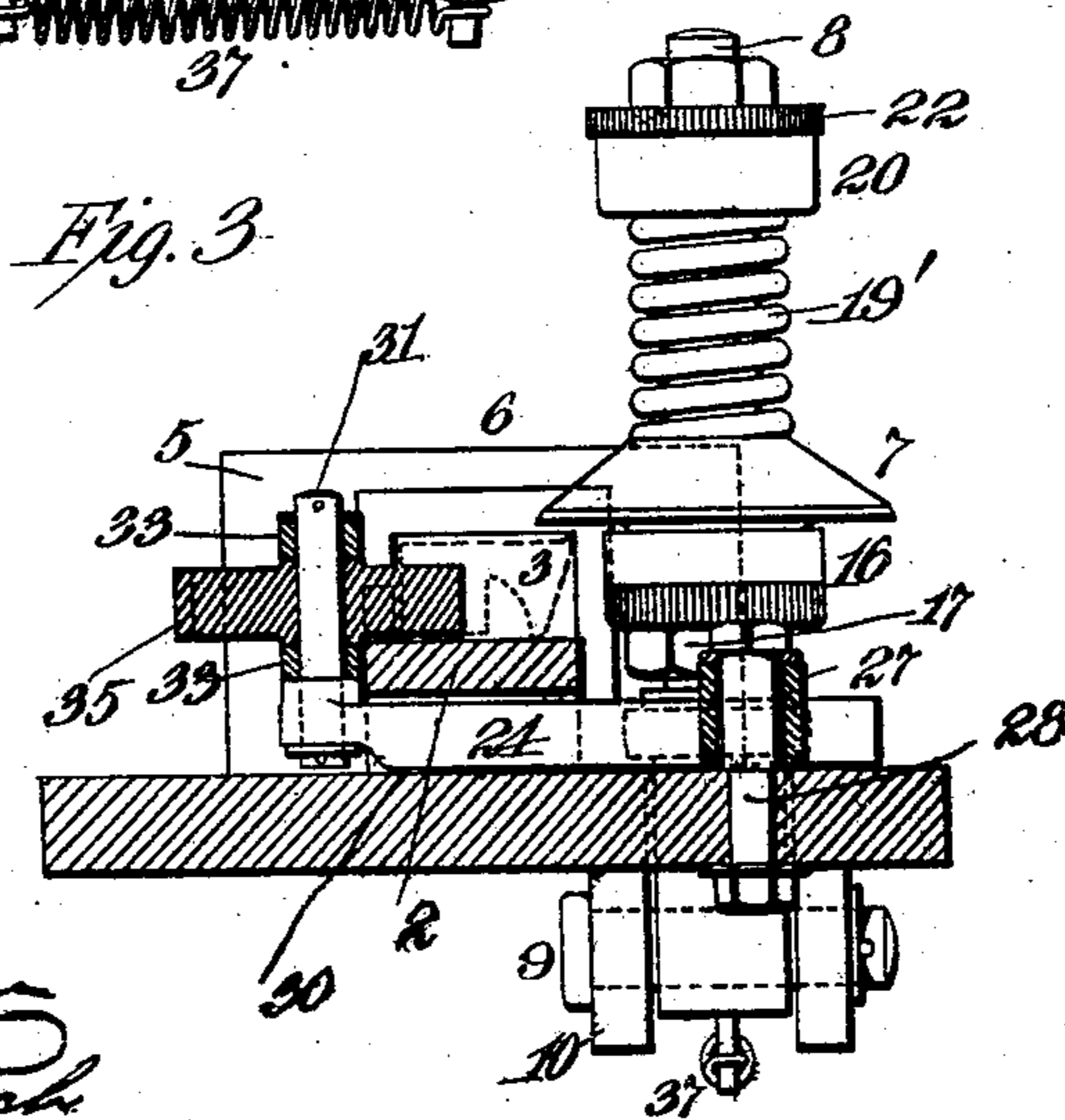
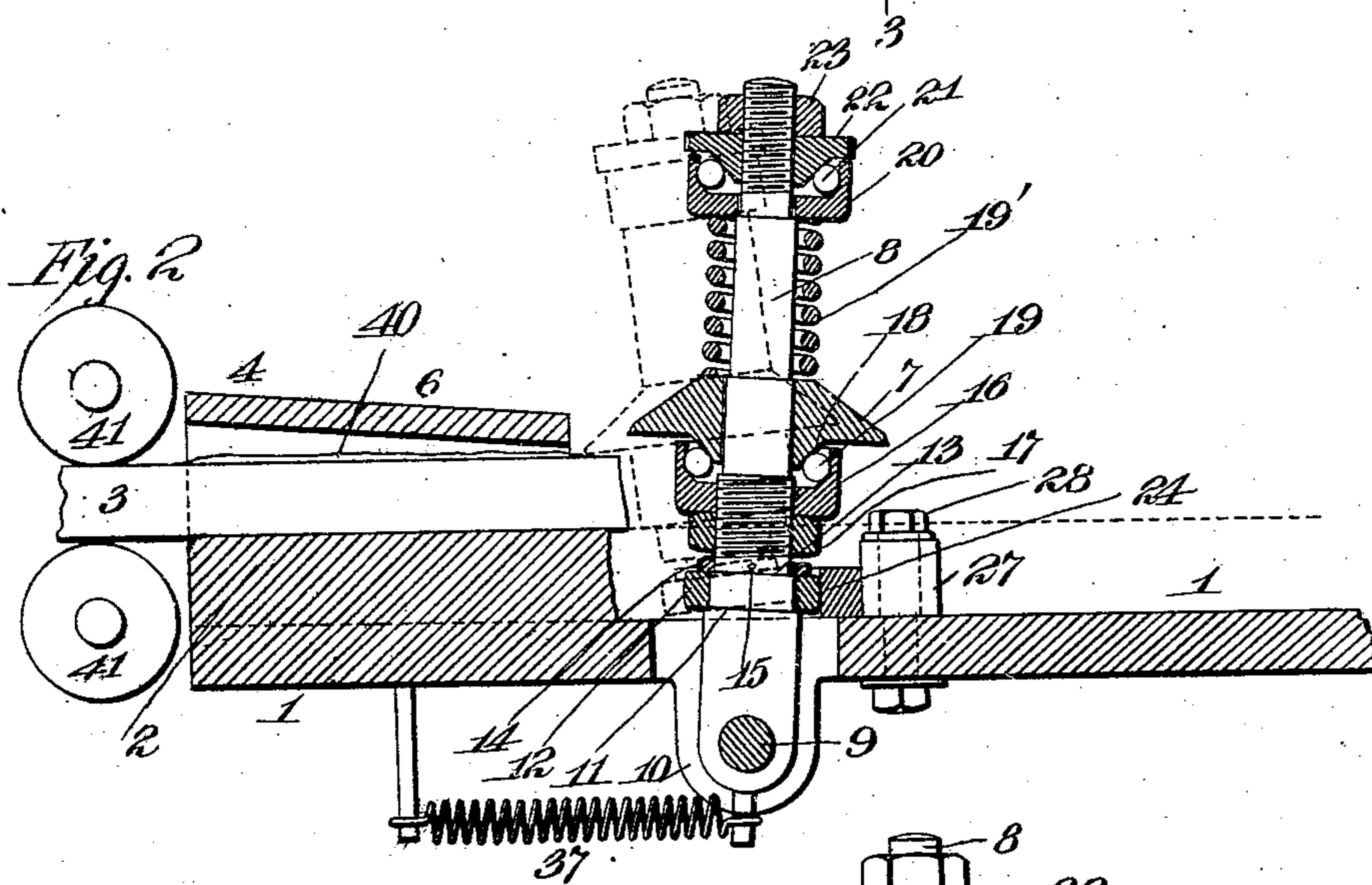
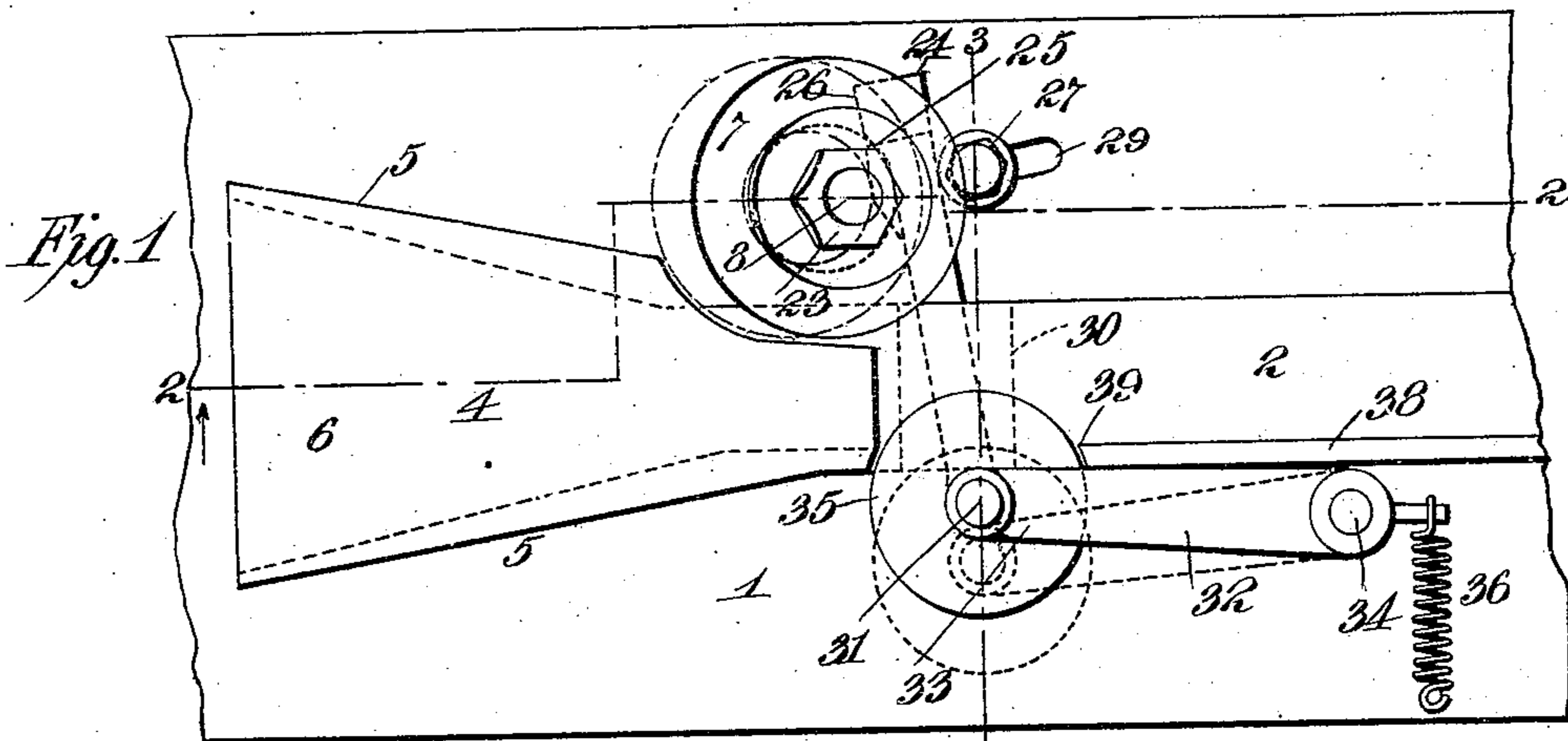


No. 855,535.

PATENTED JUNE 4, 1907.

A. SMITH.
HORSESHOE MACHINE.
APPLICATION FILED DEC. 3, 1904.



Witnesses:

Jas. F. Coleman
John H. Holsch

Inventor

Arthur Smith
By Wm. W. W. W.

Attorneys

UNITED STATES PATENT OFFICE.

ARTHUR SMITH, OF EASTON, PENNSYLVANIA, ASSIGNOR TO AMERICAN HORSE SHOE COMPANY, OF PHILLIPSBURG, NEW JERSEY, A CORPORATION OF NEW JERSEY.

HORSESHOE-MACHINE.

No. 855,535.

Specification of Letters Patent.

Patented June 4, 1907.

Application filed December 3, 1904. Serial No. 235,336.

To all whom it may concern:

Be it known that I, ARTHUR SMITH, a citizen of the United States, residing at Easton, in the county of Northampton, State of Pennsylvania, have invented certain new and useful Improvements in Horseshoe-Machines, of which the following is a specification.

This invention relates to improvements in cutters for removing the fin from the backs of creased or punched billets used in the manufacture of machine-made horseshoes.

In an application for patent filed by me April 11th, 1903, Serial No. 152,105, is described a machine for creasing billets. Forming a part of that machine is a cutter for removing the fin from the back of the billet.

My present invention relates to an improved form of cutter for the same general kind of machine.

The object I have in view is to produce a device which will effectively remove the fin, and to so arrange the cutter that it will not be displaced by irregularities or wavy conformations of the billet.

Other objects are to reduce the friction of the cutter upon its spindle, and to render the parts accessible for adjustment or repair.

I attain these objects by the mechanism illustrated in the accompanying drawings, in which,

Figure 1 is a plan view of the device. Fig. 2 is a section taken on the lines 2—2 of Fig. 1 and showing a portion of the creased billet within the device; and Fig. 3 is a section taken on the lines 3—3 of Fig. 1, showing the position assumed by the creased billet.

In all of the several views like parts are designated by the same numerals of reference.

In carrying out my invention, I provide a base 1, having an elevated table 2, which serves as a support for the creased billet 3. A funnel shaped casing 4 arranged above the table constitutes a chute, and serves as a guide for the billet, this casing having inclined walls 5 and an inclined top 6 so that the billet will be properly directed and presented for the action of the cutter.

The cutter 7 is in the form of a disk and is mounted upon ball bearings upon a spindle 8 which can be oscillated to bring the cutter into engagement with the top of the billet, the said spindle constituting a movable sup-

port for the cutter. The spindle is pivoted at 9 to ears 10, 10, depending from the bottom of the base 1, so that it may be inclined to the position shown in dotted lines in Fig. 2. As shown in Fig. 2, the spindle is shouldered at 11, and has upon the shoulder a loose ring 12 which constitutes a roller. Above the ring is another shoulder 13 upon which is a washer 14 for holding the ring 12 in place. This washer may be secured by means of a pin 15. Above the washer 14 the spindle is screw threaded to support the ball cup 16 and a lock nut 17. The cutter 7 is provided with a cone 18 and a row of balls 19 in the cup forms the lower portion of the bearing. The cone is depressed upon the balls and the cutter is held in engagement with the creased billet, when the billet is in the position shown in dotted lines in Fig. 2, by means of a spring 19'. The upper end of the spring is engaged by means of a cup 20 having ball races therein and carrying a row of balls 21 and by means of which the spring is compressed.

A cone 22 engages with the balls and forms the upper portion of the bearing, and a lock nut 23 retains the cone against accidental displacement. The peripheries of the cones 22 and the cup 16 may be milled as shown in Fig. 3 for purposes of adjustment, the cup 16 being adjustable to accommodate different sizes of bullets, and the cone to adjust the upper bearing. The spindle 8 is inclined upon its pivot to bring the edge of the cutter into engagement with the top of the billet by means of a cam plate 24, having an inclined surface 25, and a straight surface 26. This cam plate is engaged between the ring 12 and a roller 27. The roller 27 is supported upon a stud 28, mounted within a slot 29 in the plate 1 to permit of adjustment for use with creased billets of varying depth. The cam plate 24 passes through an opening 30 in the table 2 and one extremity is provided with a support for a pin 31. Mounted upon this pin 31 is a lever 32, having bifurcated extremities 33 and with its other end pivoted at 34 to the plate 1. Between the bifurcated extremities 33 of the lever 32 is mounted a roller 35, which roller projects partially over the table 2, within the path of the billet 3. The arm, and roller constitute an oscillating device. A spring 36 normally holds the roller 35 in

the position shown in Fig. 3 and a spring 37 is provided for inclining the spindle 8 to the position shown in full lines in Fig. 2. An elevated flange 38 on the table 2 is provided for guiding the creased billet upon the table. This flange 38 is cut away at 39 adjacent to the roller 35, to allow the roller to be engaged by the billet.

The operation of the mechanism described is as follows:—The billet 3 after being creased will be found to have a fin 40 upon one edge opposite to the creases. The creased billet is fed into the funnel shaped opening of the chute 4, by suitable mechanism, the rollers 41, 41, which constitute feeding mechanism, serving as an illustration, and passes along the table 2 being guided thereon by means of the flange 38. One edge of the billet will engage with the roller 35, and move the lever 32 upon its pivot 34, sliding the cam plate 24 against the tension of the spring 36. The incline 25 on the cam plate will engage with the ring 12 on the spindle 8, (the other side of the cam plate bearing against the fixed roller 27), and will incline the spindle 8 upon its axis 9, tilting the cutter 7 until its edge comes into contact with the upper side of the creased billet. The billet continuing to be fed along the table 2 the cutter will engage with the top of the billet and turning upon the spindle will shear and cut off and remove all of the fin. The flange 38 on the table will prevent side-wise displacement of the billet from the resisting action of the cutter. It is to be noted that the cutter is rotated entirely by engagement with the billet, which is fed against the cutter, and the cutter is not rotated by other mechanism. As soon as the billet passes through beyond the cutter, the spring 36 will retract the cam plate 24 and the spindle 8 will be restored to its normal position by means of the spring 37, thus elevating the edge of the cutter toward the advancing billet, and presenting the parts in position to receive a fresh billet.

By employing a cam plate with the inclined portion 25, and the straight portion 26, if the spindle has been inclined, by the action of the cam plate, it will remain in such inclined position irrespective of slight variations in that edge of the billet which engages with the roller. Slight irregularities in the upper surface of the billet will be compensated for by means of spring 19' which will be compressed or expanded as necessary. By arranging the roller 35 to engage with the edge of the creased billet, the parts are rendered much more accessible than where the roller engages with the top. The ball bearings described prevent the cutter from binding and always insure the rotation of the cutter.

It is to be understood that the springs 36 and 37 may be omitted in case it is desired that the cam plate and spindle be moved by manual means.

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

1. In a horseshoe machine, the combination with means for supporting the billet, means for feeding the billet, a rotary cutter, an inclinable mounting for the cutter, an oscillating device engaging with the side of the billet, and connections between the oscillating device and the cutter for inclining the latter into engagement with the fin.

2. In a horseshoe machine, the combination with means for supporting the billet, means for feeding the billet, a rotary cutter, an inclinable mounting for the cutter, an arm carrying a roller engaging with the side of the billet, and connections between the arm and the cutter for inclining the latter into engagement with the fin.

3. In a horseshoe machine, the combination with means for supporting the billet, means for feeding the billet, a rotary cutter, a movable support therefor, an oscillating device engaging with the side of the billet and a cam plate connected to the oscillating device and engaging with the cutter support.

4. In a horseshoe machine, the combination with means for supporting the billet, means for feeding the billet, a rotary cutter, a movable support therefor, an arm carrying a roller engaging with the side of the billet, and a cam plate connected to the arm and engaging with the cutter support.

5. In a horseshoe machine, the combination with means for supporting the billet, a rotary cutter, a movable support therefor, a cam plate engaging with the cutter, means for moving the cam plate, such means being engaged by the billet, the said cam plate having an inclined and a straight portion engaging with the cutter support.

6. In a horseshoe machine, the combination with means for supporting the billet, a rotary cutter, a movable support therefor, means for moving the cam plate, such means being engaged by the billet, the said cam plate having an inclined and a straight portion engaging with the cutter support, and a roller engaging with the opposite face of the cam plate.

7. In a horseshoe machine, the combination with means for supporting the billet, a rotary cutter, a movable support therefor, means for moving the cam plate, such means being engaged by the billet, the said cam plate having an inclined and a straight portion engaging with the cutter support, and a roller engaging with the opposite face of the cam plate, the said roller being adjustable in relation to the cutter.

8. In a horseshoe machine, the combination with means for supporting the billet, means for feeding the billet, a rotary cutter, a spindle supporting the cutter, the said spindle being pivoted so that it may be inclined, a

roller on the spindle, and a cam engaging with the roller, and means for moving the cam.

9. In a horseshoe machine, the combination with a spindle, a cone thereon, and a rotary cutter, the said cutter being capable of sliding upon the spindle, a cup turning upon the spindle, balls between the cup and the cone, and a spring between the cup and cutter, a second cone carried by the cutter, and
10 a second cup upon the spindle, and balls be-

tween the second cup and the second cone whereby the cutter can be slid along the spindle and the first cup will be rotated by the cutter through the agency of the spring.

This specification signed and witnessed 15
this seventh day of November, 1904.

ARTHUR SMITH.

Witnesses:

JNO. ROBT. TAYLOR,
LEONARD H. DYER.