

No. 747,671.

PATENTED DEC. 22, 1903.

B. ADRIANCE.

MACHINE FOR CLOSING CIRCULAR SEAMS OF SHEET METAL CANS.

APPLICATION FILED APR. 5, 1901.

NO MODEL.

2 SHEETS—SHEET 1.

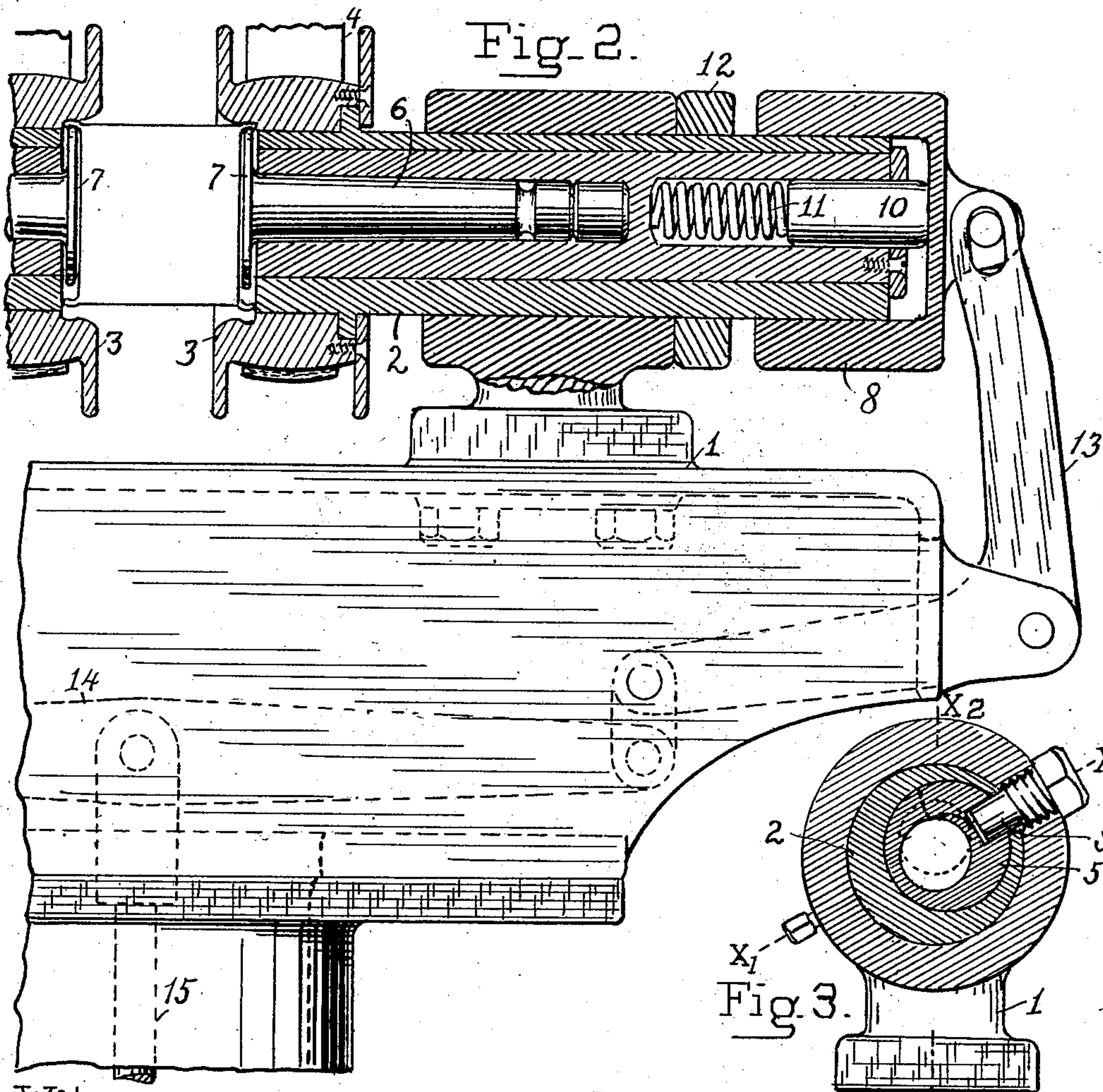
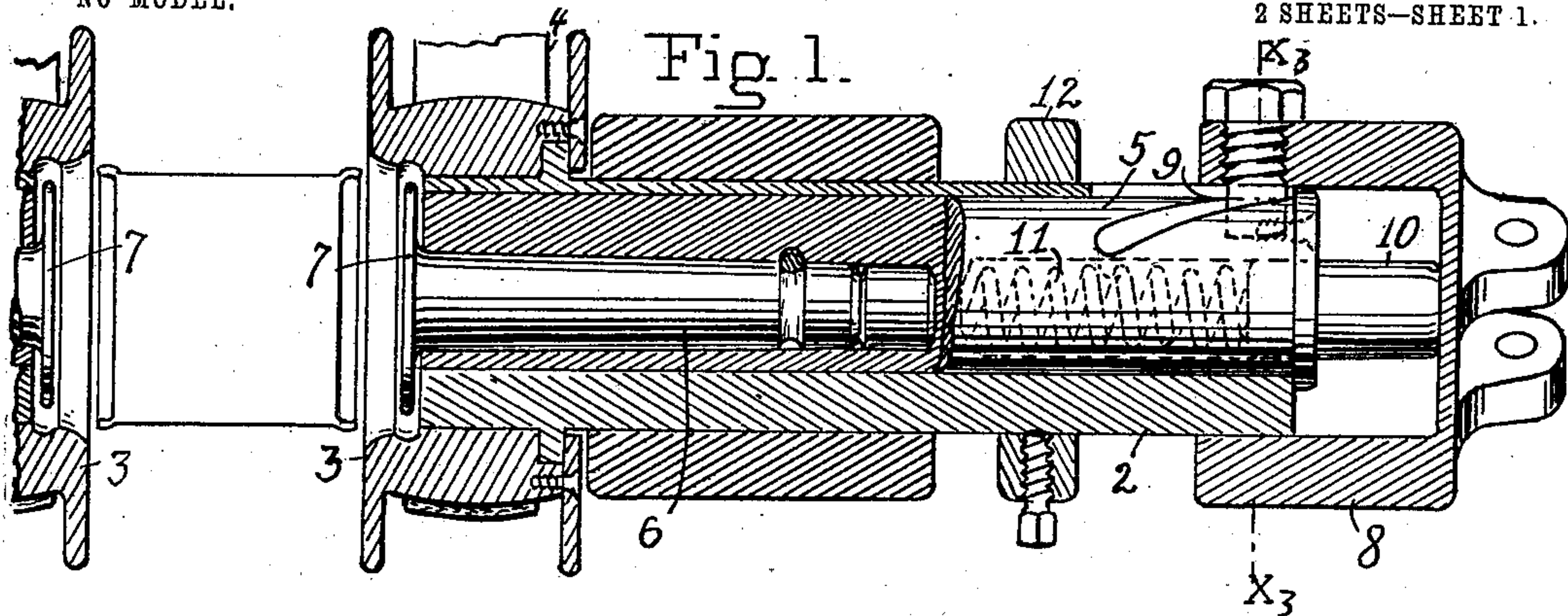
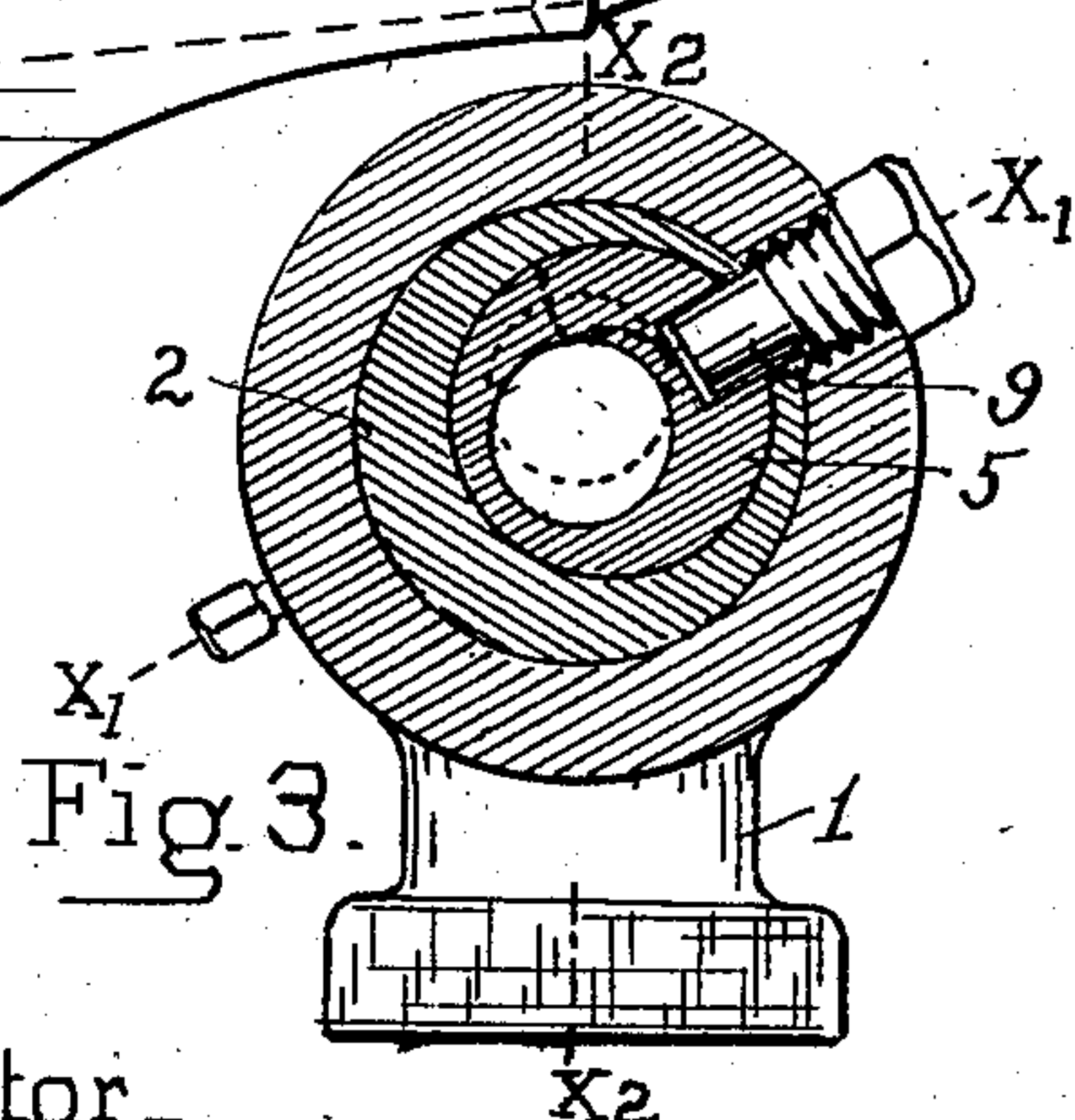


Fig. 3.



Witnesses.

Jos. F. Butterfass Jr.  
Amos Calleson

Inventor,

Benjamin Adriance.

by Samuel W. Balch  
Attorney

No. 747,671.

PATENTED DEC. 22, 1903.

B. ADRIANCE.

MACHINE FOR CLOSING CIRCULAR SEAMS OF SHEET METAL CANS.

APPLICATION FILED APR. 5, 1901.

NO MODEL.

2 SHEETS—SHEET 2.

Fig. 4.

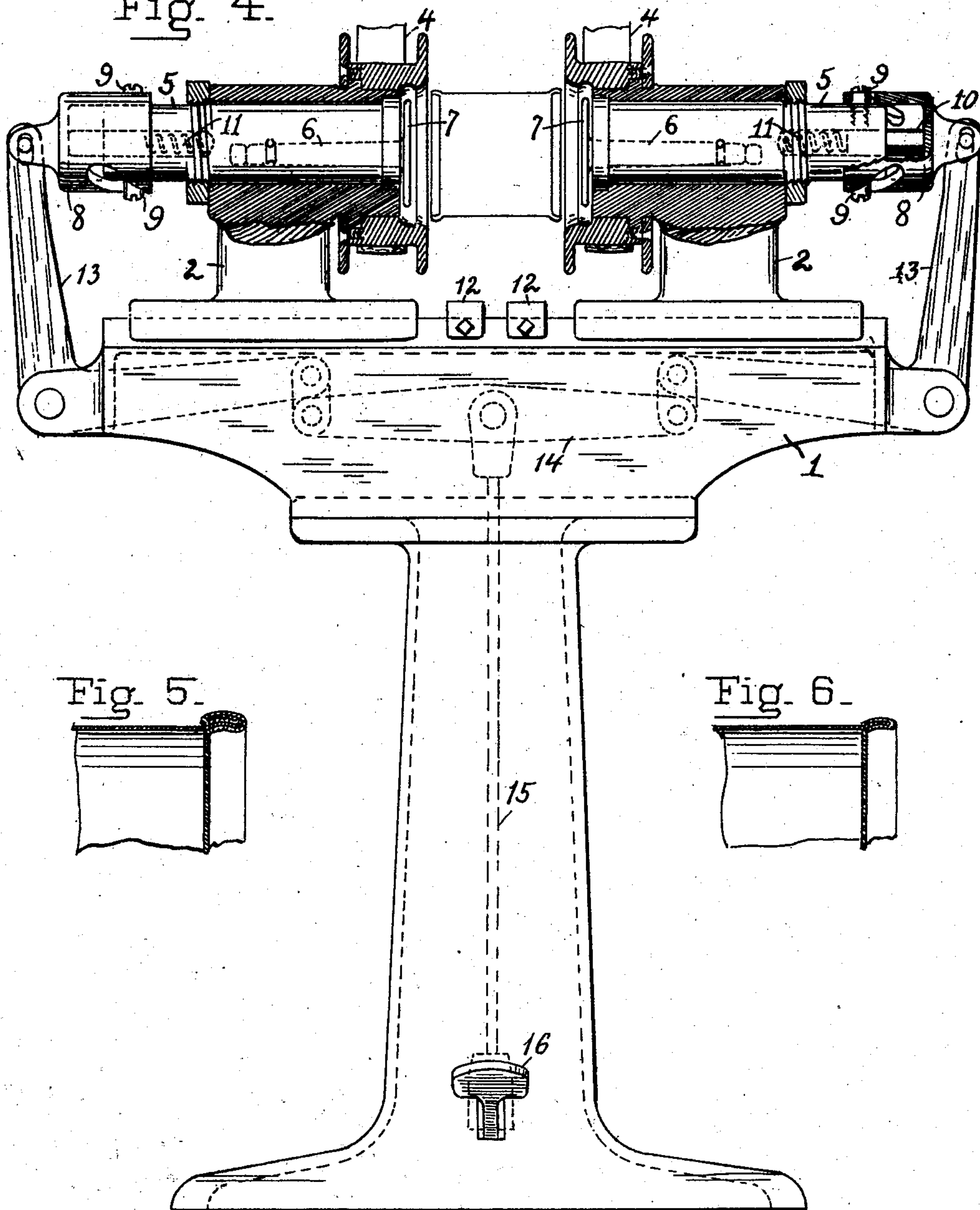


Fig. 5.

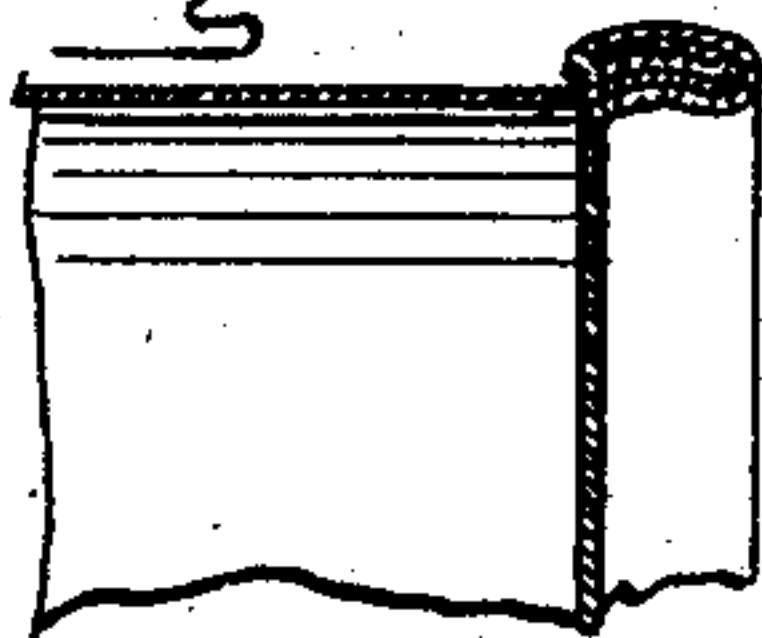
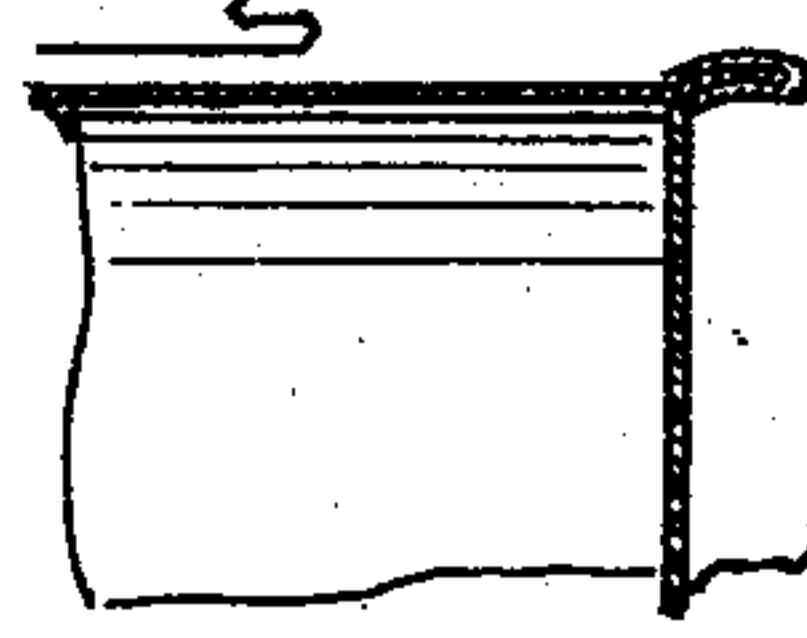


Fig. 6.



Witnesses:

*Jos. F. Butterfass Jr.*  
*Ered M. Kahouse.*

Inventor,

*Benjamin Adriance,*

*by Samuel W. Balch*  
*Attorney*



# UNITED STATES PATENT OFFICE.

BENJAMIN ADRIANCE, OF BROOKLYN, NEW YORK.

MACHINE FOR CLOSING CIRCULAR SEAMS OF SHEET-METAL CANS.

SPECIFICATION forming part of Letters Patent No. 747,671, dated December 22, 1903.

Application filed April 5, 1901. Serial No. 54,458. (No model.)

*To all whom it may concern:*

Be it known that I, BENJAMIN ADRIANCE, a citizen of the United States of America, and a resident of the borough of Brooklyn, New York city, county of Kings, and State of New York, have invented certain new and useful Improvements in Machines for Closing Circular Seams of Sheet-Metal Cans, of which the following is a specification.

10 This invention relates to machines in which the seams between the ends and sides of sheet-metal cans are squeezed between two coöperating parts. One part is a roller which  
15 seam. The other part rolls against the outer or convex side of the seam and opposes the roller. This part is preferably a die ring or chuck which encircles the end of the can. The chuck and the roller are supported by  
20 separate and parallel bearings. The two bearings are jointed together, and the axis of the joint is parallel and eccentric to the axes of both bearings. In consequence by rocking one of the bearings about this joint  
25 the chuck and roller are thrown into eccentric relation, their distance apart varied, and they are brought into engagement with the seam to be rolled. By reason of the parallel relation of the axis of the joint and the axes  
30 of the two bearings these can be disposed eccentrically one within the other in a structure which is at the same time substantial and compact. Suitable means are provided for operating the parts whereby the coöperating  
35 parts are made to progressively engage and squeeze the seam around the can.

Another feature of my invention is a structure, as hereinafter claimed, by which the closure of the seam is effected by a rotation  
40 of the chuck and roller each about its own axis by power applied to the chuck. Hence the revolution is not accompanied by any vibration of parts, such as would be the case if any part revolved about an axis eccentric  
45 to its own axis of figure, and great speed of operation is not attended with any jarring of the parts.

Another feature of my invention relates to the duplication of these mechanisms, so that  
50 the circular seams at both ends of the can may be operated upon at the same time, the construction being such that the seams at the two ends of the can are squeezed with equal

pressure irrespective of any variation in the thickness of the seams or the diameters of 55 the two ends.

In the accompanying two sheets of drawings, which form a part of this specification, Figure 1 is a longitudinal section on the line X' X' of Fig. 3, showing the mechanism for 60 closing the seam at one end of a can when out of engagement and also showing the end of the corresponding mechanism for closing the seam at the opposite end of the can. Fig. 2 is a section on the line X<sup>2</sup> X<sup>2</sup> of Fig. 3, 65 showing the same parts in engagement with a can. Fig. 3 is a transverse section on the line X<sup>3</sup> X<sup>3</sup> of Fig. 1. Fig. 4 is an elevation of a modified form of machine with the mechanism partly in longitudinal section. Fig. 70 5 is a section through a corner of the can, showing a double seam as it is hermetically closed by the machine. Fig. 6 is a section through a corner of the can, showing a single seam as it is hermetically closed by the ma- 75 chine. Fig. 4 shows a modified form of the machine with fewer parts, and this form will be more easily understood. The first form, however, is preferable, as the construction is cheaper. Both forms are identical in princi- 80 ple of operation, and the description as here given can be read on either form.

A suitable stand 1 supports two mechanisms in line with each other for simultaneously closing the circular seams at the two ends of 85 a can. In each of these mechanisms is a bearing 2 for a chuck or die-ring 3. This bearing is also a longitudinally-movable slide. This chuck is bored to a size slightly larger than the outside diameter of the fin- 90 ished circular seam of the can, so that the can may be freely withdrawn after the seam is closed; but in other respects the interior bore of the chuck forms an interior die-face which conforms to the outside of the finished seam 95 and which may be either curved, as shown, or straight. The chuck may be driven either by a belt 4, running thereon, as shown, or in any other suitable manner. The bearing for the chuck is bored parallel and eccentric to 100 the axis of the chuck, and this boring serves as a joint between the bearing for the chuck and a bearing 5, which supports the stem 6 of a roller 7. With this construction it will be seen that in one relative position of the two 105 bearings the roller is substantially concentric



with the chuck, as shown in Figs. 1 and 4, and in another position the roller is eccentric to the chuck, as shown in Fig. 2. The bearing for the roller is rocked by a longitudinal movement of an actuator 8, the bearing for the roller and actuator having a steep-pitch spiral or screw-thread connection. It is not necessary that both parts should be spirally threaded, for either may be spirally threaded or grooved and the grooves in the one engaged by pins 9, carried by the other. In the first form only one pin is shown, and it is carried by the actuator and engages a spiral groove in the bearing for the roller. In the second form two pins are carried by the bearing for the roller and engage spiral grooves in the actuator. In the first form the pin also engages a longitudinal groove in the bearing for the chuck and keeps it from turning. In the second form the bearing for the chuck is carried on ways, and is thereby confined to a longitudinal sliding movement. A spring-plug 10 and spring 11 are interposed between the bearing for the roller and the actuator, and the actuator when advanced at first pushes the bearing for the roller ahead of it, and thereby advances the bearing for the chuck and other mechanism carried by the bearing, thereby bringing the chuck over the circular seam of the can which is to be closed. A stop 12 limits the advance of the bearing, and further movement of the actuator compresses the spring and rocks or turns the bearing for the roller a portion of a revolution, thereby moving the roller laterally to a position eccentric to the chuck and squeezing the seam between it and the chuck. The pressure which is brought to bear upon the seam by the roller depends upon the force with which the actuator is pushed forward.

The actuators of both mechanisms are operated by bent levers 13, and these are operated together by an equalizing-lever 14, which is connected at its middle point through a rod 15 with a foot-treadle 16. The equalizing-lever divides the force equally between the two mechanisms, and the squeezing force which is applied to the seams at the two ends of the can must therefore be the same.

For closing the circular seam of open-ended cans one of the mechanisms may be omitted, or if retained it will be merely a suitable support for the open end of the can, and the can will be engaged between this support and the opposite closing mechanism. For this work either the support may be slid longitudinally and the can pushed into the chuck or the mechanism may be slid toward the stationary support and the clutch pushed on the end of the seam. The part which does not slide will be kept from longitudinal movement by setting up the stop to its slide.

Without confining myself to the precise details shown, what I claim as new, and desire to secure by Letters Patent of the United States, is—

1. The combination of a slide, a chuck and

a roller within the chuck, a bearing for the chuck supported from the slide, a bearing for the roller supported from the slide, the two bearings being parallel and jointed to each other along an axis eccentric to and parallel with both bearings, means for rocking one of the bearings about the joint, and means for rotating the chuck.

2. The combination of a slide, a chuck, a roller within the chuck, a bearing for the chuck supported from the slide, a bearing for the roller supported from the slide, the two bearings being parallel and jointed to each other along an axis eccentric to and parallel with both bearings, means for rocking the bearing for the roller about the joint, and means for rotating the chuck.

3. The combination of a slide, a chuck with an interior die-face, and a bearing for the chuck concentric with the die-face supported from the slide, a roller within the chuck having a limited lateral movement relative to the die-face of the chuck, a bearing for the roller concentric therewith supported from the slide, means for rotating the chuck, and means for moving the roller laterally to cause it to assume a position eccentric to the chuck.

4. The combination of a slide, a chuck supported by a bearing on the slide, a roller within the chuck, a bearing for the roller eccentrically jointed to the slide, a longitudinally-traveling actuator, a spring between the actuator and the slide, and a spiral connection within the actuator and the bearing for the roller.

5. The combination of two mechanisms each provided with cooperating parts consisting of a chuck and a roller within the chuck, bearings for both parts eccentrically jointed to each other, means for rotating one of the parts and means for varying the relative eccentricity of the chuck and roller, and an equalizing-lever for actuating the eccentricity-varying means of both mechanisms.

6. The combination of two mechanisms each consisting of a slide and a fixed stop therefor, cooperating parts consisting of a chuck and a roller within the chuck, bearings for both parts eccentrically jointed to each other and carried by the slide, means for rotating one of the parts, a longitudinally-traveling actuator, a spring between the actuator and the slide, and a spiral connection between the actuator and one of the bearings whereby the first forward movement of the actuator advances the slide and subsequent movement of the actuator compresses the spring and varies the relative eccentricity of the bearings, and an equalizing-lever for operating the actuators of both mechanisms.

Signed at New York city this 4th day of April, 1901.

BENJAMIN ADRIANCE.

Witnesses:

SAMUEL W. BALCH,  
JOS. F. BUTTERFASS, Jr.