

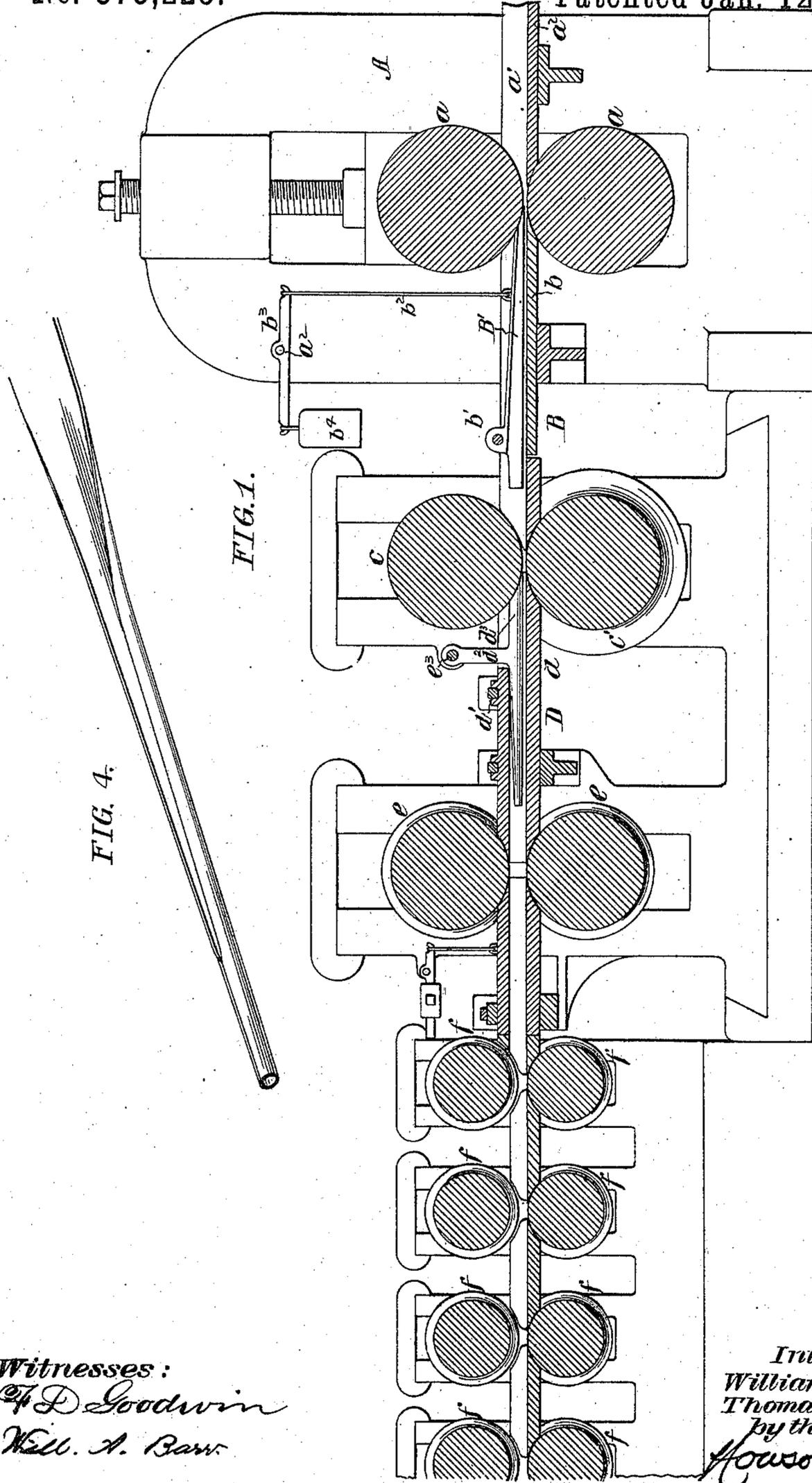
(No Model.)

2 Sheets—Sheet 1.

W. C. FRICK & T. J. PRICE.
MACHINE FOR MAKING TUBING.

No. 575,225.

Patented Jan. 12, 1897.



Witnesses:
E. D. Goodwin
Wm. A. Barr

Inventors:
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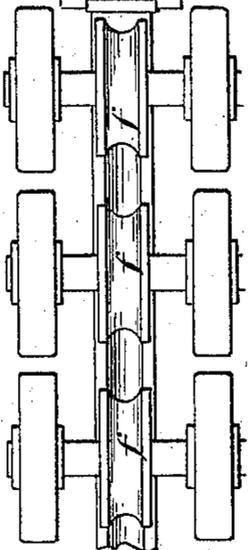
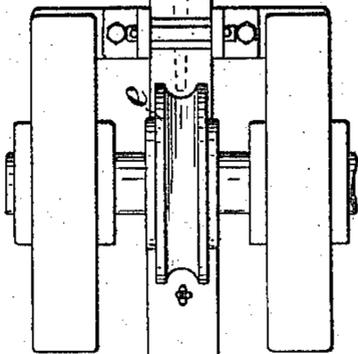
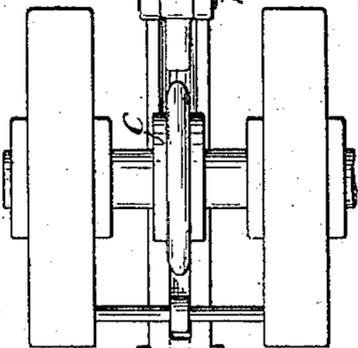
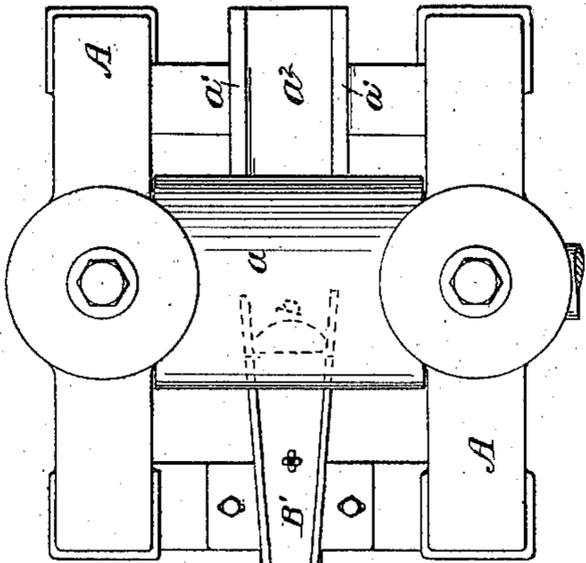


FIG. 3.

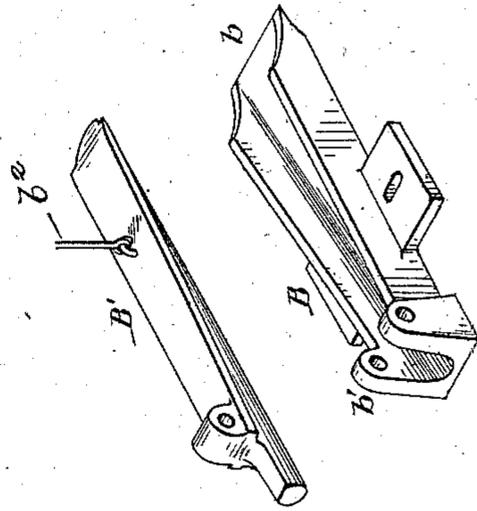


FIG. 5.

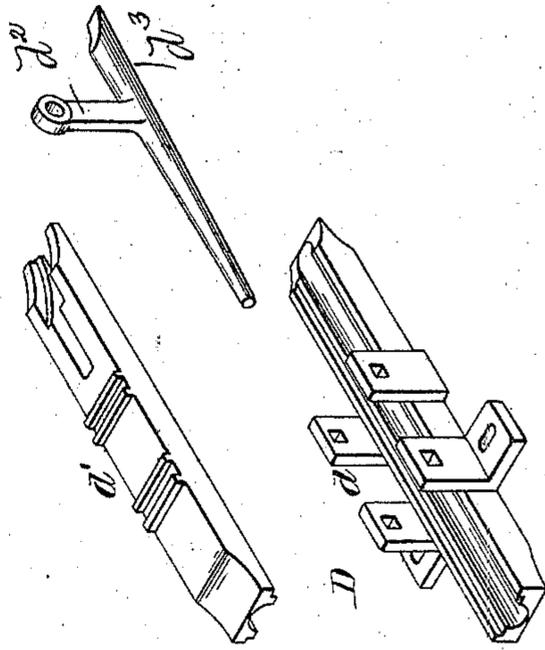


FIG. 6.

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UNITED STATES PATENT OFFICE.

WILLIAM C. FRICK AND THOMAS J. PRICE, OF DANVILLE, PENNSYLVANIA.

MACHINE FOR MAKING TUBING.

SPECIFICATION forming part of Letters Patent No. 575,225, dated January 12, 1897.

Application filed December 14, 1894. Serial No. 531,845. (No model.)

To all whom it may concern:

Be it known that we, WILLIAM C. FRICK and THOMAS J. PRICE, citizens of the United States, and residents of Danville, Montour county, Pennsylvania, have invented certain Improvements in Machines for Making Tubing, of which the following is a specification.

The object of our invention is to construct a machine for making unwelded tubes from flat skelps.

In the accompanying drawings, Figure 1 is a longitudinal section of our improved machine for rolling and shaping tubes. Fig. 2 is a plan view of Fig. 1. Fig. 3 is a diagram view illustrating the different forms which the skelp assumes in passing through the machine. Fig. 4 is a perspective view of the skelp, showing the different stages of bending. Fig. 5 is a detached perspective view of the first former. Fig. 6 is a detached perspective view of the second former.

In carrying out our invention we use a flat skelp, preferably slightly thicker than the required thickness of the tube to be rolled. This skelp is passed between the reducing and feeding rolls $a a$, which are mounted in the housings A, one of said rolls—the upper, by preference—being driven in any suitable manner. In order to guide the skelp into the rolls, I provide guide-plates a' on each side of the table a^2 , so that the skelp will be guided between the rolls at the proper point. Suitably mounted on the frame, beyond the rolls, is a former B. The end b of this former is perfectly flat and is adapted to rest against the lower roll a . This former has a wide mouth and is gradually contracted into a U shape, as shown clearly in Fig. 2.

Pivoted at b' is a cover-plate B' , which fits within the former and is shaped to correspond with the interior of said former, there being sufficient space left between the two for the passage of the skelp. Connected to the cover-plate by a rod b^2 and a lever b^3 is a weight b^4 , which tends to keep the cover-plate always in contact with the upper roll a , so that the passage of the skelp between the plate and the former is insured. The lever b^3 is mounted on a bar a^2 on the housings A. Other means of connecting the weight to the plate may be used without departing from

our invention, and a spring may be substituted for the weight.

Beyond the former is a pair of rolls $c c'$. The under roll c' has a U-shaped groove, and the upper roll c has a U-shaped tongue adapted to the groove, the rolls being so set that they will engage the partially-formed tube as it passes from the former B, and these rolls force it into the former D, which is beyond the rolls $c c'$. This former is made in two parts $d d'$ and is so shaped that it will turn the unbent ends of the partially-formed tube over a mandrel d^2 , pivoted at e^3 to the frame of the machine. This mandrel is preferably provided with a tongue d^3 , which extends to the rolls $c c'$, in order that the partially-formed tube will be directed to the final former.

After the tube is bent in the final former so that the edges nearly abut they are passed between closing and shaping rolls $e e$, which are grooved to fit the tube. The tube then passes from these closing and shaping rolls through the box and is discharged.

If it is desired to confine the tube until it sets, a train of setting-rolls is provided, consisting of a series of grooved rolls f , which are arranged close together, so that they will confine the tube at intervals and hold it until the metal sets.

The abutting edges of the tube as it comes from the rolls are close together, and, in fact, in most instances touch, so that only a seam is visible. Thus while the tube is not a welded tube still it is very strong, owing to its shape and the material from which it is made, the material we prefer to use being high-carbon steel.

We claim as our invention—

1. The combination of a machine for rolling tubes in a continuous operation, said machine consisting in reducing and feeding rolls $a a$, a former B having a pivoted cover-plate B' , a weight adapted to keep said plate against the upper feed-roll a , the plate and former being tapered and shaped to bend the flat blank to U shape, rolls beyond the former, one of said rolls having a U-shaped groove in its periphery, the other having a U-shaped tongue adapted to the groove, a former beyond the rolls U-shaped at the inlet

end and circular at the opposite end, a pivoted mandrel within the former, and a pair of grooved rolls beyond the former, substantially as described.

5 2. In the rolls for making tubing, the combination of the feeding and reducing rolls *a*, the former B having the pivoted plate, a weight adapted to force the plate up against the upper feed-roll, said former having a
10 passage tapering from a flat to a U shape, a pair of feeding-rolls beyond the former one of said rolls having a U-shaped groove and the other having a U-shaped tongue adapted to the groove, the former D beyond this pair
15 of rolls, said former tapering from a U shape to a round and having a pivoted mandrel therein, with a train of setting-rolls adapted to confine the tube until the metal sets, substantially as described.

20 3. A device for forming a blank or skelp into a trough or U shaped form, consisting

essentially of a former having a tapered passage-way therein tapered from the flat to a U shape, with a cover pivoted at the U-shaped end of the former, the opposite end
25 of said cover being shaped to conform to one of the feeding-rolls, and means for keeping the cover against the roll, substantially as described.

In testimony whereof we have signed our
30 names to this specification in the presence of two subscribing witnesses.

WILLIAM C. FRICK.
THOMAS J. PRICE.

Witnesses to the signature of William C. Frick:

WILL. A. BARR,
JOSEPH H. KLEIN:

Witnesses to signature of Thomas J. Price:

ROBERT ADAMS,
ALEX. H. GRONE.