May 17, 1932. J. M. CHRISTMAN 1,859,072

STRIPING INSTRUMENT

Filed Nov. 19, 1928

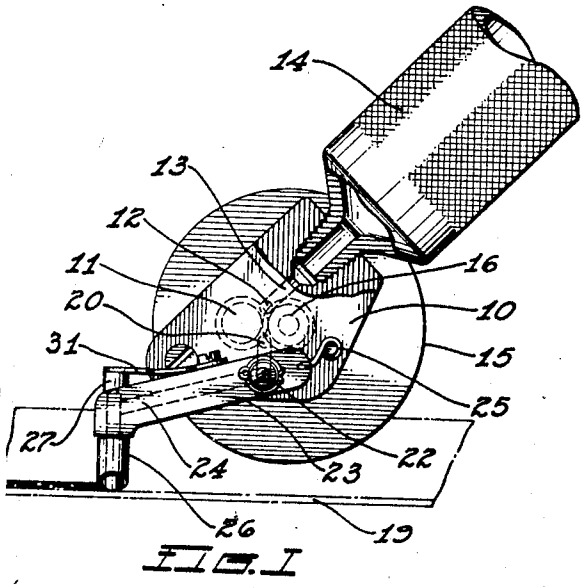


FIG. 1

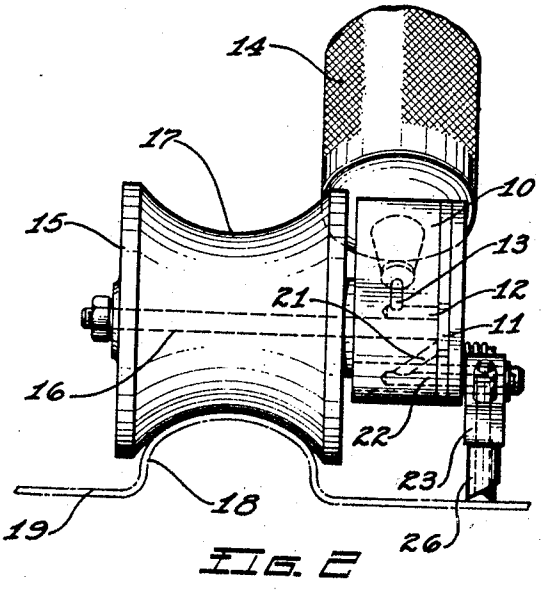


FIG. 2

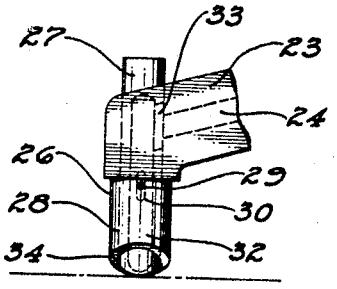


FIG. 3

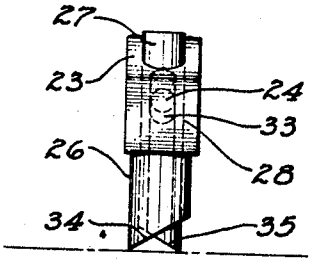


FIG. 4

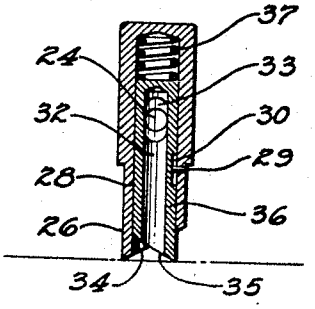


FIG. 5

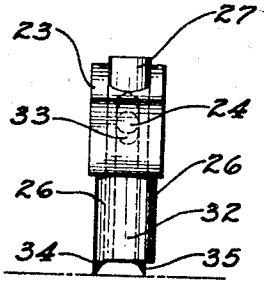


FIG. 6

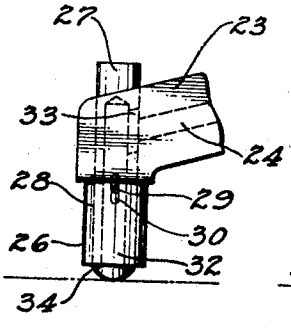


FIG. 7

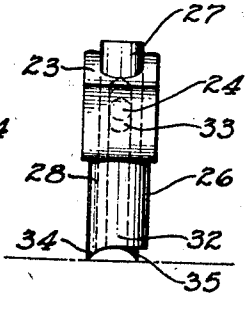


FIG. 8

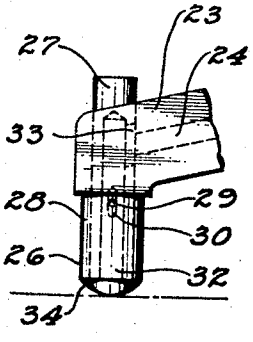


FIG. 9

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UNITED STATES PATENT OFFICE

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STRIPING INSTRUMENT

Application filed November 19, 1928. Serial No. 320,234.

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

In striping, ruling and analogous arts, when an instrument or tool is drawn or moved from left to right or vice versa, generally angular movements are imparted to the instrument due to twisting of the operator's wrist in effecting the stroke. These angular movements are in a plane in the direction of movement of the instrument and transversely with respect thereto. They are directly responsible for unsatisfactory results because they cause uncertain engagement of the point or nozzle of the instrument with the surface operated upon and this results in wavy uneven lines or stripes. It is the aim of the present invention to overcome these objections.

An object of the invention is to provide a nozzle for a striping instrument having means providing for positive engagement of the nozzle with the surface to be operated upon.

Another object of the invention is to provide a nozzle for a striping instrument having means permitting angular movement of the instrument without disengaging the nozzle from the surface to be operated upon.

Another object of the invention is to provide a nozzle for a striping instrument having means adapted to press the nozzle in engagement with a surface to be operated upon, and means permitting rocking or angular movement of the nozzle without disengaging the surface.

Yet another object of the invention is to provide a nozzle having means for supporting the discharge end thereof in spaced relation to the surface to be operated upon.

A further object of the invention is to provide a nozzle for a striping instrument having means for supporting the discharge end of the nozzle in proper relation to the surface to be operated upon and for scoring the surface to restrict the spread of liquid discharged through the nozzle.

A further object of the invention is to provide a nozzle having a two-point contact or engagement with the surface to be operated upon, the engaging means being arranged to permit rocking or angular movement without disengagement of the nozzle and defining the spread of the liquid discharged through the nozzle.

Other objects of the invention will appear from the following description taken in connection with the drawings, which forms a part of this specification, and in which:

Fig. 1 is a side elevation of a striping instrument embodying the invention, parts of the instrument being broken away and parts in section;

Fig. 2 is a rear elevation of the instrument, the container, which is also the handle, being broken away;

Fig. 3 is an enlarged side elevation of the nozzle;

Fig. 4 is an enlarged end elevation of the nozzle;

Fig. 5 is a sectional view of a modified form of the nozzle;

Fig. 6 is an end elevation of another modified form;

Fig. 7 is a side elevation of the modified form illustrated in Fig. 6;

Fig. 8 is an end elevation of yet another modification, and

Fig. 9 is a side elevation of the modification illustrated in Fig. 8.

Referring to the drawings for more specific details of the invention, 10 represents the body of the instrument which may be any preferred form adaptable for supporting a pump mechanism. As shown, the body of the instrument has positioned therein a pump 11, the intake 12 of which is connected by a passage 13 to a container 14 threaded in the body portion. The container is also the handle of the instrument.

The pump is operated by a roller 15 suitably connected by a shaft 16 to one of the gears of the pump and the roller is provided with a circumferential groove 17 adaptable for engagement with a bead 18 formed or secured on a surface 19, though it is, of course, understood that other guide means may be employed. The pump has an outlet 20 connected by a suitable passage 21 to a hollow shaft 22 extending from one side of the body 10 and the shaft has positioned thereon for

oscillation a nozzle 23 provided with a passage 24 communicating with the interior of the shaft.

Oscillation of the nozzle 23 is restricted within certain limits by a coil spring 25 suitably mounted on the body of the instrument and connected to the nozzle to urge and maintain the discharge end 26 thereof in engagement with the surface to be operated upon. Thus any angular movement of the instrument in a plane in the direction of movement of the instrument will not disengage the nozzle from the surface.

The discharge end 26 of the nozzle is at an angle to the body thereof and mounted for reciprocation in the discharge end is a floating or spring pressed sleeve 27. As shown, the discharge end of the nozzle has an axial bore 28 at an angle to the bore or passage 24 in the body of the nozzle, and the sleeve 27 is fitted for reciprocation in the axial bore 28, movement of the sleeve being restricted within certain limits by a pin 29 in the end 26 engaging a slot 30 in the wall of the sleeve.

The sleeve 27 is normally pressed downwardly or outwardly by a flat spring 31 secured on the body of the nozzle and the bore 32 in the sleeve registers with the bore or passage 24 in the body of the nozzle through an elongated port 33 or other suitable means of depressing the sleeve 27 may be used.

The discharge end of the nozzle is cut obliquely to its axis as shown at 34 and the sleeve 27 is likewise cut obliquely to its axis as at 35. The oblique end of the sleeve 27 is oppositely disposed with respect to the oblique end of the nozzle, so that the spaces between the end of the nozzle and the end of the floating or reciprocatory sleeve is substantially that of an isosceles triangle, the altitude of which is, of course, dependent upon the degree of the angle or cut of the oblique edges of the nozzle and the sleeve.

Any angular movement transversely with respect to the movement of the instrument will be taken care of by the reciprocatory sleeve 27 and the spring 31 which retains the sleeve in engagement with the surface to be operated upon. The spring 31 is sufficiently sensitive to cause the sleeve 27 to act promptly upon the slightest angular movement of the instrument transversely with respect to the direction of movement thereof.

The discharge end of the nozzle and the reciprocatory sleeve 27 provide suitable means for engaging the surface to be operated upon and to support the nozzle in proper relation thereto, so that when operating the instrument, the liquid discharged from the nozzle may be deposited and smoothed out by the oblique edges 34 and 35 in the form of a stripe, the cross sectional contour of which is substantially in accordance with the space between the edges 34 and 35. It is to be observed that the oblique edges 34 and 35 provide a two-point engagement for the nozzle with the surface to be operated upon. This serves not only to support the discharge end of the nozzle but to define the spread of the liquid. Defining and restricting the spread of the liquid is accomplished by the edges 34 and 35 biting into, scratching or scoring the surface as the instrument is manipulated, and by so defining the spread of the liquid there is produced a stripe of uniform width throughout its length.

A modified form of the nozzle is shown in Fig. 5. In this modification, the discharge end 26 has positioned therein a reciprocatory sleeve 36, the movement of which is restricted by the pin 29 in the wall of the nozzle engaging the slot 30 in the wall of the sleeve. The sleeve 36 is normally urged outwardly by a coil spring 37 positioned between the top of the sleeve and the top wall of the nozzle, and the spring 37 is sufficiently sensitive to maintain the sleeve 36 in engagement with the surface to be striped. The sleeve 36 has a bore 32 and this bore communicates with the passage 24 through the elongated slot 33. The discharge end of the nozzle and the reciprocatory sleeve are alike in construction to that shown in Figs. 1 to 4.

A further modification is shown in Figs. 6 and 7 in which the nozzle differs only in the discharge end thereof. As shown, the oblique ends 34 and 35 are accentuated or made more acute, so that the engaging points are sharp and well defined and hence will scratch, bite or score more deeply into the surface to be operated upon. This modification further differs in that the oblique cuts terminate abruptly in a cut substantially normal to the axis of the discharge end 26 of the nozzle and the reciprocatory sleeve 27 positioned therein. This gives a different character to the stripe in that it smooths the stripe cut with a flat top, whereas in the form shown in Figs. 1 to 5 the stripe is more in the form of an isosceles triangle as hereinbefore explained.

A still further modification is shown in Figs. 8 and 9 in which the nozzle also differs only in the matter of the discharge end. In this modification, both the nozzle and the reciprocatory sleeve have an arcuate cut which provides a space intermediate their respective engaging points substantially semi-elliptic. A cut of this character, of course, smooths out the stripe with a curved or semi-elliptic top, whereas in the other modifications the stripes as applied are, in cross section, substantially an isosceles triangle and a frustrum respectively.

Although this invention has been described in connection with certain specific embodiments, the principles involved are susceptible of numerous other applications that will readily occur to persons skilled in the art.

The invention is, therefore, to be limited only as indicated by the scope 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. In a striping instrument nozzle, independently spring pressed and relatively movable telescoping scoring sections.

2. In a nozzle, hollow telescopic members cut obliquely to their axes.

3. In a nozzle, hollow telescopic outlet members cut obliquely to their axes in opposite directions.

4. In a nozzle, a member slidably positioned therein, the nozzle and member being cut obliquely to their axes in opposite directions.

5. In a nozzle, a spring pressed member mounted for reciprocation on the nozzle, means on the nozzle for scoring and means on the member for scoring.

6. In a nozzle, a member mounted for reciprocation in the discharge end of the nozzle, means for normally urging the member outwardly, means limiting the movement of the member and means on the nozzle and member for scoring parallel lines.

7. In a nozzle, a hollow cylindrical member positioned for reciprocation in the discharge end of the nozzle, means for limiting the movement of the member, a beveled end on the nozzle and a beveled end on the member.

8. In a nozzle, a hollow cylindrical member mounted for reciprocation in the discharge end of the nozzle, means urging the member outwardly, means limiting the movement of the member and means on the nozzle coacting with the nozzle for scoring parallel lines.

9. In a nozzle, a telescopic reciprocatory member and means on the member coacting with the nozzle for scoring parallel lines.

10. In a nozzle, a member mounted thereon and movable relative thereto, and means on the member coacting with the nozzle for scoring parallel lines.

11. In a striping instrument, a spring pressed nozzle and a spring pressed member coacting with the nozzle adapted to score parallel lines.

12. In a striping instrument, an oscillatory nozzle, means for urging the nozzle in engagement with a surface to be striped, means coacting with the nozzle for defining the spread of the stripe and means for spreading the stripe.

13. In a striping instrument, a spring pressed nozzle, means for feeding liquid through the nozzle, means coacting with the discharge end of the nozzle to score parallel lines and to spread the liquid between the lines.

14. In a striping instrument, a spring pressed nozzle, means for feeding liquid through the nozzle and a spring pressed member coacting with the nozzle for spreading and defining the spread of the liquid as discharged from the nozzle.

15. In a striping instrument, a spring pressed nozzle having an engaging point and a spring pressed slidable member on the nozzle having an engaging point arranged in spaced relation to the point on the nozzle.

16. In a striping instrument, a spring pressed nozzle having its discharge end cut obliquely to its axis, a member slidably mounted on the nozzle having an end cut obliquely to its axis adapted for coaction with the oblique end of the nozzle for scoring parallel lines.

17. In a striping instrument, a spring pressed nozzle having its discharge end cut obliquely to its axis and a spring pressed member associated with and movable relative to the discharge end of the nozzle and having one end cut obliquely to its axis for coaction with the oblique end of the nozzle.

18. In a striping instrument nozzle, two telescoping relatively movable sections forming an outlet.

19. In a striping instrument, a nozzle outlet comprised of two tubular telescoping members.

20. In a striping instrument nozzle, two tubular telescoping outlet members, said members being cut obliquely to their axes in opposite directions.

21. In a striping instrument, a nozzle outlet comprised of two tubular telescoping sections, said sections being relatively movable in an axial direction when the angle thereof is changed while held against an article to be striped.

22. In a striping instrument, a nozzle comprised of two telescoping sections one of which is movable axially relative to the other, the outlet ends of said sections being adapted to engage the surface to be striped and forming therebetween an unrestricted outlet duct, and a spring normally spacing the other ends of the members.

23. In a striping instrument, a nozzle comprising two telescoping sections one of which is movable axially relative to the other, the adjacent outer ends of said sections being adapted to engage the surface to be striped and forming an unrestricted outlet duct therebetween, means for limiting the movement of said member relative to the other, and a spring normally maintaining the other ends of said members in extreme spaced relation.

In testimony whereof I affix my signature.

JOHN M. CHRISTMAN.