Jan. 1, 1963 P. ROTHFUCHS 3,071,067

PORTABLE STAMPING DEVICE

Filed Sept. 9, 1959

Fig.1

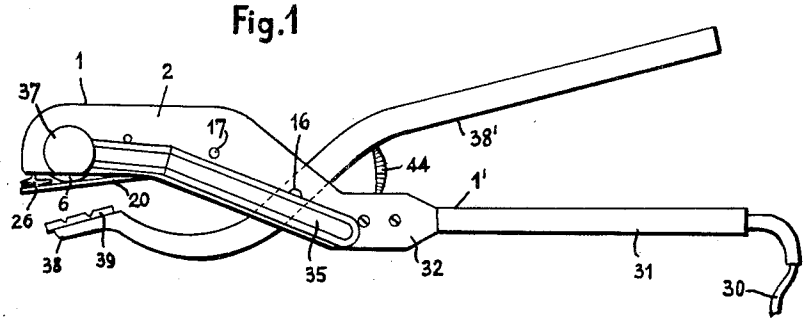


Fig.2

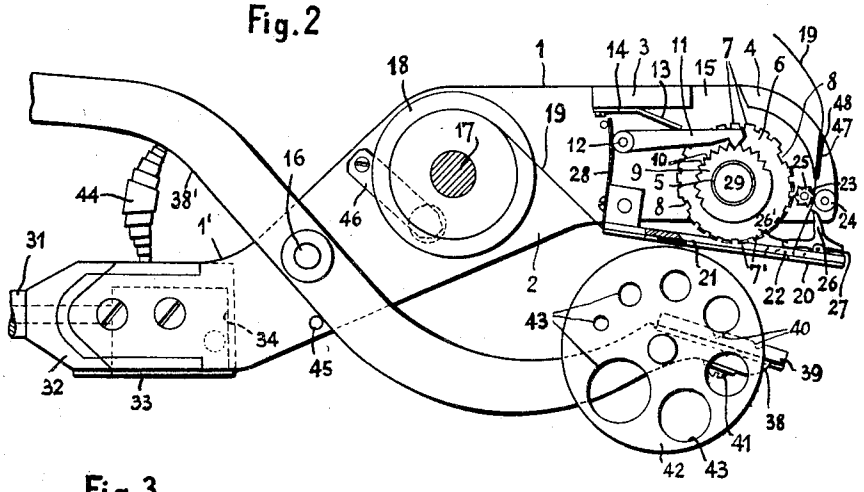
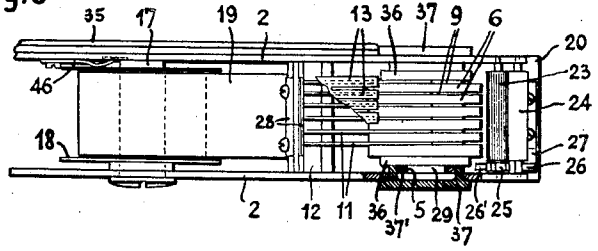


Fig.3



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PORTABLE STAMPING DEVICE

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This invention relates to improvements in devices for marking objects such as electrical conductors covered with rubber, lacquer, some synthetic resins or other thermoplastic material or material into which a marking may be pressed with the use of heat.

For example, machines under automatic control require so many electrical conductors that the conductors must be distinguished in some way to avoid improper connection particularly during maintenance work on or repair of the machine when the repairman is not familiar with the entire wiring diagram. Different color insulation is available for conductors but the number of distinctive colors is limited and not sufficient colors are available to distinguish more than a limited number of the conductors. Tags of various kinds have been used but have not proven satisfactory, as is true of any identifying or labeling means attached to and extending from the conductor. Impressing into the insulation a code number or letter or combination thereof is better than using attached labels but is in itself inadequate unless the code impressions are colored in some way.

It is therefore an object of the present invention to provide a portable device which will simultaneously impress a code designation into a thermoplastic or cold-soft material, and will color the same so that the code marking contrasts with the normal color of the material.

The present device provides one or more carriers for stamping characters in a hand tongs structure operable by one hand of the user. The carriers are rolls with stamping characters on the periphery and are rotatable to bring individual characters exactly into stamping position, where they will be held until voluntarily changed. An electric heater is associated with the stamping carrier and a color-carrying metallic foil or other tape is provided. Heat is applied by way of the stamping characters and a fresh portion of the foil with color is brought into position for transfer of the color to the code designation stamped into the object. The electrical lead to the heater is taken through at least a part of one leg of the tongs and the foil or tape is fed by an arrangement which will bring it and the color thereon into position adjacent the particular stamp in use and which moves the foil away from the stamp in steps dependent on the operation of the tongs. The foil feeding arrangement draws the foil taut during part of the stamping operation and tension on the foil is relieved during another part of the operation.

In the drawings:

FIG. 1 is a side view of the present stamp in the form of hand-operated tongs;

FIG. 2 is a view partially in side elevation, and partially in longitudinal cross-section of one jaw portion of the tongs; and

FIG. 3 is a top plan view on an enlarged scale of a portion of the tongs with a portion of the wall removed from a jaw thereof.

Referring specifically to the drawings by reference numerals, a leg 1 of a tongs has its jaw formed by side walls 2 and cross walls 3, 4 to define a space across which a hollow axle 5 extends between the side walls and at right angles to the axis of the tongs. A number of disk-like rolls 6 are rotatably mounted on the axle 5 in side-by-side relation, and each roll is formed on its periphery with projections 7 and 7', each of which carries one stamp character on that surface forming a part of the roll periphery. The set of stamping characters on one-half of a roll 6 is positive (raised) and on the other half of the roll is negative (depressed) and the two sets of characters are divided by diametrically opposed gaps 8. The sets of characters are duplicates and the characters are in pairs of the same character diametrically across the roll. Numbers, letters or other symbols and dashes or the like may be used as the stamping characters and a sufficient number of rolls are preferably provided so that one may have a six-place code designation.

Each roll has attached to one end thereof a ratchet 9 with notches 10 severally corresponding in position to the stamp characters 7, 7' and the gaps 8 of the particular roll. The notches 10 of the ratchet 9 are engageable by a pawl 11 mounted on a pivot 12 common to all of the pawls and extending between the side walls 2 parallel to the axle 5. Each pawl 11 is under the action of the flexible end 13 of a leaf spring 14 with its other end fixed to the transverse jaw wall 3. It will be seen (FIG. 2) that the walls 3, 4 of the jaw of leg 1 are spaced and thus provide an opening or window 15 through which part of the stamp characters 7 are visible and through which a pointed instrument may be inserted between the stamp characters for rotating a roll to bring a desired character into position for stamping. Hence, the characters on the upper half of each roll are preferably positive for easier recognition and corresponding characters on the bottom half of each roll are negative to receive color when the tongs are in use. Springs 13, 14 are sufficiently heavy to hold a roll in pre-set position until its position is voluntarily changed.

The pivot for the tong legs is shown at 16 and a pin 17 extends from the leg 1 to form a pivot for a roller 18 carrying a band of metallic foil or other tape 19 having a film of coloring material on one side to be transferred to the object being marked. The foil runs across a plate 20 which is pivoted to the jaw of leg 1 and which has an opening 21 across which the foil 19 extends so that the plate forms a guide and a frame for portions of the foil. The opening 21 is of a size for passage of stamps 7' therethrough and another portion of the opening is of a size for passage of the foil therethrough. A transverse member 22 extends across the opening 21 and co-acts with the pivoted end of frame 20 in guiding a run of foil substantially parallel to the longitudinal axis of the frame.

From the member 22, the foil 19 extends between two feed rollers 23, 24 which are mounted between the side walls 2 in parallel relation to the axis of the stamping rolls 6. Feed roller 23 has its peripheral surface fluted or grooved parallel to the roller axis and has a shifting wheel 25 at one end to be engaged by a pawl 26, 26' pivoted on the frame 20. Such pawl has three prongs of which one prong is engageable with the wheel 25, a prong 26' can bear on the frame 20 and another prong bears on a leaf spring 27 which urges two of the prongs respectively toward the wheel 25 and the frame 20. The frame 20 is also under the action of a leaf spring 28 bearing on pivot 12 so that the frame tends to swing to a substantial angle with the lower edge of the tongs jaw. Thus as the tongs are operated, the frame 20 pivots toward and away from the jaw whereby one prong of the pawl 26 engages the feed wheel 25 and rotates the roller 23 (when the jaws open) or stresses the springs 27 (when the jaws close). When pressure on the tongs is released, the spring 27 rotates the pawl 26 until the pawl prong 26' again bears on the frame 20. The foil band or tape 19 is thus advanced by an amount equal to the width of one stamp 7' and a new portion of foil is automatically brought into position for engagement by the stamp 7'. Feed roller 24 has an elastic covering which holds the foil engaged with the fluted edges of roller 23 so that the foil cannot slip as the roller 23 is rotated.

An insulating cylinder 29, preferably of ceramic material, is built into axle 5 to receive a conventional electrical heating unit of approximately 15 w. size at low voltage such as 12 v. Electric current is supplied to the heater by conductors 30 extending through the handle portion 31 of the second tongs leg to a portion thereof marked 32 where a cavity 34 receives connectors from the conductors 30 to the terminals of the heater, the cavity having a cover 33. From the cavity 34, the terminals of the heater extend through guard 35 to adjacent the end of axle 5 which is accessible by way of a cover 37 of sufficient size for replacement of the heater. Insulating members 36, 37' are placed between the side walls 2 and the adjacent stamp roll 6 to reduce heat transfer to the tong legs and the cover 37 is preferably formed with holes to vent heated air from within the axle and about the heater. It is obvious that the heater may be supplied with current of any kind and from either a power line or a battery. However, alternating current is preferred and it is preferred that the current supplied be at no more than 12 v. for reasons of safety.

The second tong leg 38 carries an anvil 39 with grooves 40 of different depth and also of different shape, if desired, dependent on the objects to be stamped. The anvil 40 is slidable in the jaw leg 38 and the longitudinal axis of its grooves are parallel to the axis of the stamp rolls 6 so that an object to be stamped can be brought into registry with the stamp 7', and the anvil can be held in position by a screw 41. A guide disk 42 is pivoted on the jaw 38 to rotate and bring holes 43 of different size into registry with a groove 40. Thus, the grooves 40 and the holes 43 co-act in positioning an object to be marked and assure that the object will be kept in the correct position without attention thereto during closing of the tongs.

A spiral spreader spring 44 acts between the tong legs 1' and 38 to urge the tong jaws toward open position until the tong leg 38' engages a stop 45 extending from the tong leg 1'. When the jaws are opened, the spring 28 tilts the frame 20 away from the jaw of leg 1 and returns the foil feeding mechanism to position for advance of the foil 19 by one step. The used end of the foil is preferably passed between a strip 47 and an end of the jaw wall 4 to which the strip is fastened and the edge of such strip is toothed to provide a cutter for removing used portions of the foil.

In use, a roll of foil 19 is placed on its pivot 17, the foil having a film of paint on the side which will face the anvil 39 as the foil is fed between the tongs jaws. Any contrasting color of paint may be used and the paint, of course, may be of any kind remaining tacky while on the foil and drying quickly when heated during the stamping action and when exposed to air after the stamping action. The foil is drawn over the frame 20 and between the feed rollers 23, 24 and through the cutters 47, 48 as described above. Electrical conductors 30 are connected to a source of current and are left so connected until the stamping rolls have been heated to at least the temperature for plasticizing the gums and resins involved. The stamping rolls 6 are set to bring the desired stamps 7 into alignment in the window 15 and with their sides aligned with an edge of the jaw wall 4. Corresponding stamps 7' are diametrically opposite to stamps 7 and hence will be automatically brought to the desired position. The anvil 39 and the disk 42 are set to align one of the grooves 40 with one of the holes 42 and in a position where the grooves will be opposed to stamp 7' when the tongs jaws are closed.

So long as the jaws are open, the frame 20 is in the position shown in FIG. 2 but such frame pivots when the jaws are closed to press the stamps on an object through the foil 19 and its paint film. In the position shown in FIG. 2, the foil is kept taut under the braking action of spring 46 on foil supply roller 18 but the pivoting of the frame 20 produces sufficient slack in the foil to allow it to adapt to the surfaces of the stamp 7'. Upon closing the tongs, foil first comes into contact with the heated stamp surfaces and then is pressed on the object so as to carry the color into the recessed or raised letters (dependent on the type of stamp used) which results in a code designation with a film of paint thereon. During closing of the jaws, the pawl 26 engages the feeder wheel 25 but the band 19 is soon gripped between the stamps 7' and the object so that pawl 26 acts on the spring 27. Upon opening of the jaws, the frame 20 again returns to the position of FIG. 2, and spring 27 can now react to cause turning of feed roller 23 so that more foil is drawn off the supply roll 18 and the foil is advanced by one step only. The device is then again ready for another stamping operation.

I claim:

1. In a device for simultaneously stamping and coloring code designations in objects of a material plastic during the stamping operation, tongs comprising two legs joined by a pivot and having handle portions and jaw portions, a roll rotatably mounted in the one jaw and having stamping characters formed in the periphery thereof, an anvil mounted on the other jaw, a supply of a deformable band mounted on one of the tong legs and carrying a transferable film of coloring material on one side thereof, a frame pivoted adjacent the color band supply on said one of the tong legs and having openings therethrough, the frame guiding the color band between the stamping roll and the anvil, feed rolls for the color band mounted adjacent and substantially in alignment with the stamping roll, a ratchet mounted on one of the feed rolls, and means mounted on the frame for engagement with the ratchet and drawing the band one step and holding the band taut as the jaws assume one position and yielding slack in the band when the jaws assume another position.

2. The device of claim 1 in which the anvil comprises a multiple grooved plate adjustably mounted on the other jaw, and means for holding the object in a selected groove of said plate during closing of the tong jaws.

3. The device of claim 1 in which the anvil comprises a plate having a plurality of grooves and adjustably mounted in the other jaw to bring the grooves alternately into a given position, and a disk pivoted adjacent the plate and provided with holes of different size for severally coacting with the grooves in the plate in holding the object in position for stamping a code designation thereon.

4. The device of claim 1 in which the supply of band with coloring material thereon is on a rotatable roller restrained by a spring in its rotation in a direction unwinding the band from the roller.

5. The device of claim 4 in which the band feeding means includes a frame having an opening for passage therethrough of stamping characters on the roll and guiding the band over the opening.

6. The device of claim 5 in which the frame is pivoted on the one tong jaw adjacent the roll with stamping characters thereon whereby tension on the band is released as the jaws are closed.

7. The device of claim 6 in which feed rolls are operated in steps by means responsive to the pivoting of the frame resulting from closing movement of the jaws.

8. In a device for simultaneously stamping and coloring code designations in objects of a material plastic during the stamping operation, tongs comprising two legs joined by a pivot and having handle portions and jaw portions, a plurality of rolls mounted on the one jaw for individual rotation and having stamping characters formed in the periphery thereof, means for holding the rolls in pre-set position, an electric heater within the rolls, an anvil mounted on the other jaw, a supply of a deformable band mounted on one of the tong legs and carrying a transferable film of coloring material on one side thereof, a frame pivoted adjacent the color band supply on said one of the tong legs and having openings therethrough, the frame guiding the color band between the stamping roll and the anvil, feed rolls for the color band mounted adjacent and substantially in alignment with the

stamping roll, a ratchet mounted on one of the feed rolls, and means mounted on the frame for engagement with the ratchet and drawing the band one step and holding the band taut as the jaws assume one position and yielding slack in the band when the jaws assume another position.

9. In a device for simultaneously stamping and coloring code designations in objects of a material plastic during the stamping operation, tongs comprising two legs joined by a pivot and having handle portions and jaw portions, a hollow axle mounted in the one jaw, a plurality of rolls mounted on the axle for individual rotation and having stamping characters formed in the periphery thereof, an electric heater within the axle, an electric current conductor extending through the handle portion of one of the tong legs for connection with the electric heater, an anvil mounted on the other jaw, a supply of a deformable band mounted on one of the tong legs and carrying a transferable film of coloring material on one side thereof, a frame pivoted adjacent the color band supply on said one of the tong legs and having openings therethrough, the frame guiding the color band between the stamping roll and the anvil, feed rolls for the color band

mounted adjacent and substantially in alignment with the stamping roll, a ratchet mounted on one of the feed rolls, and means mounted on the frame for engagement with the ratchet and drawing the band one step and holding the band taut as the jaws assume one position and yielding slack in the band when the jaws assume another position

10. The device of claim 9 in which the ends of the axle are insulated and spaced from the side walls of the jaws.

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