

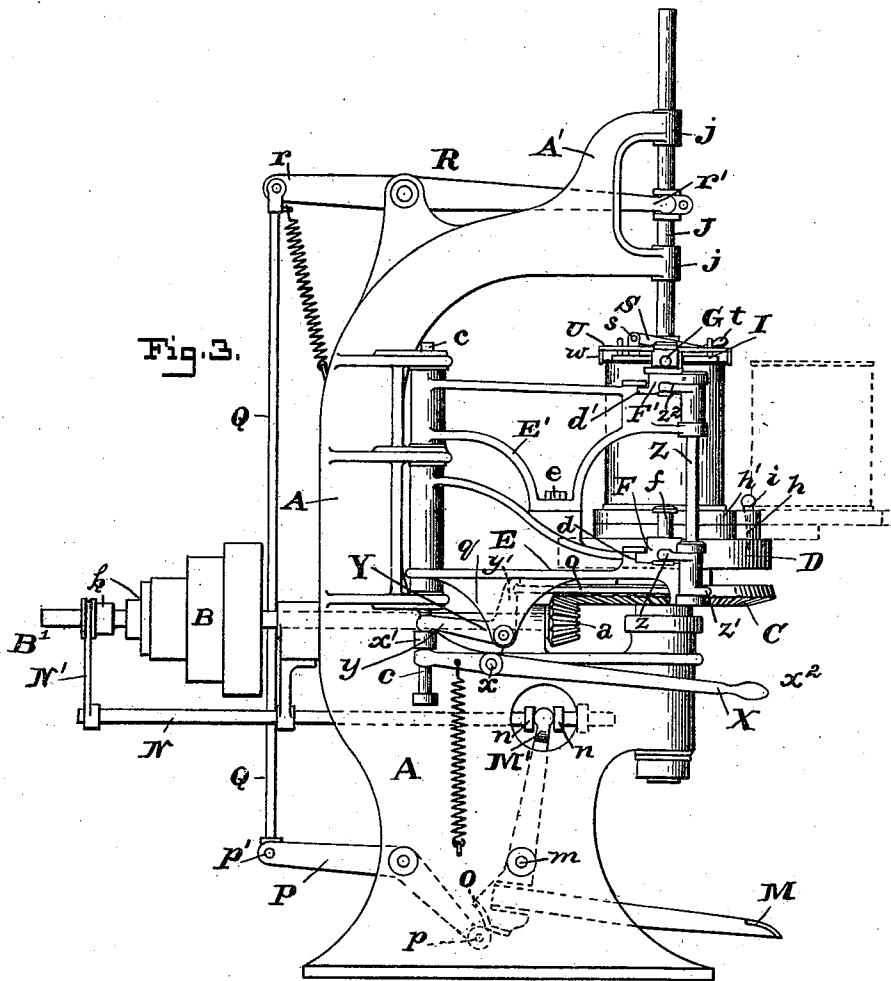
(No Model.)

3 Sheets—Sheet 1.

C. L. WAGANDT.
ROLLER SEAMING MACHINE.

No. 506,022.

Patented Oct. 3, 1893.



Witnesses:—

A. O. Babendreier.

Alvan Macauley

Inventor:—

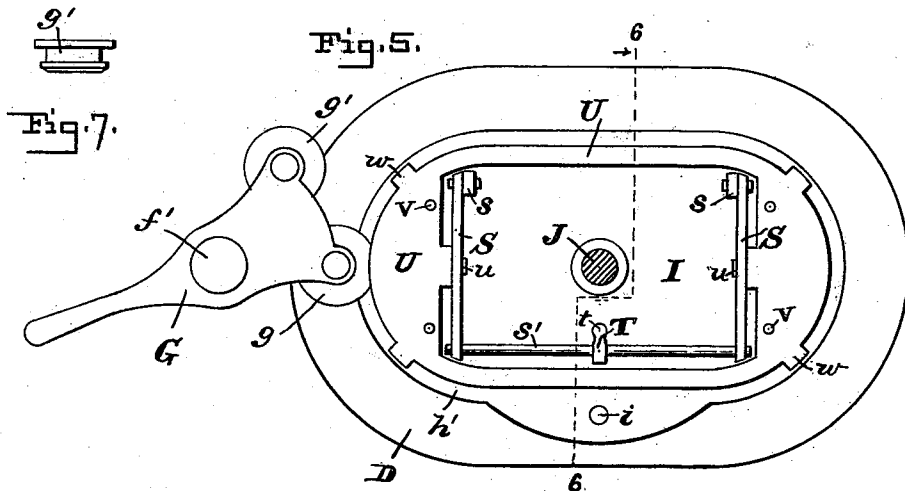
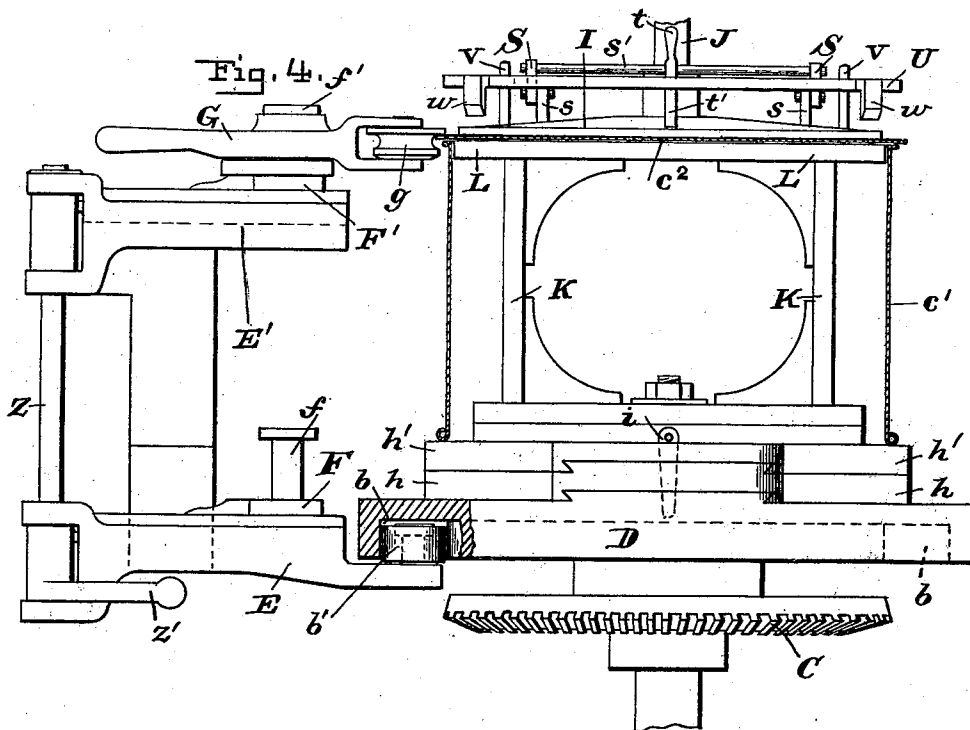
Charles L. Wagandt

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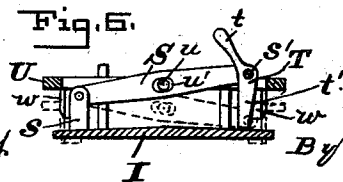


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Fig. 6.



Inventor:—

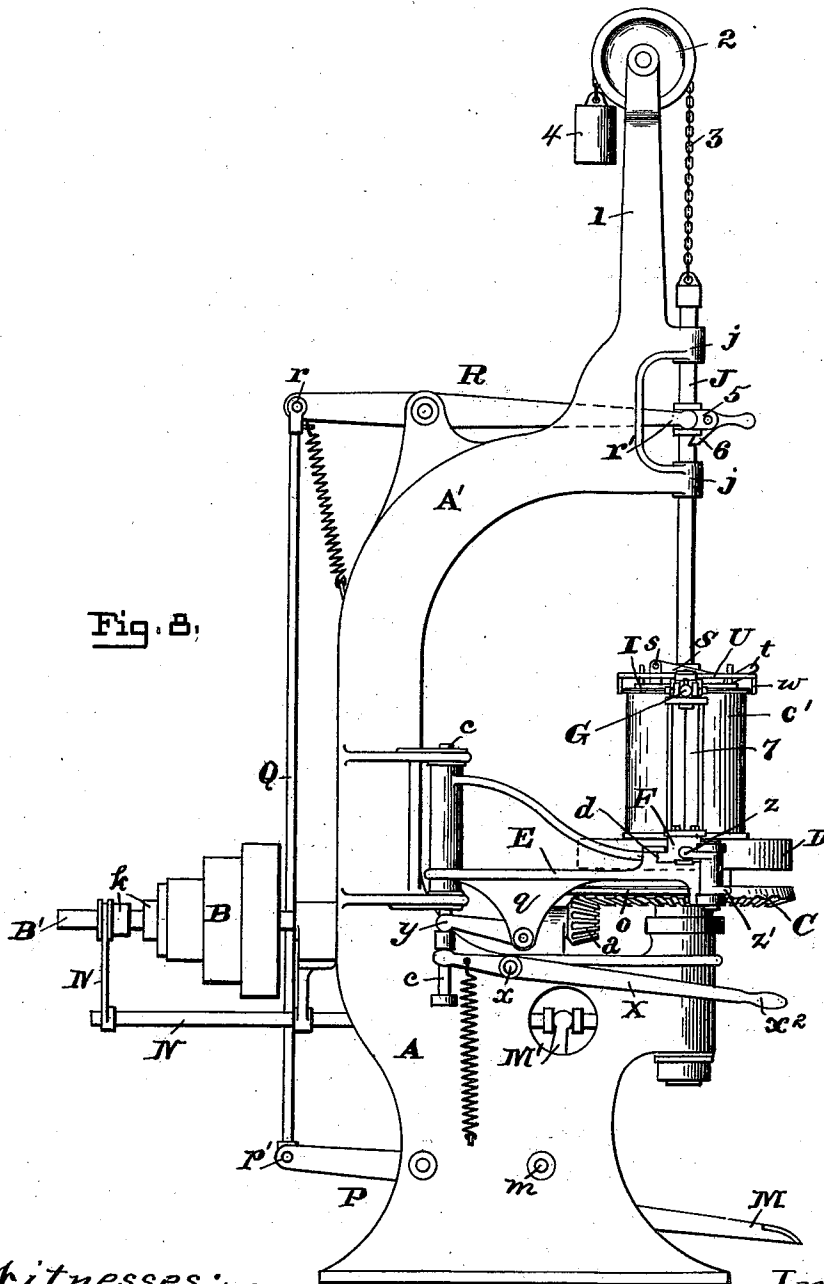
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UNITED STATES PATENT OFFICE.

CHARLES L. WAGANDT, OF BALTIMORE, MARYLAND.

ROLLER-SEAMING MACHINE.

SPECIFICATION forming part of Letters Patent No. 506,022, dated October 3, 1893.

Application filed May 11, 1893. Serial No. 473,858. (No model.)

To all whom it may concern:

Be it known that I, CHARLES L. WAGANDT, a citizen of the United States, residing at Baltimore, in the State of Maryland, have invented certain new and useful Improvements in Roller-Seaming Machines, of which the following is a specification.

My invention relates to that class of sheet metal vessel heading machines known as roller-seaming, and is especially adapted to form the seam which unites the bottoms and sides or body of wash-boilers, oval foot tubs and other vessels, which are not circular, although it may also be used for vessels that are circular. As heretofore made, the bottoms for vessels of this class have been recessed at the outside as shown in Figure 1, to allow them to have position on a die, while the seam is being formed. In distinction to the above described bottom, I use a perfectly plain or flat bottom and form the seam upward and above the plane of the bottom, and on the outside of the body, to imitate the well known hand seam, and to accomplish this result I place my seam-backing die or chuck on the inside of the vessel instead of on the outside.

In the accompanying drawings, Fig. 1, is a section of the recessed bottom and seam as now made. Fig. 2, shows a section of my improved bottom and seam. Fig. 3, shows a side view of the machine ordinarily used for forming the seam shown in Fig. 2. Fig. 4, is a view of the machine showing also a vessel and bottom therefor in section and in position to be seamed. Fig. 5, shows a top view of the same with the vessel removed. Fig. 6, shows a section on the line 6—6, of Fig. 5, of the devices for centering the bottom blanks with respect to the vessel-body. Fig. 7, is a side view of the seam finishing roller showing the square groove. Fig. 8, shows a modified construction of my improved seaming device.

The letter, A, designates the frame; B, a driving cone graduated for different speeds, mounted on and near one end of the driving-shaft, B'; on the other end of said driving shaft is fixed a miter-pinion wheel, a, which intermeshes with a gear-wheel, C, rotating in a horizontal plane. Above the gear-wheel, C, connected rigidly thereto and rotating in horizontal plane therewith is the cam-platen

or chuck, D, for carrying the vessel body c' and bottom c^2 while the seaming process takes place. The said platen has on its under side a cam groove, b , which conforms in shape or outline with that of the bottom of the vessel to be seamed. A friction roller, b' , travels in the cam groove and is attached to the end of the swinging arm, E, pivoted to the rod, c , which is secured to the main frame, A, of the machine. It will now be seen that when the platen rotates, the free end of the swinging arm, E, will describe a path about the center of the platen, parallel to the cam groove. The free end of the swinging arm is provided with a slide-way, d , in which travels a slide, F, bearing a stud or pivot post, f , on which the lever which bears the seaming rollers is adapted to be pivoted.

In forming the seam the roller, g , an elevation of which is shown in Fig. 4, is first used to turn the edges of the sheet metal, and partly form the seam. The roller, g' , shown in detail in Fig. 2, is then applied and finishes the seam, and compresses the sheet metal edges of which the seam is formed, to make the said seam close and tight. An arm, E', corresponding to arm, E, is in like manner thereto, pivoted to the rod, c , but above the said arm, E. The arm E', near its swinging end, is provided with a slide-way, d' , in which travels a slide, F', bearing stud or pivot post, f' , on which the lever, G, bearing seaming rollers, g, g' , is pivoted. The arms E, E', are bolted rigidly together as shown at, e . Said arms are not designed to be used in connection with each other, though they might be so used.

In the structure shown, when it is desired to form a seam at the top edge of the vessel body instead of at the bottom edge, or in other words when it is desired to form the seam close down to the platen, D, the lever G, bearing the seaming rollers, g, g' , is transferred from the slide-way, d' , to the slide way, d . Said arms E, E', are bolted rigidly together as shown at, e , in order that when it is desired to use the upper arm, E', for seaming the necessary movement of said arm may be imparted thereto through the lower swinging arm, E, which as above described receives its motion from the roller, b' , in connection with the cam groove, b , in the extension platen,

D. An inner platen or chuck comprises the leaves h, h' , mounted one over the other on top of the cam-platen, D. Said three parts are connected together by loose dovetail connections as shown in Fig. 4. The vessel to be seamed is placed upon the top leaf, h' , under the clamping-plate, I, and a pin, i , is passed down through the leaves, h, h' , into the cam-platen to hold said parts in position when they are rotated.

When it is desired to remove the seamed vessel from under the clamping-plate, I, the said plate is raised slightly and the pin, i , withdrawn, when the leaves, h, h' , bearing the seam backing die can be drawn out to the position shown in broken lines Fig. 3, from which position the can may be easily removed. By means of this construction the necessity of raising the clamping-plate, I, to a considerable height when removing the can, is avoided.

A frame, K, is secured to the upper leaf, h' , and the seam backing die, L, is mounted upon the top of this frame. Said die corresponds in shape to the interior of the vessel to be seamed, but is enough smaller than said vessel to permit the same to be placed over it. The height of the die above the upper leaf h' , is such that when the vessel to be seamed is placed over said die, the top surface of the die will be flush with the bottom edges of said vessel (since the said vessel is put upon the die upside down).

The clamping plate, I, is carried by the vertical rod, J, sliding in bearings, j , in the arm, A', of the main frame, A. The vertical movement of said rod, J, is controlled by the foot-lever, M, in a manner to be presently pointed out. Said foot-lever is formed by one arm of a bell-crank lever which is pivoted at m , to the main frame, A. The other arm M', of said bell-crank lever has a forked end, the prongs of which take, one on either side of the longitudinally sliding rod, N, between the stationary collars, n . Upon one end of said rod is an arm, N', at an angle to the rod, N. Arm, N', is secured at its end to a clutch k , upon the driving shaft, B'. Said clutch is adapted to be thrown into engagement with the loose cone pulley, B, and to make the said drive-shaft rigid with respect to the rotation of the said cone pulley.

By reference to Fig. 3, of the drawings, it can be seen how the clutch, k , is thrown into engagement with the loose cone pulley, B, by simply depressing the foot lever, M. There is a cam, O, carried by the bell-crank lever, which is adapted to depress the end, p , of lever, P, and to elevate the end, p' , of said lever, thus raising the connecting rod, Q, and the end, r , of the lever, R, to which said connecting rod is attached. The elevation of the end, r , causes the depression of end, r' , attached to the vertical rod, J, which bears the clamping plate, I. Thus it will be seen that the depression of the foot-lever, M, causes, first, the machinery to start into motion and,

second, the clamping plate to descend upon the blank and seam-backing die L.

The blanks from which the bottoms are formed are stamped out of sheet metal or otherwise manufactured, and are delivered to the machine in proper size and shape. After the vessel to be seamed has been placed upon the seam-backing die, these blanks are inserted under the clamping-plate and between it and the seam-backing die. Heretofore it has been usual with machines of this class to have the edges of the bottom-blank upturned, so that the blank when presented to the machine presents the appearance of a shallow pan, the bottom of which is just the size of the bottom edges of the vessel to be seamed thereto. The advantage of this method is that it does away with the necessity of centering the said bottom with respect to the vessel to be seamed, on the die. The objection to it is that it requires an extra operation to upturn the edges of the bottom blank, which extra operation is expensive. By means of improved devices which are employed in connection with the clamping-plate and which shall be presently described, the machine is made to use flat blanks, and to center these blanks with respect to the vessel body on the seam-backing die, automatically. To this end two posts, s , are secured to the top of the clamping-plate and two bars, S, parallel to each other are pivoted at their ends to the said posts. A rod, s' , connects the free ends of said bars. A lever, T, having a handle, t , is pivoted on the rod, s' , at its center. The arm, t' , of said lever has a flat end, so that when the handle, t , is thrown up, the free ends of the pivoted bars will be elevated and supported on the arm, t' , as shown in full lines Fig. 6,—or the handle may be thrown down as indicated by the broken lines. A centering frame, U, is pivoted on pivots, u , working in slots, u' , midway of the bars, S. Said frame has an up and down movement with the bars, S, to which it is pivoted. The upright guide pins, v , secured at one end to the clamping-plate, I, and passing through perforations in the centering frame, U, in connection with the slots in the bars, S, (in which the pivot points of the centering-frame slide,) effect a vertical movement of the centering-frame, though the bars, S, which cause the movement of said frame, move in the arc of a circle.

Four downwardly projecting centering-pins, w , are disposed around the outer edge of the centering frame, in such manner that the bottom blank will just fit between them, and when so fitted, said bottom blank will be in such position, that when the clamping plate, I, bearing the centering-frame is depressed vertically till the said bottom blank beneath the clamping-plate rests upon the seam-backing die with the vessel to be seamed thereon, the said bottom blank will be centered with respect to said vessel and in position to be seamed thereto. Normally the

handle, t , of the lever, T , is raised, in which case the frame, U , and the centering pins, w , are also elevated and the said pins are above the level of the lower surface of the clamping plate, I . If the pins be in a depressed position inclosing the bottom blank, and it is desired to release said blank, the centering-frame bearing the centering pins is thrown into this elevated position. When this has been done the edges of the bottom are exposed and may be acted on by the seaming rollers, g, g' . By depressing the handle, t , the centering frame is also depressed and the centering pins, w , will project below the lower surface of the clamping-plate as indicated in dotted lines Fig. 6. While the centering points are in this position the bottom blank is inserted by hand under the clamping-plate between the said pins, w , and held there till the clamping plate is lowered by means of the foot-lever, M , to hold the bottom blank in position upon the seam-backing die. The next step is to elevate the centering-frame and pins so as to be out of the way of the seaming rollers.

The tension of the seaming rollers on the seam is regulated by means of the horizontal tension lever, X , pivoted at, x , to the main frame, A . At its inner end it engages a collar, x' , sliding on shaft, c . A bell-crank, Y , is pivoted to a bracket, q , on the swinging arm, E . The horizontal arm, y , of said lever is bifurcated and one branch takes on either side of the said rod, c , on which the swinging arm, E , is pivoted, so that by depressing the handle, x^2 , of tension lever, X , the horizontal arm, y , of the bell-crank lever, Y , will be elevated and the vertical arm, y' , of said bell-crank lever will be moved forward. A vertical rock-shaft, Z , turns in bearings in the swinging ends of the arms, E, E' , respectively. Three horizontal arms z, z', z^2 , are secured to the rock-shaft. One of these arms z , presses at its end against the slide, F , in slide-way, d . Another arm, z^2 , parallel to said arm, z , but above it, presses against slide, F' , in slide-way, d' . The third arm, z' , is at right angles to the other two arms and is connected by the rod, o , with the vertical arm, y' , of the bell-crank lever, Y , and said rod conveys the forward motion of the vertical arm, y' , of bell-crank lever, Y , to arm, z' , on rock-shaft, Z . Said shaft will swing partly around and cause the rigid arm, z , to press against the slide, F , and arm, z^2 , to press against slide, F' . Thus it can be seen that by varying the pressure upon the lever, X , the pressure of the seaming roller upon the seam may be varied.

Fig. 8, of the drawings illustrates a modification of the device as I have heretofore described it. The modification relates to the mechanism for operating the clamping-plate, I , and comprises means whereby the said clamping-plate after the seaming process has been completed, is elevated to a sufficient height

above the bottom of the vessel to permit said vessel to be lifted up and off the seam-backing die, thereby avoiding the necessity of using the extension platen, D .

Referring to Fig. 8, of the drawings it will be seen that the arm, A' , of the main frame, A , has a vertical extension 1. A pulley, 2, is journaled in bearings in the upper end of said extension and a chain, 3, having a weight, 4, on one end passes over the pulley and is connected at its other end to the vertical rod, J . In the present instance the end, r' , of lever, R , connects with the rod, J , by means of a sliding collar 5. It is detachably secured to said rod by means of the pawl, 6, which when in engagement with the said rod, J , causes said rod to be governed by the movement of the lever, R . When said pawl is thrown out of engagement with the rod, said rod may move freely up and down sliding through the bearings, j , and the collar, 5. As in the other described construction, the clamping plate is carried by the rod, J . In the present construction, the weight, 4, will be of such size as to balance the combined weight of rod, J , and the clamping plate, I ; whereby when the pawl, 6, is in a released condition the vertical movement of the clamping plate may be controlled by the hand. When it is desired to forcibly depress the clamping plate, as when holding the bottom blank, C^2 , the said pawl is thrown into engagement and the downward pressure may then be applied by means of the foot lever, M . In this construction the arm, E' , is done away with, and to perform its functions, an upright piece, 7, is bolted or otherwise secured to the top of the slide, F , and the lever, G , bearing the seaming rollers, g, g' , is pivoted to the upper end of this upright piece in which position it performs the same functions as in the other construction, but there are fewer mechanical parts and the workman has better access to the machine than in the machine illustrated in Fig. 3.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. In a machine for forming the seams which unite the bottom blank to the body of a sheet-metal vessel, the combination of a revoluble clamping-plate having a limited vertical movement; a revoluble platen, D , whose axis is in line with the axis of the clamping plate; and a seam-backing die mounted on the said platen and movable laterally thereon to admit of its being removed from withunder the said clamping plate.

2. In a machine of the class described the combination of the clamping-plate vertically movable above a seam backing die, and a depressible frame pivotally secured to posts upon said clamping plate, and adapted to center the bottom blank, as described.

3. In a machine of the class described, the combination of the clamping-plate vertically

movable above a seam backing die; two posts, secured to the top of the clamping-plate; two bars, *s*, having longitudinal slots, *u'*, and each pivoted at one end to one of the posts; a frame, *U*, on pivots which slide in the said slots, *u'*, in bars, *S*; and downwardly projecting centering pins, *w*, secured to the frame, *U*, substantially as described.

4. In a machine of the class described, the combination of a horizontally-revoluble clamping plate having a limited vertical movement; a revoluble platen below the clamping plate; a seam backing die; and leaves mounted on the said platen and connected together loosely so as to admit of moving on each other laterally from under the clamping plate,—said leaves supporting the seam backing die, as set forth.

5. In a machine of the class described the combination of the clamping-plate having a limited vertical movement; and a seam backing die mounted upon an extension platen;

said platen comprising a series of inter-sliding leaves, as described.

6. In a machine for forming the seams which unite the bottom blank to the body of a sheet-metal vessel, the combination of a horizontally-revoluble clamping plate having a limited vertical movement; a revoluble platen, *D*, whose axis is in line with the axis of the clamping plate and is provided with a cam groove; an oval-shaped seam-backing die mounted on the said platen and movable laterally thereon; a lever, *G*, having seaming rollers to form the seam; and a swinging arm having a roller which travels in the said cam groove and thereby guides the said seaming-lever, as set forth.

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

CHARLES L. WAGANDT.

Witnesses:

ALVAN MACAULEY,
CHAS. B. MANN, Jr.