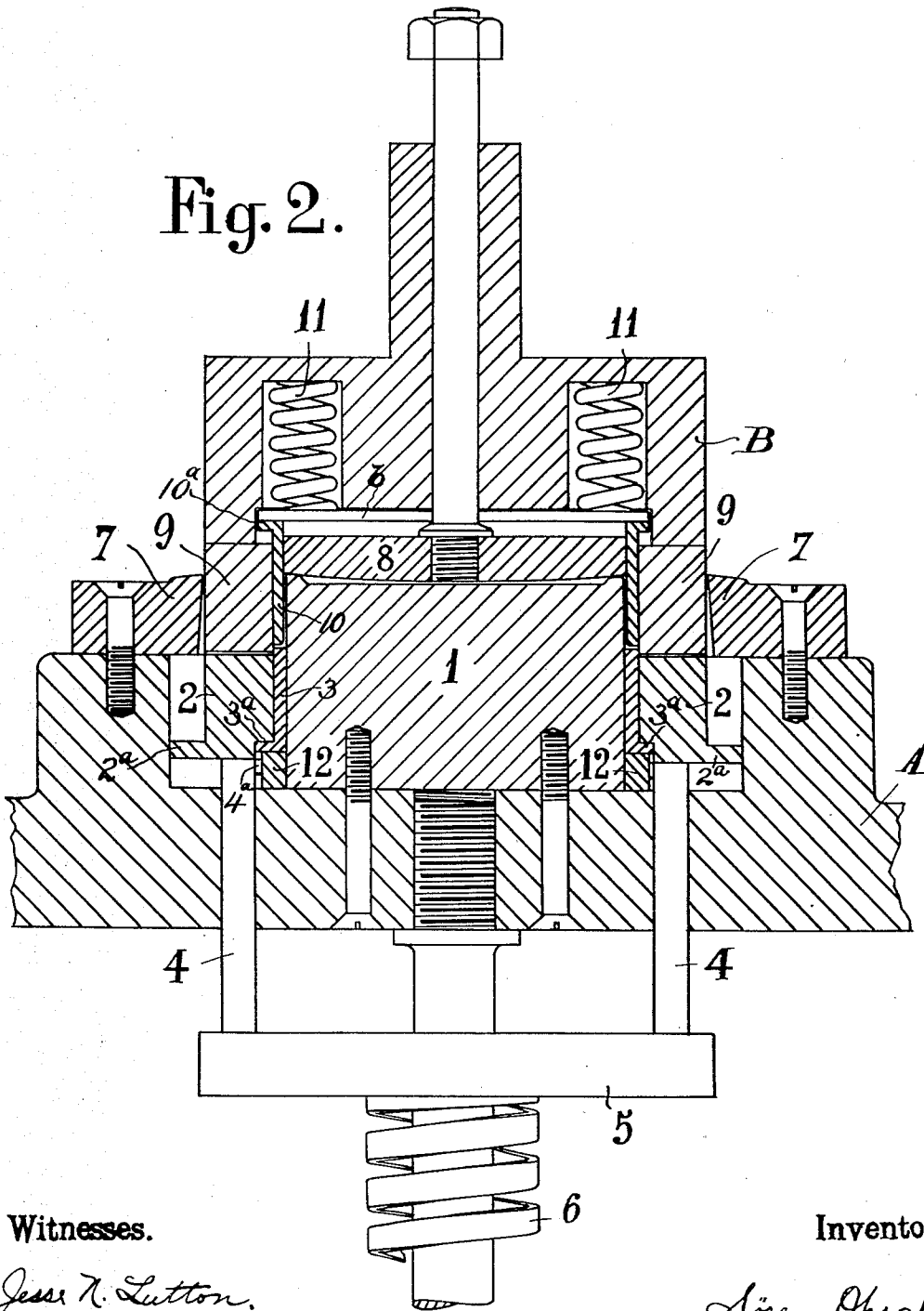


S. OPSAL.
MACHINE FOR FORMING TINS.
APPLICATION FILED SEPT. 11, 1907.

913,841.

Patented Mar. 2, 1909.
2 SHEETS—SHEET 2.

Fig. 2.



Witnesses.

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UNITED STATES PATENT OFFICE.

SÖREN OPSAL, OF STAVANGER, NORWAY, ASSIGNOR TO FREDRIK WATTNE, OF STAVANGER, NORWAY.

MACHINE FOR FORMING TINS.

No. 913,841.

Specification of Letters Patent.

Patented March 2, 1909.

Application filed September 11, 1907. Serial No. 392,361.

To all whom it may concern:

Be it known that I, SÖREN OPSAL, a subject of the King of Norway, residing at Stavanger, Norway, have invented certain new and useful Improvements in Machines for Forming Tins; 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 letters or figures of reference marked thereon, which form a part of this specification.

My invention relates to the manufacture of pressed tins of the class that have the top or lid secured thereto by means of a folded and rolled seam, and the object of the invention is to provide means for forming the flange for the seam and trimming the same in one and the same operation with the pressing.

In the accompanying drawings, Figure 1 is a vertical section of those parts of a machine embodying my invention and showing the position of the parts before the pressing operation takes place, and Fig. 2 is a like view showing the position of the parts after completion of the pressing and trimming operation.

In the example shown the lower portion of the machine consists of the stationary form as 1, mounted on a suitable frame A and corresponding to the inside of the tin to be formed; an annular die 3 and an outer annular die 2, which are capable of a vertical sliding movement relatively to the form 1 and to each other. The die 2 is carried by studs 4 projecting through the frame of the machine from a plate 5, which rests on a spring 6. The die 3 is loose being normally supported on lugs 4^a of the studs 4 by a flange 3^a and has a limited movement relatively to the die 2. Surrounding these annular dies is mounted a stationary annular cutter 7, which limits the upward movement of the dies 2 by means of a flange 2^a on the latter.

The upper part or presser head B of the machine comprises a presser plate 8, a presser ring 10 surrounding the latter and a cutter die 9 surrounding the ring. For convenience in assembling the parts of the head the cutter die 9 is made separate from the part B and is secured thereto by any pre-

ferred or well known means. This ring 10, the outside and inside diameter of which corresponds to the diameter of the rings 3, is supported by a flange 10^a taking over the upper edge of the cutter and is capable of a small axial motion relatively thereto. Springs 11 inserted in the head B press on a plate *b* resting on top of the ring 10 and tend to hold the same down as shown in Fig. 1.

The working of the machine is as follows: A piece of sheet metal, preferably tin, large enough to project over the inner edge of cutter 7 is placed on the form 1. When the presser head and plate are carried downward, the sheet will be held on the form by the weight of the plate and will be cut to its correct size between the inner edge of the cutter 7 and the outer edge of the ring 9. In the continued downward movement of the presser head the plate 8 remains stationary and the rings 9 and 10 will engage the outer portion of the sheet and press it with the rings 2 and 3 down below the top of the form 1 and the box will thereby be formed between the sides of the form 1 and the inner side of the ring 10. When the box rim has received its correct height the ring 3 is stopped from further downward movement by a ring 12 and a flange used for forming the seam will be held between the adjacent edges of the rings 10 and 3. The ring 9 still continues its downward movement until the flange 3^a on ring 3 engages ring 2 as shown in Fig. 2. By this movement of the ring 9 below the upper edge of ring 3 after the latter has been stopped the edge of the blank projecting outside the rings 10 and 3 will be trimmed or cut straight by the inside edge of the ring 9 and the outside of ring 3. In this manner, it will be seen, the forming of the tin-box and the trimming of the edge is performed in one and the same machine in one operation. The presser head may be mounted in any suitable mechanism for moving it up and down.

I claim:—

1. In a machine of the character described, the combination with a form and a presser head movable to and from the same, of a cutter-die carried by the head, a presser ring mounted within said cutter die and movable relatively thereto, an inner die surrounding the form operable by the presser ring, an outer die surrounding the inner die operable by the cutter-die, and means to arrest the

movement of the inner die and outer die at different periods.

2. In a machine of the character described, the combination with a form and a presser head movable to and from the same, of a cutter-die carried by the head, a presser ring mounted within said cutter die and movable relatively thereto, an inner die surrounding the form operable by the presser ring, an outer die surrounding the inner die operable by the cutter-die means to arrest the movement of the inner die and outer die at different periods, and a stationary cutter surrounding the outer-die adapted to co-operate with the cutter die.

3. In a machine of the character described, the combination with a form and a presser head movable to and from the same, of a cutter-die carried by the head, a presser ring mounted within said cutter-die and movable relatively thereto, an inner die surrounding the form operable by the presser ring, an outer-die surrounding the inner-die operable by the cutter-die and a fixed stop mounted in the path of the inner-die.

4. In a machine of the character described, the combination with a form and a presser head movable to and from the same, of a cutter-die carried by the head, a presser ring mounted within said cutter-die and movable relatively thereto, an inner-die surrounding the form operable by the presser ring, an outer die surrounding the inner-die operable by the cutter die, a fixed stop mounted in the path of the inner-side, and means on the latter to engage the outer die.

5. The combination with a stationary form, a presser plate movable to and from the same and a presser head movable independently of the plate, of a cutter-die carried

by the head, a presser ring supported on the cutter-die and movable relatively thereto, a stationary cutter surrounding the form adapted to coöperate with the cutter-die, a die of the same diameter as the cutter-die resiliently supported beneath the latter having a flange on the outer periphery to engage the cutter and a groove in its inner periphery, a resiliently supported die of the same diameter as the presser ring surrounding the form and provided with a flange movable in said recess, and a stop mounted in the path of the last named die.

6. In a machine of the character described, the combination with a form, of means to press a blank over the form, means to form a flange on the blank during the pressing and means coöperating with the pressing means to trim the edge of the flange substantially at the time of formation of the latter.

7. In a machine of the character described, the combination with a form, of means to cut a blank beyond the periphery of the form, means to press the central portion of said plank onto the top of the form, means to press a portion of the surrounding portion of the blank onto said periphery, means to press the edge of the surrounding portion of the blank perpendicular to said periphery, and means coöperating with the pressing means to trim said edge.

In testimony that I claim the foregoing as my invention, I have signed my name in presence of two subscribing witnesses.

SÖREN OPSAL.

Witnesses:

J. NORUM,
KARL KUITE.