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Making Metal Tubing.

No. 46,311. Patented Feb. 7, 1865.

Fig. 1,

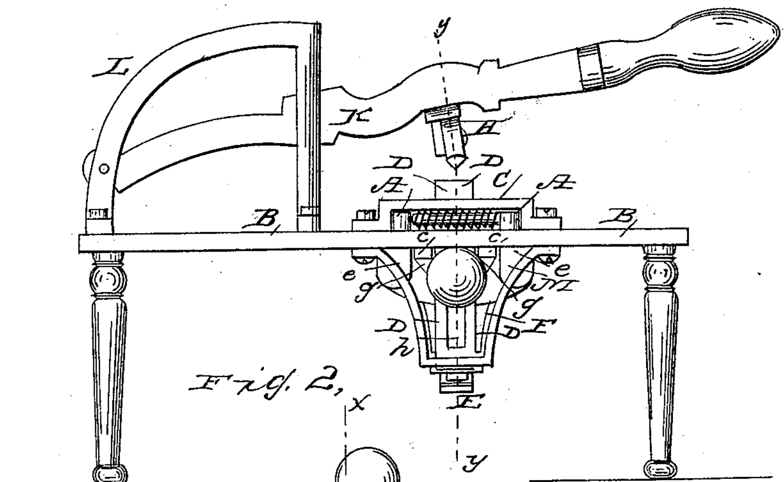


Fig. 2,

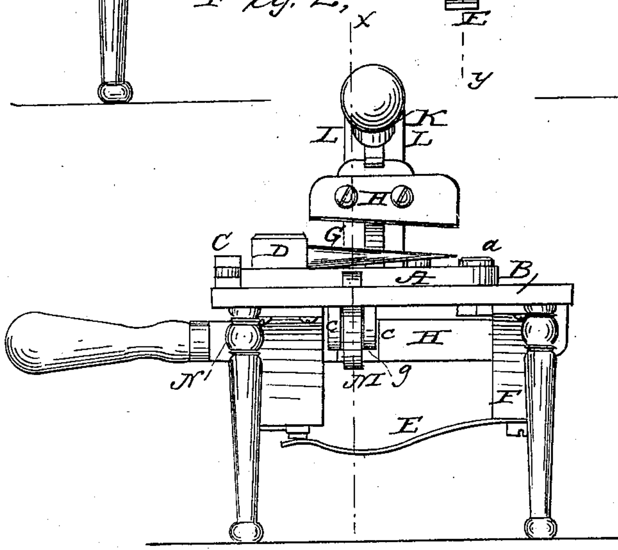
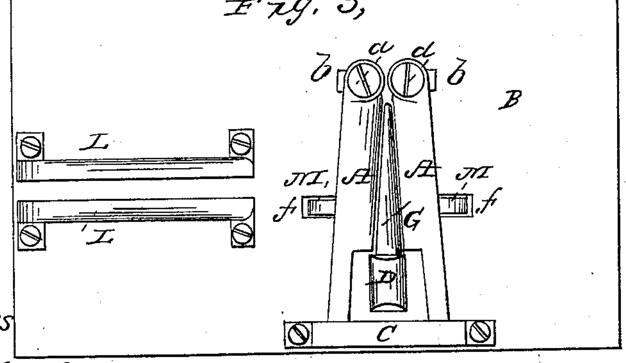


Fig. 3,



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2 Sheets—Sheet 2.

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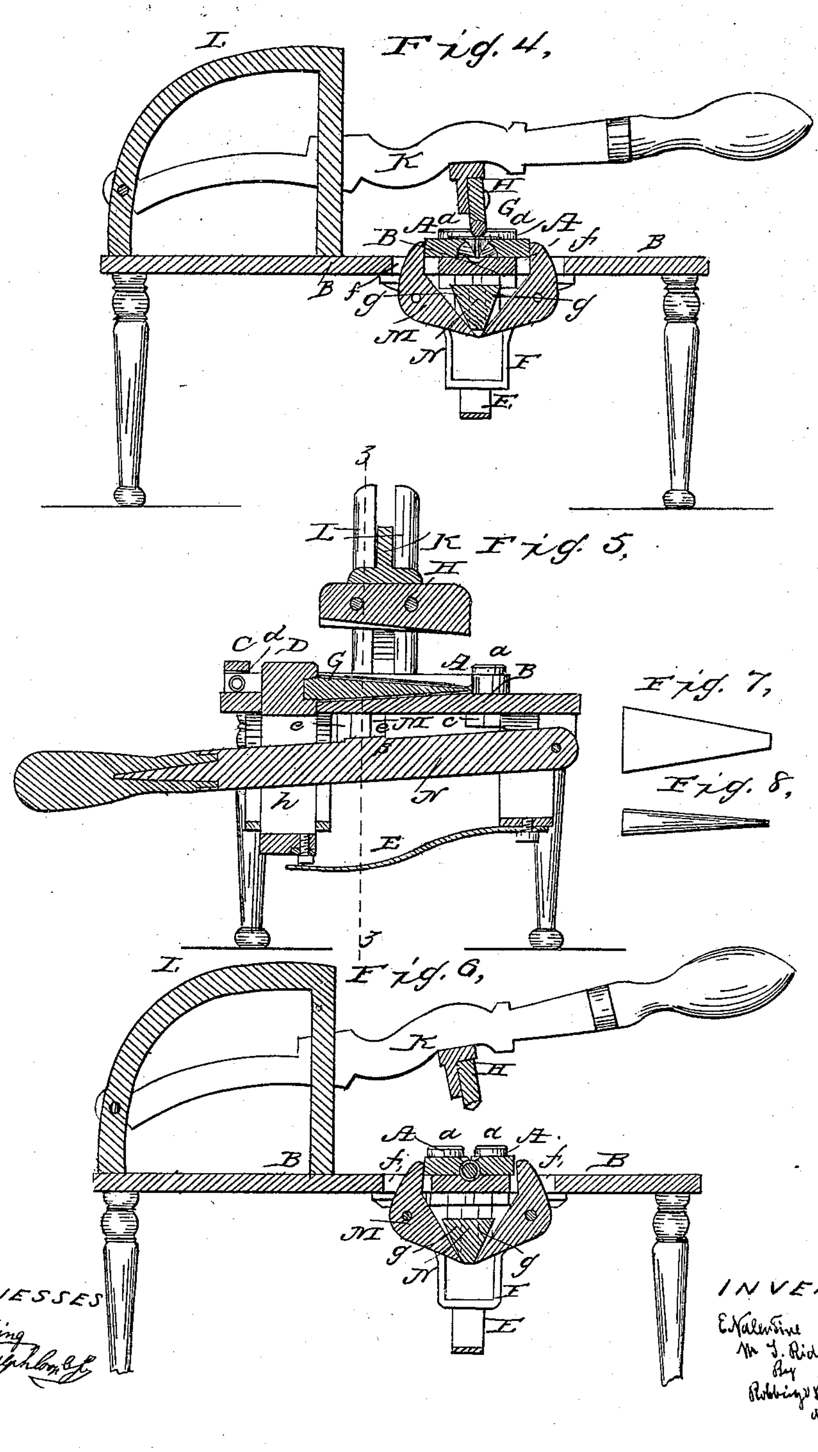

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UNITED STATES PATENT OFFICE.

E. VALENTINE AND M. T. RIDOUT, OF MILWAUKEE, WISCONSIN, ASSIGNORS TO THEMSELVES AND WM. BECK.

IMPROVED MACHINE FOR MAKING METALLIC TUBES.

Specification forming part of Letters Patent No. **46,311**, dated February 7, 1865.

To all whom it may concern:

Be it known that we, ELIJAH VALENTINE and MOSES T. RIDOUT, of Milwaukee, in the county of Milwaukee and State of Wisconsin, have invented a new and useful Machine for Making Tapering Metallic Tubes or Spouts; and we do hereby declare that the following is a full and complete description thereof, reference being had to the accompanying drawings, forming a part of this specification, and in which—

Figure 1 is a side elevation of our improved machine with the repressing-lever elevated; Fig. 2, an end view of the same; Fig. 3, a top view thereof with the repressing-lever removed, showing the relative position and arrangement of the mandrel and swaging-jaws; Fig. 4, a longitudinal vertical section in the direction of the line *x x* of Fig. 2, but showing a blank under the mandrel and in position to be formed into a tube; Fig. 5, a transverse section in the direction of the line *y y* of Fig. 1, showing the various parts of the machine in their relative positions when the formation of the spout has just been completed; Fig. 6, a transverse section of the same in the line *z z* of Fig. 5. Figs. 7 and 8 represent, respectively, a metallic blank and a complete spout formed therefrom by our improved machine.

Similar letters indicate like parts in all of the drawings.

Our improved machine is so constructed as to form a fine-pointed spout or tube by the operation of a pair of swaging-jaws, which bend and clamp a metallic blank around a suitable mandrel, the blank being first forced down and doubled up between the jaws by the mandrel itself under the pressure of a powerful lever.

The clamping or swaging jaws A A of our improved machine are laid transversely upon a table or bench, B, as shown in Fig. 3 of the drawings. They are pivoted at one end by means of the pivots or set-screws *a a* passing through the same and through slots *b b* in the table B, and secured by nuts *c c* beneath it. These jaws swing open horizontally upon the table, as seen in Fig. 3, and their free ends extend to the edge of the table, passing beneath a bridle, C, which limits their movement. They are kept apart when at rest by a spiral spring, *d*, inserted between them under the bridle C, as seen in Fig. 1. A rectangular aperture is pierced in the table or bench B centrally between the free ends of the jaws A A in the rear of the bridle C, through which rises a slotted upright bar, D. The lower end of this bar D rests upon the extremity of a spring-plate, E, which is secured beneath the table to a pedestal, F, or other suitable support, as is clearly illustrated in Figs. 2 and 5 of the drawings. A steel mandrel, G, of the size required in the metallic tubes to be formed by the machine, is screwed into the face of the upper end of this upright bar D, and extends thence horizontally above the jaws A A in a line midway between them. (See Figs. 2 and 3 of the drawings.) Each mandrel is made tapering, of the form required in the metallic spouts, and the pivoted ends of the jaws A A are placed at such distances apart as that when their free ends are spread open by the spiral spring *d* their inner sides or edges shall be parallel to the sides of the mandrel, as seen in Fig. 3. A groove tapering in the same direction and to the same degree as the mandrel is formed in each of these inner adjacent sides or edges of the jaws A A, as seen in Fig. 4, so as that when the mandrel G is brought down between them and they are drawn together upon it they will close over the same, as illustrated in Fig. 6 of the drawings. These grooves are so shaped as to insure the perfect lapping of the edges of the metal blank one upon another when it is bent around the mandrel in the manner hereinafter described.

Various sizes of mandrels may be used with the same machine, so as to form different sizes of spouts, as they can be all made to fit and screw into the same aperture in the upright bar D. As the set-screws *a a*, upon which the ends of the jaws are pivoted, pass through slots in the table and are secured by nuts beneath, the pivoted ends of the jaws A A are capable of lateral adjustment, so as to be brought nearer together or placed farther apart, in order to operate with mandrels tapering to a greater or less degree. The jaws themselves may also be easily removed, so that different sets may be used with the machine to suit the dif-

ferent sizes of mandrels required in producing various sizes of spouts. The top of the table B, immediately below the mandrel G and between the jaws A A, is also channeled out with a tapering groove, narrowing toward the pivoted ends of the jaws. A hand-lever, K, is pivoted between guiding-arcs L L, secured upon the remote end of the table B, as seen in Figs. 1 and 3, and extends the entire length of the table over and across the swaging-jaws and within easy reach of the operator. A pressure-block, H, tapering in the same direction as the mandrel G, and having its lower edge channeled out with a tapering groove the counterpart thereof, is secured upon the under side of the lever K, so as to swing over and fit upon said mandrel; hence, when by the operation of the lever the block H is brought into contact with the mandrel, it bears evenly thereon throughout its entire length, and the pressure of the lever is thereby so communicated to the upright bar D as to overcome the resistance of its upholding-spring E and force the mandrel down between the jaws into the groove in the table. The jaws may then be closed or forced together upon either side of the mandrel, so as to embrace and cover the same closely and accurately, by means of two angular levers, M M, pivoted beneath the table between ears or lugs *s s*, projecting from the under side thereof. (See Figs. 1 and 2.) The lower ends or arms of these levers M M extend toward and nearly touch each other, their inner plane faces converging at an angle of about forty-five degrees. (See Fig. 4.) The inner faces of the upper ends or arms of the levers are parallel and at right angles with the table, and they pass up through slots *f f*, cut in the table, so as to project slightly above the same immediately behind the outer edges of the swaging A A when they are spread apart, all as clearly shown in Figs. 3 and 4 of the drawings. The slots *f f* are cut transversely, so as to extend a short distance under each jaw. These angular levers M M are operated by means of a wedge-shaped cam, *g*, formed upon a lever, N, pivoted under the table, so as to extend forward between the lower convergent arms of the levers M M, and pass through a long guiding-slot, *h*, cut in the upright bar D, as seen in Figs. 1, 2, and 5. When the lever N is pressed down, the cam *g*, acting upon the opposite faces of the lower arms of the levers M M, will spread them apart, and thus force their upper and shorter arms toward each other. These in turn, pressing against the swaging-jaws A A, will overcome the resistance of the spiral spring *e*, which keeps them apart, and will close them against each other, as seen in Fig. 6 of the drawings.

Although the lever N is represented as a hand-lever, it may be connected with a suitable treadle, so as to be worked by the operator's foot.

When our improved machine is at rest, the cam *g* of the lever N will rest loosely between and upon the lower arms of the angular levers M M. These are kept together so as to support the lever by the power of the spiral spring *e* acting thereon through the swaging-jaws A A, as seen in Fig. 4. The upright bar D is also retained in an elevated position by the spring E beneath it, and will thus keep the attached mandrel G elevated above the swaging-jaws and the top of the bench or table B, as seen in Fig. 2. The hand-lever K, with its pressure-block H, may rest on the mandrel or be thrown higher, as seen in Fig. 1.

When a spout is to be formed with the machine, a metallic blank of about the shape illustrated in Fig. 7 is placed lengthwise upon the jaws immediately under the mandrel, with its broadest end against the upright bar D, as seen in Fig. 4. Pressure is then exerted upon the lever K, so that the attached plate H will bear down upon the mandrel G, and by forcing it down upon the blank will double this blank up lengthwise and carry it down between the swaging-jaws A A. These jaws are then closed by a movement of the lever N acting upon the angular levers M M, as described.

Having thus fully described our improved machine for forming metallic tubes or spouts, what we claim therein as new, and desire to secure by Letters Patent, is—

1. In combination with a movable mandrel, G, or its equivalent, the hinged sliding jaws A A, pivoted upon a supporting block or table, B, and operating substantially in the manner and for the purpose herein set forth.

2. In combination with the jaws A A and movable mandrel G, or its equivalent, securing said jaws by adjustable pivots, so as to adapt them to mandrels of different proportions, substantially in the manner herein set forth.

The foregoing specification of our improved machine for making fine-pointed metallic spouts signed by us this 29th day of October, A. D. 1864.

E. VALENTINE.
M. T. RIDOUT.

In presence of—
WM. BECK,
G. W. KELLOGG.