

No. 773,651.

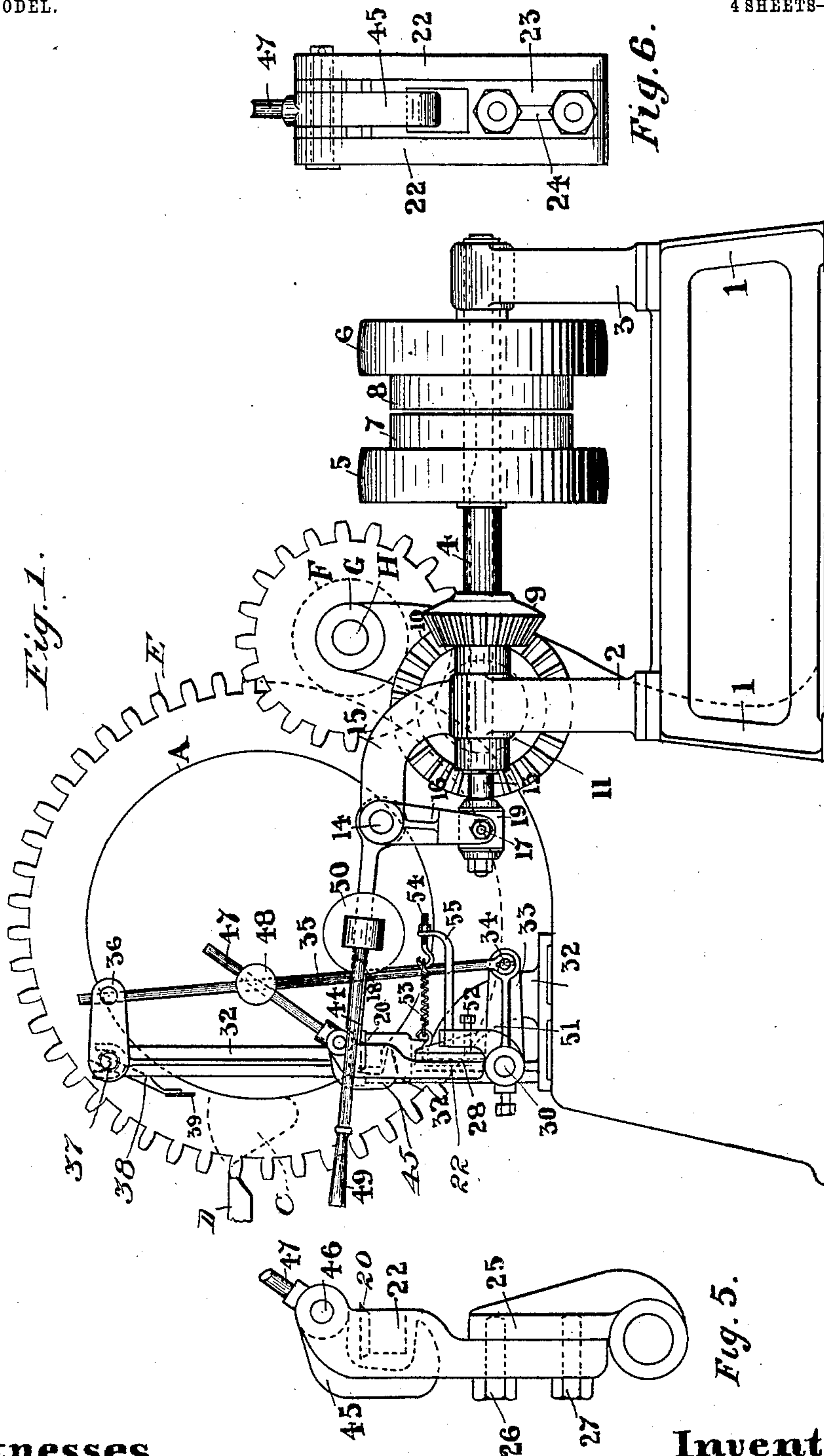
PATENTED NOV. 1, 1904.

E. J. LANE.
SAFETY GEAR FOR IRONING MACHINES.

APPLICATION FILED DEC. 18, 1901.

NO MODEL.

4 SHEETS—SHEET 1.



Witnesses.

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G. Newberry

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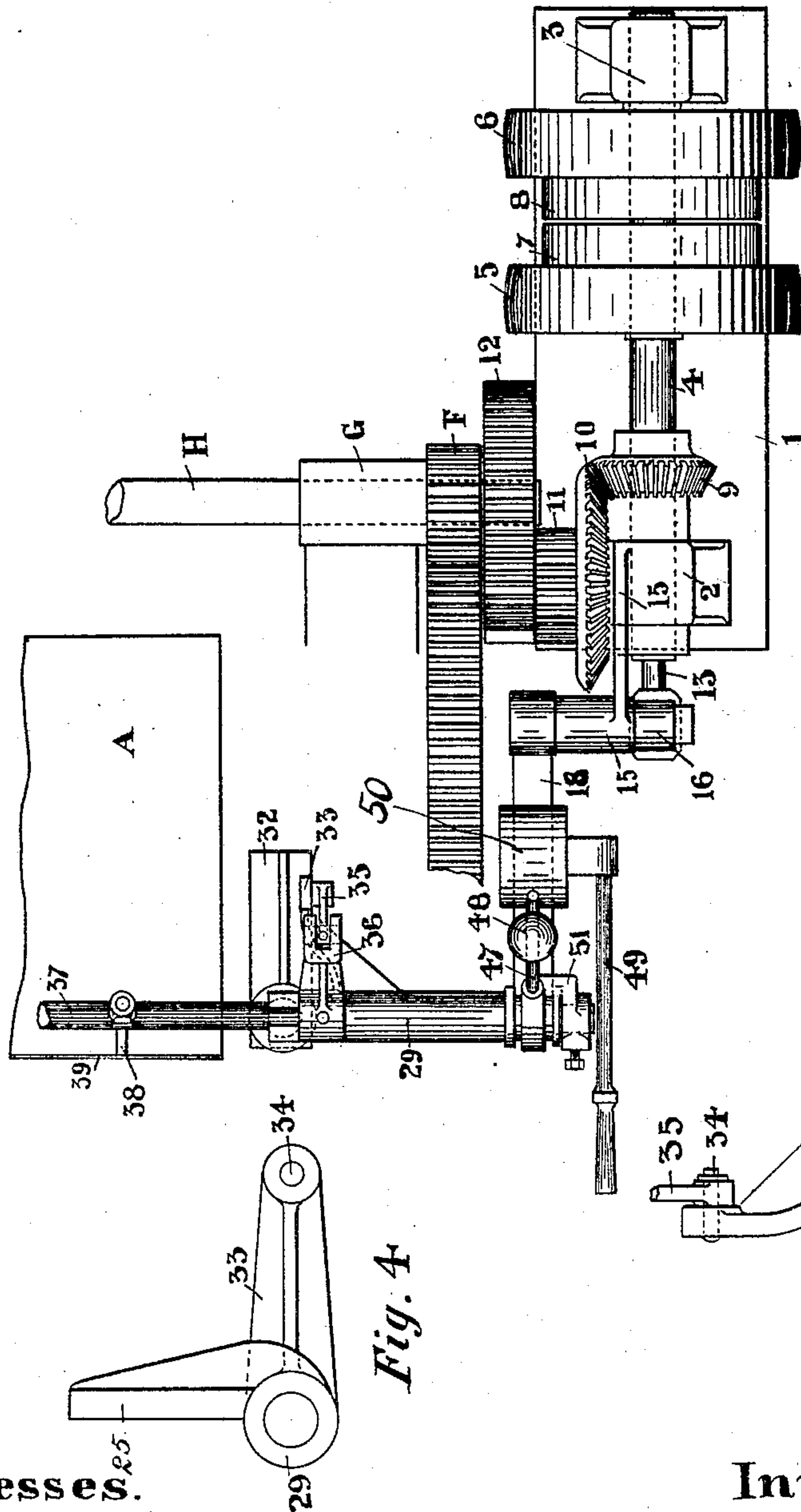


Fig. 4.

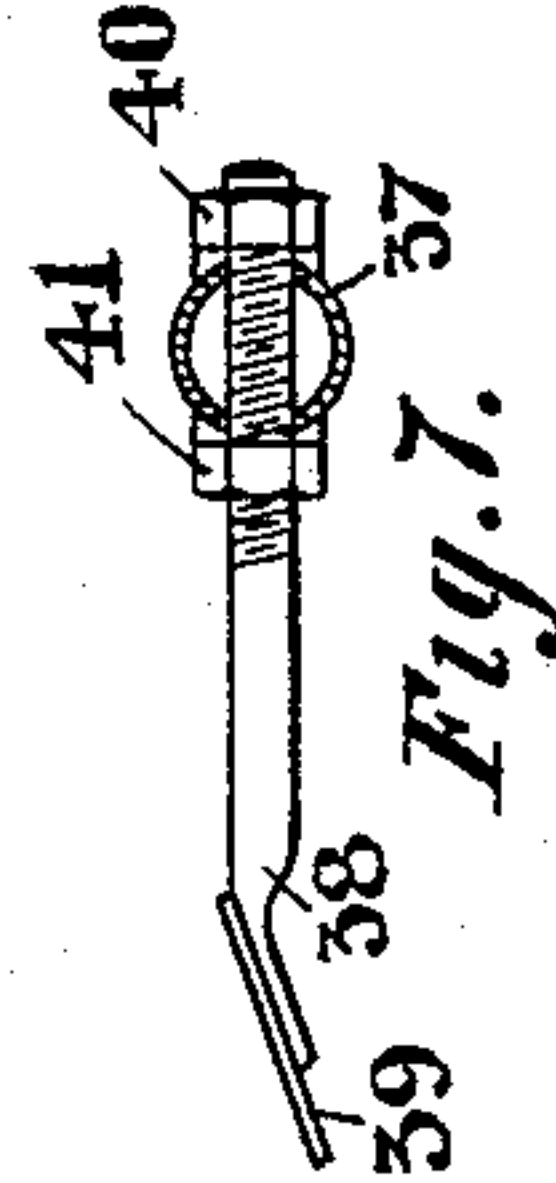


Fig. 7.

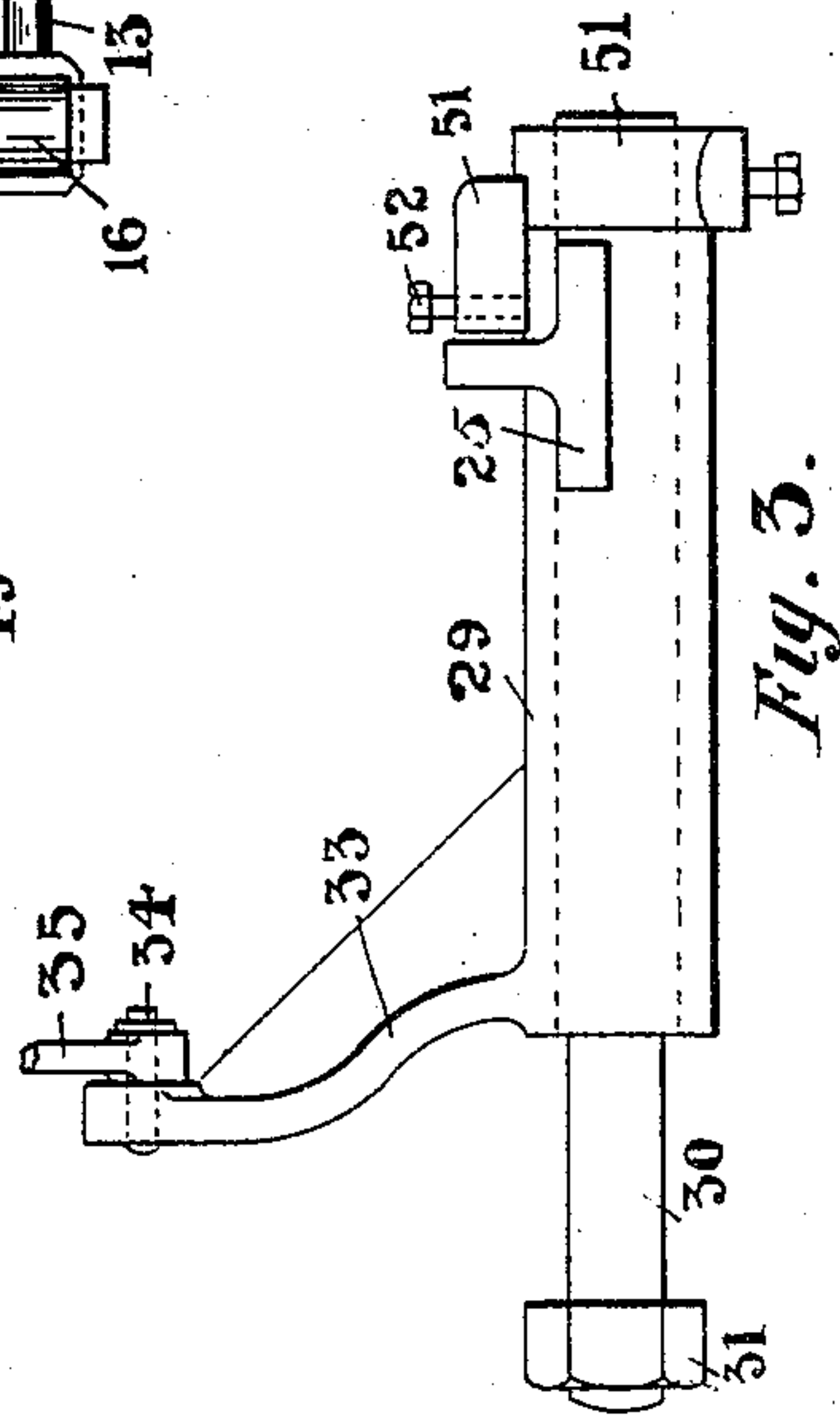


Fig. 3.

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4 SHEETS—SHEET 3.

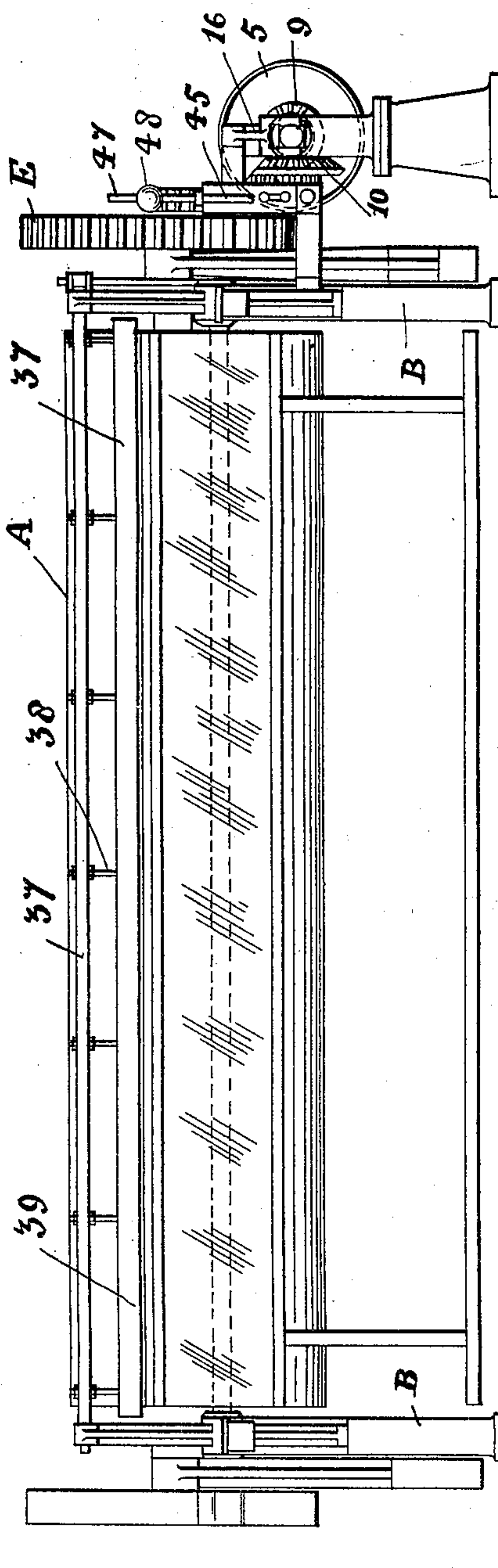


Fig. 8.

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4 SHEETS—SHEET 4.

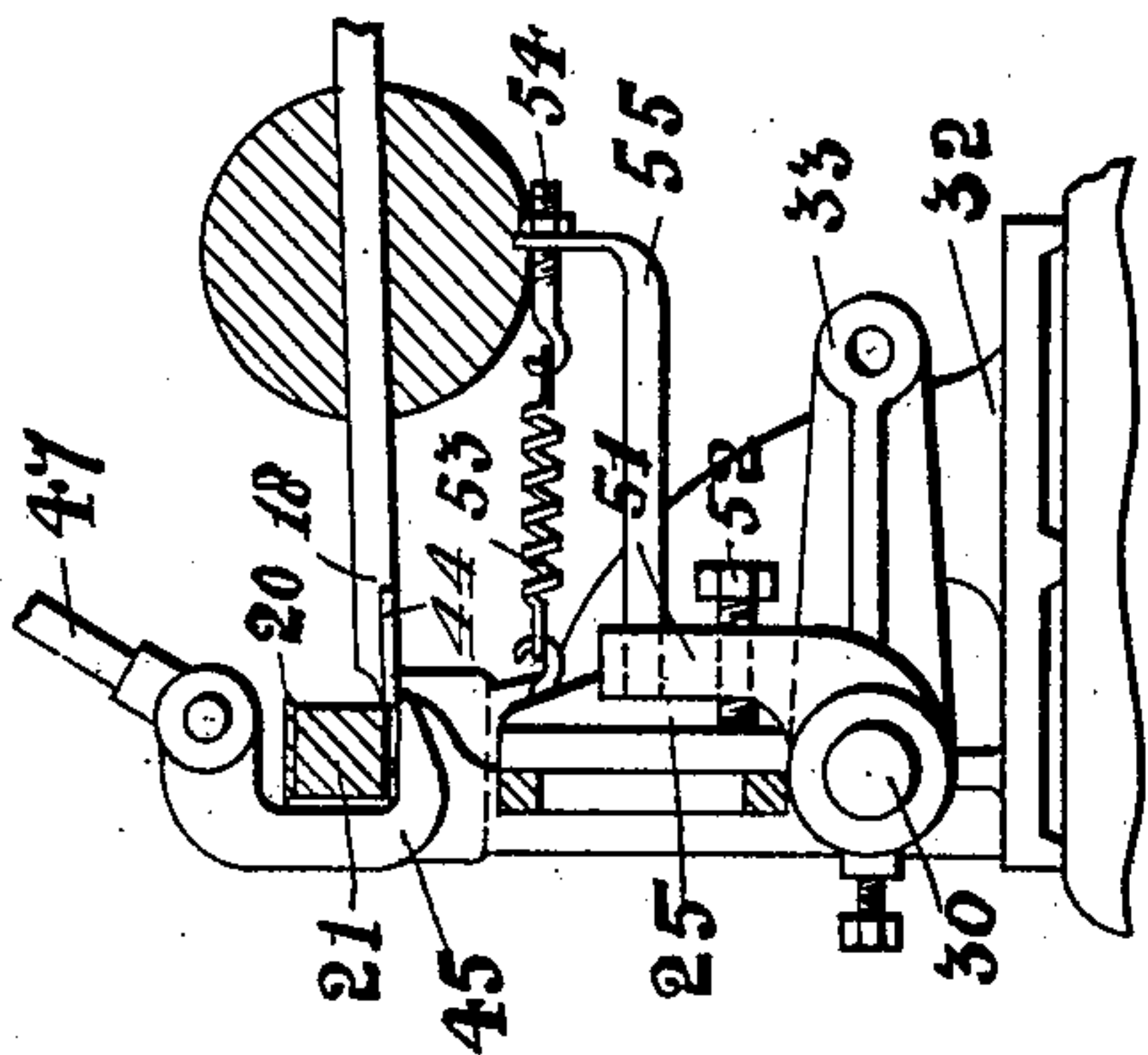


Fig. 11.

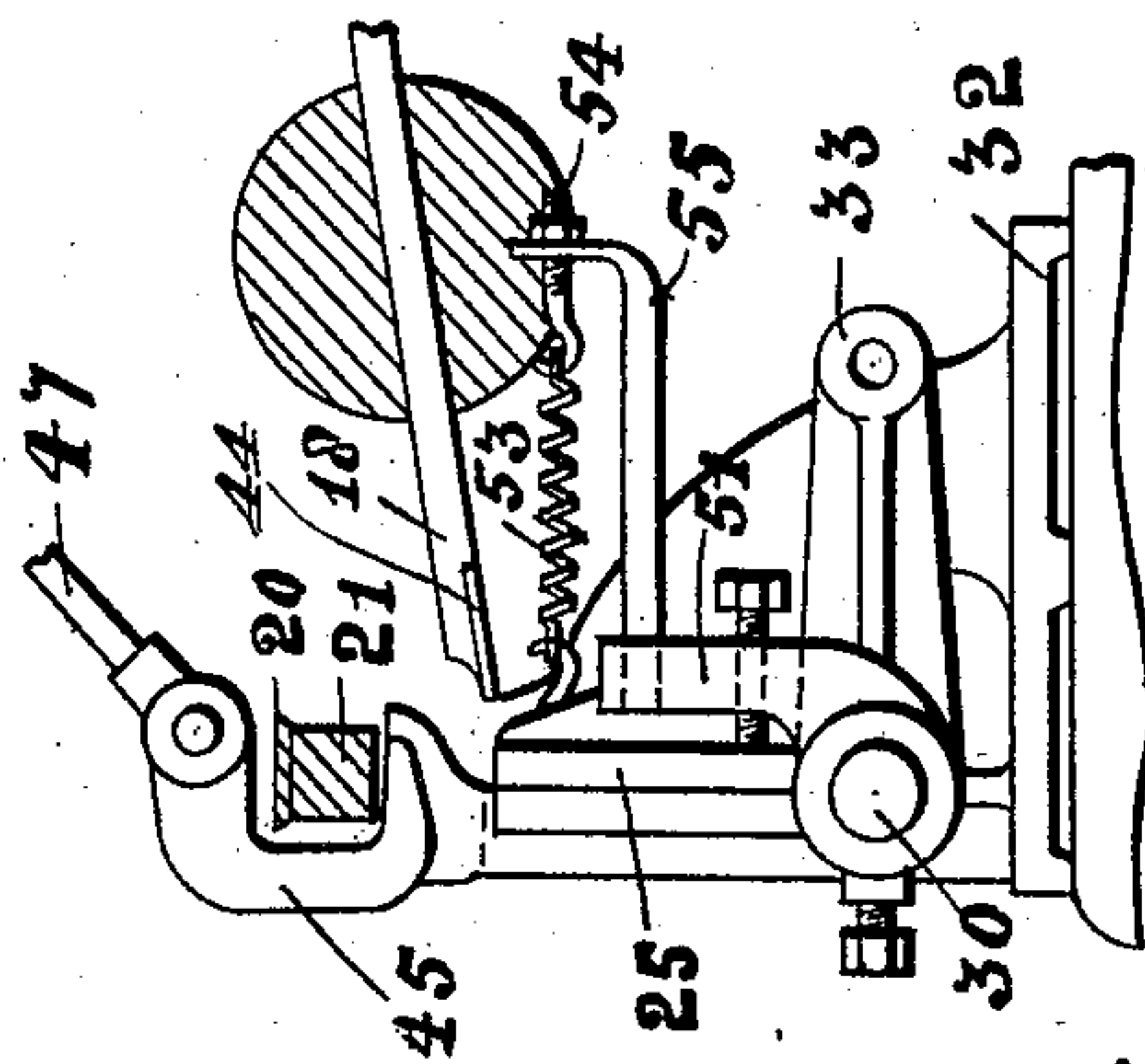


Fig. 12.

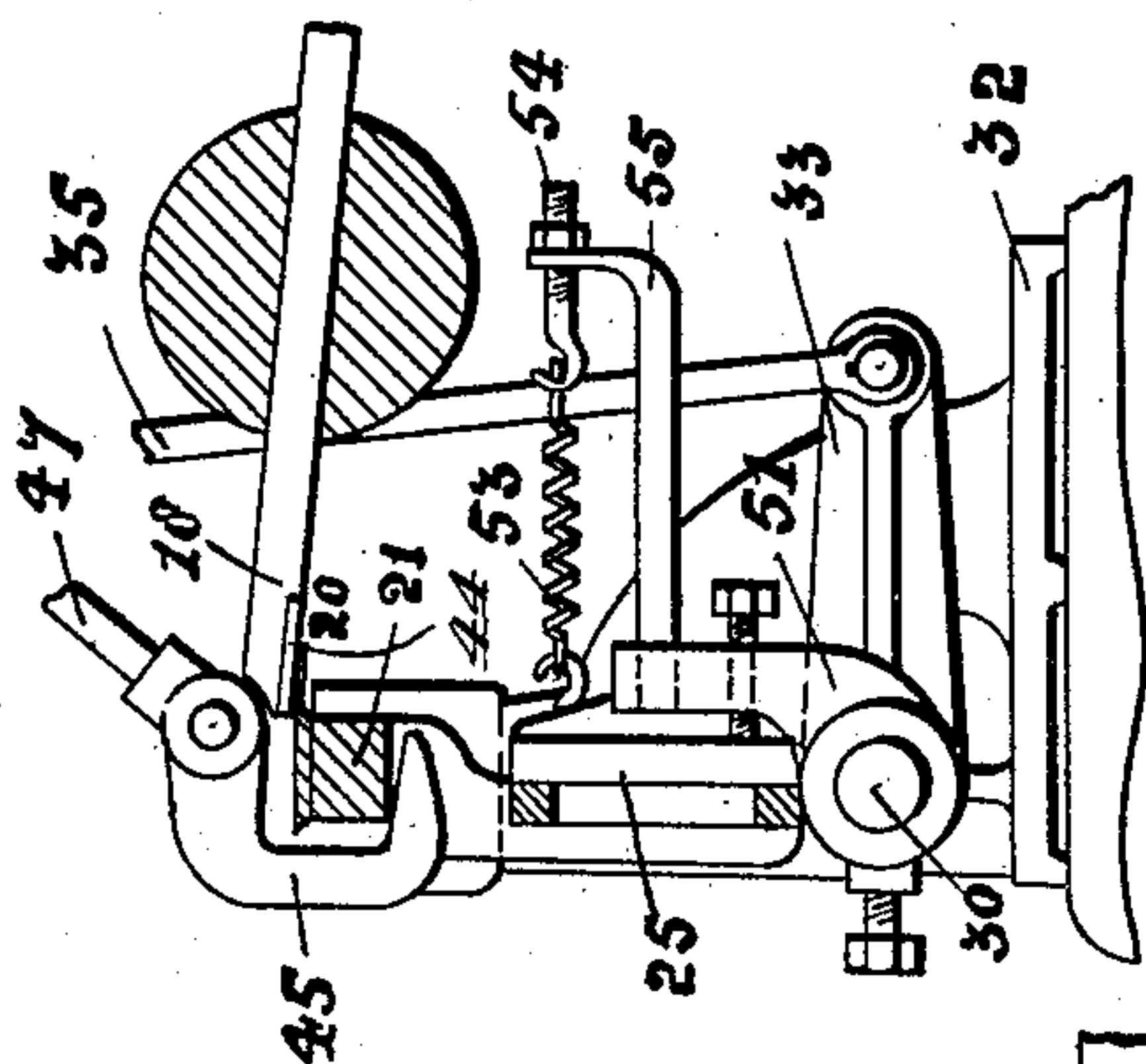


Fig. 10.

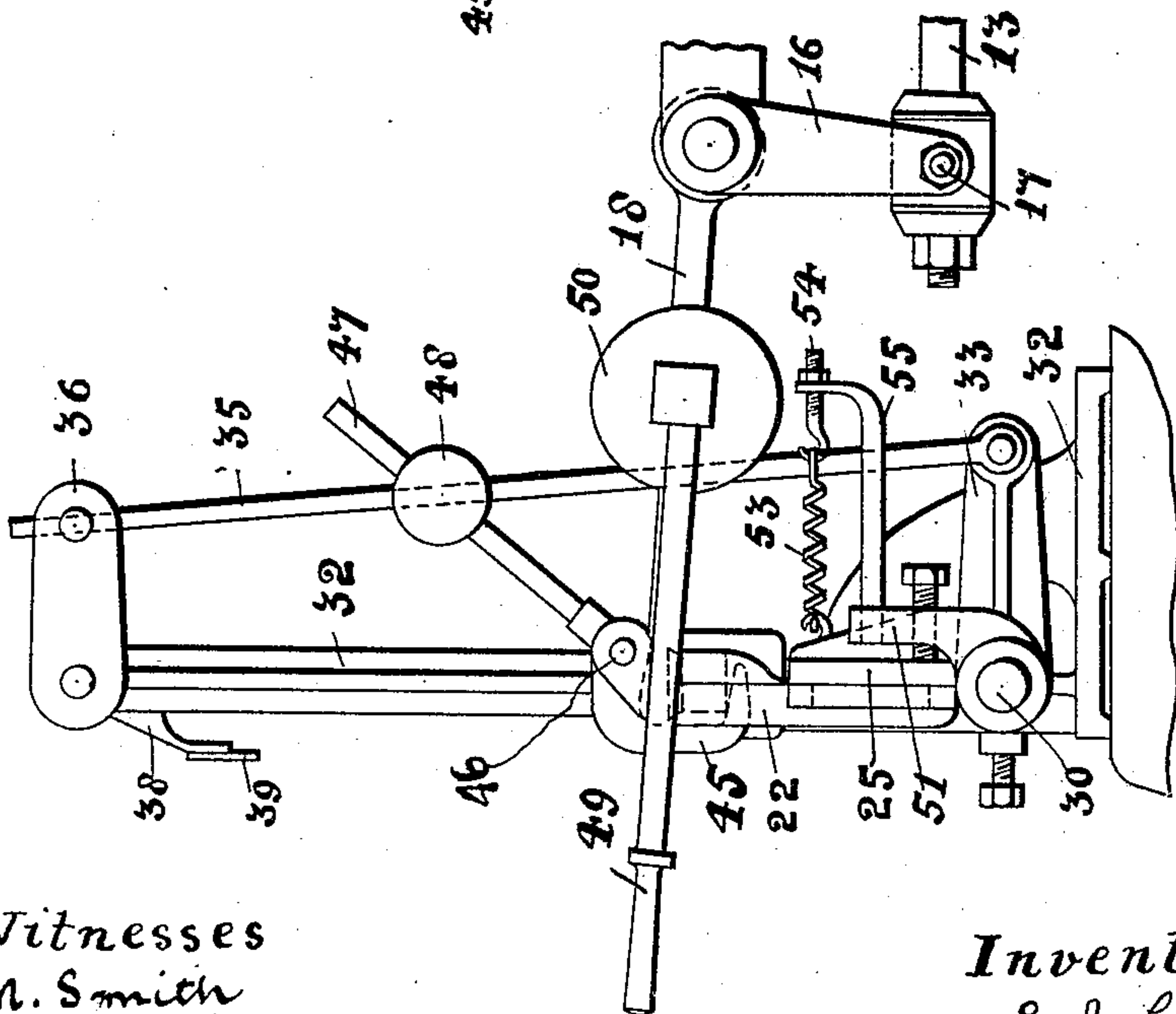


Fig. 9.

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UNITED STATES PATENT OFFICE.

EDWIN JOHN LANE, OF LONDON, ENGLAND.

SAFETY-GEAR FOR IRONING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 773,651, dated November 1, 1904.

Application filed December 18, 1901. Serial No. 86,376. (No model.)

To all whom it may concern:

Be it known that I, EDWIN JOHN LANE, a subject of the King of Great Britain, residing at 23 Gascoyne road, South Hackney, London, England, have invented a new and useful Safety-Gear for Ironing-Machines and other Machinery, of which the following is a specification.

It has been found in practice that serious accidents are likely to occur in all cases in which goods or materials under treatment are fed between rollers or between a roller and a concave from the hands of the attendants being caught between the rollers or between the roller and the concave. Such accidents are very liable to occur to persons feeding calenders, mangles, wringers, ironing-machines, Decoudun ironing-machines, and other machines of various descriptions; and the object of this invention is to minimize as far as possible the risk of serious injury to the attendants of such machines by attaching thereto an apparatus which will instantaneously stop or reverse the machine or the feeding-rolls as soon as a hand or finger is caught without any effort to stop the machine on the part of the attendant.

I will describe my invention as applied to "Decoudun" ironing-machines, which machines I select for illustration, as they are made up to nine feet in length and the attendants have to feed the machines at any point in the length of the roll, and when ironing fringed goods—such as table-cloths, counterpanes, and towels—their fingers may be caught between the live-roll and the concave-bed at a point where the belt-shifting gear or clutch-actuating mechanism is not within easy reach, or if it is within reach a serious accident resulting in the loss of a hand or of an arm may occur before the machine can be stopped by shifting the belt or otherwise, more especially if the machine has to be stopped by the attendant whose arm is being drawn into the machine.

In order that my invention may be fully understood, I will proceed to explain the same with reference to the accompanying drawings, in which—

Figure 1 represents a side elevation of my

safety-gear as applied to a Decoudun ironing-machine. Fig. 2 is a plan of same. Fig. 3 is a plan of bell-crank to an enlarged scale. Fig. 4 is an end view of same. Fig. 5 is a side view of catch to an enlarged scale. Fig. 6 is a back view of same. Fig. 7 shows the method of attaching the metal safety-strip to the tubular shaft to an enlarged scale. Fig. 8 represents a front elevation of a Decoudun ironing-machine fitted with my safety-gear. Fig. 9 is an elevation of the safety-gear, showing same in position for driving the machine. Fig. 10 is a section showing the weighted lever in the driving position. Fig. 11 is a section showing weighted lever when machine is stopped. Fig. 12 is a section showing the weighted lever in position for reversing the machine.

The same characters denote the same parts in all the figures.

A is the roller of the machine. B is the frame of the machine. C is the moving feed-mouth. D is the feeding-table. E is the spur-wheel which is secured to the roller-shaft. F is the pinion on the lay-shaft H. G is the bracket which supports the lay-shaft H. All these parts being old and well known, no further description of them is necessary.

1 is a stool to which are secured brackets 2, 3, which brackets have bearings therein to receive the hollow driving-shaft 4.

5 and 6 are pulleys running loose on the driving-shaft 4 and driven in opposite directions by means of open and crossed belts, either pulley being capable of being instantaneously locked to the shaft 4 by means of expansible friction-rings inside the clutches 7 and 8, one clutch being cast integral with the pulley 5 and the other clutch being cast integral with the pulley 6.

9 is a bevel-pinion keyed to the shaft 4, which pinion gears with a bevel-wheel 10, rotating on a stud fixed in the bracket 2.

The bevel-wheel 10 has formed integral therewith a long pinion 11, one portion of which drives the usual gearing for raising the roller A out of contact with the bed when the machine is not in use, the other portion of the said pinion driving the spur-wheel 12, secured to the lay-shaft H.

13 is a rod passing through the hollow driv-

ing-shaft 4, said rod actuating the friction-rings in the clutches 7 and 8.

18 is a weighted lever secured to a shaft 14, which oscillates in a bearing formed in the bracket 15, which bracket is formed integral with the bracket 2. To the opposite end of the shaft 14 is secured a forked lever 16, which engages, by means of set-screws 17, with the block 19, which block is attached to the rod 13 in such a manner as to allow the said rod to rotate with the shaft 4 and at the same time to enable it to be moved longitudinally therein by means of the weighted lever 18.

To the end of the lever 18 is secured a hard-steel trip-piece 44, which normally rests on a similar trip-piece 20, secured to a metal block 21, forming part of or secured to the cheeks 22, and so supports the lever 18 when the machine is running.

23 is a second metal block having a slot 24 therein, the block 23 being secured to the cheeks 22 by rivets or other suitable means. The block 23 is secured to the piece 25 by set-screws 26 and 27, as shown by Figs. 5 and 6. The piece 25 is the vertical arm of a bell-crank lever having a long boss 29, which boss oscillates on the pin 30, the said pin being secured in the standard 32 by means of the nut 31.

The standard 32 is made in two pieces for adjusting the height of the shaft 37 above the roller A.

The horizontal arm 33 of the bell-crank lever has a pin 34 therein, which is connected, by means of the rod 35, with the lever 36, which latter is secured to the tubular shaft 37. The tubular shaft 37 is supported in bearings formed at the top of the standards 32, there being a standard at each end of the machine. To the shaft 37 is also secured, by means of studs 38, a strip of metal 39, extending from one end of the machine to the other, the said strip being adjusted, by means of the nuts 40 and 41, to within a short distance of the roller A and the feeding-mouth C, the distance between the bottom of the said strip and the feeding-mouth being such that it is impossible for an attendant to get his or her fingers caught between the roller A and the feeding-mouth C without moving the strip 39 toward the roller A. Should the attendant's fingers be drawn into the machine, the strip 39 will be pushed toward the roller A and the lever 36 raised. The motion of the lever 36 being transmitted to the lever 33 by the rod 35, the lever 33 will also be raised and the piece 25 moved to the left, withdrawing the trip-piece 20 from under the trip-piece 44 at the end of the weighted lever 18, which lever instantly falls and by means of the rod 13 and clutch 7 reverses the motion of the roller A.

To enable the machine to be stopped at will, a hook or catch 45 is pivoted at 46 to the cheeks 22, and to the said catch is secured a handle 47, having a weight 48 near the end thereof, which normally holds the catch clear

of the lever 18 and trip-piece 44, as shown by Fig. 1, so as to enable the fall of the lever 18 to reverse the machine; but if the handle 47 is pulled to the left the catch 45 is brought into the position shown by Figs. 5 and 11, so that as soon as the trip-piece 20 is moved from under the trip-piece 44 by a further movement of the handle 47 the lever 18 falls onto the catch 45 and is supported thereby in such a position that both clutches are released and the machine stops, both driving-pulleys running idle.

In order to enable the attendant to start the machine, a handle 49 is secured to the weight 50, by means of which handle the lever 18 may be raised until the trip-piece 44 rests on the trip-piece 20, releasing the catch 45 and locking the pulley 6 to the shaft 4 by means of the clutch 8.

When the lever 18 is in its highest position, the machine runs forward; when in mid position, the machine stops; when in its lowest position, the machine runs backward.

To the pin 30 is secured a piece of metal 51, in which is a set-screw 52 to regulate the distance the trip-piece 20 projects under the end of the trip-piece 44.

To prevent accidental reversal of the machine while being fed, a spring 53 is attached to the piece 25 at one end and at the other end to a tension-screw 54, passing through an eye in a metal rod 55, carried by the piece 51, the tension of the spring allowing the machine to be fed in the usual way, but yields sufficiently in case of accident to enable the reversing-gear to act.

Although I have described my invention as applied to a Decoudun ironing-machine, yet I wish it to be understood that I may apply my invention to any machine or to the counter-shaft of any machine or to an independent counter-shaft the reversal or stopping of which may be effected by the fall of a weighted lever actuating clutches or belt-shifting gear, the said lever being normally held up by trip-pieces, the lower of which is instantaneously withdrawn in case the attendant's fingers or clothing become entangled in the machinery.

When applying my invention to high-speed machinery, where the momentum of the moving parts is great, I reverse the motion of the feeding-rollers only, as no matter how quickly the reversing-gear acts a serious accident would certainly occur before the whole of the moving parts could be brought to rest and the motion thereof reversed if it were sought to reverse the whole; but the feeding-rollers only can be instantly reversed without any difficulty and before a serious accident can happen without stopping the machine.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. In a safety-gear for mechanically stop-

ping and reversing the motion of machinery the combination of a weighted lever, a movable trip-piece for supporting the said weighted lever, a movable part, mechanism whereby a foreign body between said movable part and said mechanism operates to move said trip-piece to allow the said weighted lever to drop, and clutch-operating means actuated by the dropping of said weighted lever substantially as described.

2. In a safety-gear for mechanically stopping and reversing the motion of the feeding-rollers of machinery the combination of a weighted lever, a movable trip-piece for supporting the said weighted lever, a movable part, mechanism whereby a foreign body between said movable part and said mechanism operates to move said trip-piece and allow the said weighted lever to drop, and means operated by the dropping of the said weighted lever for stopping and reversing the motion of the said rollers substantially as described.

3. In a safety-gear for mechanically stopping and reversing the motion of machinery the combination of a shaft extending from end to end of and above the feeding-mouth of the machine, standards at each end of the said shaft to support the same, a metal strip attached to said shaft, a lever secured to said shaft, a connecting-rod to transmit the motion of the said lever to the horizontal arm of a bell-crank lever, a bell-crank lever and a trip-piece secured to the vertical arm of the same, a pin or stud on which the said bell-crank lever oscillates, a weighted lever supported by the said trip-piece, and means for stopping and reversing the machine connected to and actuated by the fall of the weighted lever as specified.

4. In a safety-gear for mechanically stopping and reversing the motion of machinery the combination of a framework, a weighted lever fulcrumed in the framework, a movable trip-piece attached to the vertical arm of a bell-crank lever, a bell-crank lever, a movable part, mechanism whereby a foreign body between said movable part and said mechanism operates to move the trip-piece to allow the said weighted lever to drop, means for moving the trip-piece by hand to stop the machine, a catch pivoted to the vertical arm of the bell-crank lever, a weighted handle attached to the said catch to normally keep the said catch clear of the weighted lever, and a handle attached to the weighted lever to raise same into engagement with the trip-piece when it is required to start the machine all substantially as specified.

5. In a safety-gear for mechanically stopping and reversing the motion of machinery

the combination of a shaft extending from end to end of and above the feeding-mouth of the machine, standards at each end of the shaft to support the same, a metal strip attached to said shaft, a lever secured to said shaft, a connecting-rod to transmit the motion of the said lever to the horizontal arm of a bell-crank lever to the vertical arm of which is attached a trip-piece, a pin or stud on which the said bell-crank lever oscillates, a weighted lever supported by the said trip-piece, means for stopping and reversing the machine connected to and actuated by the fall of the weighted lever, means for regulating the amount of motion of the trip-piece, and an adjustable tension device, as specified and for the purpose stated.

6. In a safety-gear for ironing-machines the combination of a shaft 37 extending from end to end of the machine above the feeding-mouth C, standards 32 to support the said shaft, a strip of suitable material 39, adjustable studs 38 securing said strip to said shaft, a lever 36 secured to one end of the said shaft, a stud 30 attached to the standard at the driving end of the machine, a lever oscillating on said stud, a rod 35 connecting the levers 33 and 36, a lever 25 formed integral with the lever 33, a block 23 secured to the lever 25, cheeks 22 secured to said block, a catch 45 pivoted to said cheeks at 46, a handle 47 attached to said catch, a trip-piece 20 attached to block 23, a weighted lever 18 secured to a shaft 14, a bearing 15 for said shaft, a forked lever 16 secured to shaft 14, a sliding rod 13 actuated by lever 16, friction-clutches 7 and 8 actuated by rod 13, driving-pulleys 5 and 6 formed integral with said clutches, a hollow driving-shaft 4, a bevel-pinion 9 on shaft 4, a bevel-wheel 10 rotating on a stud in standard 2, a spur-pinion 11 secured to the wheel 10 for transmitting the motion of the driving-shaft to the ordinary spur-wheels and roller, a stop-piece 51 secured to a stud 30, an adjusting-screw 52 therein, a tension-spring 53 also adjustable secured at one end to the lever 25, a tension-screw 54 to which the other end of said tension-spring is secured, a piece 55 through which said tension-screw passes, and a handle 49 for raising the weighted lever 18 into engagement with the said trip-piece all as specified and for the purposes stated.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

EDWIN JOHN LANE.

Witnesses:

T. E. HALFORD,

GEORGE NEWBERRY.