

June 19, 1923.

F. J. RUGGIERO

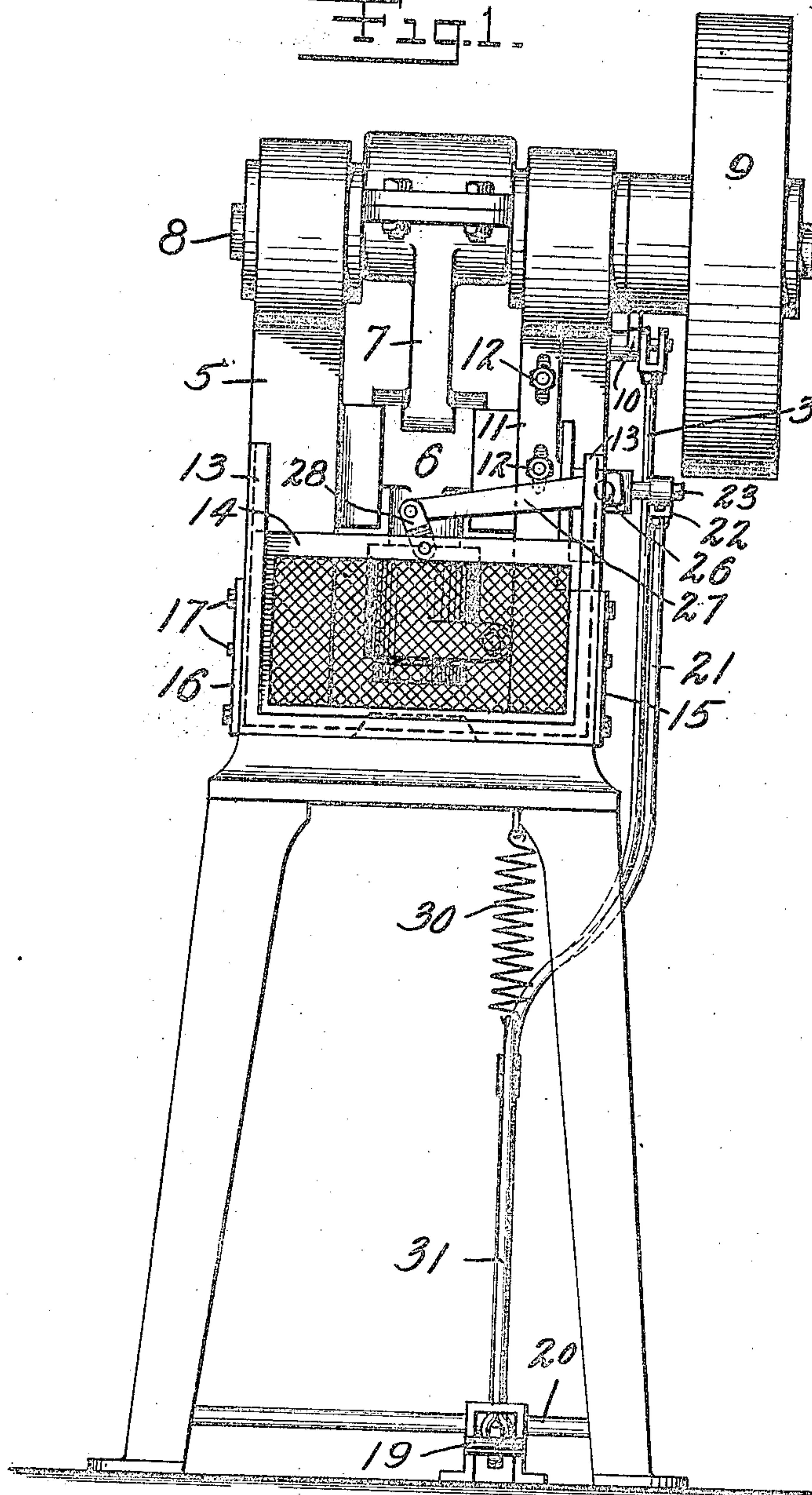
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GUARD FOR PUNCH PRESSES

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Fig. 1.



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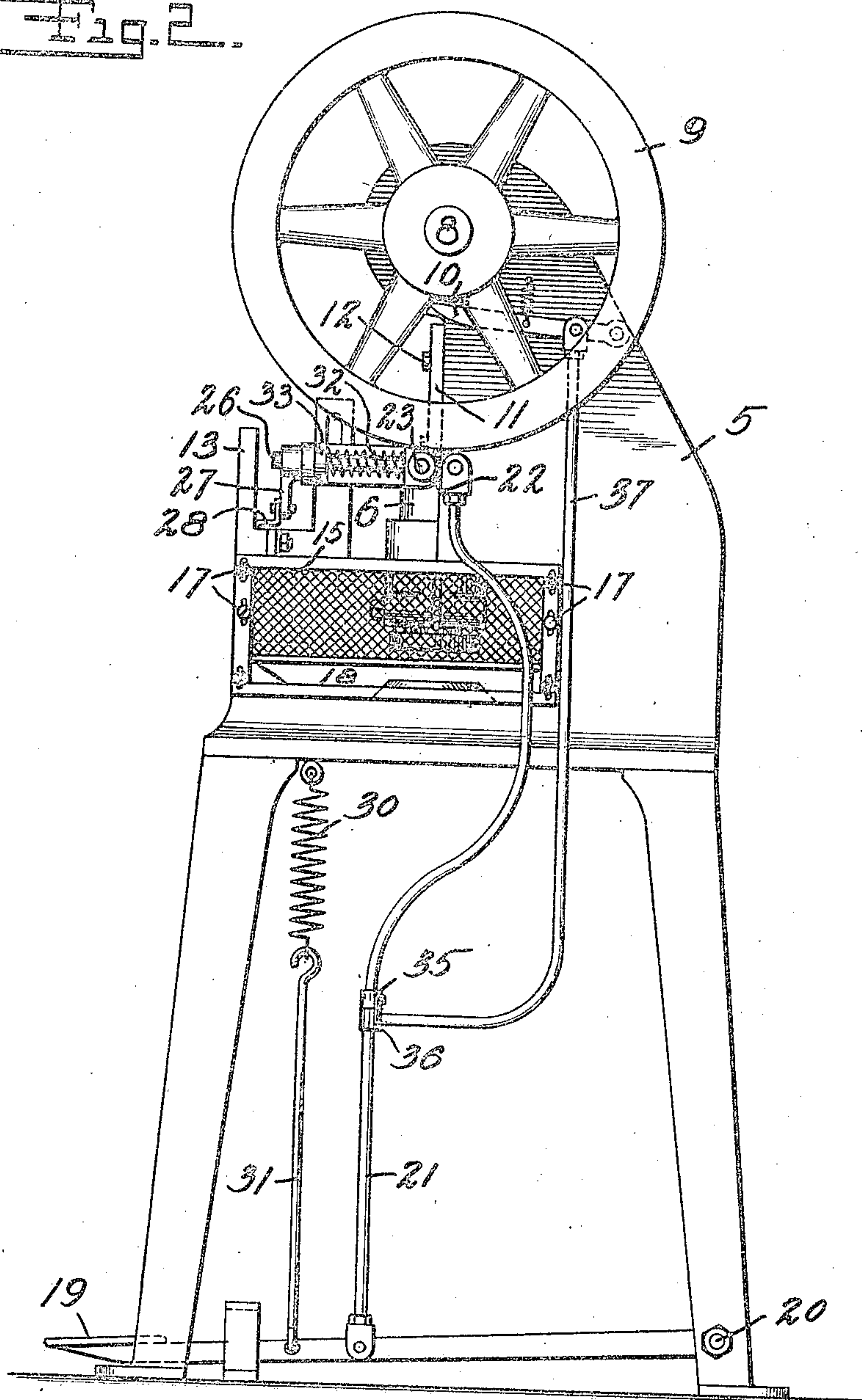
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Fig. 2.



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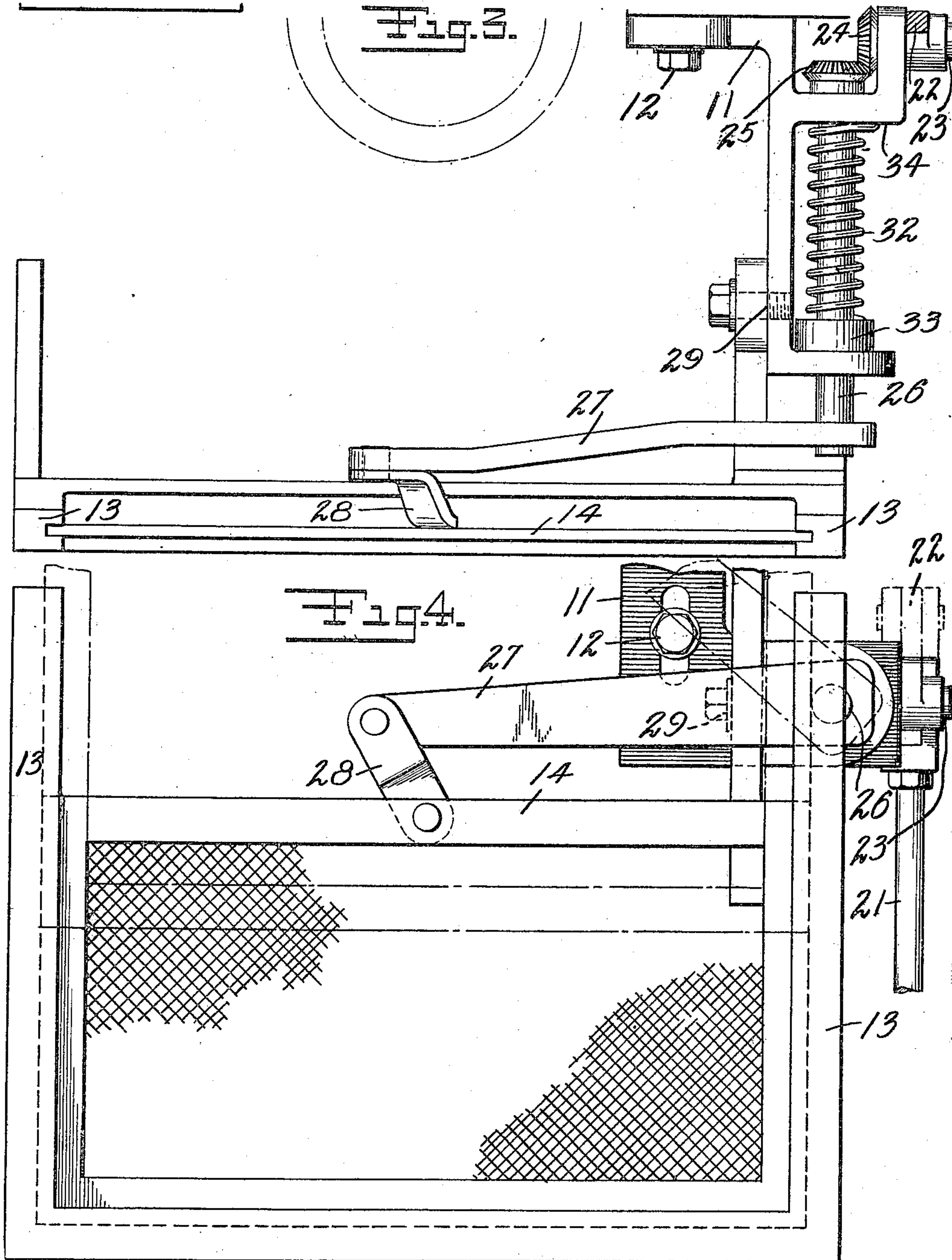
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UNITED STATES PATENT OFFICE.

FRANK J. RUGGIERO, OF NEW YORK, N. Y.

GUARD FOR PUNCH PRESSES.

Application filed September 23, 1919. Serial No. 325,630.

To all whom it may concern:

Be it known that I, FRANK J. RUGGIERO, a citizen of the United States, residing at Bronx, in the county of Bronx and State of New York, have invented certain new and useful Improvements in Guards for Punch Presses, of which the following is a specification.

This invention relates to safety devices for protecting the operators of punch presses and machines of the like dangerous character.

The objects of the invention are to provide a guard which can readily be attached or applied to machines now in use and which will effectually protect the operator from injury.

Further objects are to provide a guard of this nature which will be relatively simple in construction, and which can be readily adjusted to suit different machines and which will be positive in its operation and entirely practical.

With these objects primarily in view the invention resides in a protective guard adapted for ready application to a punch press or other machine and provided with means for operating the same, which operating means will effect also the control of the machine after the guard has been shifted to its protective position.

Other features of the invention will appear as the specification proceeds.

In the drawings accompanying this specification I have illustrated the invention as applied to a punch press of typical construction but would have it understood that the invention may be applied to other machines and that various structural modifications may be made without departure from the true scope and spirit of the invention. In said drawings Figure 1 is a front elevation of the invention as applied to the press, with the gate shown in the lowered or protective position; Figure 2 is a side elevation of the same; Figure 3 is an enlarged plan view of the safety attachment; Figure 4 is a broken front view of the same. The press illustrated is of the usual construction embodying a frame 5 in which there is reciprocally mount-

ed a plunger 6 connected by fitment 7 with the crank shaft 8, said crank shaft carrying the usual heavy fly-wheel 9, and a controller 10 being provided for throwing the machine into operation.

The parts of the guard mechanism are shown as supported on and carried by a base or frame 11 which is adjustably secured on the frame of the machine by the bolt-and-slot connections 12. This frame is provided at the front of the machine with spaced upright guides 13 in which slides the movable guard or gate 14. This frame also supports at opposite sides of the plunger the relatively fixed guard members 15 and 16 which are shown as adjustably secured into place on the frame by bolt-and-slot connections 17 and which are also illustrated as supported a slight distance above the bed of the press to provide a clearance space 18 for the passage of the stock through the machine.

The movable guard or gate is shifted into the protecting position by means of a manually operable lever, shown as a foot treadle 19, pivoted at 20, said lever being connected by means of a rod 21, with the rearwardly extending arm 22 of a rock shaft 23, which rock shaft is in turn connected by bevel gears 24—25 with a forwardly extending rock shaft 26, carrying at its forward end a rock arm 27, connected by a pivot 28 with the gate. Practically all of these parts, it will be noted, are supported on and carried by the base or frame 11, which enables the device being handled and applied to the machine as a single unit. That part of the frame which supports the side and front guard members may be adjustably secured to the base portion in which the rock shafts are journaled, as indicated at 29 in Figures 2 and 4, to permit of adjustments to fit different machines.

The treadle is normally supported in its upper position by means of a spring 30, connected with the treadle lever by a link 31. This spring also, through the medium of the connecting rod 21, rock shaft 23 and bevel gears etc. exerts its force to lift the gate when pressure on the treadle is removed but to insure the positive lifting of the gate

at such times, I prefer to provide a special return spring for this purpose, which is here illustrated as coiled spring 32, engaged about the rock shaft 26 and connected at one end with a collar 33 fast on said rock shaft and at its opposite end with a stationary part 34 of the framework.

A special feature of my invention is that the controller for the press is not tripped to throw the machine into operation until after the gate has been lowered into its protective position. This is accomplished by the provision of a lost-motion connection between the gate operating treadle and the controller and which connection consists in the present disclosure of an abutment collar 35 adjustably secured on the treadle rod 21 and arranged, in the downward movement of said rod, to engage and carry with it a sleeve 36 loosely guided on said rod and carried by a link or rod 37 connected with the controller. Both the rods described may be offset rearwardly, as indicated in Figure 2, to provide clearance for the stock or material issuing from or being fed in at the side of the press.

It will be clear from the foregoing that the press is thrown into operation by depressing the treadle but it will be seen that such operation cannot take place until the safety gate has been lowered into its protective position. With this invention the sides, as well as the front of the press, are protected and it will be noted that the construction is such that the device may readily be fitted to presses now in general use.

I claim:—

1. The combination with a press and a controller therefor, a rod connected with said controller, a base adjustably secured to the press, a movable gate for guarding the press carried by the base, guides for the gate, a treadle for operating said gate, a rod extending from the treadle to the gate mechanism, a sleeve on the controller rod encircling said treadle rod and a shoulder on the treadle rod positioned to engage said sleeve when the treadle has been operated to shift the gate into its protective position.

2. Guard mechanism for presses and the like comprising a movable gate, a rock shaft for shifting the same, a second rock shaft disposed at an angle to the first, gearing connecting said rock shafts, a rocker arm connected with said second rock shaft, a manually operable lever connected with said rocker arm, a control device and a lost-motion connection from the manually operable lever to said control device.

3. A safety device for machines of the character described comprising a gate, a rock shaft having an arm connected with said gate, a torsional spring disposed about said rock shaft for turning the same to shift the gate in one position and a manually operable lever having connections there-

from for turning the rock shaft to shift the gate in the reverse direction.

4. In combination with a punch press and a controller therefor, a gate for guarding the front of the press, a rock shaft journaled at the side of the press, a rock arm on the forward end of said shaft extending across the front of the press and connected with the gate, a second rock shaft at the rearward end of the first rock shaft disposed at an angle thereto, inter-meshing bevel gears on adjacent ends of said two angularly disposed rock shafts, a rearwardly extending rock arm on the second rock shaft, a treadle, a rod extending from said last mentioned rock arm to said treadle, a rod connected with the controller and provided with a sleeve member embracing the treadle rod and a collar on the treadle rod for engagement with said sleeve upon the operation of the treadle.

5. The combination with a machine to be protected, of a base secured to said machine, side guards adjustably mounted on said base for covering the side portions of said machine, a front guard slidably mounted on said base for protecting the front of the machine, a rock shaft journaled on the base and connected with the movable front guard, a second rock shaft journaled on the base and geared to the first rock shaft, a treadle, a rod connected with said treadle and with the rock arm, a machine controlling rod and a lost-motion connection between said treadle rod and said machine controlling rod.

6. A guard for punch presses comprising a supporting frame, means for adjustably securing said frame on the press, guards for the sides of the press mounted on said frame and adjustable to provide clearance for the passage of the stock at the sides of the press, a gate slidably mounted in the frame at the front of the press, and means for shifting said gate.

7. A guard for punch presses comprising a supporting frame having guides at the front of the press and rearward extensions at the sides of the press, means for adjustably securing said frame on the press, a gate protecting the front of the press and slidably engaged in said guides, means for shifting the gate in said guides and side guards mounted on the rearward extensions of the supporting frame and adjustable to provide clearance for passage of the stock at the sides of the press.

8. In combination with a punch press, a frame comprising a base mounted on the press and a guide carried by said base and adjustable with respect thereto, a gate slidably engaged with said guide, gate-shifting means mounted on the base and operating connections from the gate-shifting means on said base to the gate which is slidably engaged in the adjustably supported guide,

said connections including a pivoted link for permitting relative adjustment of the guide and base.

5 9. In combination, a punch press, a protective gate for the press, a treadle, an operative connection between said gate and said treadle including a rod, rock shaft and gear members for shifting the gate into its

protective position, a spring for returning the treadle, and a torsional spring disposed 10 about the gear member of the operative connection for returning the gate to nonprotective position independently of the treadle spring.

In testimony whereof I affix my signature.
FRANK J. RUGGIERO.