Oct. 6, 1953 E. GIBBS 2,654,140

BULLET FORMING DIE

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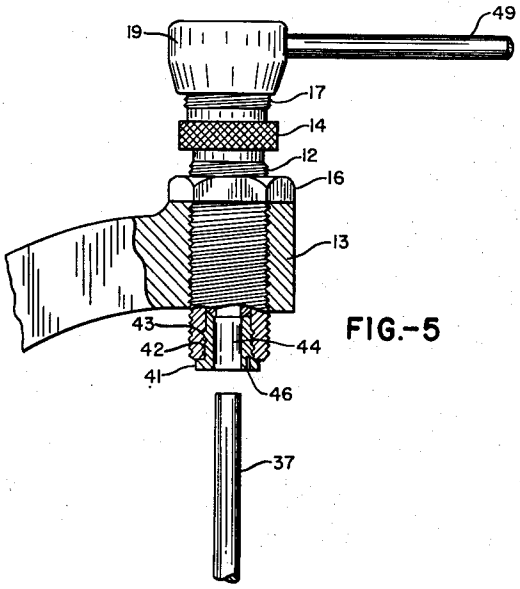


FIG.-5

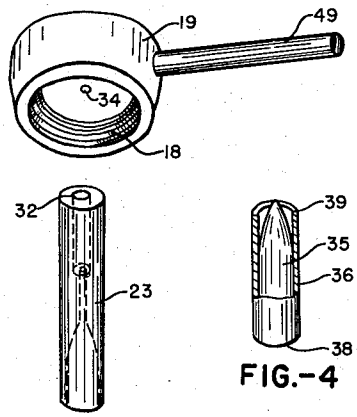
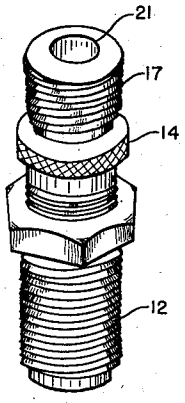


FIG.-4



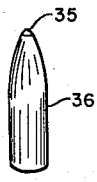


FIG.-3

FIG.-2

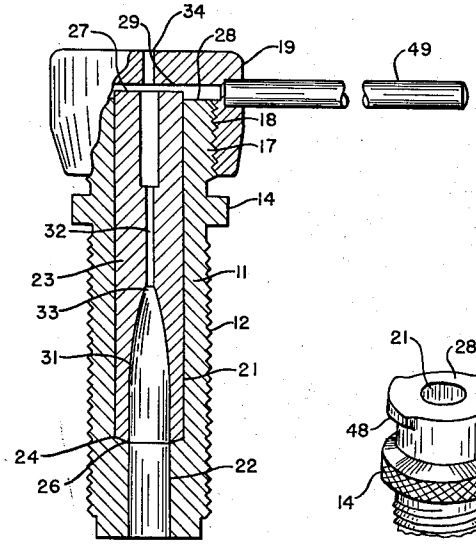


FIG.-1

FIG.-6

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BULLET FORMING DIE

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5 Claims. (Cl. 29—1.23)

1

This invention relates to a bullet forming die and more particularly to a bullet die that is adaptable to form bullets of various sizes and shapes as desired.

Previously many different types of bullet dies or bullet forming devices have been made and sold. These devices have been of many different forms and constructions. In general, however, the die pieces of all former mechanisms have been of such construction that they were only usable to form one particular size and shape of bullet. Since those who are interested in making bullets of special size and shape generally have quite a few guns of different caliber it has previously been necessary for them to purchase a considerable number of dies in order to satisfy their requirements.

In order to better serve customers who are interested in making a great number of different shaped bullets for the same caliber, or even customers who are desirous of making bullets of different calibers and shapes, the present inventor has devised a bullet die having interchangeable pieces to provide die cavities of different shape for a single caliber or of different shape and diameter for multiple calibers.

In providing a die of the foregoing type it has been one object of the inventor to provide a bullet forming die which may be received and held in conventional bullet reloading tools.

Another object of this invention is to provide a bullet forming die which may be adapted to form bullets of a single caliber having differently shaped heads by use of interchangeable, head forming, die cavity pieces.

Another object of this invention is to provide a bullet forming die providing means for changing the size or caliber of the bullet body forming die cavity as well as for changing the shape and size of the bullet head forming die cavity.

A still further object of this invention is to provide a bullet forming die having a cap member which may be used to hold the head and body die cavities in registered alinement and which may be readily and speedily removed to remove the finished bullet from the die.

Another object of this invention is to provide separate means for engaging the cap piece to the die block.

A further object of this invention is to provide a die which may be utilized to form a jacketed type of bullet.

Other objects and advantages of the present invention will be apparent from the appended description and drawings in which:

2

Fig. 1 is an elevation in partial section of one type of bullet forming die showing the elements in their assembled relation;

Fig. 2 is an exploded perspective further showing the features of the die of Fig. 1;

Fig. 3 is a perspective elevation of a type of jacketed bullet as formed in the dies of this invention;

Fig. 4 is a perspective elevation in partial section showing the shape of the bullet jacket before the core has been inserted and the jacketed bullet has been formed;

Fig. 5 is an elevation in partial section showing a modification of the die of Fig. 1; and

Fig. 6 is a perspective elevation showing a further modification of the die of Fig. 1.

Briefly stated the present invention provides an externally threaded cylindrically shaped die block having a bore drilled partially therethrough for the reception of an interchangeable die piece which itself provides a bullet head forming die cavity. The head forming die cavity is formed concentrically with the die piece and the die block so that a smaller bore through the remaining portion of the die block and of diameter corresponding to the diameter of the bullet head being formed is in aligned relation with the head forming die cavity. An internally threaded cap member is provided for engagement with one end of the die block to hold the replaceable die piece and the bullet body forming bore in aligned relation.

As modifications of the basic device the applicant provides separate means for securing a cap to the die block, and further the applicant provides a removable piece which may be inserted in the lower end of the die block to provide bullet body forming die cavities of different diameters to correspond with the bullet caliber and the internal diameter of the head forming cavity in the interchangeable die pieces.

Referring now to the drawings the details and features of the invention will be more readily understood with reference to Fig. 1 in which it is shown that a die block 11 having external threads 12 thereon for reception in a conventional type reloading tool 13, as partially shown in Fig. 5, is further provided with a knurled section 14 which will facilitate replacement and removal of the die block 11 from the reloading tool 13. Further as shown in Fig. 5 a lock nut 16 is provided to hold the die block in fixed position in the reloading tool 13. Above the knurled section 14 the die block as shown in Figs. 1, 2 and 5 is provided with a threaded section 17 formed for engagement

with the internal threads 18 of a die cap 19 which may by means of the threads 17 and 18 be held in fixed engagement with the die block 11.

The die block itself is provided with a central bore 21 drilled through the greater length of the die block 11. This central bore 21 connects with a concentric bore 22 of smaller diameter which passes through the remainder of the die block 11. The smaller bore 22 is of a diameter corresponding to the caliber of the bullet which is to be formed in the bullet forming die of this invention. Actually this smaller bore 22 is utilized to form the base or body portion of the bullet. A die piece 23 of diameter corresponding to the diameter of the bore 21 is provided for reception in the bore 21, and the die piece 23 is of such length that when the angularly disposed edges 24 of its lower end are in engagement with a base flange 26 of the die block 11, the upper end 27 of the die piece 23 extends a slight distance above the upper edge 28 of the die block 11 so that when the cap 19 is threaded onto the die block 11, an inner face 29 of the cap 19 will come into engagement with the upper end of the die piece 27 to hold the die piece 23 in secure position within the bore 21. The die piece itself is provided with a die cavity 31 of shape conforming to the shape of the bullet head which is to be formed in the die cavity. For general purposes the curvature of this die cavity 31 will substantially correspond to the ogive curvature of conventional bullet heads.

In order to prevent the accumulation of pressure within the die cavity 11 as a bullet is being pressed upwardly into the cavity, a vent hole 32 is provided to interconnect the point 33 of the die cavity with the upper end of the die piece 27. Likewise a vent opening 34 is provided in the die cap 19 to assure the escape of any air as the bullet is being moved upwardly in the die cavity 31.

In operation the bullet forming die disclosed in Figs. 1 and 2 is used as follows: If all the parts are in disassembled relation lock nut 16 is threaded onto the die block 11 and the die block 11 is then threaded into a press or bullet reloading tool 13 as shown. Lock nut 16 is then tightened to hold the die block in fixed relation with the press or reloading tool. Die piece 23 is inserted in the bore 21 and the cap 19 is screwed down on the threads 17 until the inner face 29 of the cap comes into engagement with the upper end of the die piece 27. When these operations are accomplished the die cavity 21 within the die piece 23 will be in aligned relation with the smaller bore 22 at the lower end of the die block 11. With the parts in their assembled relation a preformed slug or bullet core 35 is inserted in a bullet jacket 36 as shown in Fig. 4. The forward end of the slug and jacket are then inserted into the lower end of the bore 22 and a ram member 37 as shown in Fig. 5 is moved upwardly into engagement with the lower surface 38 of the bullet 36. Further movement of the ram 37 causes the bullet core 35 and jacket 36 to move upwardly through the bore 22 and into the cavity 31. As the jacket 36 moves upwardly in the cavity 31 the sides 39 of the jacket are moved or swedged inwardly until the sides 39 assume the shape and curvature of the die cavity 31 to closely enclose the bullet core 35, thereby forming a jacketed bullet as shown in Fig. 3.

Since the die pieces 23 are removable from the die block 11, more than one type of die piece 23 can be used in the bullet forming die as shown in Figs. 1 and 2. Accordingly separate die pieces 23 may be provided which will have die cavities 31 of different forms and shape as necessary to make all of the different standard or "wild cat" shapes of bullet heads for any specific caliber.

When it is desirable to provide a bullet forming die which may be used interchangeably to form bullets of various shapes and forms for more than one specified caliber, the device as shown in Figs. 1 and 2 may be modified as shown in Fig. 5 to provide a removable plug 41 in the lower end of the die block 11. The removable plug 41 is provided with external threads 42 which may be engaged with internal threads formed in the lower end of the die block 11. The plug 41 is provided with a bore 44 which may be of different size or caliber for each separate plug 41. In order to replace or remove the plug 41 in the lower end of the die block 11, various means may be utilized. However, for the embodiments shown the applicant provides a plurality of holes 46 adapted to receive the pins of a spanner wrench.

When this form of the invention is used it will be readily apparent that by the simple expedient of providing separate plugs 41 and separate die pieces 23, bullets of different sizes, shapes, form and caliber may be formed in the same bullet forming die. Since the sportsmen who are interested in special loads or special forms of bullets are usually interested in the application of the special forms to several different calibers of bullets, this modified form of bullet die is especially useful and convenient.

As a still further modification of the basic design the applicant provides a separate means for attaching the cap 19 to the die block 11. This separate means is illustrated in Fig. 6 where it is shown that the applicant provides a cam locking arrangement to hold the cap and die block in fixed position. This cam locking arrangement is comprised of outwardly disposed ear members 47 providing downwardly disposed cam surfaces 48 which tend to move the inner face 29 of the cap 19 into engagement with the upper end of the die piece 27 when the cap 19 is placed over the end 28 of the die block 11 and the handle 49 is rotated in a clockwise direction. Necessarily when the embodiment as shown in Fig. 6 is used the cap 19 must itself be provided with inwardly extending ear members of shape corresponding to the outwardly extending ear members 47 on the die block 11. It should be noted however that each of the separate ears on either the die block or the die cap should be affixed to substantially less than 90° of the arcuate curvature of the die block 11 or the cap 19 so that the cap may be fitted over the end 28 of the die block before it is rotated to the locked position.

The separate embodiments of this invention as illustrated and described show that the present invention is adaptable to different changes and modifications. All such modifications and changes as are within the scope of the hereunto appended claims are accordingly deemed to be a part of this invention.

What is claimed is:

1. A bullet forming die, comprising an elongated die block adapted to be held in an upright position and having an opening extending longitudinally therethrough, said opening at its lower end providing a bullet body forming die cavity and the rest of said opening being a smooth cylindrical bore of larger diameter, a removable die piece slidably fitted in the cylindrical bore with

its upper end beyond the end of the die block and providing a bullet head forming die cavity as a concentric extension of the lower die cavity, there being an intermediate passage of small diameter extending upwardly from the end of said upper die cavity and terminating in a bore of greater diameter at the upper end of said die piece, and a die cap at the upper end of the die block mounted for movement into pressing engagement with the extended end of said die piece so as to hold said die cavities in alined relation and having an opening to atmosphere in register with the bore of said die piece, whereby a slug positioned in the lower die cavity may be forced into engagement with the walls of the upper die cavity to form a bullet of a size and shape corresponding to the size and shape of said cavities.

2. Structure as defined in claim 1, in which the cap piece is in threaded engagement with the die block.

3. Structure as defined in claim 1, in which the die block and cap piece have coactive cam locking members.

4. Structure as defined in claim 1, in which the die block has an inclined seat for correspondingly inclined surfaces at the lower end of the die piece.

5. A bullet forming die, comprising an elongated die block adapted to be held in an upright position and having an opening extending longitudinally therethrough, said opening throughout its major extent providing a smooth cylindrical bore and terminating at its lower end in a threaded portion, a removable die piece slidably fitted in the cylindrical portion with its upper end beyond the end of the die block and providing a bullet head forming die cavity at its lower end, a member in threaded engagement with said threaded portion having a bullet body forming die portion as a concentric extension of the upper die cavity, there being an intermediate passage of small diameter extending upwardly from the end of said upper die cavity and terminating in a bore of greater diameter at the upper end of said die piece, and a die cap at the upper end of the die block mounted for movement into pressing engagement with the extended end of said die piece so as to hold said die cavities in alined relation and having an opening to atmosphere in register with the bore of said die piece, whereby a slug positioned in the lower die cavity may be forced into engagement with the walls of the upper die cavity to form a bullet of a size and shape corresponding to the size and shape of said cavities.

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