

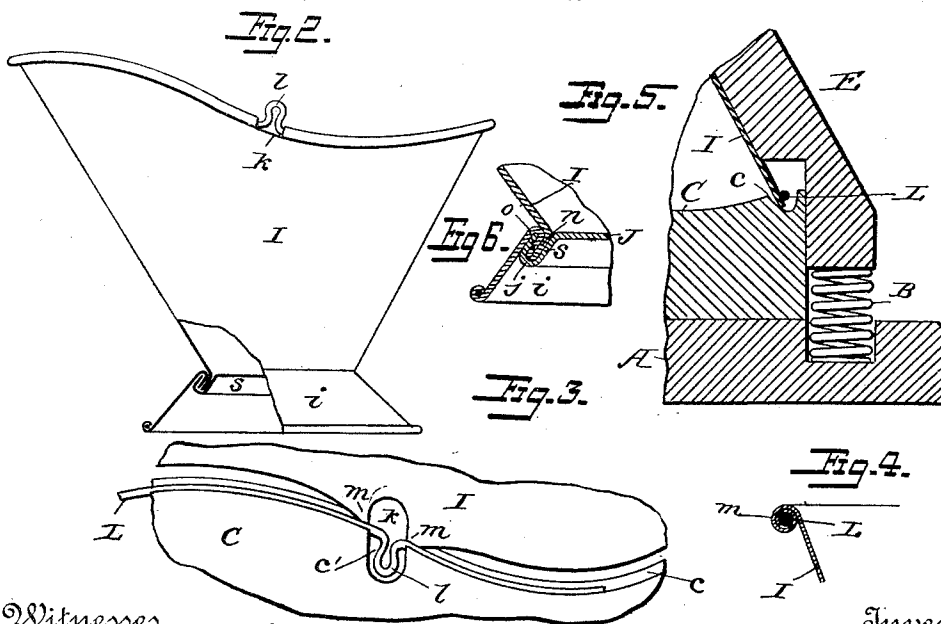
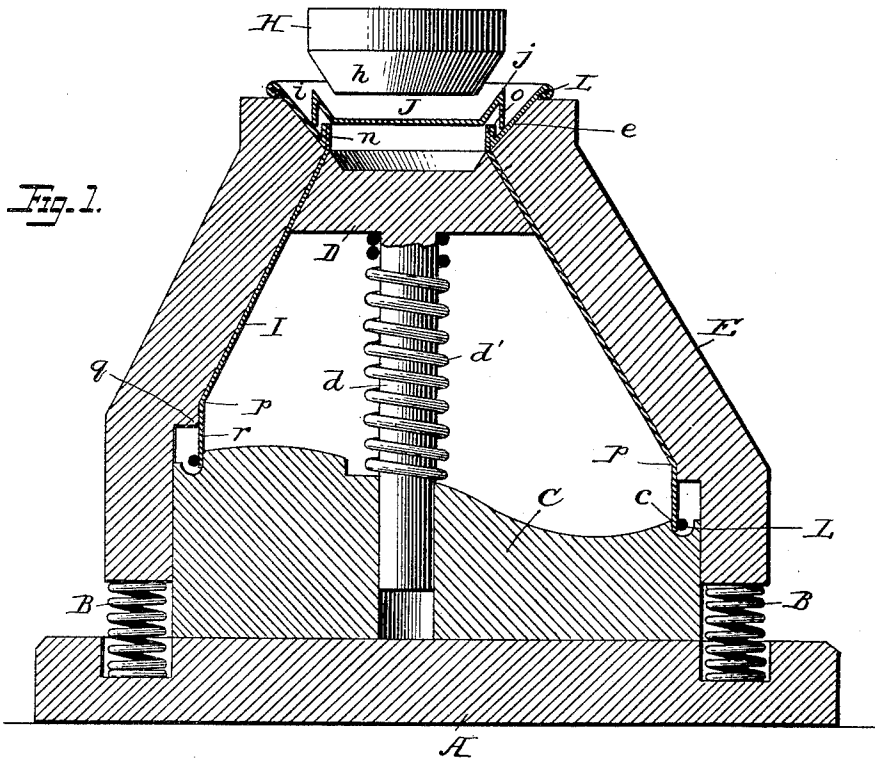
(No Model.)

J. R. PADDACK.

MANUFACTURE OF SHEET METAL VESSELS.

No. 461,041.

Patented Oct. 13, 1891.



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JAMES R. PADDACK, OF CINCINNATI, OHIO.

MANUFACTURE OF SHEET-METAL VESSELS.

SPECIFICATION forming part of Letters Patent No. 461,041, dated October 13, 1891.

Application filed August 26, 1889. Serial No. 321,994. (No model.)

To all whom it may concern:

Be it known that I, JAMES R. PADDACK, a citizen of the United States, residing in the city of Cincinnati, county of Hamilton, and State of Ohio, have invented certain new and useful Improvements in the Manufacture of Sheet-Metal Vessels, of which the following is a specification.

My invention relates to improvements in sheet-metal vessels which have an annular flaring foot or support—such as coal-hods, pails, &c.—and an improved device for making such vessels, the object being to securely unite the body, foot, and bottom of a vessel of this character and to curve outwardly the top edge of it at one operation. The device which I employ for this purpose possesses certain features in common with the die forming the subject-matter of my Letters Patent No. 422,313.

In the drawings wherein my invention is illustrated, Figure 1 is a central vertical section of a die embodying my invention. Fig. 2 is a view of a hod made according to my invention, partly in section, to show the joint formed by the union of the body, foot, and bottom. Fig. 3 is a detached view showing the bail-ear formed in the strengthening-wire, its position on the curling-block, and the lengthened or eared portions of the upper edge of the vessel. Fig. 4 is a detached sectional view of the curled edge of the hod adjacent to one of the bail-ears. Fig. 5 is a sectional view of a portion of the die, illustrating a modification. Fig. 6 is an enlarged sectional view showing the joint.

A represents the base-piece or support of the die, which is provided with recesses for the springs B. Upon this base is secured the curling-block C, which is provided around its upper edge with a groove *c*, lying in an irregular plane, for effecting the curling of the upper edge of the hod.

D is the interior supporting-block, fitting the lower or smaller interior portion of the vessel. It is held up to its place by the spring *d'*, surrounding its stem *d*, which is guided in its movement by the recess in the center of the curling-block, in which it works.

E is the outer casing or die, surrounding the other parts and interiorly shaped with converging inclined sides to fit the outside

of the body of the vessel. It is supported upon the springs B and is formed of two parts adapted to fit one another, so that when closed they complete the outer shell or casing. The upper end of the casing E is beveled at *e*, the beveled portion constituting the lower forming and swaging surface used in forming and uniting the body, foot, and bottom of the vessel and upon which the annular flaring piece for the foot of the vessel rests when the parts are in the position shown in Fig. 1 immediately prior to the swaging operation.

H is the follower or forming and swaging block, with its lower edge beveled to correspond with the beveled surface *e* of the shell to co-operate in forming and swaging this joint.

J is the bottom of the vessel, shaped, as shown in cross-section in Fig. 1, with the doubled or V-shaped peripheral flange *j*.

L is the strengthening-wire, around which the upper edge of the body of the vessel I is bent or curled. This wire is preferably bent on opposite sides to form loops or eyes *l*, to which the bail is subsequently to be secured. The curling-block C is provided with recesses *c'* in the bottom of the groove *c* to receive the loops or eyes *l* of the wire when in position thereon, as shown in Fig. 3. The edge of the body I is notched at *k* opposite the places where the eyes *l* come, so as to permit the edge of the blank to be curled close around the wire on each side of the eye but not covering it.

In order to insure greater strength to the rim of the vessel where the eyes *l* project therefrom, as these are the points of greatest strain, I flare the blank on either side of the notches *k*, as at *m m*, Fig. 3, so that when the body is brought down upon the groove *c* these portions *m* strike the curling-groove *c* first and are curled partly around the wire before the main portion of the edge is curled, the result being that at these places the metal is turned or curled around the wire to a greater extent than it is at the other portions thereof. (See Fig. 4.)

In using the above-described die for making a coal-hod or similar vessel I take a tubular body I, of sheet metal, of the form of the vessel to be made and having at its contracted

or lower end a flange *n*, a bottom *J*, with the doubled or V-shaped flange *j*, an annular flaring piece *i* for the foot of the vessel having a flange *o*, and a wire *L*. These are arranged as shown in Fig. 1—that is, the body *I* is slipped down over the interior supporting-block *D* until its edges or the edges of the portions *m* thereof rest upon the groove *c* of the curling-block, and the wire *L* is slipped upon the outside of the lower edge of this blank, with the eyes or loops *l* thereof resting in the recesses *c'* in the curling-block. The parts of the outer casing *E* are then closed together, fitting closely the outside of the body *I*, the smaller portion thereof being confined between the interior supporting-block *D* and the casing *E*, while the flange portion *n* thereof lies inside of and projects above the lower edge of the beveled swaging-surface *e* of the casing. The annular foot *i* is next placed upon the beveled portion *e* of the casing, with its flange *o* resting against and parallel with the flange *n* of the body-blank, and the bottom *J* is finally placed as shown in Fig. 1, so that the flanges *n o* of the body and foot, respectively, lie between the two parts of the doubled or V-shaped flange *j*. The parts being in this position and pressure being applied to the follower, the joint *s* (shown in Figs. 2 and 6) is first formed by the opposing action of the swaging-faces *h* and *e* of the follower and the upper portion of the casing, respectively, and then the parts are swaged together, the flange *j* of the bottom being folded or bent over and embracing the flanges *n* and *o*, while these latter are bent down and outward and then swaged together by continued pressure, as will be readily understood. It will be seen that the joints, thus made, possesses many advantages not only arising from the ease and rapidity of its formation, but when formed and swaged, each portion serves as a lock or brace to secure all the parts together and prevent their separation under the ordinary strains put upon them. The body *I*, against which the curved portion of the foot bears, prevents upward movement thereof, the bottom and the foot flanges both unite to prevent the expansion or separation of the body, and the foot and body flanges, being bent outwardly at an angle unite, in securing the bottom and holding it under pressure of the load. The tension of the spring *B* is sufficient to prevent downward movement of the casing during the first or forming part of this operation, and continued pressure from the follower carries downward with it the casing *E* and the supporting-block *D* against the force

of the springs *B* and *d'* and firmly presses or swages the parts of the joint together. The curling-block being stationary and the vessel moving with the casing, it follows that the upper edge of the body must bend or curl, and the shape of the groove *c* causes the curling thereof around the wire *L*, the portions *m* thereof adjacent to the bail-ears curling to a greater extent than do the other parts, as has been described. As the body is bent at *p*, it is weakened at that point. I therefore extend the casing *E* vertically to a point *q* below the angle *p*, confining the body at this place and thereby preventing breaking.

It will be seen from the foregoing description and an examination of the drawings that the top edge of the vessel is curled, and the bottom and foot are both united to each other and the body of the vessel at a single operation of the die, and when desired the strengthening-wire having the bail-ears is also securely united to the body.

Without limiting myself to the precise construction and arrangement of parts shown, I claim—

1. In a die uniting the bottom and body of a vessel and curling the opposite end of the vessel at one operation, the combination, with the curling-block, of the movable casing surrounding the body of the vessel, and a follower, the casing being provided with an extension *q* below the flaring portion to prevent the breaking of the body, substantially as set forth.
2. A sheet-metal vessel having its edges curled over a looped wire, the portion of the edge adjacent to the looped part of the wire being curled to a greater extent than the other portions thereof, substantially as set forth.
3. A sheet-metal vessel composed of a body, a bottom, and a foot, the body and foot having downwardly-inclined flanged portions lying parallel with each other, and the bottom having a double flange embracing the flanges of the other parts, the said flanges being bent at the point of meeting of the bottom and body to form a joint at an angle to the bottom and inclosed by the foot portion, substantially as set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

JAMES R. PADDACK.

Witnesses:

J. S. BARKER,
F. L. FREEMAN.