

No. 814,200.

PATENTED MAR. 6, 1906.

J. GIBSON.
PRESS FOR PUNCHING TUBING.
APPLICATION FILED JAN. 25, 1905.

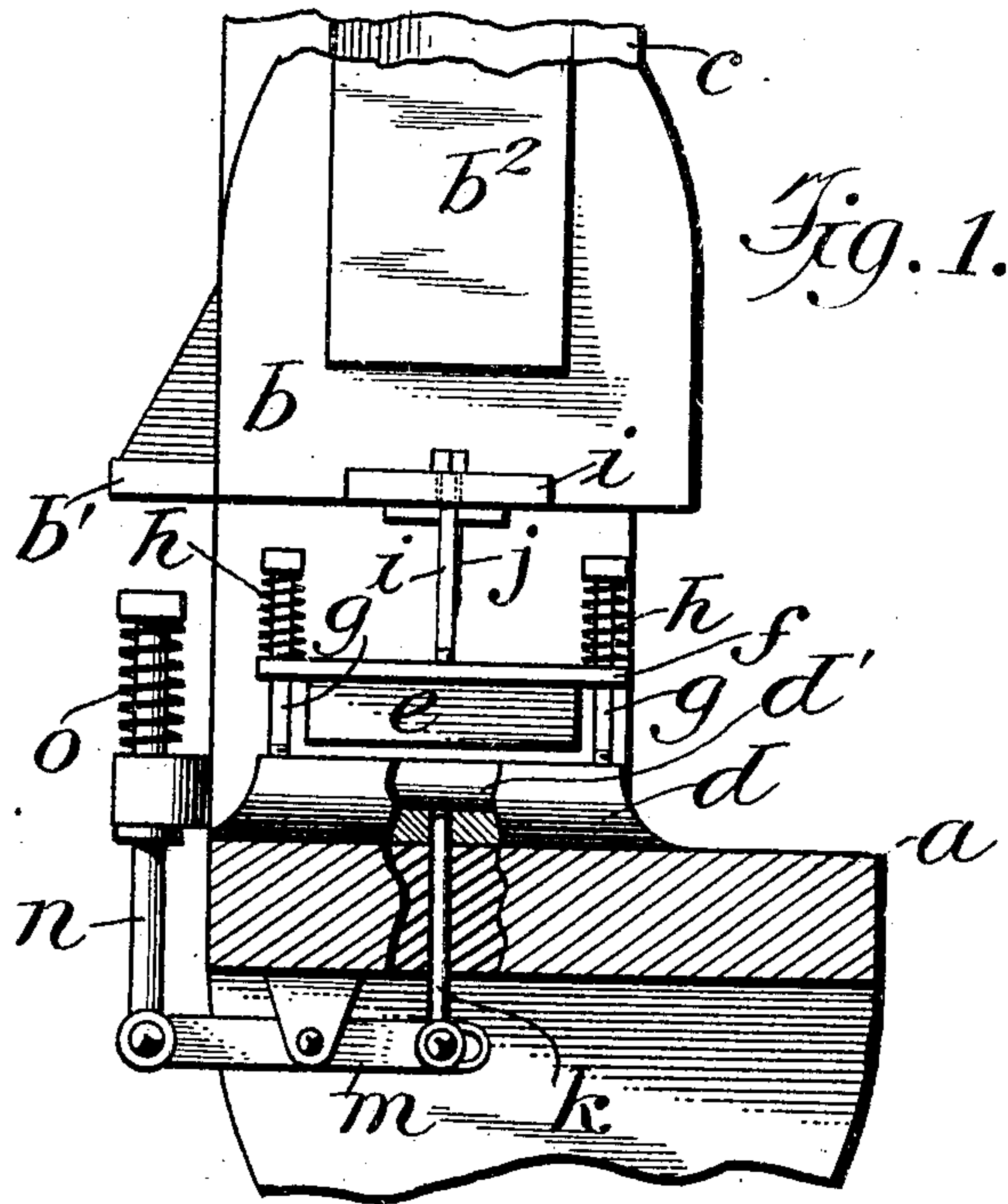


Fig. 1.

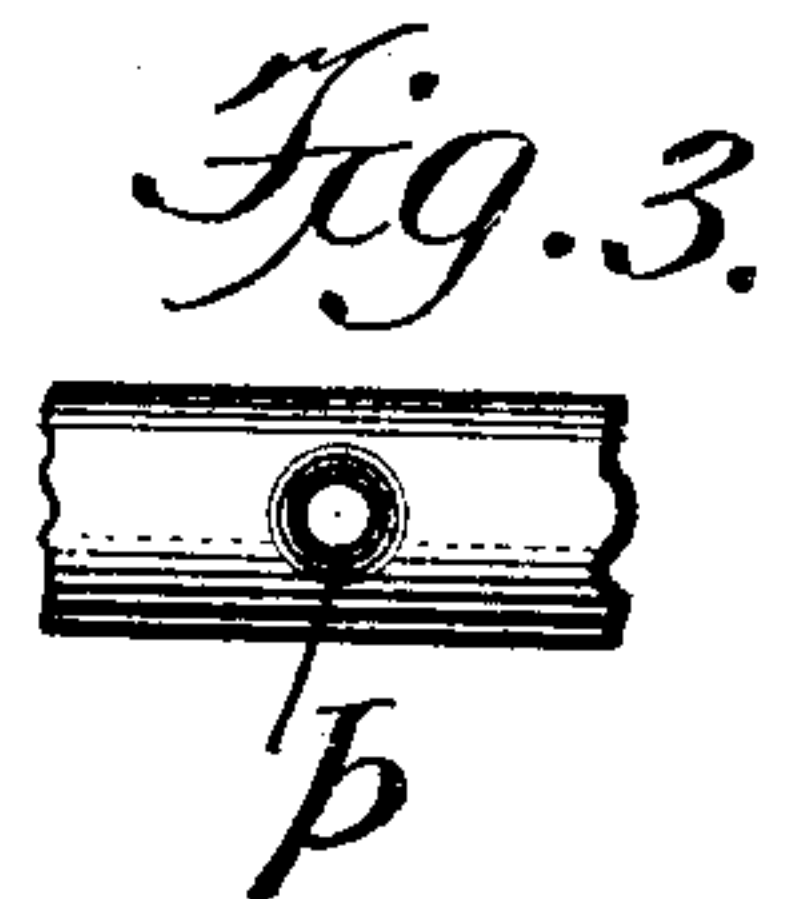


Fig. 3.

Fig. 2.

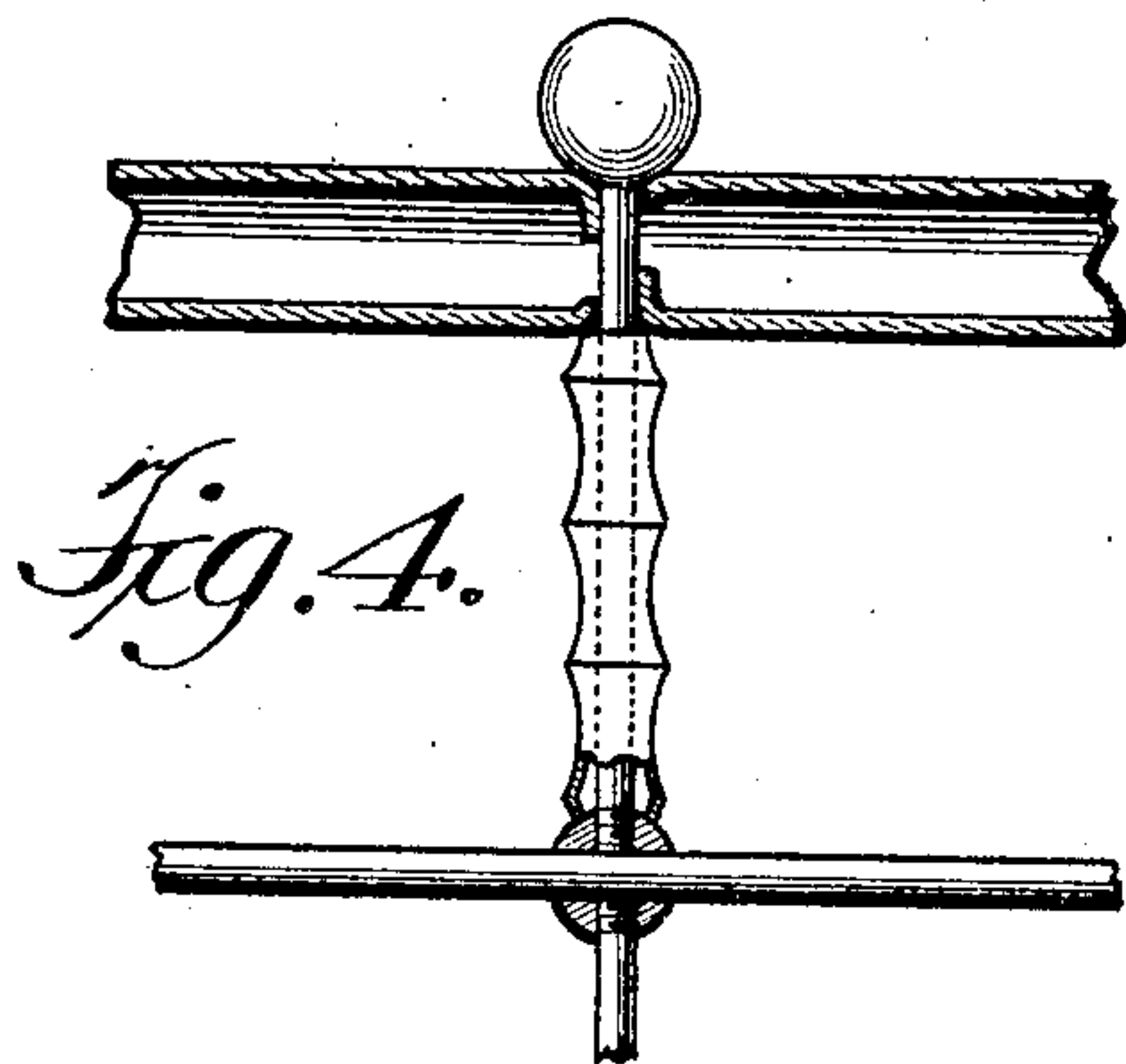
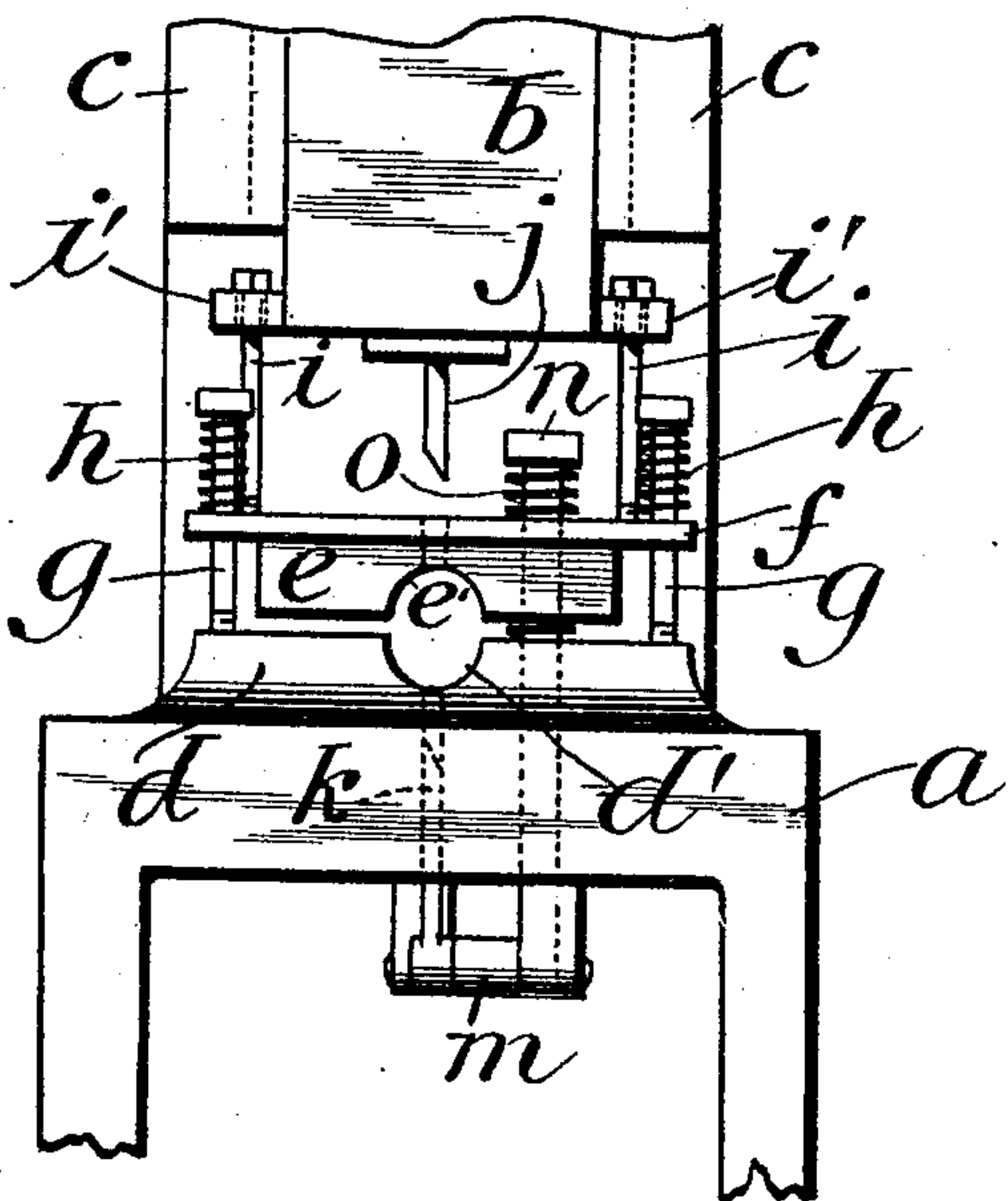


Fig. 4.

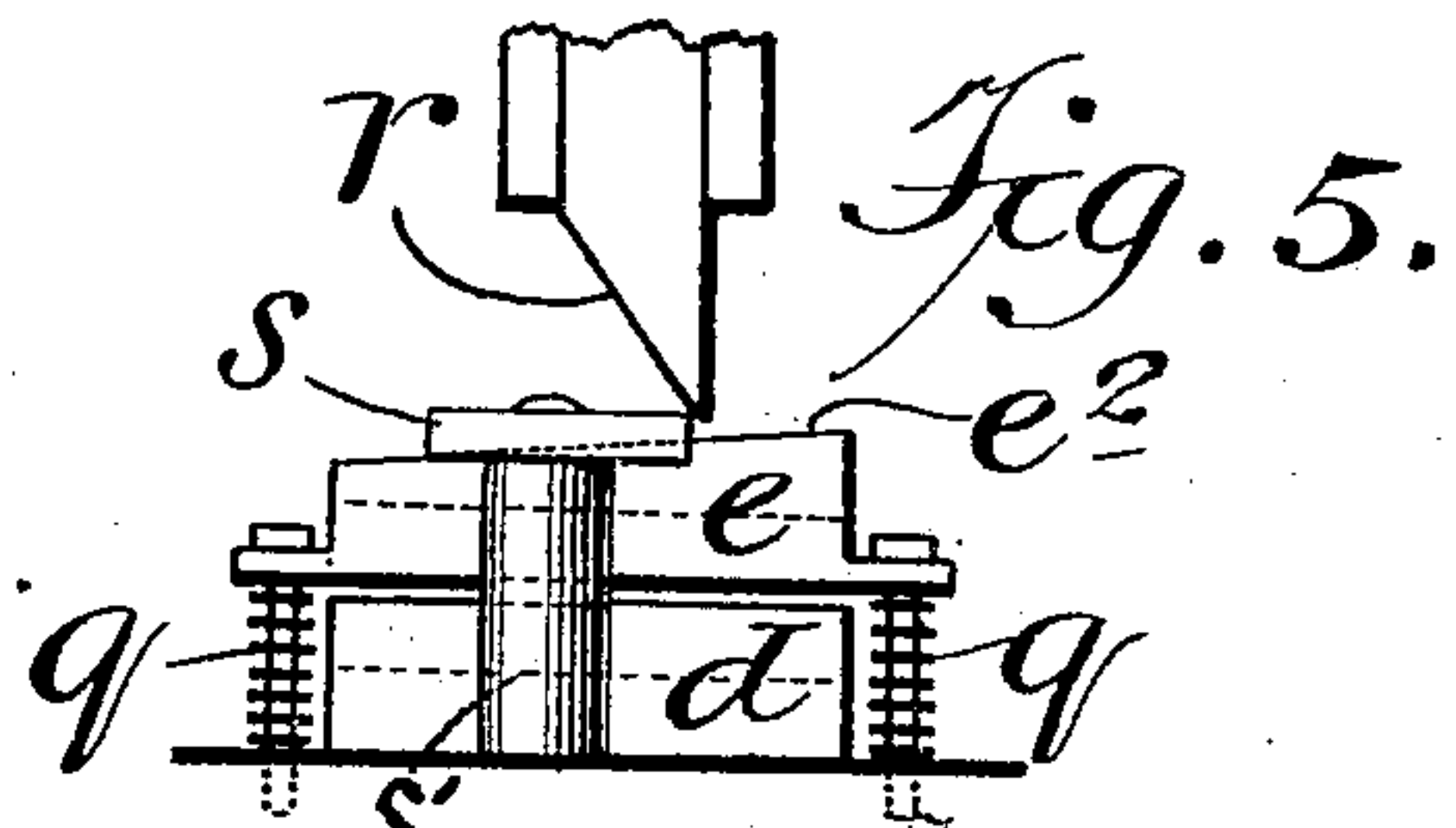


Fig. 5.

Witnesses
A. R. Appleman
L. F. Browning

Inventor
James Gibson
By his attorney
Edward C. Davidson

UNITED STATES PATENT OFFICE.

JAMES GIBSON, OF WESTBORO, MASSACHUSETTS.

PRESS FOR PUNCHING TUBING.

No. 814,200.

Specification of Letters Patent.

Patented March 6, 1906.

Application filed January 25, 1905. Serial No. 242,688.

To all whom it may concern:

Be it known that I, JAMES GIBSON, a subject of the King of Great Britain, residing at Westboro, in the county of Worcester, State of Massachusetts, have invented an Improved Press for Punching Tubing, of which the following is a specification.

In the manufacture of brass bedsteads the tubing employed, which is usually of soft steel or iron coated with a layer of brass, is apertured for making the desired connections. Such apertures are usually radially opposite for the passage of coupling-rods or for bolts to secure brass or other ornaments. Heretofore it has been customary to drill the opposite apertures. This mode, however, is open to the objection of being unnecessarily expensive and as leaving a bur around the apertures on the outer face of the tube. It has been proposed to punch the radially-opposite apertures by a single punch entering one side of the tube and emerging at the other. This plan is, however, objectionable, as it leaves a bur around the outer edge of the final aperture which the punch forms, and there is also owing to the necessary lightness of the punch liability of the latter springing, so that the apertures are not exactly diametrically opposite.

This invention comprises certain improvements in tube-punching apparatus in the special art stated and is hereinafter clearly set forth in detail.

Figure 1 is a vertical longitudinal section through so much of a punching-press as is necessary to illustrate the invention; Fig. 2, an elevation thereof; Fig. 3, a detail view showing a piece of punched tubing; Fig. 4, a detail sectional view showing one of the ways in which such punched tubing may be coupled in the way stated by the manufacturer, and Fig. 5 illustrates a modification in the press.

a indicates the base of a press; *b*, its plunger, having a lateral projection *b'*. The plunger may be formed with cheek-pieces *b²*, that run in the ways of the side guides *c c*. On the bed of the press is a cradle *d*, having a half-round seat *d'*, in which the tubing to be punched fits. The corresponding upper cradle *e* has a like half-round recess *e'* and is carried by a plate *f*, through the four corners of which extend posts *g*. Between the headed ends of the posts and the upper face of the plate are interposed strong spiral springs *h*, whose reaction normally tends to close the

upper cradle *e* down upon the lower one *d* to thereby embrace and firmly hold the tubing lying in the annular space *d' e'*. Headed bolts pass loosely through laterally-projecting ears or lugs *i'* at opposite sides of the plunger *b* and are screwed into or otherwise permanently or rigidly secured to the plate *f*. When the plunger is elevated, the lugs *i'* engage the heads of these bolts and lift the plate *f*, and with it the upper cradle *e*, against the tension of the springs *h*.

The upper punch *j* is carried on the lower face of the plunger *b* and works in an aperture through the plate *f* and upper cradle *e*. The bottom punch *k* is connected in the end of a horizontal lever *m*, to the opposite end of which is secured an upright rod *n*, passing loosely through a lug on the side of the frame and having interposed between its head and the lug a coiled spring *o*, whose reaction tends normally to lift the rod *n* and lower the punch of *k*.

A length of tubing having been inserted between the opposite half-round cradles or tube-holders *d e*, the press, which may be of any appropriate construction, is actuated, and its plunger *b* descends. The rods *i* slide loosely in the lugs *i'* and permit the reaction of the springs *h* to carry the upper cradle down upon the lower one in advance of the punch *j*, which as the plunger continues to descend passes through the aperture in *f* and *e* and through the wall of the tubing. At the same time when the projection *b'* on the side of the plunger strikes the headed end of rod *n* the lower punch *k* is forced upwardly through the lower wall of the tubing. The tubing being thus firmly held exteriorly is accurately punched, the apertures being diametrically opposite, while the tube is firmly embraced by the cradles and prevented from being flattened or distorted. The burs that are formed are on the inner faces of the tube, and the outer faces surrounding the punched apertures are somewhat depressed, as seen in Fig. 4 and indicated at *p* in Fig. 3.

Fig. 5 shows a modification. In this case the upper cradle *e* is held away from the lower one *d* by reaction of the springs *g*, and the two are closed in advance of the action of the punches by a cam-face *r*, moving down with the plunger and acting upon one end of a horizontal lever *s*, pivoted in an upright post *s'*. The opposite end of the lever being thereby swung horizontally and acting upon the upper inclined surface *e²* of the upper

cradle forces it downwardly, thereby positively closing the two cradles against each other and firmly clamping the tubing. When the plunger ascends, the reaction of springs *q q* lifts the upper cradle to permit shifting or removal of the punched tube and insertion of a new tube. In the construction shown in the other figures as the plunger ascends the upper die is positively lifted by the rods *i*, as seen in Fig. 2. The apertures in *d* and *e* permit free passages of the punches, which have chamfered or beveled cutting-faces acting to shear the metal.

I claim as my invention—

1. In a press for punching radially opposite holes in tubing, the combination of opposite half-round cradles exteriorly embracing and clamping the tubing and oppositely-acting punches for cutting diametrically opposite apertures in the sides of the tubing.

2. In a press for cutting apertures in opposite sides of tubing, the combination of opposite half-round apertured cradles exteriorly embracing the tubing and oppositely-acting punches for cutting apertures in opposite sides of the tubing.

3. In a press for punching radially opposite holes in tubing, the combination of a cradle having a half-round seat for the tubing,

an opposite cradle having a corresponding half-round seat, a plunger, a punch actuated thereby, a diametrically opposite punch, means whereby as the plunger descends the two punches are advanced toward each other, means for automatically closing the cradles in advance of engagement of the punches with the tubing and means for automatically separating the cradles when the punches are retracted.

4. In a press for punching radially opposite holes in tubing, the combination of a cradle having a half-round seat for the tubing, an opposite cradle having a corresponding half-round seat, springs normally tending to close the cradles and clamp the tubing therein, oppositely-acting punches, means whereby the springs are permitted to close the cradles in advance of the action of the punches upon the tubing, and means for separating the cradles against the tension of their closing-springs when the punches are retracted.

In testimony whereof I have hereunto subscribed my name.

JAMES GIBSON.

Witnesses:

KATHARINE MACMAHON,
LILLIE F. BROWNING.