June 23, 1931. H. ANDERSON ET AL 1,811,167

STENCILING DEVICE

Filed Dec. 19, 1929 2 Sheets-Sheet 1

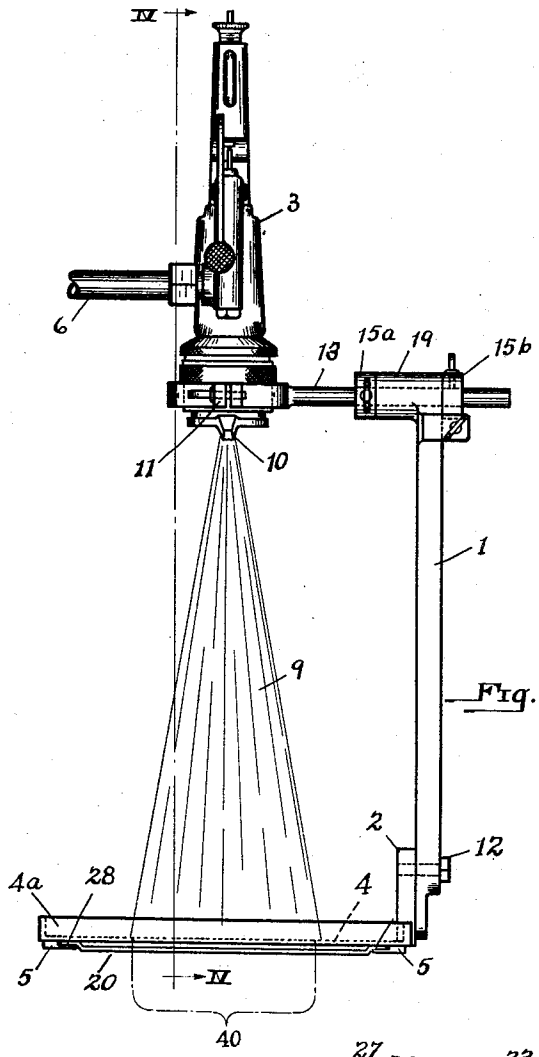


Fig. I.

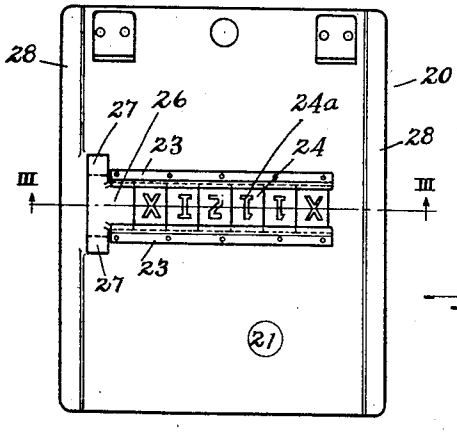


Fig. II.

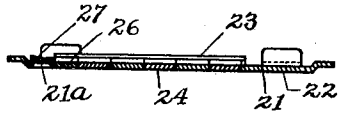


Fig. III.

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STENCILING DEVICE

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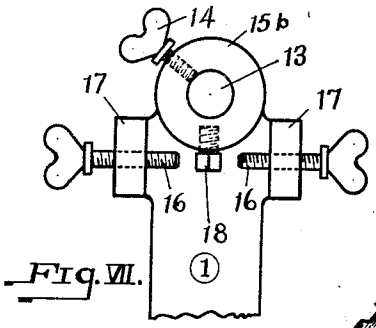


Fig. VII.

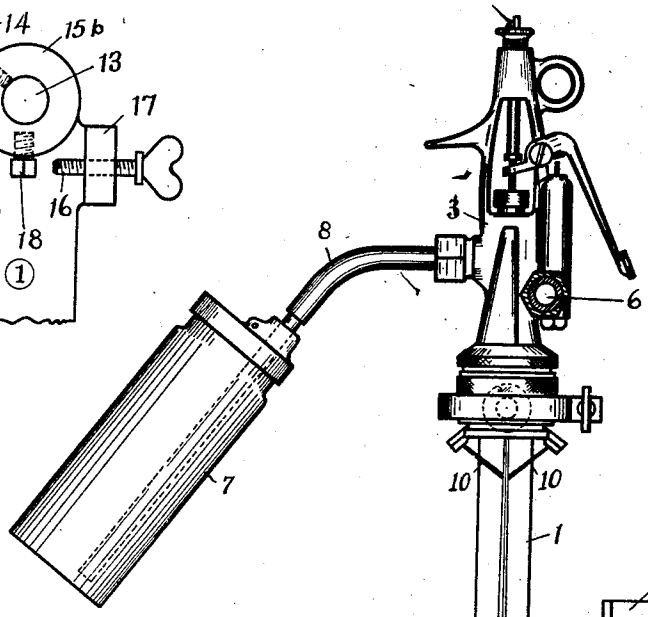


Fig. IV.

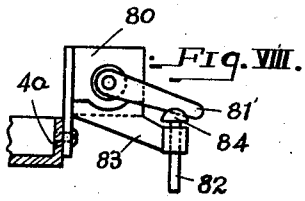


Fig. VIII.

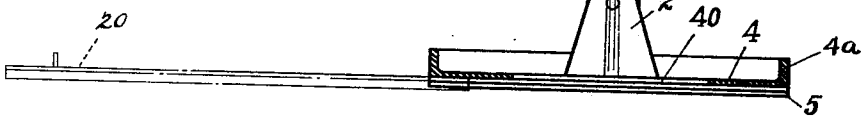


Fig. V.

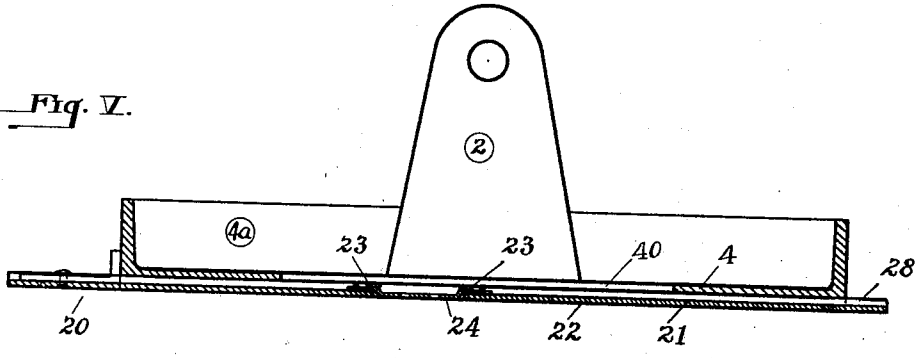
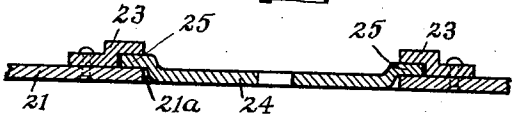


Fig. VI



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UNITED STATES PATENT OFFICE

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STENCILING DEVICE

Application filed December 19, 1929. Serial No. 415,148.

This invention relates to a stenciling device, consisting of the organization of a paint-gun and a stencil in a frame, which device requires a minimum of supervision in the application of accurately painted patterns or characters to surfaces to be marked.

The accompanying drawings illustrate a device embodying our invention. Figure I is a view of the device in side elevation; Figure II is a view in plan of the stencil, showing interchangeable character-bearing plates mounted therein; Figure III is a view in cross-section, taken on the plane III—III of Figure II; Figure IV is a view of the device in cross-section, taken on the plane IV—IV of Figure I; Figure V is an enlarged view of the base of the device in cross-section, showing the removable stencil positioned therein; Figure VI is a further enlarged view showing in cross-section a character-bearing plate in position in the stencil; Figure VII is a fragmentary view of the paint-gun supporting standard, showing instrumentalities associated therewith to regulate angular movement of the paint-gun; and Figure VIII is a view in side elevation of a tally which may conveniently be associated with the stenciling device for recording in summation the number of applications of patterns or characters which have been made.

Referring to the drawings the device consists of a stencil carrying base to which an adjustable standard 1 is attached. The base includes a windowed floor 4 (the numeral 40 designates the window in the floor) which terminates peripherally in a wall or flange 4*a*, conveniently having a stud 2 integral therewith for the attachment of the standard 1 to the base. A set-screw 12 serves to secure the standard 1 to the stud 2, and manifestly the standard may be adjusted angularly from the vertical position in which it is shown in Figure IV.

In the suitably grooved ways 5 a stencil 20 is removably retained beneath the floor 4 of the base in such position as to permit its lower surface to lie closely upon the surface to which the patterns or characters are to be applied. The stencil comprises a carrier plate 21 which is ordinarily formed of sheet metal. The lower surface 22 is unobstructed, and is shaped to conform with the surfaces to be marked—in this case, a plane surface. The carrier plate is provided with an opening 21*a* (Fig. VI), and with strips 23 mounted upon the upper face of plate 21 and extending along opposite sides of opening 21*a* and forming with the plate grooves for guiding and for retaining in position the character-bearing plates 24.

The character-bearing plates 24 are conveniently formed of sheet metal and consist each of a body portion substantially corresponding in length to the breadth of the opening 21*a*, to which body portion the numeral 24 is immediately applied, and of opposite terminal tongues 25. The tongues 25 are offset with respect to the body 24 by an interval which corresponds to the thickness of the carrier plate 21. The character-bearing plates are thus adapted to be set in the opening in carrier plate 21, with their terminal tongues over-lapping upon the upper face of the carrier plate and beneath strips 23, and with the lower surfaces of their body portions extending in common plane with the lower surface 22 of carrier plate 21.

The strips 23 overlie the tongues 25 of the character-bearing plates, as shown in Figure VI, and, in order to remove a character-bearing plate 24, it must be slid lengthwise of the strips and opening 21*a* past the left-hand ends of the strips (Fig. II), whence it is free to be removed and replaced. When a desired legend has been composed, by the arrangement of several character-bearing plates, say six character-bearing plates, a keeper 26 is inserted to stay the said plates and retain them in tightly closed side-by-side relation in the carrier plate 21. The keeper 26 is formed of resilient sheet metal, and is provided with wings 27 which, when the keeper is pressed and slid to the position shown in Figures II and III, are slightly flexed. The flexed wings 27 bear resiliently upon the upper surface of the carrier plate and cause that portion of the keeper which extends beneath the strips 23 (Fig. II) to press against the nether surfaces of the strips. Friction be-

tween the flexed keeper and the strips 23 is effective to secure the keeper in position.

Each plate 24 may by cutting be caused to bear its own distinctive character 24*a*. In Figure II the assembly is shown of a plurality of character-bearing plates in the opening of the carrier plate. Manifestly any arrangement of particular characters is possible, and characters of any sort, whether numerals, letters, or conventional signs or designs may be formed in the individual plates 24. Plates of uninterrupted continuity—blank plates, with no character cut through them—may be interposed, to effect proper spacing of characters. Facility in change and adaptation of the stencil as a whole in applying different particular legends or other designs to surfaces to be marked is manifestly possible.

It will be noted that the carrier plate 21 is formed with off-set lateral flanges 28. These flanges are off-set at an interval sufficient to enable the tops of the strips 23 to pass freely beneath the floor 4 of the base when the stencil is positioned with the flanges 28 inserted in the ways 5, and slid into the position assumed during use; that is, into the position shown in Figure V, which places the effective portion (the character-bearing portion) of the stencil in exposure through window 40. By forming the carrier plate with the off-set flanges 28, and by forming the character-bearing plates 24 with off-set terminal tongues and so bringing the lower surfaces of these plates to common plane with the lower surface of the carrier plate, it is manifest that in use the character-bearing plates will come into close contact with a surface to which the stenciling device may be applied.

Adjustably mounted at an interval of space above the stencil-carrying base is a paint-gun 3. The mechanical construction and operation of the illustrated paint-gun 3 are well known to the art, and precise description of it is unnecessary. In general, however, the paint-gun is connected to a source of compressed air, and the air, as in operation it is released through a small orifice, draws a suitable printing fluid from a container and emits a jet 9 of air carrying in atomized condition the printing fluid. In the drawings, the compressed air enters the paint-gun through a tube 6, and a bottle 7 contains the fluid which is drawn through a tube 8 into the gun. If the bottle 7 be positioned at some elevated station remote from the apparatus (as, obviously, it may be) gravity will aid the flow of fluid into the gun.

Although the paint-gun 3 in and of itself is well known, its organization with the instrumentalities of our device is deemed to be novel. On the upper extremity of standard 1 there is formed a boss 19, suitably bored to receive the stem 13 of a clincher-bracket 11 in which the paint-gun 3 is secured. Arranged with the thumb-screws 14 to be fixed at various positions on the stem 13 are collars 15*a*, 15*b* bearing against the boss 19 and adjustably securing the paint-gun in the desired position laterally of the device. Complementary longitudinal adjustment of the point-gun may be had by swinging the standard 1 on set-screw 12.

In stenciling, the jet 9 of air and printing fluid is directed toward the stencil-carrying base and plays upon the effective area of the stencil; that is to say, upon the area of the stencil which is exposed by the windowed floor 4 of the base. As may be seen in Figure I, the jet 9 diverges downwardly, and attains a breadth which is as great as the breadth of the window 40. Two auxiliary air jets 10 (see Fig. IV) may be directed obliquely downward upon jet 9, and from opposite sides, to control the breadth of the jet 9. While, of course, the depth of jet 9 is relatively slight, it may be varied both in breadth and depth by proper control of jets 10. To permit the jet in its depth (transversely, Fig. IV) to cover the effective area of the stencil we have movably mounted the paint-gun. The mounting of the stem 13 in the boss 19 is expedient to this end. That is, by swinging the paint-gun and its supporting bracket 11 on the axis of the revoluble stem 13, the spray or jet will, in striking the stencil, travel in accordance with the angular movement of the gun. As shown in Figure VII, adjustable stops 16 may be set in lugs 17 on the standard 1 to limit the rotary movement of the paint-gun and to confine the travelling of the jet within desired limits. That is to say, a set-screw 18 forms in effect a protuberance on the collar 15*b*, and the inner ends of the thumb-screws 16 afford adjustable stops to limit movement of the screw 18, and thereby confine rotation of the paint-gun within the desired limits.

A tally may be included with the device, for indicating the total number of markings which the device has made during a certain interval of time. This recording feature is found to be particularly advantageous in steel-sheet mills where it is customary to inspect, count, and mark each sheet. At variance with the usual practice one attendant may attend to all three of these matters. Our device does not require close supervision in operation. It may be placed on a sheet and intuitively operated—operated by "feel"—while the operator is searching for defects the sheet which he is marking; and, of course, the tally records each application, whereupon the number of sheets may be determined.

We have shown a tally 80 in Figure VIII, a tally which indicates progressively in units of one each oscillation of the tally-operating arm 81. The tally 80 may conveniently be

attached to the flange 4a of the stencil-carrying base, and a "floating" pin 82 may be supported in a bracket 83. The pin 82 is provided with a grooved head 84 to receive the arm 81, and the lower end of the pin normally extends below the plane of the stencil 20. By placing the stencil upon a surface to be marked, the tally-operating arm 81 is raised to record one application. Manifestly, a saving of time and of labor is realized.

A further important advantage of the stenciling instrument is worthy of mention. It has to do with the marking of metal sheets which are provided for protection with a thin film of oil. In marking such sheets, it has to our knowledge always been necessary preliminarily to remove the oil from the surface before the printing fluid may be satisfactorily applied. We have found, however, that the paint-gun may be so operated and so positioned relatively to the stencil 20 that the characters or patterns may be directly applied to an oily surface. That is to say, if the paint-gun is operated by air under a pressure of 40 pounds, and the spray or jet orifice of the paint-gun is arranged from 7 to 9 inches from the stencil, a peculiar action takes place. The mixed jet of air and printing fluid penetrates and replaces the oil on the surface which lies immediately beneath the cut-out portions of the stencil, and sharp and legible characters are, as a result, applied to the sheet.

What we claim is:

1. In a portable stenciling machine which is movable as a unit to a position of rest upon the surface to be marked, the combination of a supporting base for the machine, a stencil removably secured in said supporting base, which stencil conforms to the surface to be marked and comprises the bottom face of said base which is adapted to lie in close contact with said surface to be marked, a standard extending upward from said base, and a paint-gun movably secured to said standard above said base and its included stencil.

2. In a portable stenciling machine which is movable as a unit to a position of rest upon the surface to be marked, the combination of a supporting base for the machine, a stencil removably secured in said supporting base, which stencil conforms to the surface to be marked and comprises the bottom face of said base which is adapted to lie in close contact with said surface to be marked, a standard extending upward from said base, a paint-gun movably secured to said standard above said base and its included stencil, and adjustable means for limiting the extent of such movement.

3. In a portable stenciling machine which is movable as a unit to a position of rest upon the surface to be marked, the combination of a supporting base for the machine, a stencil removably secured in said supporting base, which stencil conforms to the surface to be marked and comprises the bottom face of said base which is adapted to lie in close contact with said surface to be marked, a standard extending upward from said base, a paint-gun revolubly secured to said standard above said base and its included stencil, and adjustable means for defining an arc through which said paint-gun may be revolved.

4. In a portable stenciling machine which is movable as a unit to a position of rest upon the surface to be marked, the combination of a windowed supporting base for the machine, a stencil removably secured in said base within the area of its window, which stencil conforms to the surface to be marked and upon which surface the stencil is adapted to rest, a standard extending upward from said base, a paint-gun revolubly supported by said standard, and adjustable means for defining an arc through which said paint-gun may be revolved.

5. In a stenciling machine, the combination of a base, a stencil removably secured in said base, a standard extending upward from said base, a paint-gun revolubly supported by said standard, and adjustable means for defining an angle through which said paint-gun may be revolved.

In testimony whereof we have hereunto set our hands.

HERMAN ANDERSON.
RAYMOND J. GANNON.