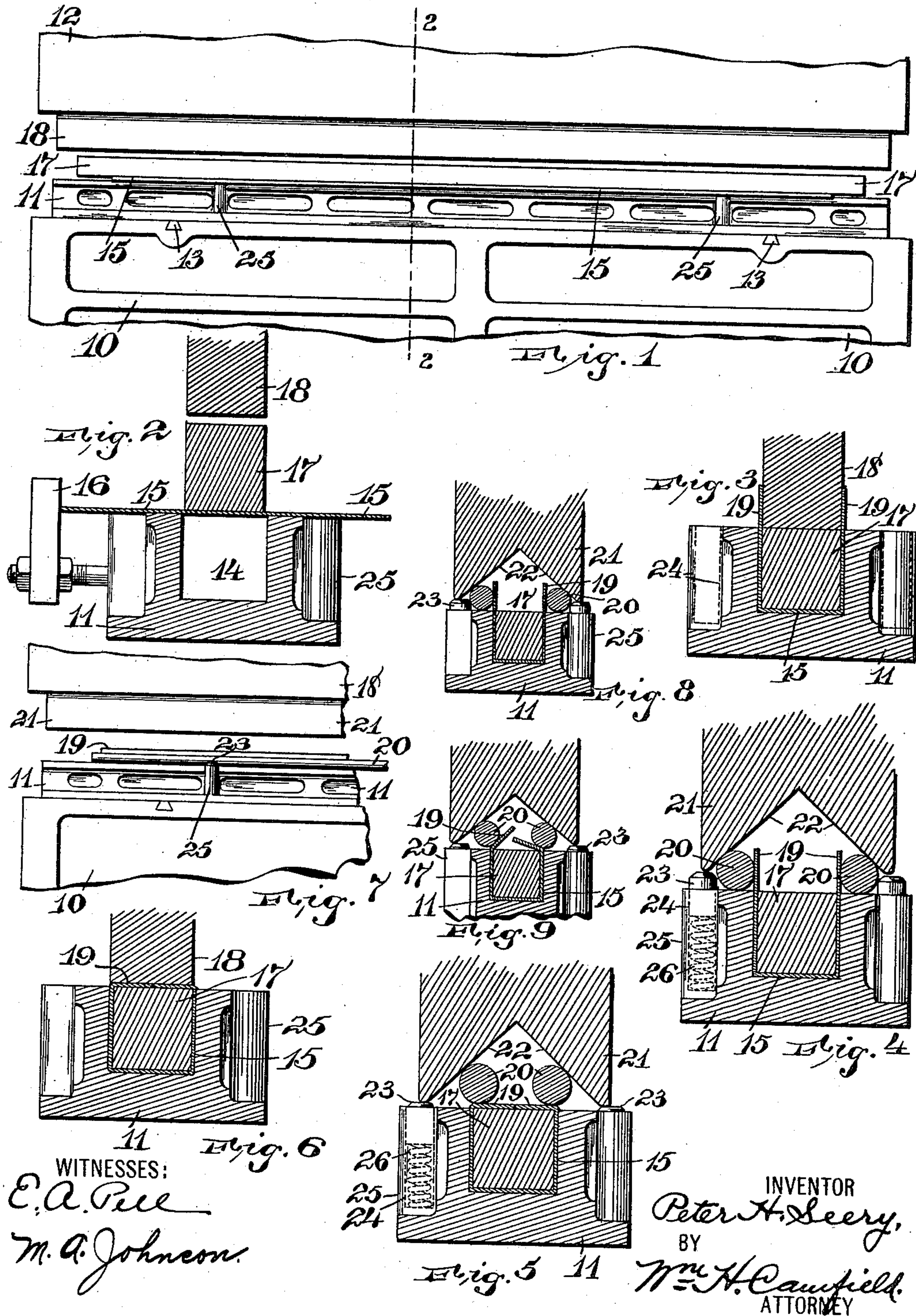


P. H. SEERY.
 APPARATUS FOR MAKING SQUARE METAL TUBES.
 APPLICATION FILED MAY 31, 1910.

997,709.

Patented July 11, 1911.



WITNESSES:
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APPARATUS FOR MAKING SQUARE METAL TUBES.

997,709.

Specification of Letters Patent. Patented July 11, 1911.

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To all whom it may concern:

Be it known that I, PETER H. SEERY, a citizen of the United States, residing at Newark, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in Apparatus for Making Square Metal Tubes; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to figures of reference marked thereon, which form a part of this specification.

This invention relates to an improved apparatus for making square or rectangular tubing by forming a sheet of metal directly into a square or rectangular tube without first making the sheet into a round or similar tube. The present machine does not necessitate the manufacture of a round tube and the subsequent shaping of it into a square tube. This latter step places considerable strain on the material and particularly where the seam is brazed or soldered and this very often opens.

By my present invention I can make either a butt joint or a lap joint and form a square tube quickly and cheaply from a sheet of metal.

The invention is illustrated in the accompanying drawing, in which—

Figure 1 is a side view of part of a metal press with the die used in making the tube and also a square mandrel which is employed. Fig. 2 is an enlarged section on line 2, 2, in Fig. 1. Figs. 3, 4, 5 and 6 are views similar to Fig. 2 showing successive operations in making a tube. Fig. 7 is a view of part of a press with the apparatus in the positions shown in Fig. 4. Figs. 8 and 9 are sections of the latter part of the process when the seam is a lap seam.

The apparatus, that is the dies, mandrel, etc., used in making the tube by my new process, can be attached to any press adapted for stamping metal, and the bed plate 10 can be of any form to support the die 11 which embraces the tube in its manufacture, this bed plate and die cooperating with the hammer 12 which carries the movable portion of the forming device. I have illustrated a press for making square tubes and will limit my description to such form although it

will be understood that other forms can be made by changing the die and mandrel.

The bed plate 10 has the die 11 placed thereon, the die being preferably made to slide on the bed plate, being guided by the rib 13 fitting in a groove in the bed plate, and the die can be slid along to be acted on by separate hammers, or it can be successively used under the same hammer. The die has a groove 14 of the proper shape. A sheet 15 of metal, which sheet is of the proper size, is laid on the die as in Fig. 2, being positioned if necessary by a gage 16, and a strip 17 which forms the male part of the die is placed on the sheet 15, as in Figs. 1 and 2. The hammer 12 now descends, forcing the bar 18 which is secured to it and no wider than the strip 17, on said strip and forces the strip 17 in the groove, thus forming a U-shaped structure from the sheet 15, the projecting ends 19, on the withdrawal of the block 18, being the only portion of the sheet 15 visible above the flush upper surface of the die and the rib. A pair of round rods 20 are now placed, one on the outside of each projecting end 19 (see Figs. 4 and 7). A block 21 is secured to a movable hammer 12 in a manner similar to the bar 18. The block 21 has inclined faces 22 on its bottom edge, which faces engage the rods 20 and by forcing the rods toward each other, cause the rods to roll the projecting ends 19 down against the strip 17 which now acts as an anvil. This step is illustrated in Figs. 4 and 5. If desired, means can be installed for holding the rods 20 before they are forced to roll the ends 19, said holding means being preferably detachable and also yielding in its relation to the block 21.

The preferred form of holding means consists of a series of detachable fingers 23, each finger being set into a recess 24 in a boss 25, the bosses being disposed along each side of the die. A spring 26 is arranged in each boss 25, the springs holding the fingers so that the fingers secure the rods 20 in place, but the springs permit the fingers to retreat in their respective recesses when forced down by being engaged by the block 21. After the projecting ends have been rolled as above described, the bar 18 can again, if necessary, be brought down on the folded projecting ends and insure the straightening and squaring of the square tube. This oper-

ation is illustrated in Fig. 6. The strip 17 can be removed from the tube and the tube is ready for use. It will be understood that soldering or brazing can be employed to seal or strengthen the joint or seam in the tube.

When the joint is a lap joint the projecting ends must be folded over successively, one slightly preceding the other. This is accomplished by placing the die 11 and the block 21 slightly out of vertical alinement so that one of the faces 22 will engage its roller or bar slightly in advance of the other one, and in this way the projecting ends are made to descend on the anvil as shown in Fig. 9, that is, with one preceding the other. The last step, as in Fig. 6, used on a lap joint makes a finished closure for the tube.

It will be understood that the bar 18 of the block 21 can be used on different heads and the die successively passed under them, or it can be attached alternately to the same head and the die removed from underneath the head and then replaced at each successive operation. The fingers 23 are made removable so that they can be raised from their recesses by the operator and thus permit a flush surface on which the sheet 15 can be laid when it is to be acted on by the strip 17.

Having thus described my invention, what I claim is:—

1. A device for making square tubing comprising a die with a square groove therein, a strip to fit in the groove, a pair of round rods, a detachable holding means on the die for retaining the rods in their normal position on the die, the holding means

being adapted to yield to pressure toward the die, and a block acting to descend and force the rods toward each other.

2. A device for making square tubing comprising a die with a groove therein, a strip to fit in the groove, a pair of rods, detachable fingers for retaining the rods in their normal position on the die, the fingers being adapted to yield to pressure toward the die, and means for forcing the rods toward each other.

3. A device for making square tubing comprising a die with a groove therein, a strip to fit in the groove, a pair of rods, the die having recesses therein, springs in the recesses, fingers removably arranged in the recesses and resting on the springs, the fingers being adapted to hold the rods in their normal position on the die, and a block acting to force the rods toward each other.

4. A device for making square tubing comprising a die with a groove therein, a strip to fit in the groove, a pair of rods, the die having recesses therein, springs in the recesses, fingers removably arranged in the recesses and resting on the springs, the fingers being adapted to hold the rods in their normal position on the die, and a block with inclined faces which are adapted to engage the rods and force them toward each other when the block descends.

In testimony, that I claim the foregoing, I have hereunto set my hand this 25th day of May, 1910.

PETER H. SEERY.

Witnesses:

WM. H. CAMFIELD,
E. A. PELL.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."