

No. 718,671.

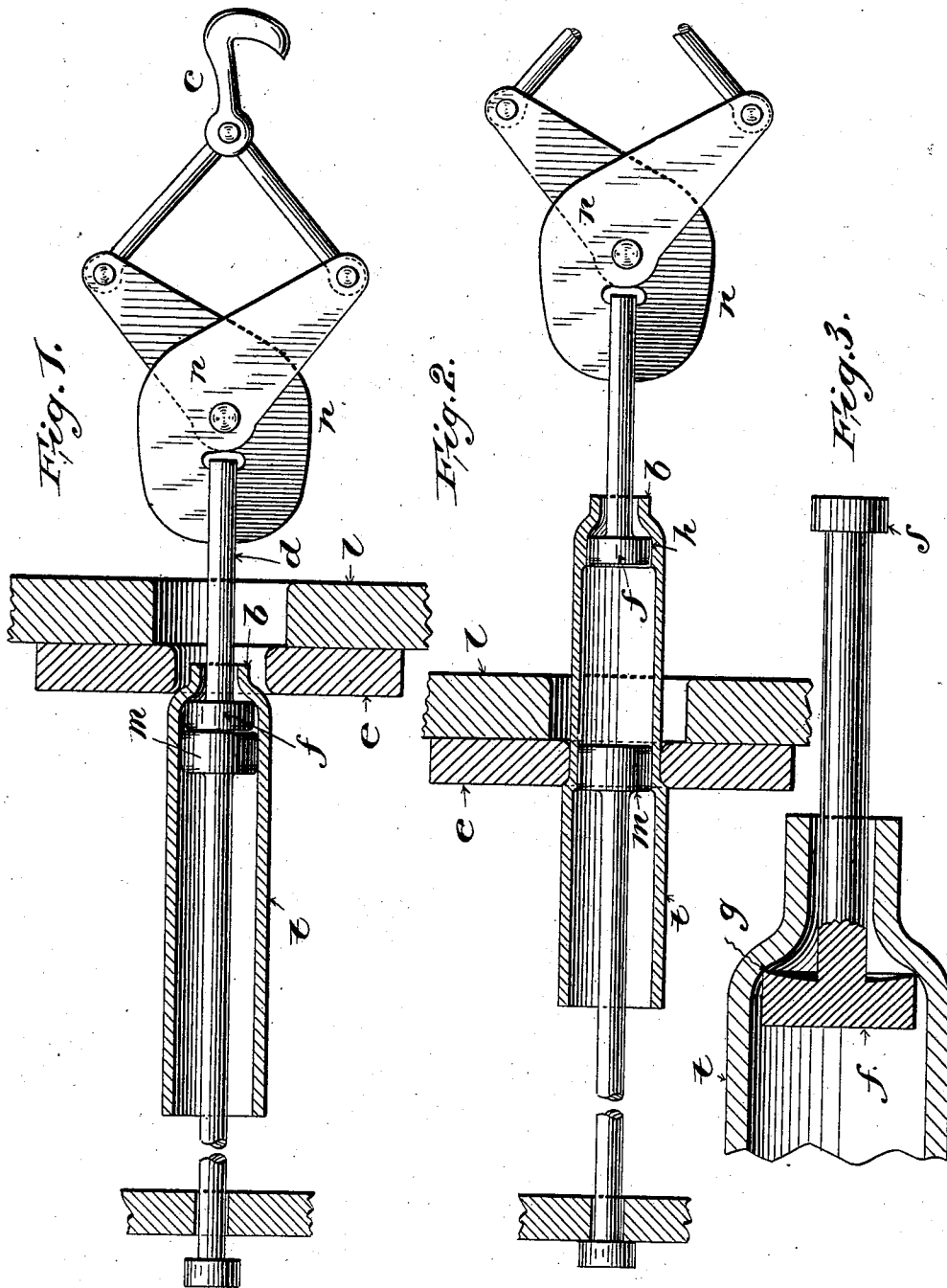
PATENTED JAN. 20, 1903.

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TUBE DRAWING DEVICE.

APPLICATION FILED MAR. 11, 1901.

NO MODEL.



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UNITED STATES PATENT OFFICE.

RALPH CHARLES STIEFEL AND RICHARD T. BROWN, OF ELLWOOD CITY,
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TUBE-DRAWING DEVICE.

SPECIFICATION forming part of Letters Patent No. 718,671, dated January 20, 1903.

Application filed March 11, 1901. Serial No. 50,633. (No model.)

To all whom it may concern:

Be it known that we, RALPH CHARLES STIEFEL and RICHARD T. BROWN, of Ellwood City, State of Pennsylvania, have invented certain new and useful Improvements in Tube-Drawing Devices, of which the following is a specification, illustrated by the accompanying drawings.

It has commonly been the practice in drawing tubes to close or "point" one end of the tube by forging for a length sufficient to pass through the die and far enough beyond to enable it to be firmly gripped in the jaws or other gripping mechanism of the draw-bench. This pointed portion of the tube is finally cut away as waste, thus involving considerable loss. Furthermore, the closing up of the tube prevents free fluid circulation through the tube when it is being annealed, pickled, washed, or greased. Unless the pickling, washing, and greasing are thorough the mandrel is apt to bind in the tube and produce excessive friction, sufficient often to break the tube.

The object of our invention is to overcome these and certain other difficulties and to save to a large extent the loss of tube length due to pointing. This we accomplish by a novel drawing or pulling bar or link.

In the drawings, Figure 1 is a side elevation, partly in section, of our bar or link in position before drawing commences. Fig. 2 shows the device in operation and a tube partly drawn. Fig. 3 is a detail view showing another form of the draw-link.

In the figures like letters of reference are used to indicate like parts.

The gripping device forms no part of our invention. Any desired form may be used.

The draw-link *d* is provided with a head *f*, which forms a shoulder adapted to engage the interior of the tube and with a shank or pulling-bar for the gripper-tongs *n* to engage. The tube *t* is reduced for a short distance at its forward end, and the draw-link *d* is inserted with the shoulder and head *f* within the tube and the shank protruding. When the mandrel *m* and mandrel-bar are in place in the tube, the mandrel should abut against

the head *f* of the draw-link *d*. When the gripper-tongs *n* have been coupled to the chain of the bench and the drawing operation commenced, the head *f* engages the reduced end of the tube and draws it through the die *e*, as shown in Fig. 2. The head *f* should be of a diameter to enable it to pass through the die *e* when surrounded by the tube without reduction of the original thickness of the wall. It must of course be of a less diameter than the inside of the tube. The forward edge of the head *f*, which forms its engaging shoulder on the side toward the gripping-jaws, should have a sharp edge, which bites into and firmly holds the reduced end of the tube and prevents it from slipping and stretching the reduced portion. As will be readily seen, the portion of the tube inclosing the head *f* will be drawn down or "sunk" snugly onto the head by the initial action of the die on the tube without necessarily reducing its thickness at all. The remainder of the tube will be drawn and reduced as required between the die and the mandrel in the usual manner. Thus the wall of the tube about the head *f* may be kept at its original strength and thickness.

Fig. 3 shows a draw-link with a specially-sharpened edge *g*. The draw-link is also provided with a head *s* for preventing the gripping-jaws from slipping.

Without enumerating the many possible modifications of which our invention is capable, we claim the following characteristic features thereof:

1. In combination with a die and as a means for drawing a tube, a draw-link adapted to be inserted in the tube and provided with an abrupt shoulder for internally engaging the reduced end of the tube when in place, provided with a sharp edge for biting into the metal internally, and means for giving motion to the said link to draw the tube through the die, substantially as set forth.

2. In combination with a die and as a means for drawing a tube, a mandrel, a mandrel-bar therefor, means for holding the mandrel-bar, a draw-link having a head of smaller diameter than the mandrel and adapted to be in-

serted in the tube and provided with a shoulder for engaging the reduced end of the tube when in place, said shoulder having a sharp edge for biting and internally holding the teeth, and means for giving motion to the said draw-link to draw the tube through the die, substantially as set forth.

3. In combination with a die and as a means for drawing a tube, a mandrel, a mandrel-bar therefor, means for holding the mandrel-bar, a draw-link adapted to be inserted in the tube and provided with a shoulder for engaging the reduced end of the tube when in place, the engaging end of said shoulder having a substantially sharp edge for internally biting and holding the reduced end of a tube, and means for giving motion to the said draw-link to draw the tube through the die, substantially as set forth.

4. In combination with a die and as a means

for drawing a tube, a mandrel, a mandrel-bar therefor, means for holding the mandrel-bar, a draw-link adapted to be inserted in the tube and provided with a shoulder for engaging the reduced end of the tube when in place, the engaging edge of said shoulder being substantially sharp for internally biting and holding the reduced end of a tube, said draw-link having a shank of length to project from the tube to be drawn, and means for gripping and giving motion to the said shank to draw the tube through the die, substantially as set forth.

Signed this 4th day of March, 1901, at Ellwood City, Pennsylvania.

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