July 9, 1935. A. A. ALEXANDER 2,007,787

STRIPING DEVICE

Filed Sept. 28, 1934

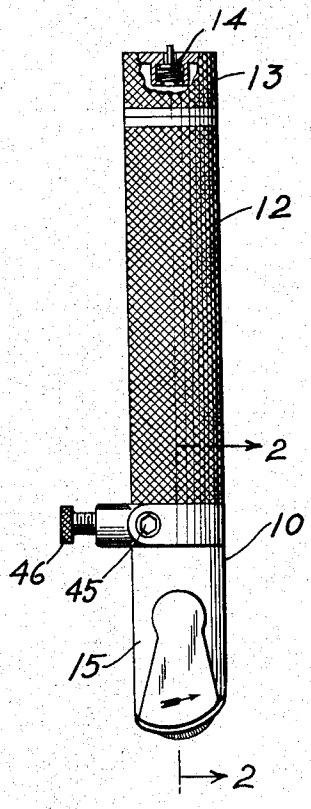


Fig. 1

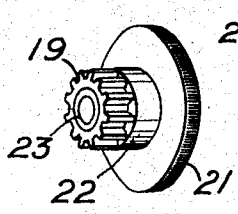


Fig. 3

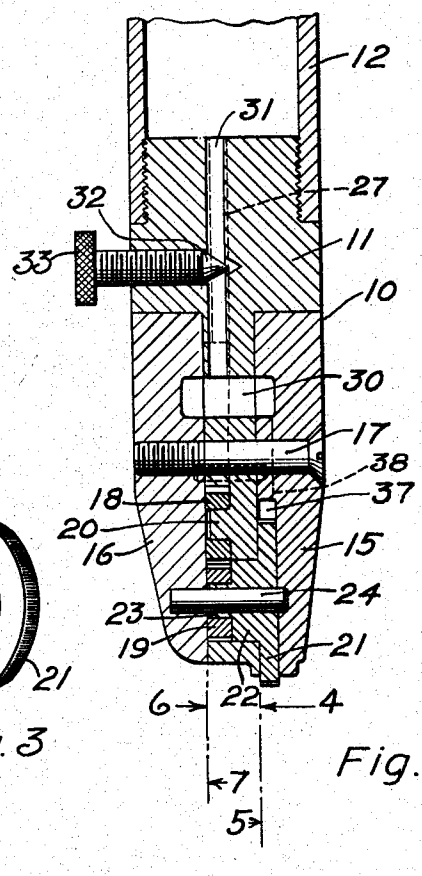


Fig. 2

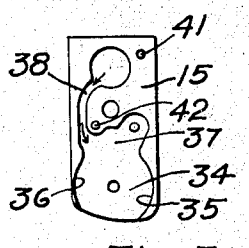


Fig. 5

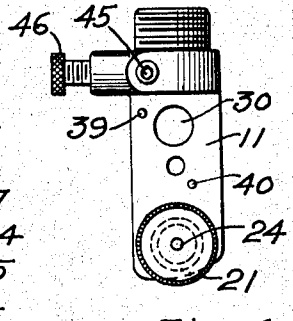


Fig. 4

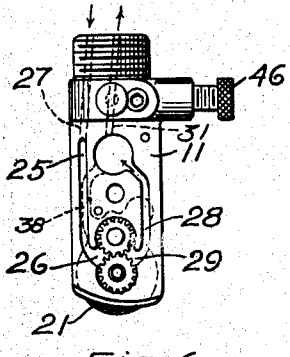


Fig. 6

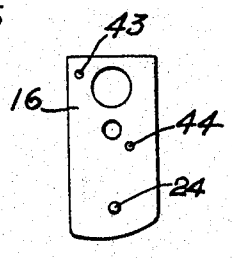


Fig. 7

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STRIPING DEVICE

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Application September 28, 1934, Serial No. 745,988

9 Claims. (Cl. 91—62.6)

This invention relates to improvements in striping devices and is directed more particularly to structural refinements and improvements in the striping device shown and described in pending application Serial No. 688,577, filed September 8, 1933.

In said pending application a device for applying stripes of paint, lacquer, or the like, for decorative purposes is described. By means of such a device, an unskilled person or an amateur may turn out a striping job equal to that of a skilled hand striper.

An object of the invention is the provision of an improved striping device in which the striping wheel has formed integral therewith one element of a gear pump which supplies paint and the like to the striping wheel. The provision of such integral members greatly facilitates the changing of striping wheels in the device to produce stripes of different widths.

A further object of the invention is the provision in a striping device of novel refinements tending to produce stripes of uniform widths throughout.

A still further object of the invention is the provision of an improved device of the above character which may be easily and cheaply manufactured in quantity production.

Further objects and advantages of the invention will appear in the course of the following description in connection with the attached drawing, in which:

Figure 1 is a side view of the device, partly in section;

Figure 2 is an enlarged cross sectional view of the paint applying and pumping head;

Figure 3 is a perspective view of the unitary paint applying wheel and pumping element;

Figure 4 is a right side elevation of the head shown in Figure 2 with the right side plate removed;

Figure 5 is a left elevation of the right side plate;

Figure 6 is a left side elevation of the head with the left side plate removed; and

Figure 7 is a right elevation of the left side plate.

Referring to Figures 1 and 2, a striping head generally denoted by the numeral 10 comprises a body portion 11, preferably a die casting, to which is screwed in fluid tight relation a hollow handle or magazine 12 adapted to contain a volume of striping material such as paint, lacquer, or the like. The magazine 12 has a filler cap 13 in which is retained an inwardly opening check valve 14.

Right and left side plates 15 and 16 respectively, Figure 2, are secured to the sides of body 11 by means of a screw 17 countersunk in plate 15 and threaded into plate 16.

A pair of meshing spur gears 18 and 19, countersunk in the left side of body 11, are closely embraced thereby around portions of their circumferences to form a gear pump. The gear 18 is rotatably mounted on a boss 20 formed on the body 11.

A peripherally knurled paint applying wheel 21 normally projecting from the right side of body 11, has a hub 22 and an extended or second hub 23 on which is secured the gear 19. In some cases it may be preferable to construct the members 19, 21, 22 and 23 into a single unitary structure. A stub shaft 24 secured in the left side plate 16, extends through the hubs 23 and 22 and wheel 21, forming a substantially long bearing therefor.

A passage 25 formed in the left side of body 11 leads to the pump inlet space 26 adjacent the juncture of gears 18 and 19 from a hole 27 opening into the interior of magazine 12. A second passage 28 in the left side of body 11 leads from the pump discharge space 29 to a pressure chamber 30 formed jointly in body 11 and side plates 15 and 16.

From the chamber 30 a passage 31 leads back into the magazine 12. A needle valve 32 threaded into the body 11 and having an exterior knurled adjusting head 33, intersects the passage 31 and is adapted to control the flow of fluid through the latter.

The right side plate 15 contains a recess 34 having sides 35 and 36, Fig. 5, closely embracing opposite portions of the circumference of the wheel 21. The upper part of recess 34 forms a feed chamber 37 connected by a passage 38 with the pressure chamber 30.

Two or more dowels 39 and 40 secured in body 11, are adapted to engage holes 41 and 42 in plate 15 and holes 43 and 44 in plate 16, to insure accurate registration of the plates with the body.

A cross hole 45 in the body member 11 is adapted to receive any suitable type of guiding finger (not shown) which may be clamped therein by means of a screw 46.

The operation of the device is as follows:

A quantity of paint having been placed in the magazine 12, wheel 21 is placed on the surface

to be striped and the device moved in the direction indicated by the arrow, Figure 1, revolving the wheel 21. The gear 19 is thereby driven and drives the gear 18, setting up a pumping action which draws paint from the magazine 12 through the hole 27 and passage 25 carries it around the gears and forces it through the passage 28 into the pressure chamber 30. From the chamber 30 the paint is fed through the passage 33 to the feed chamber 37 where it is forced against the knurled periphery of the revolving wheel 21. The wheel carries the paint out and deposits it on the work surface in a stripe having a width determined by the width of the knurled periphery.

Excess paint forced into the chamber 30 returns through the passage or by-pass 31 to the magazine 12. As different paints and lacquers have different degrees of viscosity it is necessary for uniform operation that they be fed to the wheel at different degrees of pressure. This is taken care of by adjusting the constriction placed in the return passage 31 by means of the needle valve 32. The act of screwing the needle inward places an increased resistance on the flow through the passage. Consequently the pump builds up a greater back pressure in the chamber 30 and the paint is fed through passage 33 to the wheel at increased pressure. Similarly, the constriction may be lessened to lower the feed pressure of freer-flowing fluids. By the means described, the device is adapted to feed any type of paint or lacquer at the correct pressure to insure proper striping.

The check valve 14 admits air to the magazine 12 as the paint is exhausted therefrom, but closes to prevent leakage in case the device is inverted.

As the pump is directly driven by the striping wheel, the rate of feed increases as the speed of striping is increased. The pump capacity therefore increases to supply the increased amount of paint or the like required, at the same time slightly increasing the back pressure to provide for proper pick-up by the wheel at the greater speed.

It will be noted that the bottom of recess 34 and the right side of body 11 fit closely against the sides of the wheel 21, thereby preventing leakage between the surfaces. The close fit of the sides 35 and 36 of recess 34 about the periphery of the wheel similarly prevents passage of paint when the device is not in use. When in operation the striping paint is carried outward in the grooves of the knurling which thereby meter it accurately.

For different widths of stripe different thicknesses of wheel are used, all interchangeable. Each wheel is constructed as shown in Figure 3, having permanently secured thereto or formed integral therewith the pump gear 19.

To change striping wheels the screw 17 and right side plate 15 are removed. The unitary wheel and gear 21, 19, may then be withdrawn and replaced with a similar structure having the desired width of wheel. Removal and replacement through the body 11 is made possible by use of the enlarged hub 22 which has a diameter equal to the outer diameter of the gear. When in place the end surface of hub 22 acts as part of the sealing side plate of the pump and the periphery of the hub fits closely in the body to prevent leakage from the pump to the wheel. For each different thickness of wheel a different right side plate 15 is furnished in order to maintain the close sealing fit against the faces of the wheel as previously described.

The unitary structure of wheel 21 and gear 19 has many advantages. It reduces the total number of working parts to two, namely the gear 18 and the said unitary structure, thereby promoting simplicity, ease of cleaning and assembly, and cheapness of manufacture. It furthermore provides a single long supporting bearing on the stationary shaft 24 for both wheel and gear whereby accurate guidance and alinement as well as durability are secured. No wear can occur between the gear and striping wheel, the latter being actually a part of the pump.

It will be noted that no loose pins or shafts are present in the structure, the gear 18 revolving on the boss 20 formed on the die cast body and the wheel 21 with its gear 19 having as an axle the shaft 24 which is rigidly fixed, at one end, in the left side plate 16 and supported at its other end in the right side plate 15. Both side plates are doweled to the body to insure accurate registration and are tightly held thereto by a single screw 17. The working elements are thus directly supported on stationary axes comprised in a rigid structure which maintains them in proper relationship to operate more smoothly and produce more uniform results than similar devices having loose pins, axles and parts subject to wear and loss of alinement.

While the invention is described in preferred form it is not limited to the precise structures shown, as various modifications may be made without departing from the scope of the appended claims.

What is claimed is:

1. In a stripping device in combination, a hollow casing adapted to enclose pigment, a body secured to said casing, a first and a second side plate removably secured to said body, said plates and body jointly enclosing a pressure chamber, a pair of meshing gears comprised in said body and forming with said body and said first plate a gear pump, said body having formed therein a passage to said pump from the interior of said casing, a second passage from said pump to said chamber, and a restricted passage from said pressure chamber to the interior of said casing; a stripe producing wheel removably comprised in said second side plate and forming with one of said gears a unitary structure whereby said pump may be operated by the rotation of said wheel to pump pigment from said casing to said pressure chamber, said second plate having formed therein a feed chamber in communication with the periphery of said wheel, and a channel connecting said feed chamber with said pressure chamber whereby pigment may be supplied from said pressure chamber to said wheel.

2. A device as claimed in claim 1, wherein the unitary structure of stripe producing wheel and one pump gear is rotatably mounted on a pin which is rigidly secured at one end in the first side plate and supported at the other end in the second side plate, and wherein the other pump gear is rotatably mounted on a boss formed on the body.

3. In a striping device in combination, a body, two side plates removably secured to said body, a pin secured at one end to one of said plates and having its other end supported in said other plate, a unitary structure rotatably mounted on said pin and comprising a peripherally knurled striping wheel and a central hub and a gear, a second gear rotatably disposed in said body in mesh with said first gear to constitute therewith

a gear pump, means to supply striping fluid to said pump, and means to direct a part of said fluid from said pump to the periphery of said wheel.

4. A device as claimed in claim 3 in which the second gear is rotatably mounted on a boss formed integrally with said body, wherein the striping wheel is comprised axially in sealing relation between the body and one of the side plates, and wherein said plate embraces two substantially opposite portions of the periphery of said wheel in sealing relation.

5. In a striping device in combination, a wheel adapted to apply striping fluid to a surface in rolling thereon, and a pump, comprised of cooperating pumping gears, operable by said wheel to supply striping fluid to the periphery thereof, one of said gears being formed integrally with said wheel.

6. In a striping device in combination, a peripherally knurled wheel adapted to apply paint to a surface in rolling thereon, a hub on said wheel, and a pump, comprised of cooperating pumping gears, adapted to supply paint to the periphery of said wheel, one pumping member of said pump being rigidly secured to said hub whereby said pump may be actuated by rotation of said wheel.

7. In a striping device in combination, a gear pump having a body, a pair of cooperative pumping gears therein, one of said gears having a hub extending through a side of said body and rotatable therein in sealing relation, said hub having a diameter substantially equal to the outer diameter of said gear whereby said gear and hub may be removable through said side, a striping wheel formed on the outer end of said hub and adapted to actuate said pump in rolling over a surface be striped, means to supply striping fluid to said pump, and means to feed a portion of said fluid from said pump to the periphery of said wheel.

8. In a striping device in combination, a gear pump having a body, a pair of cooperative pumping gears therein, one of said gears having a hub extending through a side of said body and rotatable therein in sealing relation, said hub having a diameter substantially equal to the outer diameter of said gear whereby said gear and hub may be removable through said side, a striping wheel formed on the outer end of said hub and adapted to actuate said pump in rolling over a surface to be striped, means to supply striping fluid to said pump, means to feed a portion of said fluid under pressure from said pump to the periphery of said wheel, and means to regulate said pressure.

9. In a striping device, a striping head comprising a body, two side plates, common means to removably secure said plates to said body, dowel pins in said body adapted to engage holes in said plates, a stationary pin rigidly supported by said plates and extending through said body, a unitary structure rotatively mounted on said pin and comprising a striping wheel, a hub thereon, a second hub extending beyond said first hub, and a gear on said second hub, said first hub being rotatably in sealing relation in a side of said body and having a diameter substantially equal to the outer diameter of said gear, and a second gear rotatably mounted in said body in pumping relation with said first gear whereby a striping fluid may be pumped, and means adapted to direct said fluid to the periphery of said striping wheel, said wheel being adapted to roll on a surface to be striped while actuating said pumping gears.

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