Mar. 3, 1925. 1,528,133

M. J. ROSS

PISTON CONVEYER

Filed July 15, 1924 2 Sheets-Sheet 1

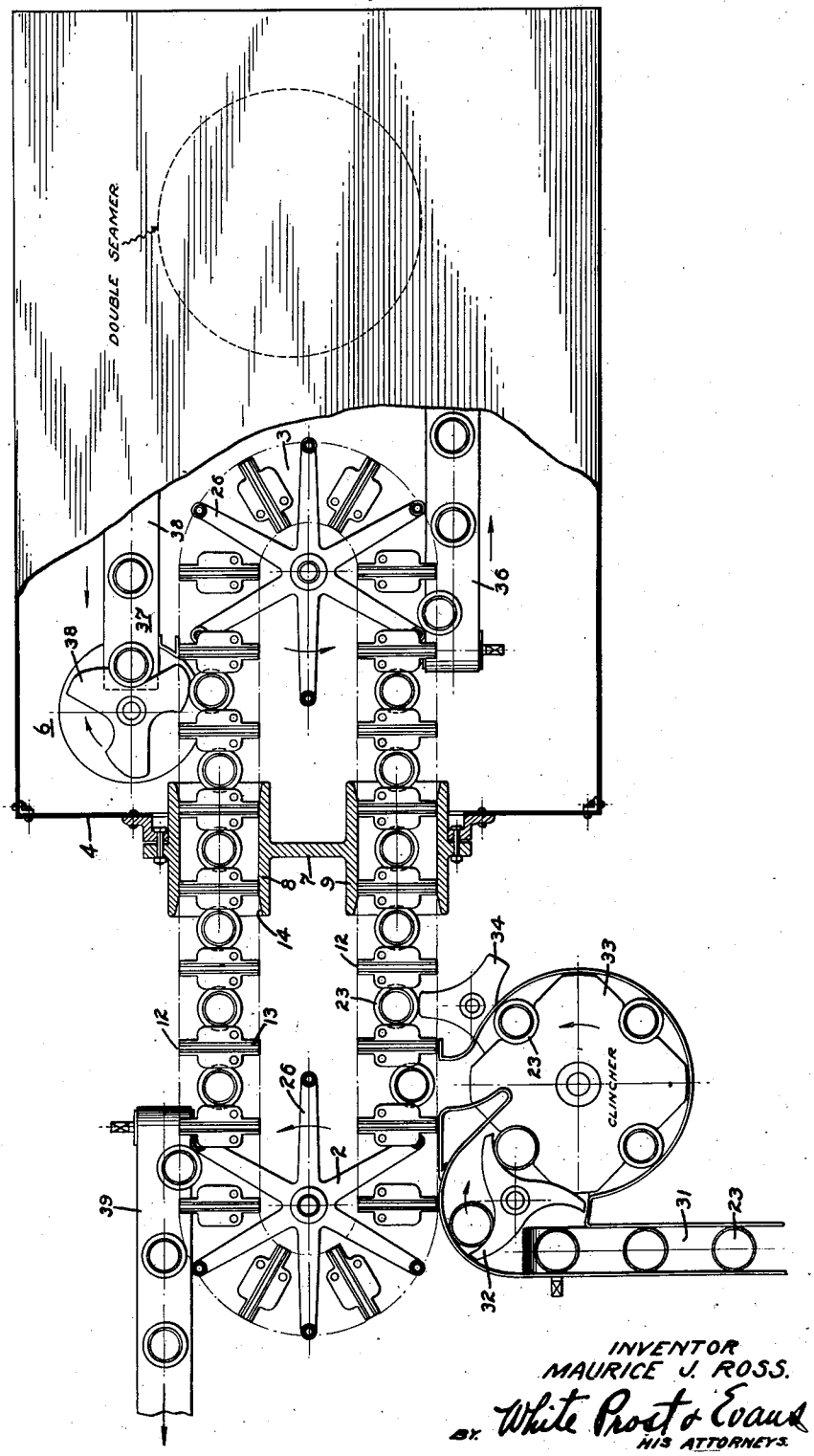


FIG. 1.

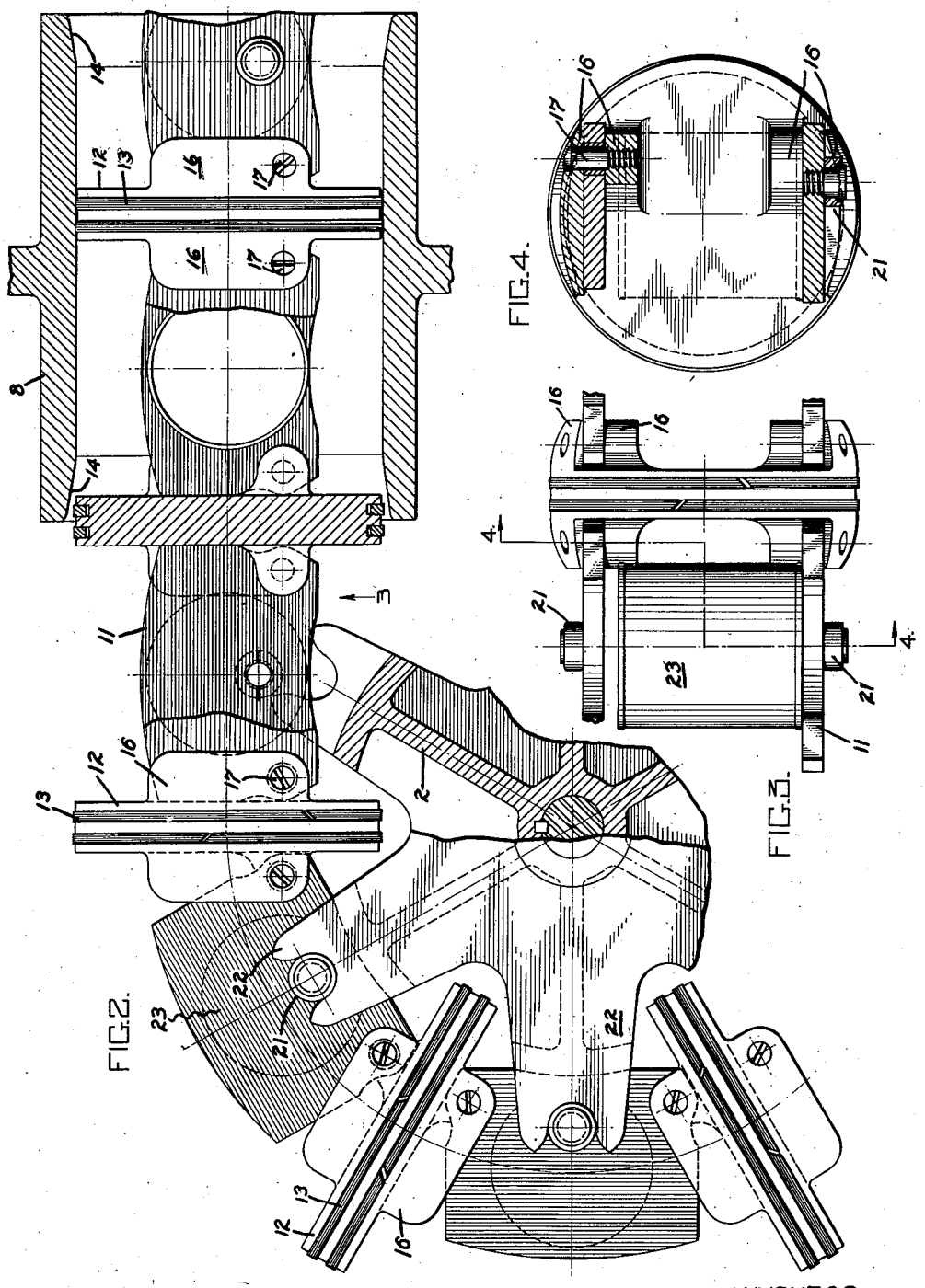
INVENTOR
MAURICE J. ROSS.
BY White Prost & Evans
HIS ATTORNEYS.

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INVENTOR
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UNITED STATES PATENT OFFICE.

MAURICE J. ROSS, OF SAN FRANCISCO, CALIFORNIA.

PISTON CONVEYER.

Application filed July 15, 1924. Serial No. 726,213.

To all whom it may concern:

Be it known that I, MAURICE J. ROSS, a citizen of the United States of America, and a resident of the city and county of San Francisco and State of California, have invented a new and useful Piston Conveyer, of which the following is a specification.

My invention relates to conveying mechanism and particularly to apparatus for moving receptacles into and out of a vacuumized chamber.

One of the objects of the invention is the provision of a conveyer for introducing cans into the vacuum chamber surrounding a double seamer and removing the cans from such chamber without breaking the vacuum.

Another object of the invention is the provision of a chain conveyer of the type described in which the links lock rigidly in alinement as they turn into the reaches of the conveyer, so that the reaches tend to assume a bar-like rigidity and the pistons embodied in the chain properly engage in the cylinders thru which they pass into and out of the vacuumized chamber.

My invention possesses other objects and features of advantage, some of which, with the foregoing will be set forth in the following description of my invention. It is to be understood that I do not limit myself to the showing made by the said description, as I may adopt variant forms of the invention within the scope of the claims.

Referring to the drawings:

Figure 1 is a plan view of my apparatus as used to transfer a succession of cans from a clincher into a vacuumized chamber where they are acted upon by a double seamer and then convey them out of the chamber.

Figure 2 is a detail partly in horizontal section, and showing a portion of the conveyer and one of the cylinders.

Figure 3 is a view in elevation, and from the direction of the arrow 3 shown in Figure 2, of one of the pistons with the connecting can-enclosing links.

Figure 4 is a transverse sectional view of one of the pistons and the connecting links, the planes of the section being indicated by the line 4—4 of Figure 3.

The apparatus of my invention comprises a pair of sprocket wheels 2 and 3 arranged on opposite sides of the wall 4 of the vacuumized chamber 6 in which a double seamer of the usual type is arranged. Since the double seamer forms no part of my present invention, it will not be described and will be referred to herein by name, as typical of any machine for operating upon an object in a closed container under vacuum or under pressure.

Fixed on the wall 4 of the tank is a frame 7 including two tubes forming cylinders 8 and 9 with open ends, so that each provides a cylindrical passage thru the wall.

Arranged on the sprocket wheels 2 and 3 and extending thru the cylinders 8 and 9 is an endless chain comprising the links 11 spaced apart in pairs on each side of the pistons 12, and pivotally connected to the pistons after the fashion of a knuckle joint. The pistons 12 are provided with piston rings 13 which form a tight working fit within the cylinders, the edges 14 of which are coned out to facilitate the entrance of the ringed piston.

Projecting from the opposite faces of each piston are pivot pin lugs 16, a groove being provided between each pair of lugs in which the end of the link may engage with a working fit to prevent side play. The link is pivotally connected to the piston at one side of the axis of the piston by a pivot pin 17, and since the end faces of the links are parallel, the links are adapted to seat against the pistons, as in a knuckle joint, when the links move off of the sprocket wheels, so that the reaches of the chain are rigid and the successive pistons approach the cylinders in proper alinement. Rollers 21 mounted on the outside of each link carry the chain on the sprocket arms 22 of the sprocket wheels, the pistons lying between the sprocket arms as shown in Figure 2. Because of the close fit of the links in the lugs, there is no material movement of the chain laterally.

The links 11 of each pair are spaced apart laterally, sufficiently to accommodate therebetween the cans 23 which are to be handled; and disposed on each sprocket wheel are arms 26 which act as ejectors with the rotation of the sprockets to remove the cans from the conveyer.

Referring now to Figure 1, a succession of cans 23 is carried by the conveyer belt 31 and star wheel 32, both of conventional design, into the clincher, generally designated by the reference character 33, from which the cans emerge and pass between the links 11 of my piston conveyer. The rate of travel of the conveyer is synchronized by well known devices with the rotational

speed of the clincher, so that the chain is in position to receive a can when it leaves the clincher. In order to position the can upon the conveyer a star wheel 34 connected by suitable means for synchronous rotation with the conveyer chain is so arranged that the arms of the wheel engage the can between the links of the chain and push it into the desired position as the chain moves by the wheel.

The can now enters the cylinder 9 and since the spacing of the piston on the chain is less than the length of the cylinder, there is always a piston in the cylinder to prevent loss of the vacuum or pressure within the chamber 6. Obviously some loss proportioned to the space between the pistons occurs, but with suitable vacuum or pressure means this is negligible. After reaching the inside of the chamber the can is ejected from the chain by contact with one of the arms 26 and is conveyed by the belt 36 of conventional design, into the double seaming or other mechanism. Emerging from this mechanism, the can is caught by the belt 37, and by means of the star wheel 38 of conventional design is replaced on the chain and carried out of the chamber 6 thru the cylinder 8, then being ejected by the arms 26 on the sprocket wheel 2, upon a table or conveyer 38 which carries it to the next operating station.

It is of course obvious that all parts of the apparatus must be synchronized to run in step, but this is common practice in the art and accomplished by well known means which will need no description here, since such mechanism forms no part of my present invention.

I claim:

1. A conveyer comprising a cylinder, an endless chain including load-bearing links and having one reach passing thru said cylinder, and pistons fitting said cylinder arranged on said chain at intervals less than the length of the cylinder.

2. A conveyer comprising a cylinder, an endless chain including load-bearing links and having one reach passing thru said cylinder, and pistons fitting said cylinder arranged between the links at intervals less than the length of the cylinder.

3. A conveyer comprising a cylinder, an endless chain including load-bearing links and having one reach passing thru said cylinder, and pistons fitting said cylinder and pivotally connecting adjacent links, the spacing of said pistons being less than the length of the cylinder.

4. A conveyer comprising a cylinder, an endless chain including load-bearing links and having one reach passing thru said cylinder, and pistons fitting said cylinder and pivotally connecting adjacent links.

5. A conveyer comprising a cylinder, an endless chain including load-bearing links and having one reach passing thru said cylinder, pistons fitting said cylinder and pivotally connecting adjacent links at one side of the axis of the piston, and shoulders on the links opposite the pivoted connections of such proportions as to engage the pistons when adjacent pistons are parallel.

6. A conveyer comprising a cylinder, a plurality of pistons fitting the cylinder and each having on each face pivot pin lugs at one side of the axis of the piston, and links pivotally connected to said lugs and having parallel end faces adapted to seat upon the adjoining faces of the connected pistons to maintain adjacent pistons in parallelism.

7. A conveyer comprising a cylinder, a plurality of pistons fitting the cylinder and each having on each face pivot pin lugs at one side of the axis of the piston, a pair of spaced links pivotally connected to said lugs between each two pistons, to form an endless chain, each link having parallel end faces adapted to seat upon the adjoining faces of the connected pistons to maintain adjacent pistons in parallelism.

8. In combination with a closed receptacle, a tube forming a cylinder arranged thru the wall of the container, a chain including load bearing links disposed thru said cylinder, and pistons fitting the cylinder arranged on said chain at intervals less than the length of the cylinder.

9. In combination with a closed receptacle, a tube forming a cylinder arranged thru the wall of the container, a chain including load bearing links disposed thru said cylinder, and pistons fitting said cylinder pivotally interposed between adjacent links to form knuckle joints therewith, the spacing between the adjacent pistons being less than the length of the cylinder.

10. In combination with a closed receptacle, a tube forming a cylinder arranged thru the wall of the container, a chain including load bearing links disposed thru said cylinder, pistons fitting the cylinder arranged on said chain at intervals less than the length of the cylinder, and means for moving the loads to and from the load bearing links.

11. In combination with a closed receptacle, a tube forming a cylinder arranged thru the wall of the container, a chain including load bearing links disposed thru said cylinder, pistons fitting the cylinder arranged on said chain at intervals less than the length of the cylinder, a sprocket wheel for carrying one end of the chain, and arms on said wheel for moving the loads from the load bearing links.

12. An apparatus for moving receptacles into and out of a vacuumized chamber comprising a pair of tubes forming cylinders arranged thru the chamber wall, an endless chain including load-bearing links passing

thru said cylinders, and pistons fitting said cylinders arranged on said chain at intervals less than the length of the cylinders.

13. An apparatus for moving receptacles into and out of a vacuumized chamber comprising a pair of tubes forming cylinders arranged thru the chamber wall, an endless chain including load-bearing links passing thru said cylinders, pistons fitting said cylinders arranged on said chain at intervals less than the length of the cylinders, and means for loading and unloading the chain on each side of the chamber wall.

In testimony whereof, I have hereunto set my hand.

MAURICE J. ROSS.