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Gawlick et al.

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- [54] **ANVIL FOR PERCUSSION PRIMER**
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- [30] **Foreign Application Priority Data**
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- [52] **U.S. Cl.** **102/45**
[51] **Int. Cl.** **F42c 19/08**
[58] **Field of Search**..... 102/45, 86.5, 38,
102/44

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[57] **ABSTRACT**

An anvil for percussion primers comprising an annular disk having at least two recesses or cut-outs at the periphery thereof. As seen in cross-section, the anvil tapers approximately conically and has a cylindrical outer surface in the zone of one of its end faces and passes over into an annular surface at right angles to the axis thereof in the zone of the other of its end faces.

10 Claims, 4 Drawing Figures

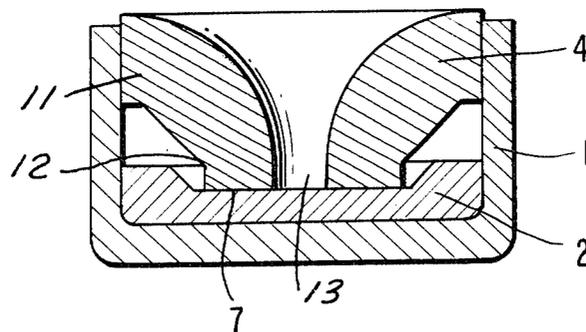


FIG. 1

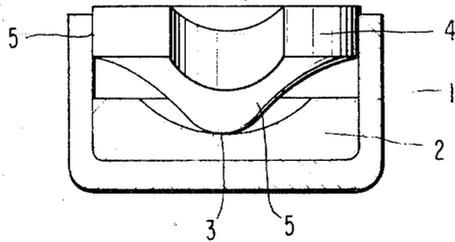


FIG. 3a

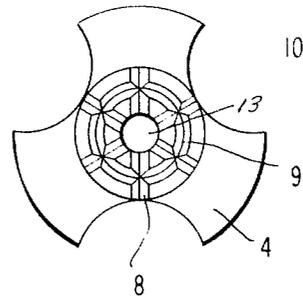
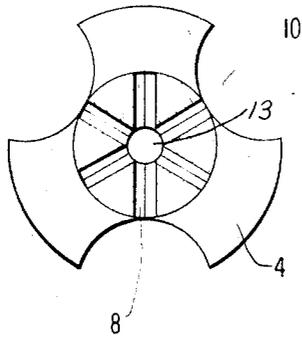
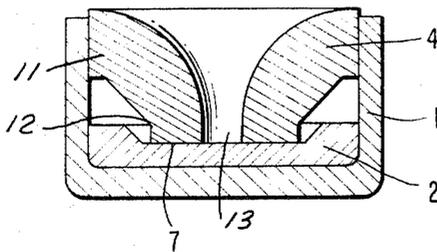


FIG. 3b

FIG. 2



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ANVIL FOR PERCUSSION PRIMER

BACKGROUND OF THE INVENTION

The present invention relates to an anvil for percussion primers or caps.

The safe functioning of percussion primers depends very essentially on the accuracy with which the striker or firing pin impinges, with respect to its central guidance, onto the anvil or the percussion primer cap. It is known from German Patent 1,214,578 to construct the anvil with a large area so that a flawless ignition of the primer is effected even when the striker pin impinges eccentrically. However, this anvil has the disadvantage that it has a very large axial extension and thus cannot be utilized in all those cases wherein a low structural height is required.

SUMMARY OF THE INVENTION

It is an aim of the present invention to overcome the problems and disadvantages encountered with the prior art devices.

It is an object of the present invention to provide an anvil which ensures a perfect ignition in case of an eccentric impingement of the striker pin even with a low required structural height.

The foregoing problems and disadvantages have been solved in accordance with the present invention by constructing the anvil as an annular disk which, as seen in cross section, tapers approximately conically and has a cylindrical outer surface in the zone of one of its end faces, while it passes over into an annular surface at right angles to the axis thereof in the zone of the other of its end faces.

In accordance with an advantageous feature of the present invention, the provision is made that the annular disk has at least two recesses or cutouts at the periphery thereof. Preferably, these recesses are disposed uniformly along the periphery, so that a uniform ignition effect is obtained as seen along the periphery. This effect can be essentially enhanced by providing in accordance with a further feature of the present invention the end face which is at right angles to the axis with projections and/or depressions. These can be formed, for example, as annular and/or radially extending depressions or raised portions. However, a very finely roughened area is also suitable.

BRIEF DESCRIPTION OF THE DRAWING

These and further aims, features and advantages of the present invention will become more apparent from the following description when taken in conjunction with the accompanying drawing which shows, for purposes of illustration only, several embodiments in accordance with the present invention and wherein:

FIG. 1 is a cross-sectional axial view of a primer with a conventional anvil having a central rounded tip;

FIG. 2 is a cross-sectional axial view of a primer with the anvil in accordance with the present invention; and

FIGS. 3a and 3b are bottom views of two different embodiments of the anvil of FIG. 2.

DETAILED DESCRIPTION OF THE DRAWING

Referring now to the drawing and in particular, to FIG. 1, primer composition 2 with a central depression 3 is accommodated in a cup 1. The anvil 4 is held with its outer annular surface 5 in the cup 1 by a clamping connection and is disposed with its central rounded tip

6 directly above the primer composition 2. Due to the increasing height of the primer composition 2, the consequence of an increased deviation from the centered arrangement is performed a lower sensitivity of the primer, since the anvil 4 impinges with its tip 6 always on the primer composition 2 only at a point.

In contrast thereto, the design of the anvil 4 in accordance with the present invention as shown in FIG. 2 ensures a sufficiently certain ignition by the relatively large annular surface 7 even when the striker pin (not shown) impinges on the cup 1 eccentrically. In this connection, a particular advantage of the anvil 4, which is again held in the cup 1 by clamping action, is its extremely small structural height making it possible to employ the arrangement with great versatility. The shape imparted to the primer composition 2 so as to be adapted to the configuration of the anvil 4 is self-evident in this connection. As shown, the anvil is of one piece construction and includes a disk portion 11 having a cylindrical outer surface and a frustrum portion of a substantially conical member 12 extending therefrom with the disk and frustrum portion defining an axial aperture 3 extending completely therethrough.

As shown in detail in FIGS. 3a and 3b, the effectiveness of the anvil 4 can be considerably increased by roughening the annular surface 7, that is providing same with raised portions or depressions such as, for example, in the form of the radial grooves 8 of FIG. 3a or the annular grooves 9 and the radial grooves of FIG. 3b. The priming effect is, moreover, quite considerably enhanced by recesses or cut-outs 10 at the periphery of the annular surface.

The dimensions of the anvil will, of course, be selected in adaptation to the respective dimensions of the primer or the respective situation. Suitably for a striker pin diameter of about 2 mm., an annular disk is selected having an inside diameter of, at most, 1.5 mm., and in case of a striker pin diameter of about 3 mm., an annular disk is chosen having an inside diameter of no more than about 2.2 mm.

While we have shown several embodiments in accordance with the present invention, it is to be clearly understood that the same is susceptible of numerous changes and modifications as are encompassed by the scope of the present invention. We, therefore, do not wish to be limited to the details shown and described herein but intend to cover all such changes and modifications as are encompassed by the scope of the present invention.

We claim

1. A one piece longitudinally extending anvil for percussion primers comprising a disk portion with a cylindrical outer surface and a frustrum portion of a substantially conical member extending in the longitudinal direction from said disk portion, said disk and frustrum portions defining an axial aperture extending completely therethrough, said frustrum portion and the aperture defining an annular end surface of said anvil, said disk portion defining outer longitudinally extending apertures at at least two places in the outer cylindrical surface thereof.

2. Anvil according to claim 1, wherein the outer apertures are uniformly distributed.

3. Anvil according to claim 1, wherein the annular end surface is at right angles to the axis and is provided with projections or depressions.

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4. Anvil according to claim 3, wherein the outer apertures are uniformly distributed.

5. Anvil according to claim 3, wherein said projections or depressions extend at least radially outwardly from the axial aperture.

6. Anvil according to claim 5, wherein said projections or depressions also define annular grooves in the annular end surface.

7. Anvil according to claim 1, wherein the percussion primer includes a cup having a primer charge therein, and the anvil being arranged in the cup with the annular end surface thereof directly facing the primer charge.

8. Anvil according to claim 7, wherein the annular end surface contacts the primer charge.

9. A one piece longitudinally extending anvil for percussion primers comprising a disk portion with a cylindrical

drical outer surface and a frustrum portion of a substantially conical member extending in the longitudinal direction from said disk portion, said disk and frustrum portions defining an axial aperture extending completely therethrough, said frustrum portion and the aperture defining an annular end surface, said annular end surface being arranged directly facing a primer charge and having an outer diameter which is larger than the diameter of a striker pin for the percussion primer and having an inner diameter which is smaller than the diameter of the striker pin.

10. Anvil according to claim 9, wherein said disk portion defines outer longitudinally extending apertures at at least two places in the outer cylindrical surface thereof.

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