

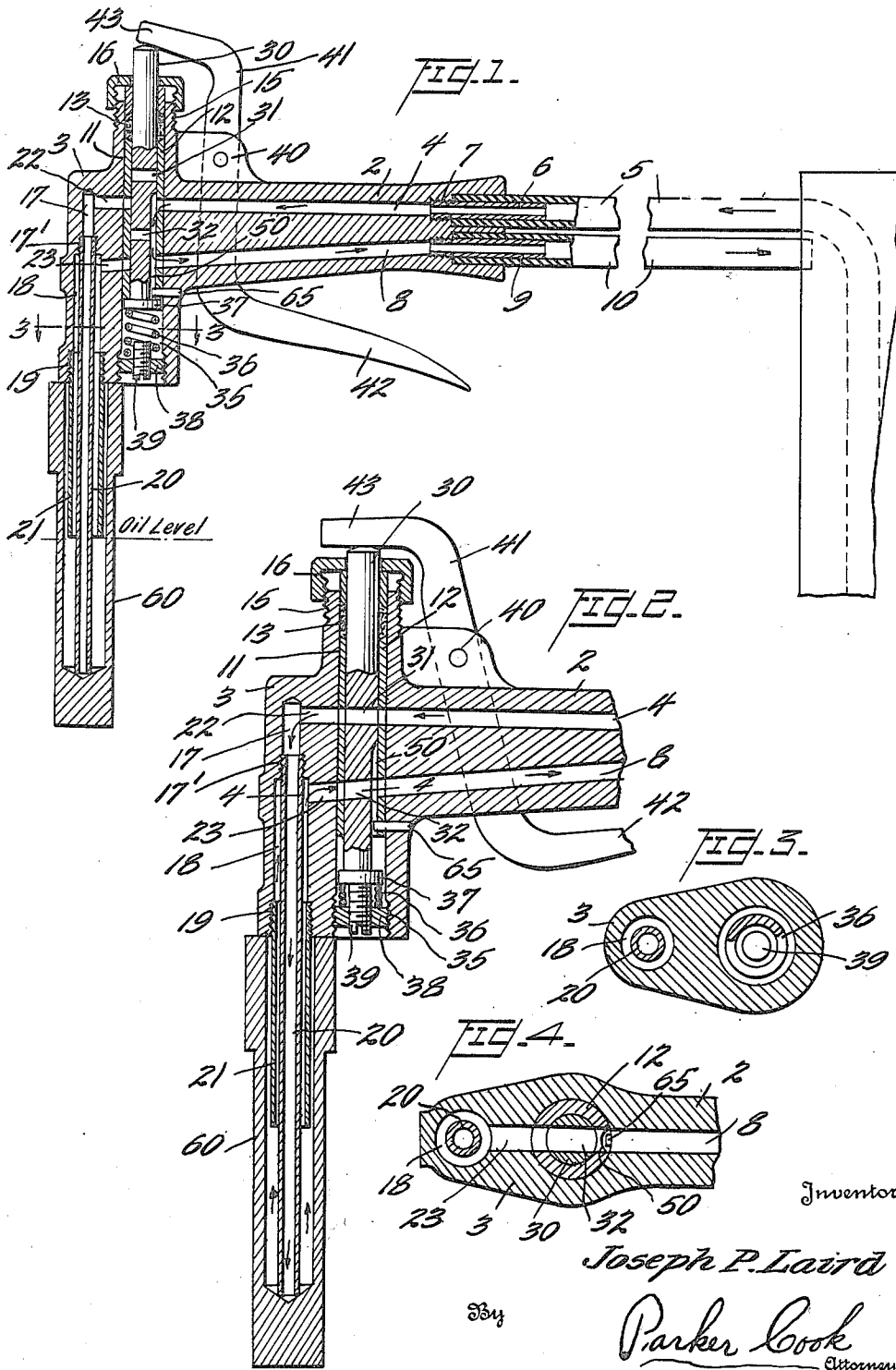
Jan. 12, 1943.

J. P. LAIRD

2,308,181

OILING GUN FOR SPINDLES AND THE LIKE

Filed Nov. 14, 1941



UNITED STATES PATENT OFFICE

2,308,181

OILING GUN FOR SPINDLES AND THE LIKE

Joseph P. Laird, Philadelphia, Pa., assignor to
The Wicaco Machine Corporation, Philadel-
phia, Pa., a corporation of Pennsylvania

Application November 14, 1941, Serial No. 419,211

7 Claims. (Cl. 221—86)

My invention relates to a new and useful improvement in pressure guns for oiling spindles and the like.

As is well known to those skilled in the art, it is desirable, if not necessary, that a certain oil level be retained in the bolsters which house the twisting spindles.

Heretofore numerous arrangements have been provided for supplying the bolster with oil to properly lubricate the spindle, but if too much oil is provided so that it will overflow, it is likely to damage or spoil the yarns on the spindle.

One of the objects of the present invention, therefore, is to provide an oiling gun, the nozzle of which will fit down within the bolster so that oil can be supplied quickly to the bolster and at the same time any excess oil that is shot into the bolster will be immediately withdrawn.

Still another object of the invention is to provide an oiling gun that is provided with a pressure line and a suction line from which extend tubes, one within the other, one of the tubes, that is from the pressure line extending to the bottom of the bolster, and the other tube extending to the desired oil level in the bolster, so that when the oil is forced into the bolster and reaches the desired level, the excess oil will be carried back through the gun into a mobile tank where the oil is circulated and filtered.

Still another object of the invention is to provide an oiling gun wherein the oil from a desired storage tank is continuously forced through the gun, but on an operation of the trigger, rather than having the oil flowing back from the gun to the tank, it is forced through the pressure nozzle into the bolster until it reaches a certain level, and after which the excess oil is drawn up through the gun and returned to its tank.

Still another object of the invention is to provide a gun wherein the oil may be quickly forced under pressure into the bolster and only to a certain level, thus blowing out the oil in the bolster, filling the bolster up to the desired oil level, and drawing off any oil that would have a tendency to go above the desired oil level.

Still another object of the invention is to provide a simple and efficient means whereby the spinning bolsters may be flushed out and re-oiled in a comparatively short period of time without any danger of too much oil being placed in the bolster.

Still another object of the invention is to provide an oiling gun for bolsters and the like that is extremely light in weight, relatively cheap to manufacture, and highly efficient in service.

With these and other objects in view, the invention consists in certain new and novel arrangements and combination of parts as will be hereinafter more fully described and pointed out in the claims.

Referring now to the drawing showing a preferred embodiment:

Figure 1 is a sectional view showing my improved oiling gun and diagrammatically showing the mobile tank to which the gun is to be attached;

Figure 2 is a view similar to Figure 1, but showing a gun in its operative position;

Figure 3 is a detailed sectional view taken on the line 3—3 of Figure 1; and

Figure 4 is a detailed sectional view taken on the line 4—4 of Figure 2.

Referring now more particularly to the drawing, and for the moment to Figure 1, there is shown diagrammatically a mobile tank 1 in which will be stored the oil to be used, and although I have not shown the motors and filters on or within the tank, it will be understood that such means are provided for forcing the oil under pressure from the tank to the gun about to be referred to. Also there is means provided for forming a suction line through the gun, so that the oil after reaching a certain level in the bolster will be automatically drawn off and returned to the tank.

Referring more particularly now to the gun which may be an aluminum casting, there will be seen the handle 2 and the head 3. Within the handle there may be seen the passageway 4, which is connected to an oil pressure line 5, which line may be in the form of a flexible oil resisting solvent hose, and this hose will be fitted on the nipple 6 that is threaded in the counter-bore 7 at the rear end of the handle. Likewise, there is the passageway 8 with the nipple 9 over which fits the suction pipe 10 which, of course, leads from the handle back to the mobile tank 1.

The head 3 of the gun is bored, as at 11, throughout its length, and is fitted with an internal bushing 12 and a packing gland 13. The top of the head is externally threaded as at 15 and fitted with a cap 16. Near the outer face of the head there is also the vertically extending bore 17, which is counterbored, as at 18, and this counterbore 18 is again counterbored, as at 19, as may be clearly seen. The bore is internally threaded, as at 17', to receive a tube which will hereinafter be spoken of as the pressure nozzle 20 and, in turn, extends through a some-

what larger tube 21, which is hereinafter referred to as the suction nozzle.

From the bore 17 at its top extends a port 22, and likewise there is a second part 23 which registers with counterbore 18. Both of these ports also register with the main bore 11.

The bushing 12 also has ports that register with the ports 22 and 23. Likewise the bushing also has ports on its opposite sides that register with the forward ends of the passageways 4 and 8 heretofore mentioned.

Fitting within the main bore 11 is the plunger valve 30, which has the transverse port 31 near its upper portion and the transverse port 32 spaced below the above-mentioned port. The distance between these two ports is the same as the distance between the port or forward end of the pressure passageway 4 and the suction passageway 8. These ports 31 and 32 are also arranged to register with the ports 22 and 23 when the plunger valve is in its lowermost or operated position.

It might here be mentioned that the main bore 11 is also counterbored at its lower end, as at 35, so that a spring 36 may be fitted therein which, in turn, will bear against the foot 37 of the plunger, and likewise bear against the nut 38, which is threaded into the counterbore. This nut 38 also carries a small adjusting screw 39 to regulate the distance to which the plunger can be lowered, so that the various ports above mentioned will all be in their respective alignment when the plunger valve is operated.

Mounted on the handle, at 40, is the trigger 41, which trigger has the finger 42 beneath the gun, and also has the arm 43 which is located just above the plunger valve heretofore mentioned.

Also as may be seen in Figure 1, the plunger valve has a vertically extending port 50 which registers with the forward ends of the passageways 4 and 8 when the plunger is in its inoperative position, so that the oil when driven through the passageway 4, will flow through the port 50 in the plunger, and then be drawn from this port back through the suction passageway 8 to the tank 1.

Thus when the plunger is in its normal or inoperative position, the oil will continuously flow from the tank through the handle of the gun down the plunger and back through the suction passageway into the mobile tank. Also the oil is continuously circulating through the gun and ready to be shot from the gun, as will be shortly explained, the moment the trigger is operated.

As heretofore mentioned, various kinds of filters and pumps may be carried on the mobile tank 1, so that clean oil will be continuously circulated through the gun.

In Figures 1 and 2 I have shown a bolster 6 which is the object to be oiled, and it will be noticed that the pressure nozzle 20 extends to the bottom thereof.

Different bolsters may have different depths, so to provide for this, it will be noticed that the suction nozzle as well as the pressure nozzle are quickly and readily removable from the gun so that different length nozzles may be quickly installed. Figure 1 shows a normal installation, with the suction nozzle at the desired height, that is, the desired oil level of the bolster.

It might be mentioned before passing to the operation that there is a small pin 65 that extends within the vertical port within the plunger valve, which pin prevents the plunger valve from

turning, and also, of course, helps hold the bronze bushing in position.

Operation

After the motors and pumps, not shown, are turned on in the mobile tank 1, as heretofore mentioned, the oil will be circulated through the gun by passing through the pressure passageway 4 through the port 50 in the plunger, and be drawn out through the suction passageway 8.

When it is desired to clean out the old oil in the bolster to put a fresh supply therein, and have it extend to the desired oil level, the trigger finger 42 is grasped and pulled upwardly toward the handle which, in turn, forces the plunger valve downwardly so that the ports 31 and 32 in the plunger will now be in registry with the pressure and suction passageways 4 and 8, and also with the ports 22 and 23, which lead respectively to the pressure nozzle and the suction nozzle. The oil in the gun then rather than circulating back to the tank just through the handle is now driven through the pressure nozzle 20 down into the body of the bolster, as will be readily seen. As soon as the oil, however, rises to the lower end of the suction nozzle 21, any additional oil above the level will be quickly drawn up through the suction nozzle through the gun, and be returned to the mobile tank.

I have found in actual operation that the nozzles can be inserted within the bolster, the old oil forced out, new oil forced in to the desired oil level, and any excess oil forced back in the tank, all within a period of fifteen seconds.

It will be seen, therefore, that by using the gun and its tank, the correct oil level may be instantly obtained without the necessity of measuring out the proper amount of oil in an oil can, and at the same time the old oil is drawn out clean and filtered, and again recirculated through the gun.

Finally, there is no possibility of putting too much oil in a bolster so that it is impossible for the oil to overflow, and thus spoil any yarn on the spindle, not shown.

It will be readily appreciated that should the trigger be held in its pressed position unnecessarily long, it in no way affects the amount of oil in the bolster, as the oil will be drawn out through the suction nozzle just as fast as it is shot in through the pressure nozzle. Therefore, the operator cannot put too much oil in each bolster, even though he continue to press the trigger long after the bolster is filled to the desired oil level.

From the foregoing it will be seen that I have provided a means for quickly oiling bolsters of spinning machines, and by providing a mobile tank, the same may be quickly run up to and from the machine and the multiple spindles all oiled rapidly and in an efficient manner without any danger of furnishing too much oil to any bolster.

Many slight changes may be made without departing from the spirit and scope of the present invention.

Having thus described my invention, what I desire to secure by Letters Patent is:

1. An oiling gun for spindle bolsters and the like adapted to be used in connection with a circulating oil supply including a handle and a head, the said handle and head having a pressure passageway and a suction passageway, a valve mechanism normally connecting the pressure and suction passageways to permit the oil to by-pass

continuously through the handle, a pressure nozzle and a suction nozzle, the pressure nozzle being of greater length than the suction nozzle, the said valve mechanism also provided with transverse ports, trigger means for operating the said valve mechanism to bring said transverse ports in registry with the pressure and suction passageways and the pressure and suction nozzles, to thereby supply oil in the bolster to the level of the suction nozzle when said nozzles are inserted in said bolster, and spring means for normally holding the valve mechanism in its inoperative position.

2. A pressure oiling gun for filling bolsters and the like to a predetermined oil level and adapted to be used in connection with a circulating oil supply, including a pressure nozzle adapted to extend to the lower end of the bolster and a suction nozzle adapted to extend to the desired oil level the one within the other, the said gun provided with pressure and suction passageways, an operable valve mechanism normally permitting the oil to circulate through the gun, said valve mechanism provided with ports to bring the said respective passageways and nozzles into registry, whereby when said valve mechanism is operated the oil will be shot into the said bolster to the level of the suction nozzle and any additional oil will be drawn through said suction nozzle.

3. An oiling gun for spindle bolsters and the like adapted to be used with a constant circulating oil supply including a pressure and a suction nozzle, the pressure nozzle fitting within said suction nozzle and of greater length, a passageway in the gun for supplying oil to the pressure nozzle, and a suction passageway for withdrawing any oil that extends above the level of said suction nozzle when the said nozzles are inserted within a bolster, operable valve means for normally by-passing the oil through said pressure and suction passageways until said valve means is operated and the operation of said valve means supplying the oil to the pressure nozzle.

4. An oiling gun for automatically supplying oil to a desired level in spindle bolsters and the like and adapted to be used with a constant circulating oil supply including a pressure nozzle and a suction nozzle, the suction nozzle being shorter in length than the pressure nozzle for determining the height of the oil to be supplied to the bolster, the said gun provided with a pressure and a suction passageway, an operative valve mechanism in said gun and having a port normally registering with said passageways to thereby by-pass the oil through the handle, means for operating said valve mechanism to bring further ports into registry and cause the oil to be shot through the pressure nozzle and

to rise to the level of the suction nozzle and from this level to be withdrawn back through the suction passageway of said gun.

5. In an oiling gun for spindle bolsters and the like and adapted to be used with a constantly circulating oil supply including a handle and a head, a valve member movable in said head, the said handle having a pressure passageway and a suction passageway, a vertical port in said movable valve normally registering with both of said passageways whereby oil may be continuously circulated through said handle and said valve, a suction nozzle fitted within said head and a pressure nozzle within said suction nozzle and of greater length, transverse ports also within said valve mechanism, trigger means for operating said valve mechanism to bring said last-mentioned ports in registry with the pressure and suction passageways and also in registry with the pressure and suction nozzles, whereby the oil will be forced through said pressure nozzle on an operation of the valve mechanism to the level of the suction nozzle when said nozzles are placed within the bolster to thereby fill the bolster only to the level of the suction nozzle.

6. An oiling gun for spindle bolsters and the like adapted to be used in connection with a circulating oil supply, including two nozzles, one within the other, one of which is longer than the other, the longer of the nozzles adapted to reach the bottom of the bolster to be oiled and the shorter of the nozzles adapted to determine the height to which the bolster is to be filled with oil, means for supplying oil to the longer of said nozzles and drawing off the oil in the bolster when it reaches the level of the shorter nozzle, passageways in the gun for by-passing the oil before it reaches the nozzle as the oil flows through the gun, valve mechanism in said gun for normally cutting off both of said nozzles and by-passing the oil through said passageways in said gun, and trigger means for actuating said valve to operate said gun.

7. An oiling gun for automatically supplying oil to a desired height in a spindle bolster and the oiling gun adapted to be used in connection with a circulating oil supply, the gun including a pressure and a suction nozzle one within the other, the pressure nozzle being longer than the suction nozzle, the pressure nozzle adapted to reach the bottom of the bolster to be oiled and the suction nozzle adapted to determine the height to which the bolster is to be filled with oil, the oiling gun provided with a valve and passageways for normally by-passing the nozzles while the oil is circulating through the gun, and trigger means for actuating said valve and cutting in both of said nozzles to operate said gun.

JOSEPH P. LAIRD.