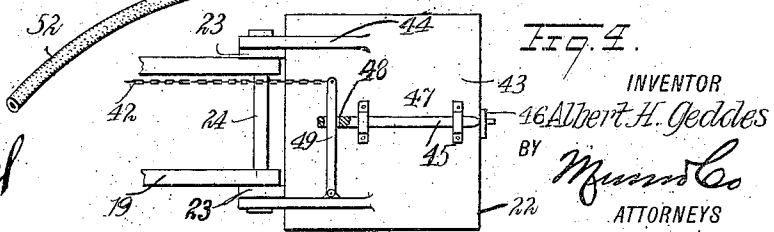
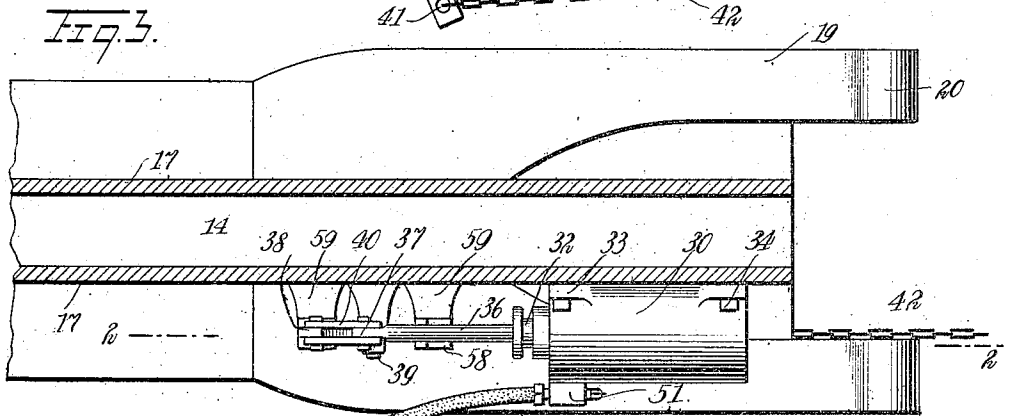
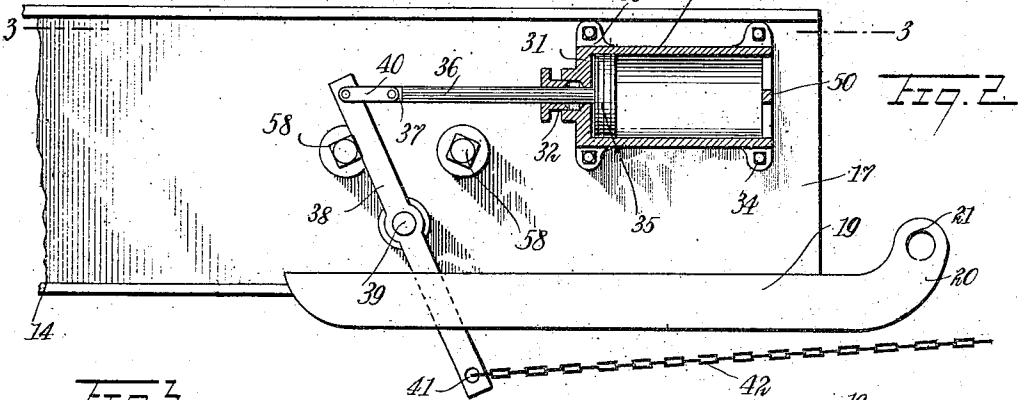
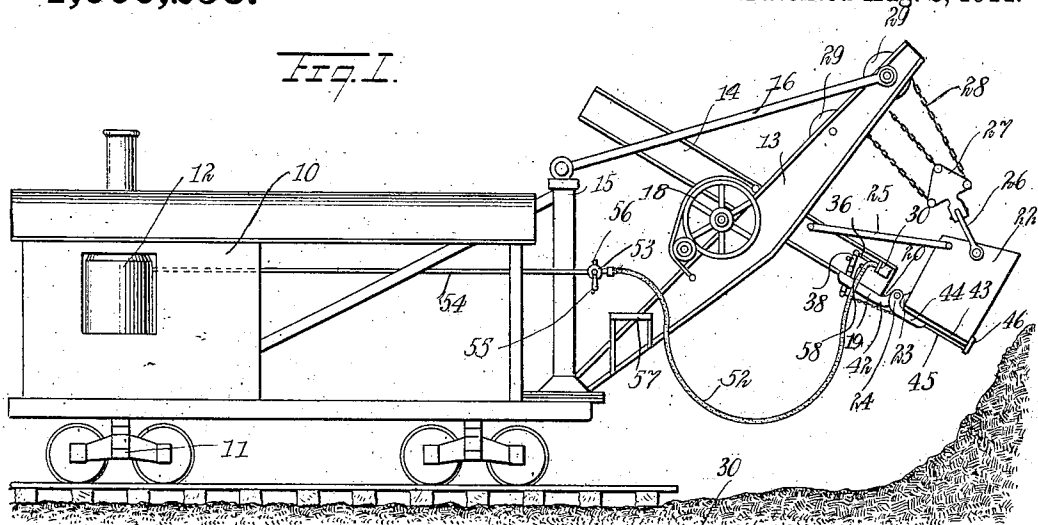


A. H. GEDDES.  
 DIPPER TRIP FOR STEAM SHOVELS.  
 APPLICATION FILED MAR. 9, 1911.

1,000,253.

Patented Aug. 8, 1911.



WITNESSES  
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# UNITED STATES PATENT OFFICE.

ALBERT H. GEDDES, OF EMPIRE, CANAL ZONE.

## DIPPER-TRIP FOR STEAM-SHOVELS.

1,000,253.

Specification of Letters Patent. Patented Aug. 8, 1911.

Application filed March 9, 1911. Serial No. 613,386.

*To all whom it may concern:*

Be it known that I, ALBERT H. GEDDES, a citizen of the United States, and a resident of Empire, Canal Zone, have invented a new and Improved Dipper-Trip for Steam-Shovels, of which the following is a full, clear, and exact description.

This invention relates to dipper trips for steam shovels, dredges and the like, and has reference more particularly to the combination in a steam shovel having a dipper, a door therefor, and means for operating the dipper, of a latch for the door, a cylinder adapted to receive a fluid under pressure, a piston in the cylinder, a pivoted lever operatively connected with the piston, an operative connection between the lever and the latch whereby the piston can be actuated to release the door, and a fixed stop arranged to limit the movement of the same.

The object of the invention is to provide a simple and efficient dipper trip for use in connection with steam shovels, dredges and like machines for excavating and other purposes, by means of which the door of the dipper or bucket can be released mechanically to permit the bucket to be emptied, thereby avoiding the necessity of pulling manually upon a rope or the like to release the door, and thus saving time and labor, which renders the operation of the steam shovel or dredge more rapid and economical, which can be operated by steam or other fluid under pressure, and the operation of which is regulated by means of fixed stops which limit the movement of the lever constituting an operative connection between the fluid pressure operable mechanism and the latch of the dipper door.

The invention consists in the construction and combination of parts, to be more fully described hereinafter and particularly set forth in the claims.

Reference is to be had to the accompanying drawings forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the figures, and in which—

Figure 1 is a side elevation of a steam shovel having an embodiment of my invention applied thereto; Fig. 2 is an enlarged side elevation of the end of the dipper stick or handle, showing in longitudinal section the cylinder; Fig. 3 is a longitudinal section on the line 3—3 of Fig. 2; and Fig. 4 is an

inverted plan view of a dipper or bucket, showing the latch for locking the door.

Before proceeding to a more detailed explanation of my invention, it should be clearly understood that the same constitutes an improvement upon that form of the device disclosed in my United States Patent Number 978,575, dated December 13, 1910.

Certain of the details of construction shown, for example herewith, form no part of the invention, and can be varied in accordance with individual preference and special conditions without departing from the underlying spirit of invention.

Referring more particularly to the drawings, I have shown a steam shovel of conventional type having a car 10 carried upon wheeled trucks 11 and adapted to run upon tracks in the usual manner. The car carries a boiler 12 for producing steam to operate the shovel and is provided with a suitable engine (not shown) for this purpose. At one end of the car is located the boom 13 mounted to swing and carrying the dipper stick or handle 14 in the customary manner. An upright 15 is located at the end of the car and is connected to the end of the boom by means of tie members 16. The dipper stick or handle is fashioned from two channels 17, arranged back to back and spaced apart, the channels being secured together in any suitable manner. The dipper stick is controlled by the bull wheel 18 and is arranged to move in the direction of its length. At the forward end it has a dipper stick casting 19 provided with upwardly-disposed extensions 20, provided with openings 21. The dipper or bucket 22 has extensions 23 pivotally connected with the extensions 20 by means of a hinge pin 24 which extends through the openings 21. Link members 25 are secured to the dipper and to the dipper stick. The bucket has at the open end the usual bail 26 to which is connected the pulley block 27. A cable or chain 28 is attached to the pulley block and passes over sheaves 29 to the operating engine (not shown), in the usual manner. It will be understood that the engine actuates the chain to effect the operation of the bucket, and also serves to move the dipper stick and to move the boom.

A cylinder 30, open at one end and provided at the other with a head 31 having a stuffing box 32, is provided with flanges 33

secured by means of bolts 34 to one of the channels 17. Within the cylinder is a piston 35 having a piston rod 36 which passes through the stuffing box and has a flattened end 37. A lever 38 is pivotally mounted by means of a suitable bolt pin 39, or the like to the dipper stick, and has its upper end pivotally connected by means of spaced links 40 with the flattened end 37 of the piston rod. At the lower end the lever is provided with an opening 41 to which is attached a chain 42. The door 43 of the dipper has hinge arms 44, by means of which it is pivotally associated with the hinge pin 24 and is thereby mounted to swing at the rear end of the bucket and forms a closure therefor in its normal position. Upon the door is arranged a latch including a slidable bolt bar 45, the end of which, when inserted in the keeper 46 on the bucket, serves to hold the door closed. The bolt bar 45 is movably supported in off-set brackets 47 and has an opening 48 at the end, which receives loosely a lever 49 pivotally mounted upon the bucket door. The chain 42 is secured at the end of the lever 49. By drawing upon the chain the bolt bar is retracted to release the latch to permit the door to swing open gravitationally, permitting the bucket to be emptied. At the open end the cylinder has a spider 50, and if so desired a spring can be employed within the cylinder which tends to hold the piston in normal position, but I prefer to dispense with this spring. The cylinder has a suitable inlet 51, at which the extremity of the flexible tube 52 is connected, to permit the introduction of the fluid under pressure into the cylinder to actuate the piston. The flexible tube 52 leads to a three-way valve 53 connected by a pipe 54 with the boiler 12 or other source of supply of fluid pressure. The three-way valve has an operating handle 55 and an outlet 56. The operator's seat 57 is located at one end of the boom so that he can conveniently control the three-way valve. The tube 52 may be of any suitable kind of material, and is preferably wired, to prevent the rubber or other material being carried into the cylinder.

At each side of the lever 38, the dipper stick has a fixed stop 58, consisting preferably of a bolt having a flat face adapted to be engaged by the lever. The bolts may be mounted upon extensions 59 of the channel 17. The fixed stops are so arranged that the movement of the lever is limited to prevent the piston from engaging directly at the ends of the cylinder, thus leaving a little clearance at all times.

After the bucket has been filled with ma-

terial, and when it is desired to empty it, the three-way valve, which is normally closed, is opened to permit steam or other fluid under pressure to enter the cylinder and to move the piston toward the open end of the cylinder. This pulls upon the chain and operates the latch to withdraw the bolt bar, the door swings open and the contents of the bucket escape. When the door of the bucket is again closed the movement is transmitted through the chain and the lever to the piston, which is then returned to its normal position.

Having thus described my invention, I claim as new and desire to secure by Letters Patent:

1. In a steam shovel, the combination with a dipper, a door therefor, and means for manipulating said dipper, of a latch for the said door, a cylinder adapted to receive a fluid under pressure, a piston in said cylinder, a pivoted lever operatively connected with said piston, an operative connection between said lever and said latch, and a fixed stop for limiting the movement of said lever.

2. In a steam shovel, the combination with a dipper, a door therefor, means for operating said dipper, of a latch for said door, a cylinder adapted to receive a fluid under pressure, a piston in said cylinder, a piston rod connected with said piston, a pivoted lever operatively connected with said piston rod, a flexible member operatively connecting said lever and said latch, and a fixed stop at each side of said lever and serving to limit the movement of the same.

3. In a steam shovel, the combination with a dipper stick, a dipper carried thereby, a door for said dipper, means for operating said dipper, of a latch for said door, a cylinder mounted upon said dipper stick and adapted to receive a fluid under pressure, a piston in said cylinder, a piston rod associated with said piston, a lever pivoted upon said dipper stick, a link connecting said piston and lever, and a flexible connection between said lever and said latch whereby said piston serves to release said door, and a fixed stop carried by said dipper stick at each side of said lever and serving to limit the movement of the same whereby the travel of said piston is less than the internal length of said cylinder.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

ALBERT H. GEDDES.

Witnesses:

GUY JOHANNES,  
Wm. H. ROGERS.