

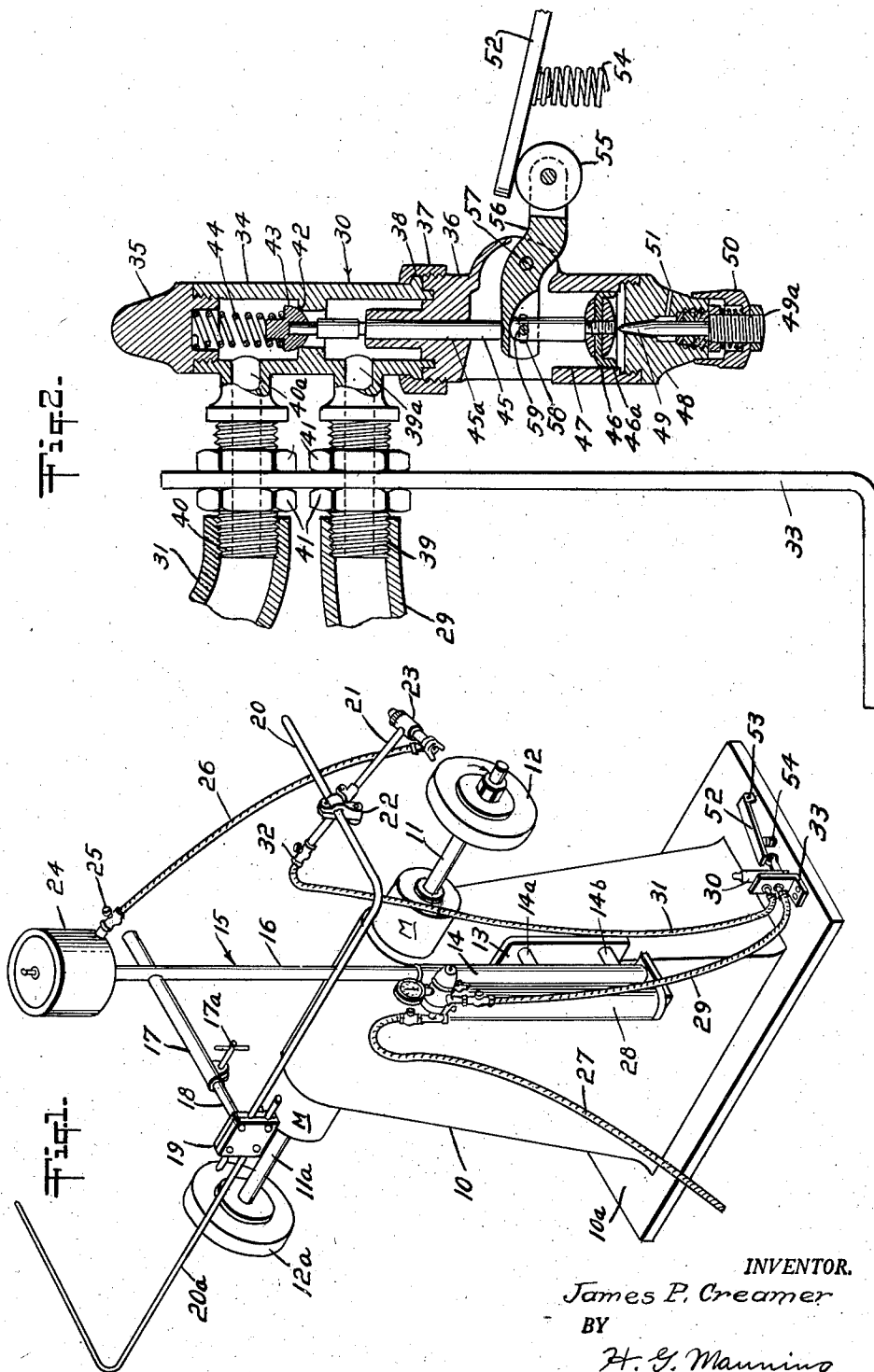
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APPARATUS FOR SUPPLYING ABRASIVE TO BUFFING WHEELS

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APPARATUS FOR SUPPLYING ABRASIVE TO
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This invention relates to buffing, and more particularly to an improved method and apparatus for spraying a liquid buffing compound upon a buffing wheel.

In buffing metal or other articles by means of a buffing wheel, powdered abrasive material, such as "Tripoli" has generally been applied to the wheel in the form of a cake, or sometimes in an agitated fluid or paste-like mixture.

These methods have been wasteful of material, since it was difficult for the operator to apply just the right amount of the buffing material to the buffing wheel, and in the instance of the cake material, the butt end of the cake or "nubbin" would be left over, which would be impractical to efficiently reclaim.

Further, the excessive amounts of buffing material applied to the buffing wheel would result in a packing of dirt in the crevices of the article being finished, thus creating a difficult cleaning problem.

While some attempts have been made to employ abrasive materials in liquid form, precise control of the liquid has been impossible because the abrasive would settle out of the liquid rapidly and even though the liquid was continuously agitated, there was always a tendency to clog the applying apparatus due to non-uniformity in the consistency of the liquid. Automatic operation with such a buffing liquid was thus found to be inefficient, and manual operation consumed an undue proportion of the operator's time.

One object of this invention is to provide an automatic apparatus which will apply buffing liquid continuously and uniformly to the surface of a buffing wheel without waste.

Another object is to provide an apparatus of the above nature, in which each application of the buffing liquid to the wheel will be made at a predetermined rate of flow and for a predetermined period of time.

Another object is to provide an apparatus of the above nature having means by which an operator may easily start the application of the buffing liquid without being required to interrupt his attention to the buffing operation itself.

Another object is to provide a method of buffing wherein the amount and direction of application of the buffing material will be precisely controlled.

A further object is to provide an apparatus of the above nature which will be simple in construction, inexpensive to manufacture, easy to install and manipulate, compact, and very efficient and durable in use.

With these and other objects in view, there has

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been illustrated on the accompanying drawing one form in which the invention may conveniently be embodied in practice.

In the drawing,

Fig. 1 shows a perspective view of an apparatus having a pair of buffing wheels and showing means for applying buffing liquid in the form of a spray to one of said buffing wheels.

Fig. 2 is a cross-sectional view, on an enlarged scale, showing the construction of the timer valve for controlling the period of the abrasive spray.

Referring now to the drawing, in which like reference numerals denote corresponding parts, the numeral 10 indicates a standard having a flat base 11a, and provided adjacent its upper end with a pair of oppositely-extending rotatable spindles 11 and 11a carrying buffing wheels 12 and 12a, respectively. The buffing wheels 12 and 12a are adapted to be rotated rapidly to perform any desired buffing operations upon articles (not shown) which may be held against the peripheral or side surfaces of said buffing wheels.

In order to support the spraying apparatus, one side of the standard 10, laterally of the spindle 11, carries a vertical bracket plate 13 provided with horizontal arms 14a and 14b, to which is secured an upright mounting tube 14 which supports a T-post 15 comprising a stem 16 telescopically received in said tube 14. The T-post 15 also has a horizontal tubular cross-arm 17 rigidly secured at right angles to the stem 16.

The cross arm 17 is provided at its outer extremity with a hand screw 17a which is adapted to clamp one end of a horizontal mounting post 18 within said arm 17. The opposite end of the mounting post 18 is provided with a vertical two-plate clamp 19 which is adapted to carry a pair of oppositely-extending L-shaped supporting arms 20, 20a, to each of which a tubular spray gun support 21 may be attached, by means of a double clamp 22.

A spray gun 23 is carried on the outer end of the support 21, being normally held in position for spraying buffing liquid directly against the peripheral surface of the buffing wheel 12 (or 12a), as shown in Fig. 1.

By means of this construction, it will be seen that the hand screw 17a, the clamp 19, and the double clamp 22 serve to mount the spray gun universally, and permit both longitudinal and rotatable adjustments so that the spray gun 23 may be pointed in any desired direction and be arranged at any desired height.

In order to supply buffing liquid to the spray gun 23, provision is made of an overhead liquid

tank 24 mounted upon the top of the stem 16 of the T-post 15—said tank having a shut-off valve 25 at the point of connection with a flexible hose 26, leading to the spray gun 23.

The spray gun 23 is of the type which employs compressed air to break up the fluid into an "atomized" spray and to propel the spray in the desired direction—the gun 23 being inoperative in the absence of air under pressure.

As herein disclosed, a flexible air hose 27 supplies compressed air to an air cleaner 28, which serves the purpose of cleaning said air and regulating its uniform delivery through a flexible air hose 29, connected to the inlet of a timer valve 30. The outlet of the valve 30 is connected by an air hose 31 to a shut-off valve 32 connected with the tubular support 21, for delivering the compressed air to the spray gun 23.

The purpose of the timer valve 30 is to enable the operator to actuate the spray gun for any desired predetermined periods of time under the control of a pedal 52 to be described later.

The timer valve 30 is connected to the base 10a or other support by an apertured angle bracket 33 and is held thereby in a position which will be convenient to the operator's foot. The valve 30 includes a hollow body 34, provided with an upper screw closure plug 35, and a lower hollow closure and guide member 36, secured to the body 34 by a threaded union ring 37 coacting with a flange 38 of the valve body. The body 34 also is provided with a lower horizontal air inlet nipple 39 and an upper horizontal air outlet nipple 40 having bores 39a, 40a, respectively, communicating with the interior of said valve body 34. The nipples 39, 40 also serve as one means for mounting the timer valve upon the bracket 33 and said nipples are held firmly in operating position by two pairs of nuts 41 located on opposite sides of the bracket 33.

Within the valve body 34, provision is made of a valve seat 42 located intermediate the nipple bores 39a and 40a, and a hemispherical valve closure 43 is also provided to coact with the valve seat 42—said closure being urged downwardly into closed position by a valve spring 44 reacting against the top closure plug 35. The valve closure 43 is movable upwardly into open position by a vertical valve rod 45 which is longitudinally slidable in a close fitting central bore 45a of the closure and guide member 36.

The valve rod 45 is extended downwardly into the closure and guide member 36 and has on its lower end a plunger 46 comprising a leather cup 46a which is fitted into a dashpot cylinder 47 formed in the lower end of said member 36. The dashpot cylinder 47 has a screw plug bottom closure 48 provided with an adjustable needle valve 49—the lower end 49a of which is threaded and provided with a manipulating knob 50. A bleed hole 51 is provided in the closure 48 to control the period of operation of the timer valve.

To facilitate the operation of the timer valve 30, a pedal 52 is pivotally connected at its rear end to a horizontal pin 53 on the base 10a—the intermediate portion of said pedal being pressed upwardly by a vertical counterbalance coil spring 54 disposed upon the base 10a.

The front end of the pedal 52 is located above a roller 55 carried in the outstanding end of a lever 56 fulcrumed at an intermediate point upon a laterally-extending pivot pin 57 secured at one side of the closure and guide member 36 which embraces said lever 56. The opposite end of the lever 56 has a slot 58 embracing the valve

rod 45 to which said lever 56 is operatively connected by a coacting cross pin 59 secured in said rod 45—the parts being so linked that the depression of the pedal 52 will cause the opening of the valve closure 43, and lifting of the dashpot plunger 46.

Operation

To place the apparatus in operation, the tank 24 will first be provided with a supply of a buffing liquid having powdered buffing material, such as Tripoli, in suspension, preferably consisting of an emulsion.

The valve 25 will then be manually opened to permit the liquid to flow by gravity from the tank 24 to the spray gun 23. The air valve 32 will then be opened, and the spray gun 23 adjusted in height and direction so that it will direct a spray efficiently against the desired surface of the wheel 12.

The buffing wheel 12 having been set in rapid rotation by any suitable means, such as an electric motor M, the operator will hold the work to be buffed against the peripheral or side surface of said buffing wheel, and will cause a "spurt" of buffing liquid to be sprayed upon the wheel surface by depressing the pedal 52 with his foot, whenever in his judgement it may be required.

It will be readily seen that a single momentary depression of the pedal 52 will trip the valve 30 and swing the lever 56 clockwise, raising the valve rod 45—thus causing simultaneous rapid opening of the valve closure 43 and the lifting of the dashpot plunger 46.

When the pedal is released, the downward closing movement of the valve closure 43 under the pressure of the spring 44 will be resisted and retarded by the air trapped in the dashpot 47 to a variable degree, depending upon the adjustment of the needle valve 49.

It will be understood that the needle valve 49 will normally be set to allow the air in the dashpot 47 to escape through the bleed hole 51 in two or three seconds, thereby holding the valve closure open long enough to permit passage of compressed air through the nipple bores 39a, 40a, for this time period.

One advantage of the present invention is that the application of the liquid buffing material to the buffing wheel 12 will be under the complete control of the operator—requiring a minimum of attention from him and leaving his hands and his eyes free to concentrate on the buffing operation.

A further advantage is that uniformity in the application of the buffing material is achieved, since in the normally desirable spraying period of two or three seconds, many revolutions of the buffing wheel 12 will take place permitting the spray to cover the entire periphery of the buffing wheel.

A still further advantage is that the liquid supply tank 24 may easily be filled, and inasmuch as no complicated mechanism for agitating the liquid is required, the entire liquid system will be compact and easy to clean.

While this invention has been herein illustrated as applied to a manually-operated buffing spray apparatus, it will be understood that it may also be used upon automatic buffing machines in which any desired trip mechanism may be employed to actuate the air brush spray gun without the use of any variable cams, etc., within the spirit and scope of the present invention.

While the present invention has been herein disclosed for applying a buffing liquid to a buffing

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wheel, it will be understood that it may also be applied to a reciprocating belt, or directly to the work within the spirit and scope thereof.

While there has been disclosed in this specification one form in which the invention may be embodied, it is to be understood that this form is shown for the purpose of illustration only, and that the invention is not to be limited to the specific disclosure, but may be modified and embodied in various other forms without departing from its spirit. In short, the invention includes all the modifications and embodiments coming within the scope of the following claims.

Having thus fully described the invention, what is claimed as new, and for which it is desired to secure Letters Patent, is:

1. In an apparatus for applying a liquid buffing compound to a buffing wheel, a spray gun, means for supplying buffing liquid and compressed air to said gun, and a timer mechanism for automatically cutting off the supply of air at the end of a predetermined time interval, said timer mechanism including a normally closed valve for controlling the flow of said liquid and air, a longitudinally movable valve rod connected at one end to said valve, a lever connected to an intermediate portion of said rod and adapted to move the rod to open the valve, a spring urging said valve to closed position, and a dash pot at the other end of said rod to hold the valve open against the force of said spring for a predetermined time period.

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2. In an apparatus for applying a liquid buffing compound to a buffing wheel, means for rotating said wheel at constant speed, a manually-directable atomizing spray gun located in proximity to said buffing wheel, means for separately supplying buffing liquid and compressed gas to said gun, and mechanism comprising a manually-operated control valve included in said gas supply means adapted to open the valve, and dash pot timing means connected to said valve to automatically close said valve for cutting off said gas supply at the end of a predetermined time interval.

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