

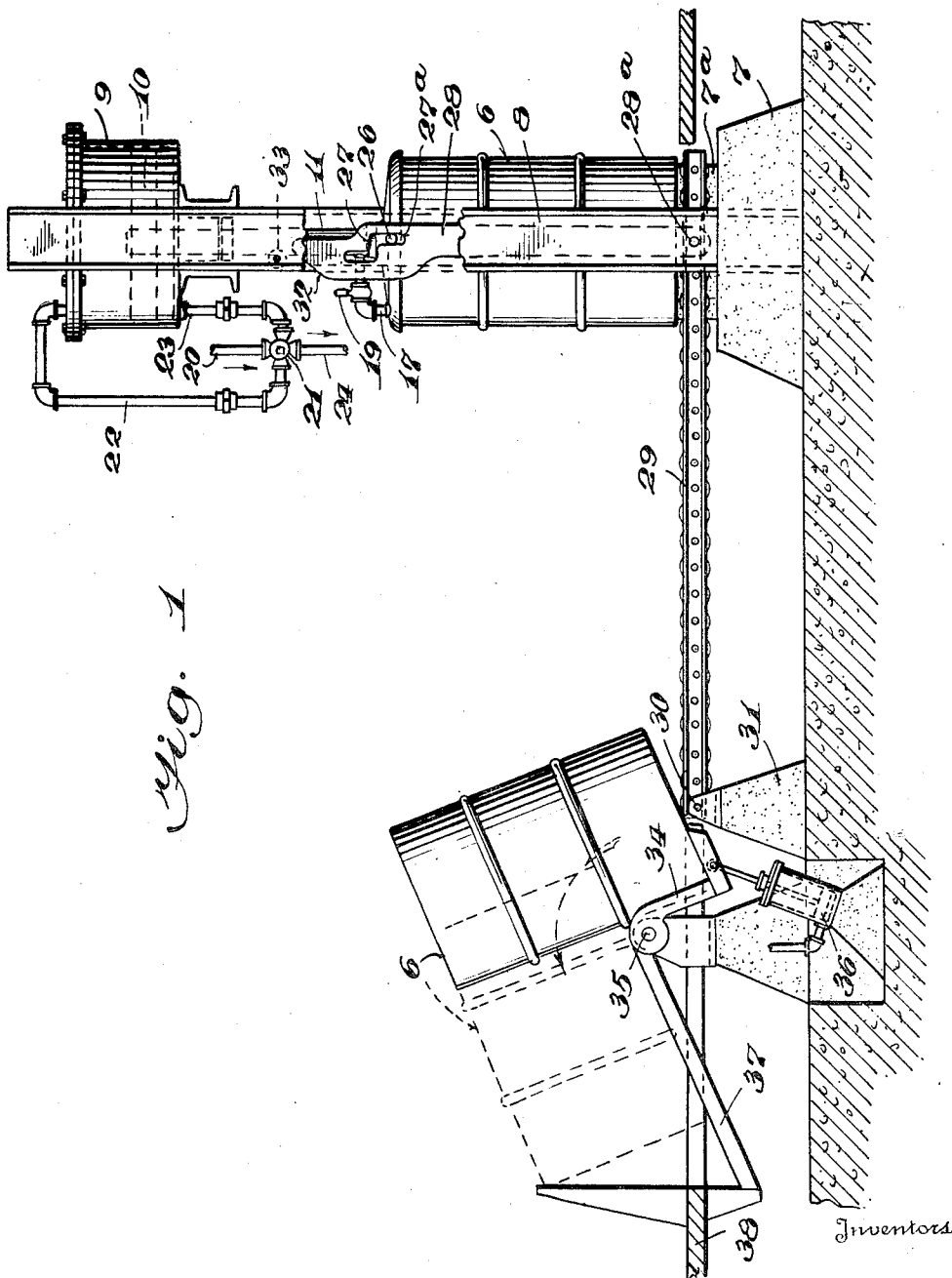
Feb. 8, 1944.

B. D. TITUS ET AL

2,341,128

RECEPTACLE CONVEYING AND UNLOADING APPARATUS

Original Filed April 18, 1942 2 Sheets-Sheet 1



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Fig. 3

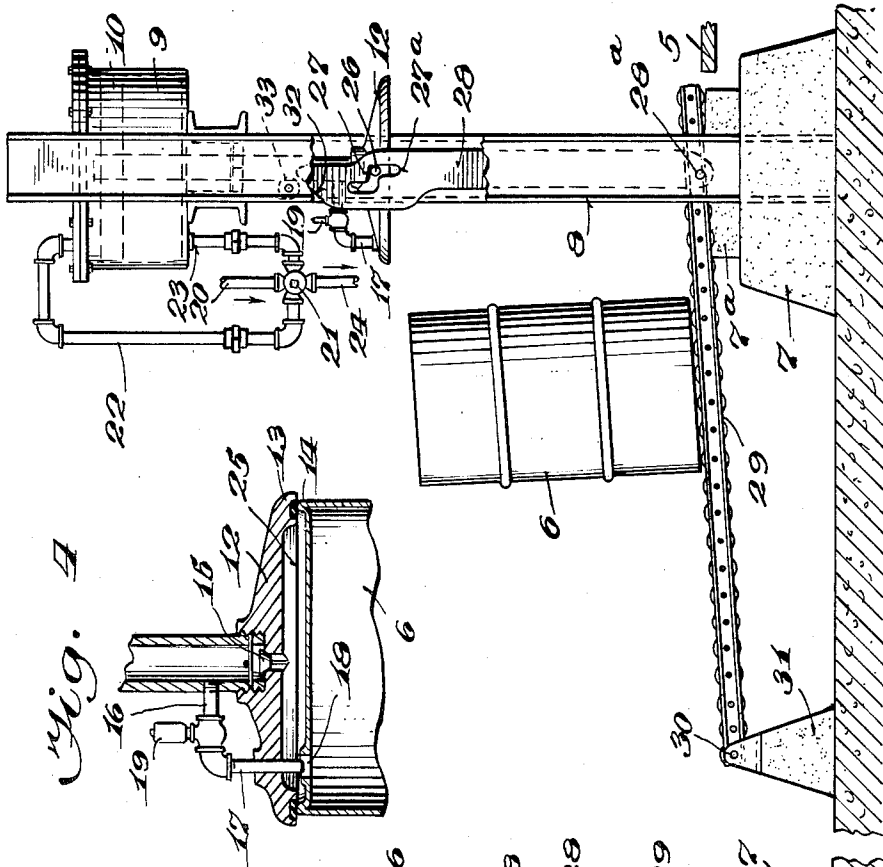


Fig. 4

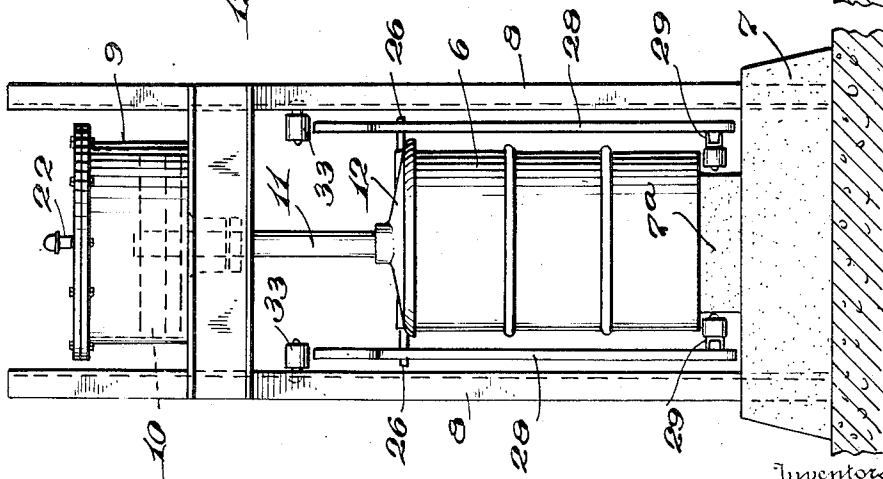
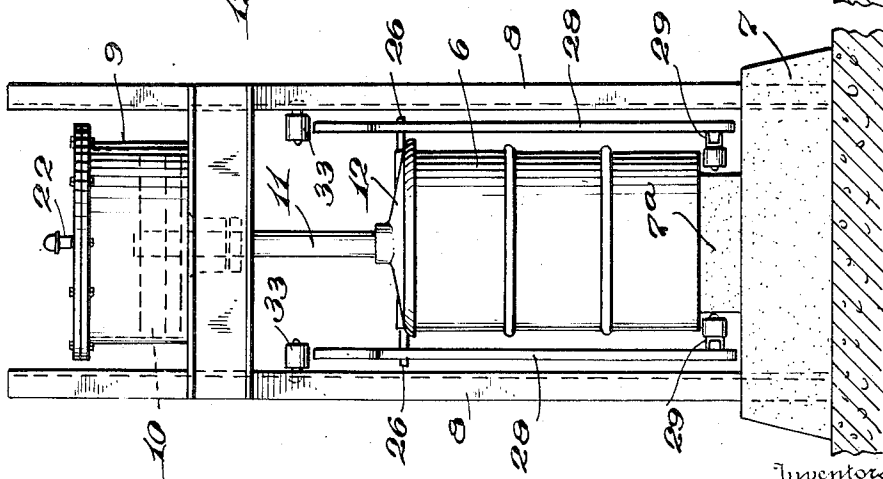


Fig. 2



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RECEPTACLE CONVEYING AND UNLOADING APPARATUS

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Original application April 18, 1942, Serial No. 439,588. Divided and this application February 12, 1943, Serial No. 475,664

4 Claims. (Cl. 214—1)

This invention relates to receptacle conveying and unloading apparatus of the type disclosed in our application Serial No. 439,588, dated April 18, 1942; of which the present application is a division.

In our parent application, we have disclosed and claimed a method of and apparatus for straightening metal barrels or the like, and although our present invention was designed for use therewith, it will be evident that it may be used for other purposes.

One of the objects of the invention is to provide an apparatus for automatically discharging a receptacle from a station.

Another object is to supply an apparatus for dumping the receptacle and discharging the contents thereof after it has been transferred from said station.

With the foregoing objects outlined and with other objects in view which will appear as the description proceeds, the invention consists in the novel features hereinafter described in detail, illustrated in the accompanying drawings, and more particularly pointed out in the appended claims.

In the drawings:

Fig. 1 is a side elevation of our apparatus, partly broken away to facilitate illustration.

Fig. 2 is an end elevation of the apparatus.

Fig. 3 is a view similar to Fig. 1, with certain parts removed and illustrating the manner of discharging a barrel after straightening.

Fig. 4 is a vertical sectional view of a detail of the apparatus and the upper end portion of a barrel.

It is believed that the invention will be best understood by describing it in connection with our method and apparatus for straightening metal barrels or the like.

Referring to the drawings, 5 designates a platform employed in placing barrels 6 made of metal or other malleable material in the machine. The latter comprises a foundation 7 supporting an abutment 7a and rigid posts 8 which are spaced apart and rigidly support a cylinder 9.

A piston 10 is arranged to move upwardly and downwardly in the cylinder and carries a depend hollow piston rod 11 provided at its lower end with a disk or head member 12 having a downwardly extending rim 13 (Fig. 4) designed to make a seal with the chime 14 of the barrel. The passageway through the piston rod is normally closed at the lower end by a check valve 15 adapted to open upwardly. A conduit or passageway 16 connects the piston rod and head,

and has a nozzle 17 adapted to register with the bung hole 18 in the head of the barrel, while the barrel rests on the abutment 7a. A loaded valve 19 is interposed in the conduit and adapted to open toward the nozzle when sufficient pressure is exerted within the hollow piston rod.

Water or any other suitable liquid is supplied to the apparatus, under pressure, through a pipe 20 connected to one branch of a multi-way hand operated valve 21. One of the lateral branches of the valve is connected to the top of the cylinder 9 by a pipe 22, and the opposite lateral branch is connected to the bottom of the cylinder by a pipe 23. A waste pipe 24 is connected to the bottom branch of the valve.

Assuming the piston 10 and head 12 are in uppermost position and a barrel is properly placed on the abutment 7a, to be clamped by the head, if the control member of the valve 21 is moved to place the pipe 20 in communication with the pipe 22, liquid under pressure will flow into the top of the cylinder and force the piston and disk 13 downwardly until the latter is halted by the barrel. Then, as the liquid continues its flow into the cylinder, sufficient pressure will be built up to open the valve 19 to allow the liquid to flow through the conduit 16 and hole 18 into the barrel, and such flow will continue until the barrel is filled or substantially filled. Meantime, the air within the barrel will be displaced into the cavity 25 of the head and will be put under pressure. The barrel is now ready to be straightened. This is accomplished by the operator who delivers a series of sharp blows with a hammer at the dented area of the barrel. With each blow of the hammer, the liquid inside the barrel returns the blow with equal force on the reverse side of the metal, thus forcing the dent or dents out and restoring the barrel to its original shape. The operator now manipulates the valve 21 to close off the supply of liquid to the top of the cylinder 9, which permits the compressed air on top of the barrel head to expand, opening check valve 15, thus releasing all pressure both in the barrel and in the cylinder, through the medium of the hollow piston rod.

At this point it may be noted that the air, originally in the barrel at atmospheric pressure when the barrel was placed in the machine, cannot escape except to the chamber 25, and such air will therefore be compressed as the water rises in the barrel until it finally attains a pressure equal to the hydraulic pressure exerted by the machine.

After the pressure has been released, the oper-

ator moves the control valve 21 to a position to place the pipe 20 in communication with the pipe 23, so that water is admitted to the cylinder below the piston to force it upwardly, discharging as it moves upward, the water on top of the piston through the pipes 22 and 24.

As the piston rises, lugs or lifting elements 26 which are rigidly connected to diametrically opposite sides of the head 12, will also rise from the lower ends of slots or guideways 27a in arms 28, and engage shoulders 27 forming parts of the slots. As the lower end of each of these arms is hingedly connected at 28a to one side of a roller conveyor section 29, the latter will swing upwardly about a horizontal pivot 30 arranged on a suitable support 31. Due to this construction, as the head rises, it will first move away from the top of the barrel, and then lift one end of the conveyor so that the barrel (Fig. 3) will travel downwardly toward the pivotal point 30 by gravity. When the head 12 rises to a predetermined height, cam surfaces 32 at the upper ends of the arms will be brought into engagement with rollers 33 mounted on stationary horizontal axes on the posts 8. This will cause the arms to be swung in a clock-wise direction (Fig. 1) to release the shoulders 27 from the lugs 26, so that the pivoted conveyor section will return to its normal horizontal position. Of course, when the barrel has travelled part way down the conveyor due to gravity, it can move the remainder of the way due to momentum, although the conveyor has returned to horizontal position. Momentum will also cause the barrel to come to rest on an angular dump rack 34 (Fig. 1), swung about a horizontal axis 35 by means of a hydraulic ram 36 which functions to force the barrel on to a draining rack 37 where the water discharges before the barrel is removed along tracks 38.

When the head 12 is again lowered to engage the top of another barrel, the lugs 26 will travel downwardly in the slots 27a from the upper to the lower ends of the latter.

It is to be understood that the embodiment of the invention herein disclosed is to be taken as an example only, and that our improvements may be embodied in any suitable combination and arrangement of parts falling within the terms of the appended claims.

What is claimed and desired to be secured by Letters Patent is:

1. In combination, a conveyor adapted to be swung upwardly and downwardly about a horizontal pivot, a member movable toward and away from the free end portion of said conveyor,

upwardly extending arms connected to the free end portion of the conveyor and operatively connected to said member to be lifted thereby, and lost motion means cooperating with said arms and member for releasing the arms when said member rises to a predetermined height to allow the free end of the conveyor to descend.

2. In combination, a conveyor adapted to be swung upwardly and downwardly about a horizontal pivot, a member movable toward and away from the free end portion of said conveyor and provided with lifting elements, upwardly extending arms movably connected to the free end portion of the conveyor and provided with irregular guides with which the lifting elements cooperate, each arm having a shoulder about midway the height of each guide, serving as an abutment by which the lifting elements can lift the arms and the free end of said conveyor, and means for releasing the shoulders from the lifting elements when said member rises to a predetermined height to permit the free end of the conveyor to descend.

3. In combination, a conveyor having rollers and adapted to be swung upwardly and downwardly about a horizontal pivot, a member arranged above and movable toward and away from the free end of said conveyor and provided with lifting elements, upwardly extending arms movably connected to the free end portion of said conveyor and provided with irregular guideways in which the lifting elements operate, each arm forming a shoulder about midway the height of each guideway, said shoulders serving as abutments by which the lifting elements can lift the arms and the free end of the conveyor, and means for releasing the shoulders from the lifting elements when the head rises to a predetermined height to permit the free end of the conveyor to descend.

4. In combination, a conveyor adapted to be swung upwardly and downwardly about a horizontal pivot, a head movable toward and away from said conveyor and provided with lugs, upwardly extending arms movably connected to the free end portion of said conveyor and provided with irregular slots in which the lugs operate, each arm forming a shoulder about midway the height of each slot, serving as an abutment by which the lugs can lift the arms and the free end of said conveyor, and means for releasing the shoulders from the lugs when the head rises to a predetermined height to permit the free end of the conveyor to descend.

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