Feb. 6, 1945. J. H. PAYNE 2,369,073

METHOD AND APPARATUS FOR APPLYING INDICIA TO EXPLOSIVE SHELLS, CARTRIDGE CASES, AND THE LIKE

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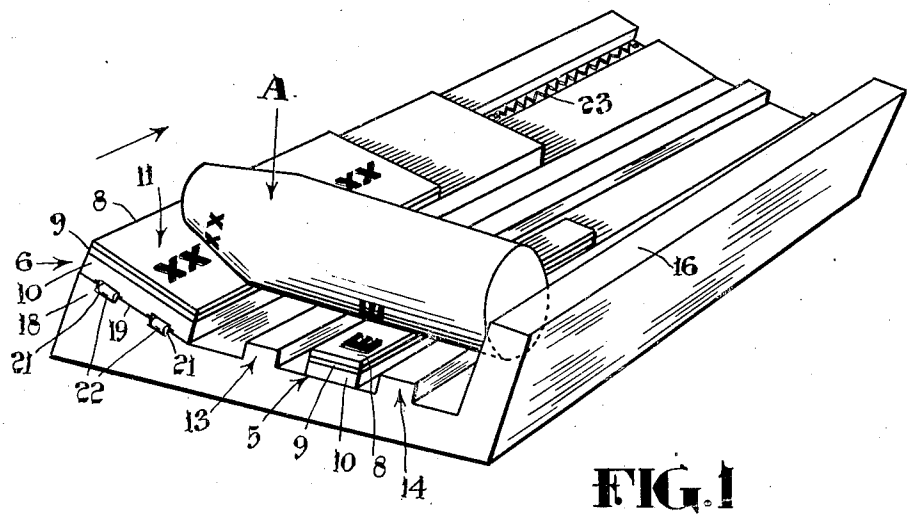


FIG. 1

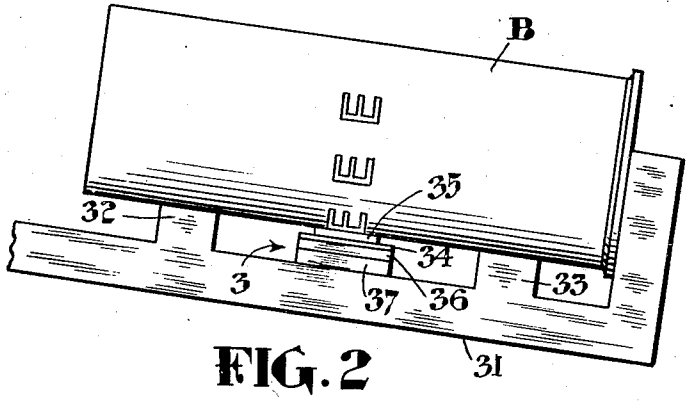


FIG. 2

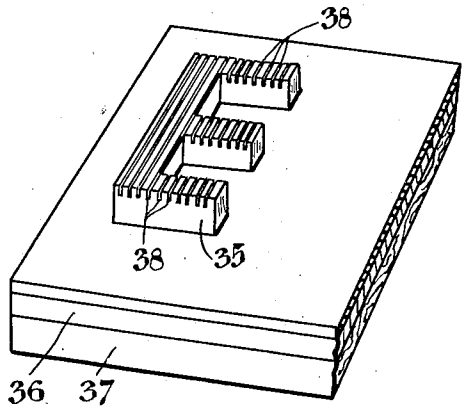


FIG. 3

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METHOD AND APPARATUS FOR APPLYING INDICIA TO EXPLOSIVE SHELLS, CARTRIDGE CASES, AND THE LIKE

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1 Claim. (Cl. 101—39)

This invention relates to the application of identifying symbols and other indicia to shell and cartridge casings and the like.

The conventional method of applying identifying symbols and other indicia to shell and cartridge casings by means of a stencil is slow and tedious and is also open to the objection that the ink, paint or marking reagent applied through the openings of the stencil plate tends to run beneath the solid portions of the plate with the result that the symbols or other indicia are blurred as to outline.

With the foregoing in mind an object of the present invention is the provision of a method and apparatus whereby sharply defined identifying symbols and other indicia may be applied to shell and cartridge casings in a fraction of the time required by the stencilling method.

Another object is the provision of a method and apparatus whereby suitable reagents may be applied to cartridge and similar metal casings by means of resilient non-metallic printing elements to form sharply defined identifying symbols or other indicia.

Other objects, advantages and characteristic features of the invention will be more readily understood from the following detailed description taken in connection with the accompanying drawing, in which—

Fig. 1 is a perspective view of one form of apparatus which may be employed for applying identifying symbols and other indicia to shell casings in accordance with my invention.

Fig. 2 is a similar view of a slightly different type of apparatus which may be used for applying identifying symbols and other indicia to cartridge casings.

Fig. 3 is a perspective view of a portion of the printing element appearing in Fig. 2.

The apparatus shown in Fig. 1 comprises two marking devices 5 and 6 arranged on a suitable base 7 over which the shell casings A are rolled as hereinafter described. In the present instance each marking device is shown as comprising a resilient printing element 8 mounted on a sponge rubber cushioning member 9 which, in turn, is mounted on a rigid backing member 10 made of wood or other suitable material. The printing element 8 of each marking device is provided with raised characters 11 by means of which the required markings are applied to the shell casings A as the latter are rolled over the base 7. Any paint or printing ink which is suitable for shellmarking purposes may be applied to the printing surfaces of the raised characters 11 by means of a brush or pad or by any other suitable means.

The base 7 is provided with laterally spaced shell supporting rails 13 and 14 between which the marking device 5 is arranged with its raised characters 11 projecting a suitable distance above the upper surfaces of said rails. The base 7 is also provided with a back-stop 16 and is tilted so that the base of each shell casing A will remain in contact with the back-stop as the shell is rolled along the rails 13 and 14 and over the printing characters 11 of the marking devices 5 and 6.

The marking device 6 is supported on the base 7 at a suitable inclination so that the raised characters thereof will make proper contact with the tapered nose portion of the shell A, as the latter is rolled along the rails 13 and 14. In order to provide for this inclination of the marking device 6 the base 7 is provided with a raised portion 18 presenting a rearwardly and downwardly sloping upper surface 19 of suitable inclination. The backing member 10 of the marking device 6 is arranged on this sloping surface 19 so that it lies parallel therewith, the printing characters 11 of said marking device being thereby inclined to make proper contact with the tapered nose portion of the shell as the latter is rolled thereover.

Owing to the difference in diameter between the body portion and the tapered nose portion of the shell A it is necessary that the marking device 6 be floatingly arranged on the base 7 so that it is free to move relatively to said base. For this reason the backing member 10 of the marking device 6 is preferably supported on the raised portion 18 of the base 7 by means of rollers 21 working in grooves 22, the bottom walls of which lie parallel with the inclined surface 19. A spring 23 normally holds the marking device 6 in a given position but is yieldable to permit said marking device to move relatively to the base 7 during the printing operation. The printing elements 8 of the two marking devices are preferably made of rubber which is somewhat harder than the sponge rubber cushioning members 9 on which they are mounted. It will be understood, however, that these printing elements 8 may be made of any other suitable material possessing the requisite resiliency.

In Figs. 2 and 3 I have shown another form of apparatus which is particularly useful in connection with the marking of casings, such as cartridge casings which are made of brass or other material which require that the markings

be applied by means of etching solutions such as silver nitrate and the like. In this case a marking device 30 is arranged on a base 31 between supporting rails 32 and 33 over which the cartridge casing B is rolled during the printing operation. The marking device 30 is similar to the marking devices previously described to the extent that it comprises a printing element 34 which is provided with raised characters 35 and which is mounted on a sponge rubber cushioning member 36 which, in turn, is mounted on a rigid backing member 37. However, I have found that, when marking shells and similar casings with a reagent such as silver nitrate, it is impossible to obtain a satisfactory impression when the printing surfaces of the raised characters 35 are made perfectly smooth and flat. In this connection it has been demonstrated that when silver nitrate or similar reagents are applied to cartridge casings by rolling the latter in contact with smooth printing surfaces to which the reagent has previously been applied the latter tends to run on the printing surface ahead of the moving surface of the cartridge casing so that a satisfactory transfer of the reagent to the casing from the printing surface is not obtained. In the present instance this difficulty is overcome by providing each of the raised printing characters 35 with an uneven printing surface affording alternating ridges and valleys. In the present instance this is accomplished by providing each character 35 with a printing surface which is interrupted by slits 38. When the silver nitrate is applied to this type of printing surface it collects in the grooves afforded by the slits 38 and also covers those portions of the printing surfaces which are located at opposite sides of each slit. This ensures the transfer of a sharply outlined and otherwise satisfactory impression to the cartridge casing B when the latter is rolled over the silver nitrate covered printing surfaces of the printing characters 35. In other words, the uneven contour of the printing surfaces of the characters 35 serves to hold the silver nitrate solution so that it will not run ahead of the moving surface of the shell during the printing operation.

Instead of being slit as described herein, the printing surface of each of the printing characters 35 may be made uneven in various other ways as, for example, by providing such surface with minute depressions of any desired shape or, alternatively, with minute closely spaced projections.

It will also be understood that my invention is not limited to the use of the particular forms of apparatus described herein but may be reduced to practice with the aid of various other forms of apparatus in which adequate provision is made for applying indicia to shell or cartridge casing by bringing the surfaces of such casings in rolling contact with resilient printing elements previously covered by a suitable paint, printing ink, plating reagent, or other suitable marking substances or solutions. The main consideration in cases where an etching solution, or other thin solution, is employed is that this solution be transferred to the shell or cartridge casing by means of a resilient printing element having an uneven printing surface. Any apparatus capable of meeting these requirements may be used in accordance with this invention for applying identifying symbols or other indicia to shell or cartridge casings. It is immaterial whether the shell or cartridge casing be moved relatively to the printing element of the marking device, or vice versa, so long as there is rolling contact between the printing surface and the engaging surface of the shell or cartridge casing.

Having thus described my invention, what I claim is:

Apparatus for applying indicia to a shell or cartridge casing comprising a base which is tilted so that its front edge is higher than its rear edge, a back-stop projecting upwardly from the base at the rear edge thereof, a pair of laterally spaced rails projecting upwardly from the base in front of the back-stop, a printing element arranged on the base between said rails with the upper surface of the printing element projecting above the upper surface of the rails, and a supplementary marking device mounted on the front portion of said base in a tilted position so that the front edge of said supplementary marking device is higher than the rear edge, said supplementary marking device being capable of limited travelling movement relative to said base and in the longitudinal direction of said rails.

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