No. 891,070. PATENTED JUNE 16, 1908.

G. A. HOYT.

WIRE DRAWING APPARATUS.

APPLICATION FILED OCT. 10, 1907.

2 SHEETS—SHEET 1.

Fig. 1.

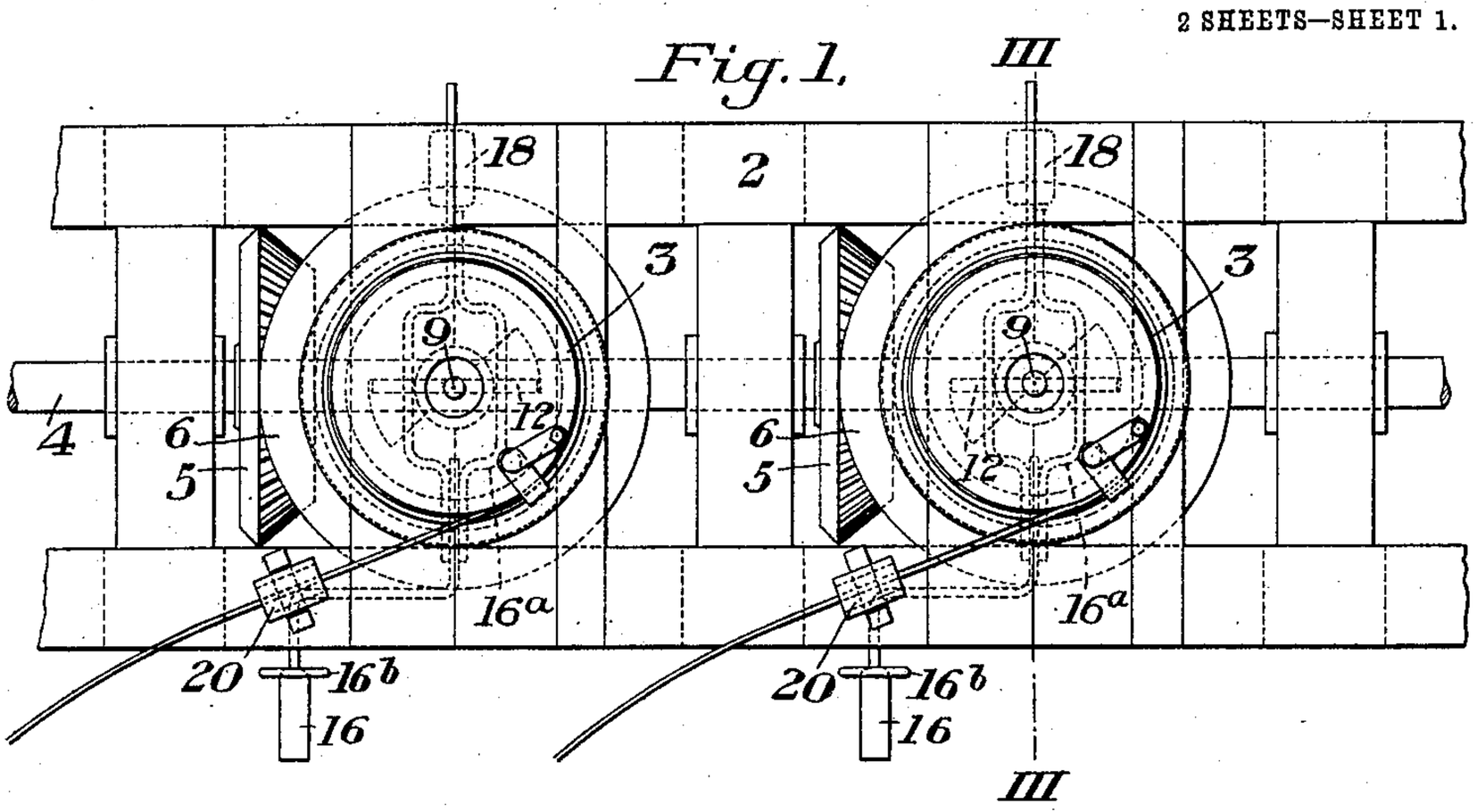
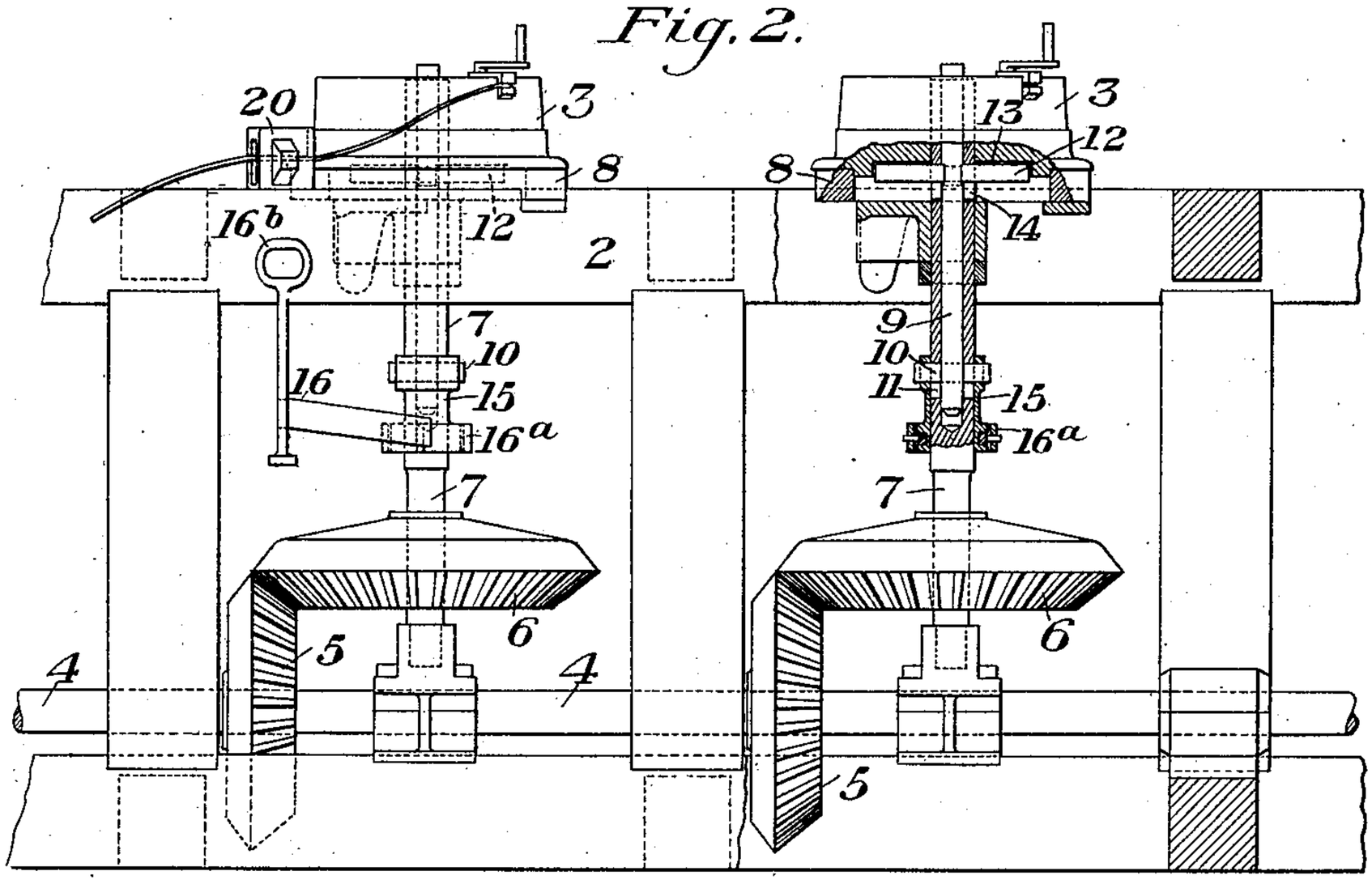


Fig. 2.



WITNESSES

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Fig. 3.

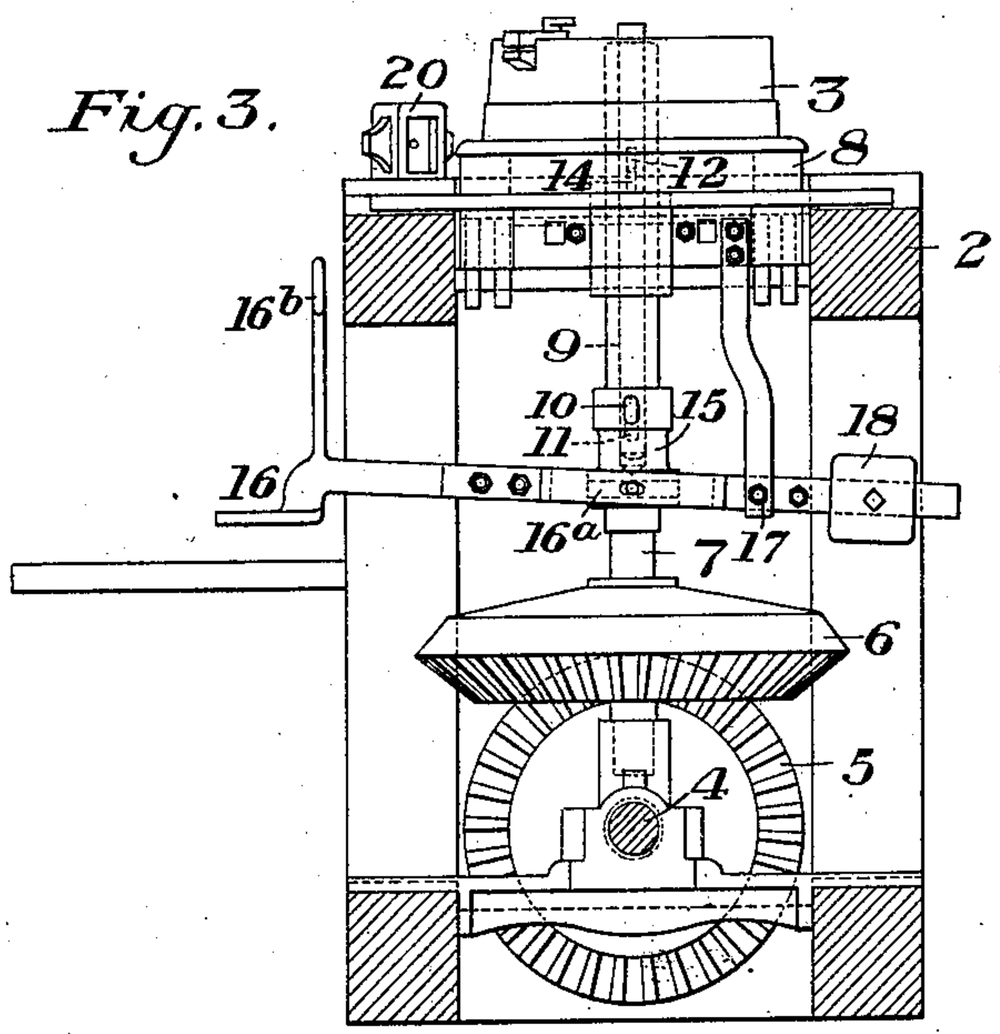


Fig. 4.

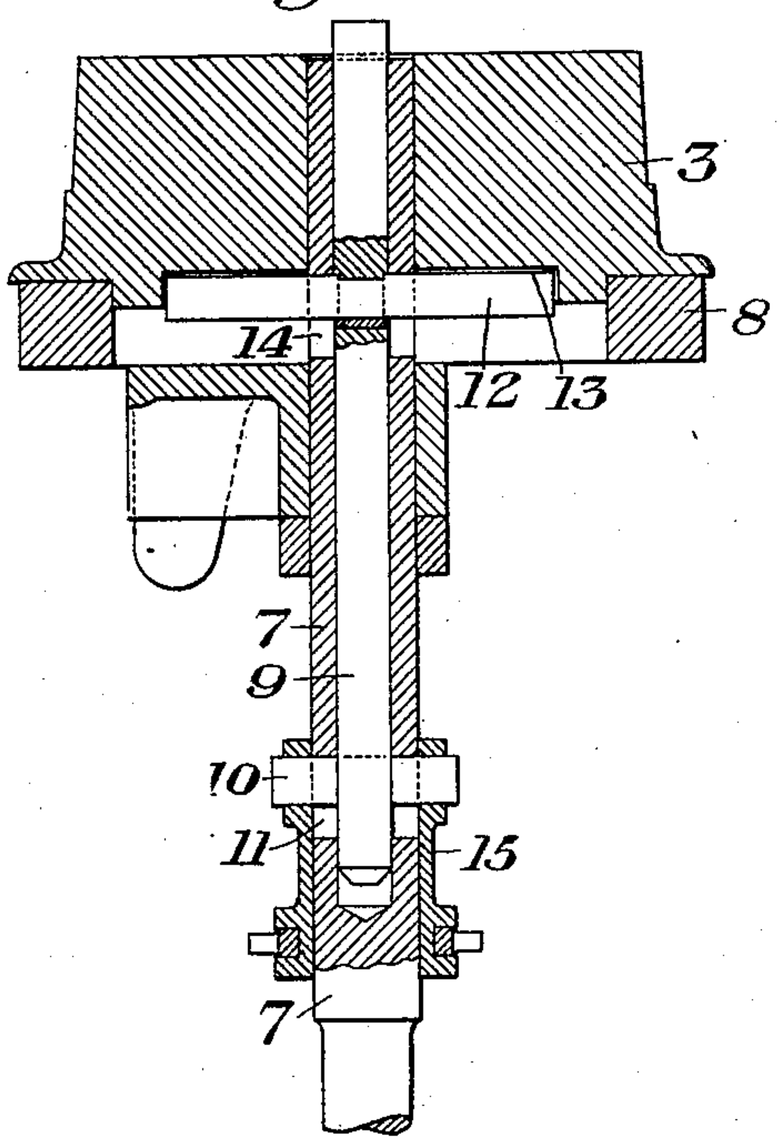
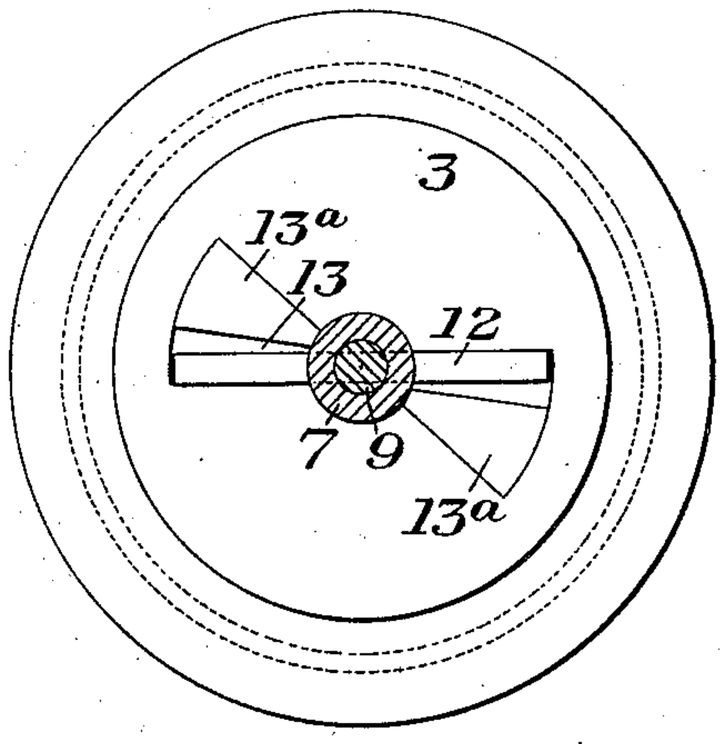


Fig. 5.



WITNESSES

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UNITED STATES PATENT OFFICE.

GEORGE A. HOYT, OF CLEVELAND, OHIO, ASSIGNOR TO AMERICAN STEEL & WIRE COMPANY, OF CHICAGO, ILLINOIS, A CORPORATION OF NEW JERSEY.

WIRE-DRAWING APPARATUS.

No. 891,070. Specification of Letters Patent. Patented June 16, 1908.

Application filed October 10, 1907. Serial No. 396,792.

To all whom it may concern:

Be it known that I, GEORGE A. HOYT, of Cleveland, Cuyahoga county, Ohio, have invented a new and useful Improvement in Wire-Drawing Apparatus, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification, in which:—

Figure 1 is a plan view of wire drawing apparatus embodying my invention; Fig. 2 is a side elevation of the same; Fig. 3 is a vertical section on the line III—III of Fig. 1; Fig. 4 is a detail sectional view of one of the drawing blocks, and the driving means therefor; and Fig. 5 is an inverted plan view of one of the drawing blocks.

My invention has relation to wire drawing apparatus and is designed to provide mechanism of this character in which the drawing block will automatically stop as soon as the last end of the wire passes through the die or when the wire breaks between the block and die, or when the tension on the wire is released; and in which the block, when once stopped, will not start again except by the manual operation of the operator.

The precise nature of my invention will be best understood by reference to the accompanying drawing in which I have shown the invention, and which will now be described, it being premised, however, that various changes may be made therein by those skilled in the art, without departing from my invention as defined in the appended claims.

In these drawings, the numeral 2 designates the drawing bench and 3 two of the drawing blocks.

4 is the usual longitudinally arranged driving shaft carrying the beveled gear wheels 5 which mesh with similar gear wheels on the vertical shafts 7. Each of the shafts 7 is formed with a hollow portion at its upper end upon which the drawing block is loosely mounted to rotate on the fixed base ring 8. Working in the hollow upper portion of the shaft or spindle 7, is a second shaft or spindle 9, which is secured in the shafts 7 by the key 10, the shaft or spindle 7 being slotted as shown at 11 to receive said key. The inner shaft or spindle 9 carries at its upper portion a transversely extending clutch key 12, which is designed to be raised into contact with a groove 13 in the under side of the drawing block, the outer shaft or spindle being slotted as indicated at 14 to permit of a limited vertical movement of the inner shaft or spindle in the outer one.

15 is a sleeve which is slidably mounted on the shaft or spindle 7 and through which the key 10 passes.

16 is a treadle lever which is fulcrumed at 17 and which has a forked portion 16^a which is secured to the sleeve 15.

18 is a counterweight adjustably mounted on the rear arm of the lever.

20 indicates the usual wire drawing dies.

The operation is as follows:—To start the drawing block, the operator takes hold of the upwardly extending handle portion 16^b of the treadle lever 16, and raises the same thereby moving the sleeve 15 upwardly on the shaft or spindle 7 and raising the inner shaft or spindle 9 to cause the clutch key 12 to engage with the drawing block. As soon as the clutch key becomes engaged with the drawing block, it will be held in such engagement by the tension of the wire on the block. When, however, the last end of the wire passes through the die, or should the wire break between the block and the drawing die, or if the tension on the wire is released for any cause, the weight of the spindle 19 and its attached parts will immediately act to pull down the spindle 19 to withdraw the clutch key 17 from its engagement with the drawing block. The counterweight 18 partially counterbalances the weight of the spindle and its attached parts and prevents shock when the spindle drops. The block will then stop and will not start again until the operator takes hold of the treadle lever with his hand and lifts the same. This does away with the danger of the operating treadle being kicked off, causing the block to start again while the operator is stripping it or before he is ready to start. If the operator stops the block for any reason, he is not obliged to use as great an effort when pressing on the operating treadle with his foot in order to raise the block with the wire thereon, but simply presses the treadle sufficiently to overcome the pressure on the block.

A further advantage of the invention is that it obviates the usual cam on the driving spindle. The clutch key 12 may be made of a hard and durable steel and the groove or recess 13 on the under side of the drawing block can be faced with hardened steel strips 13^a. This prevents the constant chipping

such as occurs on the usual cast iron clutch. Inasmuch as the drawing block sits closely on its base ring 8 there is no chance of the wire getting caught below the block, or on the spindle between the frame and the block and winding itself up.

I claim:—

1. In wire drawing mechanism, a drawing block, and a driving member therefor, said block and member having portions which are held in frictional driving contact with each other by the tensional action of the wire on the block, said member being free to drop by gravity out of driving engagement with the block when such tensional action ceases; substantially as described.

2. In wire drawing mechanism, a drawing block, a driving shaft therefor, and a driving member having a driving engagement with the driving shaft, and forming the only connection between said shaft and the block, said member and block having coöperating portions held in frictional contact by the tensional action of the wire on the block, and said member being free to drop by gravity out of driving engagement with the block when such tensional action ceases; substantially as described.

3. In wire drawing apparatus a drawing block, a hollow driving spindle therefor, a second spindle vertically movable within the hollow spindle and having a clutch device adapted to engage a seat in the underside of the drawing block when raised into engagement therewith, said spindles having a driving connection with each other and to be neld in such engagement solely by the tension of the wire on the block; substantially as described.

4. In wire drawing apparatus a drawing block, a driving shaft therefor, a weighted clutch spindle vertically movable in the driving shaft and having a clutch key, and means for actuating said spindle to bring the clutch key into engagement with the drawing block, said block having a portion for frictional contact with said key, said spindle being arranged to retract the clutch spindle and key from the block, by gravity when the tension on the drawing block is relieved; substantially as described.

5. In wire drawing apparatus a drawing block having a recess in its under side, a base ring on which said block rotates, and a weighted, vertically movable clutch device adapted to be raised into engagement with said recess and to be held in engagement with a wall of said recess by the tension on the drawing block, and unsupported from below to permit it to drop by gravity to automatically disengage itself from the block when the tension is relieved; substantially as described.

6. In wire drawing apparatus, a drawing block having a recess in its under side, and a vertically movable driving member having a clutch portion adapted to engage and disengage said recess and to be held in engagement therewith solely by the pressure of the drawing block upon its clutch portion, said driving member being unsupported from below to permit it to fall by gravity and disengage its clutch portion when the drawing tension of the wire on the block is relieved; substantially as described.

In testimony whereof, I have hereunto set my hand.

GEORGE A. HOYT.

Witnesses:

ALBERT W. HITZ,

JAS. G. BREE.