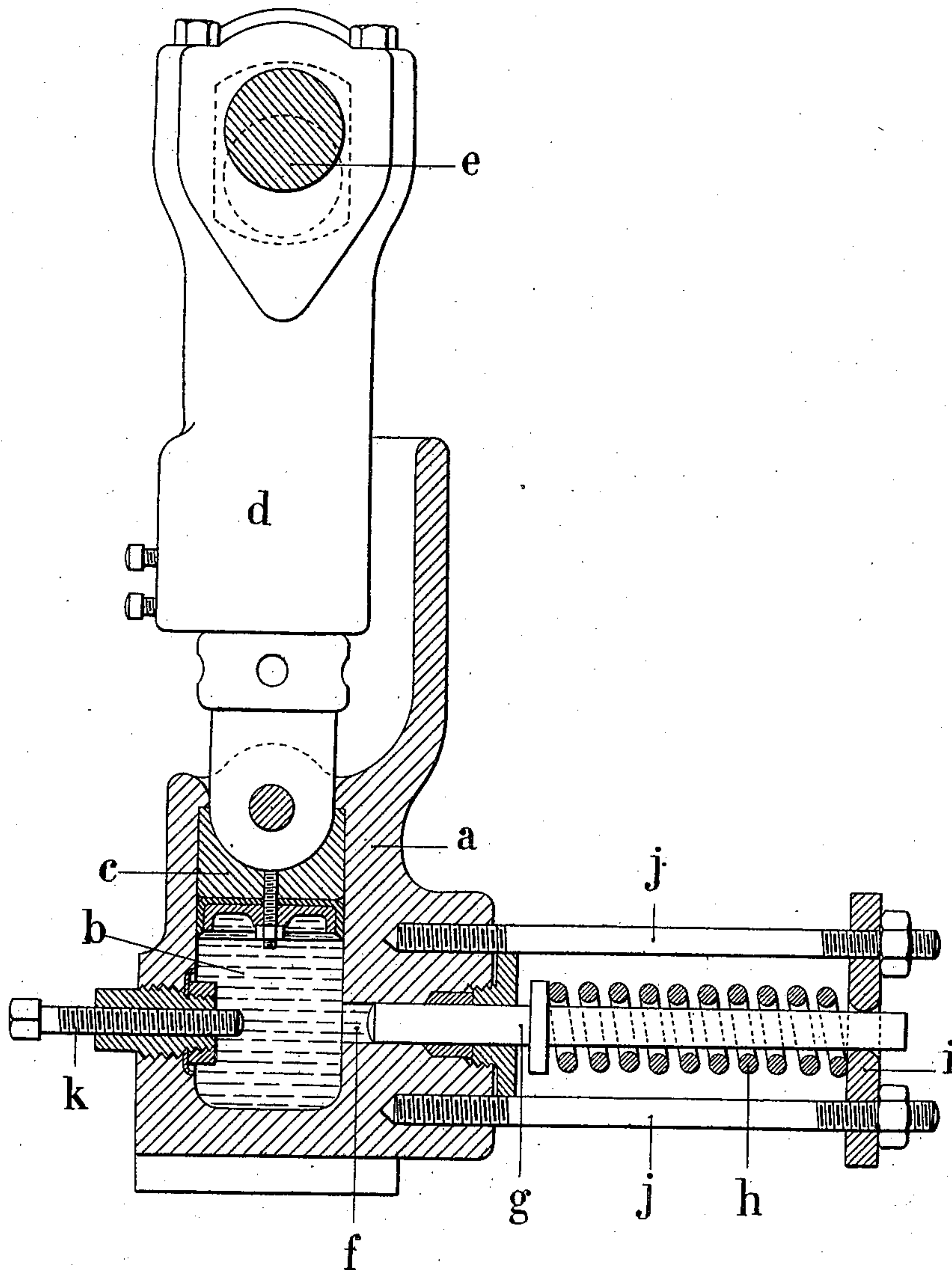


903,424.

A. WILZIN.
PRESSURE LIMITING DEVICE.
APPLICATION FILED FEB. 21, 1907.

Patented Nov. 10, 1908.
2 SHEETS—SHEET 1.

FIG. 1.



WITNESSES:

Ired White
Rene Muine

INVENTOR:

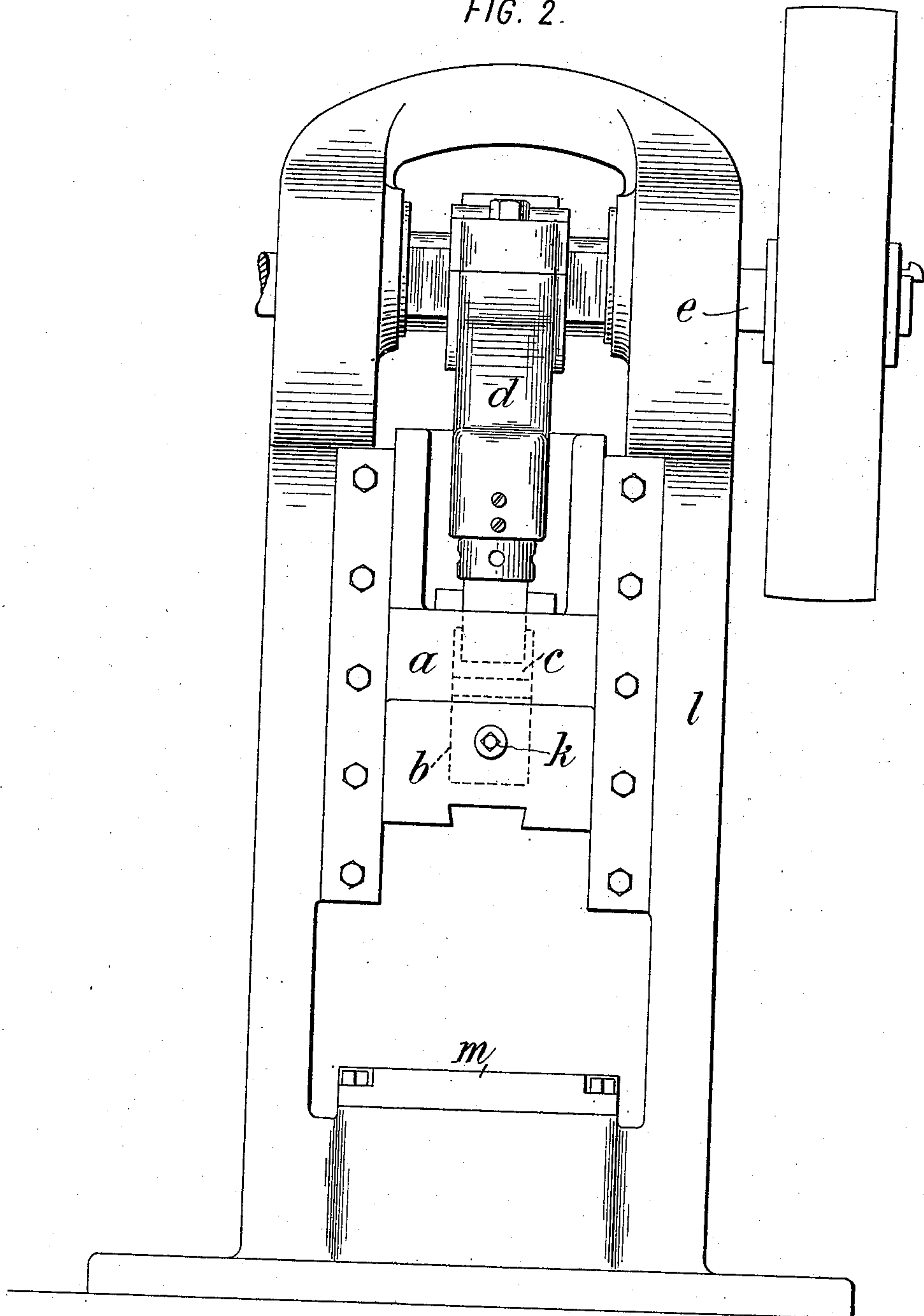
Arthur Wilzin,
By Attorneys,
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2 SHEETS—SHEET 2.

FIG. 2.



WITNESSES:
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UNITED STATES PATENT OFFICE.

ARTHUR WILZIN, OF CLICHY, FRANCE, ASSIGNOR TO E. W. BLISS CO., OF BROOKLYN, NEW YORK.

PRESSURE-LIMITING DEVICE.

No. 903,424.

Specification of Letters Patent.

Patented Nov. 10, 1908.

Application filed February 21, 1907. Serial No. 358,653.

To all whom it may concern:

Be it known that I, ARTHUR WILZIN, of 4 Rue Huntziger, in the city of Clichy, Seine, in the Republic of France, engineer, have invented a Pressure-Limiting Device, of which the following is a full, clear, and exact description.

This invention relates to a pressure-limiting device adapted to be applied to all kinds of presses whereby to prevent the pressure from attaining such value as to be hurtful to the tool, break the machine or the parts thereof.

The aforesaid device is constituted by the interposition in the line of action of the force exerted by the machine, of a piston bearing upon a liquid which completely fills an inclosed chamber and by a safety piston which also bears upon said liquid and is controlled by a spring whose tension is regulated to yield at the moment the pressure reaches a critical value. This hydraulic pressure-limiting device may be situated on the slide of the machine or beneath the matrix thereof.

The accompanying drawing shows by way of example the application of the invention to the slide of any form of press; Figure 1 being a side elevation of the pitman with the pressure-limiting device in section, and Fig. 2 being a face elevation of the complete press.

The slide *a* is formed with a completely inclosed chamber *b* at the upper part of which a piston *c* is placed to which is pivoted the connecting rod *d* operated in the ordinary manner by a crank-shaft *e*, said piston *c* bearing at its outer face upon the liquid, either water, oil, glycerin or the like, which completely fills said chamber *b*.

A passage *f* opening into said chamber *b* contains a plunger *g* controlled by a spring *h* which abuts against a plate *i* adjustably mounted upon tie-rods *j* projecting from the slide *a*.

The tension of the spring *h* is so regulated that the spring will only yield when the pressure transmitted by the piston *c* to slide *a* exceeds a predetermined value.

The slide travels upon V-guides on the upright frame *l* which at its upper end carries the shaft *e* and at its lower end the bed *m* upon which the matrix or lower tool is supported.

It will be observed that so long as the tool mounted in the jaws attached to the slide *a*

does not encounter resistance greater than a predetermined value the piston *c* transmits the power received directly to the slide owing to the incompressibility of the liquid. But if the tool becomes stopped during its travel by meeting with excessive resistance the piston *c* is nevertheless enabled to descend since the safety piston *g* is caused to withdraw from the passage *f* immediately the liquid exerts pressure upon it sufficient to overcome the tension of the spring *h*. In consequence of the difference in the cross sectional areas of the pistons *g* and *c* a spring may be employed whereof the tension may be much lower in comparison than the value of the predetermined limit of pressure.

Immediately the connecting rod *d* commences to rise the spring *h* expands and returns the plunger *g* to its initial position, said plunger driving back the liquid into chamber *b* and thus reestablishing the integrity of the slide *a* and the piston *c*.

In order to permit of easily adjusting the plunger *g* under pressure, the slide *a* is provided with a screw plunger *k* which when turned in one direction is advanced into the liquid, a portion of which being thereby displaced and being only able to pass into the channel *f* bears upon the plunger *g* and thus compresses the spring *h*. By this simple means it is made certain that the liquid contained in the chamber *b* is under pressure and completely fills said chamber.

As previously mentioned the aforesaid device may equally well be situated beneath the matrix of the machine.

This hydraulic pressure-absorbing device is of advantage in that it requires no lubrication and is capable of application to all kinds of presses, punching, stamping and embossing machines and the like now in use, regardless of the particular means employed for driving them; and is particularly useful in presses and similar machines having a long stroke and working upon sheet-metal or the like, whose differences in thickness though absolutely small, are relatively quite great, and must be provided for in order to avoid injury to the driving mechanism.

Claim:

In combination, a slide *a* having an inclosed chamber *b*, a piston *c* in the upper part of said chamber, a connecting rod *d* connected to said piston, a crank shaft *e* operating

said connecting rod, a plunger *g* entering said chamber, a spring *h* for pressing said plunger into said chamber with a yielding pressure, and a screw plunger *k* adapted to be advanced into or withdrawn from the chamber to compress the spring *h* or permit it to expand.

The foregoing specification of my pressure-limiting device, signed by me this eighth day of February 1907.

ARTHUR WILZIN.

Witnesses:

MAURICE H. PIGNET,
HANSON C. COXE.