

No. 691,892.

Patented Jan. 28, 1902.

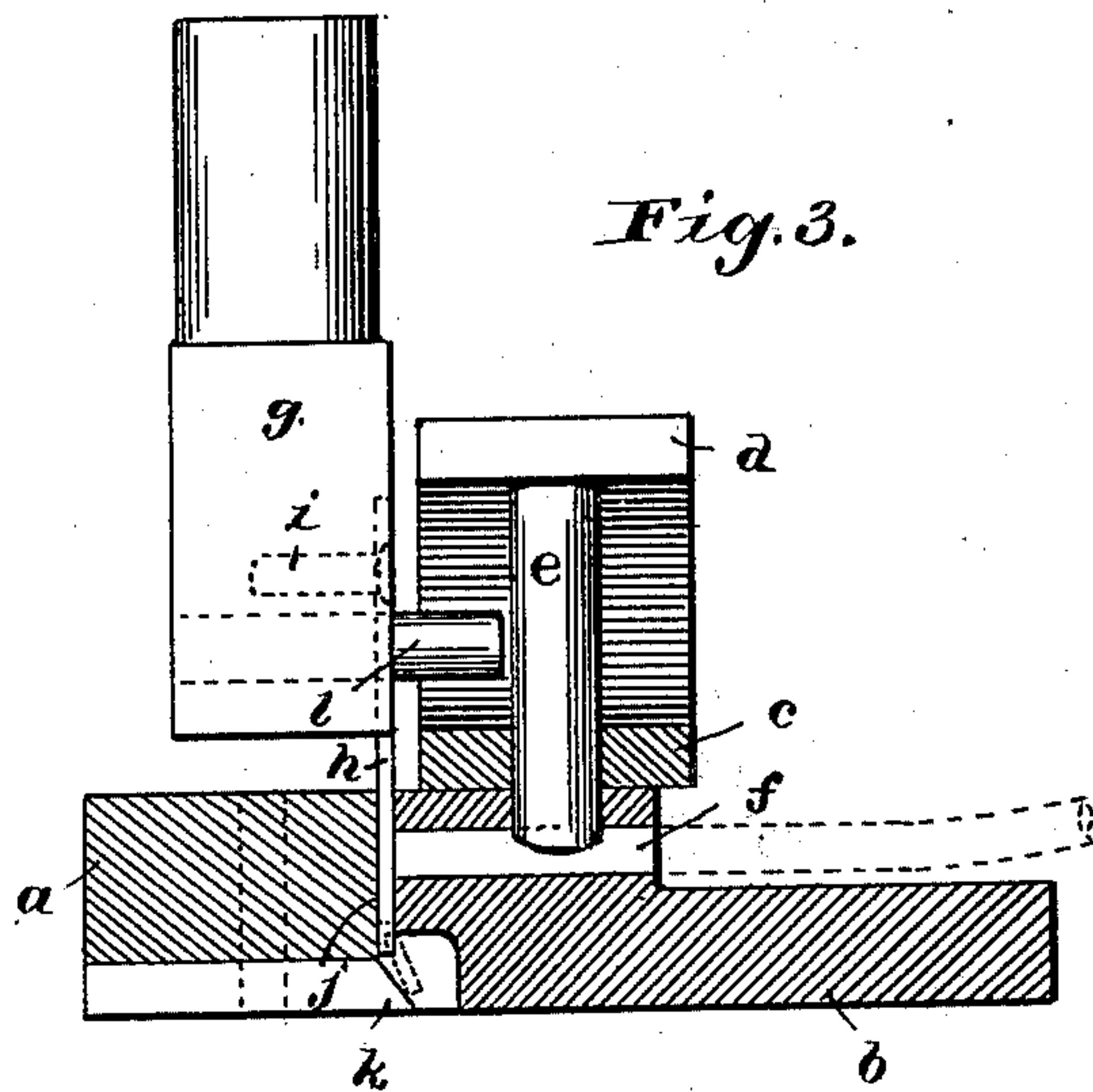
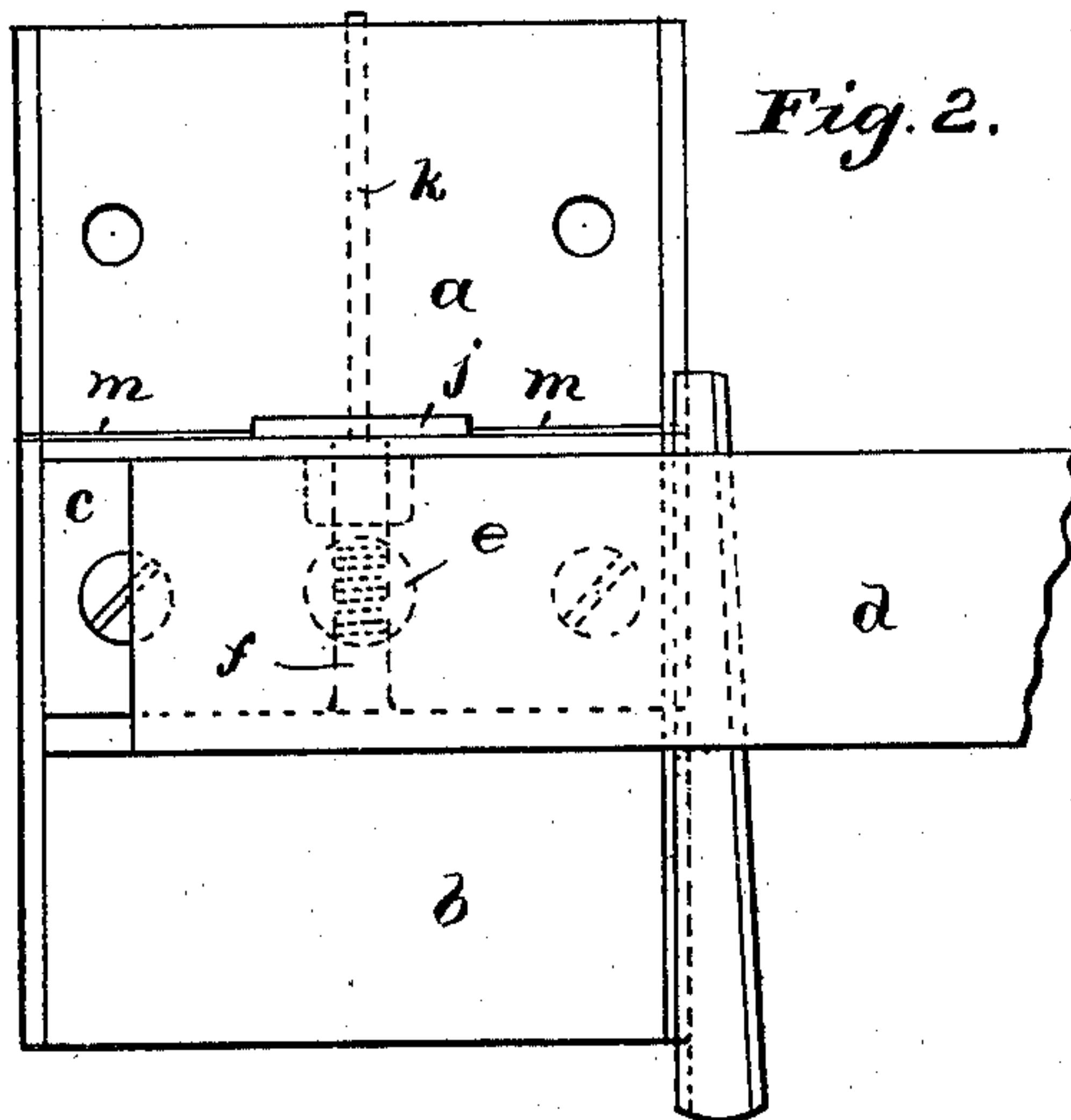
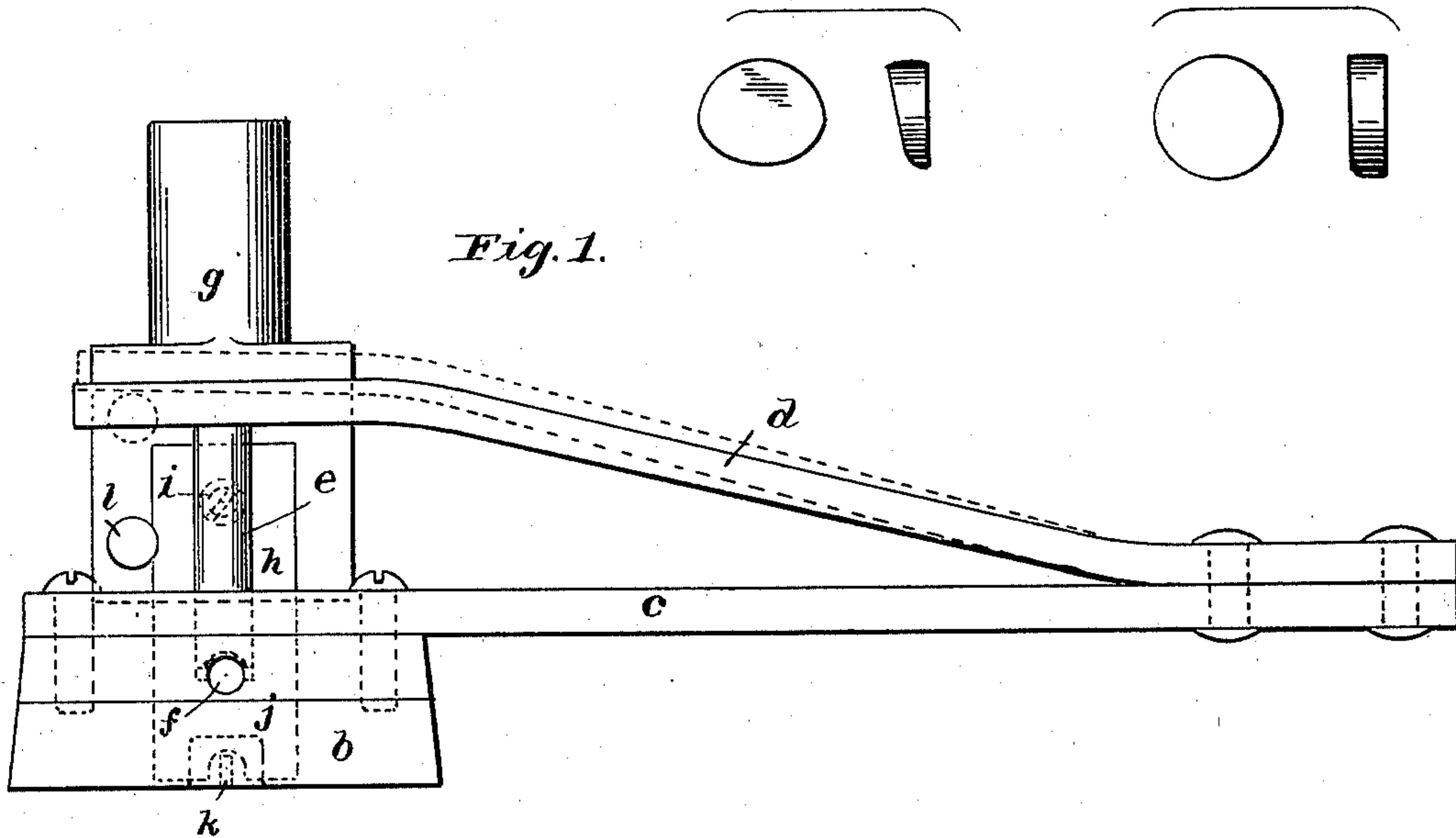
R. A. BREUL.  
WIRE CUTTING DIE.

(Application filed Sept. 11, 1901.)

(No Model.)

Fig. 4.

Fig. 5.



Witnesses

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# UNITED STATES PATENT OFFICE.

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## WIRE-CUTTING DIE.

SPECIFICATION forming part of Letters Patent No. 691,892, dated January 28, 1902.

Application filed September 11, 1901. Serial No. 75,089. (No model.)

*To all whom it may concern:*

Be it known that I, RICHARD A. BREUL, a citizen of the United States, and a resident of Bridgeport, in the county of Fairfield and State of Connecticut, have invented certain new and useful Improvements in Wire-Cutting Dies, of which the following is a specification.

My invention relates to wire-cutting dies, such as are employed for severing blanks from a continuous wire-rod, and is specially designed for severing thin blanks used in the formation of furniture-nail heads and may be used separately for that purpose or in connection with an automatic furniture-nail machine similar to that shown and described in my Letters Patent No. 680,839.

Heretofore in the production of wire blanks from which to form nail-heads considerable difficulty has been experienced in securing perfect blanks—that is, a blank which when cut will form a true disk shape, being sufficiently round and of uniform thickness. The majority of blanks heretofore produced have usually been oblong in cross-section, and thicker on one edge than on the other. Therefore it has been difficult to form a true symmetrical nail-head therefrom, since the stock was unevenly distributed.

It is therefore the object of my present invention to provide dies that will effectively cut serviceable blanks of uniform diameter and discharge the same from the dies in successive order. Further, to provide a device which is durable and especially adapted for operating upon large wire, the blanks from which when sliced off form small disks, being thin in comparison with their circumference. I have therefore provided dies adapted to receive the forward end of the rod and having hardened polished surfaces, which dies inclose the wire end in a manner to prevent it from spreading in either direction as the force is applied and insuring the blank as it is shaved off to retain the original diameter of the rod with smooth and unbroken surfaces, and, finally, to convey the blank from the wire-feed against a stripping device, whereby its ejection is insured.

With the above objects in view my invention resides and consists in the novel construction and combination of parts shown upon the

accompanying sheet of drawings, forming a part of this specification, upon which similar characters of reference denote like or corresponding parts throughout the several figures, and of which—

Figure 1 shows a side elevation of my improved blank-cutting die complete. Fig. 2 is a plan view of Fig. 1, the punch being omitted. Fig. 3 is a side elevation of the punch and dies shown in Fig. 1. Fig. 4 shows a side and edge view separately of a blank such as have heretofore been made, and Fig. 5 shows a side and edge view of a blank such as are produced by my improved device.

Referring in detail to the characters of reference marked upon the drawings, *a* and *b* represent dies, which are suitably secured together and in practice may be located upon the bed of an ordinary press. The punch-passage *j* between these dies may be made for different thicknesses of punch-plates, as may be required to produce a different thickness of blanks. This adjustment of the dies is secured by the substitution of various thicknesses of packing-plates *m*, as will be obvious from Fig. 2. *c* indicates a bracket secured to said dies, extending to one side and supporting a spring *d*. This spring is designed to normally rest upon a pin *e*, which passes through a suitable hole in the bracket and die and is provided with a semicircular roughened or serrated end to engage the wire rod after it is fed in through the channel *f*, thus preventing any return movement of the rod. In practice this rod is held in this manner at all times except when the same is to be fed forward.

*g* represents a punch, which in practice may be secured to the head of a press or may be carried by a suitable movable part of an automatic machine, and is thus provided with a vertical reciprocating movement which raises and lowers the same to and from the dies before mentioned. Secured within the side of this punch is provided a cutter *h*, the same being formed of a hardened polished piece of steel set into a suitable recess of the punch and secured by means of a screw *l*. This cutter in practice fits into the way *j* of the die *a*, reciprocating therein with the movement of the punch. The lower end of this cutter contains a semicircular cutting-recess, as is



clearly shown in Fig. 1, which in practice engages the end of the rod and with the movement of the punch severs a blank from the said end and forces it down into the lower portion of said die, where it engages the beveled end of a stationary stripper *k*, secured in the die *a* in any suitable manner. It will be observed that the blank is then removed from the recess in the punch and free to fall. (See Fig. 3.) On the side of the punch before referred to is fitted a pin *l*, as clearly appears in Figs. 1 and 3, which is so located that when the punch is in its raised position (see dotted lines, Fig. 1) the same will engage the under side of the spring in a manner to raise it off the friction-pin, thus leaving the wire free to be fed forward. By reason of the foregoing construction it will be obvious that the blanks are closely confined within the finished punch-passages of the dies and tightly held within the slot of the cutter and are forced into a smooth, sufficiently-true, and desirable blank. The rod may be fed into these dies of course either automatically or by hand, as desired, and consequently I have omitted the illustration of any special feeding device.

To a certain limit this present invention is also adaptable for use in automatic machinery, such as illustrated in my patent aforesaid, as the blanks produced thereby will be of more service and accurate shape than those produced without the additional element of the unyielding, flattening, and end-squaring surfaces, all of which has actually been demonstrated since application for such patent was made.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In a wire-blank-cutting device the combination with suitable dies having a hole for the wire to be fed therein, of a punch-plate adapted to operate in a suitable recess at a right angle to the wire-opening before mentioned, a friction-pin mounted in the die adapted to engage the wire, a spring to engage the pin and normally hold it against the wire, means carried by the punch to engage the spring and raise it from the pin.

2. A wire-blank-cutting device comprising suitable closed dies with a rectangular opening therethrough, a reciprocating cutter fitted in said opening, having a transverse semi-circular recess in its lower edge, means to firmly hold the wire during the cutting operation and a lug contained on the punch-holder for automatically releasing the pressure on the wire with the upward movement of the punch.

3. In a wire-feeding device the combina-

tion with a punch carrying a cutter, of dies to receive said cutter, a stripper in the bottom of said dies and in line with the cutter and having a beveled end to engage a blank and deflect it sidewise as it is fed thereagainst in the cutting movement.

4. A wire-cutting-off die having a wire-channel opening into a punch-plate passage with two opposite parallel smoothed sides, adapted to force against both ends of a wire blank during its removal from the wire rod, and to confine its length to the limit of the thickness of the punch-plate.

5. A wire-cutting die containing a wire-channel leading to an aperture with parallel sides adjustable to various thicknesses of punch-plates and arranged to closely confine the thickness of a blank to the size of the punch-plate by flattening and smoothing the blank ends during the cutting-off process.

6. A wire-cutting die with a punch-aperture adjustable in the direction of the wire-supply, a wire-channel leading into and a punch-plate fitting said aperture, the latter containing parallel polished surfaces for forcing the end surfaces of the wire blanks during the cutting-off operation, squaring and smoothing the forced end portions and for accurately sizing the length thereof.

7. In a device for cutting thin blanks from a wire rod, a two-part die forming an adjustable aperture with parallel sides for the passage of a punch-plate, a wire-channel opening into one of these sides, in combination with means to firmly hold the wire rod in its advanced position during the cutting operation.

8. An adjustable wire-cutting die consisting of a wire-holding portion and a wire-stop portion, both parts forming a close-fitting aperture for the punch-plate, said aperture having opposite parallel polished blank-forcing surfaces in combination with a friction-pin in the wire-channel, means to force such pin against the wire during the cutting operation and mechanism to remove the pressure from said pin during the feeding of the wire rod.

9. A wire-cutting die, having in the lower part of one of its punch-passage sides an inclined surface, arranged to engage the wire blank during the downward movement and to force it out of the punch-recess and from the wire-channel.

Signed at Bridgeport, in the county of Fairfield and State of Connecticut, this 10th day of September, A. D. 1901.

RICHARD A. BREUL.

Witnesses:

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