

March 1, 1927.

H. W. HILL

1,619,344

ABRASIVE SUPPLYING MEANS

Filed May 16, 1925

2 Sheets-Sheet 1

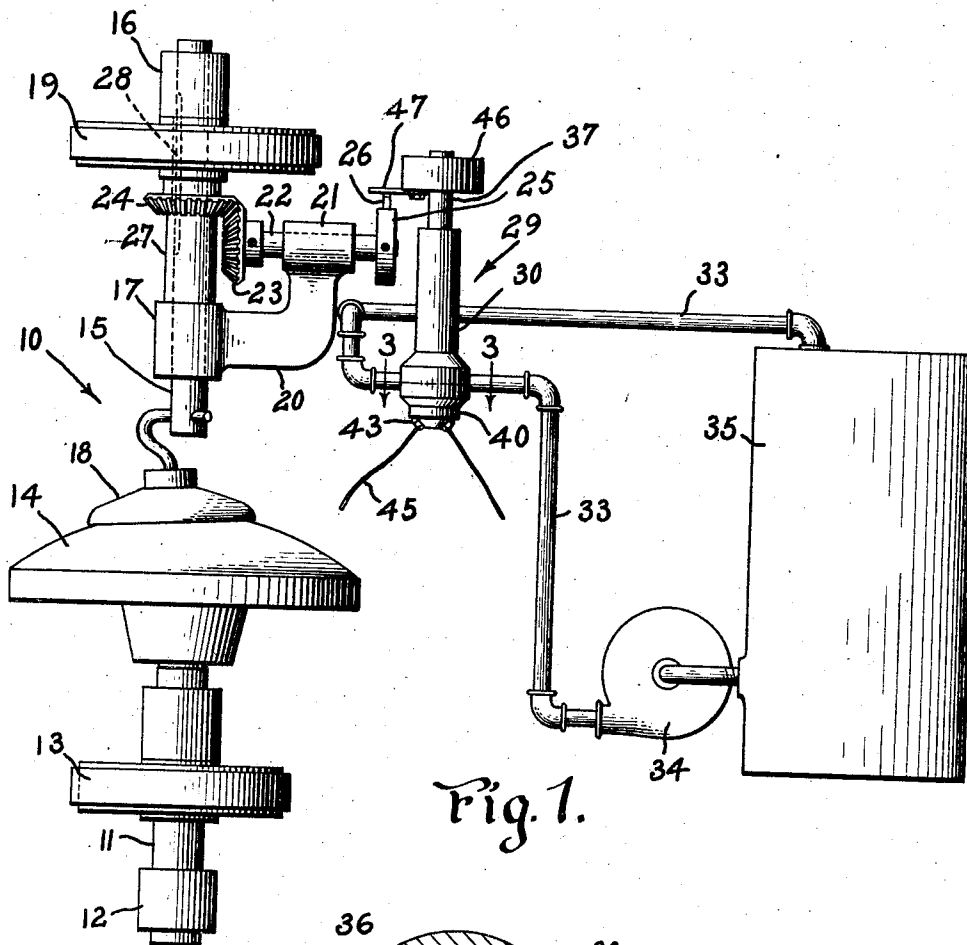


Fig. 1.

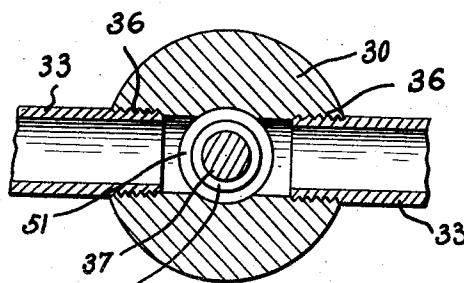


Fig. 3. Harry W. Hill.

By Harry H. Styll

Inventor

Attorney

March 1, 1927.

H. W. HILL

1,619,344

ABRASIVE SUPPLYING MEANS

Filed May 16, 1925

2 Sheets-Sheet 2

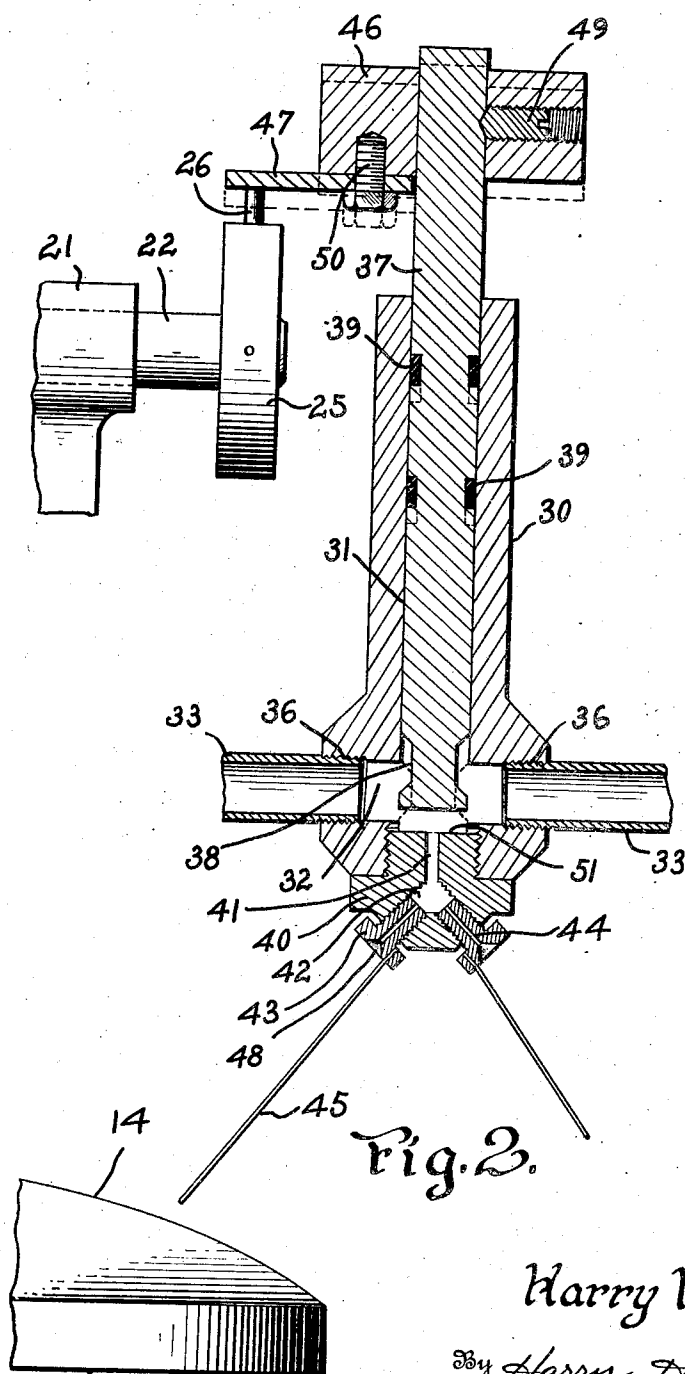
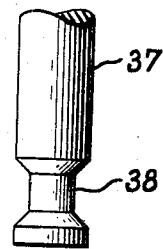


Fig. 4.

Fig. 2.

Inventor

Harry W. Hill.

By Harry H. Styll.

Attorney

UNITED STATES PATENT OFFICE.

HARRY W. HILL, OF SOUTHBRIDGE, MASSACHUSETTS, ASSIGNOR TO AMERICAN OPTICAL COMPANY, OF SOUTHBRIDGE, MASSACHUSETTS, A VOLUNTARY ASSOCIATION OF MASSACHUSETTS.

ABRASIVE-SUPPLYING MEANS.

Application filed May 16, 1925. Serial No. 30,837.

This invention relates to new and useful improvements in means for supplying an abrasive, such as rouge, emery, or the like, to lens surfacing machines.

5 It is well known that in the polishing of ophthalmic lenses it is essential that these lenses be constantly supplied with an abrasive, usually rouge, in order that a highly polished surface may be obtained.

10 In lens polishing machines prior to the present invention, the application of rouge to the lens was performed either by hand or by what is known as the scoop method, wherein a quantity of rouge was placed
15 within the rouge pan and thrown onto the lens by the action of centrifugal force as the pan was rotated. While this method possessed many advantages over applying the rouge by hand, yet it was necessary to
20 more or less constantly watch the machine so as to replenish the supply of rouge as it was needed.

Therefore, one of the principal objects of the present invention is the provision of a
25 device for automatically supplying an abrasive to a lens surfacing machine so that the constant watching thereof will not be necessary.

Another object of the invention is to construct such a device of this character where-
30 by the abrasive will be intermittently supplied to the lens surfacing machine, and wherein is provided new and novel means for regulating the flow thereof.

35 Another object is to provide such a device which is capable of supplying an abrasive to more than one machine at the same time.

A further object is to provide such a device which may be mounted in series, and
40 wherein the operation of any one may be discontinued without affecting the operation of the others.

With these and other objects in view the invention resides in the novel construction,
45 combination and arrangement of parts hereinafter more fully set forth, illustrated in the accompanying drawings, and particularly pointed out in the appended claims.

In the drawings forming a part of this
50 application:

Figure 1 is a view, in elevation, showing the present invention as applied to a lense surfacing machine;

Figure 2 is a vertical horizontal sectional

view through the improved abrasive feeding means;

Figure 3 is a view taken on line 3—3 of Figure 1;

Figure 4 is a view, in elevation, of the lower end of the plunger.

In the drawing, wherein for the purpose of illustration is shown a preferred embodiment of the invention, the numeral 10 designates a lens surfacing machine in its entirety and comprises in its construction a spindle 11 supported in the journal 12 and being driven by means of the belt and pulley connection 13. The rotatable spindle 11 supports at one end the lens surfacing tool 14 which is detachable therefrom so that any desired curvature of tool may be employed.

Arranged in opposed relation to the surfacing tool 14 is a spindle 15 journaled within the upper and lower bearings 16 and 17, respectively, and carrying at its lower end a lens holder 18, rotatable with said spindle 15 which is driven by means of the belt and pulley 19.

The lower bearing 17 is formed integrally with the bracket member 20, being provided at its outer end with the horizontally disposed bearing 21, in which is mounted the shaft 22 having secured thereto at one end a bevel gear 23 which meshes with the bevel gear 24 carried by the spindle 15, while secured to the opposite end of said shaft 22 is a cam member comprising a collar 25 having a pin, or the like, 26 secured to the periphery thereof. While a cam member of this particular construction has been shown and described, it is, of course, obvious that any desired type may be employed which will accomplish the results desired. The gear 24 is held in proper position relative to the gear 23 by means of a spacing collar 27 encircling the spindle 15. Carried by the gear 24 and the pulley 19 is a key 28 which operates in a groove formed in the spindle so that while the gear 24 and the pulley 19 are rotatable with the spindle, they remain stationary during any vertical movement thereof.

Positioned in close proximity to the surfacing machine is the automatic abrasive supplying means designated generally at 29 and comprising in its construction a body member 30 having a vertical bore 31 there-
105 through and a transverse bore 32 intercept-

ing the first named bore adjacent the bottom thereof. The body member 30 is positioned in a pipe line 33 connected at one end to a centrifugal pump 34 and at its other end to the abrasive containing tank 35, the separated ends of the pipe line being received within the opposite ends of the transverse bore 30, as shown at 36, thereby forming a continuous abrasive passage.

Slidably mounted within the vertical bore 31 and extending into the transverse bore 32 is a plunger 37 being formed adjacent its lower end with a circumferential groove 38 so as not to retard the free passage of the abrasive through the transverse bore. The plunger 37 is provided with the stuffing boxes 39 in order to prevent upward creeping of the abrasive material.

Threaded into the lower end of the vertical bore 31 is a plug 40 which provides a valve seat 51 for the plunger 37. Formed within the plug 40 in alignment with the vertical bore 31 is a vertical opening 41 which communicates at its upper end with the transverse bore 32 and at its lower end with the plurality of openings 42 which extend obliquely therefrom and which receive the screws 43, each of which is provided with an opening 44, communicating with the opening 38.

Secured to each of the screws 43 and positioned directly below the opening 44 is an abrasive conducting wire 45, the free end of which is positioned directly above the surfacing tool 14.

Carried by the upper end of the plunger 37 is a weight 46 having secured to its lower face a plate 47 arranged to be engaged by the pin 26 of the cam member as the shaft 22 is rotated. Thus, when the surfacing machine is put into operation the shaft 22 will be rotated through the instrumentality of the gears 23 and 24 with the result that the pin 26, contacting with the plate 47 will cause the plunger to be raised and lowered. As the plunger is raised, a portion of the abrasive material which is constantly flowing through the pipe line 33 and the transverse bore 32 will gravitate down into the vertical opening 41 and as the plunger is lowered it will be forced downwardly through the openings 44 and the action of surface tension will cause it to adhere to and flow along the wire 45 to the lens surfacing tool.

The openings 44 are countersunk as indicated at 48 which will prevent any tendency for the abrasive to over-shoot and miss contact with the wires, these countersinks acting to guide the flow thereof onto the wire.

The weight 46 may be raised and lowered on the plunger by means of a set screw 49, whereby to time the opening and closing movement of the plunger relative to the opening 41, so as to regulate the flow of the abrasive onto the wire 45. That is to say,

the nearer the weight is positioned to the collar 25, the longer the valve will remain open as the pin 26 will contact sooner with the plate and will raise and lower the plunger gradually.

It may be desirable to mount these devices in series, or in other words, to place a number of them in a single pipe line and in order that the operation of any one may be discontinued without affecting the operation of the others, the plate 47 is secured to the weight by means of a screw 50, so that the said plate may be swung in a horizontal plane out of engagement with the pin 26.

As hereinabove stated, there is a constant flow of abrasive material through the pipe line, and that which is not forced outwardly by the plunger is returned to the tank 35, where it is again put into circulation through the pipe line by means of the pump 34.

While the invention has been shown and described in connection with this particular type of polishing machine, it will, of course, be obvious that it may be used in connection with any other kind of a polisher. Also, while there has been shown and described a preferred embodiment of the present invention, it will be understood that various changes in the particular make-up of the device may be found necessary, and that such changes as fall within the scope of the appended claims may be made without departing from the spirit of the present invention.

What is claimed is:

1. A device for supplying an abrasive to a lens surfacing machine, including a body portion having a vertical bore and a transverse bore intersecting the first named bore, a plunger mounted within the vertical bore and extending into the transverse bore, an abrasive conducting wire carried by the body portion, a weight carried by the plunger, and means engaging the weight whereby to raise and lower said plunger.

2. A device for supplying an abrasive to a lens surfacing machine, including a body portion having a vertical bore and a transverse bore, through which is arranged to flow an abrasive material a plunger mounted in the vertical bore and extendable into the transverse bore, a plug carried by the lower end of the body portion, and having an opening therethrough communicating with the transverse bore, an abrasive conducting wire secured to the plug adjacent the opening therethrough, a weight carried by the upper end of the plunger, and means engaging with said weight for raising and lowering said plunger whereby to force the abrasive through the opening in the plug and onto said wire.

3. A device for supplying an abrasive to a lens surfacing machine including a body

portion having a longitudinal bore and a transverse bore intersecting the first named bore, a plunger mounted in the longitudinal bore and extendable into the transverse bore, an abrasive conducting member carried by the body portion, and means engaging the plunger to reciprocate it in the longitudinal bore of the body portion.

4. A device for supplying an abrasive to a lens surfacing machine including a body portion having a longitudinal bore and a transverse bore through which is arranged to flow an abrasive material, a plunger in the longitudinal bore and extendable into the transverse bore, a member carried by the body portion having an opening therethrough communicating with the transverse bore, and means for reciprocating the plunger whereby to force the abrasive through the opening in the member carried by the body portion.

5. A device for supplying an abrasive to a lens surfacing machine including an abrasive supply tank, a pipe line between the tank and the machine, a pump in the pipe line, an abrasive distributing member in the pipe line comprising a body portion having a longitudinal bore and a transverse bore

communicating with the pipe line, a plunger in the longitudinal bore adapted to extend into the transverse bore, an outlet member secured to the body portion and having an opening therethrough, and means to reciprocate the plunger to permit the abrasive in the pipe line to pass through the opening in the outlet member.

6. A device for supplying an abrasive to a lens surfacing machine including an abrasive supply tank, a pipe line between the tank and the machine, a pump in the pipe line, an abrasive distributing member in the pipe line comprising a body portion having a longitudinal bore and a transverse bore communicating with the pipe line, a plunger in the longitudinal bore extendable into the transverse bore, an outlet member secured to the body portion and having an opening therethrough, conducting means extending from the opening to the machine, a weight on the plunger, and a movable cam member engaging the weight to reciprocate the plunger to permit the abrasive in the pipe line to flow through the opening in the outlet member onto the conducting member.

HARRY W. HILL.