June 24, 1958 S. M. ROBERTS ET AL 2,839,883

CAPSEAL APPLYING TOOL

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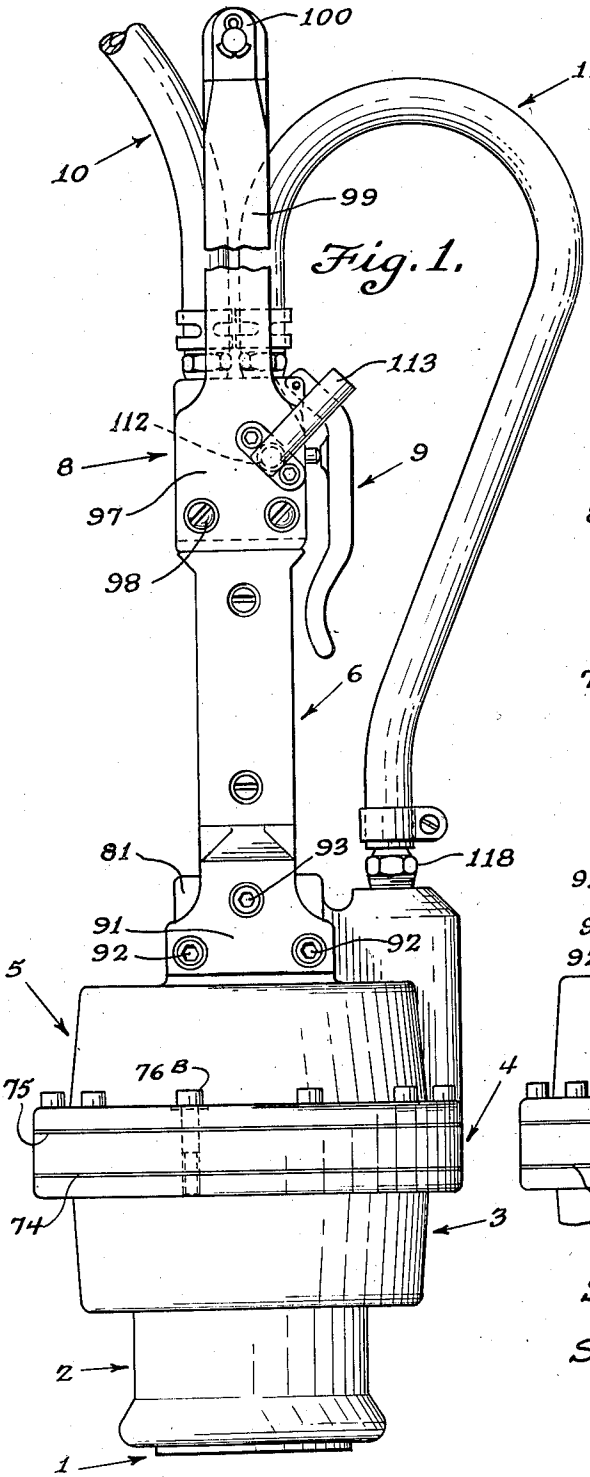


Fig. 1.

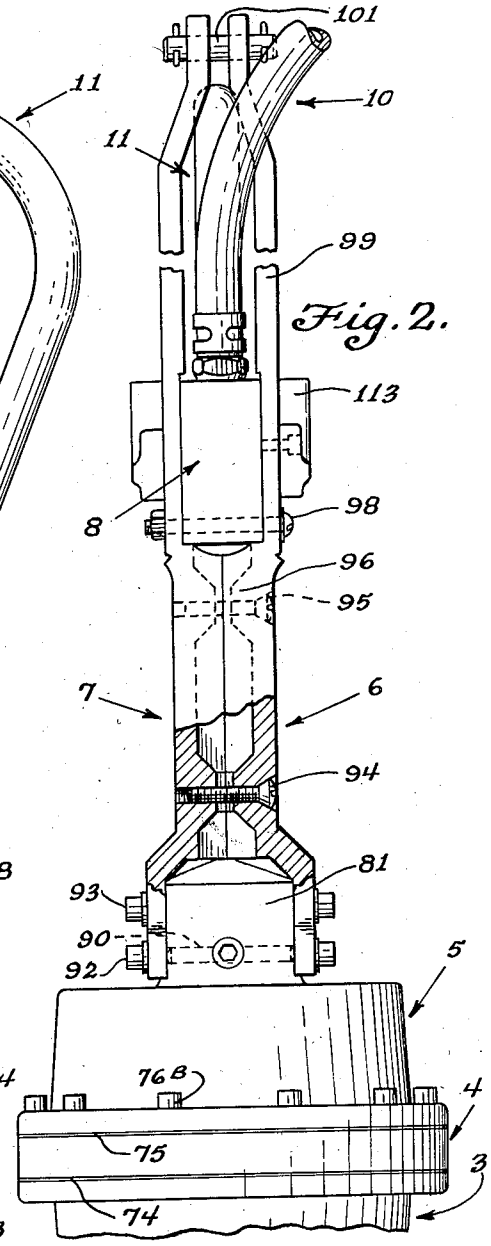


Fig. 2.

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CAPSEAL APPLYING TOOL

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Fig. 3.

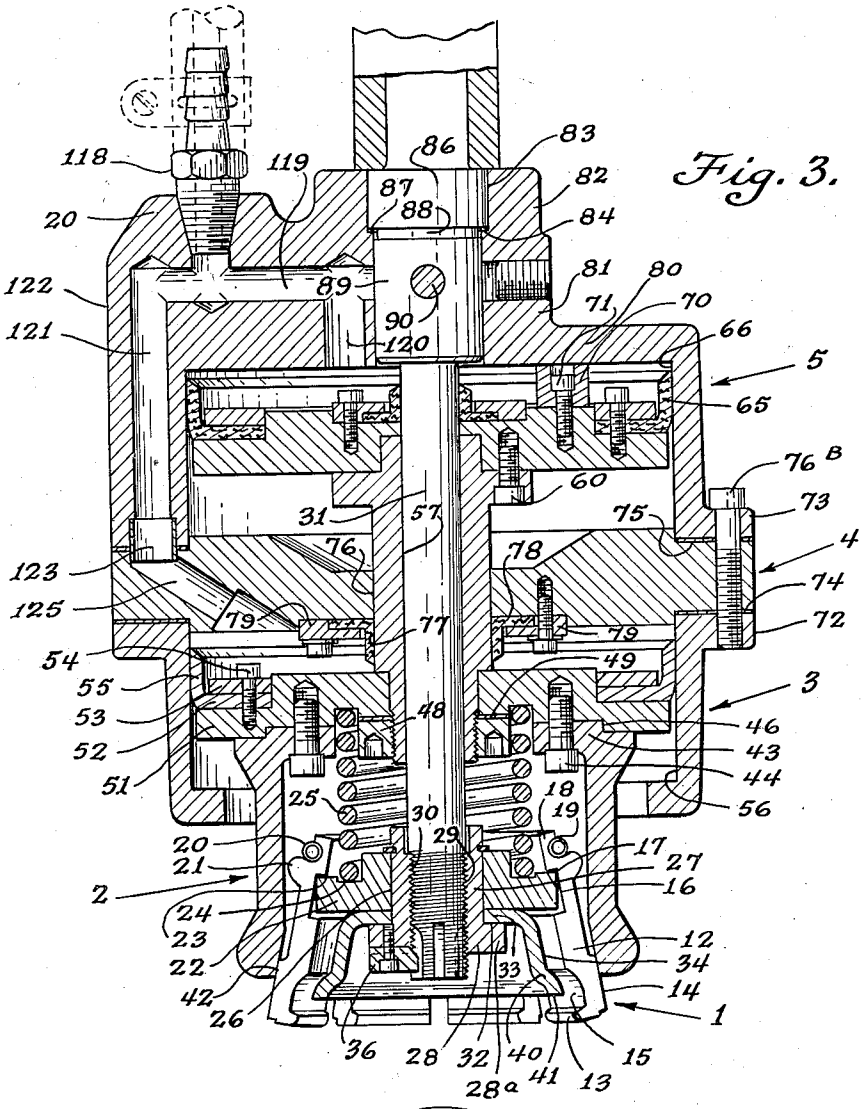
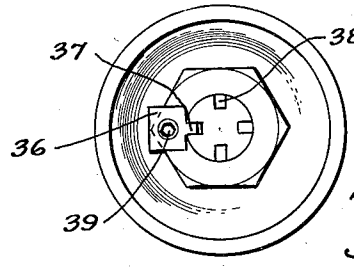


Fig. 5.



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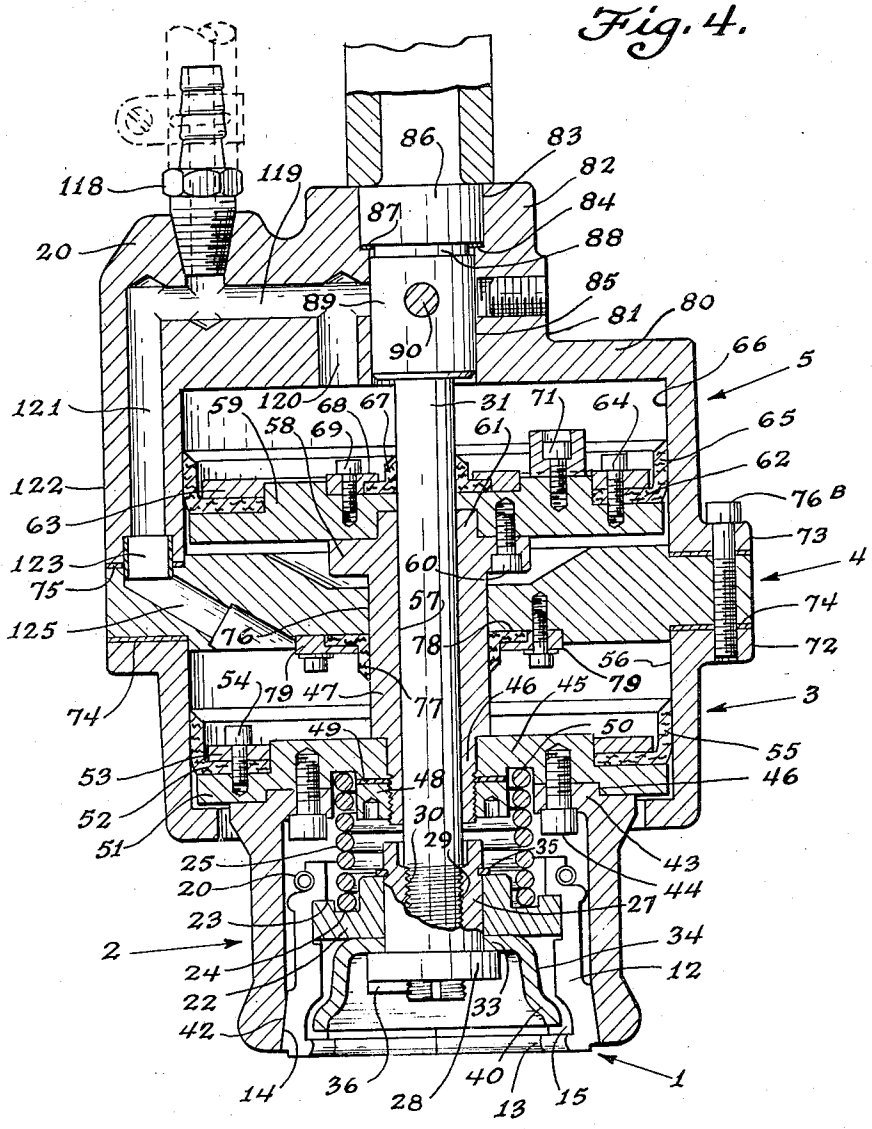
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CAPSEAL APPLYING TOOL

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Fig. 4.



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CAPSEAL APPLYING TOOL

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Fig. 6.

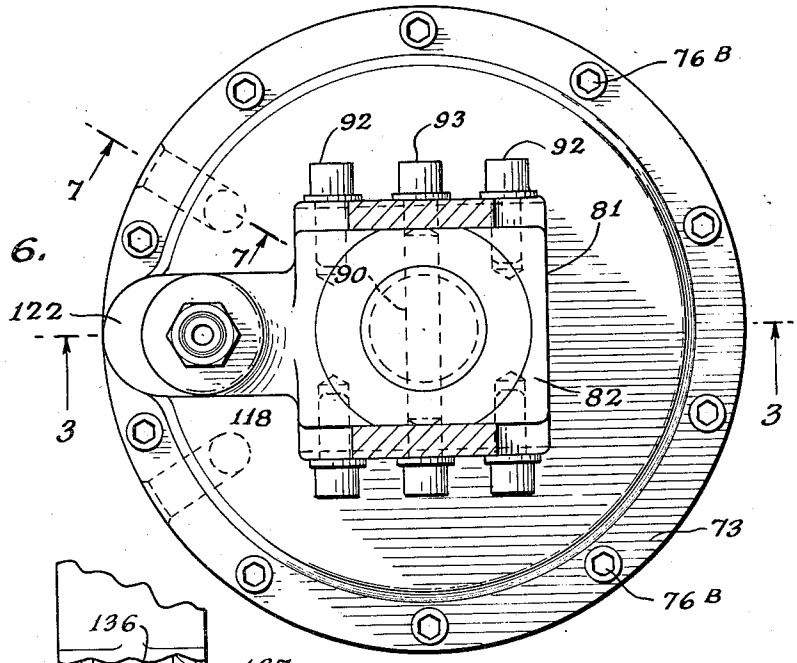


Fig. 10.

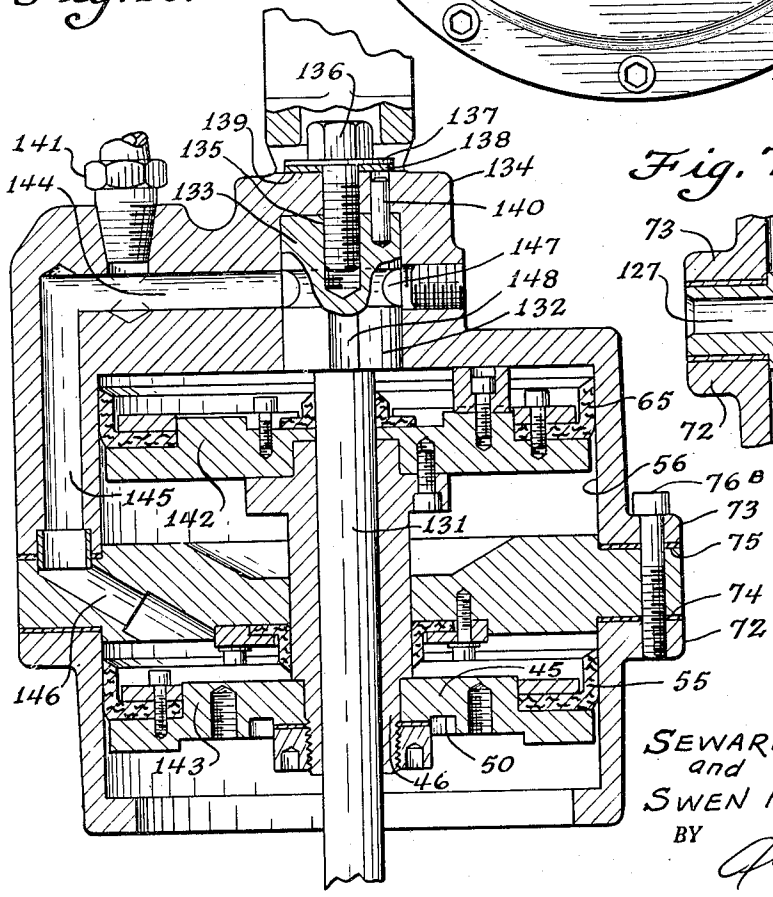
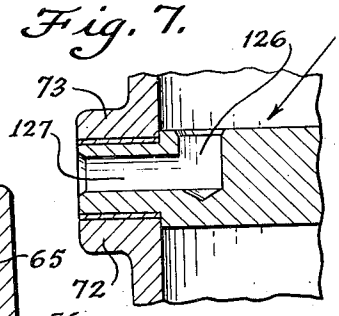


Fig. 7.



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CAPSEAL APPLYING TOOL

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Fig. 8.

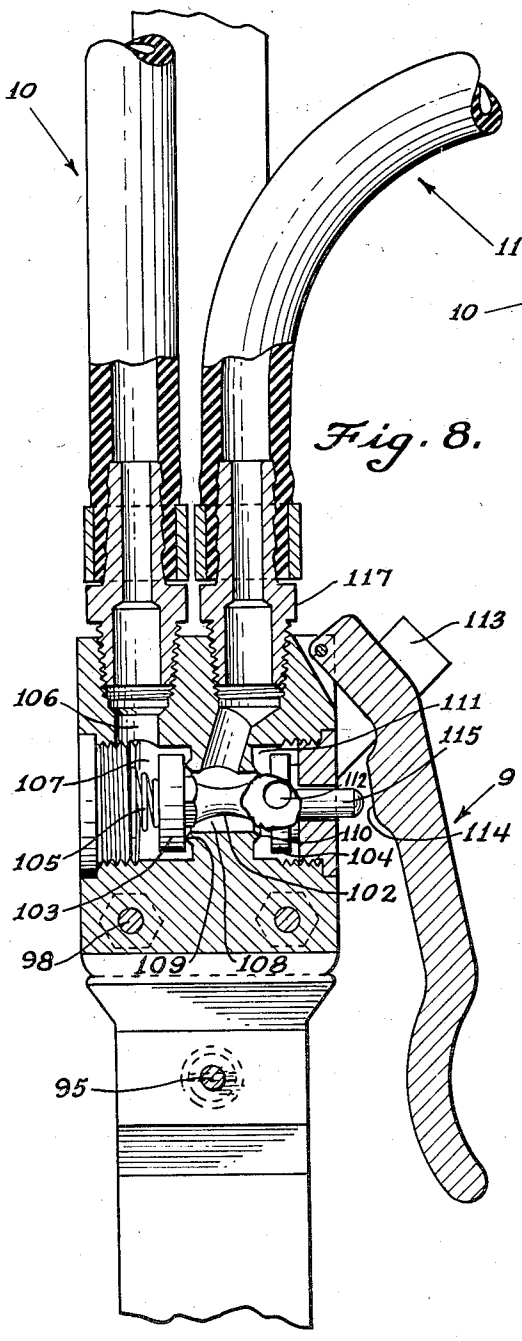
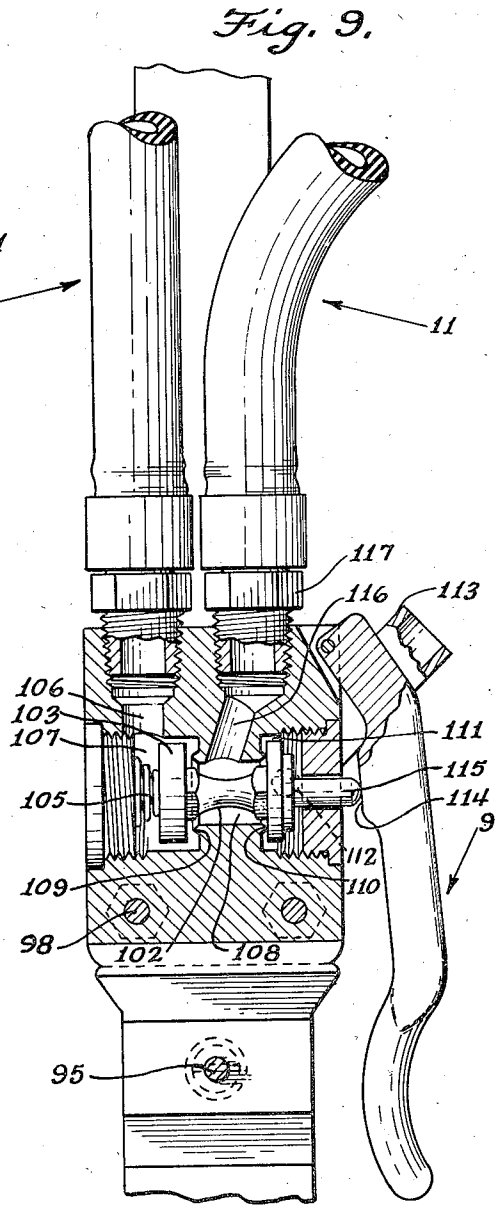


Fig. 9.



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United States Patent Office 2,839,883 Patented June 24, 1958

2,839,883

CAPSEAL APPLYING TOOL

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Application April 13, 1953, Serial No. 348,428

14 Claims. (Cl. 53—348)

This invention relates to tools for applying capseals to container closures and, more particularly, to hand tools for such purpose which are power operated.

Hand operated tools for applying capseals to container closures, particularly to the relatively large closures employed at the openings in steel barrels and drums, have heretofore been used to a great extent. Their use and operation has been, and remains, entirely satisfactory where hand operation is still adequate. A number of factors have developed, however, to create a demand for an improved and power operated tool.

For one thing, the use of steel barrels and drums has increased to a marked degree and the speed of filling them, on the high speed filling lines with which refineries and chemical plants are equipped, has also greatly increased. Manual labor, employing hand operated sealing tools, has been unable to keep step with this increase. This has led to undesirable results such as the bottlenecking of the filling lines and the poor and irregular application of capseals, where exactness of application is necessary if the seals are to perform their proper sealing function.

The power operated tool of this invention meets the new demands and overcomes the foregoing and other drawbacks of prior art constructions. It is simple and foolproof in construction and operation, can be operated by unskilled labor and yet provides for the correct, uniform and effective application of capseals. The tool of the invention will operate for the application of many thousands of capseals without the necessity of adjustment, replacement of any part, or the making of any repairs. Nevertheless it is designed to be so mounted and used that the effort to be expanded by the operator is reduced to a minimum.

It is accordingly, a principal object of this invention to provide power operated hand tools for applying capseals to container closures much more rapidly than can be done with hand operated tools.

Another object is to provide such tools which operate in a foolproof manner to effect uniform sealing.

Another object is to provide such tools which reduce the work needed to be done by the operator to a minimum, while being readily applicable to the capseals to be applied.

Still another object is to provide such tools, which will stand up under prolonged use without adjustment.

A further object is to provide such tools which will withstand hard useage and abuse without affecting their operativeness.

Still further objects are to provide such tools which are of simple construction and which can be readily restored to full effectiveness if they ever get out of order.

Further and more detailed objects will in part be obvious and in part be pointed out as the description of the invention, taken in conjunction with the accompanying drawings, proceeds. In those drawings:

Fig. 1 is a side elevation of the complete tool, in accordance with the invention, a small portion thereof being broken away to conserve space.

Fig. 2 is a front elevation thereof, with a part shown in section and with the lower portion thereof broken off and omitted to save space.

Fig. 3 is a vertical section, on line 3—3 of Fig. 6, through the principal operating portions of the tool, with the tool turned 180° from the showing of Fig. 1 and with the tool jaws in open position.

Fig. 4 is a similar view showing the jaws in closed or contracted position.

Fig. 5 is a bottom plan view of the pressure pad showing the locking device for retaining the adjustable mounting bushing in position.

Fig. 6 is a top plan view of the main housing of the tool, with the hangers therefor cut off and shown in section.

Fig. 7 is a fragmentary sectional view, on lines 7—7 of Fig. 6, showing one of the atmospheric bleeder ports in the partition between the air cylinders.

Fig. 8 is an enlarged fragmentary section of the valve device for controlling the operation of the tool showing the valve in closed position and illustrating the exhaust arrangement therefor.

Fig. 9 is a similar view, showing the valve in open position with the exhaust closed.

Fig. 10 is a section, similar to Fig. 3, of a somewhat modified tool construction.

From the Fig. 1 showing it will be seen that the tool of this invention comprises a set of closing jaws 1, a closing sleeve 2, a lower cylinder housing 3, a partition 4, an upper cylindrical housing 5, a pair of hanger members 6 and 7, a valve mechanism at 8, a valve actuating handle 9, and suitable air conduits 10 and 11.

The jaws 1, as shown in Figs. 3 and 4, are identical in construction and are eight in number. It is to be understood, however, that the invention is in no way limited by the number of jaws shown, that number merely being selected as the preferred minimum for effective operation. Each of the jaws has a body 12, with an inwardly extending capseal engaging ledge 13 at its bottom, an actuating surface 14 on its outer side adjacent the bottom thereof; a recess 15 on the inner side, opposite the surface 14, and a mounting recess 16 on its inner side adjacent the top. Above the recess 16, which provides a mounting shoulder 17, each jaw has a head portion 18 which is recessed at 19 to receive a ring type contracting spring 20. Downward movement of the spring 20 is precluded by an outwardly extending shoulder 21.

The jaws 1 are mounted around an annular jaw support 22, which fits into the recess 16 and has an upper surface 23 on which the jaws rock by means of their ledges 17. The jaw support 22 is recessed at 24 to receive the lower end of an expansion spring 25 and is furnished with an axial bore 26 which fits the shank 27 of a supporting collar 28. This collar is internally threaded at 29 for engagement with the threaded lower end 30 of the shaft 31. The lower end of the collar 28 is enlarged at 28a to provide a shoulder 32 on its upper surface to seat the upper inwardly extending portion 33 of a pressure pad 34 against the lower surface of the jaw support 22.

The assembly of the pressure pad 34 and the jaw support 22 on the collar 28 is effected by means of a split retainer ring 35 which seats in a recess around the upper portion of the collar 28 and engages the top surface of the jaw support 22. The collar 28 is locked in desired position, with respect to the shaft 31, by means of a key 36 as best shown in Fig. 5. This key seats up into a recess in the enlarged end 28a and has a protruding part 37 which extends into one of the several key ways 38, here shown as four in number, cut into the shaft 31

adjacent its lower end. The member 36 is secured and held in position by means of a set screw 39, seated in it and extending up into the enlarged end 28*a*. The end 28*a* may, as shown in Fig. 5, be given a hexagonal outline to facilitate screwing of the collar 28 on to the lower end of the shaft 31.

The pressure pad 34 is a dome-like element which flares outwardly at its lower portion 40 and terminates in a seating surface 41. The surface 41 seats on and around the periphery of the top of the capseal to be applied. This seating, along with the positioning of the jaws around the skirt of the capseal, establishes a proper relationship between the capseal, closure and tool before the jaws go into action. Though the tool is normally hung on a counter-balance, it attains downward momentum by the workmen forcing it down to overcome the counter-balancing weight. The checking of this momentum, by the pressure pad engaging the capseal, results in proper downward seating of the capseal over the closure.

The jaws 1 are recessed at 15 to provide room for the flared portion 40 of the pressure pad, in all positions of the jaws with respect thereto. The manner in which the closing in of the jaws is effected will now be described.

Referring to Figs. 1 and 4 it will be seen that the surfaces 14 on the jaws 1 are downwardly and outwardly inclined. This incline is engaged by a mated incline 42 extending inward from the open mouth of the closing sleeve 2. The relationship here is such that when the closing sleeve is in its full downward position, as seen in Fig. 4, the jaws 1 have been forced fully inward to form a closed circle. This inward action takes place against the action of the spring 20 tending to spread the jaws as well as against the action of the retracting spring 25. The force component required for the drawing down and crimping in of the capseal is, of course, much greater than that needed to overcome the spring action. The total force is provided by the action of a pair of pistons working under air pressure in a pair of cylinders.

Commencing with the lower cylindrical housing 3 it will be seen that the upper end 43 of the sleeve 2 is suitably bolted, as shown at 44, to the body of the lower piston 45. The undersurface of the piston and the upper surface of the sleeve are formed with suitably mated shoulders and recesses at 46 to assure the accurate relationship of them. The piston 45 is secured tightly in place on the lower extending spindle 46 of the piston sleeve 47 by means of a threaded securing ring 48. Suitable packing to prevent escape of air is employed at 49 between the ring 48 and the undersurface of the piston 45. By suitable spacing of the ring 48, with respect to the inward termination of the portion 43, a channel is formed, aligned with a recess 50 in the undersurface of the piston 45, which channel and recess together receive the upper end of the spring 25.

The outer portion of the top of the piston 45 is recessed downwardly at 51 to receive a gasket 52 which is clamped thereon by means of the annular clamping plate 53 bolted down as shown at 54. The gasket turns upward around the periphery of the plate 53 into a portion 55 which provides air-tight engagement with the inner cylindrical surface 56 of the lower cylindrical housing 3.

The piston sleeve 47 is internally bored at 57 to slide on the shaft 31. Adjacent its upper end the sleeve 47 is flanged outwardly at 58 to provide a seat for the upper piston 59. This piston and flange are bolted together as shown at 60 with the upper end 61 of the sleeve being received in a recess in the piston to assure an accurate relationship of the sleeve and piston. Like piston 45, the top of piston 59 provides a peripheral seat for a gasket 62 held down by a securing ring 63 bolted in place at a number of positions around its extent by bolts

64. The gasket 62 is turned up at 65, past the periphery of the ring 63, for air-tight engagement with the inner cylindrical surface 66 of the cylindrical housing 5.

Gasketing against any escape of air between the piston 59 and the shaft 31 is effected at 67 by means of a gasket which is held down in a recess in the top of the piston and against the shaft 31 by means of a clamping ring 68 bolted at a plurality of positions as shown at 69. The gasket 67, as shown, has a base portion and an upward extending collar portion which wipes against the shaft 31.

A stop element 70 is bolted at 71 to the upper surface of the piston 59 to engage the cylinder head to limit the upward travel of that piston as well as the travel of the parts acting conjointly therewith.

The upper and lower cylindrical housings 3 and 5 are separated by and secured to the intermediate partition member 4, which securing holds them in accurate relationship. This securing is achieved by an outwardly extending bordering flange 72 around the upper end of the housing 3 and a similar flange 73 around the lower end of the housing 5 which flanges are seated in recesses 74 and 75 respectively around the lower and upper faces of the partition member 4. A plurality of bolts, such as 76B, extend through both the flanges and the partition member to secure them together. Suitable gasketing between each flange and the adjacent recess of the partition member is provided to prevent escape of air.

The partition member 4 is axially bored for the slidable reception of the piston sleeve 47 as shown at 76. Escape of air between the bore and partition is precluded by means of a gasket 77, similar to the gasket 67. The gasket 77 has a base portion clamped in place in a recess 78, in the lower part of the partition, by means of a clamping ring 79 which, at the same time, holds the gasket in toward the surface 76. The extending portion of the gasket 77 extends around past the inner surface of the ring 79 and acts against the surface 76.

It will be apparent from the foregoing that the pistons 45 and 59 are tied together through the piston sleeve 47 causing them to move up and down together. Since the closing sleeve 2 is fixed to the lower piston 45, it moves up and down as the pistons do.

It is also apparent that since the lower end of the spring 25 acts against the jaw support 22, mounted in fixed relation with respect to the shaft 31, and the upper end of the spring 25 acts against the piston 45, that spring will tend to move the piston upwardly. Thus the spring 25 provides a retracting action for the tool in the absence of air under pressure above the pistons.

The shaft 31 is mounted in the upper cylindrical housing 5 in a manner to preclude any possibility of its loosening and moving downwards. First it is to be noted that the housing 5 is provided, in its top wall 80, with an upwardly extending centrally located projection 81. The upper portion of the projection 81 tapers inwardly into a circular formation which is centrally bored at 83. The bore 83 terminates at an inwardly extending shoulder 84 from which a slightly smaller bore 85 extends the rest of the way through the projection 81 into the air chamber above the piston 59. The shaft 31 has an enlarged head 86 which seats in the bore 83 and down on a suitable gasket 87, mounted on the shoulder 84. Beneath the head 86 there is a short inset portion 88 of reduced diameter which is wiped by the inner periphery of the gasket 87.

Below the portion 88 this end of the shaft is again enlarged as seen at 89 into a portion of a diameter to be received in the bore 85. A pin 90 extends through the portion 89 and through the material of the enlargement 81. This pin locks the portion 89 and, accordingly, the shaft 31, of which it forms a part, against upward move-

ment while the head **86** locks it against downward movement.

The weight of this tool makes it desirable to suspend it in some manner above the drum line, at the point where the filled drums come along to have the capseals applied thereto. In use the tool is preferably carried by a counter-weight arrangement so that it principally merely needs to be pulled down for application of a seal and allowed to raise up by the action of the counter-weight after the seal is applied. To support the tool in this manner and, also, to mount the three-way valve employed to operate it, the tool is equipped with a pair of hanger arms generally shown at **6** and **7**. Since these are substantially identical only one needs to be described in detail.

The lower end of arm **6**, as best shown in Fig. 1, is laterally enlarged at **91** for the reception of a pair of suitable bolts, here shown as socket head screws **92**. A third bolt, or screw, **93**, lies above the screws **92** and extends into the upper rounded portion **82** of the projection **81**, while the two lower screws **92** extend into the main part of that projection. The provision of a greater area than the normal extent of the arm for securing the arm to the tool and the provision of the three bolts is of importance, for the tool must withstand such mistreatment by the operator as trying to move or rock the filled drum by use of the tool as the seal is being applied.

Each hanger arm extends inwardly and upwardly from its enlarged bottom end **91** and for the first part of its extent has substantially enclosed sides as seen in Fig. 2. In other words the left and right hand hanger members are drawn together by recessed bolts **94** and **95** which extend from a recess in the hanger **6** into a threaded hole in the hanger **7** at positions where those hangers are thickened to receive them.

Above the position of the bolt **95** the hangers have their side faces **96** removed and they are enlarged laterally at **97** to provide a seat for the valve mechanism **8**. A pair of bolts **98** pass through the hangers and through part of the valve housing to hold it in place. Above the valve housing the hanger arms are again reduced in width at **99** and come towards each other at their top ends where they are perforated to receive a pin **101**, for use in hanging the tool on a counter-balance or other support.

The three-way valve, shown at Figs. 8 and 9, is not novel per se, but is of particular applicability to the mechanism of this invention. This valve has a main valve stem **102**, which carries valve members **103** and **104** normally urged to the right in Fig. 8 by a spring **105** as well as by the action of the incoming air through the inlet port **106**. The inlet port **106** opens into an inlet chamber **107** which leads into the outlet chamber **108**. Between the two chambers there is a valve seat **109** on which the valve **103** seats when the valve is closed against the flow of inlet air.

At the opposite end of the chamber **108** from the seat **109** there is another opening, bordered by a valve seat **110**, which opening leads into an exhaust chamber **111**. The chamber **111** has an opening **112** in its side wall which allows air to exhaust out into the atmosphere through the exhaust pipe **113** (Fig. 1). When, however, the valve is in the position shown in Fig. 9 the valve member **104** engages the valve seat **110** and closes off any flow of air to the opening **112**. Actuation of the valve is effected by means of the trigger generally shown at **9** whose actuating surface **114** engages the end **115** of the valve stem for that purpose.

An outlet port **116** extends upward from the chamber **108** and connects through suitable connections, such as the nipple **117**, with the air line generally indicated at **11** extending down to the actuating part of the tool. This line is connected by other suitable nipple means **118**, with an air passage **119** formed in an enlarged rib **120** extending outwardly along the top of the tool from the enlargement **81**. The passage **119** communicates at its

right hand end, as viewed in Fig. 4, with a downwardly extending passage **119***a* communicating with the chamber in the upper cylinder **5** above the piston **59**. At its left end, as viewed in Figs. 3 and 4, the passage **119** communicates with the passage **121** extending downwardly alongside the upper cylinder **5** through a rib **122** provided for that purpose. The passage **121** communicates with the opening through the bushing **123** extending part way into each of the ribs **122** and the partition **4**. The opening in the bushing **123** communicates with an inclined passage **125**, extending down through the partition **4** for inter-communication with the chamber in the cylinder **3** between the lower piston **45** and the partition **44**. Thus air, coming in through the conduit **11**, is distributed uniformly to act on both of the pistons **45** and **59**.

As regards the piston **45**, the portion of the cylinder **3** beneath the same is open to the atmosphere but the space beneath the piston **59** would be closed to the atmosphere and air therein would be compressed, building up a resistance on the down stroke of the piston if no means were provided for bleeding that air. This is taken care of by suitable ports, positioned as indicated in Fig. 6 and formed as shown in Fig. 7, through the body of the partition **4**, one on either side of the rib **122**.

These bleeding ports merely consist of a downwardly extending passage **126** which communicates with an outwardly extending one **127** through the extending rim of the partition **4**.

Considering briefly the operation of the tool, the normal relaxed position of the jaws is that shown in Fig. 3, in which position the air valve **8** would be closed against air under pressure and opened to exhaust, as seen in Fig. 8. Thus no air would be able to flow from the conduit **10** into the conduit **11**. Free flow of air to atmosphere would, however, be possible from above each of the pistons **45** and **59**. This is so because ports **120** and **125**, communicating as they do through port **119**, with conduit **11**, will provide a passage for air into the chamber at **108**. Valve **104** being off its seat **110**, air from **108** can flow into the chamber **111** and exhaust to atmosphere through the opening **112**. Thus the spring **25** can expand from the Fig. 4 position to the Fig. 3 position raising the sleeve **2** along with the pistons **45** and **59** and their connecting elements. Spring **20** thus goes into action and rocks the jaws **12** on their surface **17** about the mounting surface **23** to move the tool into open or retracted position as shown in Fig. 3.

When a capseal is to be applied the tool is brought down with the surface **41** of the pressure pad **40** engaging the top of the capseal. As the tool is brought into position the workman squeezes the trigger **9** inwardly, which forces the valve stem **102** from the Fig. 8 position into the Fig. 9 position. This unseats valve **103** so that air from the conduit **10** can flow through the passage **106**, the chamber **108** and up through the passage **116** into the conduit **11**. From the conduit **11** the air is distributed via the passage **119**, through the passages **119***a* and **121** to the cylinders **3** and **5** above their pistons where its pressure, acting over the area of the pistons, serves to slide the pistons down on their shaft **31**. This carries the closing sleeve down over the jaws **1**. The jaws **1** cannot travel vertically downward since their supporting plate **22** is mounted in fixed position with respect to the shaft **31**. Thus the jaws are quickly closed and as they move to complete the circle as seen in Fig. 4 they first center the tool accurately with respect to the capseal and then crimp the skirt of the capseal inwardly against the neck of the closure.

On release of the trigger **9** the valve **8** reverts to the Fig. 8 position thus allowing the air under pressure, above the pistons, to escape up and out through the bleeder port **112**. The spring **25** then goes into action and expands to restore the tool to its open position.

A slightly modified form of tool is shown at Fig. 10.

Here the main shaft **131**, instead of being inserted down from the top, as in the preferred form, is inserted up from the bottom. The shaft **131** has an enlarged head **132**, which is received in the bore **133** of an enlargement **134**. The head **132** is provided with an axial screw threaded hole **135**, extending down into it from its outer surface, which hole receives a suitable retaining bolt **136**. The head of this bolt engages a suitable washer **137** which presses on a gasket **138** which gasket is compressed against the upper surface **139** of the enlargement **134**. Thus leakage of air at this position is prevented.

Turning of the shaft **131**, with respect to the bolt **136**, is precluded by pin **140** which has portions seating in aligned bores in the head **132** and the enlargement **134**. The bore in the enlargement **134** lies beneath the gasket **138** to prevent leakage of air.

In this form of tool the incoming air through the nipple **141** is distributed to the chambers above the pistons **142** and **143** in slightly different manner from that of the preferred form. The air enters the horizontal passage **144**, passes outwardly to the passage **145** and thus downwardly through the inclined passage **146** to act on the top of the piston **143**. Air passing inwardly toward the center of the tool in this form reaches the head **132** and flows around the peripheral channel **147** therein into the downwardly extending communicating channels **148**. The channels **148** communicate with the chamber above the head of the piston **142** to enable the air to act on the upper side of that piston.

The valve used for this alternate construction is the same as that previously described, while the pistons, partition and other relationships of the parts, is the same as shown in the preferred form. Hence it is not believed any further description of this form is necessary nor is description of the operation necessary, since it is the same as already given.

While in the foregoing description pneumatic operation of the tool has been described it is, of course, to be understood that power can be supplied by hydraulic, rather than pneumatic, means.

Other changes in and modifications of the construction and different embodiments of the invention would suggest themselves to those skilled in the art and could be made without departing from the spirit or scope of the invention. It is accordingly intended that all matter contained in the above description, or shown in the accompanying drawing, shall be interpreted as being illustrative and not in a limiting sense.

We claim:

1. A tool of the character described comprising, a mounting member, a plurality of jaw elements mounted on said mounting member for swingable movement between contracted and expanded positions, a contracting member formed to overlie said jaw elements and to move the same into contracted position, a supporting shaft, said mounting member and said contracting member being mounted about said shaft for relative movement with respect to each other, pneumatic means acting on one of said members for moving said members toward each other and resilient means acting between said members to move said members apart solely by spring action on completion of the action of said pneumatic means.

2. In a tool of the character described, a plurality of jaw-like members, means for the swingable mounting of said jaw-like members in a circle so that in retracted position they extend away therefrom and become separated from each other, a contracting bell formed with a radially inwardly extending upper end, a piston having an undersurface formed to receive said upper end and means for securing said upper end to said undersurface, said contracting bell and said jaw-like members being formed with inclined mating surfaces, a housing providing a cylinder for the reception of said piston and means for introducing air into said cylinder on the side of said piston remote from said bell.

3. In a tool of the character described, a shaft, a plurality of jaw elements formed to complete a full circle when in contracted position, a mounting member, for the swingable mounting of said jaw elements, carried by said shaft in fixed axial position thereon, said jaw elements being mounted on said mounting member, a contracting bell overlying the exterior of said jaw elements, said bell and said jaw elements being formed with mating inclined surfaces and said bell being formed with a radially inwardly extending upper end, a piston mounted about said shaft for axial movement with respect thereto, the undersurface of said piston being formed with a receiving surface thereon, means for securing said upper end directly to said receiving surface, a cylinder enclosing said piston and means for admitting air to the side of said piston opposite said bell.

4. In a tool of the character described, a shaft, a plurality of jaw elements formed to complete a full circle when in contracted position, a mounting member carried by said shaft in fixed axial position thereon and formed for the swingable mounting of said jaw elements thereon, said jaw elements being mounted on said mounting member, a contracting bell overlying the exterior of said jaw elements, said bell and said jaw elements being formed with mating inclined surfaces, a piston, said bell and said piston being formed with mated engaging faces, means mounting said bell on said piston with said faces in engagement, a sleeve mounted on said shaft for slideable axial movement with respect thereto, a second piston in spaced relation with respect to said first piston, means mounting said pistons in fixed position on said sleeve, a housing receiving said pistons and packing means acting between said pistons and the interior of said housing providing for air-tight slideable engagement therebetween.

5. In a tool of the character described, a plurality of actuating jaws formed to complete a circle when in contracted position, a mounting member, means on said jaws and said mounting member for the swingable mounting of said jaws thereon, a shaft and means for mounting said mounting member in fixed axial position on said shaft, a contracting bell surrounding said actuating jaws and formed for engagement with the same, a pair of pistons axially moveable with respect to said shaft, means interconnecting said pistons for causing them to move in unison, said contracting bell being secured to one of said pistons, pneumatic means for moving said pistons toward said mounting member, and resilient means acting between and engaging said mounting member and said one of said pistons for moving said pistons in reverse direction.

6. In a tool of the character described, a housing, formed with a cylindrical chamber therein, a pair of pistons in said housing and in operable relationship with the wall of said cylindrical chamber, a spindle extending through said housing and means for mounting said pistons on said spindle in spaced relation with respect to each other and in slideable relation with respect to said spindle, said spindle formed with a protruding part extending out beyond one end of said housing, a bell shaped operating part having a base, said base being secured to a face of one of said pistons and said operating part overlying said protruding part of said spindle, a part to be operated upon swingably mounted on and with respect to said protruding part and mated operating surfaces formed on said operating part and part to be operated upon respectively.

7. In a tool of the character described, a housing including a pair of cylindrical portions, a partition separating said cylindrical portions and means to secure said cylindrical portions together with said partition therebetween, a shaft, means to mount one end of said shaft in one of said cylindrical portions and means to secure said

shaft therein against axial movement in a direction inwardly of said cylindrical portion, said shaft extending through said cylindrical portions axially thereof and through said partition and terminating exteriorly of the cylindrical portion remote from the cylindrical portion in which said one end of said shaft is secured, a plurality of actuating jaws and a mounting member for the swingable mounting of said actuating jaws, said mounting member being secured in fixed axial position with respect to the extending portion of said shaft.

8. In a tool of the character described, a housing including a pair of cylindrical portions, a partition separating said cylindrical portions and means to secure said cylindrical portions together with said partition therebetween, a shaft having an enlarged head, a seat for said enlarged head in one of said cylindrical portions, interengaging means on said seat and on said head to prevent axial movement of said spindle in one direction, said shaft extending through said cylindrical portions axially thereof and through said partition and terminating exteriorly of the cylindrical portion remote from said enlarged head, a plurality of actuating jaws and a mounting member for the swingable mounting of said actuating jaws, said mounting member being secured in fixed axial position with respect to the extending portion of said shaft.

9. In a tool of the character described, a housing including a pair of cylindrical portions, a partition separating said cylindrical portions and means to secure said cylindrical portions together with said partition therebetween, a shaft having an enlarged head, means for seating said enlarged head in one of said cylindrical portions, said seat being formed with an inwardly extending shoulder extending inward beneath said enlarged head to prevent movement of said shaft in the direction of said shoulder, said shaft extending through said cylindrical portions axially thereof and through said partition and terminating exteriorly of the cylindrical portion remote from said enlarged head, a plurality of actuating jaws and a mounting member for the swingable mounting of said actuating jaws, said mounting member being secured in fixing axial position with respect to the extending portion of said shaft.

10. In a tool of the character described, a housing including a pair of cylindrical portions, a partition separating said cylindrical portions and means to secure said cylindrical portions together with said partition therebetween, a shaft having an enlarged head, a seat for said enlarged head in one of said cylindrical portions, said shaft extending through said cylindrical portions axially thereof and through said partition and terminating exteriorly of the cylindrical portion remote from said enlarged head, a plurality of actuating jaws and a mounting member for the mounting of said actuating jaws, said mounting member being in fixed axial position with respect to the extending portion of said shaft, a contracting bell overlying said actuating jaws and formed for contracting engagement therewith, a piston within one of said cylindrical portions, means for mounting said piston on said spindle for slideable axial movement with respect thereto and means for mounting said contracting bell directly on said piston.

11. In a tool of the character described, a housing formed of a cup-like element, a partition across the open end of said cup-like element and a cylindrical element extending from the opposite side of said partition from said cup-like element, said cup-like element and said cylindrical element being secured to said partition, said cup-like element being formed with a first conduit on the body thereof, extending from the closed end thereof to said partition, said partition being formed with a supplemental conduit therethrough, said first conduit and said supplemental conduit being aligned to form a continuous air passage whereby air introduced at the closed end of said cup-like element will be emitted on the far side of said partition.

12. A tool as in claim 11, and said partition being formed with an additional conduit therein, said additional conduit extending from the edge face of said partition through part of the body of said partition and out through one of the lateral faces of said partition.

13. A tool of the character described comprising, a mounting member, a plurality of jaw elements mounted on said mounting member for swingable movement between contracted and expanded positions, a contracting member formed to overlie said jaw elements and to move the same into contracted position, a supporting shaft, said mounting member and said contracting member being mounted about said shaft for relative movement with respect to each other axially of said shaft, pneumatic means acting on one of said members for moving said member in one direction with respect to said other member and resilient means acting between said members to move said one member in the other direction on completion of the action of said pneumatic means.

14. A tool of the character described comprising, a mounting member, a plurality of jaw elements mounted on said mounting member for swingable movement between contracted and expanded positions, a contracting member formed to overlie said jaw elements and to move the same into contracted position, a supporting shaft, said mounting member being mounted in fixed axial position on said shaft and said contracting member being mounted about said shaft for relative axial movement with respect to said mounting member, pneumatic means acting on one of said members for moving the same in one direction, and resilient means acting between said members to move said one member in the other direction on completion of the action of said pneumatic means.

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