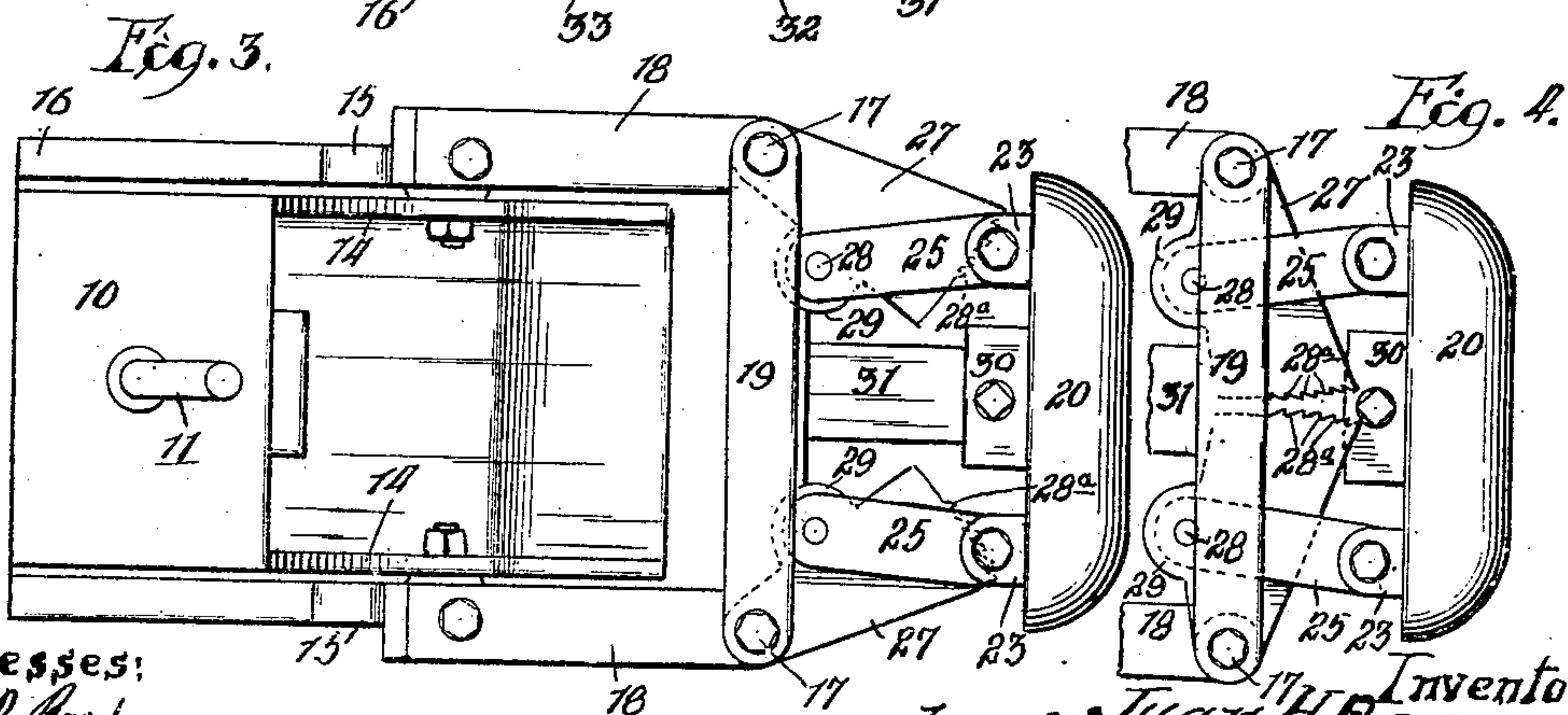
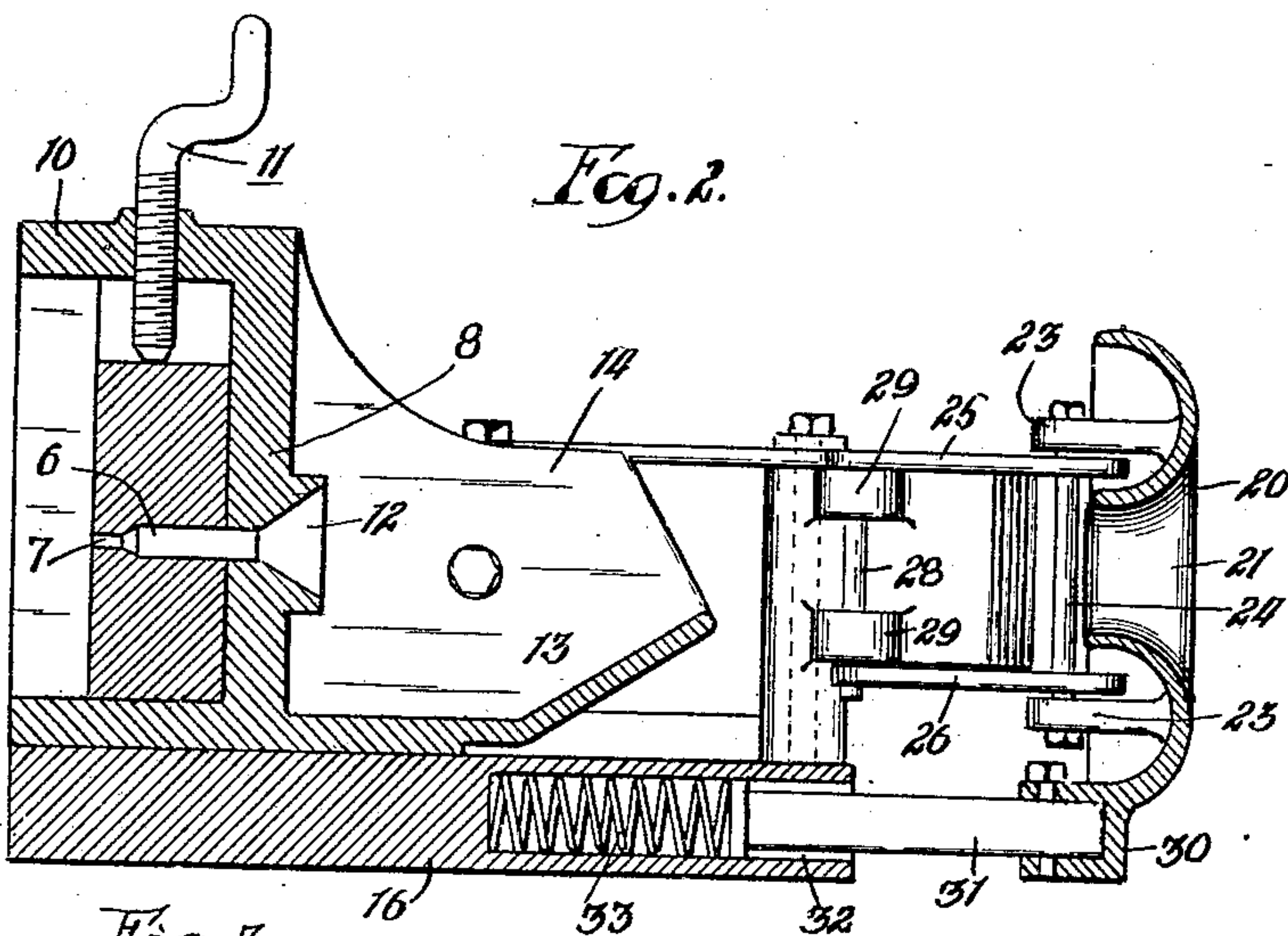
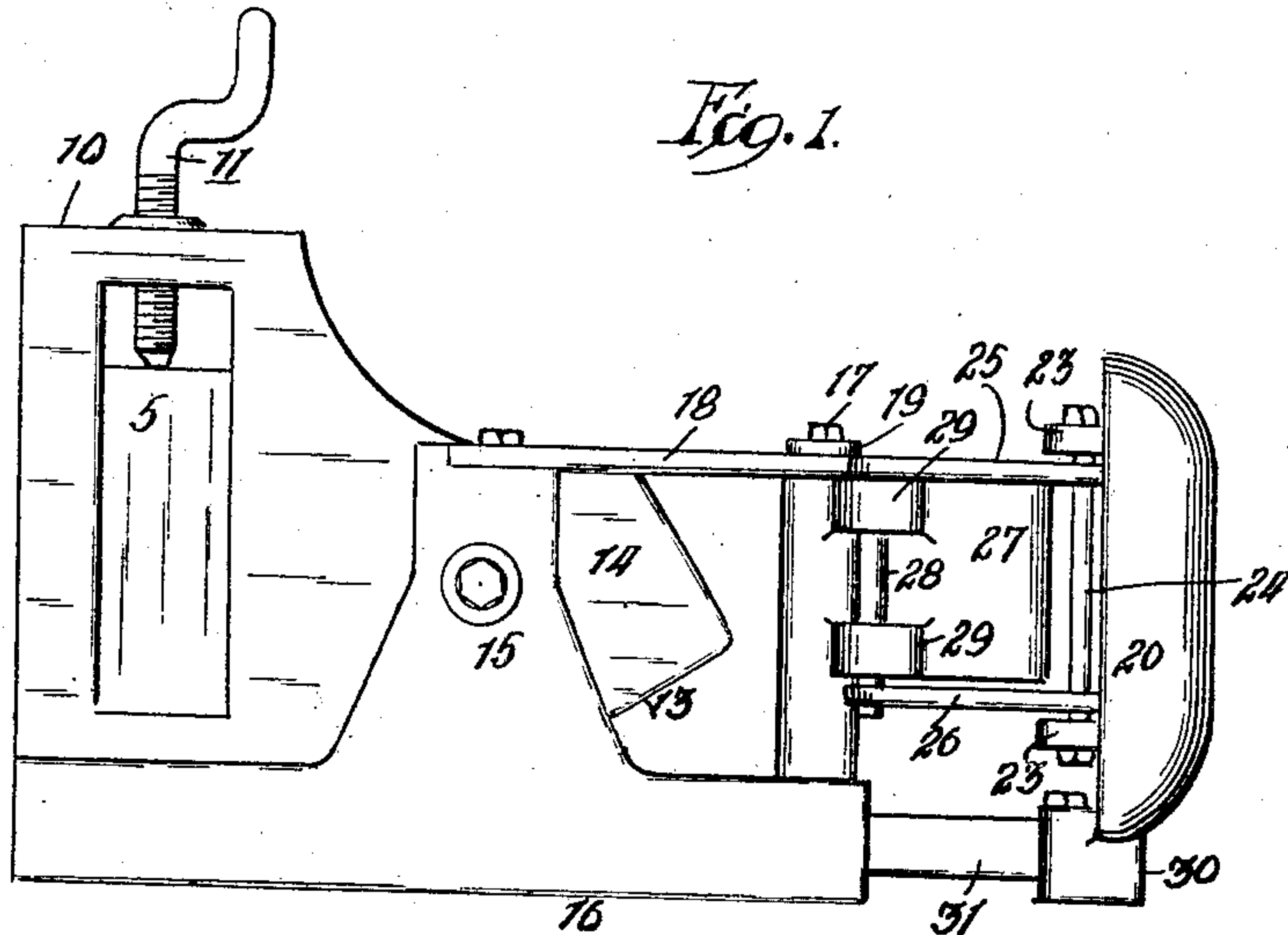


J. H. REECE.
WIRE DIE SAFETY APPLIANCE.
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929,985.

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UNITED STATES PATENT OFFICE.

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A COPARTNERSHIP.

WIRE-DIE SAFETY APPLIANCE.

No. 929,985.

Specification of Letters Patent.

Patented Aug. 3, 1909.

Application filed March 17, 1908. Serial No. 421,658.

To all whom it may concern:

Be it known that I, JUAN H. REECE, a citizen of the United States, residing at Joliet, in the county of Will and State of Illinois, have invented certain new and useful Improvements in Wire-Die Safety Appliances, of which the following is a specification.

In the operation of drawing wire, as ordinarily practiced in a wire mill, the wire is fed or drawn through a die block at a very rapid rate of speed by the revolving drawing block. In these circumstances it sometimes happens that accidents occur by reason of the operator being caught by the rapidly traveling wire prior to its passage through the die block, in which case serious accidents and injuries may result by reason of the impossibility of stopping the running wire in time to save the operator.

The object of the present invention is to provide a safety appliance which will automatically operate, in case of accident, to instantaneously cut, break or sever the wire in case excessive pressure is exerted by the entanglement of the wire around the leg or arm of the operator, thereby instantly relieving the tension and saving the operator from serious injury which might be occasioned before the wire drawing machinery could be stopped.

In the drawings, Figure 1 is a side elevation of the entire device, showing the die block in position; Fig. 2 a longitudinal sectional view of the same; Fig. 3 a top or plan view of the same, showing the grippers in normal position; and Fig. 4 a detail in plan, showing the grippers in contacted or gripping position.

The safety device of the present invention is used in connection with a wire die block 5, of the usual formation, having a die aperture 6, as shown in Fig. 2, which aperture is positioned on the wire line. Each of the die apertures terminates in a reduced aperture 7, which is of the size of the intended wire, the remaining portion of the die aperture being of larger diameter. The die block is mounted within a frame having a front wall 8, a floor 9, and an overhanging roof 10, through which roof is entered an adjustable hand screw 11 which bears upon the top of the die block. The front wall is

provided with a guide hole 12, in front of which the floor is carried forward and elevated to provide a cup-shaped pocket 13 having side walls 14 pivoted between standards 15, as best shown in Fig. 1. The formation is one which provides a receptacle for a lubricant adapted to grease the wire and thereby aid in its passage through the die block. The frame, as a whole, is tiltably mounted upon a base 16 which permits the die block to be tilted to accommodate changes in the direction of travel of the wire.

The base plate is carried forwardly of the tiltable frame and has mounted thereon, at the forward corners, upright pivot posts 17, which are connected with the tops of standards 15 by side bars or rails 18, which in turn are connected by means of a cross rail 19, which arrangement provides a rigid forward frame for the mounting of the emergency grippers to be hereinafter described.

At the extreme forward end of the device is a movable guard plate 20, provided, in its center, with an aperture 21 for the passage therethrough of the wire, which guard plate is of rounded or bulged formation so as to provide no angles or sharp edges which might cause injury to the human body; and the guard plate is provided, on its rear face, with a pair of upper rearwardly extending tongues 23. The upper and lower tongues have pivoted thereto, by means of vertical pivot rods 24, a pair of upper links 25 and lower links 26, which links extend rearwardly from the guard plate and are connected with a pair of gripper jaws 27 by means of vertical pivot pins 28 which pass through ears or lugs 29 formed on the inner sides of the gripper jaws. The gripper jaws themselves are hinged, at their upper ends, to the upright pivot posts 17 which pass through the gripper jaws and allow the latter to swing toward and from each other in conformity with the movement of the guard plate. The gripper jaws, at their forward ends, are curved on the arc of a circle whose center is forward of the axis of the jaws and are provided with teeth 28^a, which, when the edges are thrown into the position shown in Fig. 4, will be brought into close proximity with one another to grip and hold

the wire, thereby relieving the tension of the wire forward of the grippers. The eccentricity of the teeth causes them to impinge on the wire as they are brought together, and this impingement serves to prevent the passage of the wire and break it off forwardly of the die block.

The guard plate has formed, on its under edge, a rearwardly extending center tongue 30, which has bolted thereto a rearwardly extending plunger 31, which enters a recess 32 in the base plate, and between the plunger and the rear wall of the recess is a coil spring 33, which serves to normally hold the guard plate in forwardly projected position but permits its retraction when excessive pressure is brought to bear against it by reason of the entanglement of some object in the traveling wire.

In use, when the parts are in normal position, as shown in Fig. 3, the wire will be free to travel through the guard plate and through the waste contained in the cup or receptacle and thereafter through the die block, the wire being pulled therethrough by the tension of the drawing block. In ordinary operation the gripper jaws will be widely distended so as to interfere in nowise with the normal advance of the wire, but in case of emergency, due to the entanglement of some object in the wire, a pressure will be exerted against the guard plate as soon as the wire has drawn such object into contact therewith, and this pressure will retract the guard plate against the tension of the spring, thereby bringing the gripper jaws into gripping position, as shown in Fig. 4, in which position the wire will be severed or broken by the pull of the wire beyond the point of engagement by the grippers. This instantaneous breaking or severing of the wire immediately relieves the tension upon the object entangled in the wire, and in cases of entanglement around some portion of the operator's body may save the latter from serious or fatal injury.

In a previous patent applied for by me, No. 878,236, issued February 4, 1908, the wire gripper jaws are located behind the die block, but their location at such point is inconvenient in some cases, in that it interferes with the initial manipulation of the wire in securing it to the drawing block. The device of the present invention differs from the device of the patent above referred to, in that the gripper jaws are located forwardly of the die block and in a position which leaves the die block unimpeded for the initial manipulation of the wire after its end has been first inserted through the die aperture. The device, being entirely automatic, will always act instantaneously as soon as a pressure, sufficient to endanger the safety of the operator, is exerted on the guard plate, which prac-

tically eliminates all danger from the operation of wire drawing.

What I regard as new and desire to secure by Letters Patent is:

1. In a safety appliance of the character described, the combination of a wire die block, means for engaging a strand of wire located forwardly of the die block, a guard member located in front of said wire engaging means and mounted so as to permit of movement when pressure is applied, and connections between the guard member and the wire engaging means constructed and arranged so as to operate the latter when the said guard member is moved in the proper direction, substantially as described.

2. In a safety appliance of the character described, the combination of a wire die block, normally distended wire engaging mechanism adapted to engage the wire prior to its passage through the die block, a guard member located in front of said wire engaging means and mounted so as to permit of movement when pressure is applied, and connections between the guard member and the wire engaging mechanism constructed and arranged so as to actuate the latter and bring the same into contact with the wire when the guard member is moved in the proper direction, substantially as described.

3. In a safety appliance of the character indicated, the combination of a die block, normally distended wire gripping mechanism located forwardly of the entrance side of the die block and adapted to grip the wire prior to its passage through the die block, a slidably mounted guard plate through which the wire runs located forwardly of the wire gripping mechanism, and a connection between the guard plate and the grippers for closing the latter on the wire when the former is moved, substantially as described.

4. In a safety appliance of the character indicated, the combination of a die block, a pair of grippers pivoted forwardly of the die block and provided with teeth adapted to be brought into gripping engagement with the wire, a guard plate through which the wire runs, and link connections between the guard plate and the pivoted jaws for swinging the latter into gripping position when pressure is exerted on the guard plate, substantially as described.

5. In a safety appliance of the character indicated, the combination of a die block, a pair of grippers pivoted forwardly of the entrance side of the die block and provided with teeth adapted to be brought into gripping engagement with the wire, a guard plate through which the wire runs located forwardly of the grippers, connections between the guard plate and the pivoted jaws for swinging the latter into gripping position when pressure is exerted on the guard

plate, a bar connected with the guard plate, and a spring adapted to exert a forward thrust on the bar to hold the guard plate normally in advanced position, substantially as described.

6. In a safety appliance of the character indicated, the combination of a die block, a base extended forwardly of the die block, vertical pivot posts secured to the base, gripper jaws hinged to said posts and provided in their ends with teeth adapted to be brought into engagement with the wire, a guard plate located forwardly of the jaws and provided with an aperture for the passage therethrough of the wire, links connecting said guard plate with the jaws for swinging the latter into gripping position by an inward thrust of the guard plate, and a spring for normally holding the guard

plate in advanced position, substantially as described.

7. In a safety appliance of the character described, the combination of a wire die block, means for severing a strand of wire located forwardly of the die block, a guard member located forwardly of the die block and mounted so as to permit of movement when pressure is applied, and connections between the guard member and the wire severing means constructed and arranged to operate the latter when the said guard member is moved in the proper direction, substantially as described.

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