No. 835,998. PATENTED NOV. 13, 1906.

A. WILZIN.

PUNCHING, STAMPING, AND LIKE MACHINE.

APPLICATION FILED FEB. 25, 1905.

2 SHEETS—SHEET 1.

Fig. 1.

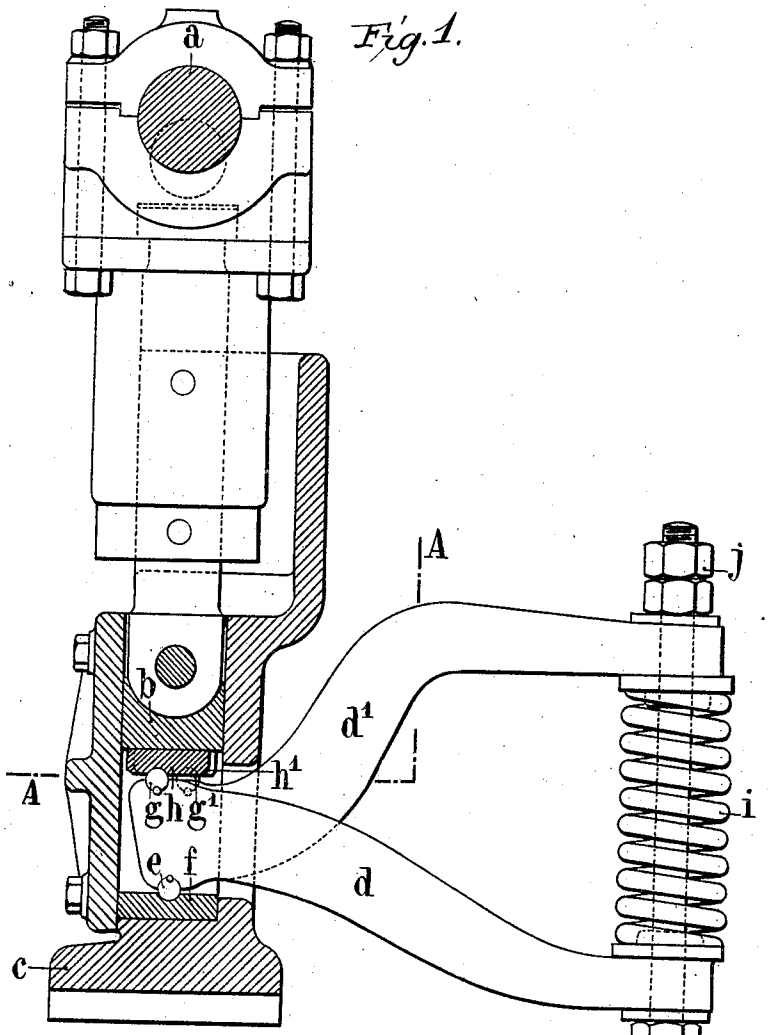
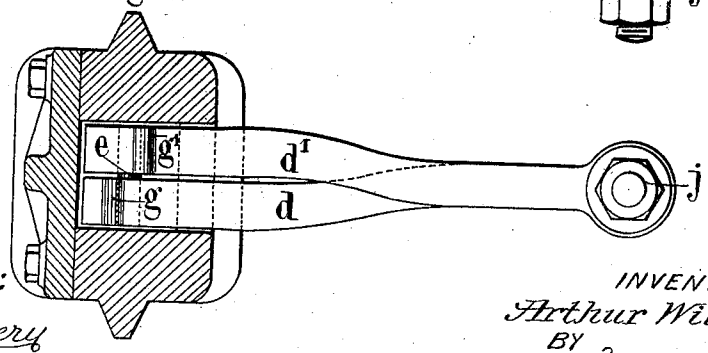


Fig. 2.



WITNESSES:

W. M. Avery

Walton Harrison

INVENTOR

Arthur Wilzin

BY

Munn & Co

ATTORNEYS

THE NORRIS PETERS CO., WASHINGTON, D. C.

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2 SHEETS—SHEET 2.

Fig. 3.

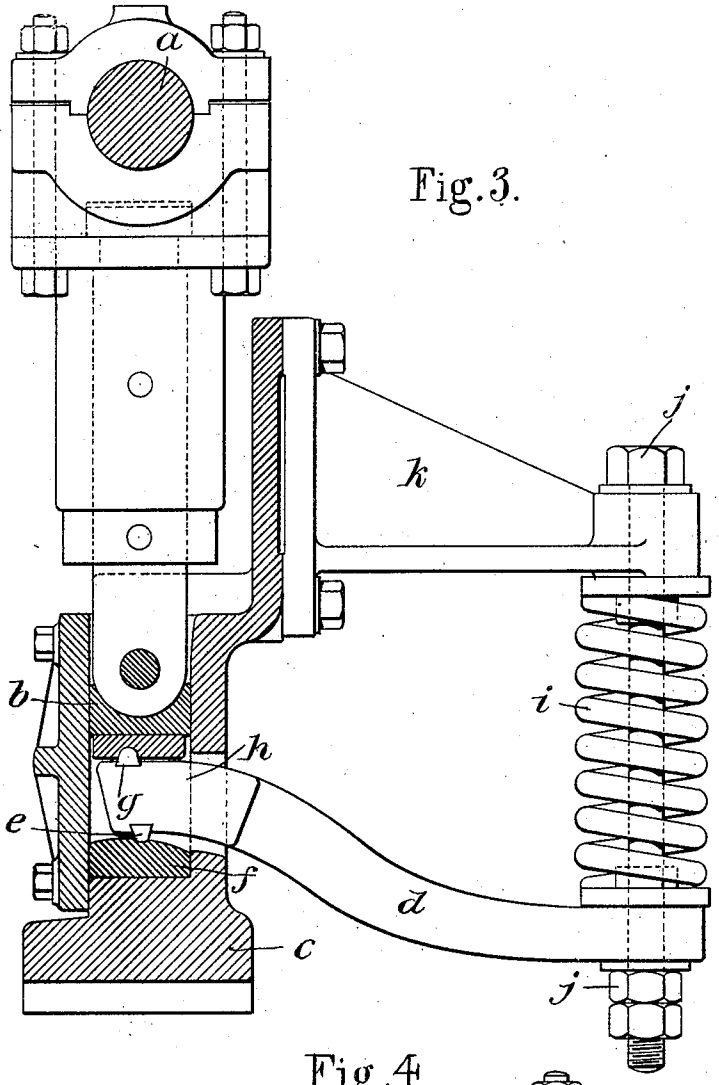
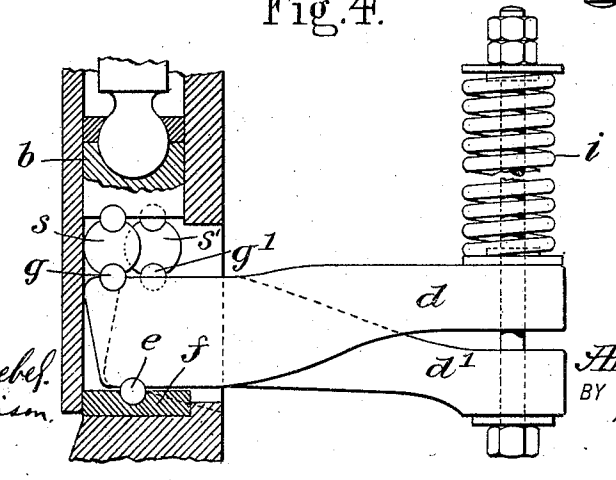


Fig. 4.



WITNESSES

William P. Goebel.

Walton Harrison.

INVENTOR

Arthur Wilzin

BY Munn & Co

ATTORNEYS

THE NORRIS PETERS CO., WASHINGTON, D. C

UNITED STATES PATENT OFFICE.

ARTHUR WILZIN, OF CLICHY, FRANCE, ASSIGNOR TO E. W. BLISS COMPANY, A CORPORATION OF WEST VIRGINIA.

PUNCHING, STAMPING, AND LIKE MACHINE.

No. 835,998. Specification of Letters Patent. Patented Nov. 13, 1906.

Application filed February 25, 1905. Serial No. 247,283.

To all whom it may concern:

Be it known that I, ARTHUR WILZIN, engineer, of 4 Rue Huntziger, Clichy, Seine, Republic of France, have invented Improvements in Punching, Stamping, and Like Machines, of which the following is a full, clear, and exact description.

This invention has for its object to provide a press for punching, stamping, and the like with improved means whereby in the event of the tool meeting with resistance which it is unable to overcome such damage to the machine and its appurtenances as would otherwise result may be avoided.

The main object of this invention is to so construct the devices used for the above purpose as to permit of their introduction into presses already in use or permit of their application to the usual styles of machines without calling for radical modification in their general appearance and proportions.

In order to realize this object, I preferably use in the press-slide itself one or several levers whose pivotal axes are situated directly in the plane in which the power is transmitted to the tool, the shorter arm being so arranged as to constantly receive the pressure transmitted, while the longer arm is subjected to the action of a spring whose tension is such that it will yield only when the pressure on the shorter arm exceeds a predetermined amount. The spring may either abut against a bracket fixed to the machine or against a second lever so arranged as to act in an inverse sense to the first.

Reference is to be had to the accompanying drawings, wherein—

Figure 1 is a view, partly in elevation and partly in section, of a portion of a machine provided with what may be termed the "two-lever" form of the invention, Fig. 2 being a horizontal cross-section thereof through line A A, Fig. 1. Fig. 3 is a similar view to Fig. 1, showing a machine provided with the single-lever form of the device. Fig. 4 shows a modification of certain constructive details.

In all the drawings similar letters of reference indicate like parts.

The machine represented in the drawings is a punching-machine of known construction; but the invention may be applied with equal advantage to any other type of machine wherein the length of stroke of a tool actuated by mechanical driving mechanism toward or from the work is invariable.

The drawings only show the movable portion of the machine—*i. e.*, the ram, punch, or equivalent part—to which an eccentric or crank-shaft *a* communicates to-and-fro movement, usually in a vertical plane.

In Figs. 1 and 3 the device of my invention is shown as interposed between the block *b* on the end of the ram and the tool-holder *c* and consists of a pair of levers *d d'* of the first and second orders, respectively, both capable of angular movement (but in opposite directions) about a roller *e*, which itself is adapted to rotate upon a hardened-steel plate *f*. The effort of the machine is transmitted to the levers through blocks *h h'* and through rollers *g g'*, whose positions determine the length of the shorter arms of the levers. In order to permit of the small displacement of the rollers *g g'* consequent on the angular movement of the levers about the point *e*, the blocks *h h'* are free to slide upon the under surface of the block *b*. These sliding blocks may, however, be replaced by rocking pieces *s s'*, as shown in Fig. 4. *i* is the spring confined between the two longer arms of the levers *d d'*. The tension of the spring may be regulated by nuts *j*.

It will be readily understood that so long as the tool does not meet with excessive resistance the spring *i* will hold the levers apart, as shown in the drawings, and the power will be normally transmitted to the tool. If, however, the tool encounters resistance in excess of the power of the machine, the continued motion of the eccentric or crank tending to force the ram down will be transmitted to the shorter arms of the levers, thus compelling the longer arms to approach one another in opposition to the stress of the spring *i*, which will be compressed, and when the ram has arrived at the end of its stroke and rises will reassert itself and restore the levers to their normal positions.

The object of the invention may, however, be accomplished by means of a single lever, in which case the spring *i* is so arranged as to abut, as shown in Fig. 3, against a bracket *k*, attached to the ram and movable therewith, the construction being otherwise practically identical with that above described.

The device of my invention may be easily

applied to existing machines, as only slight modifications of the movable portions are necessary. Hence as compared with well-known systems designed to achieve a similar result my invention offers the great advantage of requiring no material alteration in the construction of the machine.

It is possible also to employ the same elements and to interpose the device between the matrix and the bed-plate of the machine or, speaking generally, between two points serving to transmit power to the tool or receiving the action of the tool.

Fig. 4 shows certain modification in constructive details which it will be useful to apply in some cases, but which alter nothing essential in the general idea.

The invention may be applied to machines of all types irrespective of the method of driving the same, an advantage not possessed by the numerous devices of the kind hitherto proposed. As an example, Fig. 4 shows the invention applied to a machine actuated by an eccentric *l* and toggle-gear *m*. In this instance, however, the device might equally well be applied as an abutment in the slide *k* as in the tool-carrier.

I claim—

1. In a machine for punching, shearing or the like, the combination of a pair of members normally occupying definite positions relatively to each other, a lever connected with both of said members and normally stationary in relation thereto but free to turn angularly when subjected to excessive pressure therebetween, a spring for normally holding said lever in a predetermined position, and means for adjusting the tension of said spring.

2. In a machine for punching, shearing or the like, the combination of a sliding block disposed within a plane in which the power is transmitted to the tool, levers each having one extremity situated directly beneath said block and bearing at that extremity upon a projection or pin constituting the axis of oscillation, and provided with another portion bearing upon a second projection or pin corresponding to the point of application of the power, and a spring engaging the other extremity of said lever.

The foregoing specification of my improvements in punching, stamping, and like machines signed by me this 6th day of February, 1905.

ARTHUR WILZIN.

Witnesses:
HANSON C. COXE,
MAURICE H. PIGNET.