

Sept. 15, 1942.

W. D. BELL

2,296,013

APPARATUS FOR SEALING CONTAINERS

Filed Sept. 20, 1940

4 Sheets-Sheet 1

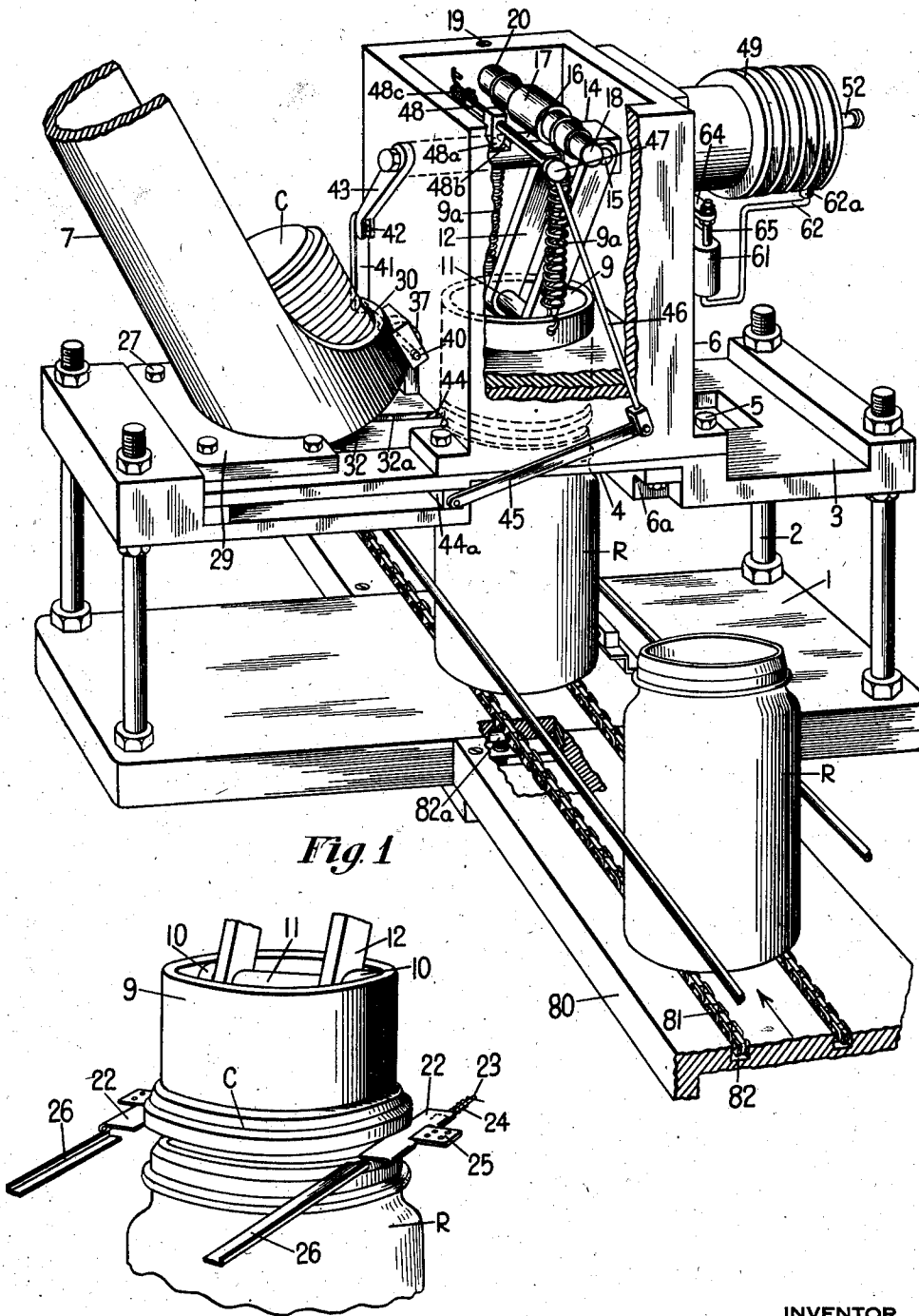


Fig. 1

Fig. 2

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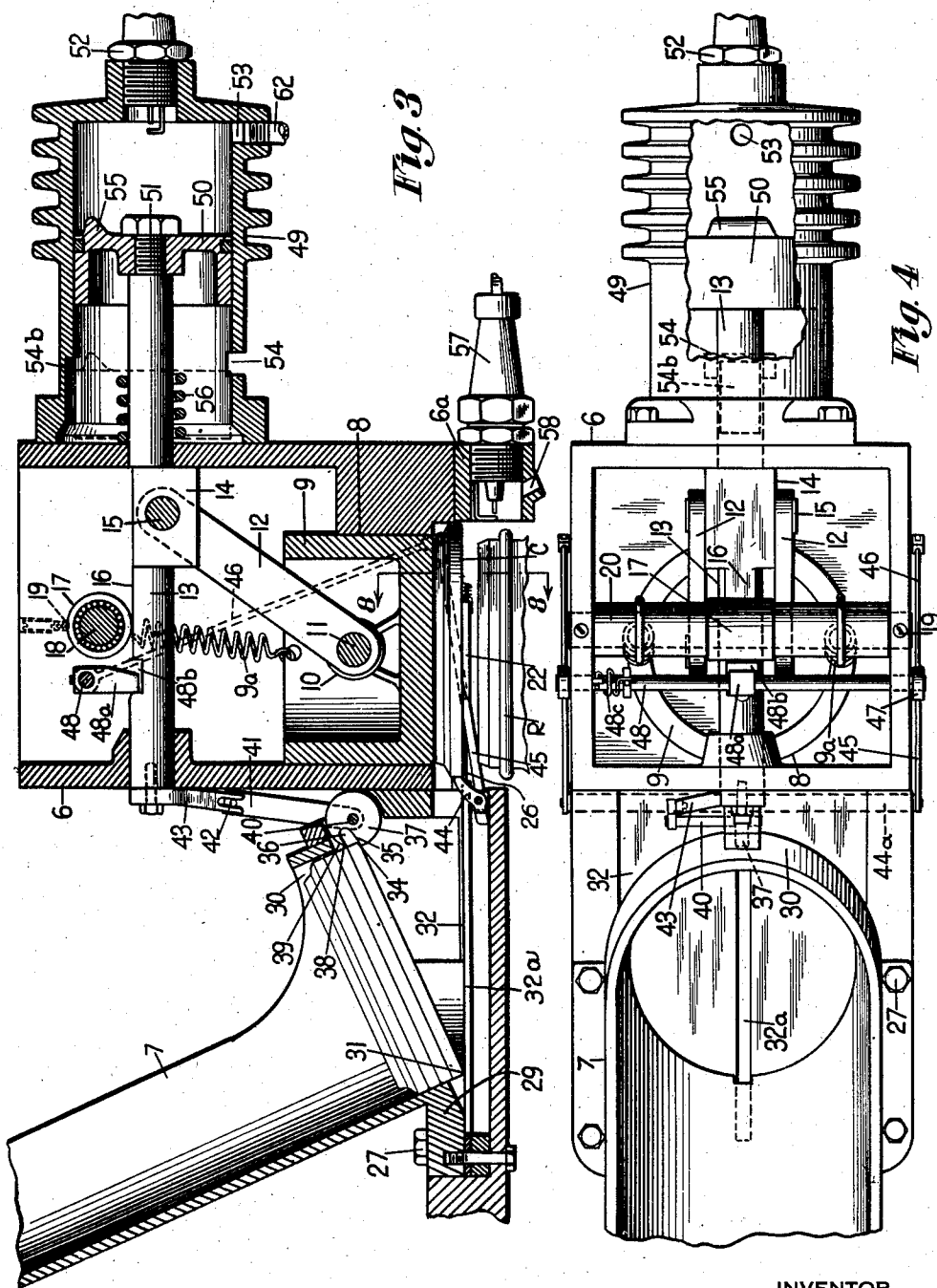
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4 Sheets-Sheet 3

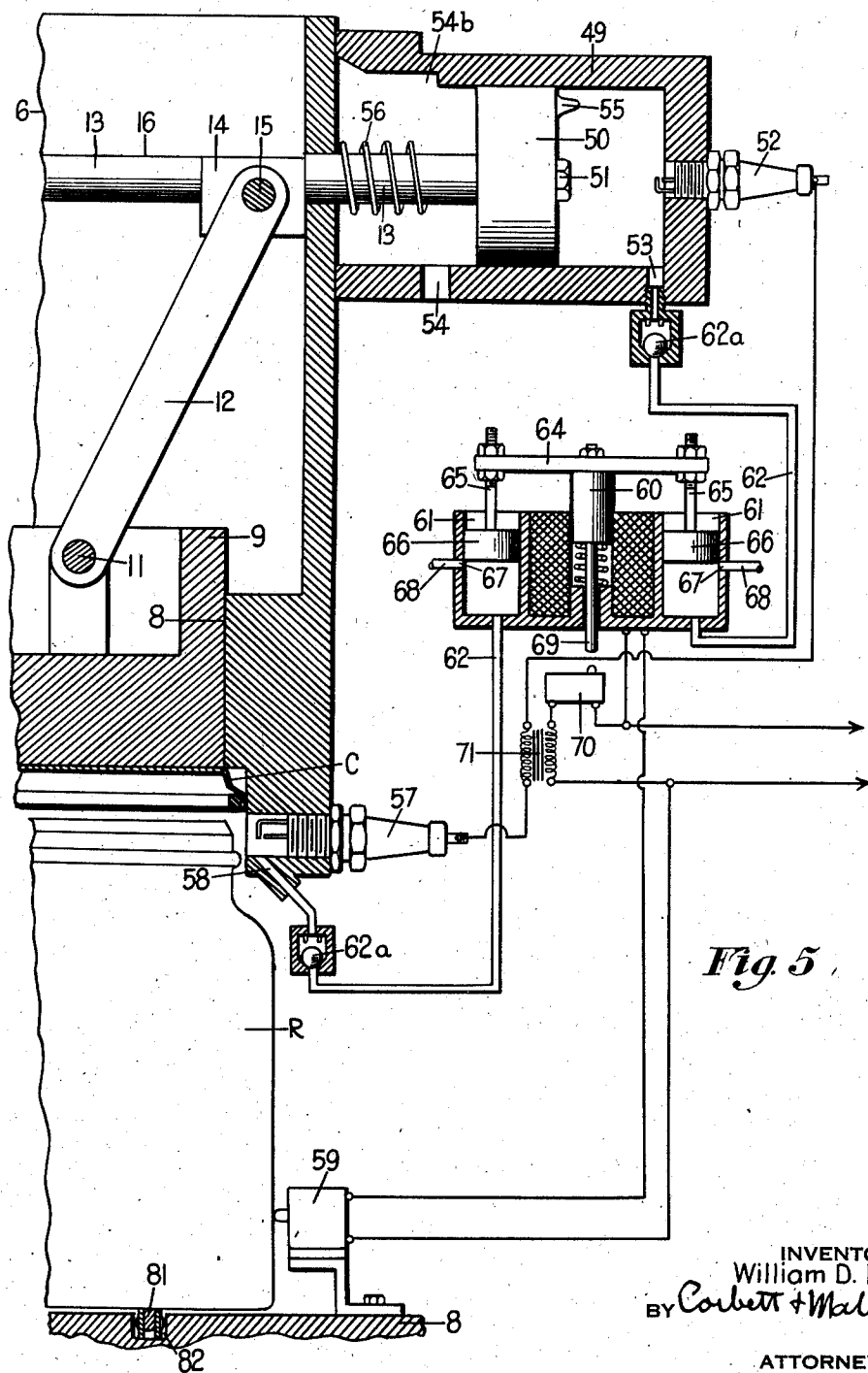


Fig 5

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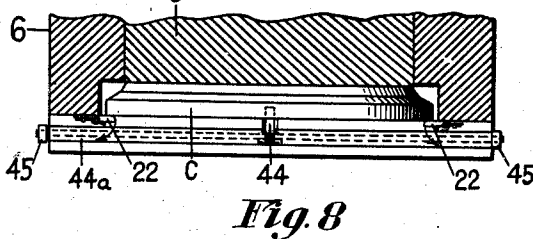
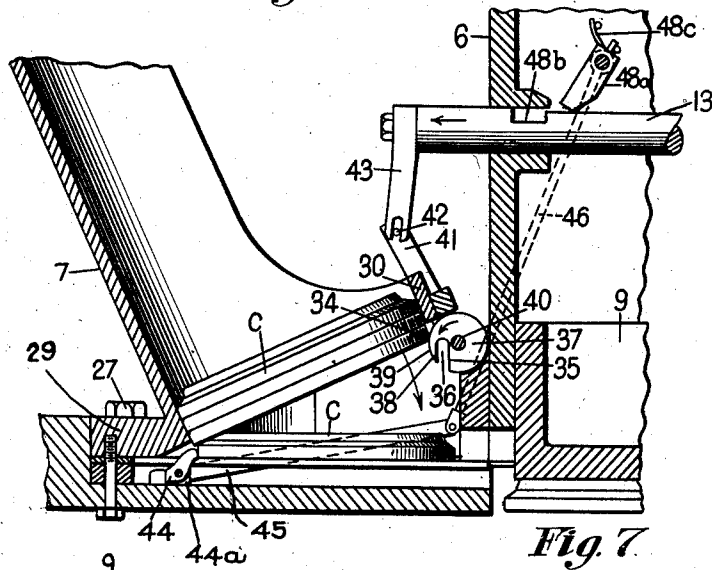
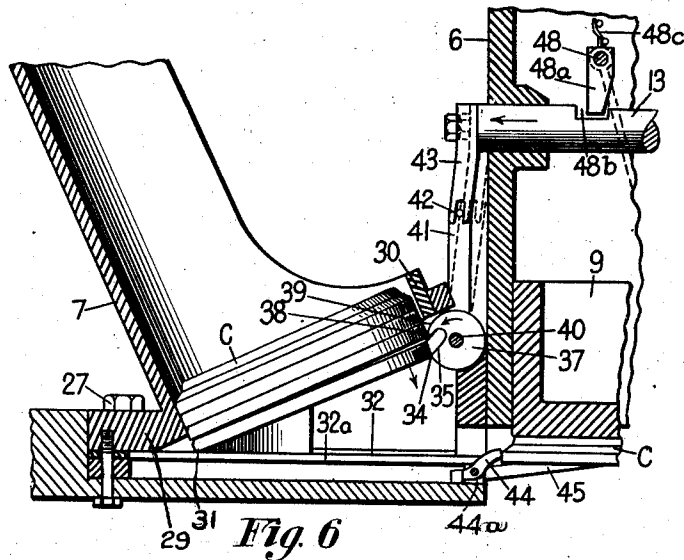
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4 Sheets--Sheet 4



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2,296,013

APPARATUS FOR SEALING CONTAINERS

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Application September 20, 1940, Serial No. 357,586

26 Claims. (Cl. 226—82)

My invention relates to apparatus for sealing containers. It has to do, more particularly, with apparatus for producing a partial vacuum in the upper ends of the containers at the same time that closures are sealed onto the containers.

This application is a continuation in part of my copending application, Serial No. 325,393, filed March 22, 1940, and directed to method and apparatus for sealing containers, which issued as Patent No. 2,284,631 on June 2, 1942.

In said application Serial No. 325,393 I describe a method for sealing containers consisting of three main steps, namely, (1) injecting a suitable combustible gas into the head space of a container, beneath and around a cap spaced slightly thereabove; (2) igniting the combustible gas and (3) sealing the cap on the container substantially as combustion is completed.

The present invention relates to an improved machine for performing such method.

One of the objects of my invention is to provide a very simple apparatus for performing automatically the method outlined above.

Another object of my invention is to provide apparatus of the type indicated which will be self-contained and which will partially vacuumize and seal the containers without the use of auxiliary apparatus such as boilers, vacuum pumps and the like.

Another object of my invention is to provide an apparatus of the type indicated wherein the sealing mechanism for forcing the cap into position on the container is also actuated by combustible gas so that the apparatus will be greatly simplified as compared to prior art apparatus.

Another object of my invention is to provide an apparatus of the type indicated which may be operated very economically.

Another object of my invention is to provide apparatus which will be relatively simple and light in weight as compared to prior art machines but which will be sturdy and easier and cheaper to keep in repair.

Another object of my invention is to provide a machine which will partially vacuumize and seal containers fed thereto at random and which has simple and effective means for positioning the cap in cooperative relationship with the container as it reaches sealing position.

In its preferred form, my invention contemplates the provision of an apparatus embodying a sealing mechanism comprising a reciprocable sealing head which is disposed in spaced relation to a support for a container which may be a conveyor. This sealing head has means associated

therewith for positioning a cap beneath the sealing head and above the container. The sealing head is adapted to be forced downwardly to force the cap into position on the container and is actuated by means of an internal combustion cylinder and piston unit. Means is associated with the sealing head for introducing combustible gas into the head space of the container beneath and around the closure held by the sealing head in spaced relationship to the container. Means is also provided for supplying a combustible gas to the internal combustion unit. The means for supplying the gas to the head space of the container and into the internal combustion unit are both operated merely by positioning of the container in sealing position on the support beneath the sealing head. Means is also provided for igniting the gas in said unit and in association with the head space of the container substantially simultaneously to effect the vacuumizing and sealing operations and this means is also actuated by positioning of the container in sealing position.

The preferred embodiment of my invention is illustrated in the accompanying drawings wherein similar characters of reference designate corresponding parts and wherein:

Figure 1 is a perspective view, partly in section, showing my sealing machine and associated mechanism.

Figure 2 is a perspective view of the sealing head and associated cap holder.

Figure 3 is a vertical sectional view of the sealing mechanism and associated cap feed.

Figure 4 is a top plan view of the mechanism shown in Figure 3 with the cylinder of the actuating means of the sealing head shown partly broken away.

Figure 5 is a detail in vertical section showing the electrical connections which actuate the gas pump and the various ignition means.

Figure 6 is a vertical sectional view showing the initial stage of releasing a closure from the closure magazine.

Figure 7 is a vertical sectional view of the same cap feed showing the cap immediately after release and the manner of upholding the remaining caps.

Figure 8 is a vertical sectional view taken on line 8—8 of Figure 3.

With reference to the drawings, I have illustrated an automatically operated capping machine of a type in which my invention has been embodied.

The machine illustrated comprises a base 1,

having standards 2, which are adapted to support a platform 3. This platform 3 has formed on its lower surface a channel 4 which cooperates with the sealing unit proper in forming a combustion chamber for vacuum sealing. Secured to the upper surface of the platform 3 by the bolts 5 is the sealing unit which may be designated by the numeral 6. Also supported on the upper surface of the platform 3 and to one side thereof and in proximity thereto is a cap chute which may be generally designated as 7.

The sealing unit 6 is rectangular in horizontal cross section although its shape may be varied. Substantially one-third of the lower part of the sealing unit is cylindrically bored for the reception of a reciprocable sealing head which is itself of cylindrical cross section as illustrated best in Figure 3. The bore of this sealing unit is designated 8 and the sealing head is designated 9. The sealing head 9 has on its inner circumference two diametrically opposed lugs 10 having sockets to hold a pin 11. This pin has pivotally mounted thereon two upwardly extending sealing head struts 12. The other ends of these struts are pivotally connected to a driving rod 13. The direction of travel of this rod 13 is in a direction at right angles to the direction of travel of the sealing head piston. The part of the rod 13 to which the upper ends of the struts 12 are pivoted is square as at 14. The ends of these struts 12 are each respectively pivoted to a side of this square portion 14 of the rod 13, as at 15. The rod 13 has a portion of its upper surface flattened as at 16 so as to enable said rod to bear against the roller bearing 17 during its stroke. This flattened surface 16 is of a length equivalent to the length of stroke of the piston rod 13. The roller bearing 17 is disposed in juxtaposition to the path of travel of the rod 13. Bearing 17 is rotatably retained on a shaft 18 which has its opposite ends rigidly positioned in the walls of the sealing unit as at 19. The roller bearing 17 is maintained in its operative position by means of two sleeves 20 disposed on either side thereof. It will be readily seen from this description that when the driving rod 13 is driven to the position in Figure 1, its bearing surface will bear against the roller bearing 17, and, being constrained against upward movement thereby, will drive the sealing head 9 downwardly through the medium of the struts 12. Connected to the upper edge of the sealing head 9 at two diametrically opposed points are two springs 9a. Each of these springs 9a has its other end connected in a suitable manner to one of the sleeves 20 on the shaft 18. The purpose of these springs is to return the sealing head to its uppermost position and consequently to also return the piston 50 to its firing position.

The sealing head piston 9 in its descent is adapted to engage the top of a closure C and press it into sealing relation with the top of a receptacle R. The final sealing of the cap on the receptacle is effected when the sealing head has attained its lowermost position. Closure C, prior to its contact by the sealing head, is maintained in position preparatory to sealing by the horizontally extending hinges 22. These hinges are pivoted on pins 23 and are retained in horizontal closure receiving position by torsion springs 24 which have a resistance sufficiently great to enable the hinges 22 to support a closure. The pins 23 which support the hinges proper 22 are themselves supported by the hinge tab 25 which is adapted to be suitably fastened to the machine. The closures C are slid onto the hinges 22 from

the cap feed tracks 26. This construction may be clearly understood from an examination of Figures 2 and 8.

The closure holding means and its associated delivery mechanism will now be described. Bolted to the upper surface of platform 3 by means of bolts 27 is the cap holder or magazine generally designated as 7. The cap holder 7 takes the form of a base 29 supporting integrally therewith and in a slightly inclined position a semi-cylindrical member which is adapted to hold a stack of caps that can be readily laid therein. At its bottom, a small portion of this cap holder is completely cylindrical as at 30. This construction is clearly shown in Figures 1 and 3. Since the whole stack of caps is maintained in an inclined position, it will be seen in Figure 3 that the weight of this stack will rest largely on two edges of the lowermost cap. Thus, the rear edge 31 of the lowermost cap rests on a depressed surface 32 of platform 3 having formed therein a slot 32a which is formed substantially throughout the length of such depressed surface. This depressed surface 32 extends from the bottom of the cap holder 7 to the cap sealing head. The forward end of the depressed surface 32 which is adjacent to the sealing head supports the tracks 26 which form continuations thereof. The forward edge 34 of the lowermost cap rests on the lower surface 35 of a notch 36 formed in a disc 37. It will be seen that the notch 36 and the disc 37 are so located and of such form that when the disc 37 is oscillated it will have an escapement like action, or in other words, the upper surface or claw like member 38 of notch 36 in the disc 37 will separate the lowermost cap from the stack and positively force it downwardly and allow it to drop into the longitudinal depressed surface 32. While the lowermost cap is being forced downwardly by the claw like member, the surface 39 of the disc 37 will support the stack of caps as shown in Figures 6 and 7. Upon the release of the lowermost cap, the disc 37 is rotated in the opposite direction until the forward edge 34 of the cap which is now lowermost rests upon the surface 35 of the notch 36 and the cap which is now lowermost is now in a position ready for release from the cap holder 7.

The disc 37 is mounted for its escapement like motion on one end of a shaft 40. On the other end of the shaft 40 is rigidly mounted an arm 41 which extends upwardly. This arm 41 has a pin and yoke connection 42 with the downwardly extending arm 43. The other end of the arm 43 is rigidly fastened to one end of the driving rod 13. It is understood, that when the rod 13 is driven to the left in Figure 3, it causes the arm 43 to rotate the disc 37 a certain number of degrees through the medium of its supporting shaft and associated arm 41.

When a cap is dropped into the depression 32 it is in front of a pawl 44. Pawl 44 is carried by cross member 44a whose ends are connected to links 45. When suitably actuated said pawl 44 is adapted to draw the cap from its position beneath the cap magazine onto the cap holding hinges 22. The mechanism accomplishing this result will now be described in detail. The ends of the links 45 opposite to those at which the cross member 44a is attached are connected to the lower ends of levers 46. The upper ends of levers 46 are rigidly attached as at 47 to a horizontal shaft 48, said shaft 48 being rotatably mounted in the walls of the sealing unit 6. The levers 46 are attached to the rotatable shaft 48

at a point outside of the walls of the sealing unit. Suitably mounted on the shaft 48 is the torsion spring 48c. This spring normally moves the pawl and a cap forward to sealing position.

In the center of the shaft 48 is rigidly attached a downwardly extending trigger or finger 48a whose lower end extends into a notch 48b in the rod 13. This trigger is so constructed that when the rod 13 is driven forward the shaft 48 is caused to rotate and thereby actuate the pawl 44 through the medium of its associated mechanism. When the rod 13 has moved far enough to the right in its return stroke, the trigger 48a reaches a position where its downward swinging action will not be prohibited, as it formerly was by the surface of the rod 13. Thus, when the trigger reaches this position, the torsion spring 48c rotates the shaft 48 and forces the trigger into notch 48b. It will be seen that the spring 48c rotating the shaft 48 and its associated mechanism will deliver the closure to the sealing head.

The means for driving the rod 13 which causes a cap to be delivered to sealing position and which causes the sealing head to descend and seal the cap on the jar will now be described. The driving rod 13 is driven by an ordinary type of piston as in a combustion engine. The cylinder itself may be designated by the numeral 49 and it has operatively disposed therein a piston 50. The piston 50 is connected to the rod 13 by any ordinary means as at 51. In the head of the cylinder 49 is disposed a spark plug 52 for ignition of the gas which may be admitted through the port 53. The gas port 53 is connected through a gas line 62 to a suitable gas pump to be hereinafter described. At the end of the cylinder where the forward stroke of the piston 50 terminates is located a port 54. In the upper inside surface of the cylinder 49 is located a channel 54b which enables the air admitted through the port 54 when the piston is in firing position to be passed from behind the piston 50 when said piston has completed its stroke to the left into the space before the piston preparatory to compression.

The piston itself has on its explosion surface a baffle 55. It will be seen that this baffle 55 will cause the air coming through the channel 54b to be more or less deflected and spread into the explosion or combustion chamber for a more uniform mixture of the air with the gas, said air and gas, of course, being subject to slight compression preparatory to combustion by the returning stroke of the piston. Mounted on the rod 13 in front of the piston is a spring 56 which is for the purpose of initiating the return stroke of the piston. The relation of the piston to the air port at the limit of its forward stroke may be seen in dotted lines in Figure 3. The entrance of the gas and the ignition thereof are controlled by suitable timing mechanism which will be hereinafter more fully described.

One of the sealing unit walls which is parallel to the direction of travel of the receptacle is extended downwardly to form the extended wall 6a in which the spark plug 57 and gas port 58 for the vacuumizing process are disposed. Escape of the mixture of air and gas because of a draft is not possible due to the rapidity of ignition of the mixture and prompt sealing of the closure on the container. The ignition spark plug is designated by the numeral 57 and the gas port by the numeral 58. This ignition means and gas admitting means are also controlled by suitable mechanism which will be hereinafter more fully described.

In Figure 5 is shown the means for causing the gas to be injected and the means for igniting said gas. When the receptacle in the course of its travel along the conveyer contacts the micro-switch 59 it causes the solenoid to be energized, thus drawing the core 60 of said solenoid downwardly thereby causing the pumps 61 to inject gas through their gas lines 62 and associated check valves 62a into the combustion cylinder 49 and also into the combustion sealing zone. To effect this operation, the core 60 has mounted on its upper extremity a cross beam 64. The cross beam 64 has on each of its ends a rod 65 on which is mounted a plunger 66 for each pump 61. When the solenoid core is drawn down, as a result of energization of the solenoid, the pumps are caused to deliver gas through the gas lines 62 as previously mentioned. Downward movement of the pump pistons first closes off the inlet ports 67, which are connected by means of the gas lines 68 to any suitable gas reservoir. The return stroke of the pump is effected through the medium of the spring at the bottom of the solenoid core 60. Rigidly affixed to the bottom of said core is a rod 69. When the core reaches its lowermost position, the bottom of the rod 69 actuates the switch 70 which sends current through the transformer 71 to the spark plugs 52 and 57, thus igniting the gas both in the combustion cylinder 49 and in the combustion sealing zone.

As shown in Figure 1, the containers are successively presented to the sealing head by an endless conveyer which is mounted on a table 80 and which is preferably formed by spaced parallel chains 81, running in grooves 82, which project slightly above the table and upon which the receptacles are transported to and beyond the sealing head. Preferably the table 80 is provided immediately beneath the sealing head with a yielding portion 82a to absorb any shock resulting from the sealing action and to permit the chains to assume a position beneath or level with the top of the table during sealing, so that each receptacle will pause during sealing and then move on as the sealing head is lifted.

In the operation of my preferred form of apparatus, the receptacles are delivered successively to the sealing unit by the conveyer. They may approach the sealing unit at regular intervals or they may approach it at random. Simultaneously, the closures are successively separated from the stack and delivered automatically to the spring supporting flaps which are disposed immediately beneath the sealing head. As each receptacle reaches position beneath the sealing head and beneath the cap which is supported on the spring flap, the receptacle actuates the micro-switch to bring about sealing of the receptacle. Preliminary to this sealing operation, however, and about the time the receptacle reaches position beneath the closure which it is to receive, the combustible mixture is automatically introduced into the head-space and the space thereabove so that it surrounds the mouth of the receptacle and surrounds the closure, particularly the underside thereof. The actuation of the micro-switch by the arriving receptacle causes the pumps to deliver gas to the head-space and to the power cylinder, and this in turn brings about the ignition of the two charges, one in and about the head-space of the container and the other in the power cylinder. The combustible mixture in and above the head-space of the re-

ceptacle expands rapidly as a result of ignition and at about the instant of completion of this expansion, the sealing head, under the impetus of the exploding mixture in the chamber 49 moves downwardly and forces the closure past the spring flap and onto the receptacle so that the products of combustion in and above the head-space of the receptacle are entrapped. During the upward movement of the sealing head, the pumps are actuated to supply the combustible mixture to the head-space and thereabove and to the chamber 49, preparatory for the next sealing operation. In the meantime, a new cap has been automatically delivered onto the spring flap and is positioned in readiness for sealing onto the receptacle which is next to arrive.

It will be apparent from the above description that I have provided a very simple apparatus for vacuumizing and sealing containers by injecting a combustible gas beneath a cap held in spaced relationship to a container, igniting the mixture so produced, permitting the burning gases to expand and sealing the container when the expansion is substantially completed. I provide extremely simple means for positioning the cap relative to the container so that it may be forced downwardly into sealing position. The sealing mechanism is also operated by a combustible gas which greatly simplifies the machine as compared to prior art machines. The sealing mechanism and the vacuumizing mechanism is actuated automatically merely by positioning a container in sealing position.

Various other advantages will be apparent from the preceding description, the drawings and the following claims.

Having thus described my invention, what I claim is:

1. Apparatus for sealing containers having material therein which comprises sealing means actuated by a combustible mixture for sealing a closure on the container, means for delivering a combustible gas to the head-space of the container and to the sealing means so that it will mix with the air therein to form a combustible mixture, and means for igniting the mixture at the sealing means and at the head-space substantially simultaneously.

2. Apparatus for sealing containers having material therein which comprises means actuated by a combustible mixture for sealing a closure on the container, means for delivering a combustible gas to the head-space of the container and to the sealing means so that it will mix with the air therein to form a combustible mixture, means for automatically and successively conducting said containers to position beneath the said sealing means, and means for simultaneously igniting the mixture in the head-space of the container and for igniting the mixture for operating the sealing means substantially simultaneously.

3. Apparatus for sealing containers having material therein which comprises a reciprocable sealing head, an internal combustion engine for moving said reciprocable sealing head downwardly, means for delivering a combustible gas to the head-space of the container and to the internal combustion engine so that it will mix with the air therein to form a combustible mixture, means for automatically and successively conducting said containers to position beneath the said sealing means, and means for simul-

taneously igniting the mixture in the head-space of the container and igniting the mixture in the internal combustion engine for causing the reciprocable sealing head to move downwardly to effect sealing of the closure on the container.

4. Apparatus for sealing containers having material therein which comprises a vertically reciprocable sealing head, a substantially horizontally movable piston, a cylinder therefor, an intermediate strut connected between said piston and said sealing head to effect downward movement of the sealing head, means for introducing a series of closures successively and automatically to a position beneath the sealing head, means for conveying a series of containers having material therein continuously and successively to position beneath said sealing head, means for introducing a combustible gas into the head-space above the material in the container so that it will mix with the air therein to form a combustible mixture, means for introducing a combustible gas into said cylinder so that it will mix with the air therein to form a combustible mixture and means for igniting the combustible mixture in the head-space and in the said cylinder substantially simultaneously to effect ignition of the mixture in the head-space and immediate sealing of the closure on the container.

5. Apparatus for sealing open mouth containers comprising means for associating a container and a closure in cooperative relationship with the closure spaced from the mouth of the container, a unit actuated by a combustible mixture for moving said container and closure relative to each other to seal the closure on the container, means for charging the air within and about the open mouth of the container with a combustible gas to form a combustible mixture, means for delivering a combustible gas to said unit, and means for igniting the combustible mixture within and about the mouth of the container and in said unit substantially simultaneously.

6. Apparatus for sealing open mouth containers comprising a support for a container, a sealing head associated with said support, means associated with said sealing head for holding a closure member in spaced relationship to the mouth of the container, means for supplying a combustible gas beneath the closure member in association with the mouth of the container so that it will mix with the adjacent air to form a combustible mixture, a unit actuated by a combustible mixture for moving said container and sealing head relative to each other to seal the closure on the container, means for supplying a combustible gas to said unit, and means actuated upon positioning of the container in sealing position on said support for igniting the combustible mixture beneath the closure member and the combustible mixture in said unit substantially simultaneously.

7. Apparatus for sealing open mouth containers comprising a support for a container, a sealing head associated with said support, means associated with said sealing head for holding a closure member in spaced relationship to the mouth of the container, means for supplying a combustible gas beneath the closure member in association with the mouth of the container so that it will mix with the adjacent air to form a combustible mixture, a unit actuated by a

combustible mixture for moving said container and sealing head relative to each other to seal the closure on the container, means for supplying a combustible gas to said unit, means for igniting the combustible mixture beneath the closure member, means for igniting the combustible mixture in said unit, and control means actuated by positioning of the container in sealing position on said support for simultaneously actuating both of said means for supplying combustible gas and then simultaneously actuating both of said igniting means.

8. Apparatus for sealing open mouth containers comprising a conveyer for supporting the containers, a sealing head spaced above the conveyer, means associated with said sealing head for holding a closure member in spaced relationship to the mouth of the container, means for supplying a combustible gas beneath the closure member in association with the mouth of the container so that it will mix with the adjacent air to form a combustible mixture, a unit actuated by a combustible mixture for moving said container and sealing head relative to each other to seal the closure on the container, means for supplying a combustible gas to said unit, means for igniting the combustible mixture beneath the closure member, means for igniting the combustible mixture in said unit, and control means actuated by movement of the container by said conveyer into a position beneath said sealing head for simultaneously actuating both of said means for supplying combustible gas and then simultaneously actuating both of said igniting means.

9. Apparatus according to claim 8 wherein the control means includes a control member engaged by the container moved into sealing position.

10. Apparatus according to claim 7 wherein said means for supplying the combustible gas beneath said closure member and to said unit embody pumps for supplying predetermined charges, electric means for actuating said pumps, said means for igniting the combustible mixture beneath the closure member and in said unit embodying electric spark-forming means, said control means comprising an electric switch which controls a circuit to said electric pump-operating means and said spark-forming means.

11. Apparatus according to claim 8 wherein a cap-feeding unit is provided adjacent said sealing head for successively feeding caps into association with said sealing head, and means for operating said cap-feeding unit in response to operation of said unit for moving said container and sealing head relative to each other.

12. Apparatus according to claim 8 wherein a cap-feeding unit is provided adjacent said sealing head for successively feeding caps into position beneath said sealing head, said sealing head having yieldable means for supporting a cap beneath the sealing head, said sealing head being downwardly movable, and means for operating said cap-feeding unit in response to operation of said unit for moving said sealing head.

13. Apparatus for sealing open mouth containers comprising a support for a container, a sealing head associated with said support, means associated with said sealing head for holding a closure member in spaced relationship to the mouth of the container, means for supplying a combustible gas beneath the closure member in association with the mouth of the container so that it will mix with the adjacent air to form a

combustible mixture, a unit for moving said container and sealing head relative to each other to seal the closure on the container, and means actuated upon positioning of the container in sealing position on said support for igniting the combustible mixture beneath the closure member and for operating said unit substantially simultaneously.

14. Apparatus for sealing open mouth containers comprising a support for a container, a sealing head associated with said support, means associated with said sealing head for holding a closure member in spaced relationship to the mouth of the container, means for supplying a combustible gas beneath the closure member in association with the mouth of the container so that it will mix with the adjacent air to form a combustible mixture, a unit for moving said container and sealing head relative to each other to seal the closure on the container, and control means actuated by positioning of the container in sealing position on said support for actuating said means for supplying combustible gas and then actuating said igniting means.

15. Apparatus for sealing open mouth containers comprising a conveyer for supporting the containers, a sealing head spaced above the conveyer, means associated with said sealing head for holding a closure member in spaced relationship to the mouth of the container, means for supplying a combustible gas beneath the closure member in association with the mouth of the container so that it will mix with the adjacent air to form a combustible mixture, a unit for moving said container and sealing head relative to each other to seal the closure on the container, means for igniting the combustible mixture beneath the closure member, and control means actuated by movement of the container by said conveyer into a position beneath said sealing head for actuating said means for supplying combustible gas and then said igniting means and substantially simultaneously actuating said unit.

16. Apparatus according to claim 15 wherein the control means includes a control member engaged by the container moved into sealing position.

17. Apparatus according to claim 14 wherein said means for supplying the combustible gas beneath said closure member embodies a pump for supplying a predetermined charge, electric means for actuating said pump, said means for igniting the combustible mixture beneath the closure member embodying electric spark-forming means, said control means comprising an electric switch which controls a circuit to said electric pump-operating means and said spark-forming means.

18. Apparatus according to claim 15 wherein a cap-feeding unit is provided adjacent said sealing head for successively feeding caps into association with said sealing head and means for operating said cap-feeding unit in response to operation of said unit for moving said container and sealing head relative to each other.

19. Apparatus according to claim 15 wherein a cap-feeding unit is provided adjacent said sealing head for successively feeding caps into position beneath said sealing head, said sealing head having yieldable means for supporting a cap beneath the sealing head, said sealing head being downwardly movable, and means for operating said cap-feeding unit in response to operation of said unit for moving said sealing head.

20. Apparatus for sealing open mouth containers with closure members associated therewith

comprising a support for a container, a sealing head associated with said support, a unit actuated by a combustible mixture for moving said container and sealing head relative to each other to seal the closure on the container, means for supplying a combustible gas to said unit, and means actuated upon positioning of the container in sealing position on said support for igniting said combustible gas.

21. Apparatus for sealing open mouth containers with closure members associated therewith comprising a support for a container, a sealing head associated with said support, a unit actuated by a combustible mixture for moving said container and sealing head relative to each other to seal the closure on the container, means for supplying a combustible gas to said unit, means for igniting said combustible gas, and control means actuated by positioning of the container in sealing position on said support for progressively actuating said means for supplying the combustible gas and said igniting means.

22. Apparatus for sealing open mouth containers comprising a conveyer for supporting containers, a sealing head spaced above the conveyer, means associated with said sealing head for holding a closure member in spaced relationship to the mouth of the container, means for displacing air from the upper end of the container, a unit actuated by a combustible mixture for moving said container and sealing head relative to each other to seal the closure on the container, means for supplying the combustible gas to said unit, means for igniting the combustible gas, and control means actuated by movement of

the container by said conveyer into a position beneath said sealing head for progressively actuating said means for supplying combustible gas and said igniting means.

23. Apparatus according to claim 22 wherein the control means includes a control member engaged by the container moved into sealing position.

24. Apparatus according to claim 21 wherein said means for supplying the combustible gas to said unit embodies a pump for supplying a predetermined charge, electric means for actuating said pump, said means for igniting the combustible gas in said unit embodying electric spark-forming means, said control means comprising an electric switch which controls a circuit to said electric pump-operating means and said spark-forming means.

25. Apparatus according to claim 22 wherein a cap-feeding unit is provided adjacent said sealing head for successively feeding caps into association with said sealing head, and means for operating said cap-feeding unit in response to operation of said unit for moving said container and sealing head relative to each other.

26. Apparatus according to claim 22 wherein a cap-feeding unit is provided adjacent said sealing head for successively feeding caps into position beneath said sealing head, said sealing head having yieldable means for supporting a cap beneath the sealing head, said sealing head being downwardly movable, and means for operating said cap-feeding unit in response to operation of said unit for moving said sealing head.

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