

April 15, 1958

E. H. LANDIS
COOLANT SUPPLY SYSTEMS

2,830,740

Filed Nov. 12, 1954

2 Sheets-Sheet 1

FIG. 1

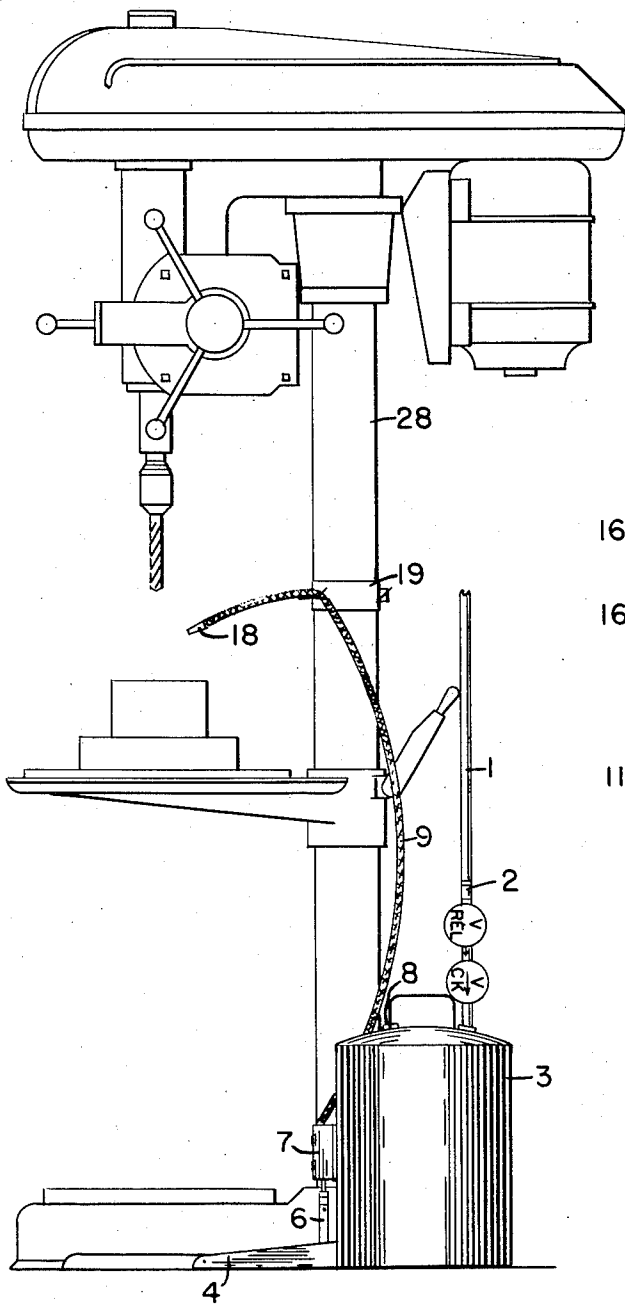
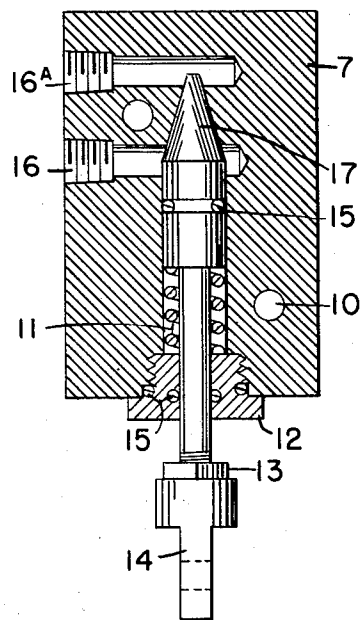


FIG. 2



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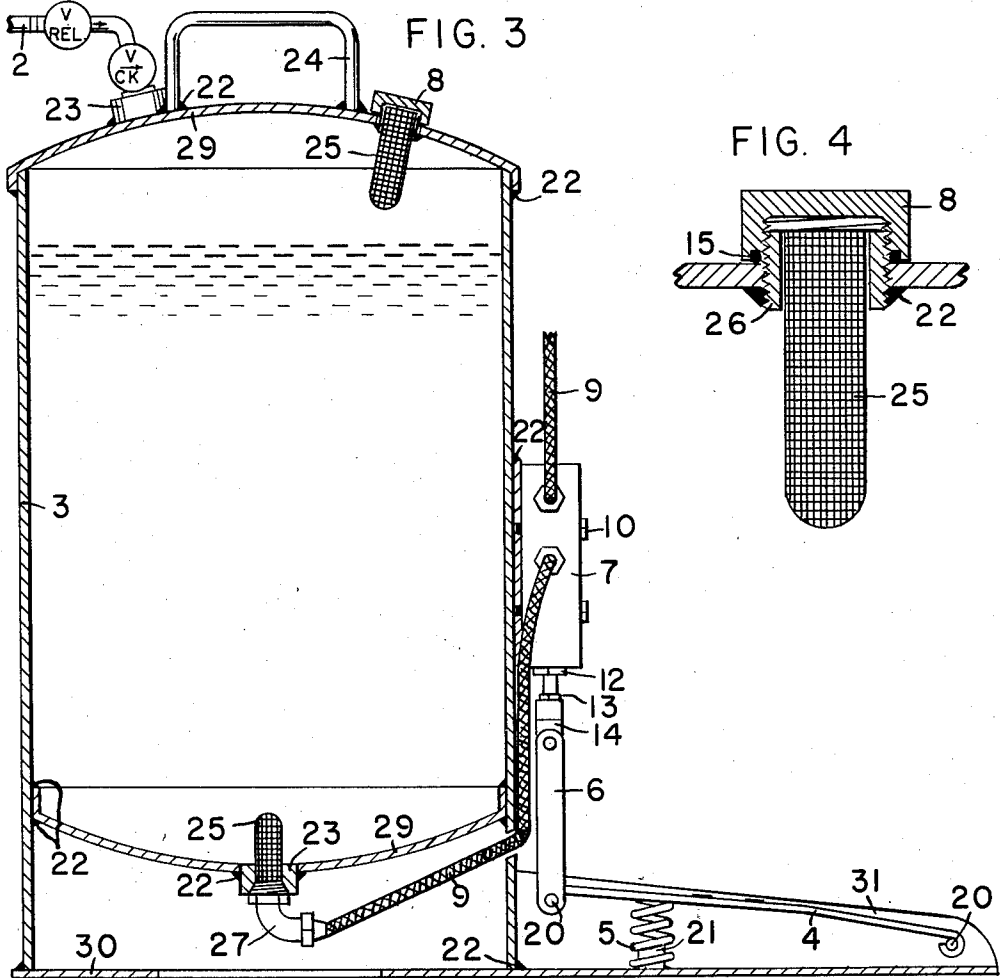
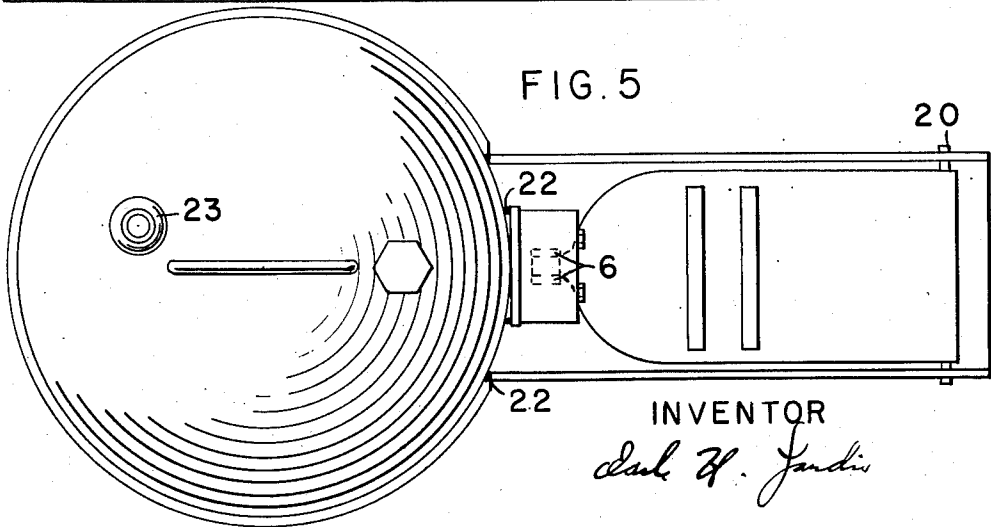
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COOLANT SUPPLY SYSTEMS

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4 Claims. (Cl. 222—179)

This invention relates to a device for supplying coolant to machine tools such as a drill press, lathe, milling machine, and the like. The primary object of this invention being to provide a simplified and more satisfactory method of supplying coolant.

Another object being to supply a compact, portable coolant supplying device that can be easily moved and used on any machine as needed, simply by snapping on to an air hose.

Still another object being to provide a coolant supplying device that is easily constructed, maintained and operated by air pressure, worked by a foot pedal.

Other objects and advantages will be seen in the details of construction and operation as more fully described and claimed in the following description and in the accompanying drawings in which:

Fig. 1 is a side view of a conventional drill press showing the pneumatic coolant supply in position ready to be used by the operator.

Fig. 2 is a cross section view of the foot pedal shut-off valve.

Fig. 3 is a cross section view of the coolant supply tank and foot pedal assembly.

Fig. 4 is a cross section view of the filler cap and the coolant strainer.

Fig. 5 is a top view of supply tank and foot pedal assembly.

The same reference numerals throughout the several views indicate the same parts.

The present conventional oil pumps that are built into the machines and others that have to be attached to the machines are of the constant flow type, resulting in a waste of oil and a loss of efficiency of the operator. Another means of supplying oil to the work piece or to the cutting tool is by hand with an oil brush or an oil can, also resulting in a loss of time by the operator. With the present motor driven oil pumps, there is the problem of the motors deteriorating; the lines often become clogged, resulting in the loss of time that is necessary to clean out the line and the reservoir. The oil pumps presently used are permanently attached to the individual machine, and when they are not in use they very often get in the way of the operator.

With the pneumatic coolant supply unit these difficulties are overcome by a thoroughly simplified means of supplying coolant only when it is needed. This means there is not any excess oil wasted or flowing over the machine and the work piece making it difficult for the operator to handle the work and the machine. So little oil is used that the return is eliminated, which in turn eliminates the hazard of clogged lines. This also cuts down a good deal of the expense in manufacturing of the product. With this greatly improved coolant supply, the operator is free at all times to use both hands on the work, and when oil is needed, the foot pedal is pressed to the degree of the amount of oil necessary. Not being exposed to an excess of oil will help to prevent the oil rash many men develop.

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Referring now to Fig. 1 of the drawings, a conventional drill press is shown with pneumatic coolant supply unit in the manner in which it is used. The air line 1, which has a Schrader snap-on coupling 2, is snapped on to the pneumatic coolant supply unit. The air passes through a pressure regulating valve into the check valve and then into the oil supply tank 3. This supply tank 3 is recommended to hold approximately five gallons. Whenever oil is needed, the operator presses down on the foot pedal 4 which has a spring 5 that acts as a stop to prevent abuse of the shut-off valve 7. The foot pedal 4 is connected to the shut-off valve 7 by a link 6. When pressure is applied to the foot pedal 4, the shut-off valve 7 opens, allowing oil to pass through into the oil line 9, through the nozzle 18 and onto the work. A special fan or spread type nozzle can be supplied for lathe work. The oil line 9 is held in position by a strap clamp 19 having a support for the metal hose 9. The strap clamp 19 has a wing nut that is easily opened to move the strap clamp 19 up and down the drill press column 28.

Referring now to Fig. 2 of the drawings, the shut-off valve 7; the valve connector 14 is attached to the link 6 by a $\frac{1}{4}$ " rod 20 and is held securely in place by a lock nut 13. When pressure is applied to the foot pedal 4 it pulls the valve 17 down. The valve stem passes through a gland nut 12 that has plastic O-rings on the interior and exterior of the nut 12. This prevents leakage. The valve spring 2 compresses and the valve 17 goes down allowing the oil to go through the valve 7 from drilled hole 16 to drilled hole 16A, on into the oil line 9 and onto the work.

The valve 7 is recommended, however if a standard valve exists that will perform the same function, as well, it can be substituted.

Referring now to Fig. 3 of the drawings which is a cross section view of the coolant supply tank and foot pedal assembly; the coolant supply tank 3 is constructed of $\frac{1}{8}$ " steel tubing with flanged and dished heads 29 of $\frac{1}{8}$ " steel welded onto the steel tubing. (All welds are designated by 22.) The tank 3 is then welded onto the base 30, being also $\frac{1}{8}$ " steel. The pedal supports or side walls 31 are bent up to support the foot pedal 4 to prevent side play. The check valve is screwed into a threaded collar 23 that is pressed into the top head 29 and then welded. The oil flows through a fine strainer 25 that is soldered onto the elbow 27 having a $\frac{1}{8}$ " pipe thread. The elbow 27 is held in position by the collar 23 that is pressed into the bottom head 29 and then welded. The oil passes through the elbow 27 into a "Titeflex" hose 9, or similar, thus going up to the valve 7. The valve 7 is held onto the tank 3 by $\frac{1}{4}$ " 20 bolts that screw into a $\frac{1}{8}$ " thick plate that is welded onto the side of the tank 3. The foot pedal spring 5 is held in position by a spring locator 21 that can be either welded or bolted to the base 30. The handle 24 is welded onto the top head 29 to make it convenient to move.

Referring now to Fig. 4 of the drawings, an enlarged cross section view of the filler cap 8 shows a threaded section of pipe 26 that is screwed into the top head 29 and welded from the inside, as shown in Fig. 3. Another strainer 25 is soldered on the top lip of the threaded pipe 26 so that when coolant supply tank 3 is filled with oil, no dirt will enter the tank. A plastic O-ring 15 is inserted over the threaded section of pipe 26 so that when filler cap 8 is screwed down it will make an air tight seal.

Referring now to Fig. 5 of the drawings, a top view of the coolant supply tank and pedal assembly showing the valve link 6 that is comprised of two pieces of $\frac{1}{8}$ " steel, one on either side of the valve connector 14 at the top, and of the foot pedal 4 at the bottom. The purpose of this double link 6 is to prevent rocking of the foot pedal 4.

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It is believed the details of construction, operation and advantages of the device will be easily understood from the foregoing without further detailed explanation. It is understood that the drawings and disclosures presented herewith are by way of example only, rather than by way of limitation, and that without changing the basic invention, the construction may be varied within the scope of the appended claims.

What is claimed is:

1. A compact coolant supply system comprising a tank to contain a supply of cooling fluid, said tank having side-walls extending below the bottom of the tank and terminating in a base portion adapted to rest upon the floor, means coupled to said tank to maintain said fluid under constant pressure, a valve body carried by a side wall of said tank, means coupling the input of said valve body to said tank adjacent the bottom portion thereof, a valve member movably disposed in said valve body to control flow of fluid therethrough, a foot pedal carried by the base portion of said tank and means coupling said foot pedal to said valve member for actuation thereof when flow of fluid is required.

2. A compact coolant supply system comprising a tank to contain a supply of cooling fluid, said tank having side walls extending below the bottom of the tank to form the base, said base having a portion extended outwardly to one side of said tank, a valve body, means coupling the input of said valve body to the bottom portion of said tank, said valve body having a valve member movably disposed therein to control passage of fluid therethrough, means pivoting a foot pedal on said extended portion, and means linking said valve member to said pedal for actuation of said valve member by the foot of an operator when a flow of fluid is desired.

3. A compact coolant supply system comprising a tank to contain a supply of cooling fluid, means to maintain

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said supply under pressure, said tank having a base rim, a base plate secured to said rim and having side walls terminating adjacent the bottom of said rim into a portion extended outwardly to one side of said tank, the side edges of said extended portion being turned upwardly, a foot pedal pivotally disposed between said side edges, a valve body having its inlet coupled to the bottom portion of said tank and a movable valve member coupled to said pedal to control the passage through said valve body in accordance with foot pressure applied to said pedal.

4. A compact coolant supply system comprising a tank to contain a supply of cooling fluid, said tank having side walls terminating into a base having a portion extended outwardly to one side of said tank, said extended portion having two upright flanges spaced apart, a foot pedal receivable between said flanges, a pin carried by said flanges to pivot said pedal at the outer end thereof, a valve body supported on the side wall of said tank above said extended portion, means coupling the input of said valve body to the bottom portion of said tank, a flexible hose coupled to the output of said valve body, said valve body having a valve member reciprocatably disposed therein to control the passage of fluid therethrough, means linking said valve member to the inner end of said pedal and a spring disposed between said pedal and said base to normally urge said pedal toward valve closing position.

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