

(No Model.)

W. ALLDERDICE.

DIE FOR DRAWING AND COMPRESSING TUBES.

No. 329,612.

Patented Nov. 3, 1885.

Fig. 1.

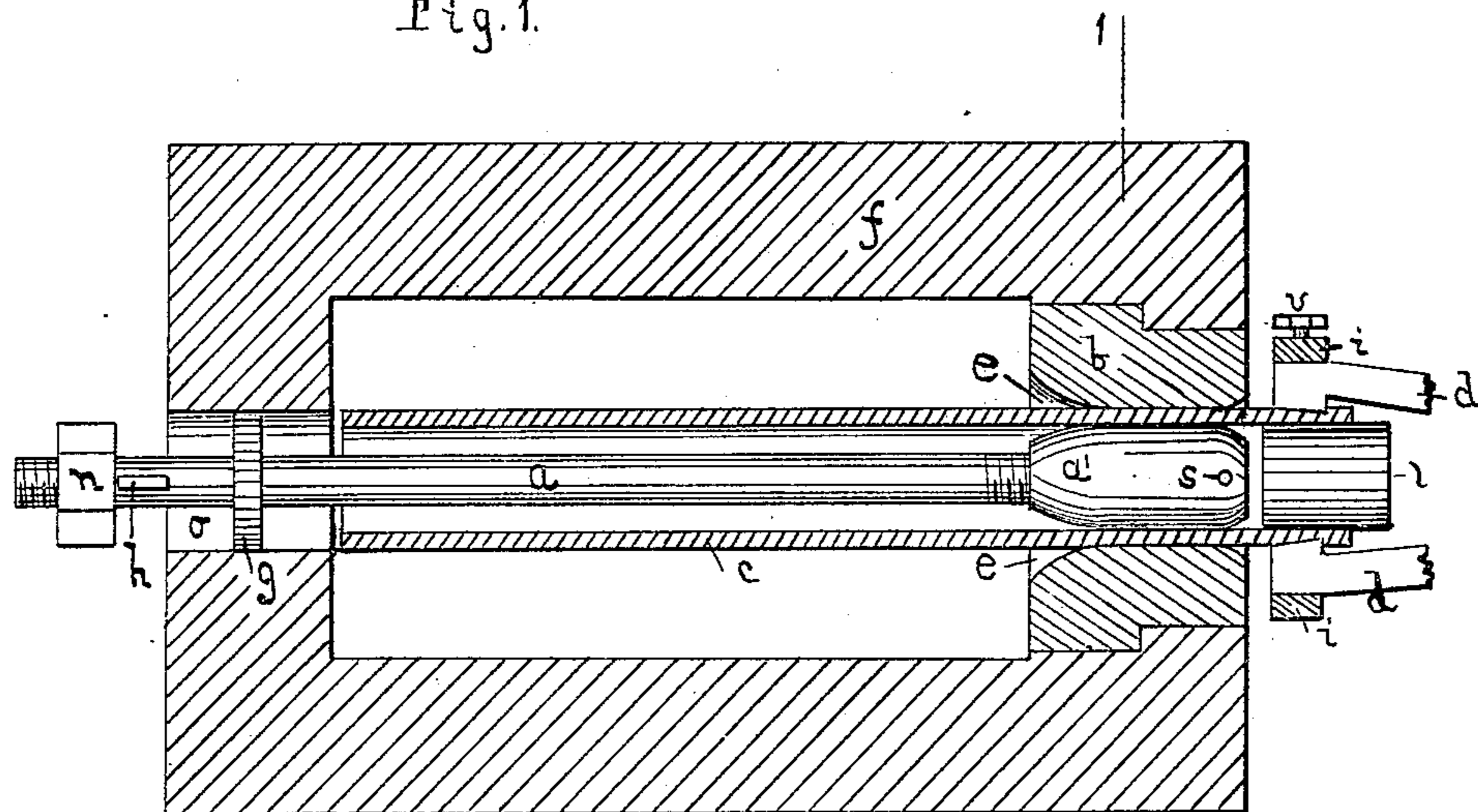
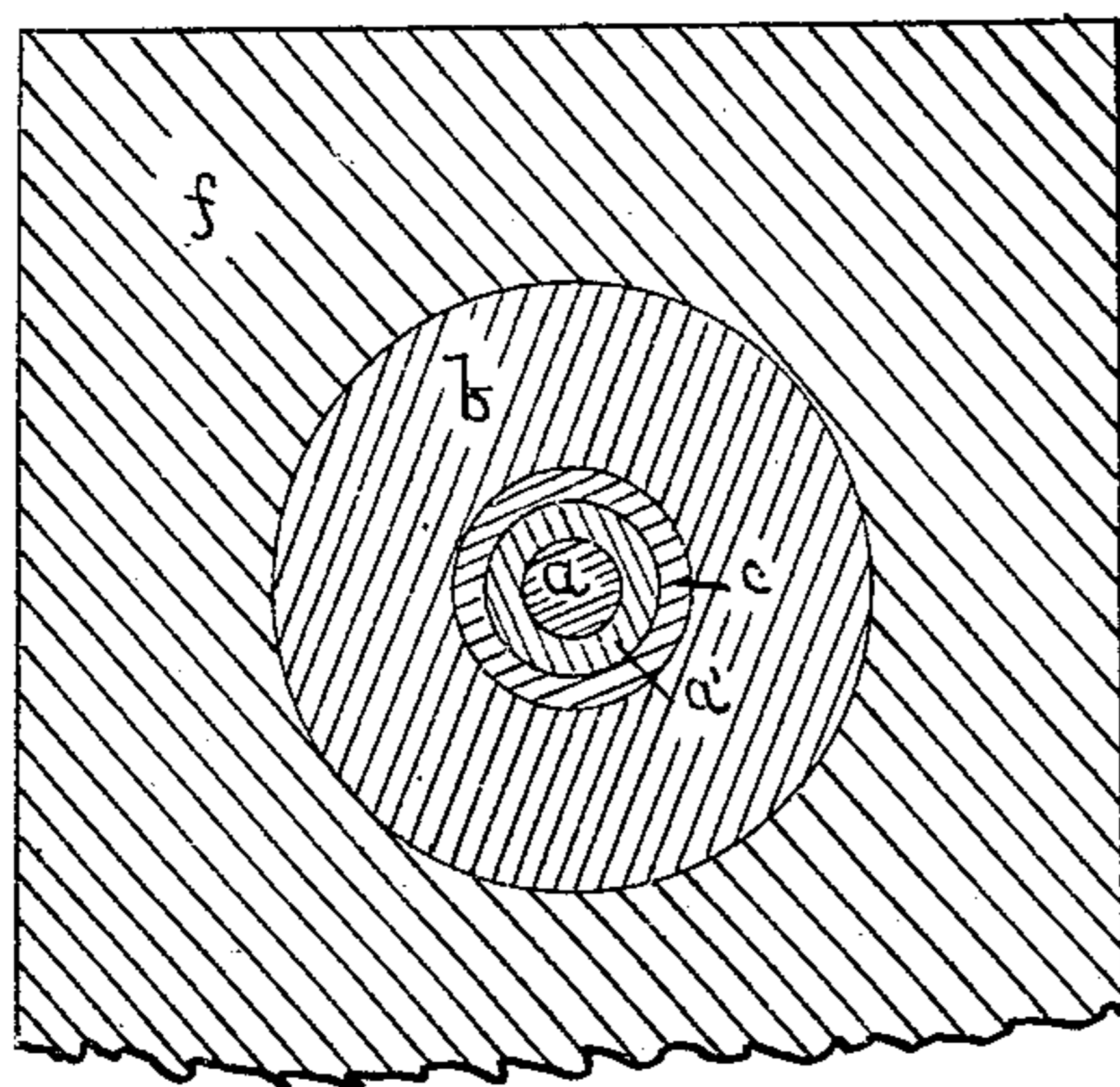


Fig. 2.



Attest
Henry M. Robinson
J. W. Root

Inventor
Winslow Alderdice
By Bradford Howland
Attorney

UNITED STATES PATENT OFFICE.

WINSLOW ALLDERDICE, OF AKRON, OHIO.

DIE FOR DRAWING AND COMPRESSING TUBES.

SPECIFICATION forming part of Letters Patent No. 329,612, dated November 3, 1885.

Application filed June 3, 1885. Serial No. 167,458. (No model.)

To all whom it may concern:

Be it known that I, WINSLOW ALLDERDICE, a citizen of the United States, residing at Akron, Summit county, Ohio, have invented a new and useful Improvement in Dies for Drawing, Compressing, and Polishing Cold Metal Tubes, of which the following is a specification.

In the drawings forming a part of this specification, Figure 1 represents the inner part, *a*, of the die, and a horizontal section of the outer part, *b*, and frame *f*. Fig. 2 is a vertical cross-section at line 1 in Fig. 1.

The die consists of an outer part, *b*, formed with an opening, *e*, and an inner part, *a*, which is a rod formed with an enlargement or bulb, *a'*, extending into opening *e* to form the interior sides of the tubes to be drawn. Part *a* may be of a single piece of steel; but I prefer to make it with the rod separate from the steel bulb *a'*, which is preferably of a tapering curved form at each end, with the intermediate part cylindrical. The bulb and rod are screw-threaded, and after screwing the bulb on the rod it is fastened by a pin or rivet, *s*. It is not essential that the rear end of the bulb at the end of the rod should be curved, but it should be tapering, in order that it may not be broken by the contraction of the interior sides of the tube *c* just as the latter passes over the bulb. The outer part, *b*, is formed with an opening, *e*, which I prefer to make flaring at both ends, with the intermediate part cylindrical. The diameter of the tube to be drawn being slightly greater than the smallest diameter of opening *e*, and the interior diameter of the tube being slightly less than the greatest diameter of bulb *a'*, in drawing the tube it is compressed and polished both on its exterior and interior sides at the same time. If it be not desired to have the exterior of the tube compressed and polished, the size of opening *e* should be such as merely to closely fit the tube, in order to resist the outer pressure of bulb *a'*, and prevent expansion of the tube. The die is to be placed in a suitable frame, *f*, formed with an opening, *o*, of sufficient size to admit the tube. A collar, *g*, of the same diameter as opening *o*, is placed on rod *a* in the opening to keep the rod in the center of opening *o*, which is in line with the center of opening *e* in part *b*.

Rod *a* is held at its front end by means of nut *n* and key *h*, the rod being slotted to receive the key. In drawing large tubes, nut *n* may be dispensed with and rod *a* held by the key only.

In operating the die one end of tube *c* should first be expanded to receive bulb *a'*, and its exterior slightly shouldered, or otherwise suitably formed, to be held by jaws *d d*, or other suitable device for holding and drawing the tube. Rod *a* is then to be placed in the tube, and both together passed through openings *o* and *e* to the position shown in the drawings. Collar *g* and key *h* are then to be put in place, as shown, and jaws *d d* firmly pressed against the tube by means of clamp *i* and set-screw *v*. A plug, *l*, is put in the end of the tube to resist the compression of the jaws. The tubes may be drawn by means of jaws *d d*, to be hinged to a draft-block traveling backward and forward on a rotary screw-shaft, or by any other suitable and well-known means. Pneumatic tubes and hollow shafting may thus be formed with smooth and polished interiors and exteriors.

I claim as my invention—

1. A die for drawing, compressing, and polishing cold metal tubes, consisting of an outer part formed with an opening to admit the tube, and an inner part arranged centrally in said opening to operate on the interior sides of the tube, the greatest diameter of said inner part being in the same plane with and less than the smallest diameter of said opening in the outer part, substantially as described.

2. A die for drawing, compressing, and polishing cold metal tubes, formed with an outer part having an opening, tapering at both ends within said opening, whose sides operate on the exterior of the tubes, in combination with an inner part consisting of a rod formed with an enlargement to operate on the interior sides of the tube, substantially as described, the greatest diameter of said opening being in the plane with and less than the smallest diameter of said opening.

3. A die for drawing, compressing, and polishing cold metal tubes, formed with an outer part having an opening to admit the tube, and an inner part consisting of a rod formed with an enlargement, the front ends of said opening and of said inner part being tapering

in opposite directions at the entrance of the die, substantially as described.

4. The rod *a*, formed with bulb *a'*, in combination with collar *g*, a suitable frame, *f*,
5 formed with an opening, *o*, of sufficient size to admit the tube to be drawn, and part *b*, formed with opening *e*, substantially as described.

5. The rod *a*, formed with bulb *a'*, in com-

bination with key *h*, a suitable frame, *f*, formed with opening *o*, of sufficient size to admit the tube to be drawn, and part *b*, formed with opening *e*, substantially as described.

WINSLOW ALLDERDICE.

Witnesses:

FRED BISHOP,

J. G. RAYMOND.