

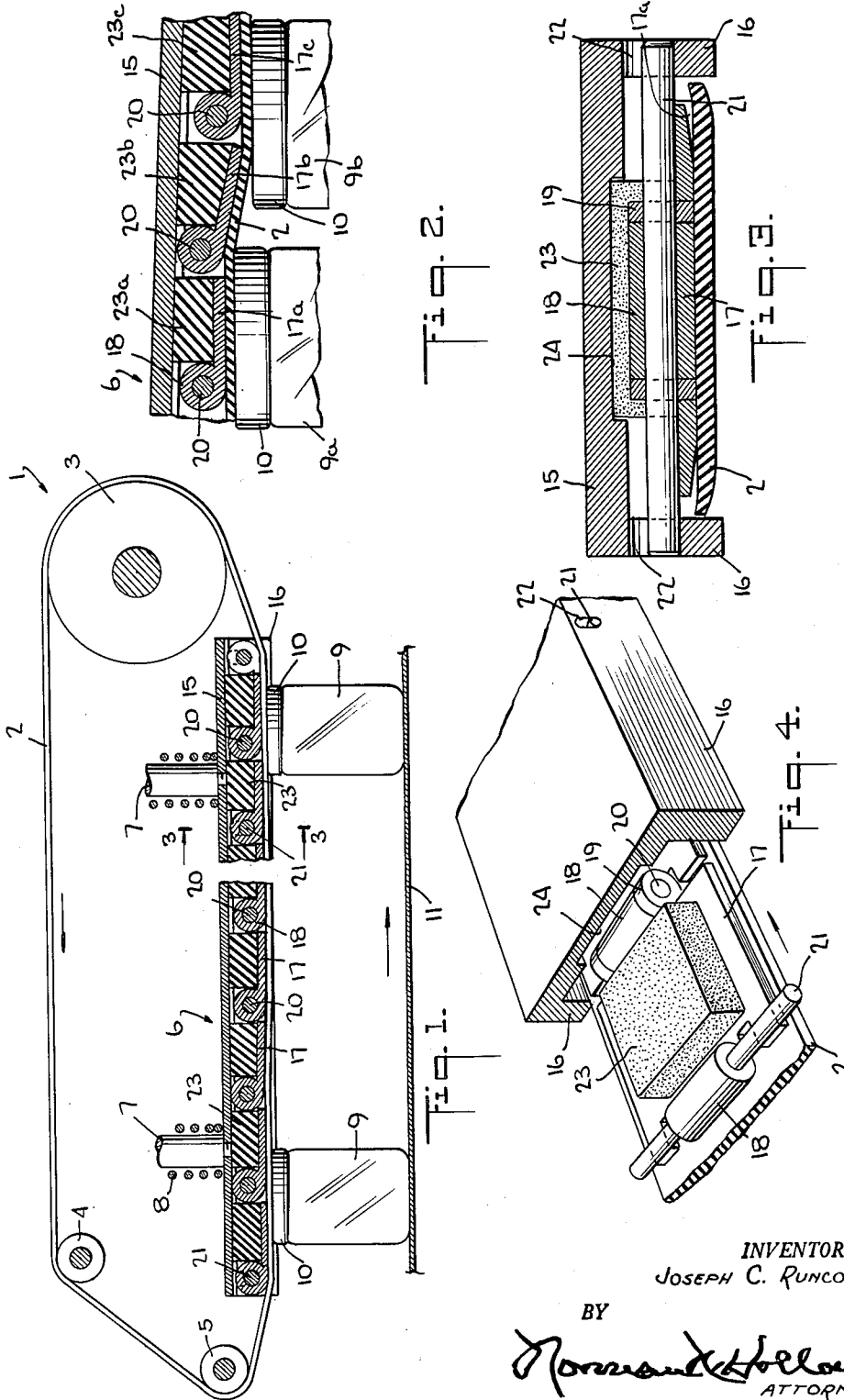
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PRESSURE SHOE

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1

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PRESSURE SHOE

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The present invention relates to a pressure shoe and more particularly to an improved pressure shoe adapted to be used in connection with sealing belts for applying closure caps to containers and for jar finish washers to act as a temporary seal for filled containers while the jar finish is being washed.

For convenience the pressure shoe of the present invention will be described primarily in connection with a sealing machine. However, it will be understood that the pressure shoe may also be used with a jar finish washer.

Closure caps are applied to containers by passing the containers with caps loosely fitted thereon beneath a moving sealing belt which is provided with a pressure shoe for applying downward pressure to the caps to force the caps tightly onto the containers.

The increased use of hermetically sealed packages necessitates the application of the closure caps to containers in an air-tight manner to preserve the contents of the package.

In the manufacture of glass containers, slight irregularities in the height of the containers are almost unavoidable. It has been found that in using the usual rigid pressure shoe for applying pressure to the sealing belt where two containers of slightly varying height are passed under the sealing belt simultaneously, the higher container lifts the pressure shoe so that the pressure shoe does not exert sufficient pressure on the lower container to effectively apply the cap thereto and the resulting package is not air-tight.

To minimize this, resilient pressure shoes have been devised. However, such shoes involve the use of impractical roller arrangements and are generally unsatisfactory. Another manner of minimizing these disadvantages has been to provide elaborate height gauging mechanisms which have been used to reject containers which are not of the proper height.

The present invention overcomes these defects and has for one of its objects the provision of an improved sealing belt.

Another object of the present invention is to provide an improved sealing belt which will apply sufficient pressure to effect a good seal on containers having slight irregularities in height.

Another object of the present invention is to provide a sealing belt which has sufficient flexibility to permit containers of higher and lower height to be sealed simultaneously while both are under the sealing belt.

A further object of the present invention is to provide an improved sealing belt which will eliminate the necessity of a height gauging mechanism.

A further object of the present invention is to provide an improved pressure shoe.

Another object of the present invention is to provide an improved pressure shoe which is resilient to permit containers of varying height to be simultaneously sealed.

Other and further objects of the invention will be obvious upon an understanding of the illustrative embodiment about to be described or will be indicated in the appended claims, and various advantages not referred to herein will occur to one skilled in the art upon employment of the invention in practice.

A preferred embodiment of the invention has been chosen for purposes of illustration and description and

2

is shown in the accompanying drawings, forming a part of the specification, wherein:

FIG. 1 is a sectional view showing the sealing belt of the present invention in operation;

5 FIG. 2 is a greatly exaggerated sectional view showing the position of the pressure pad when in its operative position;

FIG. 3 is a sectional view of the pressure pad taken along line 3—3 of FIG. 1; and

10 FIG. 4 is a perspective view of the pressure pad showing the relationship between the various parts.

Referring more particularly to the drawings, a sealing mechanism denoted generally by the reference number 1, is shown in FIG. 1. The mechanism comprises a sealing belt 2 which is rotated by a drive roller 3 on the front of the mechanism and which passes over the idler rollers 4 and 5. The idler rollers 4 and 5 may be adjustably mounted to permit the tension on the sealing belt 2 to be adjusted.

20 A pressure shoe, generally designated as 6, is mounted in depending relationship to the standards 7, above the lower run of the sealing belt 2, and is pressed downwardly by suitable springs 8 in order to apply pressure to the lower run of the sealing belt 2.

25 Containers 9 having caps 10 resting loosely on the upper ends thereof are passed beneath the sealing belt 2 by a suitable conveyor 11. The sealing belt 2 is pressed by the pressure shoe 6 against the tops of the caps 10 to press the caps 10 downwardly so that the caps 10 are forced onto the containers sealing finish to hermetically seal the containers 9.

30 The improved pressure shoe 6 of the present invention is shown in greater detail in FIGS. 2 to 4 and comprises an elongated stationary frame 15 having a pair of depending rails 16 on each side thereof and being open at both ends. A plurality of bearing elements or pressure links 17 are mounted together by means of upstanding journals 18 and 19 (FIGS. 3 and 4) and are held together by a plurality of pins 20 and 21 to form a link chain. 35 Some of the pins, such as pin 21, extend through a slot 22 in the depending rails 16 of the stationary holder 15 to secure the links 17 in the frame 15. The links 17 have substantially flat bearing surfaces which may be beveled at the ends as shown at 17a in FIG. 3.

40 Mounted above each of the links 17 is a resilient pad 23, which may be made of rubber or some other suitable material, adapted to permit the links 17 to flex upwardly when a container is passed therebeneath and to move the links back to their original positions after the containers pass by. The pads 23 are located in a longitudinally extending groove 24 in the frame 15 so that the frame will apply pressure to the pressure pads 23. With this arrangement, the spring 8 presses the frame 15 downwardly which in turn applies pressure to the pressure pads 23. Pressure pads 23 apply pressure to the links 17 which transmit the pressure to the sealing belt 2 and to the closure caps 10.

45 The operation of the pressure pads 23 and links 17 may be seen from FIG. 2. The containers 9a and 9b of different heights are passing beneath the shoe 6. As seen in FIG. 2, the link 17a is resting on container 9a, link 17b straddles containers 9a and 9b and link 17c is resting on container 9b. Container 9a is higher than container 9b and this difference in height angles the frame 15. However, the resiliency of the pressure pads 23a and 23c permits the links 17a and 17c to apply different pressure to both lower container 9b and higher container 9a.

50 In applying pressure to the container, it will be noted that pad 23a, which is over higher container 9a is under greater compression than pad 23b which is over the link 17b which straddles both containers permits the pressure pad 23b to be under greater compression at the end

over the higher container than at the other end, but the resiliency of the pressure pad will apply sufficient pressure to both containers. Hence, both of the containers, although of different heights, will be properly sealed. The resiliency of the pressure pads 23 permit the linkages to assume any height and at the same time permit the pressure to be applied equally.

For convenience, the present invention has been described in connection with a so-called "straight-line" sealing machine for "press-on" caps. However, it will be understood that it is within the scope of the present invention to use the improved pressure shoe of the present invention on a rotary sealing machine, on a machine for applying screw caps and the invention may also be used with a jar finish washer to temporarily seal the open ends of the jars on which the finish is being washed.

When the pressure pad of the present invention is to be used on a jar finish washer, filled containers are passed into a washing chamber before the caps are applied. The pressure shoe applies pressure to the tops of the containers so that the rims will be embedded in the resilient conveyor to effect a temporary seal. The pressure shoe operates in the same manner as described above in order to effect a good seal on containers which have slight irregularities in height. Water is then sprayed on the finish of the containers to wash the finish.

It will be seen that the present invention provides an improved sealing belt which will apply sufficient pressure to both containers of higher and lower height to effect a good seal on both and which has sufficient resiliency to permit containers of different heights to be sealed simultaneously. The present invention also provides an improved pressure shoe which is resilient to simultaneously seal containers of different heights.

As various changes may be made in the form, construction and arrangement of the parts herein without departing from the spirit and scope of the invention and without sacrificing any of its advantages, it is to be understood that all matter herein is to be interpreted as illustrative and not in a limiting sense.

Having thus described my invention, I claim:

1. A pressure shoe comprising a frame having a longitudinally extending groove, a plurality of flat relatively movable links, adjacent links being pivotally mounted to each other at their ends, and a resilient pressure pad mounted above each link for applying pressure to said links, said pressure pads extending into the groove in said frame.

2. A pressure shoe as claimed in claim 1 wherein pins are provided to pivotally mount adjacent links together and wherein at least one of said pins extends through the frame to secure the links to said frames.

3. A closure applying sealing mechanism comprising a sealing belt, a pressure shoe for applying pressure to the sealing belt, said pressure shoe having a frame with a

longitudinally extending groove therein, a plurality of substantially flat relatively movable links, adjacent links being pivotally mounted to each other at their ends, a resilient pressure pad above each of said links for applying pressure to said links, said pressure pads extending into the groove in said frame.

4. A pressure shoe comprising a frame, a plurality of relatively movable bearing elements mounted on and depending from said frame, adjacent elements being pivotally connected to each other at their ends, and resilient means resting on each of said elements and in contact with the frame to apply pressure to said bearing elements.

5. A closure applying sealing mechanism comprising a sealing belt, a pressure shoe for applying pressure to the lower run of the belt, said pressure shoe having a frame, a plurality of relatively movable bearing elements mounted on and depending from said frame, adjacent elements being pivotally connected to each other at their ends, and resilient means resting on each of said elements and in contact with the frame to apply pressure to said bearing elements.

6. A pressure shoe comprising a frame, a plurality of relatively movable bearing elements mounted on said frame, said bearing elements having substantially flat bearing surfaces, adjacent elements being pivotally mounted to each other at their ends, and resilient pressure applying means above each of said bearing elements.

7. A pressure shoe comprising a frame, a plurality of relatively movable bearing elements mounted on said frame, adjacent elements being pivotally mounted to each other at their ends, and a resilient pressure-applying pad resting on each of said bearing elements.

8. A closure applying sealing mechanism comprising a sealing belt, a pressure shoe for applying pressure to the lower run of the belt, said pressure shoe having a frame, a plurality of relatively movable bearing elements mounted on said frame, said bearing elements having relatively flat bearing surfaces, adjacent elements being pivotally mounted to each other by journalings at their ends, and a resilient pressure-applying element above each of said bearing elements.

9. A closure applying sealing mechanism comprising a sealing belt, a pressure shoe for applying pressure to the lower run of the belt, said pressure shoe having a frame, a plurality of relatively movable bearing links mounted on said frame, adjacent elements being pivotally indented to each other at their ends, and a resilient pressure-applying pad resting on each of said bearing links.

References Cited in the file of this patent

UNITED STATES PATENTS

1,608,217	Kimball	Nov. 23, 1926
2,254,860	Rose	Sept. 2, 1941
2,319,213	Davies	May 18, 1943
2,805,533	Holstebro	Sept. 10, 1957