

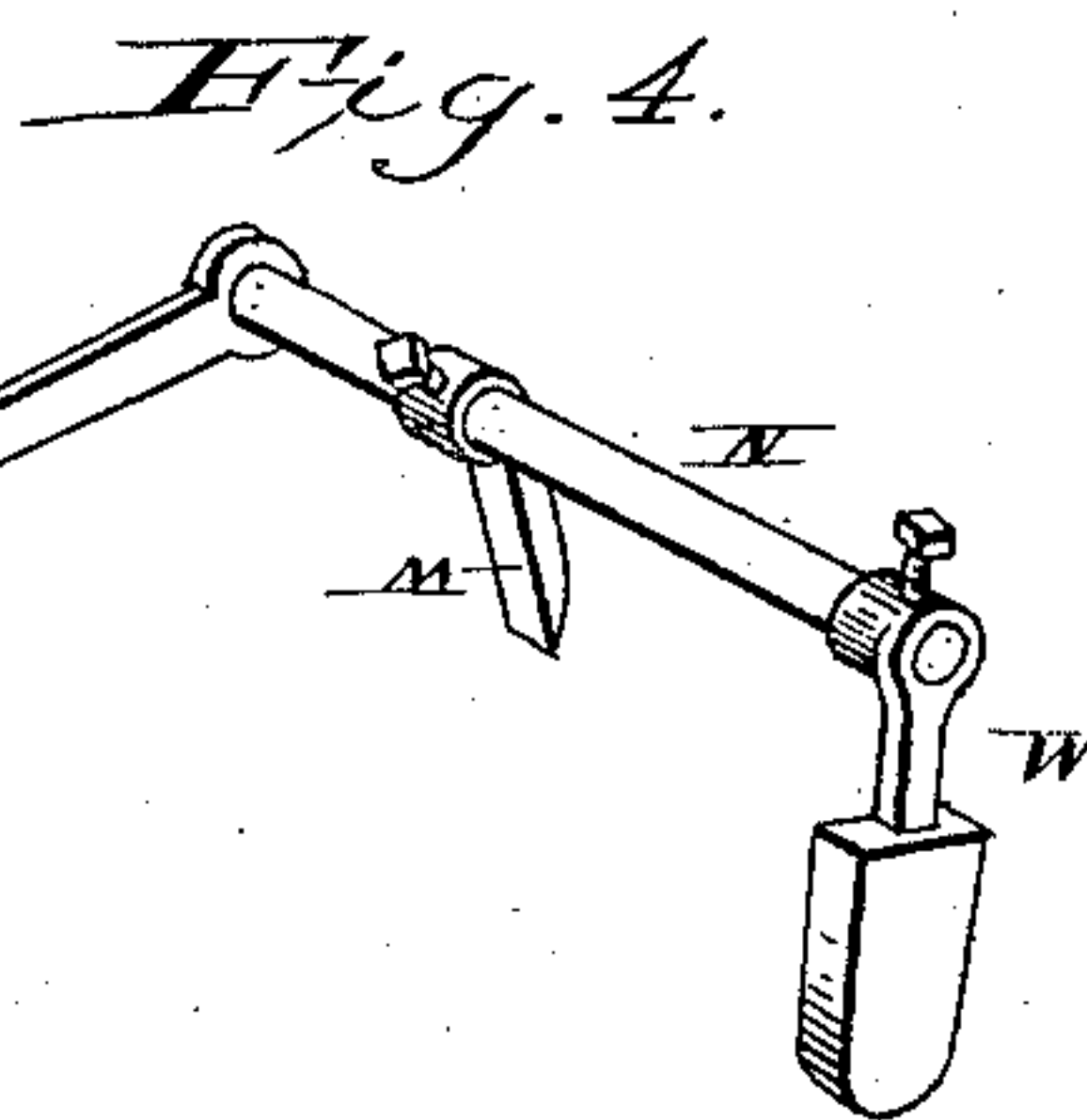
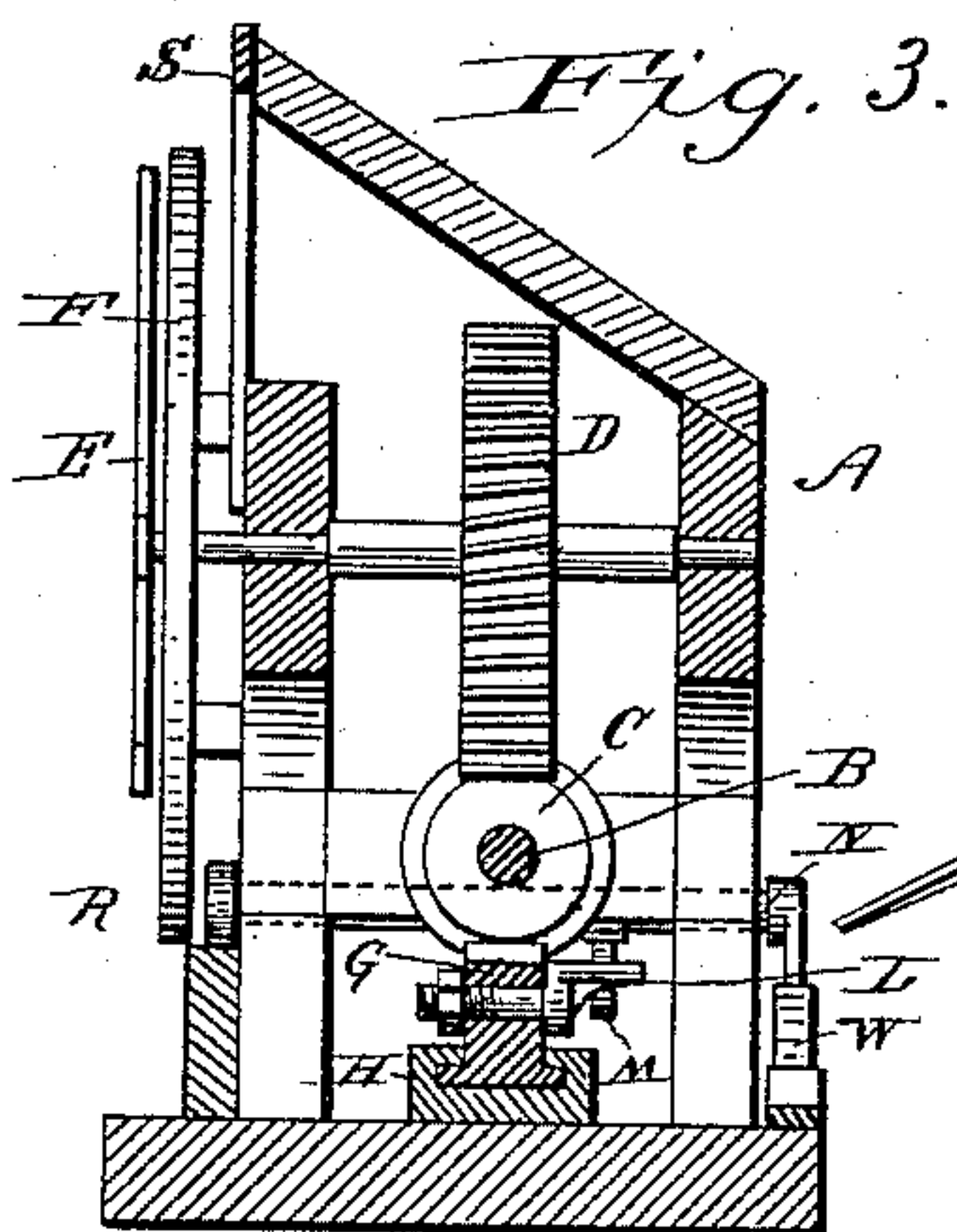
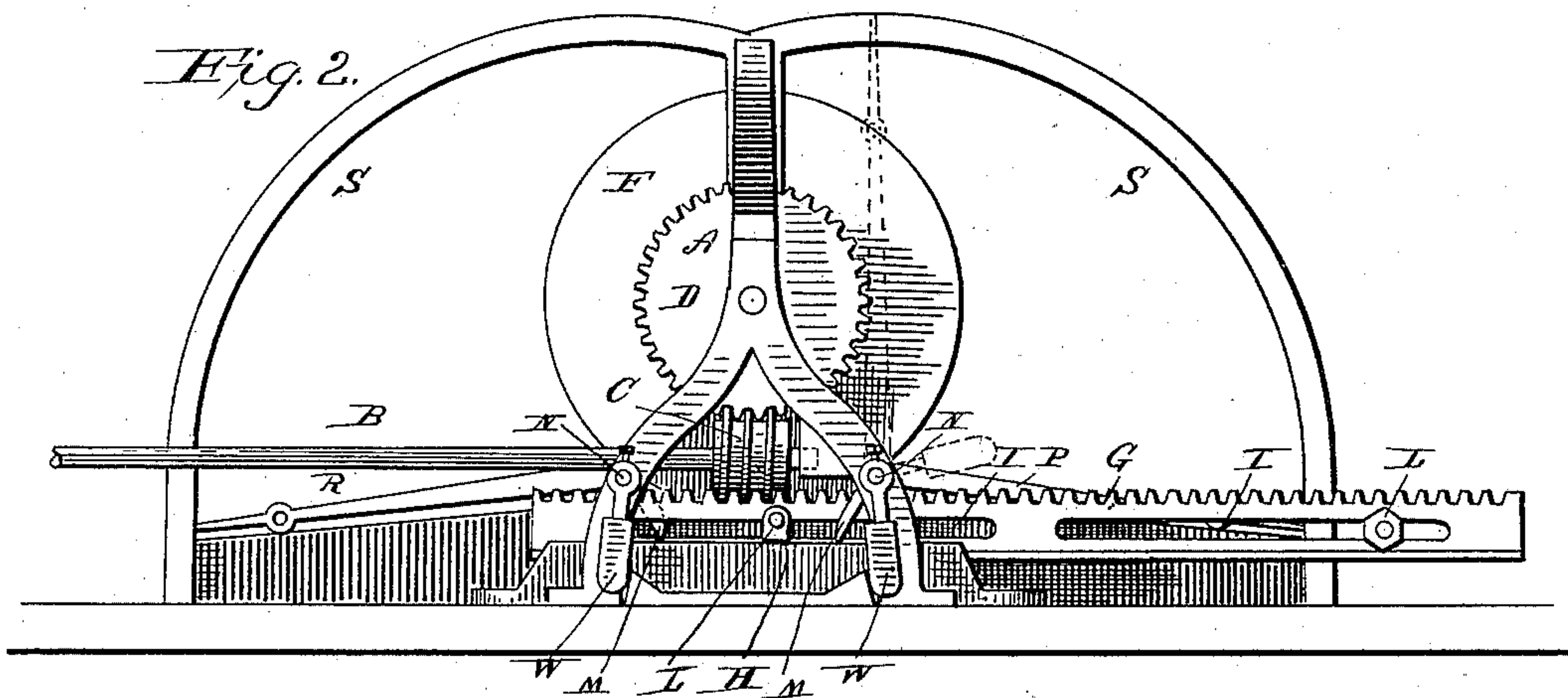
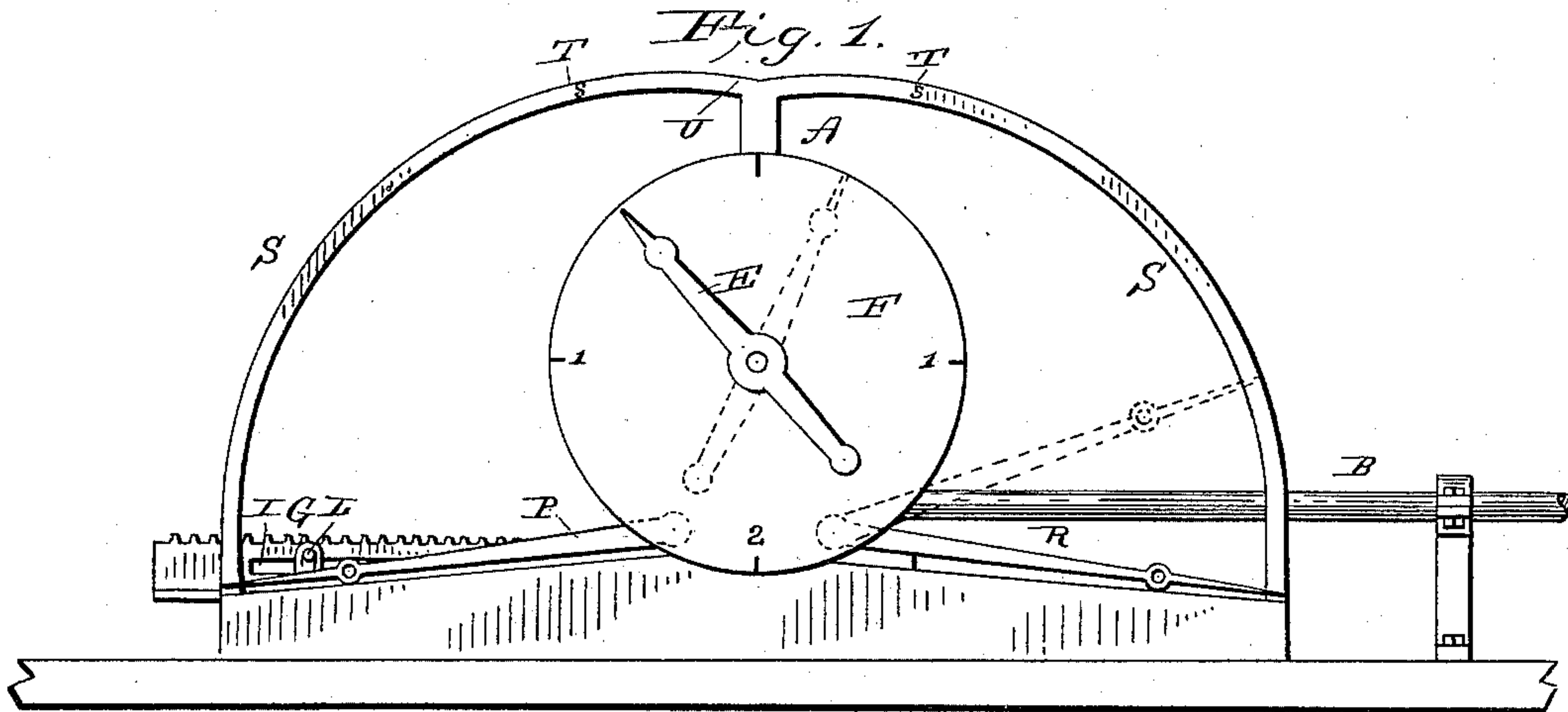
(No Model.)

S. EVANS & T. J. DAVIS.

ELEVATOR INDICATOR.

No. 368,822.

Patented Aug. 23, 1887.



Witnesses
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UNITED STATES PATENT OFFICE.

SAMUEL EVANS AND THOMAS J. DAVIS, OF JOLIETT, PENNSYLVANIA.

ELEVATOR-INDICATOR.

SPECIFICATION forming part of Letters Patent No. 368,822, dated August 23, 1887.

Application filed June 10, 1887. Serial No. 240,963. (No model.)

To all whom it may concern:

Be it known that we, SAMUEL EVANS and THOMAS J. DAVIS, citizens of the United States, residing at Joliett, in the county of Schuylkill and State of Pennsylvania, have invented certain new and useful Improvements in Indicators for Elevators, of which the following is a specification, reference being had therein to the accompanying drawings.

10 The object of this invention is to provide an indicator to be employed in connection with the elevating machinery of mining shafts and slopes to indicate to the engineer having charge of the engine which operates the drum the position of the car or cars, so that he may know when to slack or slow up previous to stopping the machinery, in order to prevent accidents from a too sudden stoppage of the same, as more fully hereinafter set forth.

20 In the general practice of mining engineering at present the shafts or slopes are of considerable length, and in order to save time in elevating and lowering the cars the drum is run very rapidly during a greater portion of the time occupied in working the cars. This rapid motion, however, if continued up to the stopping-point of the cars, would, when suddenly stopped, cause the ropes or cables to break and produce serious accidents; hence it is necessary to slack or slow up the motion when the cars reach near the end of their travel, which has hitherto been accomplished by knotting the rope or cable at a suitable point or by making a mark at a suitable point on the drum which will indicate to the engineer the proper time to slack or slow up. This means is inadequate, as the engineer is often unable to detect the knot or mark in sufficient time to slack or slow up properly, and is the cause of frequent accidents.

Our invention is designed to overcome this defect, and such object we attain by the means illustrated in the accompanying drawings, in which—

45 Figure 1 represents a front view of my improved indicator; Fig. 2, a longitudinal vertical sectional view of the same; Fig. 3, a transverse vertical sectional view of the apparatus, and Fig. 4 a detached perspective view of one of the indicating-arms and the rock-shaft on which it is mounted.

In the elevating mechanism employed in

mining operations two cars are generally employed, one car being elevated while the other is being lowered, and for this reason our improved indicator is constructed with duplicate indicators or pointers, one of which is arranged to act at the approach of each car to its landing.

In the accompanying drawings, the letter A indicates the frame-work of our improved indicating mechanism, and B a shaft, which is connected with the drum-shaft of the elevator by means of suitable gearing, so as to be moved thereby. The said shaft is provided with a worm, C, which gears with a worm gear-wheel, D, on the shaft of an indicator-finger, E, which is arranged to rotate in front of an indicator-disk, F, rigidly secured to the frame. The said worm C also intergears with a reciprocating rack-bar, G, arranged to travel in ways H, secured to the base of the frame A. The said rack-bar is grooved longitudinally, as indicated by the letter I, and is provided with adjustable tappet-pins L, which engage the tappet-arms M on the shafts N, which are journaled in bearings in the uprights of the frame A. To the front ends of the said shafts are secured the indicating-arms P R, which indicate the time for slacking and stopping the motion of the engine. The free ends of these arms travel in front of the segments S, which, at suitable points, T, are marked to show when the slacking or slowing up is to take place, and at U to indicate the stopping-point. The shafts N are also provided with weighted arms W to hold the indicating-arms normally down.

The operation of our invention is as follows: The machinery being put in motion, is run rapidly until the cars are near the ends of their respective routes. The tappet-pin at one end of the traveling rack-bar then engages the lever of one of the indicating-arms P or R and carries it up in front of the segment toward the slacking or slowing up mark, attracting the attention of the engineer and indicating to him when to slack or slow up and when to stop. The intermediate or disk indicator serves to show the exact position of the cars in the shaft or slope, so as to enable the engineer to be always on the watch.

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

1. The combination, with the shaft receiving

its motion from the elevating mechanism, of the worm mounted thereon, the intergearing worm-wheel and indicator-shaft, the indicator, and dial-disk, whereby the position of the cars in the shaft or slope is indicated to the engineer in charge of the elevating apparatus, substantially as specified.

2. The combination, with the shaft receiving its motion from the elevating mechanism, of the worm mounted thereon, the intergearing reciprocating rack-bar, the tappet-pins adjustably secured to the same, and the indicator-shafts having indicating-arms, tappet-arms, and weighted arms, and the marked segments whereby the periods for slacking or slowing up the machinery is indicated to the engineer in charge, substantially as specified.

3. The combination, with the shaft receiving its motion from the elevating mechanism, of the worm mounted thereon, the intergearing worm-wheel and reciprocating rack-bar, and the indicating-arms secured to the respective shafts, whereby the position of the cars is shown and the points for slacking or slowing up and stopping the machinery indicated, substantially as specified.

In testimony whereof we affix our signatures in presence of two witnesses.

SAMUEL EVANS.
THOMAS J. DAVIS.

Witnesses:

EZRA COCKILL,
WM. H. YARNELL.