

B. F. HALL.

DIE AND DIE HOLDER FOR PUNCHING MACHINES.

(Application filed May 10, 1901.)

(No Model.)

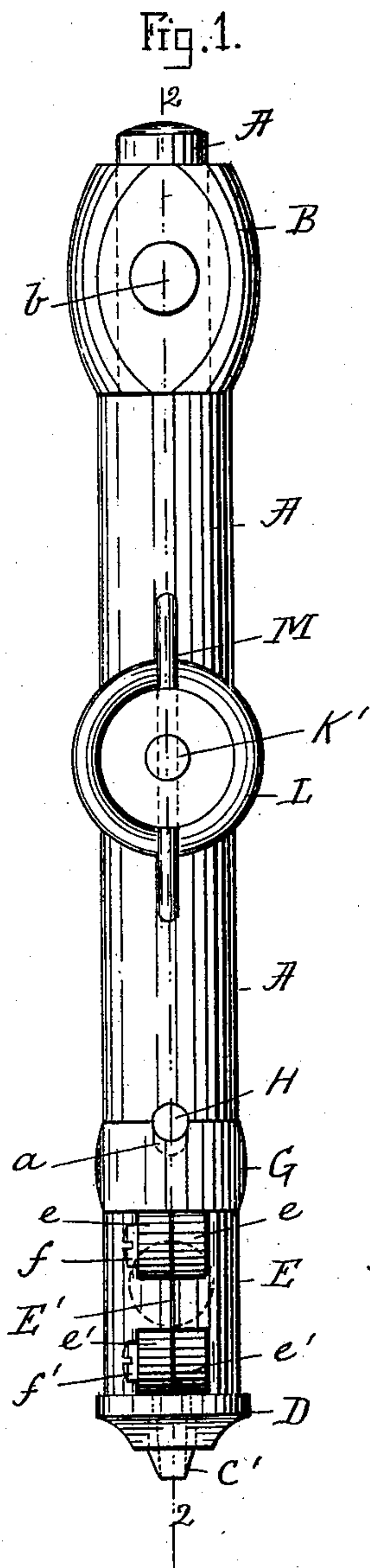


Fig. 3.

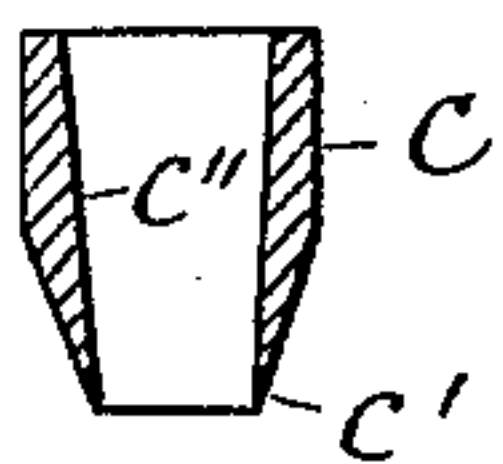


Fig. 4.

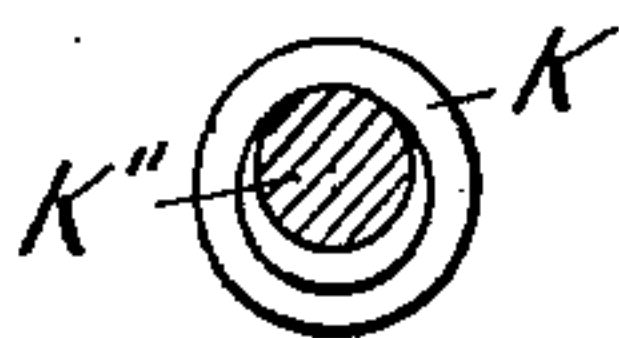


Fig. 5.

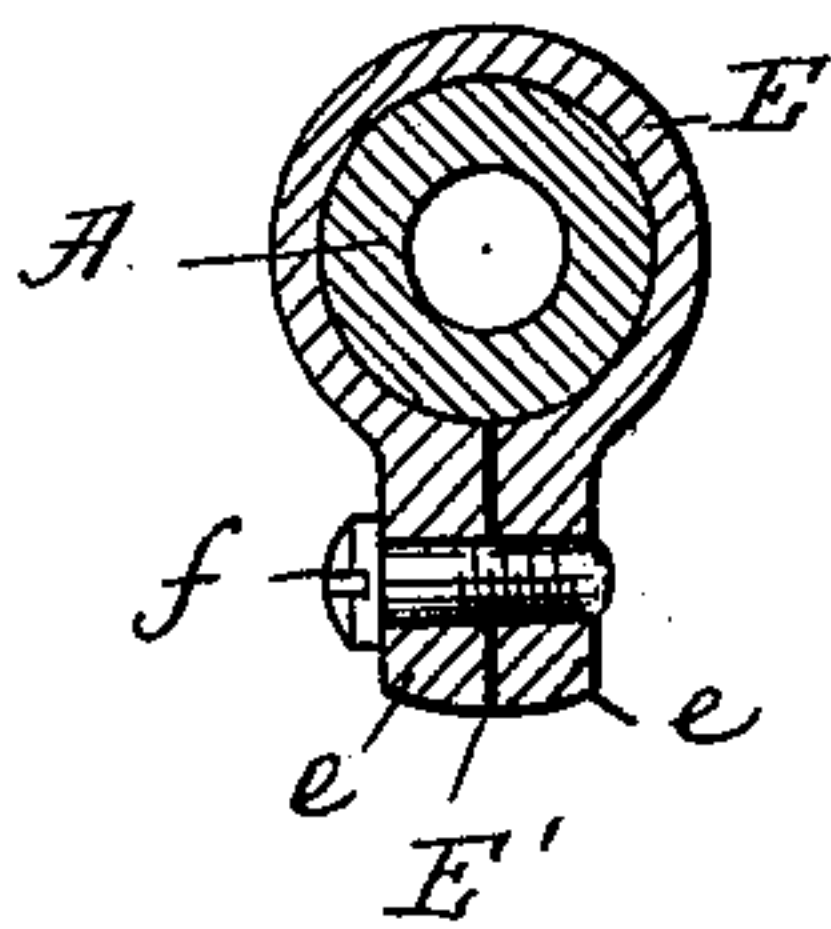
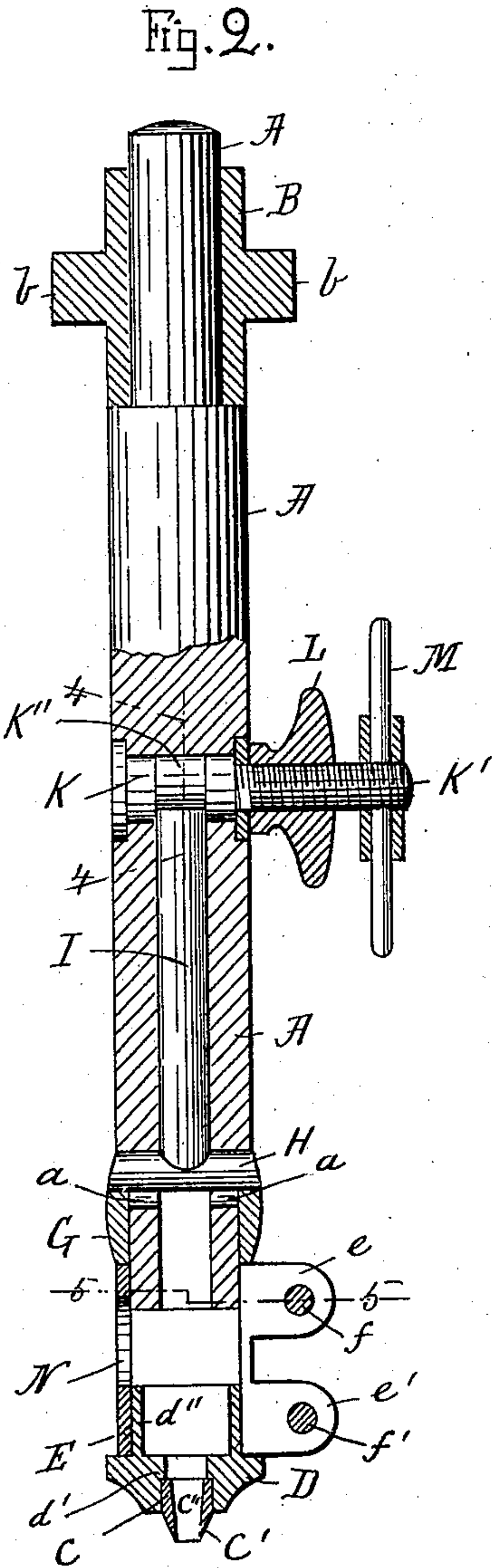
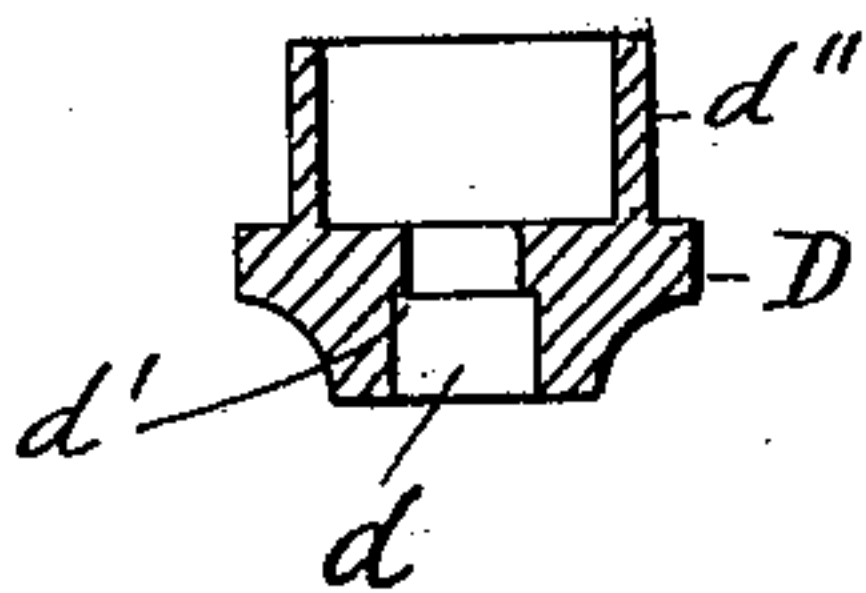


Fig. 6.



Witnesses.

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# UNITED STATES PATENT OFFICE.

BENJAMIN F. HALL, OF SALEM, MASSACHUSETTS, ASSIGNOR OF ONE-HALF  
TO ZINA GOODELL, OF SAME PLACE.

## DIE AND DIE-HOLDER FOR PUNCHING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 682,613, dated September 17, 1901.

Application filed May 10, 1901. Serial No. 59,566. (No model.)

*To all whom it may concern:*

Be it known that I, BENJAMIN F. HALL, a citizen of the United States, residing at Salem, in the county of Essex and State of Massachusetts, have invented new and useful Improvements in Dies and Die-Holders for Punching-Machines, of which the following is a specification.

This invention relates to improvements in dies and die-holders for punching-machines of the kind used on punching or perforating machines for perforating leather, paper, or other materials.

The invention is carried out as follows, reference being had to the accompanying drawings, wherein—

Figure 1 represents a side elevation of the invention. Fig. 2 represents a central longitudinal section on the line 2 2 in Fig. 1, parts being shown in elevation. Fig. 3 represents an enlarged central longitudinal section of the die. Fig. 4 represents a detail cross-section on the line 4 4 in Fig. 2, showing the eccentric pin for the vertical adjustment of the die and die-holder. Fig. 5 represents a cross-section on the line 5 5 shown in Fig. 2, and Fig. 6 represents a detail central longitudinal section of the die-holder.

Similar letters refer to similar parts wherever they occur on the different parts of the drawings.

A is the die-holder bar, to the upper end of which is secured in a suitable manner the collar B, provided with trunnions *b b*, connected to a suitable reciprocating operative mechanism common in punching or perforating machines, such actuating mechanism being, however, not shown in the drawings, as it forms no part of my present invention.

The hollow die is shown in detail in Fig. 3 and consists of a cylindrical hardened-steel tube C, terminating in its lower end as an annular cutting edge C', said die having an interiorly-tapering recess C'', so as to give clearance to the chips that are cut out from the material that is being punched or perforated. Said die is firmly driven into a cylindrical recess *d* in the die-holder D, which is provided with an interior shoulder or annular projection *d'*, which serves as a rest for the upper end of the die, as shown in Figs. 2

and 6. The upper end of the die-holder is made in the form of a tubular shank *d''*, which is inserted in the lower end of the clamping-sleeve E, the upper end of which is adapted to be adjustably secured on the lower end of the die-holder bar A, as shown. Said clamping-sleeve E is slitted longitudinally at E' and provided at such place with ears *e e'*, having the respective adjustable binder or clamping screws *f f'*. (Shown in Figs. 1, 2, and 5.)

Upon the lower end of the die-holder bar A is arranged a longitudinally-adjustable sleeve or collar G, upon which is held in contact a lateral or horizontal pin H, located in slotted perforations *a a* in the lower portion of the die-holder bar A, as shown in Figs. 1 and 2.

Within a central longitudinal perforation in the die-holder bar A is arranged a longitudinally-adjustable rod I, the lower end of which is held in contact with the pin H, as shown in Fig. 2.

In devices of this kind it is desirable to employ means for adjusting the die and die-holder longitudinally to compensate for the wear of the cutting edge of the die, and for such purpose I employ an adjusting device, which is constructed as follows: It consists of a horizontal headed pin K, journaled in a transverse perforation in the die-holder bar A, which pin is provided with a screw-threaded outer portion K', upon which is arranged a nut L of suitable size and shape, which when tightened serves to hold the pin K firmly secured to the die-holder bar A. The middle portion of said pin K is made eccentric or cam-shaped, as shown at K'' in Figs. 2 and 4. The said eccentric portion K'' engages with the upper end of the rod I, as shown in Fig. 2.

To the outer end of the screw K' is secured in a suitable manner a pin, handle, or knob M, by means of which the pin K may be turned for adjusting the position of the eccentric K'' for a purpose as will hereinafter be described.

For the purpose of adjusting the die and its die-holder relative to the die-holder bar it is only necessary first to loosen the clamping-screw *f* on the sleeve E, after which the nut L is loosened. The pin K may then be turned so as to cause its eccentric K'' to slightly de-



press the rod I, pin H, sleeve or collar G, clamping-sleeve E, the die-holder, and die, after which the clamping-sleeve E is firmly secured by tightening the screw *f*. The pin  
 5 K is then firmly secured in its adjusted position simply by tightening the nut L. The clamping-screw *f*' when tightened serves the purpose of securing the die-holder D firmly within the vertically-adjustable sleeve E, as  
 10 shown.

N is a side perforation in the sleeve E for the purpose of permitting the chips from the die and die-holder to escape from the die-holder bar during the dieing or punching op-  
 15 eration.

Dies for this purpose are generally provided with an upper extension-shoulder adapted to fit in a reduced perforation in the die-holder. Such construction is expensive and requires  
 20 extra and superfluous stock in making the die. This is avoided by my construction of the die, which is cylindrical on its exterior without any such extension or projection, and it is made to rest against a collar or interior  
 25 shoulder in the die-holder, thus making a true fit between the said die and die-holder and enabling me to make the dies of less stock and at a reduced price as compared with others of the kind above mentioned.

30 What I wish to secure by Letters Patent and claim is—

1. A centrally-perforated die-holder, D having a recess *d*, and internal shoulder or offset

*d*', combined with a perforated die having a cylindrical upper portion C, adapted to be re- 35 ceived in the die-holder recess *d*, and to rest against the die-holder shoulder *d*' and having a cutting edge C', substantially as and for the purpose set forth.

2. In a perforating or punching device, in 40 combination a die-holder bar A, a longitudinally-adjustable collar G arranged thereon, a slitted die-holder sleeve E, adjustably arranged on said die-holder bar and means for securing it thereon, a die-holder secured to 45 said sleeve, and a die attached to said die-holder and mechanism substantially as described for adjusting said die and die-holder longitudinally relative to the die-holder bar substantially as herein set forth and described. 50

3. In combination a die-holder bar A, a transverse bolt K, journaled in the former, and having upon it a cam or eccentric K'', adapted to engage a rod I, adjustable in said die-holder bar, a collar G, and a slitted sleeve 55 E, adjustable on said die-holder bar, a die-holder attached to said sleeve and a die attached to said die-holder substantially as and for the purpose set forth.

In testimony whereof I have hereunto set 60 my hand in presence of two subscribing witnesses.

BENJAMIN F. HALL.

Witnesses:

ALBAN ANDRÉN,  
 THEKLA ANDRÉN.