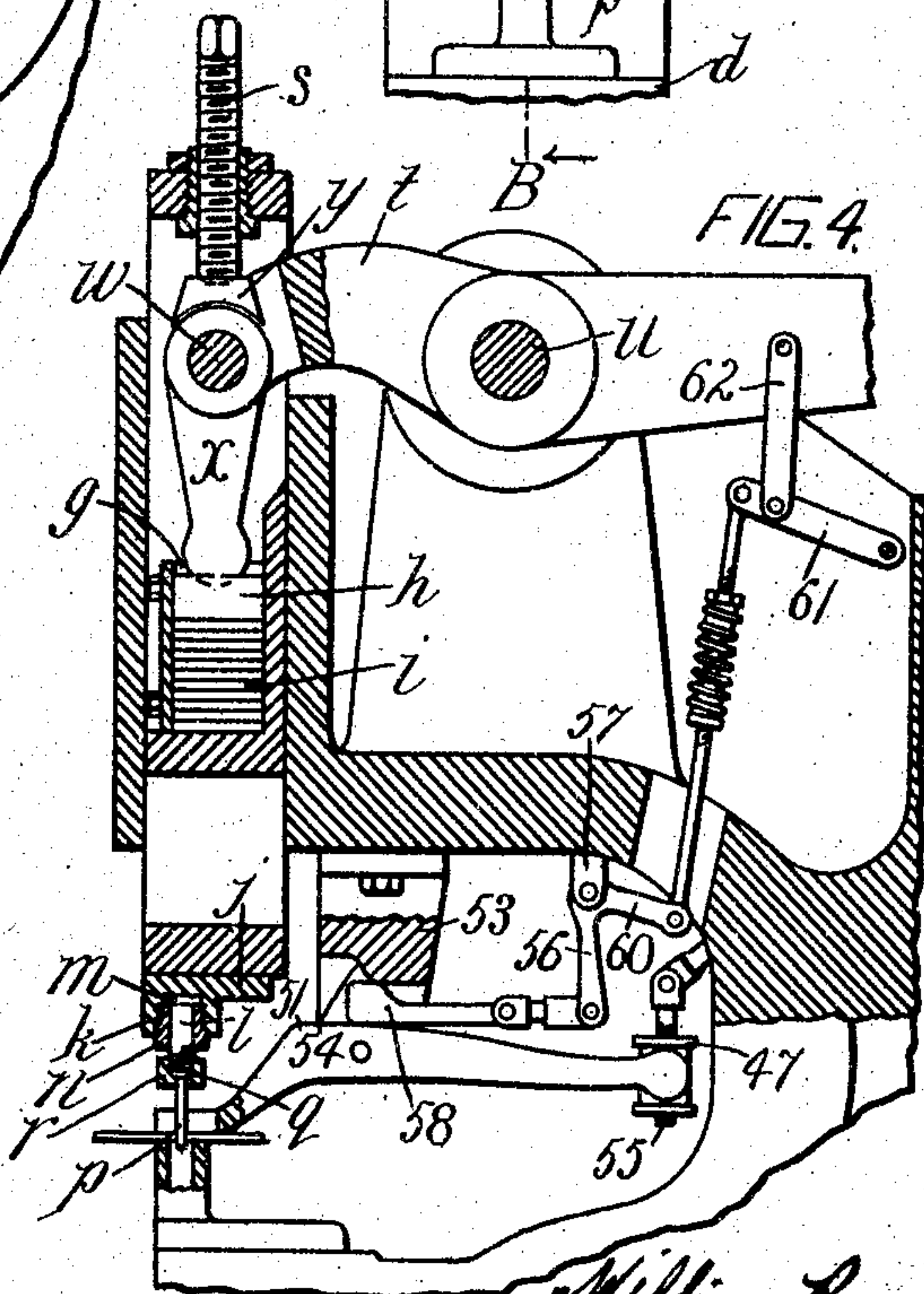
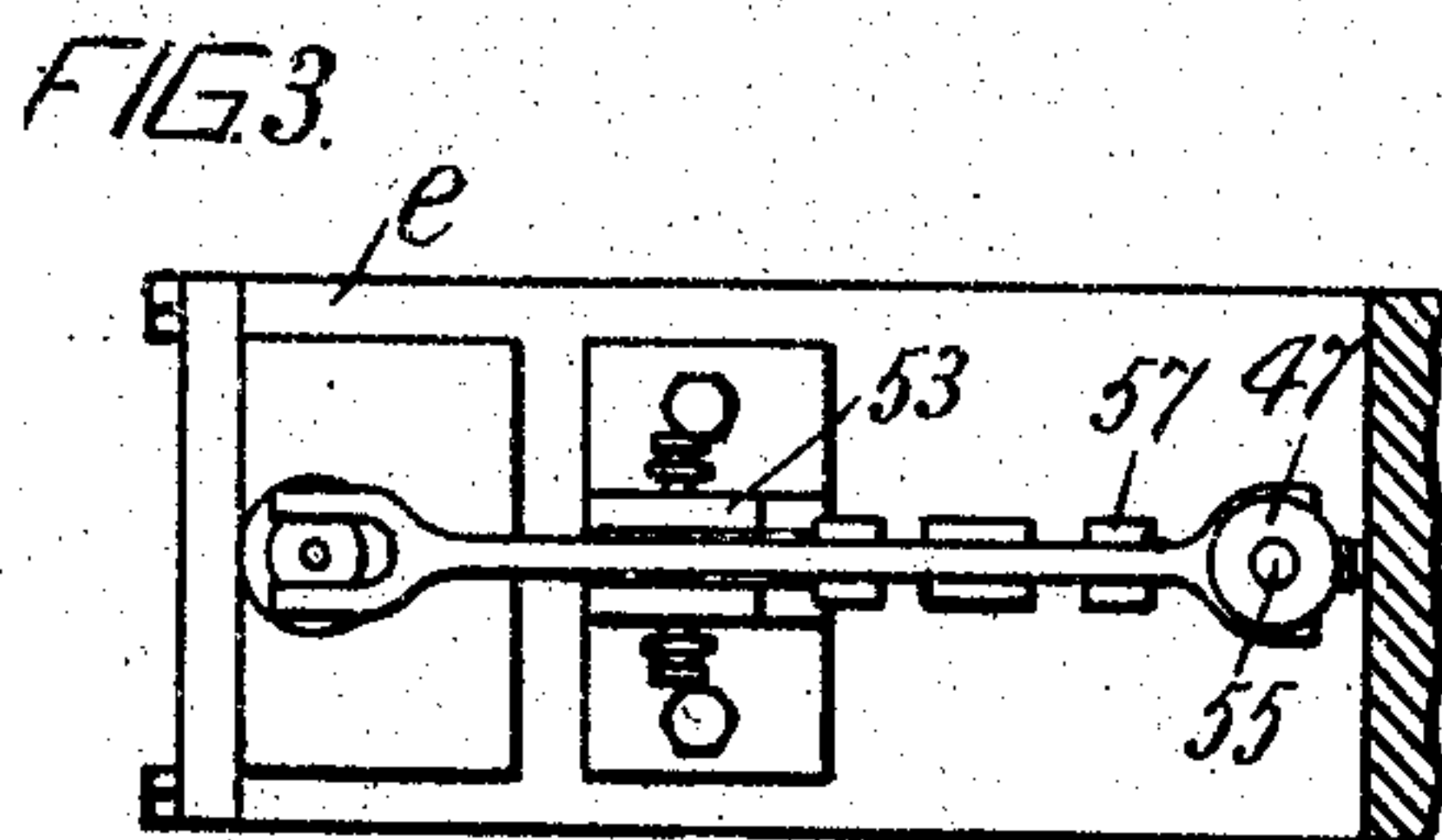
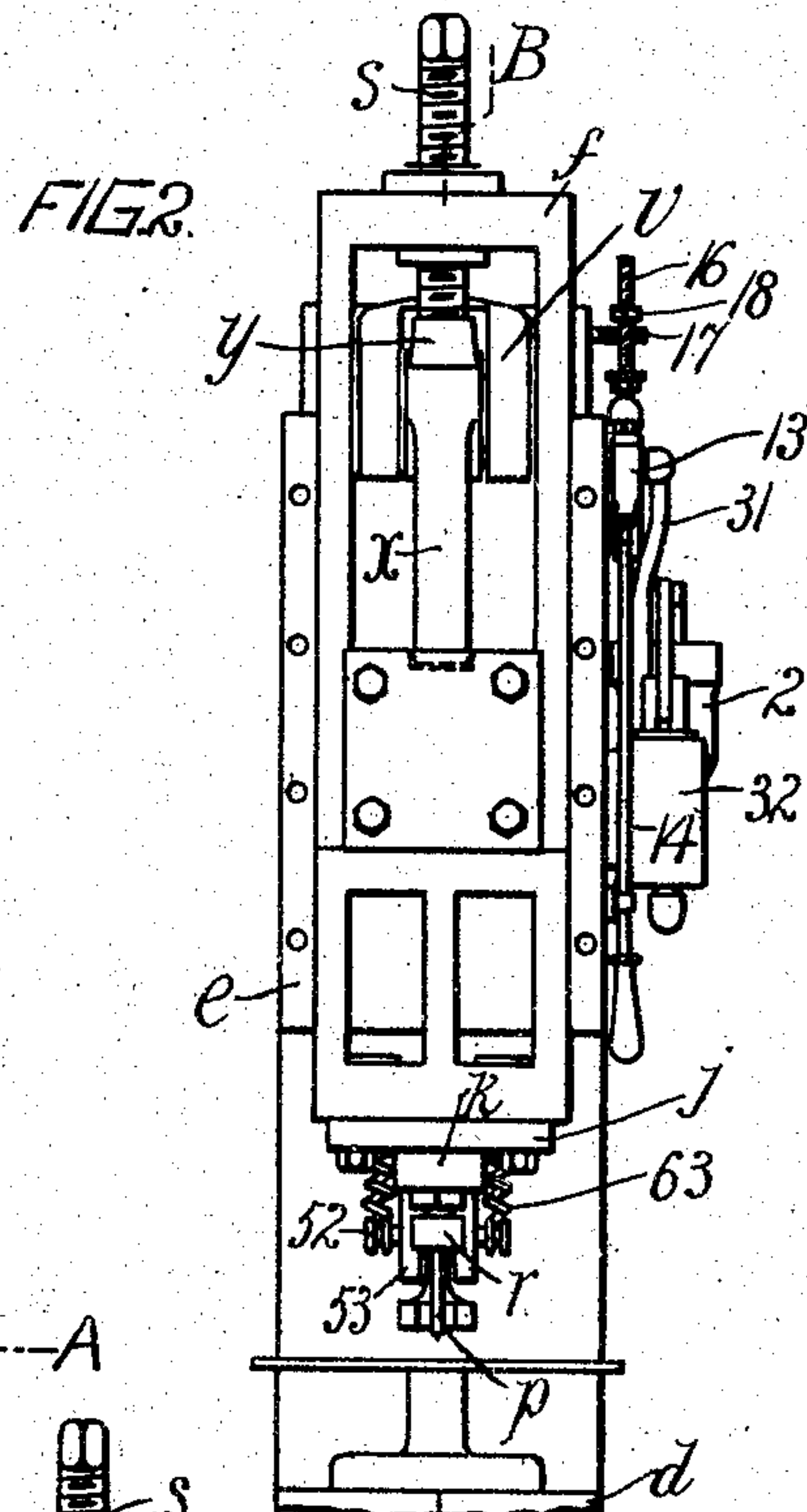
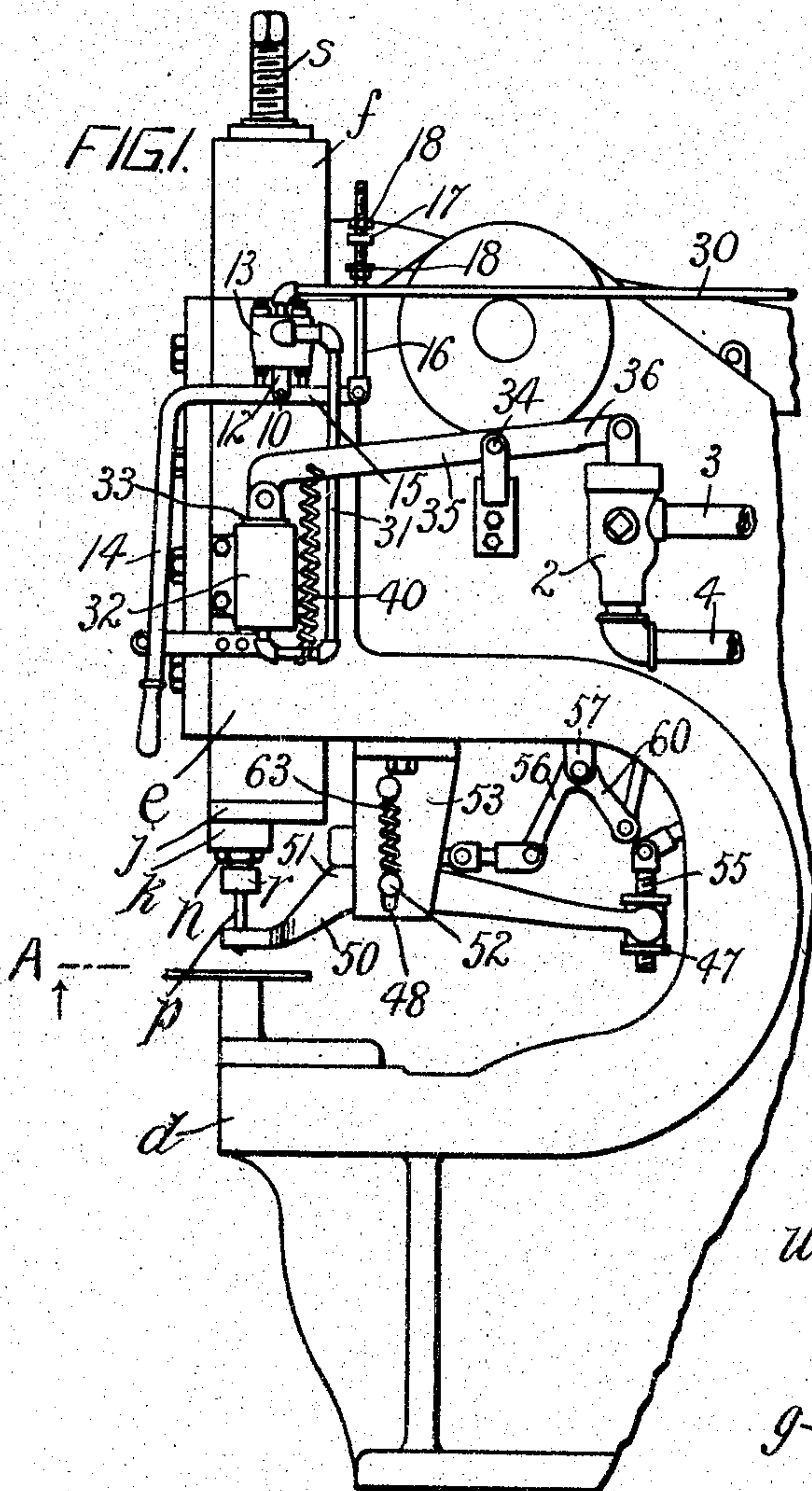


No. 787,052.

PATENTED APR. 11, 1905.

W. ROSS.  
PUNCH.

APPLICATION FILED JUNE 19, 1903.



Witnesses  
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# UNITED STATES PATENT OFFICE.

WILLIAM ROSS, OF MONTREAL, CANADA.

## PUNCH.

SPECIFICATION forming part of Letters Patent No. 787,052, dated April 11, 1905.

Application filed June 19, 1903. Serial No. 162,288.

*To all whom it may concern:*

Be it known that I, WILLIAM ROSS, of the city of Montreal, Province of Quebec, Canada, have invented certain new and useful Improvements in Punches; and I do hereby declare that the following is a full, clear, and exact description of the same.

This invention relates particularly to power-punches for use in punching heavy ware; and it has for its object to enable a punching-tool of any length to be used, the stroke of the punch to be varied, and to improve the means for stripping the work being punched from the tool.

The invention consists of the following features: A variable connection between the tool-carrier and its actuating part, means for automatically locking a stripper in a position to hold the work upon the work-support while the tool is being withdrawn therefrom, said locking device releasing the stripper and allowing it to automatically assume its normal position after the tool is completely withdrawn.

For full comprehension, however, of my invention reference must be had to the accompanying drawings, forming a part of this specification, in which like symbols indicate the same parts, and wherein—

Figure 1 is a side elevation of a power-punch constructed according to my invention. Fig. 2 is a front elevation with the face-plate removed. Fig. 3 is a horizontal sectional view taken on line A A, Fig. 1, and illustrating particularly the combined work retainer and stripper; and Fig. 4 is a longitudinal vertical sectional view taken on line B B, Fig. 2.

The frame of my improved punch comprises a work-supporting portion *d* and a guiding-head *e* for the reciprocating tool-carrier. The reciprocal tool-carrier slides in the guiding-head *e* and consists of an open rectangular frame *f*, having the lower end of its opening contracted to form a receptacle *g* for a bearing-block *h* and a series of fillers *i* between the bearing-block and the bottom of the opening in the frame. A plate *j*, having a downwardly-projecting interiorly-threaded short sleeve *k*, is bolted to the under side of the lower end of the carrier-frame, and a bolt *l*, with a head *m* and its end screw-threaded,

is inserted head foremost into the short sleeve *k*, while a perforated screw-threaded plug *n*, with a hexagonal head, is fitted over the bolt and screwed into the sleeve, thereby holding said bolt against displacement. The tool *p*, which may be of any length and is formed as usual with a head *q*, is held rigidly upon the end of this bolt by a perforated interiorly screw-threaded cap *r*, fitted over the tool and screwed upon the end of the bolt. The upper end of the frame is formed with a tapped opening in which a screw-bolt *s* is threaded and through which it projects downwardly toward the bearing-block *h*. This carrier-frame is caused to reciprocate in its guiding-head by a lever *t*, fulcrumed, as at *u*, to the frame of the machine and having one end in the form of a fork *v*, between the prongs of which a wrist-pin *w* is rigidly carried. A pitman-bar *x* is pivoted between its ends upon the wrist-pin, and the upper end thereof has a block *y* resting slidably thereon and formed with a socket which receives the lower end of the screw-bolt *s*, while the lower end of this pitman-bar is formed to roll in a socket in the top of the bearing-block *h*. When the working tool is being set in place, the filler-blocks are removed, thus allowing the carrier-frame to be raised independent of the pitman-bar until the working end of the tool is, when the machine is at rest, at its proper distance from the work-support. Sufficient fillers are then inserted to make the block *h* bear tightly upon the lower end of the pitman-bar, and the screw-bolt is then screwed down until it bears tightly, through its socket, upon the top of the pitman-bar. A variable rigid connection is thereby provided between the lever end and the punching-tool. The opposite end of the lever is operatively connected to any suitable power device or motor (not shown) for reciprocating it. The motor I prefer to use is of the type disclosed in an application filed by me March 28, 1903, under Serial No. 150,081.

The work is stripped from the punching-tool by a variable stripper, which is normally in a position above the working end of the tool when the machine is at rest, said stripper consisting of a forked lever *50*, having a



rise 51 midway of its length upon its upper side. This lever has laterally-projecting pins 52, guided in slots 48 in a hanging bracket 53, bolted to the machine-frame and formed to present a shoulder 54 a short distance above the lever, the latter being fulcrumed at its rear end to a swinging screw-threaded bolt 55 by a flanged tapped collar 47, threaded upon the bolt. A bell-crank lever 56, fulcrumed to a lug 57 upon the machine-frame, has a wedge 58 pivotally connected to the end of one arm thereof and adapted to be drawn between the upper side of the stripper and the shoulder 54, while a yielding link is pivotally connected at its lower end to the arm 60 of the bell-crank lever, and the other end thereof extends upwardly and is pivotally connected to one end of a lever-arm 61, fulcrumed at its opposite end to the frame of the machine, while a link 62 connects the swinging end of this lever-arm to the main operating-lever. When the lever is depressed, the wedge is drawn into place and jams the stripper down tightly upon the work being punched, and when the lever rises the wedge is forced out, thus releasing the stripper and allowing a pair of retractile helical springs 63, connected at one end to the machine-frame and at their other ends to the lateral pin projections upon the stripper.

It will be seen that in action the pitman-bar  $x$  is to all intents and purposes a part of the lever end which carries it, while the block  $h$  constitutes a bearing member, and the block  $y$  and screw  $s$  constitute an adjustable bearing member, while the series of fillers  $z$  form an integer in action, by means of which elements the lever imparts variable reciprocal movement to the tool-carrier.

What I claim is as follows:

1. In a metal-punching machine, the combination with a punching-tool, means for actuating same, the frame of the machine and a work-support in line with said punching-tool, of a lever, means pivotally connecting one end of said lever to the frame of the machine, the opposite end of said lever being located adjacent to said tool and adapted to act as a stripper, a suitably-supported bracket having said lever slidably connected thereto and presenting a shoulder above and in close proximity to said lever said bracket being adapted to guide the lever in its movement, a wedge adapted to be inserted between said shoulder and said lever, means actuated in unison with said punching-tool for inserting said wedge when the tool is descending and withdrawing said wedge when the tool rises, and means yieldingly supporting said lever, for the purpose set forth.

2. In a metal-punching machine, the combination with a punching-tool, means for actuating same the frame of the machine and a work-support in line with said punching-tool, of a lever, means pivotally connecting one

end of said lever to the frame of the machine, the opposite end of said lever being located adjacent to said tool and adapted to act as a stripper, a suitably-supported bracket having said lever slidably connected thereto and presenting a shoulder above and in close proximity to said lever, a wedge adapted to be inserted between said shoulder and said lever, means actuated in unison with said punching-tool for inserting said wedge when the tool is descending and withdrawing said wedge when the tool rises, and means yieldingly supporting said lever, for the purpose set forth.

3. In a metal-punching machine, the combination with a punching-tool, means for actuating same, the frame of the machine and a work-support in line with said punching-tool, of a lever, adjustable means pivotally connecting one end of said lever to the frame of the machine, the opposite end of said lever being located adjacent to said tool and adapted to act as a stripper, a suitably-supported bracket having said lever slidably connected thereto and presenting a shoulder above and in close proximity to said lever, a wedge adapted to be inserted between said shoulder and said lever, means actuated in unison with said punching-tool for inserting said wedge when the tool is descending and withdrawing said wedge when the tool rises, and means yieldingly supporting said lever, for the purpose set forth.

4. The combination with a reciprocating tool and a frame for carrying same, of a lever having one end projecting into close proximity to the tool and formed to act as a stripper, means retaining the stripper end of said lever temporarily against movement with the tool and adjustable means pivotally connecting the opposite end of said lever to the frame.

5. The combination with a reciprocating tool and a frame for carrying same, of a lever having one end projecting into close proximity to the tool and formed to act as a stripper, means retaining the stripper end of said lever temporarily against movement with the tool, a bolt pivotally connected to the frame adjacent to the opposite end of said lever, a part adjustable along said bolt and a pivotal connection between said part and the last-mentioned end of the lever.

6. The combination with a reciprocating tool and a frame for carrying same, of a lever having one end projecting into close proximity to the tool and formed to act as a stripper, a bracket carried by the frame and located between the ends of said lever, a lateral projection upon said lever projecting through a slot in said bracket, a retractile helical spring connected at one end to said bracket and at its opposite end to the said lateral projection upon the lever, said bracket being formed with a shoulder above said lever, a wedge having a shoulder formed upon its up-



per side and adapted to be inserted between the lever and the shoulder upon the bracket, means actuated in unison with said reciprocating tool for drawing the shoulder upon the wedge into engagement with the shoulder upon the bracket when the tool is descending and separating said parts when the tool rises, and means pivotally connecting the opposite end of said lever to the frame of the machine.

7. The combination with a reciprocating tool and a frame for carrying same, of a lever having one end projecting into close proximity to the tool and formed to act as a stripper, a bracket carried by the frame and located between the ends of said lever, a lateral projection upon said lever projecting through a slot in said bracket, a retractile helical spring connected at one end to said bracket and at its opposite end to the said lateral projection upon the lever, said bracket being formed with a shoulder above said lever, a wedge having a shoulder formed upon its upper side and adapted to be inserted between the lever and the shoulder upon the bracket, means actuated in unison with said reciprocating tool for drawing the shoulder on the wedge into engagement with the shoulder on the bracket when the tool is descending and separating said parts when the tool rises, and adjustable means pivotally connecting the opposite end of said lever to the frame of the machine.

8. The combination with a reciprocating tool and a frame for carrying same, of a lever having one end projecting into close proximity to the tool and formed to act as a stripper, a bracket carried by the frame and located between the ends of said lever, a lateral projection upon said lever projecting through a slot in said bracket, a retractile helical spring connected at one end to said bracket and at its opposite end to the said lateral projection upon the lever, said bracket being formed with a shoulder above said lever, a wedge having a shoulder formed upon its upper side and adapted to be inserted between the lever and the shoulder upon the bracket, means actuated in unison with said reciprocating tool for drawing the shoulder upon the wedge into engagement

with the shoulder upon the bracket when the tool is descending and separating said parts when the tool rises, and adjustable means pivotally connecting the opposite end of said lever to the frame of the machine, said adjustable means consisting of a screw-threaded bolt pivotally connected to the frame of the machine near the opposite end of the lever, an interiorly-screw-threaded sleeve screwed upon said bolt and having a pair of circumferential flanges thereon, and the last-mentioned end of the lever being forked and straddling said sleeve between the flanges.

9. In a metal-punching machine, the combination with the frame thereof having a vertical guideway therein, a work-support beneath said guideway, a tool-carrier movable within said guideway, a tool carried by the lower end thereof, a lever fulcrumed to said frame and operatively connected at one end to said tool-carrier, of a bracket secured to said frame adjacent to said guideway and presenting a shoulder, a lever slidably connected at a point between its ends to said bracket below and adjacent to said shoulder and having one end forked and extended to straddle said punching-tool and its other end pivotally connected to a stationary part of the frame, means yieldingly supporting said lever, a wedge adapted to be inserted between said shoulder and lever, a bell-crank lever fulcrumed to a stationary part of the frame, and having one arm pivotally connected to said wedge and its other arm projecting horizontally, a yielding link-rod connected at its lower end to said last-mentioned arm of the bell-crank lever and extending upwardly through the frame of the machine, a lever-arm fulcrumed at one end to the frame of the machine and pivotally connected at its other end to the upper end of said link, and a link operatively connecting said last-mentioned lever to said main lever, for the purpose set forth.

In testimony whereof I have affixed my signature in presence of two witnesses.

WILLIAM ROSS.

Witnesses:

WILLIAM P. McFEAT,  
FRED. J. SEARS.