C. M. BOWMAN.

SHOVEL.

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1,075,459.

Patented Oct. 14, 1913.

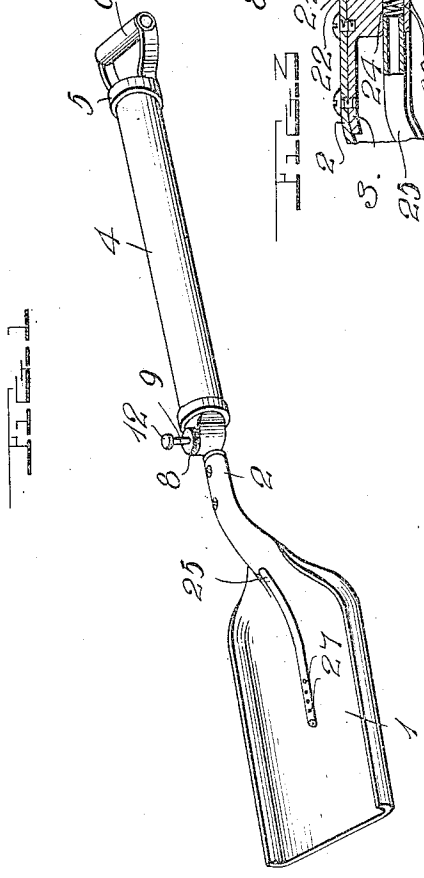


FIG. 1

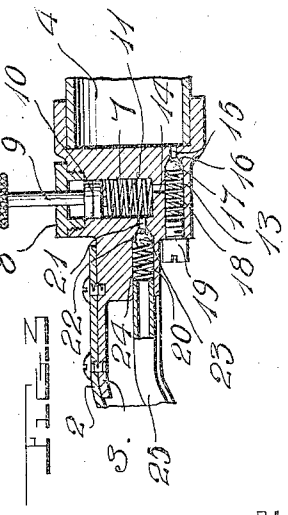


FIG. 3

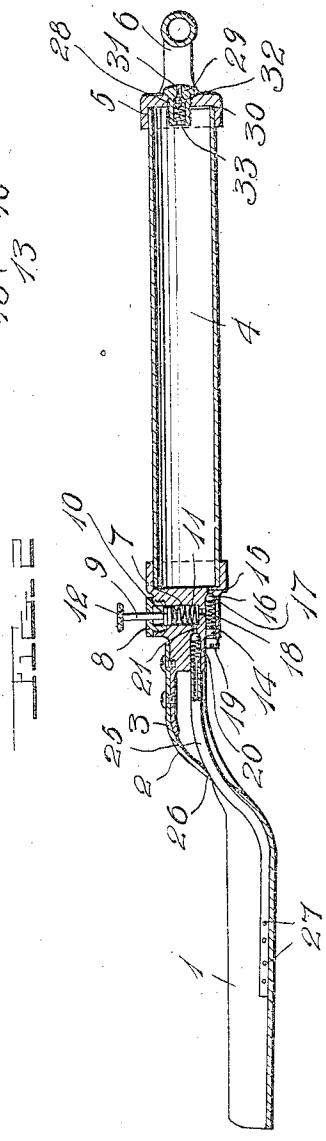


FIG. 2

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SHOVEL.

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To all whom it may concern:

Be it known that I, CHARLES M. BOWMAN, a citizen of the United States, residing at Lebanon, in the county of Lebanon and State of Pennsylvania, have invented certain new and useful Improvements in Shovels; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to improvements in shovels.

One object of the invention is to provide a shovel having a tubular handle adapted to form a reservoir or receptacle to contain liquid or other material which may be discharged onto the blade of the shovel and thrown therefrom with the fuel or other contents of the blade.

Another object is to provide a shovel of this character having an improved means for controlling the discharge of the contents of the tubular handle or reservoir.

With these and other objects in view, the invention consists of certain novel features of construction, and the combination and arrangement of parts as will be more fully described and claimed.

In the accompanying drawings: Figure 1 is a perspective view of my improved shovel; Fig. 2 is a central longitudinal section thereof; Fig. 3 is an enlarged detail sectional view of the socket which connects the blade to the handle showing the construction and arrangement of the liquid discharging mechanism therein.

Referring more particularly to the drawing 1 denotes the blade of my improved shovel, said blade being here shown as preferably scoop shaped and provided with a channel shaped attaching shank 2. The shank 2 is secured at its outer end by suitable fastening devices to the projecting end of the handle attaching socket or coupling 3 in which is secured the inner end of a tubular handle 4 which forms a reservoir for the shovel and on the outer end of which is secured a cap 5 having thereon a hand hold 6.

In the socket or coupling 3 is a pump chamber 7 which opens through the upper side of the socket and is closed by a screw cap 8. In the cap 8 is slidably mounted the piston rod 9 of a pump piston 10 which is operatively engaged with the chamber 7 and is forced outwardly therein by a coiled spring 11 arranged between the piston and the inner end of the chamber as shown. On the outer end of the piston rod 9 is a head 12 by means of which the piston may be projected or forced downwardly into the chamber 7.

In the lower portion of the socket or coupling 3 below the pump chamber 7 is an inlet valve chamber 13 which communicates with the lower end of the pump chamber by a fluid inlet port 14. The inner end of the chamber 13 communicates with the tubular handle or reservoir 4 through a fluid discharge port 15 at the inner end of which is arranged a valve seat 16. With the seat 16 is engaged a check valve 17 which is here shown as preferably in the form of a ball and which is yieldingly held in engagement with the seat 16 by a coiled spring 18 arranged in the chamber 13 and having its opposite end engaged with a plug 19 having a threaded engagement with the outer end of the chamber 13 as shown.

In the outer end of the socket or coupling 3 above the chamber 13 is formed a discharge valve chamber 20 the inner end of which communicates with the pump chamber 7 through a discharge port 21 at the outer end of which is formed a valve seat 22. Adapted to be engaged with the valve seat 22 is a check valve 23 which is also in the form of a ball and is yieldingly held in engagement with its seat by a coiled spring 24 the outer end of which is engaged with the end of a fluid conducting tube 25 which is disposed in the shank 2 of the shovel blade and has its inner end in fluid tight engagement with the outer end of the chamber 20. The fluid discharging tube 25 is curved downwardly and extends forwardly through an aperture 26 in the rear end of the shovel blade and has its outer end in close engagement with the bottom of the blade as shown. The discharge end of the tube 25 terminates at a point substantially midway between the inner and outer ends of the blade and in said end of the tube are formed series of fluid discharging apertures 27.

In the cap 5 on the outer end of the tubular handle or reservoir 4 is formed a filling opening 28 through which oil or other fluid is introduced into the reservoir, said opening being normally closed by a screw plug 29 in the inner end of which is formed a valve chamber 30. The chamber 30 con-

nects at its outer end with an air vent 31 formed in the outer end of the cap and which is normally closed by a check valve 32 in the form of a ball and which is held in engagement with its seat by a coiled spring 33 arranged in the chamber 30 as shown.

In the operation of the shovel when it is desired to discharge the contents of the reservoir or handle 4 onto the contents of the blade it is simply necessary for the shoveler to depress the piston rod 9 and thus project the pump piston into the pump chamber 7 thereby forcing the oil or other contents of the pump out through the discharge port 21 and into the tube 25 which conducts the fluid to the shovel blade and discharges the same through the apertures 27 therein onto the fuel or other contents of the shovel blade. In thus forcing the fluid from the pump chamber the check valve 23 is automatically opened by the pressure of the fluid. When the piston rod is released the spring 11 will again retract the piston or force the same upwardly in the pump chamber thereby drawing a fresh supply of oil or other fluid through the ports 15 and 14 from the reservoir 4. In this operation the check valve 17 will be opened by the suction of the piston and will be automatically closed by its spring 18 as soon as the piston has reached the limit of its retracting stroke. When a charge of fuel is drawn from the reservoir 4 by the piston in the manner described the check valve 32 in the screw plug 29 will be automatically opened thus permitting air to enter the reservoir which will facilitate the operation of the pumping mechanism and the discharge of the fluid from the reservoir. By constructing the pumping mechanism as herein shown and described it will be seen that any desired quantity of oil may be pumped from the reservoir and discharged into the blade of the shovel by repeatedly depressing and releasing the piston of the pump.

My improved shovel is designed particularly for shoveling coal or other fuel and the tubular handle or reservoir is intended to contain oil, a suitable quantity of which is pumped therefrom and discharged onto the bottom of the blade beneath the fuel which has been previously lifted or shoveled up on the blade, so that when the fuel is thrown from the blade onto the fire the oil will be carried off the shovel blade with the fuel and will stimulate the combustion of the latter and cause the same to quickly produce an increased heat. The shovel will be found especially useful in connection with the firing of locomotive boilers where it is frequently desirable to increase the steam pressure temporarily as when going up a steep grade under a heavy load. By discharging the oil onto the shovel blade beneath the fuel the oil will be practically absorbed before the fuel is thrown into the fire and will be protected from contact with the fire before the shovel is unloaded. Any oil which is not absorbed by the fuel will be carried or pushed off from the shovel blade when the fuel is thrown therefrom.

From the foregoing description taken in connection with the accompanying drawings the construction and operation of the invention will be readily understood without requiring a more extended explanation.

Various changes in the form, proportion and the minor details of construction may be resorted to without departing from the principle or sacrificing any of the advantages of the invention as claimed.

Having thus described my invention, what I claim is:

1 A shovel of the character described comprising a blade, a tubular handle forming a reservoir, a coupling to connect said blade and reservoir and arranged adjacent to said blade and inner end of said reservoir, pumping mechanism within said coupling and means on the exterior of the coupling whereby said pumping mechanism may be actuated by the hand gripping the lower end of the handle to eject the contents of the reservoir into said blade.

2. A shovel of the character described comprising a blade having a shank, a hollow handle adapted to form a reservoir, a socket to connect said blade with said hollow handle, a fluid conducting and discharge pipe to connect said socket with the blade of the shovel, a pumping mechanism arranged in said socket and adapted to be operated by the hand gripping the inner end of the shovel handle whereby the contents of the hollow handle is pumped therefrom and forced through said fluid conducting pipe into the blade of the shovel.

3. A shovel of the character described comprising a blade, a tubular handle adapted to form a reservoir, a socket to connect the inner end of said tubular handle with said blade, a cap arranged on the outer end of said handle and having therein a filling opening, a vented plug to close said opening, said plug having a check valve to normally close the vent therein, a fluid conducting pipe to connect said socket with the blade of the shovel and a pumping mechanism arranged in said socket and adapted to pump the contents from said tubular handle through said fluid conducting pipe into the blade of the shovel.

4. A shovel of the character described comprising a blade, a tubular handle adapted to form a reservoir, a socket to connect said handle with said blade, said socket having therein a pump chamber and inlet and discharge valve chambers, check valves arranged in said valve chambers, a fluid con-

ducting pipe to connect said discharge chamber of the socket with the shovel blade, and a pump piston operatively mounted in said pump chamber of the socket whereby the contents of the tubular handle are pumped therefrom and forced through said discharge pipe into the blade of the shovel.

5. A shovel of the character described comprising a blade having a shank, a tubular handle adapted to form a reservoir, a socket to connect said handle with the shank of the shovel blade, said socket having therein a pump chamber and inlet and discharge valve chambers, said chambers communicating respectively with the hollow handle and with said pump chamber, a plug arranged in the outer end of said inlet valve chamber, spring projected check valves arranged in said chambers whereby they are normally closed, a fluid conducting pipe connected at one end with said discharge valve chamber and extending forwardly through the shank and inner end of the shovel blade and into engagement with the inner portion of the bottom of the shovel, said fluid conducting pipe having in its outer end discharge apertures, a pump piston slidably mounted in said pump chamber, a spring to retract or force said piston outwardly in said chamber, a piston rod connected with said piston, and a head on the outer end of said piston rod adapted to be engaged by the hand which grips the inner end of the handle whereby said pump piston is projected inwardly against the pressure of said spring and is thereby operated to pump the contents of said tubular handle therefrom and to force said contents through the fluid conducting pipe and into the blade of the shovel.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

CHARLES M. BOWMAN.

Witnesses:
THOS. J. SHAAK,
GEO. SCHROPP.