No. 822,068. PATENTED MAY 29, 1906.

A. J. MOXHAM.

MACHINE FOR CRIMPING OR BENDING THE ENDS OF CYLINDERS FORMED OF PLASTIC OR FLEXIBLE MATERIAL.

APPLICATION FILED MAY 25, 1905.

3 SHEETS—SHEET 1.

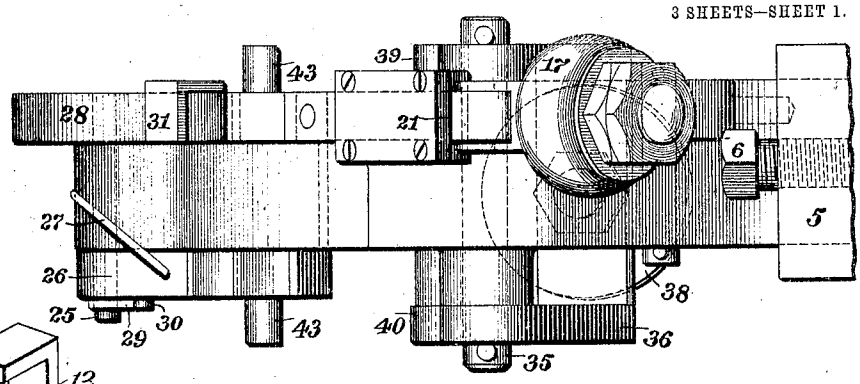


Fig. 2.

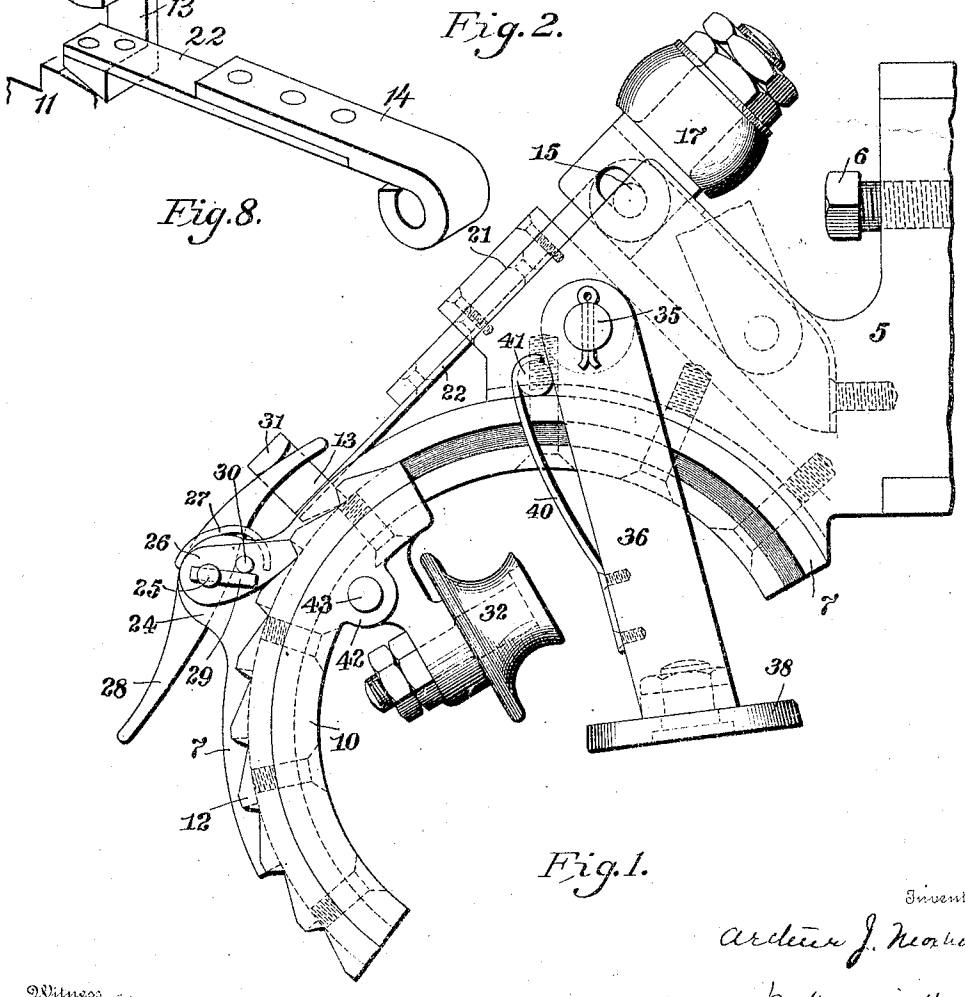


Fig. 8.

Fig. 1.

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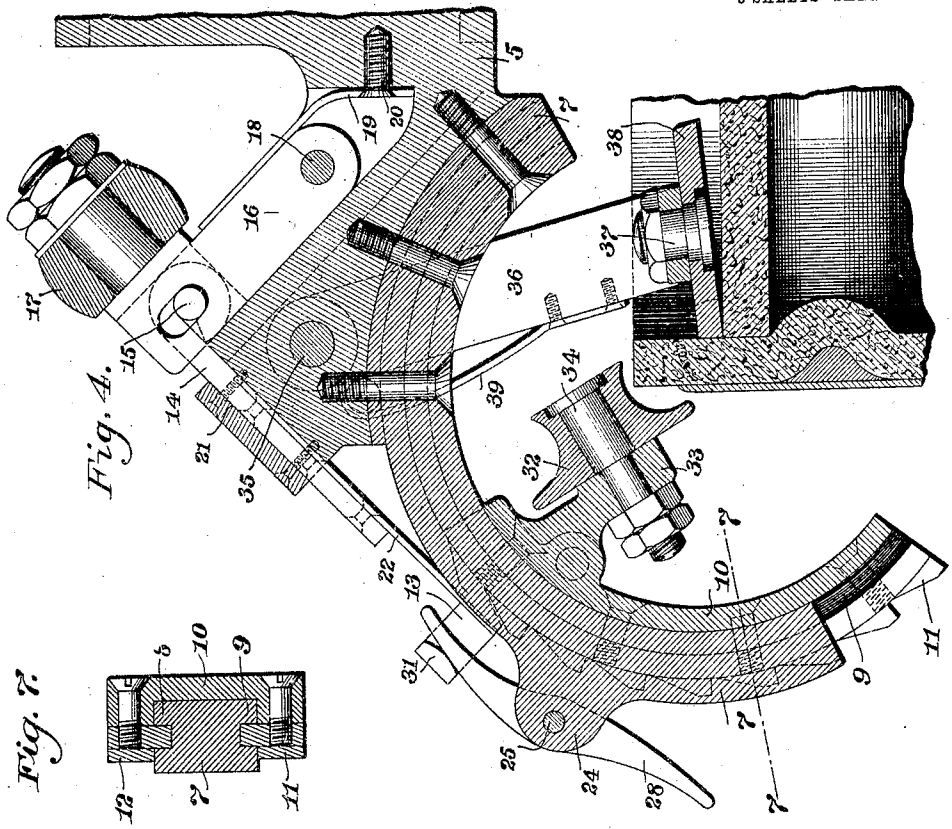


Fig. 4.

Fig. 7.

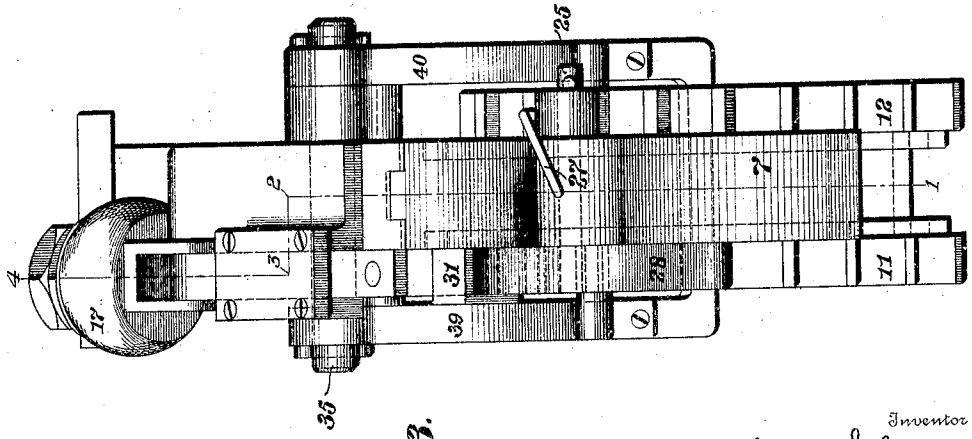


Fig. 3.

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3 SHEETS—SHEET 3.

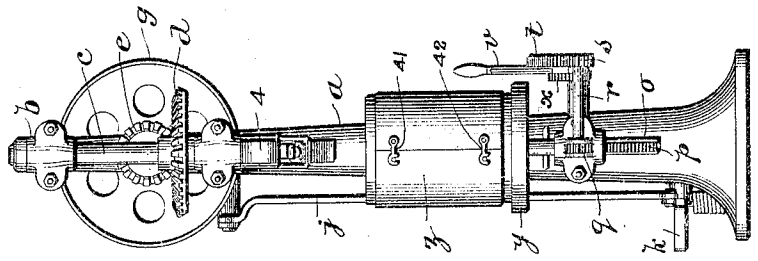


Fig. 6.

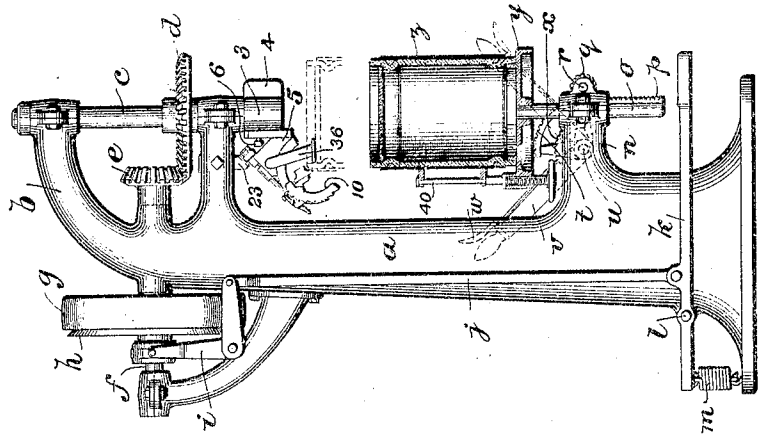


Fig. 5.

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UNITED STATES PATENT OFFICE.

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MACHINE FOR CRIMPING OR BENDING THE ENDS OF CYLINDERS FORMED OF PLASTIC OR FLEXIBLE MATERIAL.

No. 822,068. Specification of Letters Patent. Patented May 29, 1906.

Application filed May 25, 1905. Serial No. 262,142.

To all whom it may concern:

Be it known that I, ARTHUR J. MOXHAM, a subject of the King of Great Britain, residing at Wilmington, county of Newcastle, and State of Delaware, have invented a new and useful Improvement in Machines for Crimping or Bending the Ends of Cylinders Formed of Plastic or Flexible Material, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, which form a part of this specification.

My invention relates to a new and useful machine for crimping or bending the ends of cylinders formed of plastic or flexible material—such, for instance, as the body portion of kegs or vessels formed of pulp, paper, or similar material. It is the custom in this form of kegs or vessels to bend over or crimp the ends of the body on the heads in order to secure or lock them in position. My machine is especially adapted for this purpose. In this class of kegs or vessels usually a body is first formed provided with an internal seat or projection near each end. A head is placed upon each of these projections, and the ends of the body beyond the projection are crimped or bent over upon or against the surface of the respective heads.

I will first describe the embodiment of my invention illustrated in the accompanying drawings and then specifically point out the invention in the claims.

In the drawings, Figure 1 is a side elevation of the crimping mechanism. Fig. 2 is a plan view of the crimping mechanism. Fig. 3 is an end elevation of the crimping mechanism. Fig. 4 is a section of the crimping mechanism, taken on the line 1 2 3 4, Fig. 3. Fig. 5 is a side elevation, in part section, of the entire machine with the keg or vessel to be crimped thereon. Fig. 6 is a front elevation of the same. Fig. 7 is a section on the line 7 7, Fig. 4. Fig. 8 is a perspective view showing pawl 13 and its connection with slide 14.

a is the frame of the machine, having the head *b*, carrying the rotary spindle *c*, driven by the bevel-gear *d*, meshing with the bevel-gear *e* on the shaft *f*, loose on which is the pulley *g*, the connection between pulley *g* and shaft *f* being controlled by the cone-clutch *h*, which is operated by the bell-crank *i*, rod *j*, lever *k*, pivoted at *l*, the lever being also connected to spring *m*. In an orifice upon a projection *n* from frame *a* is the rod or standard *o*, having the rack *p*, which meshes with the pinion *q* on the shaft *r*. On this shaft *r* is the gear *s*, meshing with the toothed sector *t*. The sector is on the shaft *u*, on which is the lever *v*. *w* is the locking-pawl and the rack for said pawl. By moving the lever the standard *o* is elevated or depressed. Carried by this standard is the platform *y*, upon which the keg is placed.

z is a cylindrical shield which surrounds the keg or vessel and is formed in two parts hinged together and supported upon the rod 40 and is locked in the closed position by the catches 41 42.

The crimping mechanism is secured to and rotated by the rotary spindle. Upon this spindle is the boss 3, having the counterbalance 4. This boss is provided with a radial groove in which rests the arm 5 and in which it is secured by the set-screw 6. On the under side of this arm is fitted the sector-frame 7, having on opposite sides the grooves 8 or guides 9. Working in these guides is sector-slide 10. Upon each of the upper surfaces of this slide are the ratchet-teeth or racks 11 and 12, respectively.

13 is a pawl which engages the rack-teeth 11. This pawl is connected to the slide 14 by means of the spring-piece 22. The slide 14 is fastened by a pin 15 to the lever 16, carrying on its upper end the roller 17. The lever 16 is fastened in a pocket in the arm 5, in which it is secured by a pin 18. Contacting with this lever is the spring 19, fastened in the pocket by means of the screw 20. The slide 14 passes through the slide 21 on the arm 5 and carries on its outer end the spring-piece 22, connecting it, the slide 14, and the pawl 13, which allows the pawl to lift out of the rack-teeth when the pawl is moved outwardly, and the slide 14 is moved a distance of a tooth when the pawl moves inwardly. The pawl 13 is moved outwardly by the action of the spring 19 and inwardly by the roller 17 in the revolution of the spindle, striking a lug 23, attached to the frame of the machine, and thus in each revolution of the spindle the pawl moves inwardly and outwardly, advancing the slide the distance of a tooth.

On the boss 24 of the sector-frame is a pin 25, carrying the pawl 26, which is pressed tightly into the teeth of rack 12 by spring 27. This pawl is of such shape as to allow the sector-slide to move forward under the action of

pawl 13, but to hold the slide from backward movement. In order to release both pawls, and thus allow the slide to be brought to the extreme outward position, I secure to the pin 25 a lever 28. Also connected to the pin is the trip 29, which is adapted to contact with a pin 30 on the pawl 26. The outer end of the lever 28 has in its line of movement a lug 31 on the pawl 13. When the lever 28 is operated, both pawls are released from engagement with their ratchets and the slide can be moved to the extreme outward position.

32 is the crimping-roller, which is carried on the under face of the slide by means of the lug 33 and pin 34.

Pivoted upon the pin 35 on the arm 5 is the bifurcated oscillating hanger 36, which carries at its outer end, by means of the pin 37, the backing-roller 38. Secured to the sides of the hanger 36 are the springs 39 and 40, which at the other end are secured to the pin 41, carried by the arm 5. Through the lug 42 on the sector-slide is the pin 43. When the sector-slide advances inwardly sufficiently, it will strike the oscillating hanger 36, and further inward movement will lift the hanger and backing-roller out of the path of the crimping-roller.

The operation of the machine is as follows: The vessel is placed on the platform, the shield closed around it. The shield does not extend the entire height of the vessel, and it is the portion above the shield that is to be crimped. The sector-slide is moved into the position shown in Fig. 1. The platform is elevated until the vessel assumes the position shown in Fig. 4 and dotted lines, Fig. 5, the backing-roller being within and the crimping-roller without the vessel. The spindle D is then rotated, which carries the crimping-roller and backing-roller around the vessel, acting upon the upper surface of the vessel. In each rotation the slide is rocked inward, carrying the crimping-roller, and thus forcing the surface of the vessel farther inward. When in the movement of the slide the pin strikes the backing-roller oscillating hanger, it is swung so as to carry the roller out of the vessel. This enables the slide in its further movement to complete the crimping. When the crimping of one end of the vessel has been completed, it is lowered, the vessel reversed, and a like operation performed in the other end. The vessel is then moved and a new vessel acted on.

Having now fully described my invention, what I claim, and desire to protect by Letters Patent, is—

1. In a crimping-machine, in combination, a rotary spindle, a frame secured to rotate with said spindle, a slide having a rack supported on and movable along said frame, an operating-pawl for said rack, and means to operate said pawl at each revolution of the spindle to advance the slide the distance of one tooth and a crimping-roller carried by said slide.

2. In a crimping-machine, in combination, a rotary spindle, a frame secured to rotate with said spindle, a slide having a rack supported on and movable along said frame, an operating-pawl for said rack, and means to operate said pawl at each revolution of the spindle to advance the slide the distance of one tooth, a crimping-roller carried by said slide, and a backing-roller adapted to coöperate with said crimping-roller.

3. In a crimping-machine, in combination, a rotary spindle, a frame secured to rotate with said spindle, a slide supported by and movable along said frame, means to move said slide, a crimping-roller carried by said slide, and a backing-roller, a pivotal support for said backing-roller, said support being in line of movement of said crimping-roller slide.

4. In a crimping-machine, in combination, a rotary spindle, a frame secured to rotate with said spindle, a slide supported by and movable along said frame, means to move said slide, a crimping-roller carried by said slide and a backing-roller adapted to coöperate with said crimping-roller.

5. In a crimping-machine, in combination, a frame, means to rotate said frame, a slide supported by and movable along said frame, a crimping-roller supported by said slide and means to move said slide.

6. In a crimping-machine, in combination, a frame, means to rotate said frame, a slide supported by and movable along said frame, means to give said slide a step-by-step movement along said frame, and a crimping-roller supported by said slide.

7. In a crimping-machine, in combination, a frame, means to rotate said frame, a slide supported by and movable along said frame, means to give said slide a step-by-step movement along said frame, a crimping-roller supported by said slide, and a backing-roller adapted to coöperate with said crimping-roller.

8. In a crimping-machine, in combination, a frame, means to rotate said frame, a slide supported by and movable along said frame, a crimping-roller supported by said slide, a backing-roller a pivotal support for said backing-roller, said support being in line of movement of said slide.

9. In a crimping-machine, in combination, a frame, means to rotate said frame, a slide supported by said frame, means to move said slide along said frame a crimping-roller supported by said slide, and a backing-roller adapted to coöperate with said crimping-roller.

10. In a crimping-machine, in combination, a rotary spindle, a frame secured to rotate with said spindle, a slide, having two racks, supported so as to be movable along

said frame, an operating-pawl for one rack and a holding-pawl for the other rack, means to operate said operative pawl at each revolution of the spindle and a crimping-roller carried by said slide.

11. In a crimping-machine, in combination, a rotary spindle, a frame secured to rotate with said spindle, a slide, having two racks, supported so as to be movable along said frame, an operating-pawl for one rack and a holding-pawl for the other rack, means to operate said operative pawl at each revolution of the spindle, means to simultaneously release said operating and holding pawls and a crimping-roller carried by said slide.

12. In a crimping-machine, in combination, a rotary spindle, a frame and operating-pawl rotatable with said spindle, a slide, having two racks supported so as to be movable along said frame, a spring tending to move the pawl in one direction, a projection on the machine, adapted in the revolution of the pawl to move the pawl in the opposite direction and a crimping-roller carried by said slide.

13. In a crimping-machine, in combination, a rotary spindle, a frame and operating-pawl rotatable with said spindle, a slide, having two racks, supported so as to be movable along said frame, a spring tending to move the pawl in one direction, a projection on the machine, adapted in the revolution of the pawl to move the pawl in the opposite direction, and a holding-pawl for the other rack and a crimping-roller carried by said slide.

14. In a crimping-machine, in combination, a rotary spindle, a frame and operating-pawl rotatable with said spindle, a slide, having two racks, supported so as to be movable along said frame, a spring tending to move the pawl in one direction, a projection on the machine, adapted in the revolution of the pawl to move the pawl in the opposite direction, a holding-pawl for the other rack, means to simultaneously release said operating and holding pawls and a crimping-roller carried by said slide.

15. In a crimping-machine, in combination, a rotary spindle, a frame secured to rotate with said spindle, a slide, having a rack supported so as to be movable along said frame, an operating-pawl, a pivoted lever, said operating-pawl being in line of movement of said lever, whereby, when said lever is operated, said pawl is moved from operative position with reference to its rack and a crimping-roller carried by said slide.

16. In a crimping-machine, in combination, a rotary spindle, a frame and operating-pawl rotatable with said spindle, a slide, having two racks, supported so as to be movable along said frame, said operating-pawl coacting with one rack and a holding-pawl for the other rack, means to operate said operative pawl at each revolution of the spindle, a pivoted lever, said operating-pawl being in line of movement of said lever, a trip movable with said lever, a pin carried by said holding-pawl in line of movement of said trip whereby, when said lever is operated, said operating and holding pawls are released from operative position with respect to their racks and a crimping-roller carried by said slide.

17. In a crimping-machine, in combination, a rotary spindle, a frame secured to rotate with said spindle, a slide supported by and movable along said frame, a crimping-roller carried by said slide, a backing-roller a pivoted support for said backing-roller, said support being in line of movement of said crimping-roller slide, and a spring for holding in and returning said backing-roller to operative position.

18. In a crimping-machine, in combination, a frame, means to rotate said frame, a slide supported by and movable along said frame, a crimping-roller supported by said slide, a backing-roller, a pivoted support for said backing-roller, said support being in line of movement of said slide, and a spring for holding in, and returning said backing-roller to operative position.

19. In a crimping-machine, in combination, a rotary spindle, a frame secured to rotate with said spindle, a slide supported by and movable along said frame, a crimping-roller carried by said slide, a backing-roller, a pivoted support for said backing-roller, said support being in line of movement of said crimping-roller slide, a table or support upon which the keg or vessel to be crimped is adapted to be placed, means to elevate and depress said table, said crimping and backing rollers in the elevated position of the table or support being in line respectively with the upper exterior and upper interior of the vessel.

20. In a crimping-machine, in combination, a rotary spindle, a frame secured to rotate with said spindle, a slide supported by and movable along said frame, a crimping-roller carried by said slide, a backing-roller a pivoted support for said backing-roller, said support being in line of movement of said crimping-roller slide, a table or support upon which the keg or vessel to be crimped is adapted to be placed, means to elevate and depress said table said crimping and backing rollers in the elevated position of the table or support being in line with the upper exterior of the vessel, and a shield adapted to surround the vessel up to the crimping-line.

21. In a crimping-machine, in combination, a frame, means to rotate said frame, a slide supported by and movable along said frame, means to give said slide a step-by-step movement along said frame, a crimping-roller supported by said slide, a table or support upon which the keg or vessel to be

crimped is adapted to be placed, means to elevate and depress said table said crimping-roller in the elevated position of the table or support being in line with the upper exterior of the vessel.

22. In a crimping-machine, in combination, a frame, means to rotate said frame, a slide supported by and movable along said frame, means to give said slide a step-by-step movement along said frame, a crimping-roller supported by said slide, a table or support upon which the keg or vessel to be crimped is adapted to be placed, means to elevate and depress said table said crimping-roller in the elevated position of the table or support being in line with the upper exterior of the vessel and a shield adapted to surround the vessel up to the crimping-line.

23. In a crimping-machine, in combination, a frame, means to rotate said frame, a slide supported by and movable along said frame, a crimping-roller supported by said slide, a backing-roller a pivoted support for said backing-roller, said support being in line of movement of said slide, a table or support upon which the keg or vessel to be crimped is adapted to be placed, means to elevate and depress said table said crimping and backing rollers in the elevated position of the table or support being in line respectively with the upper exterior and the upper interior of the vessel.

24. In a crimping-machine, in combination, a frame, means to rotate said frame, a slide supported by and movable along said frame, a crimping-roller supported by said slide, a backing-roller a pivoted support for said backing-roller, said support being in line of movement of said slide, a table or support upon which the keg or vessel to be crimped is adapted to be placed, means to elevate and depress said table said crimping and backing rollers in the elevated position of the table or support being in line respectively with the upper exterior and the upper interior of the vessel, and a shield adapted to surround the vessel up to the crimping-line.

In testimony of which invention I have hereunto set my hand, at Wilmington, Delaware, on this 16th day of May, 1905.

ARTHUR J. MOXHAM.

Witnesses:

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M. D. FISHER.