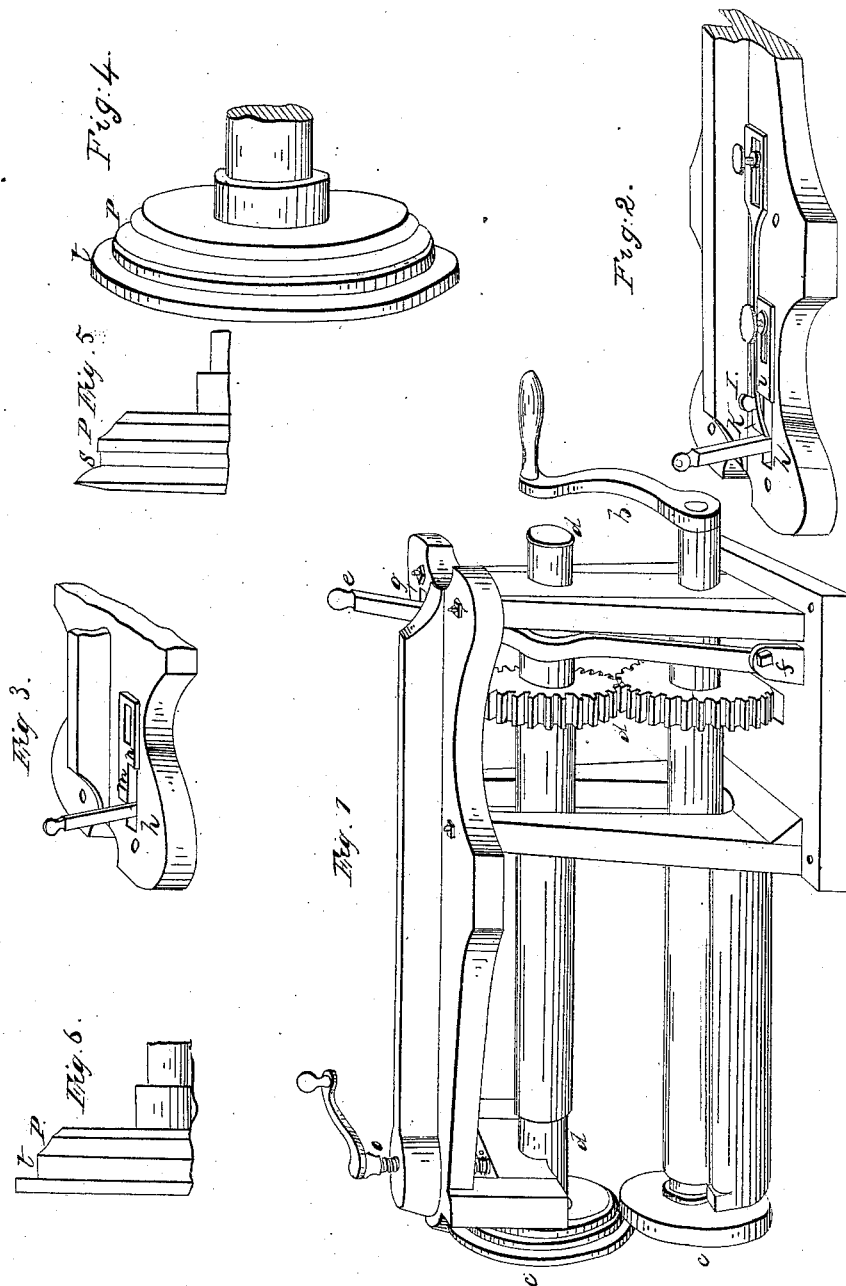


Van Pelt & Armstrong,
Roller-Tool for Sheet-Metal.
N^o 1350. Patented Sep. 30, 1839.



UNITED STATES PATENT OFFICE.

HIRAM VAN PELT AND BENJAMIN ARMSTRONG, OF TROY, NEW YORK.

IMPROVEMENT IN MACHINES FOR DOUBLE-SEAMING TIN AND OTHER WARE OF FLEXIBLE METALS.

Specification forming part of Letters Patent No. 1,350, dated September 30, 1839.

To all whom it may concern:

Be it known that we, HIRAM VAN PELT and BENJAMIN ARMSTRONG, of the city of Troy, in the county of Rensselaer and State of New York, have invented a new and improved mode of forming double seams in the manufacture of tin and other ware of flexible metals; and we do hereby declare that the following is a full and exact description, reference being had to the annexed drawings, making a part of this specification.

In the construction of many articles of tinware it becomes necessary to connect a circular bottom or end plate to its sides, and for this purpose a burr is usually raised from the edge to be joined of each, the burr from the circular plate overlapping the other to a discretionary distance, and is then peened down upon it by hammering or by machinery, forming a lip or flange round the article extending in the same plane with the circular plate. This in many light articles, when soldered in that state, constitutes the only fastening; but for articles of larger dimensions, requiring stronger and closer joinings, this entire flange is turned up and laid close to the sides of the article. This, in the language of the manufacturer, is a "double seam;" and to effect this last operation is the object of the machinery here to be described.

The machine consists of two shafts placed horizontally, one above another, as represented in Figure 1 of the annexed drawings. By means of a pinion or spur wheel upon each, as shown at *a*, and a crank upon the end of one of them, as at *b*, they are made to revolve on being turned either way by the crank. On the opposite end, as at *c c*, a circular head is fixed upon each, of the form respectively represented in the drawings, as a roller. That upon the lower shaft we make about three-eighths of an inch thick; and in manufacturing articles having bottom or end plates at right angles with their sides we use a roller of corresponding form, its edge or periphery at right angles with its sides. The upper roller is provided with a flange or enlarged section extending out in the direction of its radii, as a lip from the outer edge of its periphery to any discretionary distance beyond the other sections of the roller, as shown at *r*. At the opposite edge of the periphery we provide a

furrow or hollow section, as shown at *P*. This is a little narrower than the flange of the article to be operated upon. The circle of the outside edge of the furrow, or that which is next to the inside of the roller, we make as much smaller than that of the other edge of the same furrow as would give an inclination to a straight line extending across it of about eighteen degrees toward the shaft from a line parallel therewith. The furrow from one edge to the other is curved to the depth of about one-twelfth of an inch. The grooved section of this roller shown at *S*, Fig. 5, and the inclined section at *t*, Fig. 6, are hereinafter described and explained. By the immediate action of these rollers upon the article subjected to their operation the double seam is laid. This, however, requires a first and second process in order to bring different sections of the rollers successively to bear upon it. To effect this, one of the shafts is made movable one way or the other to a given extent in the direction of its length; and it will be perceived by the description that the movement of either in this respect would produce the same result. We have preferred the application of the principle to the upper roller. In order to allow the motion required, an increased length is given to each gudgeon or bearing-section of the shaft in their respective rests or boxes, as shown at *d d*. The movement is produced by means of the hand-lever shown at *e*, attached at its lower end to a fixture of the frame at *f* by a pin-joint. This lever, in extending upward, is made to encircle the shaft, having a shoulder or collar provided on each side for moving it.

In order to limit the motion to the extent required and to adjust the roller in its line of bearing upon the article under operation, and relative also to the other roller, an opening is provided in the top plate of the frame for the lever to pass backward and forward, as partially seen at *g*, Fig. 1, and more fully shown at *h* in the sectional view of the top plate in Figs. 2 and 3. Over one end of the opening a plate is fixed, provided with a slot extending in the direction of its length, and an adjusting or fastening screw passing through it and into the top plate of the frame, as shown at *i*, Fig. 2. This movable plate is fixed by means of the screw as a stop to the lever at any required

point. As a stop, also, to secure the lever, and of course the shaft and its roller, at the other extremity of the movement required, a spring-catch is attached in like manner to the top of the frame, a little back of the other plate. On the side next the lever and near the outward termination of the spring it is inclined nearly across the opening in the top of the frame, as shown at *k*. This slanting side of the spring causes the end to yield and allow the lever to pass it when brought back, and when passed the spring returns to its position with this end over the passage as a stop before the lever. By means of a thumb-piece upon the top of the spring, as shown at *l*, it is borne back from before the lever when required to have it return to its other station; or, instead of these stops, we sometimes for like purposes provide a plate of the form represented at *m*, Fig. 3. In this case the lower part of the lever is made so as to incline over toward the center of the machine, so as to catch behind and remain against the outer end of the plate whenever it is brought back to that station, and then to yield as a spring to a bearing out of the hand when applied to the top for the purpose of returning it to the opposite station formed by the shoulder in the same plate at *n*.

V is a slot in the plate for the purpose of applying a screw for its adjustment, &c., in like manner as that above described in connection with the other mode of effecting the same object. We adopt one or the other of these methods at our option. The thickness of the spur-wheels upon the shafts is such as to prevent this motion from throwing them out of gear.

In applying these provisions practically to the purposes for which they are designed, the upper roller is raised up by means of the crank and screw represented at *O O*, Fig. 1, the lower end of the screw being connected with a ring or band which encircles and sustains the shaft. The article to be operated upon is then passed onto the lower roller till the bottom or end of the article comes against it. The upper roller is then brought down upon it with such pressure from the screw above as the process, in the judgment of the operator, requires, the rollers having been previously adjusted, by the means above described, so as to bring the inner edge of the inclined curve described on the circle of the upper roller at *p*, in Figs. 4, 5, and 6, about one-third of the width of that section beyond or outside of a vertical line (the machine standing level) from the outer edge of the lower roller. Then, by turning the crank at the opposite end the rollers revolve, carrying the article under operation round between them, the lower roller being within it and the upper on their outside, by means of which the outer edge of the flange is borne into the hollow of the curved section of the upper roller and receives from it and from the action of the two in this operation a curved inclination over to-

ward the side of the article favorable to its being closed down upon it by the next process. This done, the upper roller, by moving the lever to its opposite station, is brought in till its extended outside circular flange or largest section (represented at *r*) compresses and keeps the bottom or end plate of the article to the outer edge of the lower roller. Then, by again turning the machine, the flange thus partially turned and now passing round between the flat top of the lower roller, as at *c*, Fig. 1, and the grooved section of the upper, as shown at *S*, Fig. 5, is laid snugly against the side of the article, and thus the seam is finished.

It is intended to make the groove *SS*, last referred to, extending round the upper roller about as deep as the flange is thick, and about equal to it in width; but in order to adapt the machine to flanges of various widths, instead of the grooves thus described we form the section which it occupies and the flat section next to it into one plane surface, taking them in a crosswise direction, commencing at the inner vertical side of the largest outside section, as shown at *t*, Fig. 6, and from thence inclining a little outward, in order that the greatest pressure shall come upon the upper or outer edge of the flange. So, also, the inclined curve extending round the same roller at *p*, as above described, we vary in depth and in width at discretion when the stoutness or resistance of the flange to be bent shall render it expedient.

We fix our rollers upon the shaft by means of screw-threads cut in each, and in order that the motion and resistance to which the operation of the machine subjects them shall incline them onto each respective shaft instead of off, we make them right and left hand screws, adapting each in this respect to the motion it receives. With these provisions we are enabled to take off one pair of rollers and put others in their place upon the same shafts, and thus exchange them whenever the different angles formed by the bottom or end plates and the sides of articles on which the double seam is to be had shall require—such, for instance, as one set of rollers for such having sides at right angles with their bottom or end plates, and others for such as have sides diverging therefrom or tapering, &c. For these and like purposes we provide rollers of differently-formed edges and flanges accordingly.

In order to give strength to the arm of the frame which supports the lower roller sufficient to sustain it under the operation of the machine without enlarging its dimensions too much for the articles to be occasionally placed upon it, we construct it in its crosswise direction of a semicircular form, as shown at *u*, Fig. 1. This, however, as well as the dimensions of the machine generally, are left as matters of judgment in its construction, and in view of the purposes to which it is to be applied in respect to the size of articles upon

which it is to operate, or of the material of which they are made, whether of tin, copper, or other flexible metals.

What we claim as our invention, and desire to secure by Letters Patent, is—

1. The formation of the inclined curve or hollow section *p*, extending round the upper roller, into which the flange of the article under operation is borne by the lower roller for the purpose of giving it its first bend toward forming the double seam, as above described.

2. We do not claim the groove described upon the upper roller at *S*, as above referred to, that having before been in use, but we claim the inclined-plane surface *t*, (taken in its crosswise direction,) extending round the said

upper roller, as above described, and substituted for the said groove, in order that as the double seam is finished by the pressure of the lower roller thereupon its greatest pressure shall be at its outer edge, as set forth.

3. The manner of moving one or the other of the shafts of the machine with its roller, for the purposes above set forth, and the provisions for adjusting the same and regulating the movement, as also above described.

Subscribed this 17th day of September, 1839.

HIRAM VAN PELT.

BENJAMIN ARMSTRONG.

Witnesses:

J. A. MILLARD,

DANIEL WHITING.