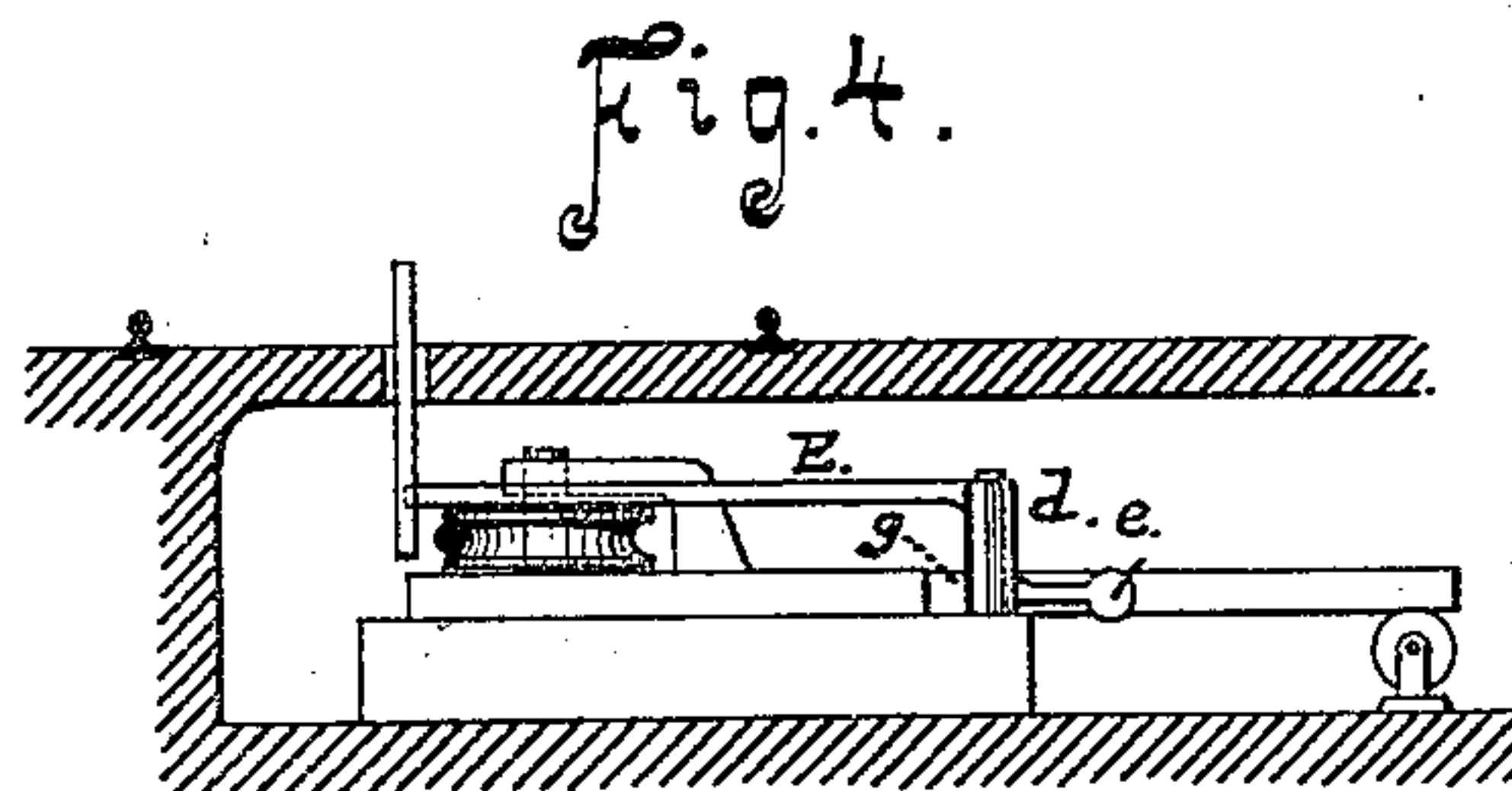
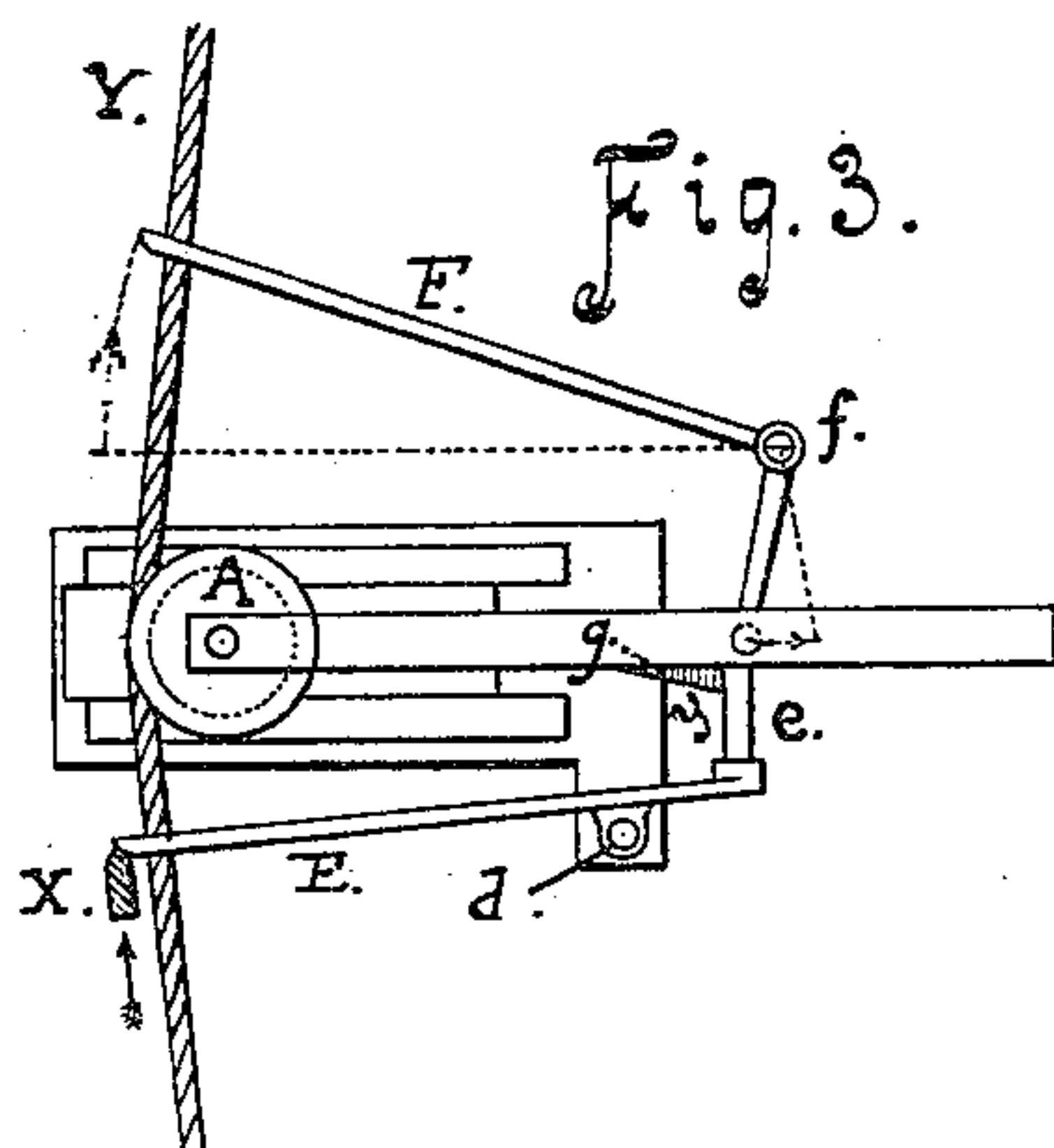
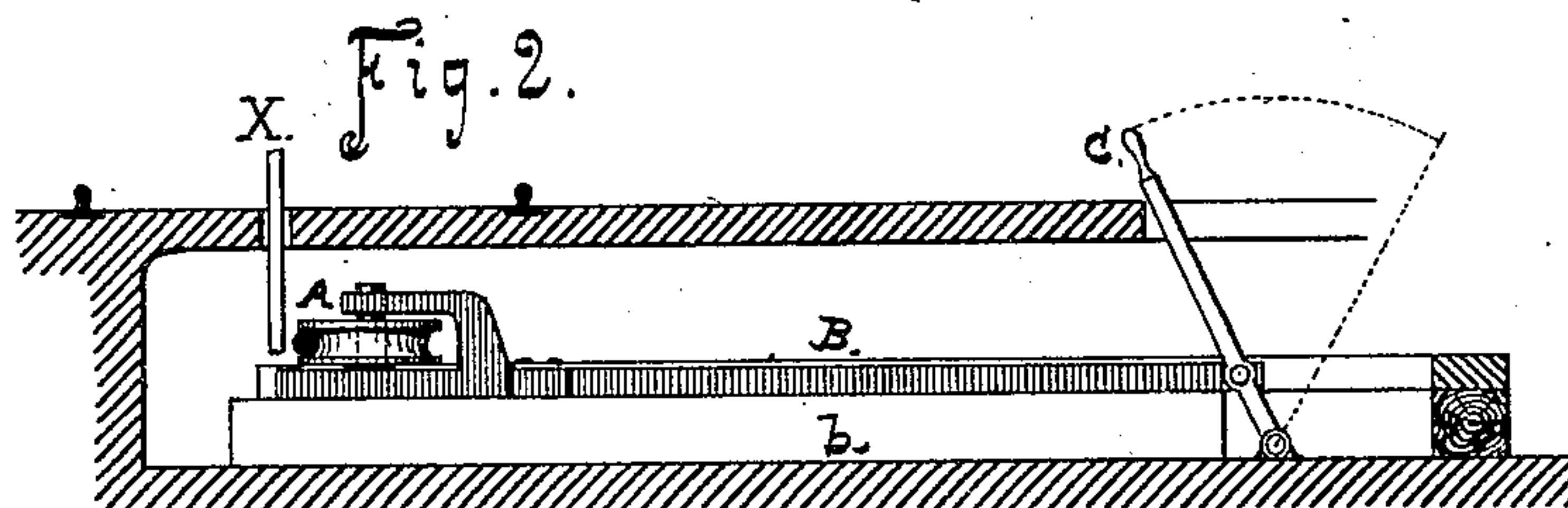
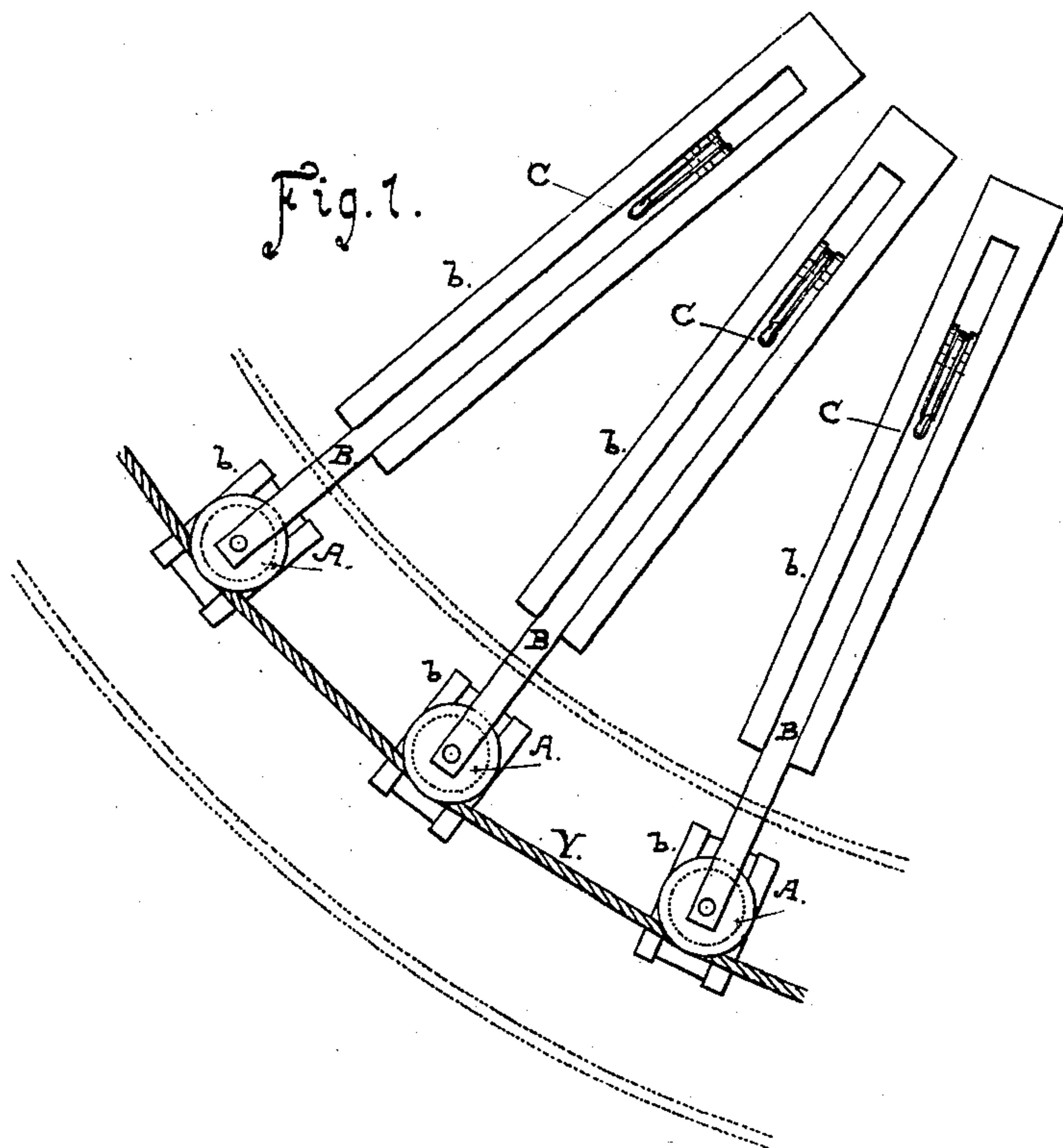
(No Model.)

A. L. ANDERSON.

DEVICE FOR TURNING CURVES IN ENDLESS CABLE RAILWAYS.

No. 246,361.

Patented Aug. 30, 1881.



Witnesses:

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UNITED STATES PATENT OFFICE.

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ONE-HALF TO WILLIAM GREEN, OF SAME PLACE.

DEVICE FOR TURNING CURVES IN ENDLESS-CABLE RAILWAYS.

SPECIFICATION forming part of Letters Patent No. 246,361, dated August 30, 1881.

Application filed May 20, 1881. (No model.)

To all whom it may concern:

Be it known that I, ADOLPH L. ANDERSON, of the city and county of San Francisco, in the State of California, have made and invented a new and useful Improvement in Devices for Turning Curves in Endless-Cable Railways, of which the following is a specification.

My invention relates to improvements in carrying and operating cables around curves and corners in those systems of propelling cars where an endless traveling cable is employed and connection between the car and the cable is made by means of a gripping device of some kind.

The object of my invention is to permit the gripping mechanism to retain its hold upon the cable and the car to be carried around the curve by the operation of the cable without throwing increased strain or tension upon the cable at such time or interfering with the movement or travel of the car.

It consists in mounting or arranging sheaves or pulleys in sliding bearings to support and carry the cable around the curve, and in operating these pulleys either by hand or by a suitable automatic mechanism in such manner that while the gripe attached to the car is being carried around the curve by the travel of the cable each pulley will move or be drawn back in succession in advance of the gripe, and will be returned to position again behind the gripe to receive the cable as soon as the gripe passes by each pulley. By such successive back-and-forth movements of these pulleys the gripe passes around the curve without coming in contact with them, and the cable is not drawn out of its line of travel or subjected to any extraordinary lateral strain or tension at such time.

The manner of applying and operating my improvement will be understood from the following description and the accompanying drawings, which are therein referred to.

In the drawings hereinafter referred to Figure 1 is a diagram showing the arrangement of my device on one track of a curved line of railway, the position of the rails being indicated by dotted lines. Fig. 2 shows a vertical transverse section through the roadway and

the pit or excavation beneath it, which is provided for the pulleys and their operating mechanism. Figs. 3 and 4 are views, in plan and transverse section, respectively, of a means for working the pulleys automatically by the forward travel of the car or the dummy.

Around the curve of the track I arrange sheaves or pulleys A in proper position between the rails to support and carry the cable in the line of the curve. The number of such pulleys required will be governed by the degree of the curve. Each pulley is mounted in bearings on the end of a bar, B, which is held in fixed guides or ways b, so as to be capable of sliding back and forth to move the pulleys alternately away from and toward the cable.

Instead of having the bearings of the pulley directly upon the end of the bar B they can be mounted in a separate block held in guides, and the end of the sliding bar can be connected to this block. This construction is shown in Fig. 1, and the other in Fig. 2, of the drawings.

The guides or ways b for the sliding bar B are fixed on the bottom of the pit or excavation below the level of the track, and a means for operating the bars to move the pulleys away from and toward the cable is connected with each bar to work them separately and independently of one another. This sliding movement can be effected either by hand or it can be produced mechanically from the forward travel of the griper-bar in the slot or groove above the cable. To work them by hand it will be necessary to station an operator at the curve, and a lever, C, pivoted to the inner end of each bar and carried up above the level of the street through a slot provided for it will afford the means for moving the bar B back and forth. The guides for the sliding bars are brought together or converging to the center of the circle, so as to bring these levers C in close position together, that they may be quickly manipulated by the operator when the cars are passing around the curve. This arrangement of the levers is shown at Fig. 1.

To operate the sliding bars mechanically I arrange two horizontal levers, E F, to project one on each side of the pulley A, in line with the path of the gripe-bar X, or a suitable bar

provided for the purpose upon the car and projecting downward through the slot in advance of the gripe can be employed. These levers are arranged in such manner that the first one when struck by the gripe-bar will release the sliding bar B and permit the pulley A to move backward away from the cable and out of the path of the gripe. This backward movement will be produced by the lateral pressure or strain of the cable against the pulley. The second lever, F, will operate when struck by the gripe-bar X to throw the sliding bar B forward again and bring the pulley A into position against the cable. A pin or stop, *e*, on the end of the lever E is caused to engage with and drop behind a tooth, *g*, on the side of the sliding bar, so that when moved forward by the action of the lever C the sliding bar will be locked and held in place until again released. The lever E is pivoted at *d*, and is kept in position by means of a spring, so that its pin or stop *e* shall work against and be held outward in line with the tooth *g* on the bar. The other lever, F, is pivoted at *f* to a fixed point, and its shorter end is connected to the sliding bar B, so as to move with it and thus throw the longer end F forward into position to be struck by the gripe-bar after the gripe has passed the pulley. The arrangement of these parts is shown in Figs. 3 and 4.

The operation of these pulleys will be as follows: As the car or dummy having the gripping device reaches the curve and approaches the first pulley A the gripe-bar or shank running in the slot will come in contact with and move the lever E before the gripe reaches the pulley A, so as to draw back the pin *e* and allow the pulley to move away from the cable. The gripe is then free to pass this pulley and move along with the cable. After passing this pulley the gripe-bar meets and engages with the second lever, F, and thus throws out the pulley again in contact with the cable after the next

pulley is reached. In this manner each pulley is drawn back out of the way in advance of the gripe and is immediately returned again behind the gripe to take the cable before the next pulley is acted upon or drawn out of the way. This same operation can be performed by an operator stationed at the curve and moving the sliding bars B back and forth in succession by means of the levers C, provided for this purpose.

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

1. In the system of propelling cars by means of an endless rope or cable moving in an underground slotted tube or channel, the combination, with a curve or change of direction of the track, of the series of laterally-moving horizontal pulleys A, adapted to receive and carry the cable around the curve and to be drawn back or away from the cable in advance of the gripping device, and to be moved forward into position again after the gripe has passed, for the purpose set forth.

2. In combination with the sliding bars B, carrying the pulleys A, and arranged in position below the track to receive and carry the cable, as described, the levers E F, projecting in the path of the gripe-bar X, and connected with and to the sliding bar B, so as to alternately release and cause the pulley to be thrown back, and then move it forward into position again after the gripe has passed, whereby the laterally-sliding action of the pulleys into and out of action is produced automatically by the gripe-bar in its movements along the track, substantially as herein set forth.

Witness my hand and seal.

ADOLPH L. ANDERSON. [L. S.]

In presence of—

EDWARD E. OSBORN,
W. T. CLARK.