

W. A. SYLVESTER.
MACHINE FOR BEADING AND FLANGING SHEET METAL.
APPLICATION FILED OCT. 11, 1909.

974,204.

Patented Nov. 1, 1910.

2 SHEETS-SHEET 1.

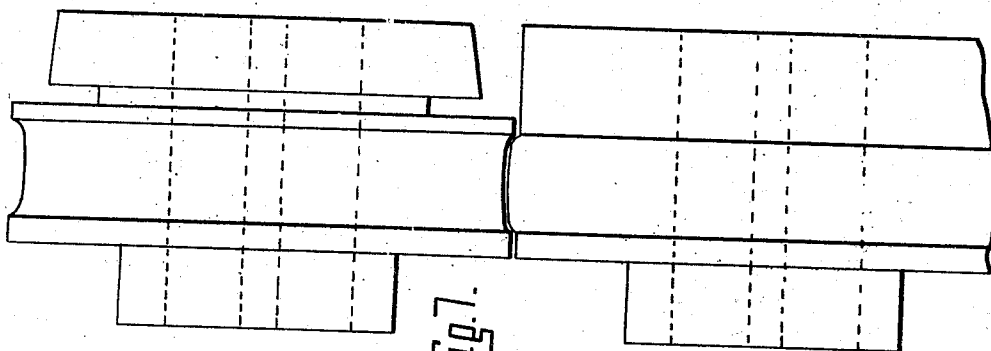


Fig. 7.

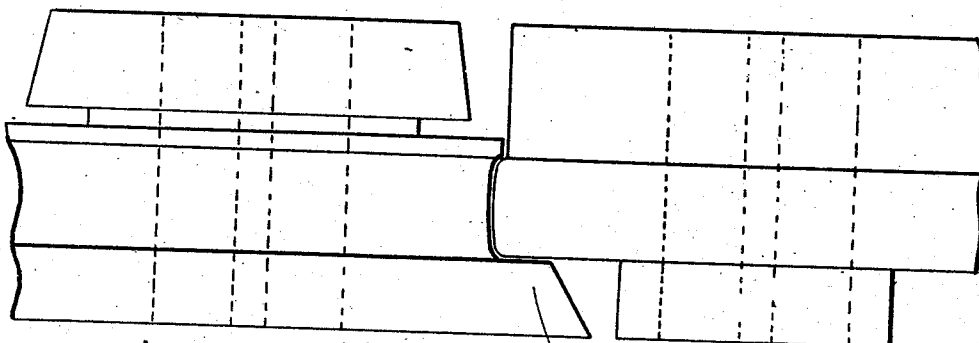


Fig. 8.

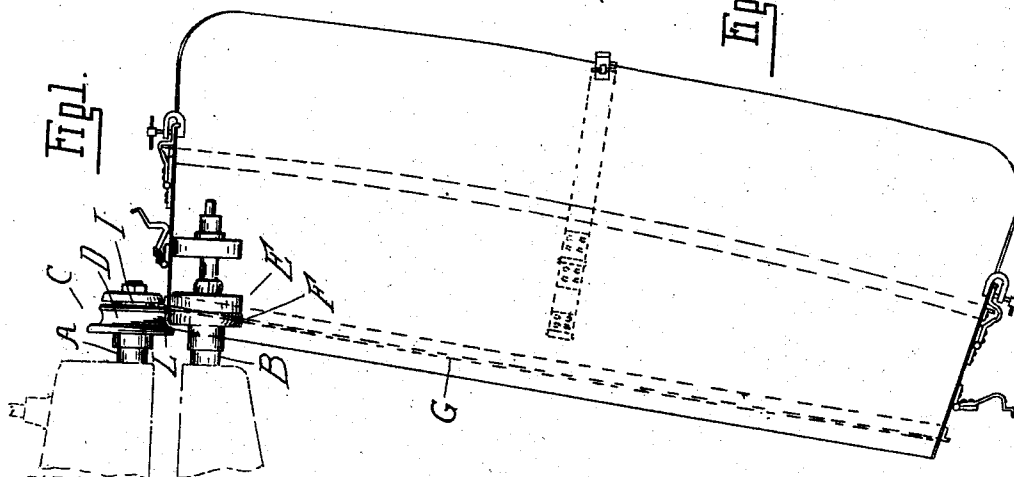


Fig. 9.

Witnesses
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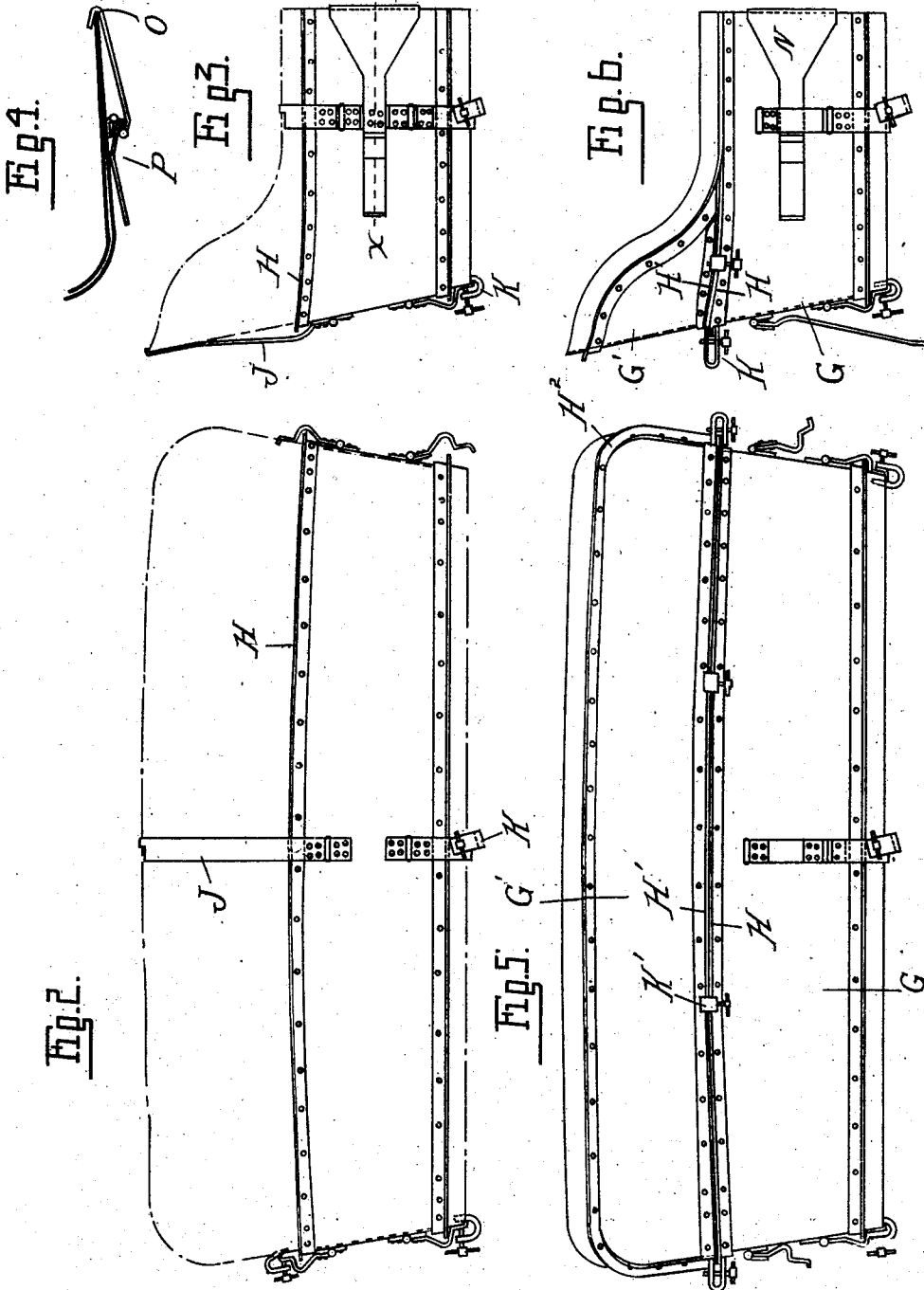
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By [Signature]

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2 SHEETS—SHEET 2.



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UNITED STATES PATENT OFFICE.

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MACHINE FOR BEADING AND FLANGING SHEET METAL.

974,204.

Specification of Letters Patent.

Patented Nov. 1, 1910.

Application filed October 11, 1909. Serial No. 522,132.

To all whom it may concern

Be it known that I, WILBER A. SYLVESTER, a citizen of the United States of America, residing at Detroit, in the county of Wayne and State of Michigan, have invented certain new and useful Improvements in Machines for Beading and Flanging Sheet Metal, of which the following is a specification, reference being had therein to the accompanying drawings.

The invention relates to the manufacture of articles from sheet metal of relatively heavy gage, such, for instance, as the bodies of automobiles.

It is the object of the invention to obtain a construction by which the sheet metal blanks may be beaded in either straight or curved lines, and in conformity to an exact pattern.

It is also an object to avoid kinking or destroying any portion of the blank, and to dispense with the necessity for any particular skill on the part of the workmen.

With these objects in view, the invention consists in the construction as hereinafter set forth.

In the drawings,—Figure 1 is an elevation of the machine showing the workholder and work in engagement therewith; Fig. 2 is an elevation of the workholder, with the work therein, indicated in dotted lines; Fig. 3 is an end elevation of Fig. 2; Fig. 4 is a section on line X—X, Fig. 2, showing a modification; Fig. 5 is an elevation of a modified form of the workholder; Fig. 6 is an end elevation thereof; Fig. 7 is an enlarged elevation of the forming rolls; and Fig. 8 is a similar view of a modified construction.

A and B are two parallelly-arranged rotating spindles upon which the forming rollers are mounted. These forming rollers consist of a member C mounted on the spindle A, which has the grooved or concave portion D fashioned to produce the form of bead desired, and E is a cooperating forming roll mounted on the shaft B, and having a convex face F complementary to the face D.

With the construction thus far described, it is evident that if the sheet metal blank be engaged with the rolls C and E, and drawn therebetween, a bead will be formed corresponding to the shape of the meeting faces of said rolls. If, however, the bead is to

be formed adjacent to one edge of the blank, as is usual, considerable force is necessary to hold the blank in proper engagement with the rolls. This is for the reason that the metal is of heavy gage, and as a consequence it is practically impossible to obtain the regularly rolled bead by merely guiding the work by hand. To avoid this difficulty, I have provided a construction of workholder G which also forms a templet and guide for the feed-forming mechanism. The guide consists of a flange H, preferably an angle bar, secured to the holder G, which flange engages with a groove I in the roll C. This groove I is preferably located in the portion of the roll adjacent to the outer edge of the portion D, and the arrangement is such that when the work is fed between the rolls the flange H will engage said groove, and will be held thereby from lateral movement. Thus, by making the flange H of the form into which the bead is to be fashioned, it will compel the workholder, and blank secured therein, to travel in a parallel direction.

The holder may be of any suitable construction to which the work may be rigidly clamped. As illustrated in 2, this holder is provided with a number of hinged clamping fingers J, which extend into engagement with the opposite edges of the work, and are clamped thereto by screw clamps K. The width of the holder G is less than that of the blank, so as to leave the marginal portion, which is to be beaded, exposed, excepting for the hinged fingers J, which extend thereacross. However, when the work is being performed, the fingers J, upon the side in engagement with the rolls, are turned back, and the clamping is effected solely by engagement at the opposite edge of the blank. After one edge of the blank has been beaded, the fingers J are reengaged with this edge, and the clamps K are shifted in position, so as to secure the work at the finished edge and permit of turning back the clamps J at the edge to be finished.

With the construction as described, in operation the workmen successively engage the blanks with the holders G, and while in engagement therewith they then feed them between the rolls C and E. The flange H will cause the automatic guiding of the work until the ends of the blanks are reached, after which the hinged fingers J

and clamps K are adjusted, as previously described, and the bead is rolled upon the opposite edges of the blanks.

When it is desired to turn a flange, such as L, upon the edge of the work, the roll C is provided with a flange M having a tapering face. This will cause the turning down of the flange L, simultaneously with the operation of forming the bead, while the flange H will hold the work from movement longitudinally of the roll.

In the beading of the seat back for automobile bodies, it is frequently desired to form beads, not only upon the upper and lower edges of the blank, but also a central bead substantially in the plane of the seat. For this class of work, it is necessary to provide the modified construction of workholder, illustrated in Fig. 5, in which the main portion G is arranged between the lower and central bead in the work, and is secured thereto in the manner previously described. After the lower and central beads have been formed, an auxiliary workholder section G' is arranged above the sections G and is secured thereby by clamps K', which engage the upper flange H of the section G and a corresponding flange H' on the section G'. This will firmly secure the sections G in position and permit of forming the bead along the upper edge by engaging a marginal guide flange H² with the groove I in the forming roll.

It is necessary to hold the sheet metal firmly in contact with the workholder to prevent buckling of the latter, and, for this purpose, I have provided clamps N which are arranged on the portions of the holder corresponding to the sides of the vehicle seat. These clamps consist of hooked portions O, which engage the edge of the blank and are connected at their opposite ends to toggle levers P by the operation of which the hooks may be drawn back to force the work into firm contact with the holder.

What I claim as my invention is:

1. The combination with a forming roll, of a workholder provided with guides having a flange and groove engagement with said roll and adapted to receive a substantially U-shaped sheet metal blank, and clamps for engaging the opposite ends of the U and forcing the blank into firm contact with the holder.

2. The combination with a forming roll, of a workholder for engaging the work so as to expose the opposite edges thereof, and a hinged finger for said workholder for engaging one of the edges of the work and positioning the same in said holder.

3. The combination with a forming roll, of a workholder for engaging the work so as to expose the opposite edges thereof, and

hinged fingers adapted to alternatively engage the opposite edges of the work to position the same in the holder and adapted to leave one edge of the work unobstructed for engagement with the forming roll.

4. The combination with a forming roll, of a workholder engaging the work so as to expose the marginal portions thereof, guide flanges on said holder adjacent to the opposite edges thereof, a finger hinged to said holder and a bent portion for passing over said guide flanges and a hook for engaging the edge of the work, and a clamp for securing said finger to the work.

5. The combination with a forming roll, of a workholder formed in a plurality of sections, each provided with marginal guide flanges for engagement with said forming roll, means for positioning one of said sections upon the work and for securing the same thereto, and means for securing another section to the first-mentioned section.

6. The combination with a workholder, a marginal guide thereon, means for clamping the work in said holder with a portion projecting beyond the holder and said marginal guide, and a forming roll adapted to engage the projecting portion of the work having a flange and groove engagement with said marginal guide.

7. The combination with a workholder, a marginal guide thereon, means for clamping the work in said holder with a portion projecting beyond the holder on said marginal guide, a forming roll adapted to engage the projecting portion of the work having a flange and groove engagement with said marginal guide, and an annular flange on said roll for turning a flange at the edges of the work.

8. The combination with a workholder, a marginal guide thereon, means engaging the opposite edges of the work for forcing the latter into firm contact with the holder with a portion of the work projecting beyond the holder and said marginal guide, and a forming roll having a flange and groove engagement with said marginal guide.

9. The combination with a workholder, a marginal guide thereon, means for clamping the work in said holder with a portion projecting beyond the holder and said marginal guide, a forming roll adapted to engage the projecting portion of the work, and means engaging said guide for feeding the work through said roll in a predetermined path.

In testimony whereof I affix my signature in presence of two witnesses.

WILBER A. SYLVESTER.

Witnesses:

HARRY W. GRAHAM,
NELLIE KINSELLA.