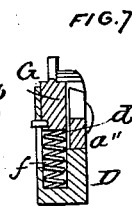
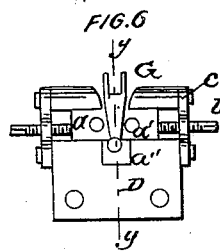
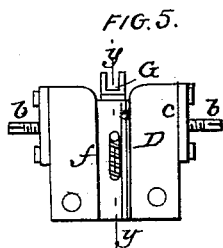
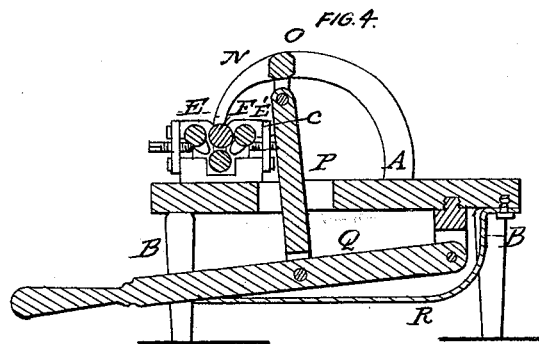
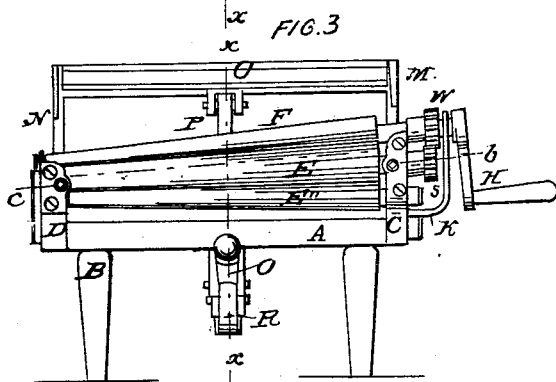
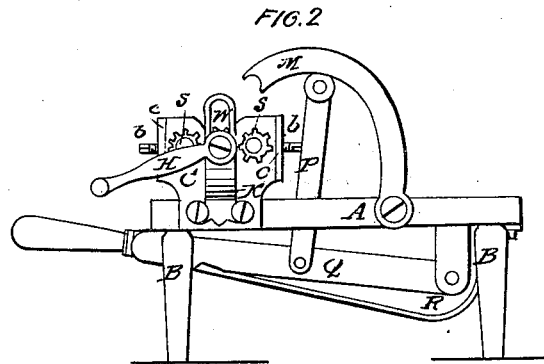
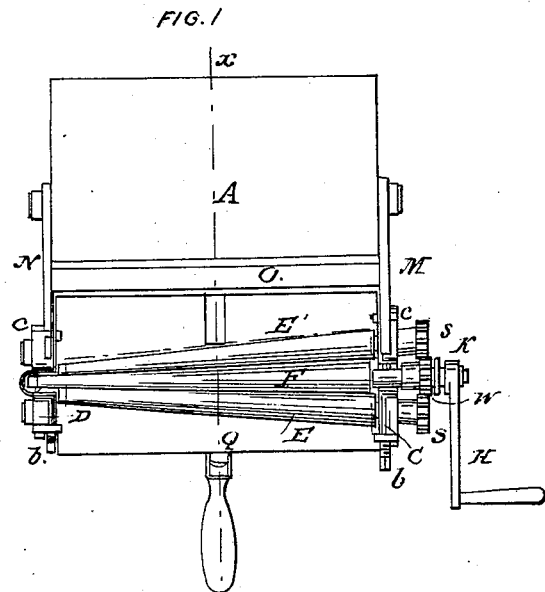


VALENTINE & RIDOUT.  
Machine for Making Metal Tubes.

No. 49,045.

Patented July 25, 1865.



WITNESSES  
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# UNITED STATES PATENT OFFICE.

ELIJAH VALENTINE AND MOSES T. RIDOUT, OF MILWAUKEE, WISCONSIN,  
ASSIGNORS TO THEMSELVES AND WM. BECK, OF SAME PLACE.

## IMPROVED MACHINE FOR MAKING METALLIC TUBES OR SPOUTS.

Specification forming part of Letters Patent No. 49,045, dated July 25, 1865.

### *To all whom it may concern:*

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

Figure 1 is a top view of our machine; Fig. 2, a side elevation thereof when at rest; Fig. 3, a front elevation with the forming-roller raised so as to allow the introduction of the metallic blank; Fig. 4, a transverse section in the line *xx* of Fig. 1, with the forming-roller or mandrel *F* forced down between the auxiliary rollers *E E'* by the pressure-arms *M N*. Figs. 5 and 6 are respectively detached front and rear elevations of the block supporting the smaller ends of the auxiliary rollers; and Fig. 7 is a vertical section of said block in the line *yy* of Fig. 5, showing the arrangement of the spring-actuated rod *G*, supporting the journal of the forming-roller at this end thereof.

Similar letters of reference indicate like parts in each of the figures.

The nature of our invention consists, primarily, in a peculiar combination and arrangement of a series of tapering rollers for the purpose of rolling up metallic blanks into tubes or spouts; secondly, in the combination of an upper forming-roller or mandrel capable of being readily detached and elevated from its bearings at either end with a series of auxiliary stationary rollers which shall partially surround the same when in operation.

The bench or table *A*, supported upon the standards *B B*, Figs. 2, 3, and 4, forms the bed-plate of our machine. This bed-plate *A* may be made (as illustrated in the drawings) of a width somewhat greater than the length of the tubes or spouts to be formed in the machine. To its side edges are secured suitable metallic blocks or frames, *C* and *D*, Figs. 1 and 3, in which are placed respectively the journal-boxes for the front and rear ends of the stationary auxiliary rollers *E E' E''* and of the forming-roller or mandrel *F*. These rollers are all equal in size and uniformly tapering.

The arrangement of the journal-boxes for the stationary rollers *E E' E''* is similar in both frames *C* and *D*, and is illustrated in the detached rear view of the block *D* in Fig. 6 of the drawings. These journal-boxes *a a' a''* are let into dovetailed recesses formed on the inner face of each block. The journal-box *a''* for the lower roller, *E''*, is placed in the center of the block, and the remaining two, *a* and *a'*, above it, on either side thereof, as seen in Fig. 6. The journal-boxes *a a'* for the side rollers, *E E'*, placed in the horizontal recesses, are secured, and at pleasure adjusted, by means of set-screws *b b* working in suitable side pieces, *c c*, secured on the ends of the block, as seen in Figs. 3, 5, and 6.

The two side rollers, *E E'*, are prolonged outwardly at their larger ends through apertures in the block *C*, and are fitted with small cog-wheels *S S* of equal diameters, as seen in Figs. 1 and 2. A central notch or recess is cut down vertically in each of the blocks *C* and *D* to the level of the bearings of the side rollers, *E* and *E'*. The lower portion of the notch in the block *C* forms a bearing for the larger end of the central forming-roller or mandrel, *F*, whose opposite smaller end is received into a *Y* upon the upper end of a rod, *G*, whose lower end drops into an inclosing-recess in the block *D*, and rests upon a spiral spring, *f*, contained therein, all as clearly illustrated in Figs. 1, 5, 6, and 7. This forming-roller or mandrel *F* extends outwardly at its enlarged end, and, passing through a slot in a guiding-piece, *K*, secured to the outer face of the block *C*, as shown in Figs. 2 and 3, terminates in a crank, *H*, Fig. 1.

A cog-wheel, *W*, equal and similar in all respects to the cog-wheels *S S* upon the ends of the auxiliary rollers *E E'*, is fitted upon this projecting end of the forming-roller or mandrel *F*, so as to gear into the same, the intervals between the cog-wheels *S S* being such that when the mandrel *F* drops down between the rollers *E E* and rests upon its bearing in the frame *C* its wheel *W* will engage with each of said wheels *S S* on either side.

In order to press down the bearing in which the journal at the small end of the forming-roller or mandrel *F* rests, and which is other-

wise kept elevated by the spring *f*, and to keep said roller down between the auxiliary rollers *E E' E''*, as seen in Fig. 4, while the spout is being formed thereon, two curved arms, *M* and *N*, are pivoted to the bed-plate *A*, so as to reach over and bear upon said forming-roller. The free extremities of these arms *M* and *N* are so recessed (see Fig. 2) as to fit accurately upon the roller, and the one, *M*, fits down thereupon immediately over its bearing in the block *C*, and the other, *N*, immediately in the rear of its bearing in the *Y* of the spring-actuated rod *G*, as seen in Figs. 1 and 3. These curved pressure-arms *M* and *N* are connected together by a stout cross-bar, *O*, and to the center of this cross-bar is hinged a long link, *P*, which passes through a slot in the bed-plate *A*, and is hinged at its lower end to the center of the lever *Q*, whose rear end is pivoted to the under side of the bed-plate, and whose front end extends out in front of the machine, and there terminates in a handle, all as clearly illustrated in Figs. 2 and 4 of the drawings.

A stout spring, *R*, is so secured under the lever *Q*, as seen in Fig. 4, as that it will keep it, when at rest, thrown up, so that the connected pressure-arms *M* and *N* shall be held up clear and free from the forming-roller *F*, as seen in Fig. 2.

In forming a spout or tube with our improved machine, a suitable metallic blank of the proper size and shape is laid upon the two rollers *E* and *E'* under the forming-roller or mandrel *F*, whose smaller end, resting in the *Y* of the rod *G*, is elevated by the power of the spring *f*, and whose larger end the operator will himself raise by means of the crank *H*. By exerting pressure upon the lever *Q* the arms *M* and *N* are then brought to bear upon the mandrel or forming-roller *F*, at either end thereof, with sufficient power to force it down, bending and carrying the blank with it in between the auxiliary stationary rollers *E E'* and upon the lower roller, *E''*. When the mandrel *F* is thus borne down between the rollers *E E'* its cog-wheel *W* will engage with their cog-wheels *S* and *S'*, so that its revolution will cause these auxiliary rollers to rotate with equal velocity, and the

blank already doubled up will be at once turned over and closed upon the mandrel, so as to form a complete and finished tube. When the tube is thus completed and the lever *Q* released the arms *M N* will, under the influence of the spring *R*, fly up clear of the mandrel *F*, and by a slight downward pressure upon the crank *H* the opposite smaller end of the roller or mandrel *F* may be elevated, so as to permit the tube or spout formed thereon to be readily removed therefrom. In this way a thousand tubes for candle-molds or for can-spouts, &c., may be easily formed in one hour, and as each roller moves in unison with its fellow the metal will not be broken, scratched, or in the least marred in the operation.

We contemplate operating the lever *Q* by means of a treadle, if found desirable.

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

1. The use and arrangement of two or more stationary rollers, *E E*, in combination with a detachable forming-roller, *F*, partially inclosed thereby, when all of said rollers have a tapering form and are made to revolve in unison with each other, substantially in the manner and for the purpose herein set forth.

2. In combination with a detachable forming-roller or mandrel, *F*, and stationary auxiliary rollers *E E'*, the pressure-arms *M* and *N*, arranged and operating substantially as and for the purpose herein set forth.

3. The spring-actuated rod *G*, so combined with the supporting-block *D* and the pressure-arm *M* as to form an adjustable journal-box for the free end of the detachable mandrel *F*, substantially in the manner herein set forth.

The foregoing specification of our improved machine for making tapering metallic tubes or spouts signed by us this 12th day of November, A. D. 1864.

ELIJAH VALENTINE.  
MOSES T. RIDOUT.

In presence of—

A. HESSELINK,  
L. MERRICK.