My invention relates generally to machines for sealing or seaming the covers of preserving cans, and particularly to devices of this kind that are adapted for operation by hand, being applicable to a table or bench in the home and easily operated to seal or seam the cover of a can containing fruit, vegetables or other food to be preserved.

The primary object of the invention is to provide a simple, inexpensive apparatus which can be easily and quickly set up for use and as readily taken down and stored away when the preserving season is completed.

A further object is to provide a hand operated can sealing or seaming machine which can be manipulated with little effort on the part of the operator.

A further object is to provide a sealing or seaming machine by means of which cans of different sizes can be hermetically closed and their contents preserved.

A further object is to provide a can-sealing or seaming machine, comprising upper and lower chuck plates, having means for moving them towards and away from each other to clamp the can therebetween, and the lower chuck plate having a series of annular grooves in the upper face thereof, each adapted to receive the bottom flange of a certain sized can, and the widths of these grooves being such as to substantially fit the flanges on the bottoms of the cans, and a portion of the upper surface of the lower chuck plate being cutaway to provide clearance for the usual seam provided in the wall of the can and which seam causes that portion of the lower can flange to be in alignment with the seam, to be slightly thicker than the remainder of the flange, so that when the can is placed upon the chuck plate with its flange received in one of said grooves, relative rotation of the can upon the chuck plate is prevented because the thickness of the groove is such as to prevent that portion of the can flange which is thicker, from passing therethrough.

Other objects of the invention will appear from the following detailed description.

The invention consists generally of various constructions and combinations, all as hereinafter described, and particularly pointed out in the claims.

In the accompanying drawings forming part of this specification:

Figure 1 is a side elevation partially in section of a hand operated can sealing or seaming machine embodying my invention;

Figure 2 is a sectional view on the line 2—2 of Figure 1;

Figure 3 is a detailed sectional view showing the working position of the sealing or seaming rollers during the sealing operation;

Figure 4 is a similar view showing another position of the rollers or another step in the sealing operation;

Figure 5 is a sectional view on the line 5—5 of Figure 1;

Figure 6 is a detailed sectional view showing a portion of the lower chuck plate and the position of the can thereon;

Figure 7 is a plan view of Figure 6; and

Figure 8 is a perspective view of an unsealed can.

Referring to Figure 1 of the drawing, 2 represents the base of the frame having suitable jaws 3 and supporting thumb screws 4 by means of which the frame may be securely clamped in an upright position on the edge of a table, bench or other suitable support.

The frame includes the base 2, a pair of upright standards 5 and a suitable header 6 here shown connecting together the upper ends of the uprights 5. The header is secured to the uprights by suitable screws 7.

The removal of these screws permits separation of the working parts of the machine from the frame.

The base 2 has a shaft 8 extending horizontally through the middle portion thereof and provided with an operating handle 9.

Near one end of the shaft within the orifice in the base, an eccentric 10 is formed thereon, opposite a bore which extends upwardly through a boss 12 formed on the middle portion of the base. This bore is adapted to receive a stud 13 which depends from the under side of a chuck plate 14. The stud is preferably provided with a flat face 15 on one side adapted to be engaged by a clamping screw.
16 to prevent rotary movement of the stud in the bore, but permitting a vertical sliding movement therein. A screw 17 is tapped into the lower end of the stud 13 and is adjustable therein. The head of the screw is adapted to ride on the eccentric 10 so that when the shaft 8 is revolved, the stud 13 will be positively raised in its bore or allowed to slide down therein as may be desired, in the operation of clamping or releasing a can.

The chuck plate 14 is adapted to support the can 18 to be sealed or sealed. To prevent relative rotation of the can upon the chuck plate 14, the upper surface of the latter is provided with a series of annular grooves A, B, and C, each adapted to receive the bottom flange of a certain sized can, (see Figures 6 and 7). The width of each of the grooves A, B, and C is such as to substantially fit the thickness of the depending rib or flange formed at the bottom of the can to be seated therein. The depth of each groove is also preferably equal to the depth of the can flange to be fitted therein, so that when a can is seated upon the chuck plate, it will be supported upon the top surface thereof and also in the bottom of one of the grooves. The upper corners of each groove are chamfered, as indicated at D, in Figure 6, so that the grooves are substantially tapered downwardly, thus securely holding the can flange when inserted therein. A portion of the upper surface of the chuck plate 14 is also cut away as indicated at E in Figures 2 and 7.

Preserving cans usually have their bottoms secured thereto when they are manufactured, and are supplied to the user with the covers detached. In constructing the can, a seam F is provided in the wall thereof because of the edges of the material from which the can is formed, being overlapped and suitably secured together by such means as solder. When the bottom of the can is secured to the can body, a depending rib or flange G is formed on the can, as shown in Figures 6 and 8, and the portion of this flange in alignment with the seam F will be slightly thicker than the remainder of the flange as indicated at H in Figure 8, because of the overlapping of the edges of the material from which the can body is formed. Consequently, this thicker portion H of the lower flange G of the can will not enter the grooves A, B, and C. When the can to be sealed is mounted upon the chuck plate 14, the seam F is positioned over the cut away portion in the chuck plate, as indicated in Figures 1 and 7, so that the thicker portion H of the depending can flange G will also be seated over the cut away portion E. Thus, it will be seen that the can cannot be relatively rotated upon the chuck plate 14 because of the thicker portion H of the flange G engaging the end of its complementary groove, as shown in Figure 7, thereby positively preventing the can from rotating on the chuck plate.

19 represents a shaft mounted to revolve in a central opening provided in the header 6, in vertical alinement with the stud 13. The hub of an operating crank 20 is clamped to the upper end of the shaft 19 by suitable means such as a screw 21, the under face of the hub resting and turning upon a boss 22 that is preferably formed around the orifice in the header 6. When this crank is turned, the shaft 19 will be revolved. An exteriorly threaded sleeve 23 is provided and has a flange 24 at its upper end that is secured to the header 6 by suitable means such as bolts 25. A cross-head 26 is securely fastened to the lower portion of the shaft by suitable means such as a pin 27. A plate 28 is secured to the under side of this cross-head and a similar plate 29 is rotatably mounted on the lower end of the shaft and provided with an annular groove to receive a correspondingly shaped flange 30 formed on said shaft. Bearing balls or rollers 31 are interposed between the plates 28 and 29 to take the thrust. An upper chuck plate 32 is secured to the under side of the plate 29 between which and the lower chuck plate 14 the can to be sealed is securely held against rotation. With this construction the plate 28 and the cross-head are free to rotate with the shaft 19, while the upper chuck plate is frictionally held against rotation through its engagement with the top of the can, the lower chuck plate being securely held against rotation by the screw 16.

Between the cross-head and the lower end of the exteriorly threaded sleeve 23 I prefer to provide a thrust bearing 33. Above this thrust bearing on the sleeve 23 is a cam 34, adapted for rotation with the cross-head 26 because of its connection therewith by a suitable pin 35, on which the cam is free to slide vertically. The cross-head will of course revolve with the shaft 19 and the sleeve 23 being stationary, the cam will move up and down thereon according to the direction of the revolution of the crank. The peripheral surface of the cam is provided with cam faces 36 and 37, and links 38 and 39 have wheels 40 at their upper ends adapted to be engaged by these cam surfaces.

Shanks 41 and 42 are adapted to fit within slots 43, longitudinally formed in the cross-head, and said shanks are provided near the middle portion thereof with ears 44. The cross-head on each side of the slots 43 has a series of holes 45 adapted to receive pins 46. Corresponding holes are provided in the ears 44 and the lower ends of the links 38 and 39 also adapted to receive the pins 46, thereby supporting the shanks in the slots of the cross head. The upper ends of the shanks extend to a point opposite the upper ends of the links 38 and 39 and have adjusting screws 47 mounted therein and adapted to bear on the
links 38 and 39, so that relative adjustment is permitted and the angle of the shanks with respect to the links increased or decreased as may be desired. The cam 34 will revolve with the cross head and during its revolution will move up and down on the externally threaded sleeve 32. The engagement of the cam faces 36 and 37 with the wheels 40, will have the effect of oscillating the links 38 and 39 and imparting a corresponding movement to the shanks 41 and 42 in succession to perform the desired sealing or seaming operation to the can, held between the chuck plates.

The series of holes 45 in the cross head allows horizontal adjustment of the links 38 to adapt the sealing machine for cans of different diameters and sizes. The upper chuck plate 32 is demountably secured to the plate 29 so that it may readily be removed and another one substituted therefor, depending upon the size of the can.

The lower ends of the shanks 41 and 42 have threaded extensions 48 and lock nuts 49 by means of which suitable seaming rollers 50 and 51 are removably mounted on said shanks, said rollers being substantially cylindrical in form and provided with annular grooves 52 and 53, respectively, which are adapted to engage the projecting edge of the can cover 54 and roll and seam it around and under the flanged edge 55 of the top of the can, the annular grooves having surfaces adapted through the rocking movement of the shanks 41 and 42, to perform the rolling and seaming operation quickly and effectually, as the can is securely held, and the crosshead rotated by the operation of the crank. The rollers are capable of adjustment on the shanks so that their position may be changed with respect to the edge of the can cover until the annular grooves are in the proper position to engage the edge of the cover and roll it in the proper manner to seal the can.

Any adjustment of the shanks and their connections made necessary by the sealing of cans of different sizes, can be easily and quickly obtained by the provision of the adjusting screws 47, the adjustable mounting of the shanks in the cross head, and the manner of supporting the seaming rollers on the lower ends of the shanks.

To use the device, the frame is clamped in an upright position to a suitable support. The chuck plates are then separated the desired distance to allow the convenient insertion of the filled can between them; the cover of the can is placed in position with its edge projecting horizontally beyond the walls of the can, the upper chuck plate 14 holds the can against revolution. The operator then grasping the crank, will rotate the cross head, and the roller 50 traveling in advance of the roller 51 and actuated first by the cam surface 36, will perform the initial folding operation for the edge of the cover. The second roller 51 following the first one and actuated by its cam surface, will complete the seaming and sealing operation folding the edge of the cover snugly under and against the projecting edge of the cam wall, and thereby effectually sealing the can and its contents. When this has been done, the rollers are separated, the can released from between the chuck plates and the operation described may then be repeated.

In various ways the details of construction herein shown and described may be modified and still be within the scope of my invention.

I claim as my invention:

1. A machine of the class described, comprising a frame, chuck plates mounted in said frame adapted to support the can to be sealed, a shaft mounted in said frame, a cross head secured thereon, shanks mounted for horizontal adjustment on said cross head, rollers carried by said shanks and having surfaces to engage the peripheral edge of the can cover, and means actuated through the revolution of said shaft for oscillating said shanks and engaging their rollers successively with the edge of the can cover.

2. A machine of the class described, comprising a frame, upper and lower chuck plates mounted in said frame between which the can to be sealed is held, a shaft vertically mounted in said frame, an operating crank on the upper end of said shaft, an externally threaded sleeve mounted on said shaft and having a flanged upper end secured to said frame, a cam mounted on said sleeve for vertical and rotary movement, roller supporting shanks and rollers thereon to engage the edge of the can cover, means actuated by said cam for oscillating said shanks, and means supporting said shanks on said shaft for rotary movement with said cam.

3. A machine of the class described, comprising a frame having means for temporarily securing it to a horizontal support, upper and lower chuck plates mounted in said frame between which the can to be sealed is held, a shaft mounted for rotation in the upper portion of said frame, and having a hand operating crank, shanks connected with said shaft for revolution therewith and having seaming rollers to engage and roll the peripheral edge of the can cover, and means actuated through the revolution of said shaft for oscillating said shanks successively to perform the initial and final seaming operation to the can cover.

4. The combination with a frame, having means for holding a can to be sealed, of a shaft mounted in said frame provided with means for operating it, a member secured to the shaft, shanks pivotally supported on said member and adapted for horizontal
adjustment thereon, means actuated by said shaft for tilting said shanks, and seaming rollers carried by said shanks and having surfaces to engage and roll the edge of the can cover.

5. A machine for applying covers to cans, comprising a rotary cross head, shanks pivotally supported in said cross head, rollers carried by said shanks and having surfaces adapted to engage the edge of the can cover to roll and seam it downwardly, and means actuated through the revolution of said cross head for oscillating said shanks successively to perform the final initial and seaming operation of the can cover.

6. A machine for applying covers to cans, comprising a frame, a rotary cross head, shanks pivotally mounted therein and having rollers at their lower ends provided with peripheral grooves adapted to engage the can cover and roll it downwardly to seal it to the can, chuck plates mounted in the frame and between which the can to be sealed is placed, one of said chuck plates being non-rotatable and having an annular groove adapted to receive the depending flange formed at the bottom of the can, said groove being adapted to prevent the can from relatively rotating upon said chuck plate, when the machine is operated.

7. A machine for applying covers to cans, comprising a frame, a rotary cross head, shanks pivotally mounted therein and having rollers at their lower ends provided with peripheral grooves adapted to engage the can cover and roll it downwardly to seal it to the can, chuck plates mounted in the frame and between which the can to be sealed is placed, one of said chuck plates being non-rotatable and having annular grooves in the top surface thereof each adapted to receive the depending flange formed at the bottom of a can of a corresponding diameter, said grooves being tapered downwardly to grip the can flange and adapted to prevent the cam from relatively rotating upon said chuck plate, when the machine is operated.

8. A machine for applying can covers to cans, comprising spaced chuck plates between which the can to be sealed is placed, rotatable means adjacent to one of said chuck plates for engaging and sealing the cover to the can, the other chuck plate being non-rotatable and having a plurality of annular grooves in the surface thereof, tapered downwardly, and each of which is adapted to receive the depending flange of a can of corresponding diameter and having a seam in the wall thereof, and a portion of the surface of said grooved chuck plate being removed to provide clearance for the seamed portion of the can, said grooves preventing relative rotation of the can upon the grooved chuck plate because of the inability of the seamed portion of the can flange to enter said grooves.
CERTIFICATE OF CORRECTION.

Patent No. 1,744,661. Granted January 21, 1930, to

CARL NELSON.

It is hereby certified that the above numbered patent was erroneously issued to "Northwestern Steel & Iron Works, of Eau Claire, Wisconsin, a Corporation of Wisconsin", whereas said patent should have been issued to "National Pressure Cooker Company, of Eau Claire, Wisconsin, a Corporation of Wisconsin", said corporation being assignee of the entire interest in said invention, as shown by the records of assignments in this office; and that the said Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 4th day of March, A. D. 1930.

M. J. Moore,
Acting Commissioner of Patents.