Sept. 20, 1932. J. M. CHRISTMAN 1,878,466

STRIPING INSTRUMENT

Filed Nov. 22, 1928

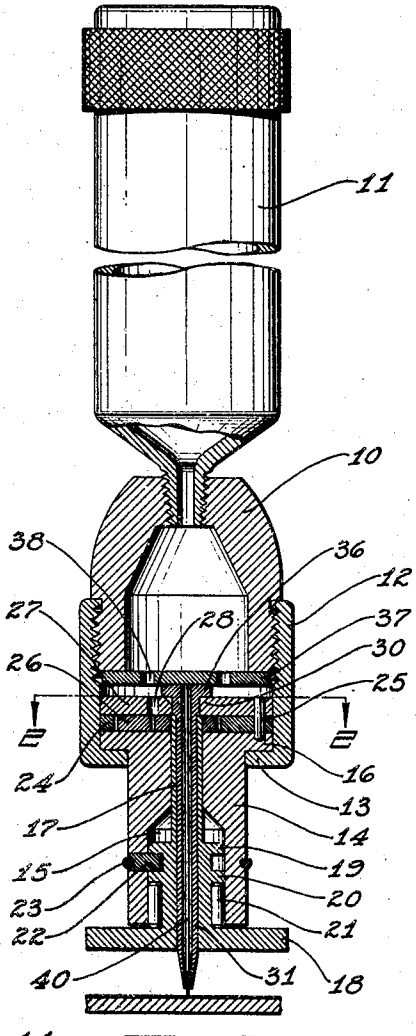


FIG. 1

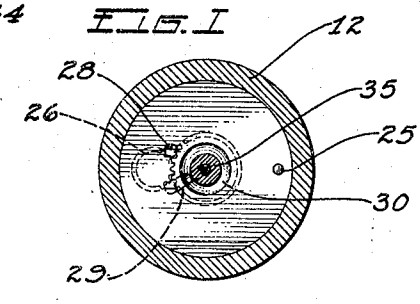


FIG. 2

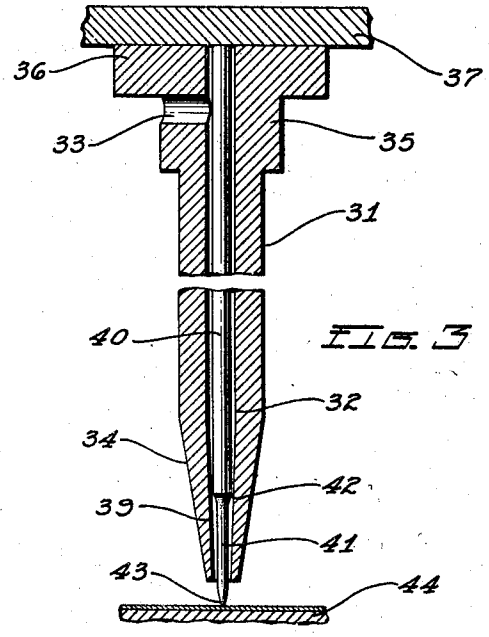


FIG. 3

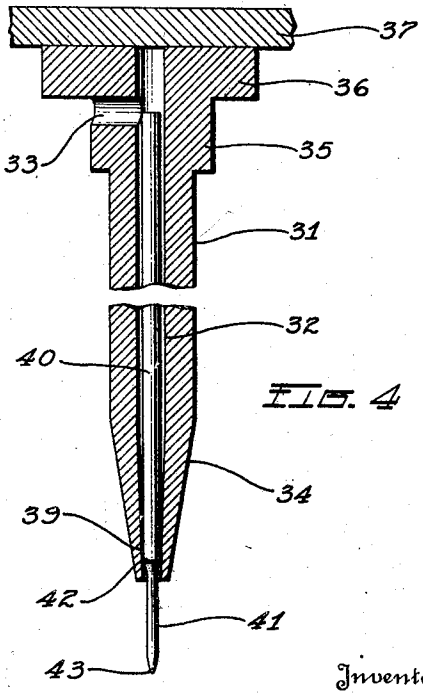


FIG. 4

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UNITED STATES PATENT OFFICE

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STRIPING INSTRUMENT

Application filed November 22, 1928. Serial No. 321,060.

This invention relates to striping instruments and more particularly to nozzles therefor.

An object of the invention is to provide a self cleansing nozzle.

Another object of the invention is to provide a nozzle having means adapted to support the discharge end of the nozzle in spaced relation to the surface to be operated upon.

Another object of the invention is to provide a nozzle having means automatically closing the nozzle upon disengagement with the surface being operated upon.

A further object of the invention is to provide a nozzle having means positioned therein providing a support for the nozzle when in use and a closure for the nozzle when not in use.

A still further object of the invention is to provide a nozzle which is highly efficient in operation and yet of marked simplicity as a whole and in respect to each of its component parts, so that its manufacture is economically facilitated both as regards parts and their assembly.

Further objects and advantages of the invention reside in the various combinations hereinafter described and claimed as will be apparent upon reference to the following specifications and to the drawing, in which:

Fig. 1 is a vertical sectional view of a striping instrument embodying the invention, the container being shown in elevation and partly broken away;

Fig. 2 is a cross sectional view taken substantially on line 2—2, Fig. 1;

Fig. 3 is a vertical sectional view of the nozzle with the needle in the position maintained during operation of the instrument, and

Fig. 4 is a vertical sectional view of the nozzle with the needle in the position in which the nozzle is closed.

Referring to the drawing for more specific details of the invention, 10 represents the body of the instrument. As shown, the body comprises a hollow cylindrical member closed at one end and open at the other end. A container 11, which is also the handle of the instrument, is threaded in the closed end and the open end is externally screw threaded to receive a sleeve 12 having an inturned flange 13. A sleeve 14 having a double diameter bore 15 and a flange 16 on one end thereof is supported by the sleeve 12, the lower face of the flange 16 bearing against the upper face of the flange 13.

A hollow shaft 17 is mounted for rotation in the sleeve 14. This shaft has formed thereon a guide roller 18 and spaced flanges 19 and 20. Roller bearings 21 are positioned between the shaft and the sleeve, and the shaft is retained in the sleeve by a key 22 fitted in a slot in the wall thereof and extending between the flanges 19 and 20, the key being secured in position by a split ring 23.

Resting on the flanged end of the sleeve 14 within the sleeve 12 is a disk 24 secured against rotation by a pin 25 and positioned in this disk is a pump 26, one gear of which is suitably secured on the hollow shaft 17. Resting on the disk 24 is a disk 27 also secured against rotation by the pin 25. This disk has positioned therein a passage 28 communicating with the intake of the pump, and also a passage 29 which establishes communication between the outlet of the pump and the recess 30 formed by beveling the upper portion of the disk.

Fitted in the hollow shaft is a nozzle 31 having an axial bore or passage 32, a radial bore 33 extending through the wall thereof, a tapering point 34 and an enlarged head 35 provided with a circumferential flange 36. The enlarged head 35 fits snugly in the axial bore in the disk 27 with the radial bore 33 therein communicating with the recess 30 and the flange 36 rests against the top of the disk over the recess. A plate 37 having a plurality of apertures 38 is interposed between the head of the nozzle and the open end of the body and serves to retain the nozzle and disk in position when the sleeve 12 is threaded on the body 10.

The point or discharge end of the nozzle is slightly contracted or restricted as at 39 and positioned in the axial bore or passage of the nozzle is a floating member 40 in the form of a needle having a reduced end portion 41 pro-

viding a shoulder 42 and a point 43. The needle 40 is slightly longer than the nozzle and is designed to support the nozzle in spaced relation to the work 44 to be operated upon. The floating member is free to reciprocate within the bore 32 of the nozzle, being limited in its movement in one direction by the engagement of the shoulder 42 with the nozzle bore and being limited in the other direction by engagement with the plate 37, and it will thus be seen that the nozzle is unattached and freely floating.

When in operation, the butt end of the needle is seated upon the disk 37, as shown in Fig. 3, and the reduced portion 41 of the needle, the point 43 of which is slightly rounded to prevent injury to the surface operated upon, is retracted in the passage of the nozzle so that the shoulder 42 is disengaged from the contracted portion of the passage, thus fluid or liquid entering the passage in the nozzle can be readily discharged therefrom to the surface of the work operated upon at the point of the needle.

Upon disengaging the point 43 from the surface operated upon, the needle as a result of gravity assisted by pressure in the passage, drops to the position shown in Fig. 4 and seats the shoulder 42 in the restricted portion 39, thus effectively closing the passage 32. The needle 40 has a relatively small diameter and is therefore exceedingly sensitive and pliable and by reason of this structure, smoothness in operation is assured.

In operation, assuming that the container has been filled with a fluid or liquid, the instrument is engaged with the work to be operated upon, in which position the needle 40 is seated on the plate 37 and the guide roller 18 is engaged with a straight edge or pattern, as the case may be, and moved over the surface to be operated upon. As the instrument is moved, the roller 18 is rotated to drive the shaft 17 which operates the pump 26 and as the pump is set in operation, fluid or liquid is drawn from the container through the passage 28 and delivered through the passage 29, recess 30 and radial bore 33 to the passage in the nozzle from whence it is discharged through the restricted portion 39 to the point of the needle.

The discharge end of the nozzle is maintained in spaced relation to the surface operated upon by the needle 40 and the needle is sufficiently flexible to provide smooth manipulation of the instrument. The needle also automatically closes the passage in the nozzle when disengaged from the surface operated upon and by reason of its reciprocatory movement in engaging and disengaging the surface operated upon and slight vibrations arising in the manipulation of the instrument, the passage is thoroughly cleansed.

While one illustrated embodiment has been described, it is not my intention to limit the scope of the invention to that particular embodiment or otherwise than by the terms of the appended claims.

Having thus described the various features of my invention, what I claim as new and desire to secure by Letters Patent is:

1. A nozzle having a passage provided with a restricted tapering portion adjacent the discharge end thereof, a free floating cylindrical needle in the passage having a reduced end portion forming a shoulder adapted to wedge in the restricted tapering portion of the passage when in its extended position, the reduced portion of the needle having a rounded point adapted to project beyond the passage and engage a surface to be operated upon.

2. In a striping instrument, a nozzle having a fluid inlet and outlet, a flexible needle adapted to reciprocate in the nozzle, said needle having a reduced end portion provided with a point and means retaining the nozzle in position providing an abutment for the needle when the instrument is in operation.

3. In a striping instrument, a nozzle having an inlet passage and a discharge passage provided with a restricted portion, a floating needle in the discharge passage, said needle having a reduced end portion providing a shoulder adapted to seat in and close the restricted portion when the instrument is released from the work and means retaining the nozzle in position providing an abutment for positively limiting inward movement of the needle when the instrument is pressed against the work.

4. In a pressure striping instrument, a nozzle having a head portion and a tapering end portion, said nozzle having an inlet passage and a tapering discharge passage providing a restricted portion, a flexible needle positioned in the discharge passage having a reduced end portion provided with a point, a shoulder formed by the reduced end portion of the needle responsive to fluid pressure to seat in and close the restricted portion of the discharge passage when the nozzle is not in operation and means for retaining the nozzle in position providing a support for the needle when the instrument is in operation.

5. In a striping instrument, a nozzle having a fluid inlet and outlet, a valve member adapted to reciprocate in the nozzle and thereby control fluid flow therethrough, said member having a bearing end projecting beyond the outlet portion of the nozzle, and means associated with the nozzle in a relation forming an abutment for the valve member to limit the inward movement thereof when pressed against a surface to be striped.

6. In a striping instrument, a rigid tubular nozzle having a fluid feeding bore therein tapering toward the outlet end, a cylindrical

valve member reciprocably mounted in the bore and adapted to engage with the tapered wall of the bore to shut off fluid flow, said member having a bearing end of reduced diameter projecting beyond the outlet end of the nozzle bore, and abutment means associated with the nozzle and engageable by the inner end of the valve member to positively limit the inward movement thereof when the bearing end is pressed against a surface to be striped.

In testimony whereof I affix my signature.

JOHN M. CHRISTMAN.