April 22, 1941. B. C. HOPE 2,239,151

PORTABLE UNLOADING PLATFORM

Filed May 31, 1939 3 Sheets-Sheet 1

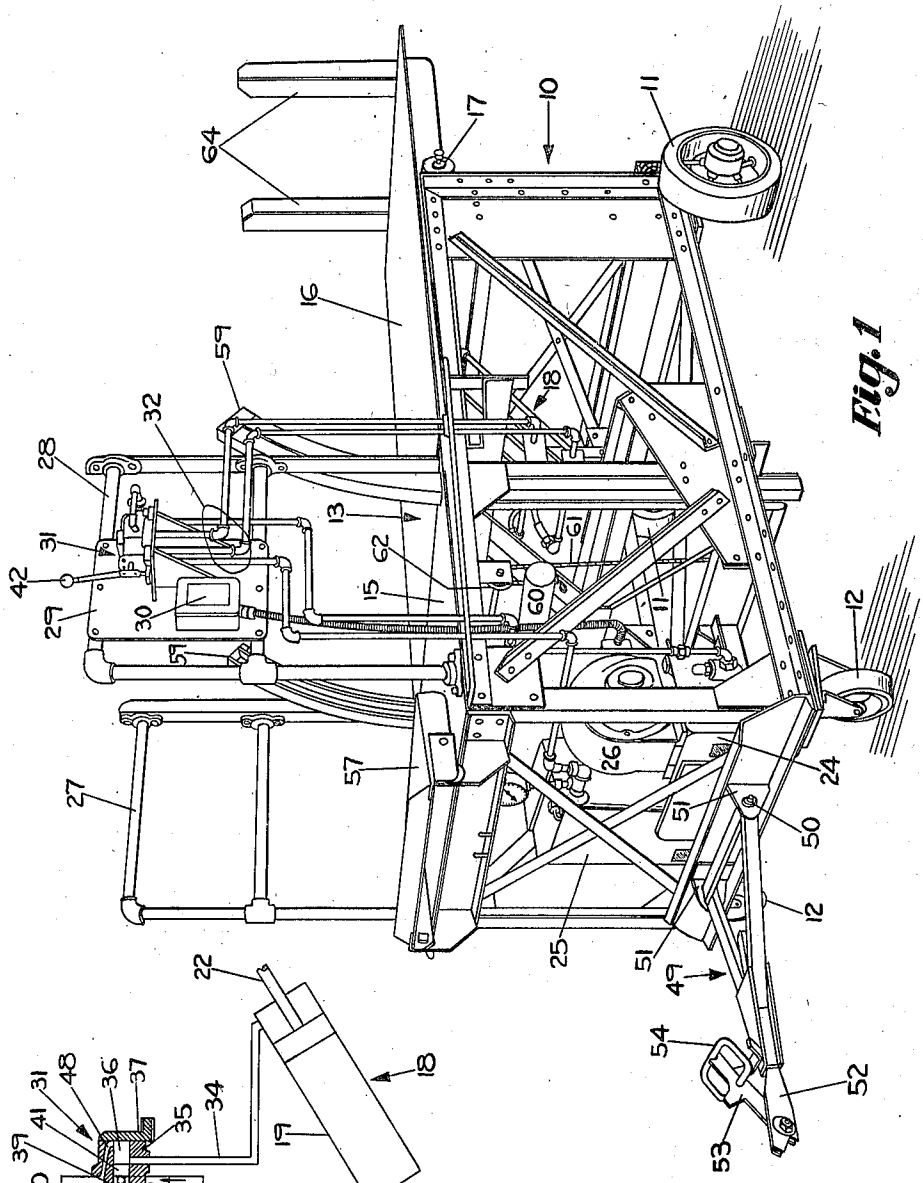

Fig. 1

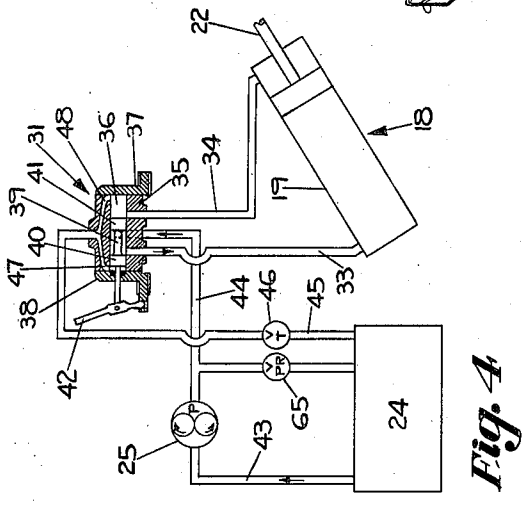

Fig. 4

INVENTOR:
BERTRAM C. HOPE,
BY
Chas. M. Nissen,
ATT'Y.

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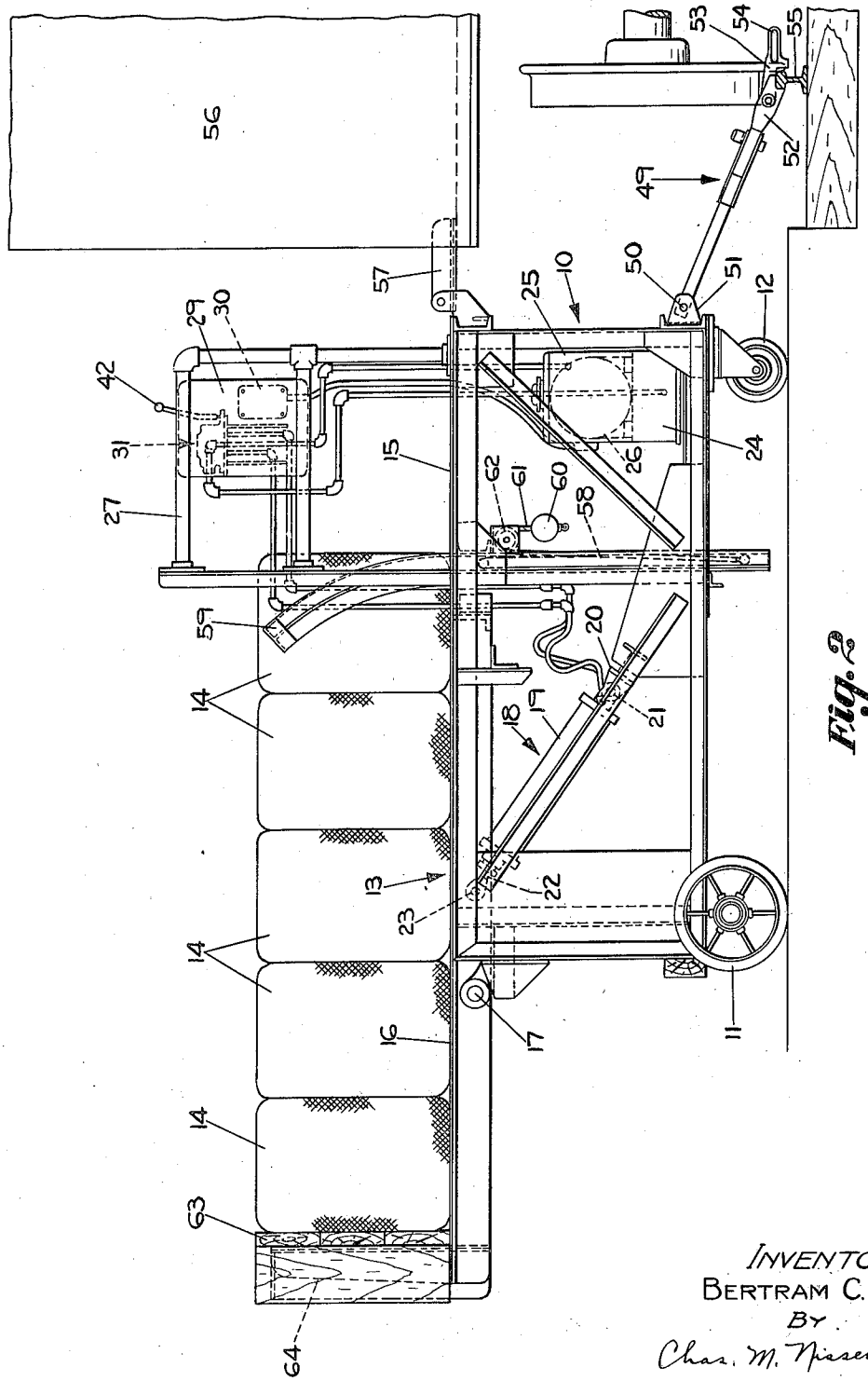

Fig. 2

INVENTOR:
BERTRAM C. HOPE,
BY
Chas. M. Nissen,
ATT'Y.

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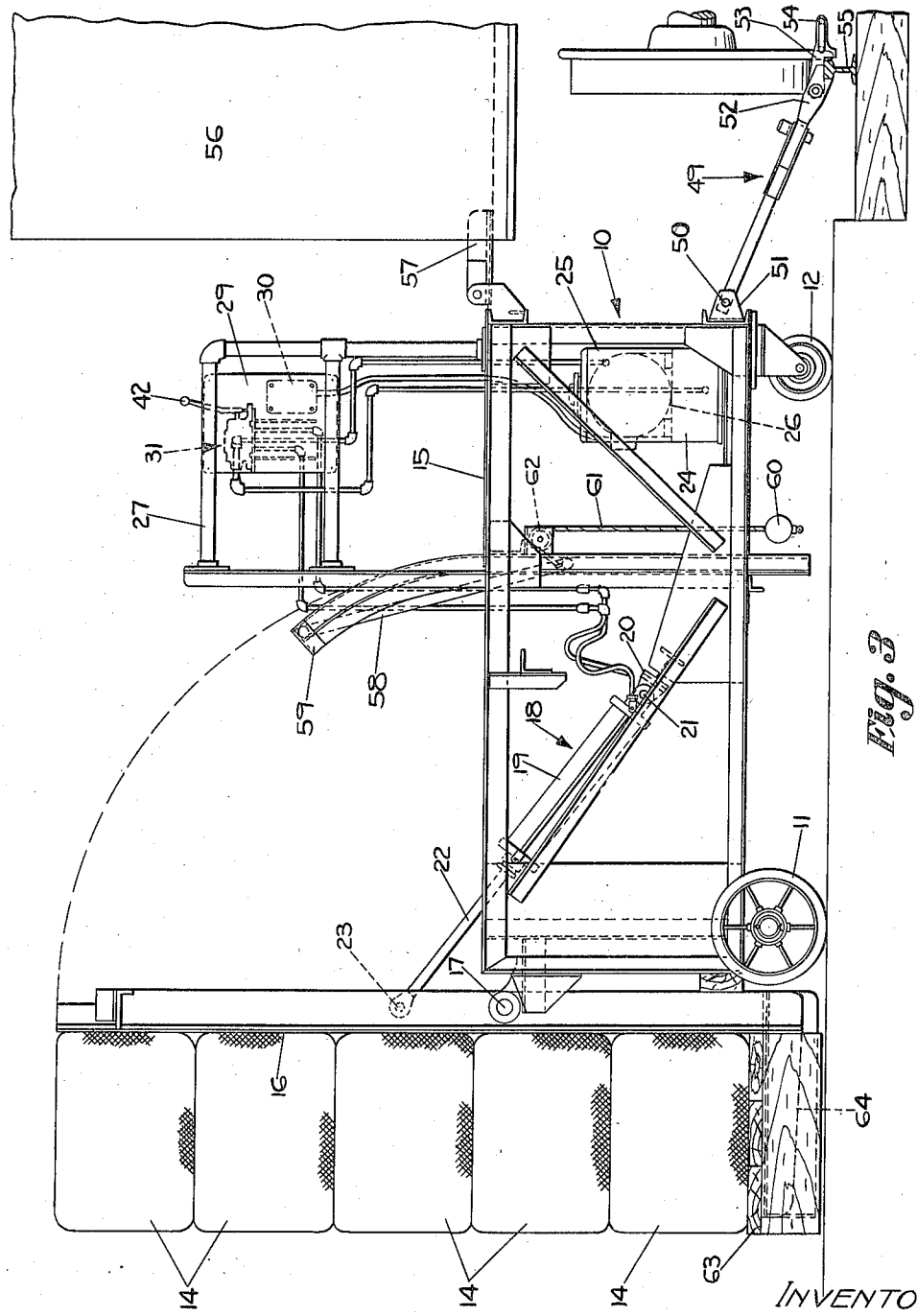

Fig. 3

INVENTOR:
BERTRAM C. HOPE,
BY
Chas. M. Nissen,
ATTY.

Patented Apr. 22, 1941

2,239,151

UNITED STATES PATENT OFFICE

2,239,151

PORTABLE UNLOADING PLATFORM

Bertram C. Hope, Middletown, Ohio

Application May 31, 1939, Serial No. 276,532

3 Claims. (Cl. 254—3)

This invention relates to a portable machine for loading and unloading material which comes in large packages, an example of which is bales or packages of paper.

An object of the invention therefore is to provide a mechanism of the above mentioned type by which large packages of material can be readily loaded onto a railroad car or truck or unloaded therefrom.

A further object of the invention is to provide a machine of the above mentioned type which is safe in operation, is easily operated and is extremely flexible.

Other objects of the invention will appear hereinafter, the novel features and combinations being set forth in the appended claims.

In the accompanying drawings,

Fig. 1 is a perspective view of the machine comprising my invention;

Fig. 2 is a side elevational view of the machine showing it in position to receive material from a railroad car or to load material into a railroad car;

Fig. 3 is a side elevational view of the machine with the tilting platform tilted which is the position thereof at the end of an unloading operation or at the beginning of a loading operation; and

Fig. 4 is a piping diagram of the hydraulic control system employed for operation of the tilting platform.

Referring particularly to Figs. 1, 2 and 3 of the drawings, it will be seen that I have provided a machine comprising a generally box-shaped main frame 10 which is supported upon rear wheels 11 and front wheels 12, the latter of which are preferably mounted for free swinging movement about an upright axis, thereby taking the form of large casters.

On top of the main frame 10 is a platform 13 which is preferably formed as a stippled plate so that a workman or operator is readily supported thereby and can walk over it and at the same time said platform 13 can readily support material, such as large bales of paper 14. The platform 13 is divided into two parts comprising a forward, workman or operator's portion or platfom 15 which is rigidly attached to the top of said main fame 10 adjacent the front end thereof and, of course, is non-adjustable with respect to said main frame 10; and a rearward, loading and unloading or material supporting platform or portion 16 which is pivotally attached to the rear end of the main frame 10 about a horizontally extending axis provided by pivot 17.

It is evident, particularly by reference to Fig. 1 of the drawings, that when the rearward portion 16 is in its normal position the two parts 15 and 16 are in horizontal alignment and cooperate to make a unitary platform 13 over which a workman can walk and can operate a small hand truck for hauling the bales of material 14 either toward or from a railroad car, as hereinafter set forth in complete detail.

To effect adjustment of the rear platform 16 from the normal position, as illustrated in Figs. 1 and 2 of the drawings, to the receiving or discharge position, as the case may be, illustrated in Fig. 3 of the drawings, I provide a power operating mechanism which may take the form of a hydraulic jack 18, the cylinder 19 of which is pivotally attached to bracket 20 by pivot pin 21 which bracket 20 is attached to the main frame 10, and the piston rod 22 of which is pivotally attached at 23 to the rear platform 16. It is evident that upon expanding the hydraulic jack 18 the platform 16 will be adjusted to the position illustrated in Fig. 3 and on contracting it said platform may be adjusted to the positions illustrated in Figs. 1 and 2.

The hydraulic jack 18 is a part of a hydraulic control system which, in addition, includes a reservoir 24 for the hydraulic fluid, which is preferably oil, and a pump 25 driven by a motor 26 which are mounted on the tank or reservoir 24 which forms a base carried by the main frame 10 and positioned below the forward platform 15. The housing of pump 25 and the reservoir or tank 24 are preferably formed integral and the motor 26 is preferably removably mounted on this reservoir or tank 24 which forms a base therefor.

Adjacent the lateral edges of the forward platform 15 are guard rails 27 and 28 the latter of which carries a control panel 29 upon which is mounted an electric control box 30 containing the electrical controls for the motor 26.

Also mounted upon control panel 29 is a control valve 31 for controlling the hydraulic jack, as hereinafter pointed out in detail. As clearly illustrated in Fig. 1 of the drawings, appropriate hydraulic pipes designated generally by the character 32 are provided to conduct the hydraulic fluid to and from the pump 25 and reservoir 24 and the hydraulic jack 18 by way of the control valve 31.

Referring particularly to Fig. 4 of the drawings, it will be seen that the hydraulic jack 18 is of the double acting type in that it has a feed

pipe 33 on one side of the piston thereof and a feed pipe 34 on the other side thereof.

The control valve 31 is formed by a main casting 35 having a main chamber 36 formed by a longitudinally extending bore which is closed at opposite ends by heads 37 and 38. Within chamber 36 is a slide piston 39 having a central reduced neck which connects a pair of spaced heads 40 and 41. The heads 40 and 41 are so positioned that when the piston 39 is in its central, normal or non-operating position they are effective to seal the ports leading from feed pipes 33 and 34 to the chamber 36. That is, the hydraulic fluid will be trapped in each of said feed pipes 33 and 34 when the control valve 31 is in its normal position thereby locking the hydraulic jack 18 in adjusted position. The control valve 31 is preferably spring biased to its normal position which it therefore will assume whenever the control lever 42 thereof is released.

The pump 25 is effective to withdraw the hydraulic fluid from the tank or reservoir 24 by a pipe 43 and deliver it by way of out-put pipe 44 to a port positioned centrally of the chamber 36. A return pipe 45 returns the hydraulic fluid to the tank 24 through throttle valve 46, said return pipe 45 being provided with branches 47 and 48 in the casting 35 which communicate with opposite ends of the chamber 36.

In Fig. 4 of the drawings the control valve 31 is shown adjusted to a position to expand the hydraulic jack 18, under which condition hydraulic fluid flows from pump 24 through pipe 44, chamber 36 between heads 40 and 41 and feed pipe 33 to the lower end of the cylinder 19 urging the piston thereof outwardly. The hydraulic fluid ahead of the piston of the hydraulic jack 18 flows by pipe 34 through chamber 36 to the right of head 41, through branch 48 and return pipe 45 to the reservoir 24.

It is evident that by moving the lever 42, 42 to its other extreme position or to the right, as viewed in Figs. 1 and 4 of the drawings, the hydraulic fluid will be delivered to the pipe 34 and drained from the pipe 33 to contract the hydraulic jack 18. As was previously pointed out, the hydraulic jack 18 is locked in its adjusted position when lever 42 is returned to its normal position. This has the important function of providing a safety feature to prevent unauthorized tilting of the rear platform 16. For example, should there be only one blade of material 14 on the extreme rear end of the platform 16 or should a workman be on its rear end either with or without such a bale the platform 16 would be overbalanced and tend to move downwardly. Such a downward movement is prevented, however, by the locking of the hydraulic jack 18 which represents one way in which this safety feature may be accomplished. Pump 25 is normally stopped by stopping motor 26 when hydraulic jack 18 is in locked position, but to take care of a condition when pump 25 is operating with valve 31 in neutral position a high pressure relief bypass valve 65 is provided for said pump 25.

To provide for hauling the machine from place to place and also to provide for locking the machine in position during loading and unloading I provide a tongue 49 at the forward end of the frame 10 which is pivotally attached to said frame by pivot 50 associated with brackets 51. The tongue 49 carries a bifurcated bracket 52 at its forward end to which is pivoted a latch member 53 having a handle 54. The bracket 52 and latch member 53 cooperate to form a hook or anchor mechanism which may be associated with a track rail 55, as clearly illustrated in Figs. 2 and 3 of the drawings, to hold the machine in proper position with respect to a box car 56 during loading or unloading of the material 14.

Adjacent the forward top edge of the main frame 10, which is also adjacent the forward platform 15, there is a pivoted gangway 57 which may be swung into position to rest on the floor of the box car 56, as clearly illustrated in Fig. 2 of the drawings. This gangway 57 may be swung into position to rest on the forward platform 15 during transportation of the mechanism, as illustrated in Fig. 1 of the drawings.

To insure against a workman walking off of the platform 15 when the rear platform 16 is in the upright position, as illustrated in Fig. 3 of the drawings, I provide a gate 58 having a pair of arcuate guides 59, 59 which guide said gate during its automatic movement to and from a guarding position. The gate 58 is urged upwardly into guarding position by a counterweight 60 which is appreciably heavier than the gate 58 and which is connected to the bottom thereof by a pair of flexible cables or ropes 61 reeved about pulleys, one of which is seen at 62.

Whenever the rear platform 16 is moved to the position illustrated in Fig. 3 the weight 60 automatically elevates the gate 58 to the guarding position illustrated in said Fig. 3. When the platform 16 is returned to its normal position the forward end portion thereof strikes a cross-piece on the gate 58 and moves it downwardly along the guides 59 to a position below the platform 13.

In order to support the bales 14 in a stacked position when the rear platform 16 is in an upright position, as illustrated in Fig. 3 of the drawings, a wood platform 63 is provided upon which the bales 14 are ultimately stored in the warehouse (see Fig. 3) and this platform is positioned adjacent a pair of spaced uprights 64 (see Fig. 1) which are attached to the rear end of the rear platform 16.

As was previously indicated, the apparatus of my invention may be used to load or unload material and it is particularly designed to handle very heavy bales of material, such as bales of paper 14. Furthermore, this platform may be used as a truck to haul the material to or from the box car 56. In the normal operation of the machine, for example, to unload a cargo of bales of paper, the machine will be positioned and the parts adjusted as illustrated in Fig. 2 of the drawings. At first, of course, there will be no bales of material 14 on the platform. The wood platform 63 is put in place adjacent the uprights 64 and the bales 14 are brought out one at a time on a small hand truck or dolly by a workman from the box car 56 and stacked on the rear platform 16, as illustrated in Fig. 2 of the drawings. The operator or workman then controls the valve 31 to expand the hydraulic jack 18 which swings the rear platform 16 to the upright position illustrated in Fig. 3 of the drawings.

The bales 14 are thus stacked on the wood platform 63 in substantially the condition desired in the storage room. Thereupon a small power operated truck having an upright plate and forwardly projecting arms, which are somewhat similar to the platform 16 and the arms 64 except that the arms are spaced laterally a different distance from the arms 64 so that they may go under the platform 63 at the same time the arms 64 are thereunder, is operated to a position adjacent the pile of bales 14 whereupon

said pile of bales and the platform **63**, upon which they rest, are transferred to the power truck by which they are carried to a desired location in the storage room and deposited.

The loading of the box car **56** may be effected by a substantially reverse operation. In addition, as above set forth, it is possible to employ the machine as a truck in that after it is loaded, as illustrated in Fig. 2, it may be hauled by hand or otherwise to a position of material storage where the platform **16** will be adjusted to the position illustrated in Fig. 3 and the material, including the platform **63**, will be slid off of the uprights **64** to discharge said material.

Obviously those skilled in the art may make various changes in the details and arrangement of parts without departing from the spirit and scope of the invention as defined by the claims hereto appended, and I therefore wish not to be restricted to the precise construction herein disclosed.

Having thus described and shown an embodiment of my invention, what I desire to secure by Letters Patent of the United States is:

1. A loading mechanism comprising the combination with a frame, of a platform on top thereof formed into a forward part fixed to said frame and a rear part adjustable with respect thereto, and gate mechanism between said two parts including means operable automatically when said rear part is moved from its normal position to close said gate.

2. A loading mechanism comprising the combination with a frame, of a platform on top thereof formed into a forward part fixed to said frame and a rear part adjustable with respect thereto, and gate mechanism between said two parts.

3. A loading and unloading machine comprising the combination with a frame, of a platform on top thereof having a normally horizontal position and formed into a forward operator's portion rigid with said frame and a rearward portion adjustable to loading and unloading positions relative to said frame, side rail means adjacent said operator's portion of said platform, and gate mechanism between said two portions of said platform constructed and arranged to move to gate closing position whenever said rearward portion is adjusted to unloading position and to move to gate opening position whenever said rearward portion is adjusted to loading position.

BERTRAM C. HOPE.