

No. 696,821.

Patented Apr. 1, 1902.

C. HUBER.

APPARATUS FOR PRESSING, STAMPING, EMBOSsing, OR PRINTING FLAT SURFACES.

(Application filed Jan. 18, 1902.)

(No Model.)

2 Sheets—Sheet 1.

Fig. 1.

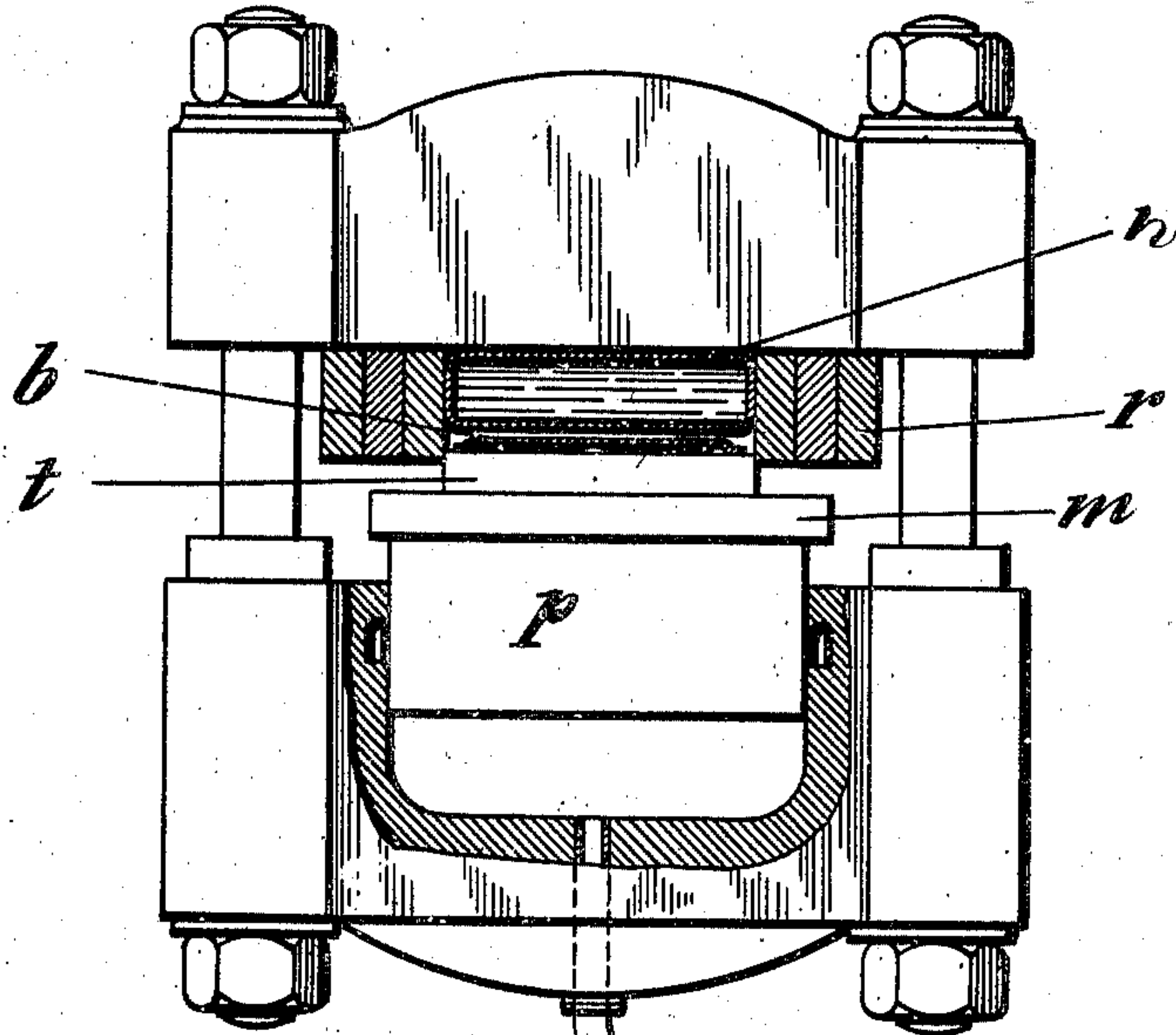
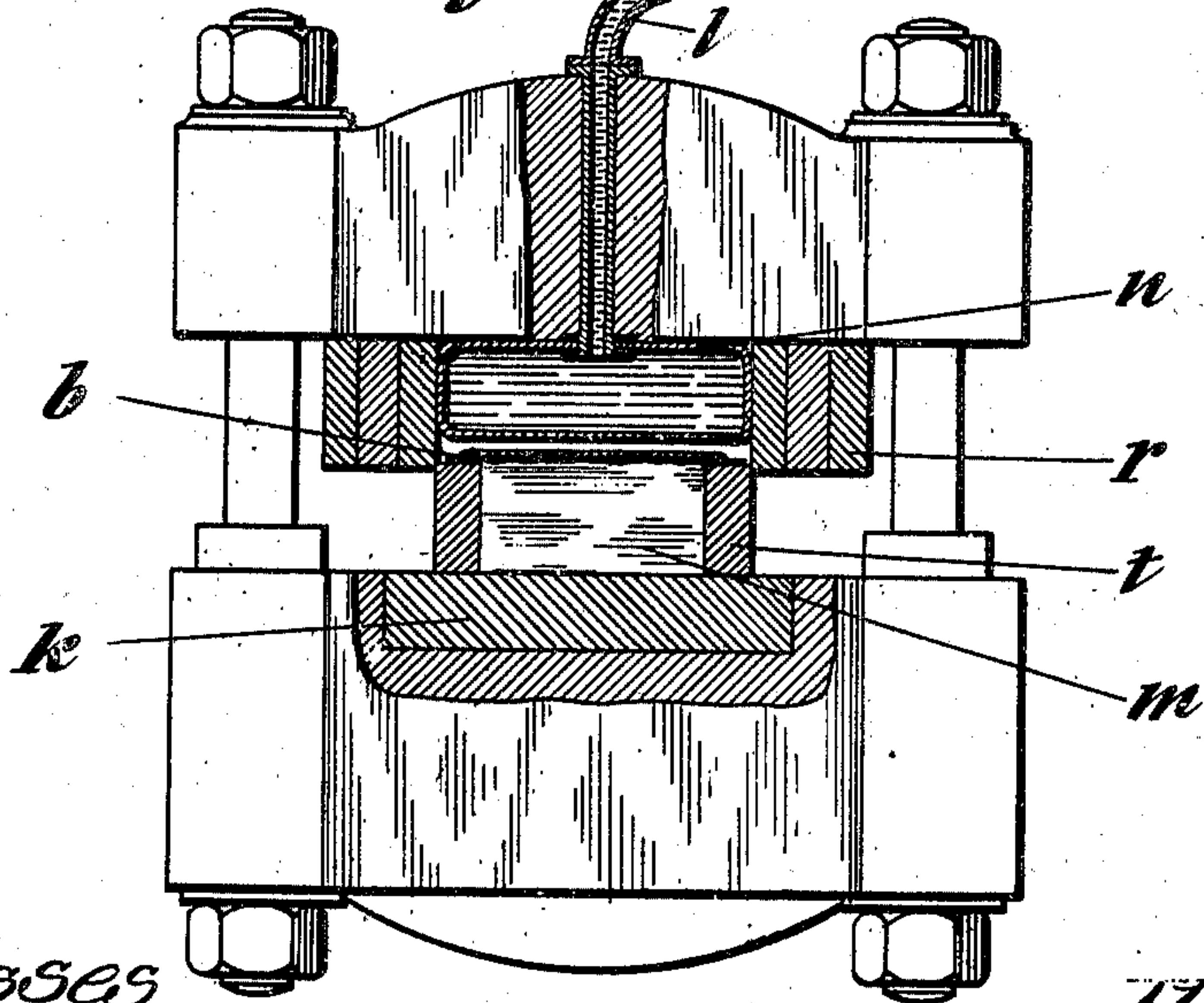


Fig. 2.



Witnesses
Bruce S. Elliott.
J. B. Keedy

Inventor
Carl Huber
By James L. Noritz
Att'y

No. 696,821.

Patented Apr. 1, 1902.

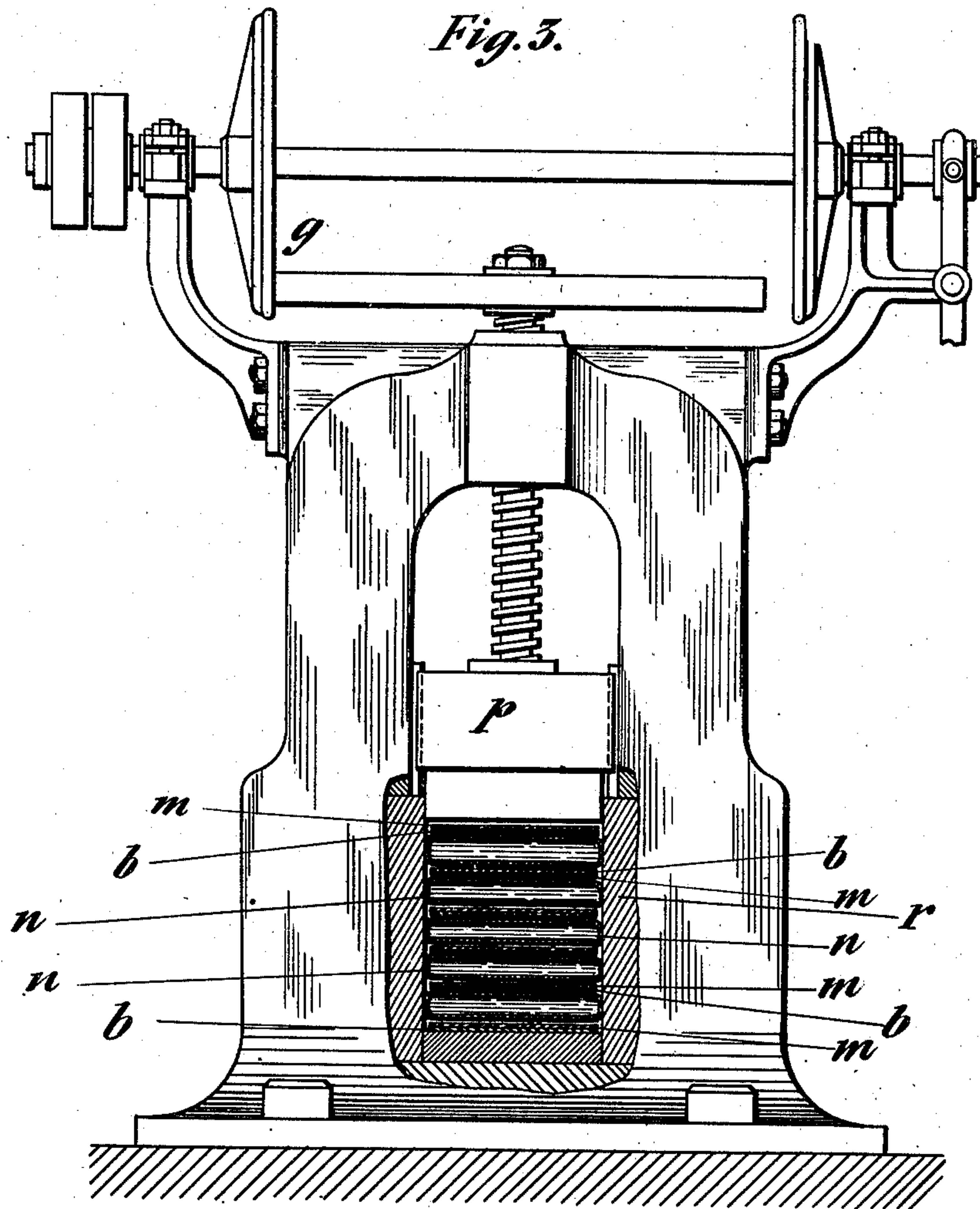
C. HUBER.

APPARATUS FOR PRESSING, STAMPING, EMBOSsing, OR PRINTING FLAT SURFACES.

(Application filed Jan. 18, 1902.)

(No Model.)

2 Sheets—Sheet 2.



Witnesses:
Bruce S. Elliott
J. B. Keefe

Inventor
Carl Huber
By James L. Romig
Atty.

UNITED STATES PATENT OFFICE.

CARL HUBER, OF CARLSRUHE, GERMANY, ASSIGNOR TO GESELLSCHAFT FÜR HUBERPRESSUNG GESELLSCHAFT MIT BESCHRÄNKTER HAFTUNG, OF CARLSRUHE, BADEN, GERMANY, A CORPORATION OF GERMANY.

APPARATUS FOR PRESSING, STAMPING, EMBOSSING, OR PRINTING FLAT SURFACES.

SPECIFICATION forming part of Letters Patent No. 696,821, dated April 1, 1902.

Original application filed February 4, 1901, Serial No. 45,932. Divided and this application filed January 18, 1902. Serial No. 90,341. (No model.)

To all whom it may concern:

Be it known that I, CARL HUBER, a citizen of Germany, residing at 38 Beiertheimer Allee, Carlsruhe, Baden, Germany, have invented a certain new and useful Apparatus for Pressing, Stamping, Embossing, or Printing Flat Surfaces, (for which application has been made for a patent in Germany, dated October 3, 1900; in Great Britain, dated November 26, 1900, No. 21,359, and in France, dated November 28, 1900, No. 294,160,) of which the following is specification.

This invention, which is a division of my application Serial No. 45,932, relates to apparatus for pressing, stamping, and embossing flat surfaces by means of which a sharply-defined design may be produced without injurious strain or deformation of the matrix and die.

The invention consists, essentially, in the use of a water-chamber having flexible walls extending continuously all around it, which is placed in a receptacle constructed to withstand high internal pressure. By virtue of the well-known property of liquids to transmit pressure equally in all directions, when such chamber is pressed upon a surface the water contents of the chamber produce a uniform pressure over the whole of the surface to be pressed.

The invention is particularly applicable for copper-plate printing, inasmuch as the plates are in no wise deformed, while in the usual method of printing by means of rollers the sharpest printing-lines are not obtainable.

In the accompanying drawings, Figures 1, 2, and 3 are different forms of a press constructed for operating according to this invention.

Fig. 1 shows a press in which the pressure is exerted by the hydraulic ram p , and the hermetically-closed water-chamber n , of flexible material, extending continuously all around it, serves as the bed-plate or abutment-surface. In this construction the water-chamber is placed in a receptacle r , built up of three rings, so as to withstand high internal pressure. The end piece t of the hydraulic

ram p , on which end piece the matrix or plate m rests, fits tightly into the mouth of the receptacle. The surface b to be embossed or the like lies on the matrix m .

Fig. 2 shows a press in which the pressure is exerted hydraulically in the water-chamber itself, which in this case plays the part of the ram or stamp. The water-chamber n , arranged in a receptacle r , as described with reference to Fig. 1, is provided with a pipe l , which communicates with a pump or the like for introducing water at high pressure into the chamber. The matrix m is carried in a carrier t , resting on a wedge k , which allows it to be raised or lowered. The operation consists in first bringing the matrix with the plate to be embossed resting on it into position under the water-chamber and then exerting the necessary pressure by pumping water into the chamber. It is obvious that the requisite pressure may also be exerted by means of a screw-press or an eccentric press instead of hydraulically. It is also obvious that more than one object may be pressed in this manner between water-chambers in the receptacle. Thus Fig. 3 shows a screw-press p , operating according to this invention, driven by friction-gear g . Here the arrangement is such that a number of flat surfaces b may be embossed by means of matrices m between a corresponding number of hermetically-closed flexible water-chambers n in a common container r .

The material of which the walls of the water-chamber is made may be of any kind suitable for the purpose, such as rubber or lead.

With regard particularly to the use of the invention in copper-plate printing it may be said that the uniform pressure exerted by means of the water-chamber on all parts of the plate presses the paper completely and uniformly into all the fine etchings on the plate.

I am aware that it has been proposed to use in printing a flexible diaphragm forced by fluid-pressure exerted behind it against the material to be printed upon when this is laid on the printing-surface. In such arrange-

ments, owing to the necessity of securing the edges of the flexible diaphragm to the rigid metal walls forming the chamber containing the liquid behind the diaphragm, no such high pressures, such as are necessary in particular when the apparatus is used for embossing metal surfaces, could be exerted without producing leakage at the joints, whereas by making the water-chamber with continuous closed walls extending all around and supporting these by strong rigid surfaces any desired amount of pressure can be exerted without producing leakage.

Having thus described the nature of this invention and the best means I know of carrying the same into practical effect, I claim—

1. Apparatus for pressing stamping embossing or printing flat surfaces comprising a water-chamber whose walls are formed of flexible material extending continuously all around, a strong receptacle confining said water-chamber so as to leave only the surface which is to exert pressure exposed, and means for bringing the surface to be impressed together with the surface for producing the impression thereon into forcible contact with the said exposed surface of the chamber, substantially as described.

2. Apparatus for pressing stamping embossing or printing flat surfaces comprising a water-chamber whose walls are formed of flexible material extending continuously all

around, a strong receptacle confining said chamber so as to leave only the surface which is to exert pressure exposed, and having its walls extended beyond such surface, a bed-plate carrying the surface to be impressed and the surface for producing the impression and adapted to fit within the projecting walls of the strong receptacle, and means for bringing the surface to be impressed into forcible contact with the exposed surface of the water-chamber substantially as described.

3. Apparatus for pressing stamping embossing or printing flat surfaces comprising a water-chamber whose walls are formed of flexible material extending continuously all around, a strong receptacle confining said chamber so as to leave only the surface which is to exert pressure exposed, means for forcing liquid under pressure into said chamber, and means for bringing the surface to be impressed together with the surface for producing the impression thereon into forcible contact with the said exposed surface of the chamber, substantially as described.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

CARL HUBER.

Witnesses:

JACOB ADRIAN,
H. W. HARRIS.