

Nov. 7, 1939.

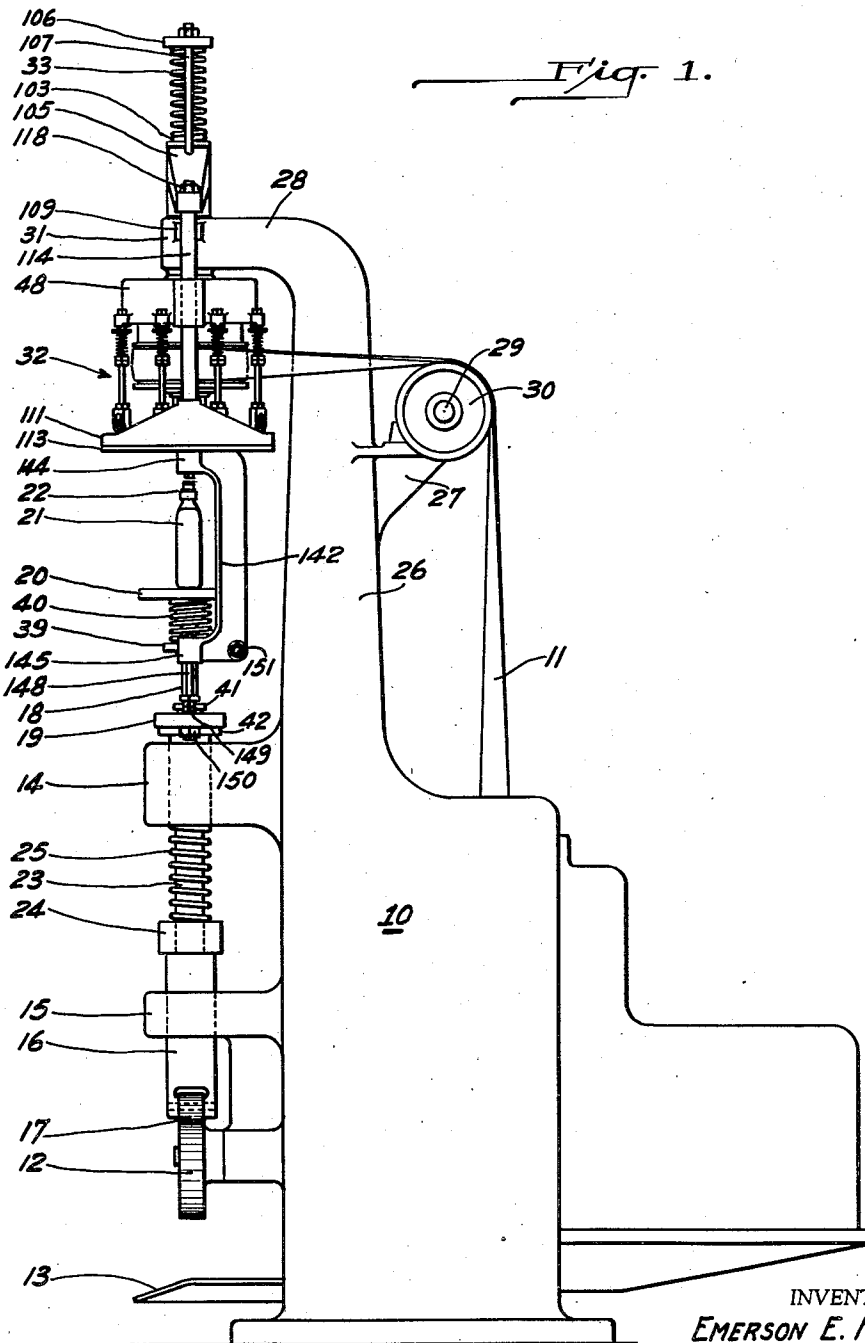
E. E. HOGG

2,178,664

SEALING MACHINE

Filed Jan. 21, 1937

6 Sheets-Sheet 1



INVENTOR.

EMERSON E. HOGG.

BY

Ronald W. Robertson
ATTORNEY.

Nov. 7, 1939.

E. E. HOGG

2,178,664

SEALING MACHINE

Filed Jan. 21, 1937

6 Sheets-Sheet 2

Fig. 2.

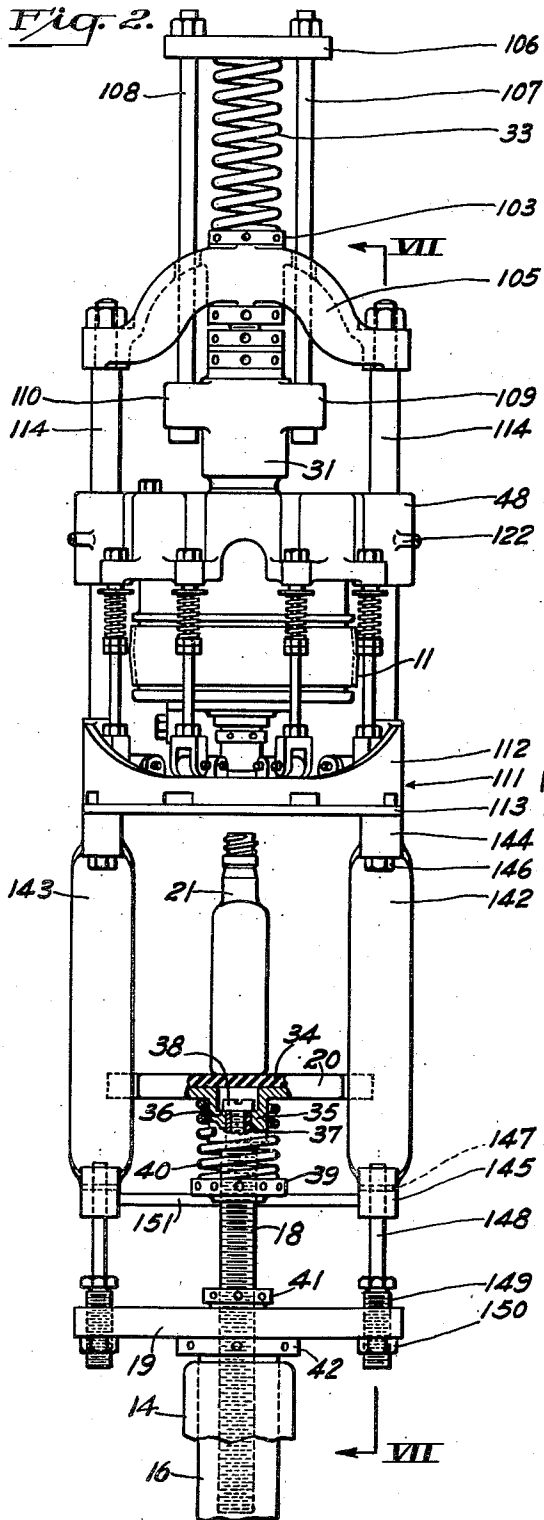
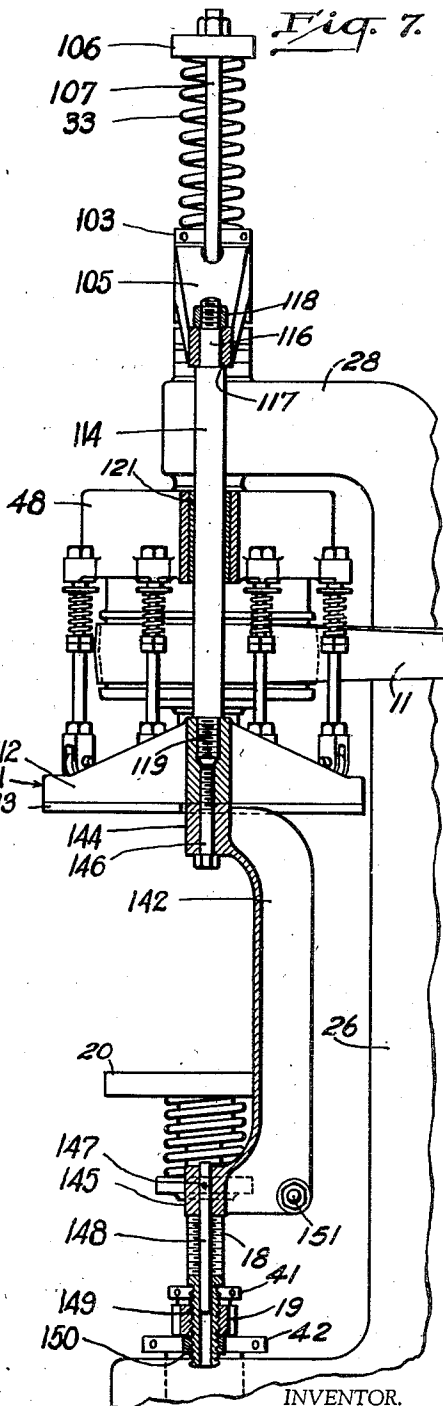


Fig. 7.



INVENTOR.

EMERSON E. HOGG

BY

Donald W. Robertson
ATTORNEY.

Nov. 7, 1939.

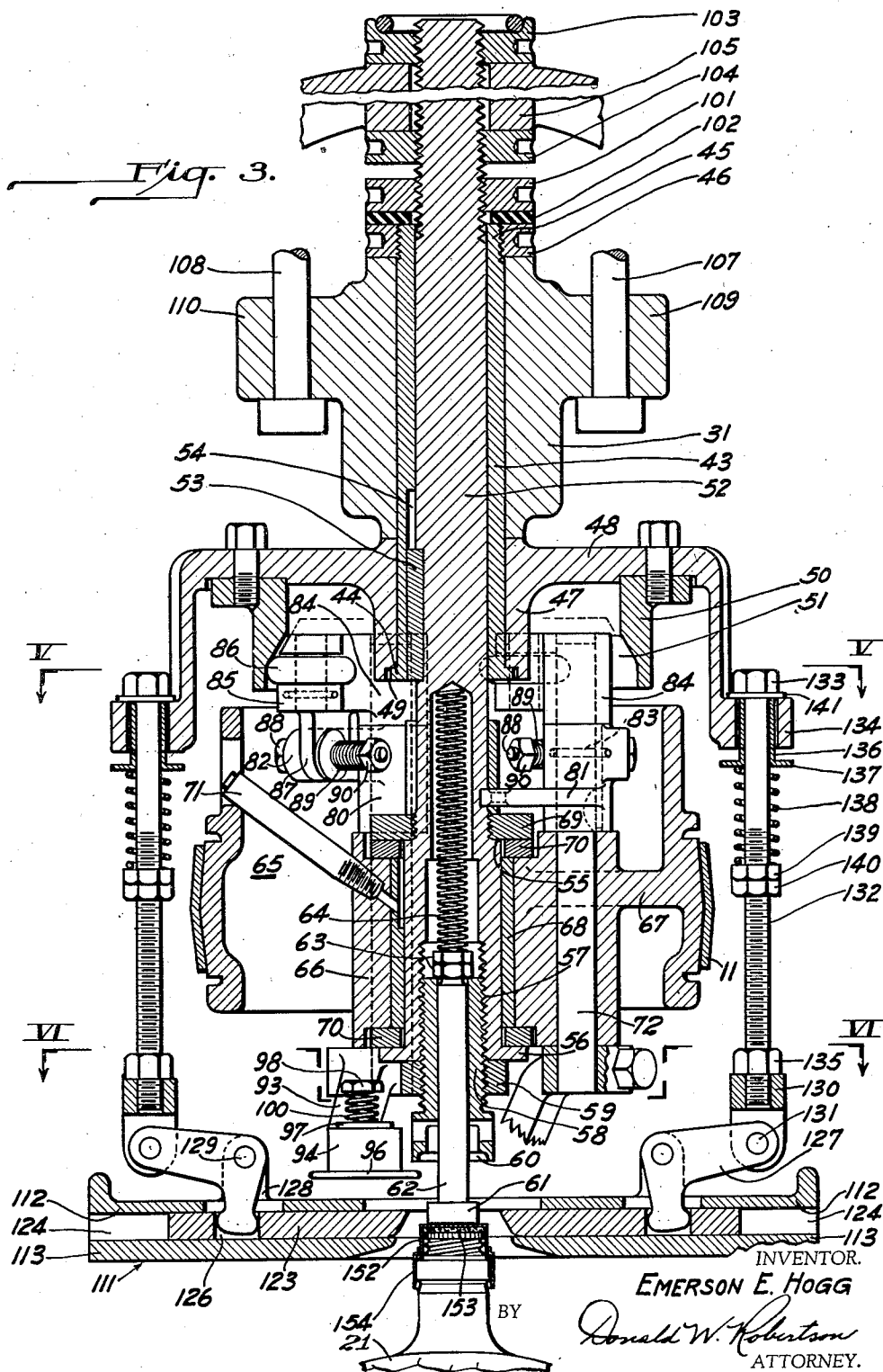
E. E. HOGG

2,178,664

SEALING MACHINE

Filed Jan. 21, 1937

6 Sheets-Sheet 3



Nov. 7, 1939.

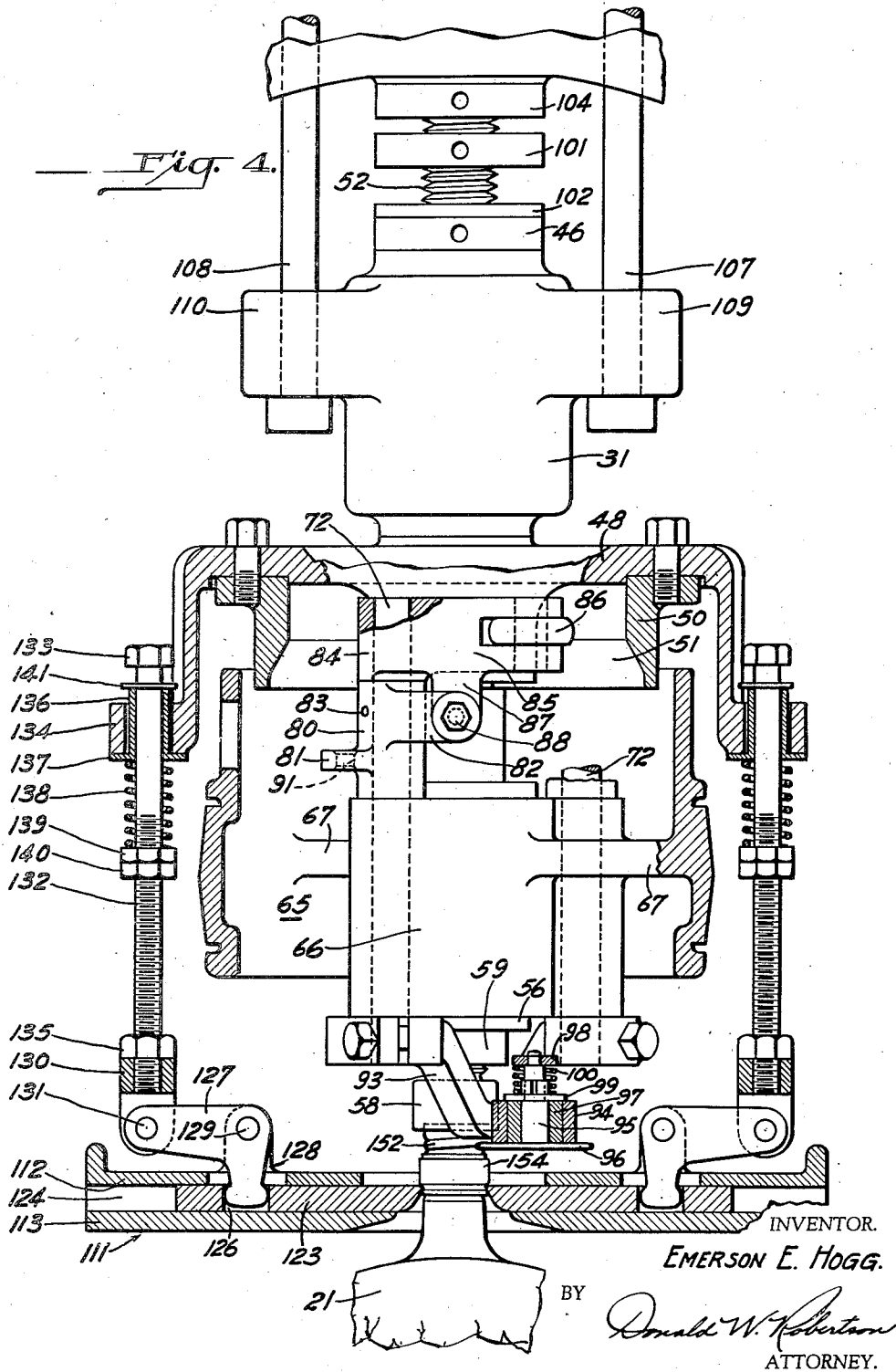
E. E. HOGG

2,178,664

SEALING MACHINE

Filed Jan. 21, 1937

6 Sheets-Sheet 4



Nov. 7, 1939.

E. E. HOGG

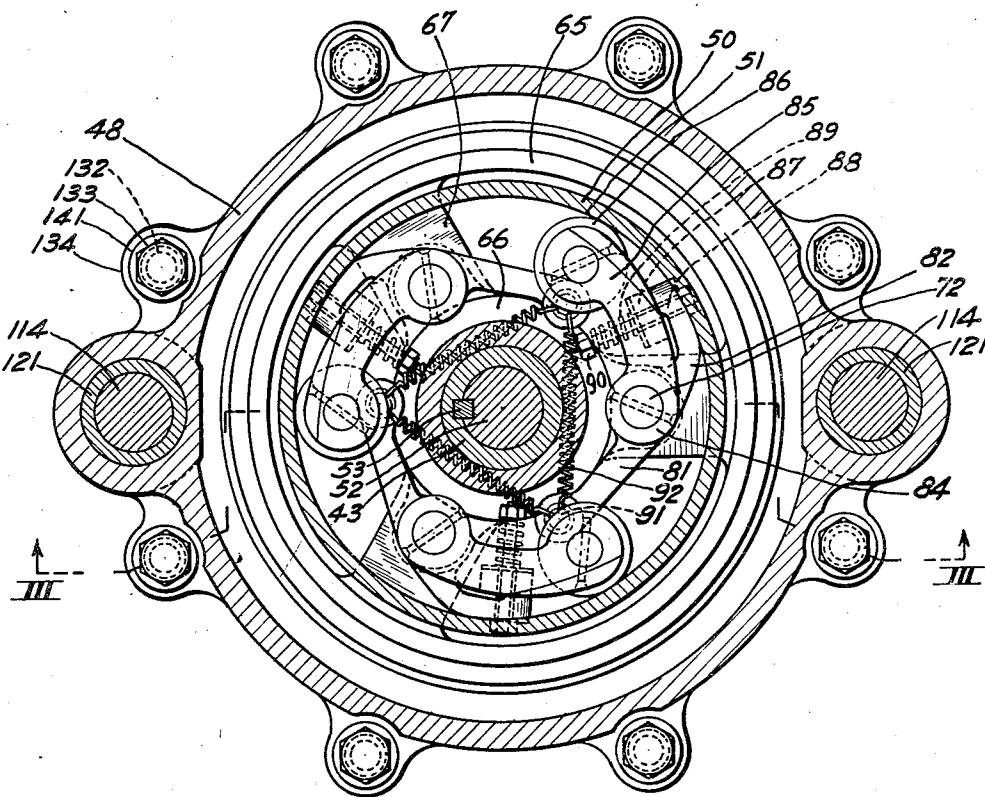
2,178,664

SEALING MACHINE

Filed Jan. 21, 1937

6 Sheets-Sheet 5

Fig. 5.



INVENTOR.
EMERSON E. HOGG.
BY *Donald W. Robertson*
ATTORNEY.

Nov. 7, 1939.

E. E. HOGG

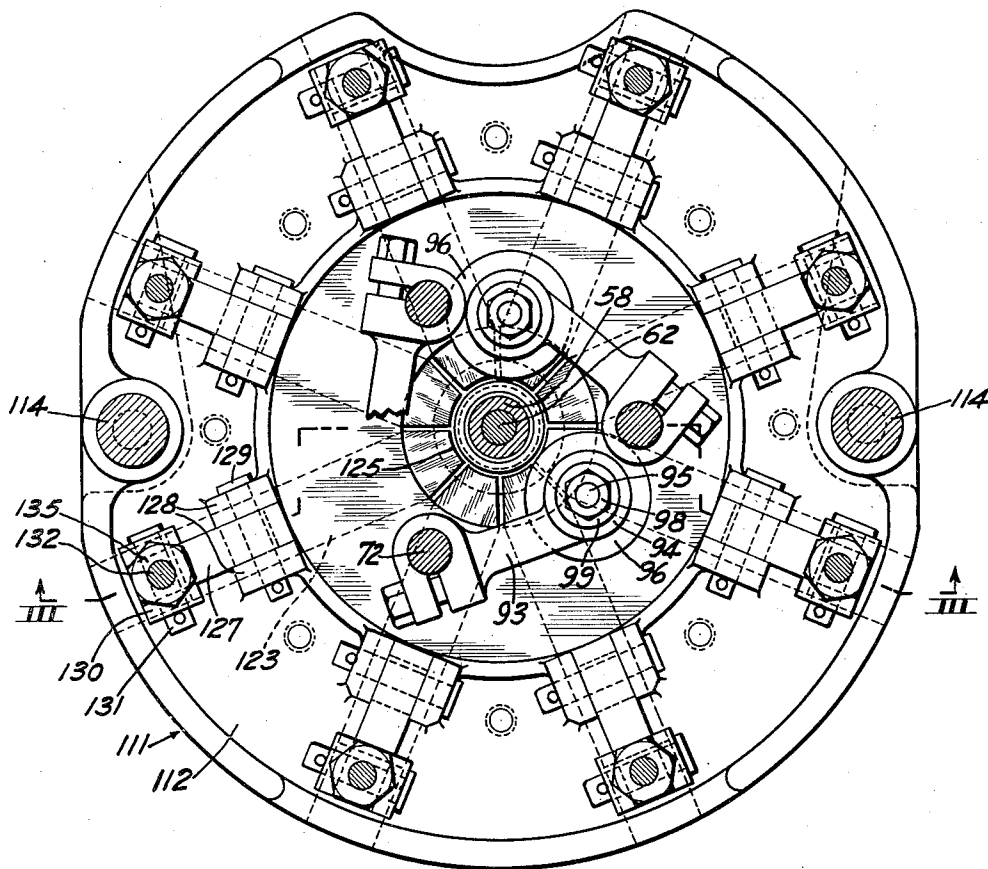
2,178,664

SEALING MACHINE

Filed Jan. 21, 1937

6 Sheets-Sheet 6

Fig. 6.



BY

INVENTOR.
EMERSON E. HOGG.
Donald W. Robertson
ATTORNEY.

UNITED STATES PATENT OFFICE

2,178,664

SEALING MACHINE

Emerson E. Hogg, New Kensington, Pa., assignor
to Aluminum Company of America, Pittsburgh,
Pa., a corporation of Pennsylvania

Application January 21, 1937, Serial No. 121,414

16 Claims. (Cl. 226—87)

This invention relates to machines of the class generally known as sealing machines, and relates particularly to machines for affixing to containers closures having retaining bands.

5 Closures comprising a cup-like cap and a locking band forming the lower portion of the skirt or attached thereto are well known. A closure of the latter type, for instance, is disclosed in U. S. Letters Patent No. 1,908,245, granted to me.
10 Most closures having locking bands are affixed to containers by means of skirt conformations such as screw threads, so that the locking bands serve to protect the sealed packages from undetectable tampering with the contents thereof. In order
15 to affix completely a closure that includes a locking band, whether the skirt conformations be preformed or formed during the sealing operation, it is necessary to force enough of the locking band under an adjacent part of the container
20 finish to accomplish the affixation thereof. Hitherto the affixation of such closure in commercial practice at least has been a two-station sealing operation, and this has been a serious disadvantage in sealing practice. It is the primary
25 object of this invention to provide a machine that will completely affix closures including a locking band integral with the cap skirt or secured thereto at a single sealing station.

Among the other objects of this invention is
30 the accomplishment of this purpose by means of a sealing machine having a simple and adjustably timed relationship between the operations of securing the cap and the locking band portions; to provide a sealing head which accommodates variations in container finish without
35 crushing the container; to provide a sealing head in which the locking band portion of the closure is secured by radial pressure applied about the circumference thereof and the cap portion is secured by progressively rolling the cap into conformity with the container finish, as disclosed in U. S. Letters Patent No. 1,684,892 granted to John E. Sharp.

These and additional objects and advantages of
45 this invention will be better understood when considered in the light of the detailed description accompanying the drawings, in which:

Fig. 1 is a side elevational view showing one embodiment of the invention, including operating
50 mechanism therefor;

Fig. 2 is a fragmentary front elevational view of the sealing head;

Fig. 3 is a fragmentary vertical sectional view of the sealing head taken substantially as indicated by the line III—III of Fig. 5 and Fig. 6;

Fig. 4 is a view similar to Fig. 3 showing the various sealing head parts in operative positions;

Fig. 5 is a horizontal sectional view taken on the line V—V of Fig. 3;

Fig. 6 is a horizontal sectional view taken on the line VI—VI of Fig. 3; and

Fig. 7 is a fragmentary vertical sectional view taken on the line VII—VII of Fig. 2.

The machine shown in Fig. 1 consists of a frame or housing 10 that contains driving means
10 suitable to actuate the belt 11 and the shaft upon which the eccentric cam 12 is mounted, the shaft and cam being driven through a suitable clutch controlled by the foot pedal 13. The housing 10 has on one side two projecting arms 14 and 15
15 which support a vertically reciprocable shaft 16 preferably provided at its lower end with an idler roller 17 that rides the cam 12. The upper end of the shaft 16 carries a screw 18 to which is secured a cross-arm 19 and a rest 20 to support a
20 container such as the bottle 21, to which a closure such as that indicated at 22 is to be applied. The shaft 16 has a portion of reduced diameter 23 which provides a shoulder to carry the spring seat 24 and the spring 25.

Extending upwardly from the housing 10 is a standard 26 which includes two laterally extending brackets 27 and 28. Bracket 27 supports a shaft 29, upon both ends of which idler belt pulleys such as that shown at 30 are mounted at a distance sufficient to permit the belt 11 to clear the standard 26. The bracket 28 supports, by means of a large boss 31, the sealing head which is generally indicated at 32 and an adjustably retained spring 33 for maintaining sealing pressure upon the top of the closure during the sealing operation.

For convenience in description the details of the rest 20 as shown in Fig. 2 will precede the description of the sealing head 32 shown there in elevation and by the succeeding figures in section.
40 The rest 20 includes a suitable resilient pad 34 and a centrally apertured boss 35 having a shoulder 36. The screw 18 has a smooth upper end 37 of reduced diameter adapted to fit into the boss 35 of the rest 20 which is secured thereto by the headed screw 38. Below the boss 35 the screw 18 carries a spring seat 39 threaded thereon, between which and the bottom of the rest 20 there is located a spring 40 which serves
50 to hold the boss shoulder 36 against the head of the screw 38, and since the distance between the shoulder 36 and the end of the boss is less than the length of the reduced screw portion 37, a spring-loaded rest mounting is provided. The

rest 20 is vertically adjustable to accommodate containers of various sizes by adjustment of the screw 18 in the shaft 16, and when adjusted is locked in position by the lock nuts 41 and 42 which also lock the cross-arm 19 to the screw 18.

Referring now to Figs. 3 and 4, and particularly the former, the boss 31 has a central aperture within which a sleeve 43 having a lower flanged end 44 and an upper exteriorly threaded end 45 is anchored by the nut 46. The sleeve 43 fits within the hub portion 47 of the housing 48 which is secured to the boss 31 by the sleeve flange 44 which fits within the hub recess 49. Suitably attached to the housing 48 is a depending annular trackway 50 having an inner cam surface 51. Within the bore of the sleeve 43 is mounted a shaft 52 which is capable of vertical reciprocation and is prevented from rotating by a key 53 which fits a keyway of corresponding size in the body of the shaft 52 and projects into an elongated keyway 54 in the inner face of the sleeve 43.

The diameter of the shaft 52 is substantially the same from the upper end to the shoulder 55, below which it is larger and terminates in a circumferential flange 56. The shaft 52 is provided with a central recess extending approximately half its length from the lower end, which recess adjacent the open end has a threaded wall 57 to receive complementary exterior threads of a centrally apertured sleeve 58 adjustably locked in position by the nut 59. The lower end of the sleeve 58 is enlarged and is provided with a shallow recess 60 which, together with the head 61 of the yielding plunger 62, forms a seat to receive the top of the closure cap during the sealing operation. The plunger 62 is slidably fitted within the aperture in the sleeve 58 and projects beyond the upper end thereof into the recess of the shaft 52 where it is secured by the nuts 63 which serve as an abutment for one end of the spring 64, the other end thereof being seated against the end of the recess of the shaft 52. Journalled upon the shaft 52 and retained in position by the circumferential flange 56 is a belt pulley 65 which, together with the herein-after described parts, forms thread-rolling means for attaching the closure cap portions to a container. The central hub 66 of the pulley 65 joined thereto by spokes 67 has interposed the axial bore thereof and the enlarged portion of the shaft 52 a bushing 68, and is spaced from the flange 56 and the pulley-securing nut 69 by rings 70. The hub 66 is provided with a lubrication fitting 71 to supply the lubricant for the contacting surfaces of the bushing 68 and the shaft 52. If desired, ball bearings or the like and suitable races can be substituted for the bushing 68.

With reference now to Figs. 3, 4, 5, and 6, rock shafts 72 extend through bosses formed in the pulley hub 66, to each of which shafts identical thread-rolling parts are attached. These parts will therefore be described with reference to a single shaft. A two-part lever is carried by a rock shaft 72 above the supporting pulley boss, the lower part of which lever consists of a boss 80, an arm 81, a lug 82, both of which extend from boss 80, and a pin 83 by means of which the part is attached to the rock shaft. The upper part of the lever is freely mounted upon the rock shaft so that it is supported by the boss 80 of the lower part and consists of a boss 84 and an arm 85 extending from the boss, which arm carries a roller 86 and has depending therefrom

a lug 87 adapted to contact the lug 82 of the lower lever part. Both of the lugs 82 and 87 are apertured to receive a bolt 88 which extends beyond the depending lug 87 and has a spring 89 interposed the lug 87 and the nut 90 for the purpose of forming a yielding connection between the two parts of the lever. Each arm 81 has an eyelet 91, the eyelets of the several arms being joined by means of springs 92, as shown in Fig. 5, to keep the rollers 86 in contact with the cam surface 51.

Attached to the lower extremity of each rock shaft 72 is an arm 93 having at its free end an apertured boss 94 which supports a rolling tool comprising a stub shaft 95 and a rolling disc 96 attached thereto, the lower portion of the stub shaft 95 being journalled in the aperture of the boss 94 with a bushing 97 interposed, and the upper end being of reduced diameter and carrying a nut 98. Interposed the nut 98 and a seat washer 99 and resting upon the boss 94 is a spring 100 to permit the rolling disc 96 to follow progressively the finish of the container during the sealing operation. The thread-forming means just described, along with the belt pulley 65, form a rotatable portion of the sealing head 32, which portion as described is supported by the shaft 52 which is suspended from the boss 31 and is secured thereto by the lock nut 101 normally seated upon the washer 102.

The threaded upper end of the shaft 52 extends beyond the lock nut 101 and has adjustably secured thereto, between the lock nuts 103 and 104, a cross-arm 105. The lock nut 103 also serves as a seat for one end of the spring 33 which has as an abutment for the other end a plate 106 suitably secured as by nuts to the tie bolts 107 and 108, the heads of which are retained, respectively, by the small lateral bosses 109 and 110 of the boss 31.

The cross-arm 105 supports the band-securing or clinching mechanism which will now be described in detail with reference to Figs. 2, 3, 4, and 7. This mechanism is carried by a two-piece base 111 consisting of a centrally apertured upper portion 112 secured to a centrally apertured base plate 113. The base 111 is rigidly connected to the cross-arm 105 by means of two tie rods 114. Since both rods are similarly secured, the description will be limited to the rod 114 as shown in Fig. 7. A reduced upper end 116 of the tie rod extends through the apertured end of the cross-arm 105 and is secured thereto against the shoulder 117 by the nut 118. The lower end 119 is threaded and is preferably of reduced diameter to provide a shoulder 120 which serves as a stop in attaching the rod to the base portion 112 by means of a threaded recess therein. Between the points of attachment the tie rod passes through an aperture in the housing 48 which is fitted with a bushing 121 to permit relative movement between the housing 48 and the base 111. A lubrication fitting 122 (Fig. 2) is preferably provided to permit lubrication of the contacting surfaces of the tie rod and bushing.

The base 111 carries a plurality of horizontally reciprocable fingers radially disposed in recesses formed by the base portion 112 and the base plate 113. Although the illustrated embodiment of the invention has eight such fingers (Fig. 6), this number is optional and any number may be used that will force enough of the locking band beneath an adjacent retaining bead to fasten the band to a container. Since the fingers and finger-operating mechanisms are identical, the

fingers and operating mechanisms will be described with reference to a single finger and its operating mechanism.

The finger 123 is fitted within a recess 124 formed by a suitable channel in the base portion 112 and the adjacent surface of the base plate 113. The finger 123 tapers toward an arcuate inner end 125 (Fig. 6), so that when the fingers are simultaneously reciprocated toward the locking band they fit together to encircle the band. Near the outer end each finger is provided with an aperture 126 adapted to receive one end of a small bell crank lever 127 which is pivotally secured to a yoke 128 by a suitable pin 129, the yoke being formed by two upstanding lugs integral with the upper surface of the base portion 112. The other end of the bell crank lever is pivotally secured to a clevis 130 by a clevis pin 131. The clevis is secured to a bolt 132 the headed end 133 of which is retained by an apertured lateral boss 134 of the housing 48 through which the shank of the bolt 132 passes, the other end being threaded into a similarly threaded aperture of the clevis 130 and locked in position by the nut 135. Extending through the aperture of the boss 134 and encircling the bolt 132 is a bushing 136 having a lateral flange 137, the barrel of the bushing being greater in length than the thickness of the boss, so that the flange is normally spaced from the boss. The under side of the flange surface provides an abutment for the spring 138 which is seated upon the nut 139 which, with the lock nut 140, can be advanced or retracted on the threaded shank of the bolt 132 to vary the loading of the spring. A washer 141 is preferably interposed the boss 134 and the headed nut 133 of the bolt 132 to provide a seat therefor.

In order to prevent the container 21 from being subjected to the compressive force of the entire head when elevated during the sealing operation, the brackets 142 and 143 are provided which will be described with reference to bracket 142 (Fig. 7). The preferred bracket shape is that of a shallow U having apertured bosses 144 and 145 at each end. The bracket is attached to the base 111 by a bolt 146 extending through the apertured boss 144 and threaded into a similarly threaded recess in the base portion 112 located immediately below the recess by which the tie rod 114 is attached. Extending through the lower boss 145 and secured thereto as by a pin 147 is a depending rod 148 which enters the externally threaded sleeve 149 extending through a similarly threaded aperture in the cross-arm 19, which sleeve is adjustably locked in position by nut 150. The brackets 142 and 143 are preferably braced by a tie rod 151 secured to each bracket.

The closure 22 to be applied to the externally threaded neck of the receptacle, as shown in Figs. 3 and 4, is of the two-piece type consisting of a skirted closure cap 152 having a sealing gasket 153 and a locking band 154 depending from the closure cap 152. The form of the closure before its application is shown in Fig. 3. Upon the conclusion of the sealing operation the closure cap 152 has been rolled into conformity with the threaded neck of the container and the lower edge of the locking band 154 has been forced under an adjacent bead of the container finish, as shown in Fig. 4.

The operation of the machine described with reference to the drawings is as follows:

In Figs. 1, 2 and 3, the various parts of the machine are shown in their relative positions at the beginning of an operative cycle. At this point the eccentric cam 12 has turned uppermost the portion of shorter radii so that the rest 20 is fully retracted to deceive freely a container 21 which has its mouth enveloped by a loosely positioned closure 22.

Upon rotation of the cam 12 the container and the parts supported by the shaft 16 are raised toward the sealing head. The cap portion of the closure contacts the head 61 of the projecting plunger 62 during this upward travel (Fig. 3) and carries the plunger upwardly until the head 61 thereof fits within the apertured sleeve 58 to form, together with the shallow recess 60 thereof, a complete cap seat. The rest 20 is adjusted so that elevation of the shaft 16 after this seating until the sleeves 149 contact the bracket bosses 145 creates a top pressure against the closure part 152 that compresses the gasket 153 into sealing relationship with the mouth of the container; this pressure if excessive is relieved by the yieldable rest mounting and is maintained throughout the sealing operation by the spring 33 as it exists at the time the sleeves contact the bosses. Rotation of the cam 12 until its portion of maximum radius is uppermost now causes simultaneous upward movement of the closure-securing mechanisms of the sealing head 32 relative to the housing 48 and the trackway 50 attached thereto, since the container and the cross-arm 19 raise the shaft 52 and the parts attached thereto against the spring 33, which movement actuates both the spinning discs 96 and the fingers 123.

During this upward movement the rotatable parts of the sealing head 32 are moved upwards axially of the shaft, causing the arms 85 to be swung radially inwardly due to the coaction of the rollers 86 with the inclined portion of the cam surface 51. The inward swinging movement of the arms 85 is transmitted through the yielding connection between the lugs 82 and 87 to the lower lever parts rigidly attached to the rock shafts. Oscillation of the rock shafts swings the arms 93 radially inwardly so that the peripheries of the rolling discs 96 are brought into contact with the skirt portion of the closure cap 152 at a point near the open mouth of the container. The relative positions of the rotatable parts of the sealing head at this point in the sealing operation, with the exception of the rolling discs 96, are shown in Fig. 4, and the rolling discs at this point are forcibly but yieldably maintained against the skirt portion of the closure cap 152. Rotation of the belt pulley 65 carries the several rolling discs 96 around the neck of the container and the peripheries of the discs adjust their positions axially of the shaft 52 so that they follow progressively the thread-like formations in the container neck. In downwardly following these thread-like formations the discs gradually compress the springs 100 until the discs reach the extreme lower region of the thread-like formations, as shown in Fig. 4.

The base 111 is also raised in the direction of the housing 48, from which the finger-actuating bolts 132 are normally suspended, as shown in Fig. 3. At the beginning of the upward travel of the base 111 the finger-actuating bolts travel upwards, which, due to the action of the springs 138, causes the bushings 136 to move upwardly until the flanges 137 thereof contact the lower surfaces of the bosses 134. Until this point in the travel of the bushings 136 is reached there is no actuation of the fingers 123. From this point,

however, the upward travel of the finger-actuating bolts 132 is opposed by the springs 138, and as the upward travel of the base continues the loading of the springs increases and they are compressed, so that the upward movement of the bolts 132 is less than the upward travel of the base. This relative movement causes the bell crank levers 127 to turn about their fulcrum points to produce radially inward movement of the fingers 123. The inward finger movement, when the initial loading of the springs 138 is adjusted to the preferred pressure, is completed at substantially the completion of the upward movement of the base 111, so that the various parts of the entire sealing head 32 assume the positions shown in Fig. 4.

Completion of a single revolution of the eccentric cam 12 permits the withdrawal of the sealed container from the sealing head to a position for free removal through the action of the spring 25 and the weight of the shaft 16, together with that of the parts supported thereby. As the sealed container is lowered the thread-rolling means carried by the belt pulley 65 and the base 111 with its associated fingers and the finger-actuating mechanisms are returned to the position shown in Fig. 3 as the final phase of the operating cycle.

From the foregoing description it is apparent that in the machine disclosed the full inward movement of the fingers 123 to force the locking band under the adjacent container bead occurs while the rolling discs 96 are in contact with the closure. For rapid operation, this timing of the sealing head parts has been found preferable. However, if desired, it is possible to change this relationship by changing the contour of the cam surface 51. In this connection, it must be remembered that the exact moment of completion of the inward finger movement is dependent upon the loading of the springs 138; therefore, a wide range of adjustability is available with respect to completion of the two securing operations. It should also be noted that the connection between the independent finger-actuating mechanisms associated with each finger and the fixed abutment provided by the bosses 134 of the immovable housing 48 is yieldable, permitting each finger to adjust itself to irregularities in container finish, so that the necessary radial pressure is provided without danger of crushing the bottle neck, an advantage that also attends the yieldable connection between the two-part lever carried by each rocker arm.

The embodiment by which the invention has been illustrated is characterized by numerous adjustable relationships of parts. The container rest 20 can be raised or lowered to accommodate containers of varying heights by adjustment of the screw 18 within the shaft 16. To accommodate locking bands of varying widths the operative level of the fingers 123 can be changed as desired by adjustment of the cross-arm 105 upon the shaft 52. Obviously, the shaft 52 can be provided with a longer threaded end, and the spring 33 elevated upon a seat that does not serve for both spring seat and lock nut, as does nut 103, so that this adjustment for bands of greatly varying widths can be made without affecting the loading of the spring 33. The radial pressure exerted by the rolling discs 96 can be varied by adjustment of the resilient connection of the two-part levers carried by each rock shaft and by vertical adjustment of the relationship between the rollers 86 and the trackway 50.

Although the invention has been illustrated

with relation to a manually-controlled machine adapted to apply a closure portion by a thread-forming operation, there is no intent upon my part that the invention should be so limited. It is apparent that the invention may be utilized with various types of machines; that is to say, the sealing head embodied in this invention might be duplicated in a machine to provide a plurality of heads with means for automatic conveyance of the containers thereto and therefrom either in a straight or circular path. Furthermore, it is apparent that a substitution of means for attaching a prethreaded closure for the thread-forming means shown herein comes within the scope of this invention. With the intent, therefore, to include all modifications that come within the spirit of this invention, I claim:

1. A sealing machine comprising a support, a fixed abutment member secured thereto, a vertically reciprocable shaft carried by said support, thread-rolling means carried on said shaft for progressively forming thread-like securing conformations in a closure, horizontally reciprocable means supported by said shaft for constricting said closure below said securing conformations, means for moving said shaft relative to said abutment member, whereby said abutment member causes movement of both said thread-rolling means and said constricting means into operative contact with the closure.

2. In a sealing machine, a sealing head including means for peripherally constricting a closure, said means comprising a base adapted for vertical reciprocation, a plurality of horizontally disposed, reciprocable fingers carried by said base, a plurality of levers fulcrumed on said base, each of said levers being independently associated with a single finger, and a plurality of lever rock rods, each being independently connected with a single lever and to a fixed member of said sealing head, each of said rods being yieldably connected to said fixed member, each of said connections including a support carried by a rock rod and a spring interposed said support and said fixed member, whereby relative movement between said base and said fixed member positively but yieldably actuates said fingers.

3. In a sealing machine, a compound sealing head comprising rotatable means for securing to a container a closure retained by thread-like conformations, means fixed against rotation cooperatively associated with said rotatable means for constricting said closure below said retaining conformations, and a supporting shaft common to both said means, said second mentioned means including a plurality of reciprocable pressure elements actuated in radial convergence against said closure.

4. In a sealing machine, a compound sealing head comprising rotatable means for securing to a container a closure retained by thread-like conformations, means fixed against rotation cooperatively associated with said rotatable means for constricting said closure below said retaining conformations, and a supporting shaft common to both said means, said second mentioned means including a plurality of reciprocable pressure elements actuated in radial convergence against said closure during actuation of said rotatable means, whereby substantially the entire circumference of said closure is simultaneously constricted.

5. In a sealing machine, a compound sealing head comprising rotatable means for securing to a container a closure retained by thread-like con-

formations, means fixed against rotation cooperatively associated with said rotatable means for constricting said closure below said retaining conformations, and a supporting shaft common to both said means, said second mentioned means including a plurality of reciprocable pressure elements yieldably-actuated in radial convergence against said closure.

6. In a sealing machine, a compound sealing head comprising rotatable means for securing to a container a closure retained by thread-like conformations, means fixed against rotation cooperatively associated with said rotatable means for constricting said closure below said retaining conformations, and a supporting shaft common to both said means, said second mentioned means including a plurality of horizontally disposed, reciprocable pressure elements and a plurality of adjustable yieldable actuating means whereby each of said elements is independently actuated in radial convergence against said closure.

7. In a sealing machine, a compound sealing head comprising rotatable means for securing to a container a closure retained by thread-like conformations, means fixed against rotation cooperatively associated with said rotatable means for constricting said closure below said retaining conformations, said latter means including a plurality of reciprocable fingers horizontally disposed within a vertically movable base and a plurality of adjustable actuating means for said fingers yieldably secured to said base and a fixed member, whereby relative movement between said base and said fixed member independently actuates each of said fingers in radial convergence against said closure.

8. In a sealing machine, a compound sealing head comprising rotatable means for securing to a container a closure retained by thread-like conformations, means fixed against rotation cooperatively associated with said rotatable means for constricting said closure below said retaining conformations, said latter means including a plurality of reciprocable fingers horizontally disposed within a vertically movable base, each of said fingers being reciprocated by a lever pivotally mounted on said base and each of said levers having an adjustable, yieldable connection to a fixed member, whereby relative movement between said base and said fixed member independently actuates each of said fingers in radial convergence against said closure.

9. A sealing machine comprising a support, a fixed abutment member secured thereto, a vertically reciprocable member carried by said support, rotatable means carried on said member for securing to a container a closure retained by thread-like conformations, means fixed against rotation suspended from said member independently of said rotatable means for constricting said closure below said retaining conformations, and means for moving said vertically reciprocable member relative to said abutment member, whereby said rotatable means and said second mentioned means are forced by said abutment member into operative contact with said closure.

10. A sealing machine comprising a support, a fixed abutment member secured thereto, a vertically reciprocable shaft carried by said support, rotatable means carried on said shaft for securing to a container a closure retained by thread-like conformations, means fixed against rotation suspended from said shaft independently of said rotatable means for constricting said closure below said retaining conformations,

said rotatable means and said second mentioned means having means adapted to positively but yieldably contact said abutment member, and means for moving said shaft relative to said abutment member, whereby said rotatable means and said second mentioned means are forced by said abutment member into operative contact with said closure.

11. A sealing machine comprising a support, a fixed abutment member secured thereto, a vertically reciprocable shaft carried by said support, thread-rolling means carried on said shaft for progressively forming thread-like securing conformations in a closure, horizontally reciprocable means supported by said shaft for constricting said closure below said securing conformations, said thread-rolling means and said constricting means having associated therewith means adapted to positively but yieldably contact said abutment member, and means for moving said shaft relative to said abutment member, whereby said thread-rolling means and said constricting means are forced by said abutment member into operative contact with said closure.

12. In a sealing machine a sealing head including means for peripherally constricting a closure, said means comprising an abutment member, a base disposed below said abutment member, a plurality of radially disposed, reciprocable pressure elements carried by said base, a plurality of levers fulcrumed on said base, each of said levers being independently associated with a single pressure element, and a plurality of lever rock rods, each being independently connected to a lever and to said abutment member, the latter connection for each rock rod including a rod portion movable through said abutment member and a resilient member supported upon the rod intermediate said base and said abutment member, whereby relative movement between said base and said abutment member positively but yieldably actuates said pressure elements against the closure.

13. In a sealing machine a sealing head including means for peripherally constricting a closure, said means comprising an abutment member, a base disposed below said abutment member, a plurality of radially disposed, reciprocable pressure elements carried by said base, a plurality of levers fulcrumed on said base, each of said levers being independently associated with a single pressure element, and a plurality of lever rock rods, each being independently connected to a lever and to said abutment member, the latter connection for each rock rod being yieldable and including a rod portion movable through said abutment member, an adjustable support carried by the rod and a spring disposed intermediate said support and said abutment member, whereby the actuation of said pressure elements may be timed by adjusting the loading of said spring produced by relative movement between said base and said abutment member.

14. A sealing machine including an abutment member, means for applying a thread-retained closure to a container actuated by contact with said abutment member, means for constricting the closure below the threads thereof, a yieldable connection between said constricting means and said abutment member, a supporting shaft common to both said means, and means for causing the relative movement between said shaft and said abutment member to actuate both said closure applying means and said closure constricting means.

15. A sealing machine including an abutment member, means for applying a thread-retained closure to a container actuated by contact with said abutment member, means for constricting the closure below the threads thereof, a yieldable connection between said constricting means and said abutment member, a supporting shaft common to both said means, and means for causing relative movement between said shaft and said abutment member, said yieldable connection including adjustable means permitting timing of the actuation of said constricting means with respect to said applying means.

16. A sealing machine including an abutment member, means for applying a thread-retained closure to a container actuated by contact with said abutment member, means for constricting the closure below the threads thereof, a yieldable connection between said constricting means and

said abutment member, a reciprocable supporting shaft common to both said means, and means for moving said shaft relative to said abutment member, said applying means being disposed on said shaft for actuating contact with said abutment member prior to actuation of said constricting means, and said yieldable connection including a rod movable through said abutment member and resilient means carried on said rod intermediate said abutment member and an adjustable support to oppose movement thereof, whereby the subsequent actuation of said constricting means may be timed with the actuation of said applying means by adjusting the loading of said resilient means produced by relative movement between said shaft and said abutment member.

EMERSON E. HOGG.