

[54] SEAL FOR TREATMENT CONTAINERS,
ESPECIALLY FOR WIDTH OF TEXTILE
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GmbH**, Germany[22] Filed: **June 20, 1974**[21] Appl. No.: **481,242**

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[58] Field of Search 277/32, 237; 68/5 E;
34/242

[56] References Cited

UNITED STATES PATENTS

2,321,546 6/1943 Fryer et al. 34/242
3,170,576 2/1965 Frank 34/242

3,302,432	2/1967	Woollatt.....	68/5 E
3,320,776	5/1967	Gorodissky et al.	68/5 E
3,352,129	11/1967	Johnson	68/5 E
3,367,151	2/1968	Fujihashi.....	68/5 E
3,593,901	7/1971	Ulrich VonDer et al.	68/5 E
3,645,116	2/1972	Peter	68/5 E

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[57] ABSTRACT

A sealing system for sealing the inlet and outlet slots of treatment containers, especially for widths of textile goods, which includes two sealing beads which form a portion of two inflatable hoses closed at their ends and normally held in cylindrical rims or housing members which are arranged adjacent and parallel to each other and at their adjacent portions are provided with slotted sections bridged by the sealing beads. The sealing beads are respectively surrounded by flexible foils of wear-resistant material, which foils are adapted to be detachably clamped between the cylindrical rims and the pertaining hoses.

8 Claims, 3 Drawing Figures

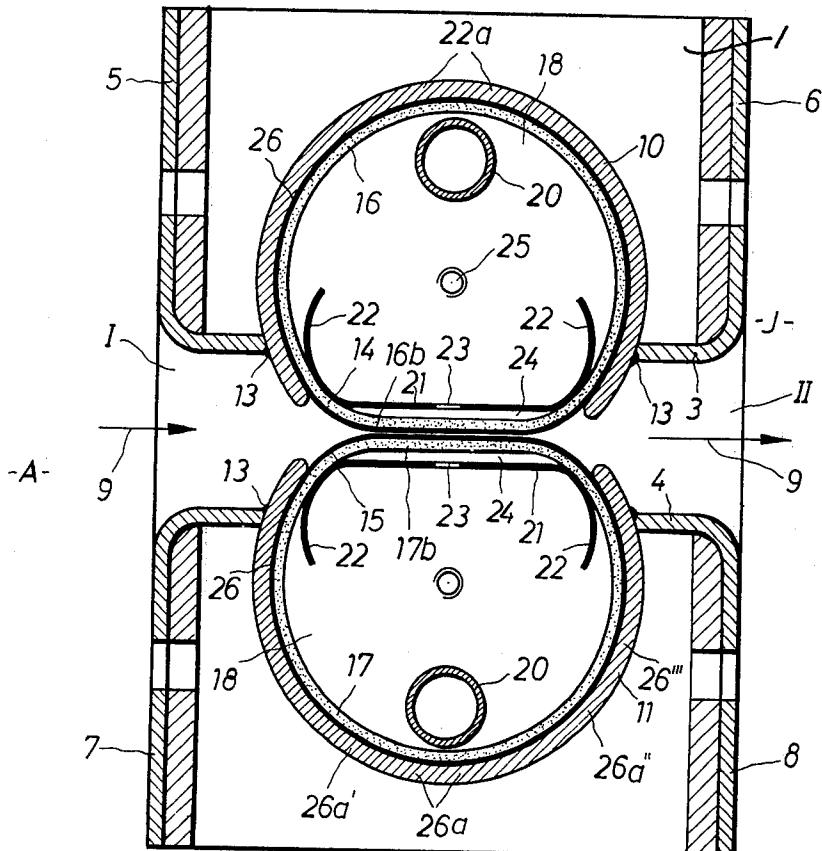


Fig. 1

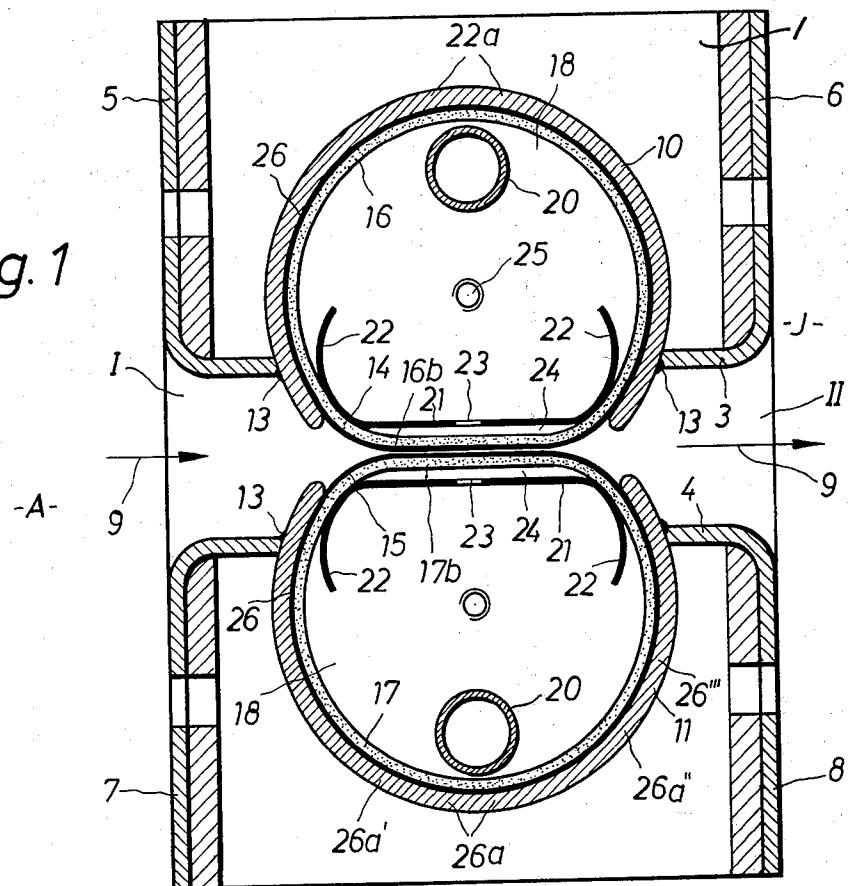


Fig. 2

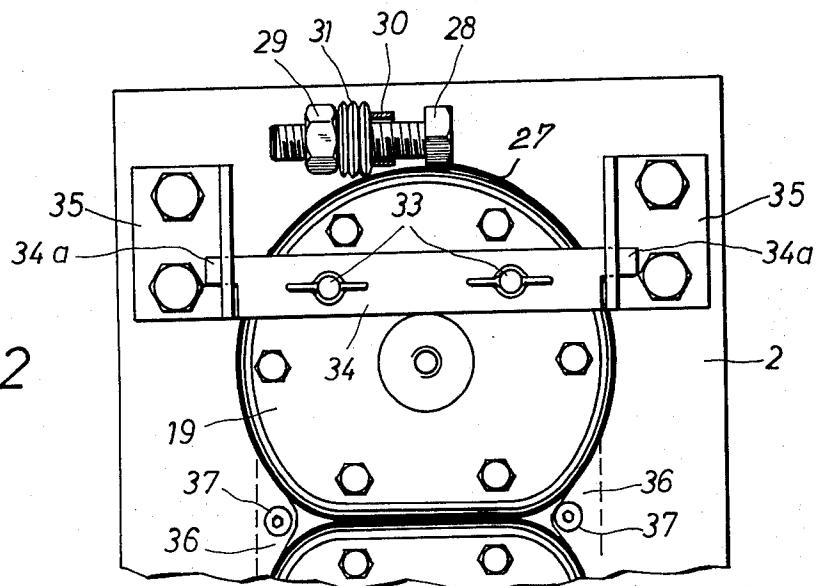
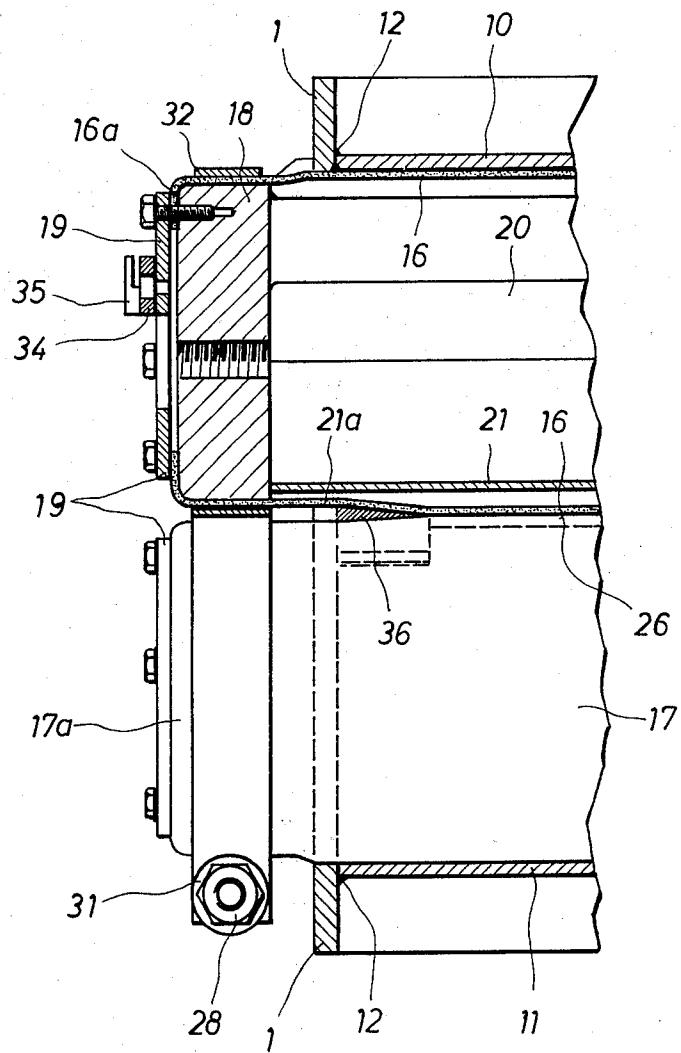


Fig.3



**SEAL FOR TREATMENT CONTAINERS,
ESPECIALLY FOR WIDTH OF TEXTILE GOODS**

The present invention relates to a seal for sealing the inlet and outlet slots of treatment containers, especially for width of textile goods, with two sealing beads extending over the length of said slots and while the goods to be treated are located between said sealing beads are yieldably pressed against each other, said sealing beads being held on parts of the container housing. While the invention is described in connection with textile material, it is to be understood that it also relates to the sealing of pressure or gas containers for any type of web-shaped goods.

Seals of the above mentioned type are generally known, but have the drawback that the sealing bead sections which engage the width of goods are exposed to considerable wear and thus have to be renewed within relatively short time intervals. Therefore, wear-resistant covers in the form of wear-resistant foils have been applied to said beads so that it is merely necessary in case of wear to exchange said covers or foils. The exchange of such foils requires a complete disassembly and removal of the sealing head, a careful and time consuming new covering of the beads, and a likewise time consuming installing of the sealing head into the container housing. These steps not only cause high labor costs, but also require a stoppage and thereby idling of the machine.

It is, therefore, an object of the present invention to provide a seal of the above mentioned general type which will be simple in construction, and will permit an easy exchange of the foils or covers worn during their period of use.

In particular, it is an object of the present invention to provide a seal as set forth in the preceding paragraph which will permit the exchange of the foils in a minimum of time.

These and other objects and advantages of the invention will appear more clearly from the following specification, in connection with the accompanying drawings, in which:

FIG. 1 represents a vertical section through the seal according to the invention.

FIG. 2 is a side view of the seal according to the invention.

FIG. 3 represents a longitudinal view with one end of the seal partially sectioned.

The seal for sealing the inlet or outlet slot for treatment containers, especially of widths of textile goods, according to the invention, with two sealing beads which extend over the slot length while material to be treated is interposed between said sealing beads which are pneumatically or hydraulically pressed against each other, while said sealing beads are held on parts of the container housing, is characterized primarily in that the sealing beads include inflatable hoses which at their ends are closed by sealing discs with pressure fluid inlet and outlet openings, and also are adapted to be pulled out of parts of the container housing in longitudinal direction. The housing parts which hold the sealing beads consist primarily of cylindrical rims which are open at their adjacent sections and at their ends and have a diameter corresponding to the diameter of the inflated hoses, while between said hoses and said rims, wear-resistant foils are adapted to be clamped in.

The invention is based on the idea to form a cylindrical inflatable body which is displaceable in a corresponding cylinder-like hollow body as a part of the housing of the container, said hollow body being open at the ends and alongside. The hose inflated first can, when the inner pressure decreases, be laterally pulled out of the cylindrical hollow body. Due to said inflation, the clamping in of the leaf-shaped and wear-resistant foil between the inner side of the cylindrical hollow body and the cylindrical inflatable body, i.e. the hose will be assured. In other words, when the pressure drops, the hose can easily be withdrawn, whereas when the hose is subjected to the appropriate full pressure, the hose will be held in the rim and simultaneously without employing connecting means, a firm clamping of the wear-resistant foil can be effected. This also means that an exchange of the wear-resistant foil can be carried out without exchanging the sealing head while the width of the goods is between the seals.

According to a further development of the invention, the sealing discs are by spacer members held at a constant distance with regard to each other whereby a hose-shaped inflated body is created which is uniform over its entire length. Between the sealing discs, strips of skid-shaped cross section may be arranged which at their curved edges leave a space between these edges and the associated rim which space corresponds approximately to the thickness of the hose. In this way, an unfavorable deformation of the cross section of the hose will be avoided when the width of goods is pulled through between the wear-resistant foils on both hoses.

The strips are provided with openings for the passage of the pneumatic or hydraulic inflating substance so that on both sides of the skid-shaped strips, substantially identical pressure conditions will exist.

According to a further development of the invention, the hose ends resting on the marginal portions of the discs are held by detachable clamping straps. The rims themselves are designed in the form of pipes or tubes which are open alongside and face each other with their respective longitudinal openings. These pipes are inserted in longitudinal slots of parallel transverse walls of the double wall of the housing.

Referring now to the drawings in detail, the arrangement shown therein comprises two vertical and parallel housing wall parts 1, 2 between which there are provided two parallel web-like wall sections 3, 4 which merge with the walls 5, 6 and 7, 8 of the container housing. The inner side J of the container housing is in FIG. 1 located on the right-hand side, whereas the outer atmospheric side A is located on the left-hand side of the drawing in FIG. 1. The two wall sections 3, 4 form an inlet I and an outlet II respectively for widths of goods moved in the direction of the arrows 9. Between the wall parts 1, 2 there are furthermore provided two parallel pipe sections which are arranged at a predetermined distance from each other and which form the rims 10, 11. The end faces of said rims 10, 11 are at their end faces at 12 (FIG. 3) welded for instance to the walls 1, 2. A similar connection exists between the rims 10, 11 at 13 with the web-like wall sections 3, 4.

The rims 10, 11 are open at the two ends as will be evident from FIG. 3 and have those regions thereof which are located opposite to each other provided with longitudinal openings 14, 15 which extend over the entire length of said rims 10, 11, the length of said longitudinal openings amounting to approximately $\frac{1}{4}$ of the

total circumference of the rims. The rims thus form troughs which are open at both ends and which at 13 are connected to the parts 3,4 and at their ends at 12 are connected to the corresponding housing wall parts.

Arranged within the cylindrical rims 10, 11 are hoses 16, 17 which have a round cross section and the ends of which are pulled over sealing discs 18 (FIG. 3). The bent over end sections 16a, 17a of the hoses are held respectively by closure plates 19. Between the sealing discs 18 respectively associated with a hose 16, 17 there is provided a tubular spacer member 20 and a skid-shaped strip 21 which will in any condition assure a constant length of the sealing element formed by the hose. The bent over longitudinal rims 22 of the strips leave relative to the inside of the rims 10, 11 a distance which corresponds approximately to the thickness of the hose 16, 17 and have that region thereof which faces the straight section extend parallel to the rim wall so that when the widths of goods pass through the seal in the direction of the arrows 9, the hose 16, 17 will cross sectionwise not lose its approximate circular shape, and a good sealing surface between the hoses will be formed in the openings 14, 15 while the hose is pressed over as large a circumferential surface as possible against the rim 10, 11. The skid-shaped strips have a row of openings 23 through which compressed air may pass in a cross sectional chamber 24 which is formed between the straight section of skid 21 and the hose section 16b, 17b.

One or two sealing discs 18 of a hose 16, 17 have an intake and discharge opening 25 for the pressure medium which is to be introduced into the hose.

Between the hose 16, 17 and the rim 10, 11 there is placed a wear resistant foil 26, the length of which corresponds approximately to the spacing of the housing walls 1,2 from each other and the width thereof corresponds approximately to the circumference of the inflated hose 16, 17. The foil 26 is solely by the pressure of the hose 16, 17 held against the inner side of the rims 10, 11 in its respective position. Simultaneously, the hoses 16, 17 at the level of the longitudinal openings 14, 15 of rims 10, 11 will see to it that the two wear resistant foils 26 of both hoses 16, 17 sealingly engage the widths of goods (see arrow 9) while the sealing pressure may be varied in conformity with the pressure in the sealing hoses 16, 17 without the foil disengaging the rim 10, 11.

The exchange of the wear resistant foils 26 is therefore simpler insofar as when reducing the pressure in the hoses 16, 17, these hoses may together with their wear-resistant foils be laterally pulled out from rims 10, 11.

The ends of the hoses 16, 17 are by means of a clamp strap 27 held on the sealing discs while the ends of said clamp strap are held by a screw 28 with nut 29 and a counterbearing 30 with spring 31. For purposes of pulling out the hoses 16, 17 with the wear-resistant foils 26, it is merely necessary to loosen the clamp straps 27 at one hose end.

The cover plate 19 may be provided with wing nuts 33 which extend through a strip 34 and thus are able to connect the strip with the cover plate 19. Laterally provided on the wall parts 1 or 2 are adjusting plates 35 with which the ends 34 of the strip cooperate so that in this way the cover plate 19 and the sealing discs 18 may be adjusted.

The wear-resistant foil 26 may be worn approximately over its entire width which is a considerable advantage over heretofore known seals, whereas in the drawing, the foil rims 26a are located opposite to the openings 23 of the strip 21, the foil may successively be applied to the hose 16, 17 in such a way that for instance the rims will be located at 26a', 26a'', 26a''', etc. Between the ends 21a of the foils there is in a manner known per se inserted a seal gauge 36 which by means of screws 37 is connected to the wall parts 1,2.

It is, of course, to be understood that the present invention is, by no means, limited to the specific showing in the drawings but also comprises any modifications within the scope of the appended claims.

15 What I claim is:

1. In combination in a treatment container having oppositely located side walls with an inner slot and an outlet slot respectively for introducing a width of goods into and withdrawing it from said container, and also having oppositely located end walls, a pair of substantially cylindrical rim means having their ends supported by some of said walls and being arranged in substantially parallel adjacent relationship to each other, those peripheral portions of said rim means which in the longitudinal direction thereof are adjacent to each other being provided with slot means facing each other, two inflatable hoses respectively located in said rim means and approximately parallel to each other bridging the respective pertaining slot means while across said slot means forming yieldable sealing bead means adapted to receive therebetween the width of goods to be treated, sealing disc means arranged at substantially the ends of said hose means and tightly closing the pertaining ends of said hose means, wear-resistant flexible foil means respectively having an inner contour substantially corresponding to the outer contour of said hoses, and while being interposed between the pertaining rim means and the respective pertaining hose surrounding the latter, and conduit means respectively leading into and out of said hoses for selectively and respectively introducing a pressure medium into and releasing it from said hoses.

2. A combination according to claim 1, in which the overall inner width of said wear-resistant foil means corresponds substantially to the overall outer width of the pertaining hose, and in which the length of each of said wear-resistant foils at least approximately equals the distance between said end walls.

3. A combination according to claim 1, which includes spacer means interposed and fitted between said sealing disc means to maintain a constant distance therebetween.

4. A combination according to claim 1, which includes two strip means of skid-shaped cross section respectively interposed between the sealing discs pertaining to said hoses, each of said strip means having a central portion substantially parallel to but spaced from those hose sections which are adjacent to each other and bridge the respective pertaining slot means, each of said strip means also having curved lateral sections curving away from the ends of the respective central portion and the respective adjacent hose portions, so that the space between said curved lateral sections and the adjacent rim portions is at least equal to the thickness of the pertaining hose.

5. A combination according to claim 4, in which said central portions of said strip means are provided with

passage means establishing communication between the interior of the respective hose and the space between the respective central portion and the adjacent hose portion bridging the slot means of the pertaining hose.

6. A combination according to claim 1, in which the ends of said hoses rest on marginal portions of the pertaining sealing discs, and which includes detachable clamping means detachably clamping said ends of said

hoses onto the pertaining sealing discs.

7. A combination according to claim 1, in which said side walls are provided with inwardly bent sections defining said inlet and outlet slots and supporting said rim means.

8. A combination according to claim 1, in which the width of said slot means equals approximately $\frac{1}{4}$ of the circumference of one of said rim means.

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