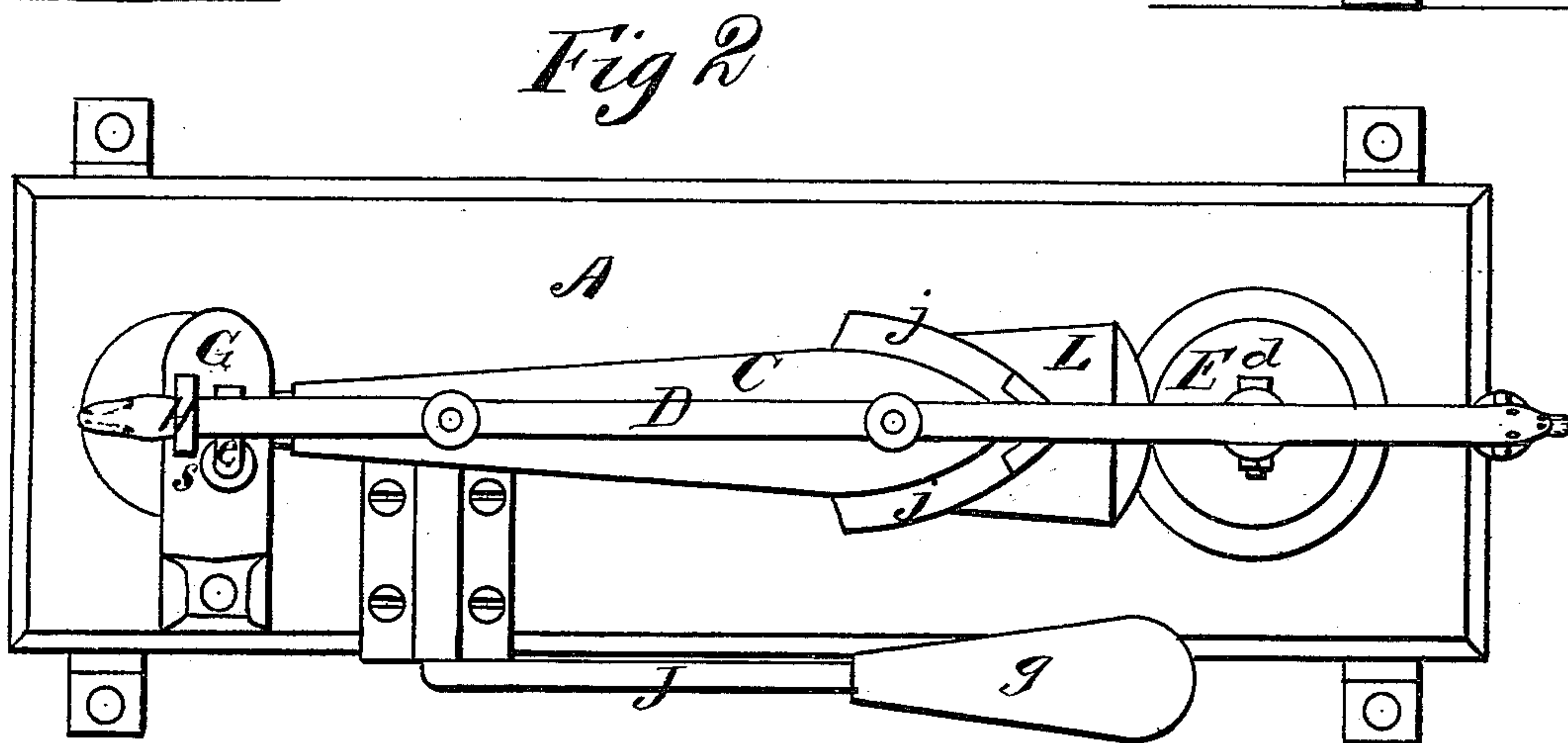
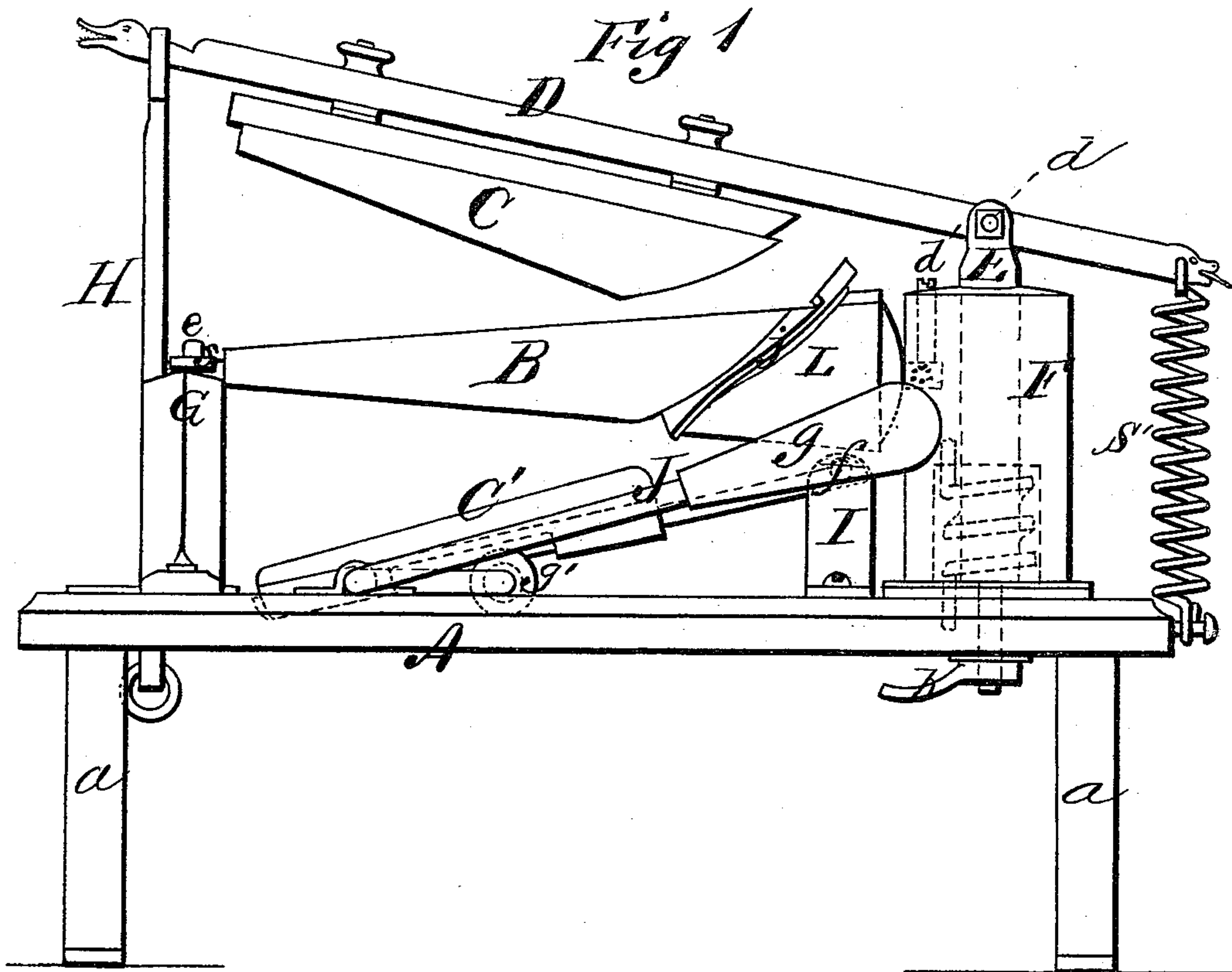


M. S. LEIDY.  
Making Sheet-Metal Spouts.

No. 165,596.

Patented July 13, 1875.



WITNESSES  
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*Fig 3*

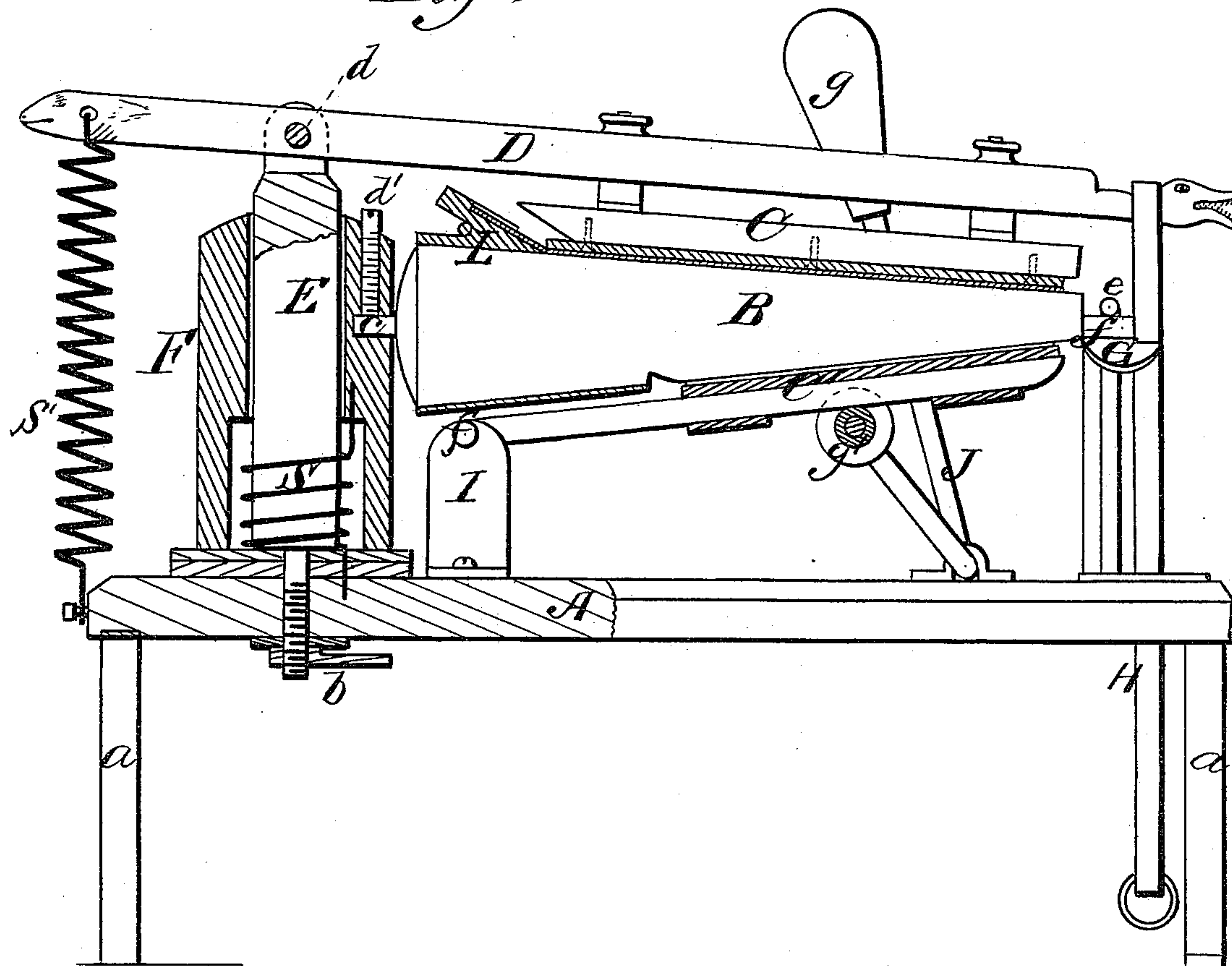


Fig 4

*Fig 5*

Fig 6

Fig 7

*Fig 8*

WITNESSES

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# UNITED STATES PATENT OFFICE.

MILETUS S. LEIDY, OF RICHMOND, VIRGINIA.

## IMPROVEMENT IN MAKING SHEET-METAL SPOUTS.

Specification forming part of Letters Patent No. **165,596**, dated July 13, 1875; application filed May 8, 1875.

*To all whom it may concern:*

Be it known that I, MILETUS S. LEIDY, of Richmond, in the county of Henrico and State of Virginia, have invented a new and valuable Improvement in Machines for Manufacturing Spouts; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawings, making a part of this specification, and to the letters and figures of reference marked thereon.

Figure 1 of the drawings is a representation of a side elevation of my machine, and Fig. 2 is a plan view of the same. Fig. 3 is a side view, part sectional, and Figs. 4, 5, 6, 7, and 8 are detail views.

This invention has relation to improvements in devices which are specially designed for forming the spouts of kettles and other like vessels of sheet metal; and the nature of the invention consists in combining, with a tapering mandrel and a detachable inclined die-bed arranged thereon, a sectional former, adapted to be actuated to embrace the said mandrel, whereby a spout will be formed out of a sheet-metal blank, as will be hereinafter more fully explained.

In the annexed drawings, A designates a platform or table, supported by suitable legs *a*, upon which my improved spout-forming device is designed to be mounted. This mechanism consists of a conical mandrel, B, which is supported in a horizontal position at both ends, and of a former, composed of sections C C', the one above and the other below the said mandrel, which sections are hinged to vibrate to and from the said mandrel, and are of such a shape that they will snugly embrace and inclose the same when they are caused to vibrate inward upon it, as shown in Fig. 3. The upper section C of the former is rigidly but detachably secured to a vertically-vibrating lever, D, fulcrumed at *d* to an upright, E, arranged within a tubular cylinder, F, which upright is maintained in position by means of a nut, *b*, applied upon its lower end, projecting through table A. Cylinder F rotates freely on rod E, and sustains one end of mandrel B, by means of a lug, *c*, on its end, which is received into a perforation in the said cylinder,

and is held therein by means of a retainer-screw, *d'*. By this means the mandrel is allowed to have a free horizontal vibration, for the purpose of removing the spout conveniently when finished, and it is automatically returned to its proper position, in relation to formers C C', by means of a coiled spring, S, arranged on rod E, and rigidly secured to the said cylinder and to platform A. When mandrel B is caused to vibrate horizontally spring S will be strongly compressed, so that the moment the mandrel is released the reaction of the said spring will cause it to be returned to its proper position under section C of the former, when it will be received upon a rest, G, at its other end. This rest has a stop, *e*, under which a projection, *f*, on the end of the mandrel will be received, thus preventing it from undue displacement, when it is returned to its proper position by spring S. The shock occurring when the mandrel is arrested by stop *e* is softened by means of a spring, *s*, on the said stop, and the casual disarrangement of the mandrel, with relation to the dies or formers C C', is thus effectually prevented. Lever D is actuated for the purpose of causing die C to embrace the mandrel by means of a vertically-reciprocating rod, H, passing through platform A, and operated by a suitable treadle, which rod is provided as to its upper end with a slot, through which the said lever passes, as shown in Fig. 1. The lower die or former C' is pivoted at *f* to an upright, I, near cylinder F, which is rigidly secured to the platform, and is actuated to embrace the lower surface of mandrel B, by means of a vertically-vibrating U-shaped lever, J, having its fulcrum on the said platform A.

When lever J is actuated by means of a handle, *g*, its weight-arm, which is provided with a grooved anti-friction pulley, *g'*, will raise the said former forcibly against the mandrel. By this means a sheet-metal blank, K, when it is interposed between the mandrel and the upper die or former C, will be bent by the latter over the mandrel when it is forcibly brought into contact therewith, thus forming a little more than one-half the bend of the spout, the remaining bend being supplied by means of the lower former C', which will bring the tapering edges *h* of the blank to-



gether for soldering. The upper end of this blank, when the flanges for fastening the spout to the vessel are designed to be made thereon, will be provided with an arrow-headed extension,  $h'$ , and it will be swaged to form a neb,  $i$ , and flanges  $i'$  on the spout  $o$ , (shown in Fig. 8,) by means of a detachable die-bed,  $L$ , which is passed on mandrel  $B$  with its upper-inclined flanged front edge upward. These flanges, designated by the letter  $j$  in the drawings, extend outward from the die, and upward beyond the same, a recess,  $j'$ , being cut slightly in rear of the point of the said bed in which the point of the arrow-headed blank  $h'$  is designed to be received. The inner end of the upper former  $C$  is beveled, so that when it is actuated for the formation of a spout it shall fit snugly over the front inclined end of the die-bed, as shown in Fig. 3.

When the blank  $K$  (shown in Fig. 7) is placed upon the mandrel with its point in recess  $j$  of the die-bed, the beveled front end of the upper former will form the neb, and the flanges  $i'$  of the spout at the same time bending the body of the blank over the mandrel, shaping out rather more than one-half of the spout; the lower former being then forcibly thrown up will shape out the remainder of the spout, and bring the edges  $h$  of the blank close together, so that they may be conveniently soldered together. The foot is then removed from the treadle actuating the upper former to spring back under the impulse imparted to its operating-lever  $D$ , through the reaction of a helical spring,  $S'$ , rigidly secured to its weight end and to the platform. Lever  $J$  is then thrown forward, allowing the lower former to gravitate from the mandrel, when the latter may be vibrated out of its rest  $G$ , and the spout conveniently removed; it will then spring back automatically into position between the upper and lower formers through the reaction of its returning spring  $S$ .

With a view to preventing die-bed  $L$  from

rotating on mandrel  $B$ , it is provided with an inwardly-projecting flange,  $n$ , in the nature of a spline, which is received into a correspondingly-shaped recess,  $r$ , in the said mandrel, thus holding the die in a constant position.

What I claim as new, and desire to secure by Letters Patent, is—

1. In a machine for making sheet-metal spouts, the concave formers  $C$   $C'$ , adapted to be successively operated in combination with a tapering mandrel,  $B$ , substantially as specified.

2. The die-bed  $L$ , having flanges  $j$  and recess  $j'$ , in combination with a mandrel,  $B$ , and the formers  $C$   $C'$ , adapted to be actuated to inclose the same, substantially as specified.

3. The combination of a rest,  $c$ , and a spring,  $s$ , applied thereon, with a horizontally-vibrating mandrel,  $B$ , adapted to be automatically returned by spring  $S$  to its rest  $G$ , substantially as specified.

4. The tapering mandrel  $B$ , having longitudinal groove  $r$ , in combination with a detachable flanged die-bed,  $L$ , having flange  $n$ , substantially as specified.

5. The mandrel  $B$ , in combination with cylinder  $F$ , rotating on rod  $E$ , substantially as specified.

6. The U-shaped lever  $J$ , having grooved anti-friction roller  $g'$ , in combination with a gravitating former  $C'$  and a fixed mandrel  $B$ , substantially as specified.

7. The sheet-metal blank  $K$ , having tapering edges  $h$  and an arrow-headed extension,  $h'$ , adapted to be formed into a spout,  $o$ , having a neb,  $i$ , and flanges  $i'$ , whereby it is riveted to a vessel, substantially as specified.

In testimony that I claim the above I have hereunto subscribed my name in the presence of two witnesses.

MILETUS SAMUEL LEIDY.

Witnesses:

W. H. TALMAN,

JNO. A. MEANLEY.