

Aug. 14, 1928.

J. BATH

1,680,360

LUBRICATING DEVICE FOR GRINDING MACHINES

Original Filed April 23, 1923

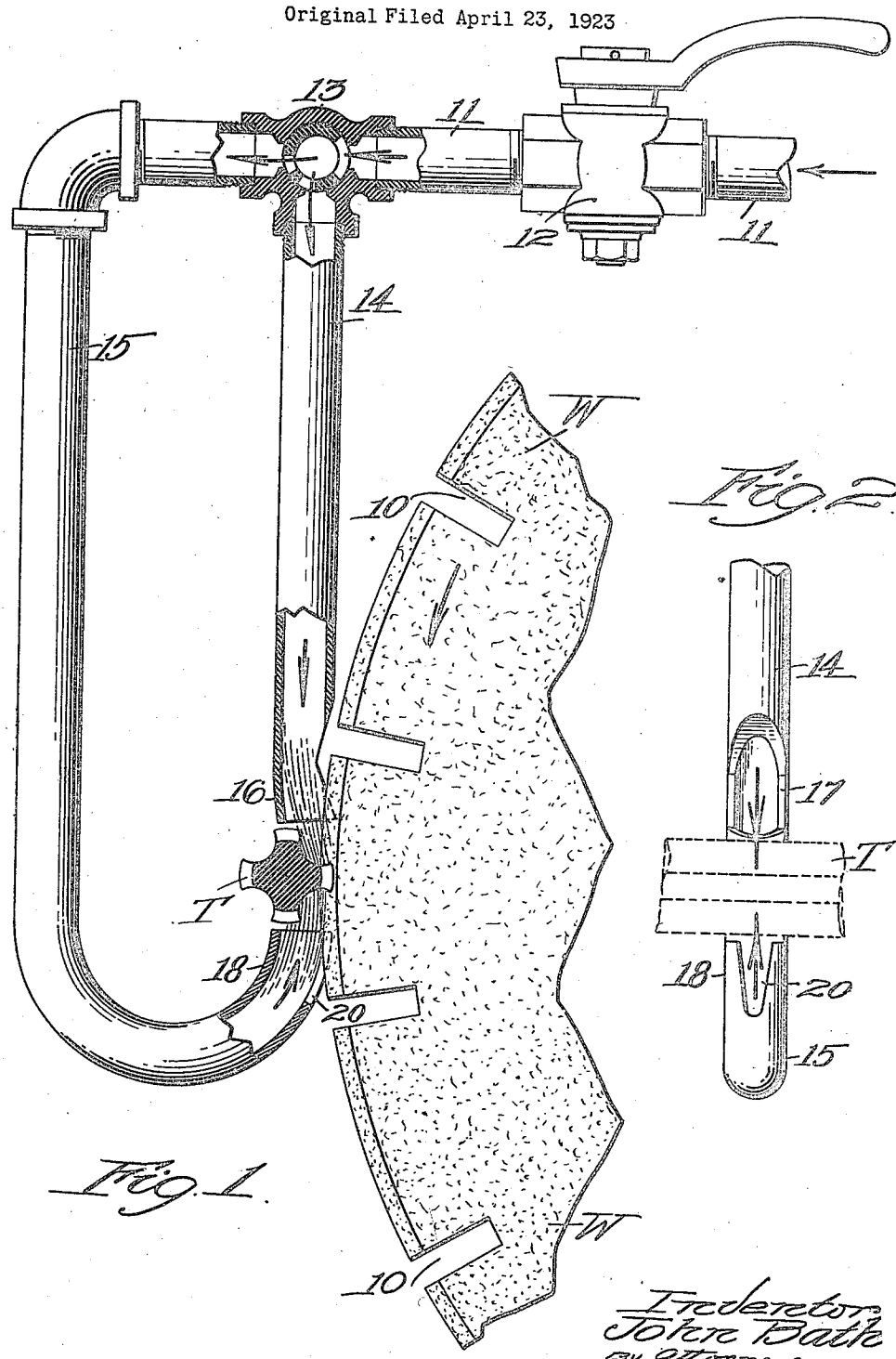


Fig. 1.

Fig. 2.

Inventor
John Bath
by Attorneys

Southgate & Southgate

Witness
C. F. Mason

UNITED STATES PATENT OFFICE.

JOHN BATH, OF WORCESTER, MASSACHUSETTS.

LUBRICATING DEVICE FOR GRINDING MACHINES.

Application filed April 23, 1923, Serial No. 633,989. Renewed February 15, 1928.

This invention relates to a device for effectively lubricating a rapidly rotating grinding wheel and the work upon which the wheel is operating and is a continuation in part of my prior application, Serial No. 527,812, embodying divisional subject matter thereof.

Although capable of general application, the device has been particularly designed for use in grinding taps and other threaded work. It is one object of my invention to provide a lubricating device having a duplex delivery so that two reversely directed streams of lubricant will engage the work on opposite sides thereof and adjacent the cutting point of the wheel.

A further object of my invention is to provide means by which the relative flow of lubricant from the delivery tubes may be conveniently controlled. Another important feature of my invention relates to a construction of each lubricant conveying pipe or tube which permits the edge of the wheel to enter the stream of lubricant before the latter escapes from its conducting tube.

My invention is particularly applicable for use with a grinding wheel in which relatively deep spaced notches or recesses are formed in the periphery, which are adapted to be filled with lubricant, and to carry the same past the work, preventing heating of the teeth to be ground.

Further objects of my invention relate to arrangements and combinations of parts which will be hereinafter described and more particularly pointed out in the appended claims.

A preferred form of the invention is shown in the drawings, in which

Fig. 1 is a side elevation of my improved lubricating device, partly in section; and

Fig. 2 is a detail rear elevation thereof.

Referring to the drawings, I have shown a portion of a tap T and a grinding wheel W having relatively deep notches or recesses 10 spaced about its periphery. The edge of the grinding wheel is of course accurately shaped to produce the desired cut in the work to be ground. Lubricant is supplied through a pipe 11, preferably from a pump not shown, and the flow of lubricant may be regulated or entirely shut off by a valve 12.

Beyond the valve 12 the pipe 11 preferably enters a three-way valve 13 having lubricant

conveying tubes 14 and 15 connected thereto. By manipulation of the valve 13 the relative flow through the tubes 14 and 15 may be controlled and regulated as desired and the total flow of lubricant may be varied by use of the valve 12.

The tube 14 is substantially straight but may be slightly curved toward the grinding wheel at its extreme lower end, as indicated at 16. The end of the tube is also preferably cut away or slotted on the side toward the wheel, as indicated at 17 in Fig. 1. This construction permits the edge of the wheel W to project somewhat into the stream of lubricant before the latter escapes from the lower end of the tube 14. This insures effective lubrication of the wheel and also to some extent protects the thin cutting edge from accidental damage.

The second tube 15 is provided with a return bend 18 at its lower end so that the two streams of lubricant are reversely directed against opposite sides of the tap T adjacent the cutting point of the wheel. The tube 15 may also be provided with a slot or opening 20 in its end portion 18 corresponding in position and function to the slot 17.

The construction herein described has been found exceedingly effective in thoroughly lubricating and cooling the work, as a copious stream of lubricant is at all times applied to all parts of the work.

It is found that the two streams, when meeting, seem to neutralize each other and to flow away from the work more quietly and with less spattering than when a single stream is used.

Furthermore, the use of my improved lubricating device in combination with a recessed or notched wheel enables me to greatly increase the grinding speed and to produce a correspondingly increased output of the machine without heating the work or drawing the temper thereof.

Having thus described my invention and the advantages thereof, I do not wish to be limited to the details herein disclosed otherwise than as set forth in the claims, but what I claim is:—

1. In a grinding machine, a grinding wheel, a lubricant conveying pipe extending downward substantially in the plane of rotation of said wheel to a point directly above the point of contact of the wheel with the work, a second lubricant conveying pipe ex-

tending upward substantially in the plane of rotation of said wheel to a point directly below the point of contact of said wheel with the work, whereby converging streams of lubricant are delivered to the wheel and work at the cutting point, and means to control the flow of lubricant from the two pipes and vary that of one relative to the other.

10 2. In a grinding machine, a grinding wheel having relatively deep recesses spaced about its periphery, and means to direct converging streams of lubricant against the wheel and work and into the recesses of the

15 wheel as the wheel rotates.
3. In a grinding machine, a grinding wheel having relatively deep recesses spaced about its periphery, and means to direct converging streams of lubricant against the wheel
20 and work and into the recesses of the wheel as the wheel rotates, said means comprising a pair of lubricant conveying pipes having their open ends reversely disposed in the plane of rotation of the wheel and closely

adjacent the cutting point above and below 25 the work.

4. In a grinding machine, a grinding wheel, and a lubricant conveying pipe extending adjacent the working point of the wheel, said pipe being slotted on one side 30 at its delivery end to permit passage of the edge portion of the grinding wheel through the side of the pipe and into the stream of lubricant as the wheel approaches the work.

5. In a grinding machine, a grinding 35 wheel having relatively deep recesses spaced about its periphery, and means to direct converging streams of lubricant against the wheel and work and into the recesses of the wheel as the wheel rotates, said means 40 comprising a pair of lubricant conveying pipes having their delivery ends directed toward each other and having slots in the end portions thereof into which the edge of the grinding wheel may project. 45

In testimony whereof I have hereunto affixed my signature.

JOHN BATH.