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DOTTING DEVICE

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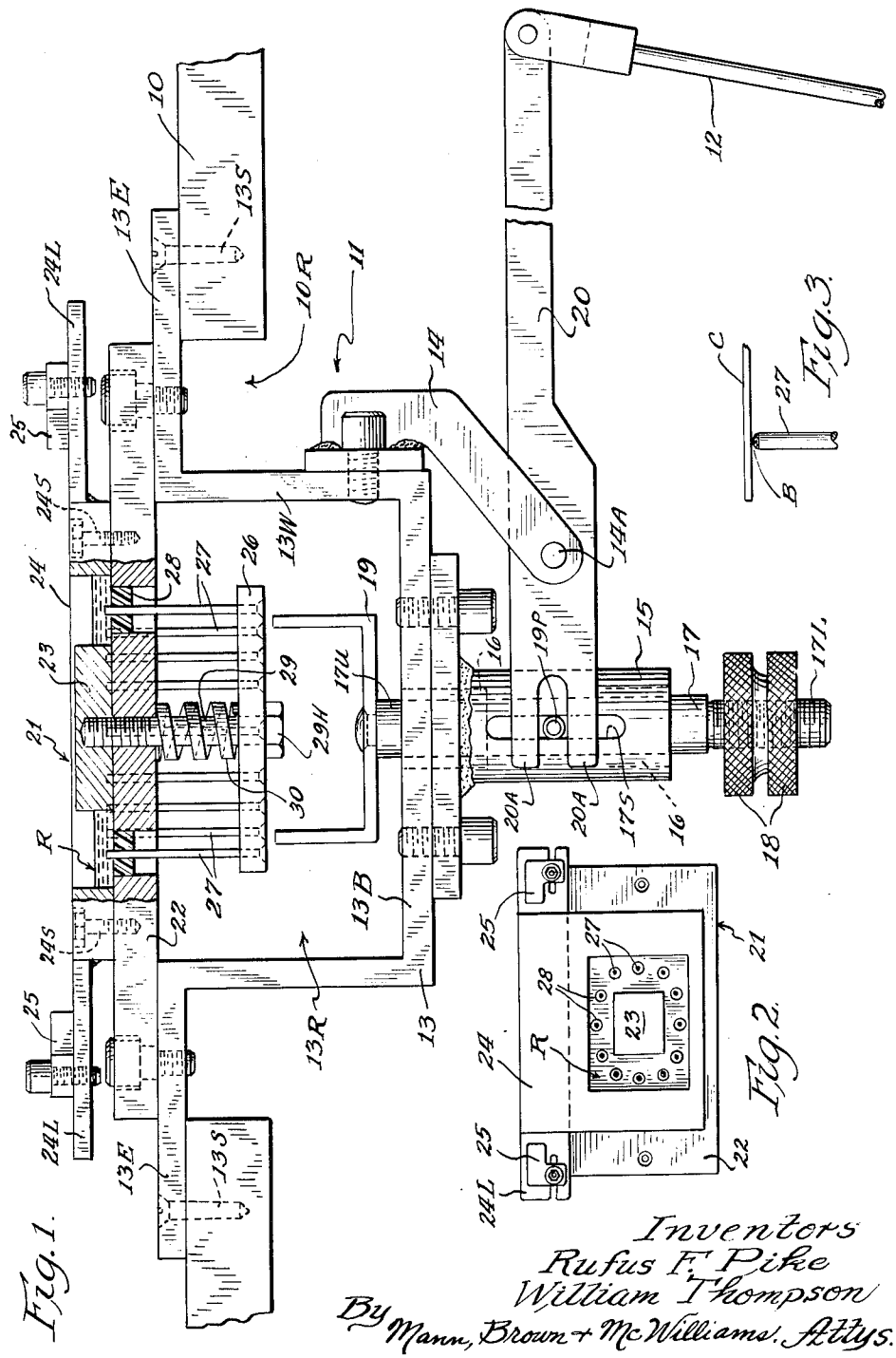


Fig. 1.

Fig. 3.

Fig. 2.

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DOTTING DEVICE

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1 Claim. (Cl. 118—263)

This invention relates to a dotting device for mechanizing the application of dots of luminous paint to items such as clockfaces and more particularly the invention is concerned with a dotter embodying an interchangeable head assembly for adapting the unit to the provision of dotting patterns of various shapes and sizes.

Extensive manual handling is unsafe in operations involving application of luminous paint and the principal object of the present invention is the provision of a dotter that reduces the hazard to personnel and that reduces the manufacturing expense while achieving high quality and minimum wastage by mechanizing the application of luminous paint to clockfaces or similar items.

Another object of the invention is the provision of a dotter utilizing interchangeable parts for adapting a single device to a variety of operations.

Other objects and advantages will become apparent during the course of the following description.

In the accompanying drawings forming a part of this specification and in which like numerals are employed to designate like parts throughout the same:

FIG. 1 is a side view of a dotting device constructed in accordance with this invention with parts broken away and sectioned to facilitate disclosure;

FIG. 2 is a reduced plan view of the dotter head assembly and illustrates the dot pattern provided by one embodiment of the invention; and

FIG. 3 is an enlarged fragmentary detail view illustrating the actual application of a dot to a clockface.

Referring now to the drawings, the dotter of this invention is preferably mounted on a suitable table and for purposes of illustrative disclosure a table top as shown at **10** may have a relief opening **10R** to receive the dotter unit, which is designated generally at **11**, in semi-recessed relation. The dotter **11** preferably includes an operating arm **12** arranged for foot pedal actuation by an operator seated alongside the table at a position suitable for handling the clockfaces that are to be applied individually to the dotter.

The dotter includes a support structure in the general form of a U-shaped strap **13** defining a hollow central region **13R** that nests within the table opening **10R** and that includes side extensions **13E** fixedly secured to the table top by suitable fasteners such as screws **13S**. The support strap **13** is equipped with an angled pivot arm **14** attached to its side wall **13W** and projecting downwardly therefrom to supportingly engage a pivot axle **14A**. The strap **13** has a vertical guide sleeve **15** secured to its base wall **13B** and defining a guide bore that opens through the base wall and into the hollow central region **13R** defined by the support strap. Bronze bushings **16** line the guide bore to provide a freely slideable mounting for a vertically shiftable ram **17** that projects through the sleeve and beyond its opposite ends. The ram has its lower end extension **17L** threaded to receive a cooperating pair of stop nuts **18** that are engageable against the lower end of the sleeve **15** to limit the vertical upward travel of the ram. Ram travel is adjustable by varying the location of the stop nuts **18**. The upper extension **17U** of the ram is fitted with a striker **19** that is movable upwardly and downwardly in unison with the ram.

To accommodate driving connection to the ram **17** the guide sleeve **15** is provided with vertical slots **17S** along its opposite sides and the ram is provided with a transverse drive pin **19P** that projects through and beyond the slots and that is movable in the slots a distance sufficient to accommodate the maximum travel range provided by the stop nuts **18**. The described parts are interconnected by a suitable drive link **20** that is rotatable on the pivot axle **14A** at an intermediate point and that has bifurcated end arms **20A** embracing opposite ends of the drive pin **19P** in a lost-motion driving relation. The operating arm **12** is pivotally connected to the outer end of the drive link **20** and on repeated operation reciprocates the ram through a prescribed vertical travel range.

A dotting assembly **21** is removably mounted upon the support structure **13** to allow for interchange of the dotting assembly with similar units that are suited to different clockface sizes and different clockface pattern arrangements. The dotting assembly **21** illustrated herein includes a plate structure that provides a reservoir R of ring-shaped configuration. The reservoir R is shown partially filled with luminous paint.

In the illustrated arrangement, the plate structure is in the form of a laminar arrangement that includes a base plate **22**, a central island **23** fixed upon the base plate and a generally rectangular frame element **24** encircling the island **23** in outwardly spaced relation and fixed in sealed relation to the base plate by screws **24S**. The frame **24** has lateral extensions **24L** located towards its rear edge and equipped with facilities for establishing exact registration of a clockface with respect to the reservoir. In this instance, adjustable corners **25** are mounted to the extentions **24L** and present upstanding edge abutment surfaces for engagement with edge regions of a lockface that is to be located upon the frame extensions **24L** in position for receiving paint dots.

A dotting head **26** is located in the open central region **13R** defined by the support strap and is located directly above the striker **19** for engagement by the striker during its upward travel. The dotting head **26** carries a set of dotting pins **27** movable jointly therewith and projecting through the base plate **22** and into the reservoir R. In the application of the invention to clockfaces, a dot is normally provided for each hour position and accordingly, the dotting head is equipped with 12 dotting pins **27** arranged in circular or rectangular array in accordance with the clockface design.

To accommodate sliding movement of the dotting pins **27** through the base wall of the reservoir there is provided in the base plate **22** corresponding to each dotting pin a through socket fitted with an annular bushing **28**. The bushing **28** defines a central passage through which the corresponding dotting pin **27** is slideable in liquid sealing relation and for this purpose it is preferred to employ a bushing of a lubric plastic material such as Teflon.

The dotting head **26** is connected as a permanent part of the dotting assembly as its dotting pin configuration is matched to the pin passage arrangement at the reservoir. In the illustrated arrangement a depending guide post **29** having an enlarged head **29H** at its lower end is secured centrally in the plate structure and receives the dotting head **26** in vertically slideable relation thereon. The post head provides an abutment cooperating with the dotting head at the lower position of the dotting head. This lower position is illustrated in FIG. 1 and is selected so that the dotting pins **27** project only slightly above the base wall of the reservoir. A bias spring **30** disposed in telescoping relation about the guide post **29** reacts between the base plate **22** and the dotting head **26** and normally urges the parts to the illustrated position.

The striker **19** which is carried by the ram to engage

and raise the dotting head **26** is in the form of a U-shaped fork **19** and its contact arms are spaced laterally for establishing stable broad surfaced contact with the dotting head to avoid the setup of tilting forces such as could cause bending of the dotting pins **27**.

The upward travel of the dotting head is determined by the spacing of the stop nuts **18** relative to the sleeve **15**. A travel range is selected so that the dotting pins **27** will approach but not actually touch the clockface. Each dotting pin **27** is circular in transverse cross section and has a flat end face permitting the pin end to form and deliver a paint bubble B of pronounced vertical dimension as illustrated in FIG. 3. The vertical height of the paint bubble simplifies adjustment of the apparatus to maintain positive clearance between the pin end and the clockface C while insuring reliable uniform application of the paint dots.

It should be understood that the description of the preferred form of the invention is for the purpose of complying with Section 112, Title 35, of the U.S. Code and that the claims should be construed as broadly as prior art will permit.

What is claimed is:

A dotter comprising support structure providing an open central region, said support structure having a vertical sleeve underlying said open central region, a ram reciprocable in said sleeve, a dotting assembly removably associated with said structure and comprising plate structure removably secure in bridging relation to said support structure to span said region, said plate structure providing a ring-shaped reservoir for luminous liquid at a location overlying said region, said plate having a number of bushings of lubric plastic material in horizontally spaced array defining bottom wall portions of said reservoir and underlying luminous liquid disposed therein, a dotter head carrying a corresponding number of vertically oriented dotter pins projecting in liquid sealing

slideable relation through the bushings, a guide post depending from said plate to extend vertically through said region and having an abutment underlying said reservoir and spaced beneath said plate, said dotter head being mounted in vertically slidable relation upon said post, yieldable means reacting between said head and said plate to bias said head downwardly against said abutment and define a lower position in which said pins have their upper ends disposed in liquid in said reservoir, and a vertically movable striker underlying said head and arranged structurally independently of said dotting assembly to enable removal and replacement of said assembly, said strike being mounted on said ram to move therewith and engage and lift said head to move said pins above said reservoir and dot paint upon a clock face positioned on said plate.

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