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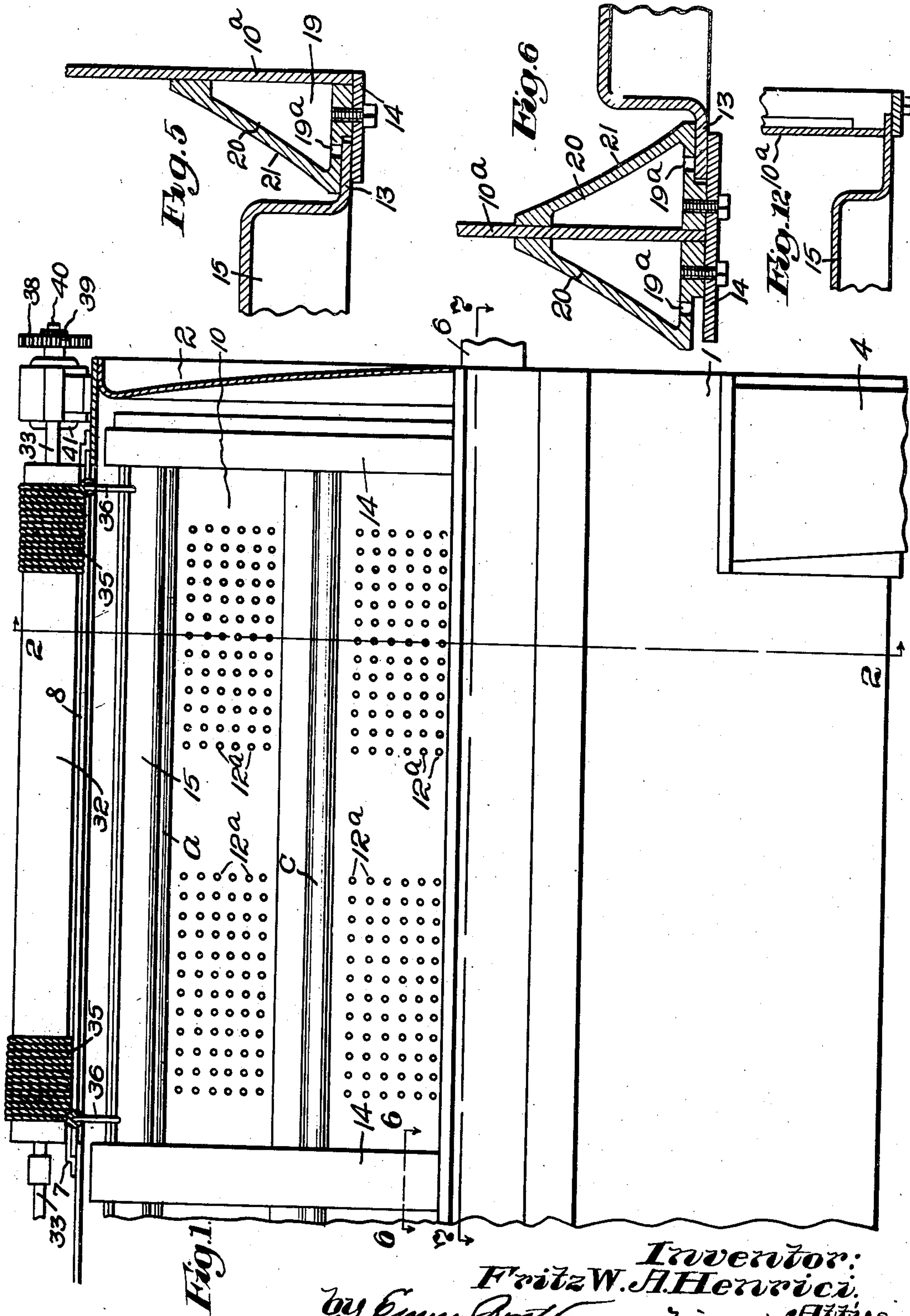
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GOODS TREATING MACHINE AND UNLOADING MEANS THEREFOR

Filed Oct. 14, 1938

4 Sheets-Sheet 1



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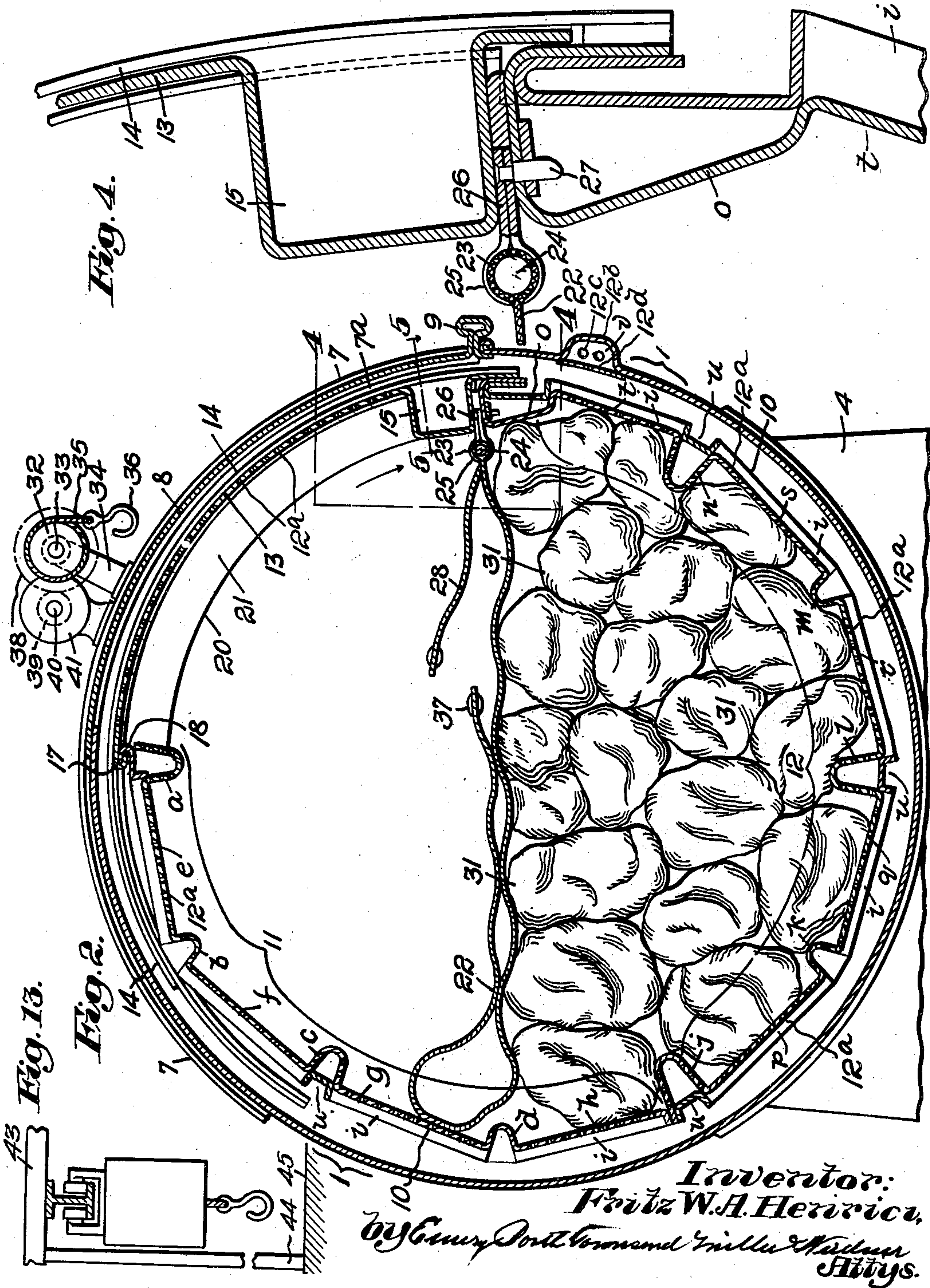
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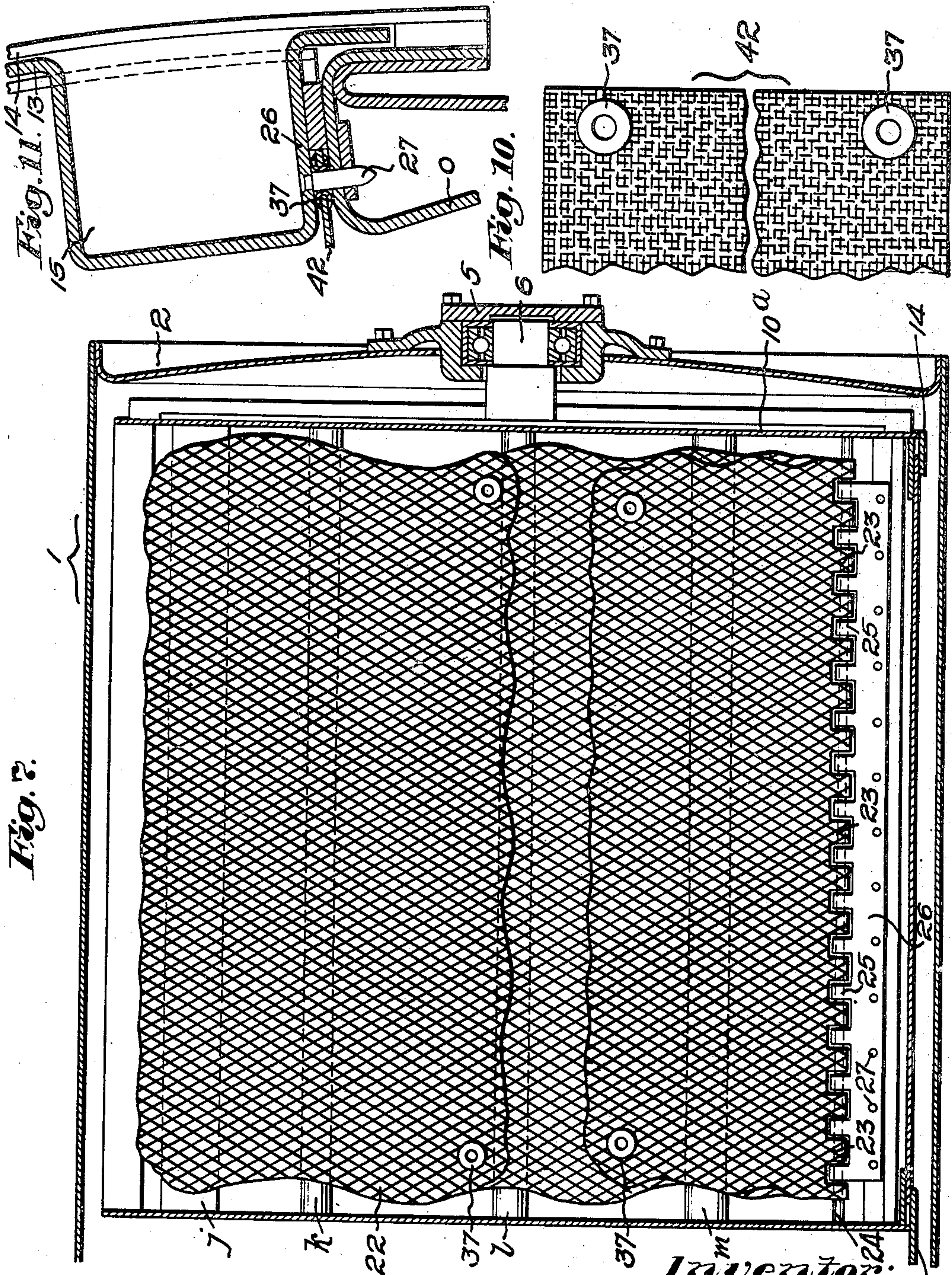


Fig. 2.

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UNITED STATES PATENT OFFICE

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GOODS TREATING MACHINE AND UNLOAD-
ING MEANS THEREFOR

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9 Claims. (Cl. 68—210)

This invention relates to machines for treating textile and other goods in the form of garments, piece goods and small units, with liquid, and especially to washing machines, and more particularly to washing machines of commercial size as used in public laundries and institutions. The invention aims to provide an improved machine of that type having, among other novel features hereinafter recited, an unloading device for the goods.

In the drawings of the particular embodiment of my invention hereinafter illustrated and described:

Fig. 1 is a front elevation, the upper portion of the shell partly broken away, showing one compartment door of the cylinder open;

Fig. 2, a vertical cross section on the line 2-2, Fig. 1, from the left, with the goods to be treated, as laundered, in the cylinder compartment, and the goods-unloading member in position preparatory to operating the machine;

Fig. 3, a like view showing the unloading member in position to unload the goods from the drum, after being treated;

Fig. 4, a partial, vertical, sectional view, on an enlarged scale, of the front wall of the goods-containing cylinder, on the line 4-4, Fig. 2;

Fig. 5, a sectional detail on an enlarged scale, on the line 5-5, Fig. 2, looking down, with the door closed, and showing the joint of the cylinder wall and end, and the novel construction thereof;

Fig. 6, a similar view of the joint of the cylinder wall and the central partition between the cylinder chambers, on the line 6-6, Fig. 1, looking down, with the compartment door closed;

Fig. 7, a horizontal section on the line 7-7, Fig. 1, looking down, showing the goods unloader substantially in the position shown in Fig. 2;

Fig. 8, a detail plan on an enlarged scale, partly broken away, of the unloader shown in Fig. 7;

Fig. 9, a vertical cross section of the same on the line 9-9, Fig. 8, partly broken away;

Fig. 10, a partial plan of a modified form of unloader, partly broken away;

Fig. 11, a detail on an enlarged scale of the same portion of the drum wall, as shown in Fig. 4, showing a modified form of unloader locked in position;

Fig. 12, a detail in section of a modified form of cylinder wall and end construction; and

Fig. 13, a modified form of operating means for the goods-unloading device.

Referring first to Figs. 1, 2, 3, my novel goods-

treating machine, and for illustrative purposes I have selected a washing machine, comprises a shell 1 of desired diameter, length and material, preferably non-corroding metal, the shell having suitable ends, as of cast metal 2.

This shell is carried by any suitable means, as a base 4, herein partly broken away, resting in turn on the floor. Each end of the shell 1 has formed therein, Figs. 1, 2, a bearing 5, to receive the end of the cylinder stub shaft 6, to be described.

The shell, Figs. 1, 2, is provided on its upper portion with a curvilinear guide strip 7 along the circumferential edge of a door opening 7a in the shell, to receive, between it and the shell, the edge of a door 8, with a suitable handle or handles 9, by means of which the door of the opening in the shell may be readily opened or closed.

Within the shell 1, and carried by the stub shaft or axle 6, Figs. 1, 7, is a cylinder-like goods-container 10, of one or more chambers or compartments longitudinally arranged.

My novel cylinder, Fig. 2, is preferably composed of two circumferential segmental sheets 11, 12, although one or many may be used, one segment being large enough to be fashioned to provide the alternately arranged, longitudinal bars *a, b, c, d*, and plates *e, f, g, h*, perforated as at 12a, with a longitudinal flange *i*, while the other segmental section is similarly fashioned to provide bars *j, k, l, m, n*, and *o*, and plates *p, q, r, s* and *t*, similarly perforated, with a flange *i*, the two segments being welded together, and which I regard as stronger and less expensive than an assembled cylinder of many separate plates and bars. In the open edges of some of the bars is provided, as by welding, an angle bar *u*, to secure rigidity for the cylinder wall.

These bars strengthen the cylinder, and assist in the washing or other process by acting to prevent the goods from becoming bunched up, and by keeping them moving within the cylinder. Each cylinder compartment has its circumferential wall, extending from the bar *a* to the bar *o* on the right, cut away to provide an opening for the insertion and withdrawal of goods. The shell, as at 12b, is provided with a combined bumper bar and water channel *v*, which admits water or other liquid through opening 12c in its end, and which liquid enters the cylinder, as through opening 12d therein.

The cylinder, Fig. 2, is provided at said opening with a segmental-like door 13 for each compartment, which door slides between the over-

hanging edges of guide strips 14 on the cylinder outer wall and the cylinder outer wall itself, the door being provided at its lower edge with a hand pocket 15 for moving it, the rear door edge 5 17 being inturned, if desired, to engage when closed a similarly outturned edge 18 on the bar *a*. The joint of the cylinder wall 10 and its ends 10*a* and strip 14 may be, as shown in Fig 7, welded or otherwise secured, but this construction and corresponding end wall, not shown, are a disturbing feature, as, in withdrawing the goods from the cylinder, the goods tend to collect or bunch up at that joint, and thus retard withdrawal of them, and create danger of tearing them during withdrawal. To overcome this difficulty, Figs. 5, 6, I fill the area 19 at such joint with a fillet 20 of metal, which provides a curved, smooth surface 21, over which the goods will slide freely, through an angular path 20 to the door. This fillet extends from the lower edge to the upper edge of the door opening. Its outer edge is provided with apertures 19*a*, by means of which one can have access to the interior to assemble it with the cylinder, as by welding.

In using this type of power washing machine, as at present constructed, a great inconvenience is the difficulty of removing the goods from the cylinder. When the goods are thoroughly soaked 30 with liquid, they are very heavy. Frequently, a cylinder chamber full of goods, when wet, will weigh 600 pounds, and cannot be lifted bodily from the cylinder by a single operator. They must be drawn out part at a time, and this proceeding is slow and apt to result in tearing some of the goods, if not carefully done.

To avoid this difficulty, I have provided the cylinder of my machine disclosed herein with a novel goods-unloading device.

40 This device, Figs. 2, 3, 4, 7, comprises, as shown, a flexible cylinder-blanketing and goods-unloading blanket 22, made of any material that is sufficiently strong and flexible to answer the purpose. A knitted member, as a net, Figs. 2, 3, 8, of textile material, or of canvas, Fig. 10, metal or any flexible material, may be used. This blanket is wider than the diameter of the cylinder, and preferably as long as the compartment in which it is used, and is provided, at a convenient point 50 or points, with suitable means for securing it to the cylinder inner wall, after the goods have been washed.

In Figs. 2, 8, the blanket is shown as folded, and fashioned longitudinally to form a plurality 55 of aligned, but longitudinally spaced loops 23, through which a rod 24 may be inserted, the rod also passing through similar co-operating longitudinally spaced sleeves 25, formed on the edge of a locking plate 26 of suitable material, as metal, or any other suitable material, which in turn is locked to the cylinder's inner wall, as by pins 27 thrust through holes 27*a* in the plate 26, Fig. 9, and into the reinforced bar *o*, Figs. 2, 4, there being as many of such pins as necessary, to 65 provide means for securely anchoring the blanket edge to said bar preparatory to positioning the blanket beneath the goods after the washing action is completed. The upper folded flap portion 28 of the blanket may be long enough to enable 70 it to be grasped by the operator when unloading the cylinder, or to be also engaged by the hooks 36, Fig. 3, with the free end of the blanket and the blanket and goods lifted bodily from the cylinder.

75 The main cylinder portion of the blanket is

wide enough, Fig. 3, after it is attached to the cylinder to unload the goods, to blanket the cylinder wall and lie beneath the goods in the drum and provide the free end 28, to be used when unloading the goods, Fig. 3, as described above. 5

While the drum may be rotated in each direction, if desired, during the washing action, it preferably should be rotated clockwise as indicated by the arrow, Fig. 3, a few times at the end of the washing period and after the unloader 10 is attached to the cylinder, to be more certain to position the blanket as desired. If desired, however, obviously the direction of rotation need not be clockwise, as stated, and the blanket will accordingly position itself over the goods, and with 15 the blanket free end enwrapped about the goods and pointing in the direction in which the cylinder has been rotated.

For removing the blanket and contained goods, Figs. 1, 2, 3, means are provided, herein comprising a roll 32, having a shaft 33 journaled in brackets 34 on the shell 1, the roll carrying as many ropes or chains 35 as needed, and provided with hooks 36, or other suitable means for engaging the end, or ends of the blanket, as through 25 eyelets 37, and lifting and ejecting it with the goods free from the cylinder.

The shaft 33 carries a gear 38, which meshes with a pinion 39 on a shaft 40 in a bearing 41 on the shell 1. The pinion may be driven by a motor, 30 not shown, or any suitable means, and thus the free end, or both ends, of the blanket may be drawn upward and forward, Fig. 3, and, with the goods, withdrawn through the door of the drum and shell, and dropped either into a basket, not shown, from which they may be dumped into a water extractor, or dumped into a basket on a car for conveying the goods to any other place. 35

Or, instead of mounting the unloader operating mechanism on the shell, it may be, Fig. 13, 40 mounted upon a support 43, or any upright member 44, broken away, conveniently positioned on the floor-like pattern 45, and the rope 35 used as described.

While a knitted sheet has some advantage, permitting the water in the clothes to escape readily, 45 a sheet 42 of woven material, Fig. 10, as canvas, rubber, woven wire, or other similar material, as stated, may be used with good satisfaction.

Obviously, the blanket, having one edge secured 50 to the cylinder, may be grasped by an operator at its opposite free edge and drawn with the goods, if not too large a mass, through the cylinder door, without any outside mechanism, more easily than the goods can be removed as they are now. 55

My invention is not limited to the precise construction shown herein, but may be modified in many details, without departing from the spirit of the claims, and within the scope thereof. 60

I claim:

1. In the art of treating goods comprising a plurality of individual pieces in a rotatable chamber, the method of collecting and enveloping in an enwrapping member, for removal as one lot, 65 the contents of the chamber, said method comprising introducing into the chamber above the treated goods a flexible goods-enwrapping member of sufficient length to surround the goods, attaching one end of said member to a side wall 70 of said chamber, the other end and sides of said enwrapping member being free, subsequently subjecting the chamber and enwrapping member to joint rotation at a speed permitting the goods to respond to the action of gravitational force, 75

thus causing the enwrapping member to wrap itself circumferentially within the chamber completely about the goods, leaving both ends above the goods in the unloading position of the chamber, seizing at least one of said ends through the door opening and withdrawing said enwrapping member with the goods therein from the chamber.

2. A goods treating machine comprising a supporting casing and a horizontal goods receiving cylinder with a door in its cylindrical wall, means for rotating said cylinder, a goods unloader lifting means on the casing, and a removable goods-unloader comprising a sheet of flexible material provided with means cooperating with said unloader lifting means and provided with a cylinder engaging part attached to the cylinder wall at one edge only to position said edge of the flexible sheet with respect to the goods leaving the remainder of the sheet free, whereby rotation of the cylinder causes the flexible sheet to enwrap itself about the goods within the cylinder, leaving one free edge of said flexible sheet exposed on top of the goods; and means for operating said lifting means for withdrawing said flexible sheet with the enwrapped goods from the machine.

3. A goods treating machine comprising a horizontal rotatable goods receiving cylinder provided with a door in its cylinder wall, and a goods-unloader member withdrawable through the door opening and comprising a sheet of flexible material having cylinder and door engaging means at one edge and attached thereby to the cylinder to position said edge of the sheet with respect to the goods, the other edges of the sheet being free whereby rotation of the cylinder causes the sheet to enwrap itself about the goods leaving one free edge exposed for unloading.

4. A machine of the kind described in claim 3 wherein the goods unloader member is provided at its exposed free edge with means adapted to cooperate with lifting means operated through said door opening.

5. A goods treating machine comprising a shell, a goods receiving cylinder with a door rotatable within said shell, and a goods-unloader member adapted to be inserted in said shell and cylinder after the goods comprising a sheet of flexible material of a width not substantially greater than the door opening and provided with a supporting bar at one edge attachable to the inner wall of the cylinder, whereby the goods unloader member is secured within the cylinder with its free end on top of the goods, whereupon rotation of the cylinder causes the goods unloader member to enwrap itself with and about the goods with its free end exposed on top of the goods in unloading position, so as to be accessible to hoisting means positioned outside of said shell for engaging said end of the unloader member and lifting it and the goods enwrapped therein to the door for removal from said cylinder.

6. A machine of the kind described in claim

5 wherein the cylinder is provided with fillet members at the joints of its circumferential wall and ends adjacent said door opening filling the angle spaces at the ends of said door opening and providing a smooth path to the door for the goods in the unloader.

7. A goods treating machine comprising a rotary cylinder and a goods unloader therefor, said cylinder having a door opening in its circumferential wall and unloader attaching means adjacent thereto, said unloader comprising a flexible sheet longer than the goods supporting portion of the inner perimeter of the cylinder and having near one edge a cylinder engaging part secured to the attaching means on the cylinder wall, said unloader being freely movable otherwise with respect to the cylinder wall whereby rotation thereof with the cylinder causes its free edge to become enwrapped about the goods therein, and said unloader having means adjacent to its edges for engagement by lifting means including members insertable through said door opening for removing said unloader member and the goods enwrapped therein from the cylinder.

8. A goods treating machine comprising a rotary cylinder and a goods unloader therefor, said cylinder having a door opening in its circumferential wall and unloader attaching means adjacent thereto, a fillet in the angle between the end wall of said cylinder and said door opening, the exposed face of said fillet sloping towards the latter, said unloader comprising a flexible sheet longer than the goods supporting portion of the inner perimeter of the cylinder and having near one edge a cylinder engaging part secured to the attaching means on the cylinder wall, said unloader being freely movable otherwise with respect to the cylinder wall whereby rotation thereof with the cylinder causes its free edge to become enwrapped about the goods therein, and said unloader having means adjacent to said free edge for engagement by lifting means including members insertable through said door opening for removing said unloader member and the goods enwrapped therein from the cylinder without injury to said goods.

9. In a goods treating machine comprising a rotary goods-treating cylinder having a door opening in its circumferential wall and unloader attaching means adjacent thereto, an unloader comprising a flexible sheet longer than one-half the inner perimeter of the cylinder and having near one edge a cylinder engaging part secured to the attaching means on the cylinder wall, said unloader being freely movable otherwise with respect to the cylinder wall whereby rotation thereof with the cylinder causes its free edge to become enwrapped about the goods therein, and said unloader having means adjacent to both said edges for engagement by lifting means including members insertable through said door opening for removing said unloader member and the goods enwrapped therein from the cylinder.

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