Dec. 23, 1952 W. FRITSCHE 2,622,881

TOY DART PROJECTILE

Filed Aug. 24, 1949

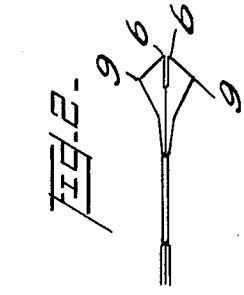

FIG. 2.

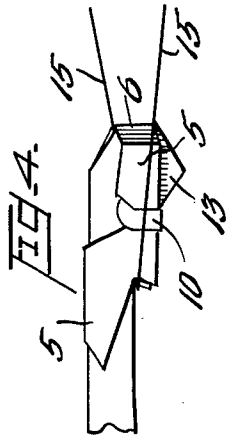

FIG. 4.

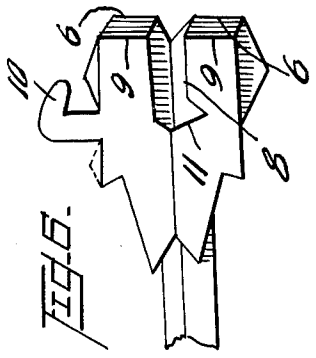

FIG. 6.

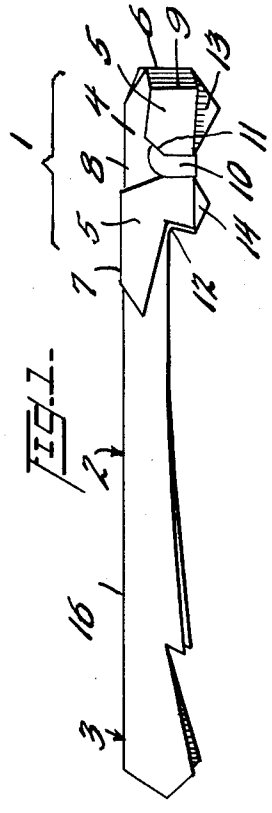

FIG. 1.

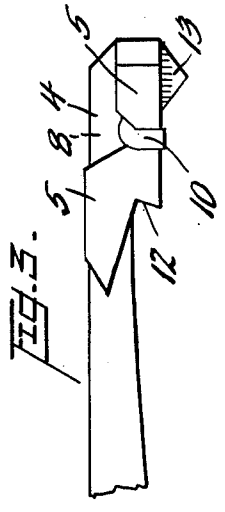

FIG. 3.

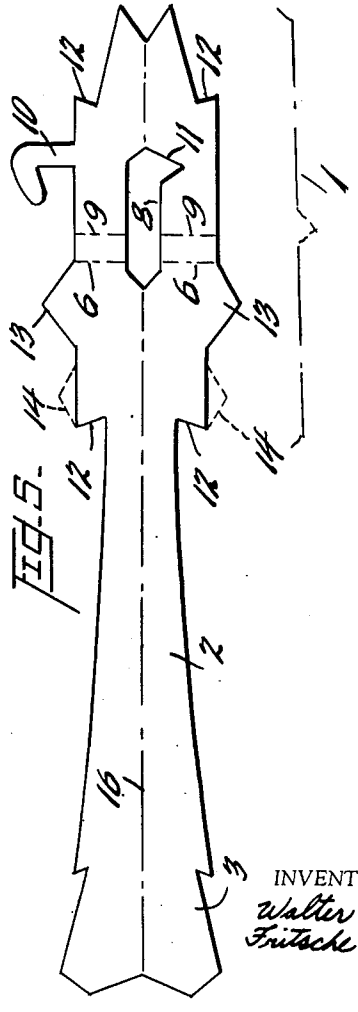

FIG. 5.

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TOY DART PROJECTILE

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6 Claims. (Cl. 273—106.5)

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The object of the present invention is a toy projectile which may be thrown a considerable distance, say 20 or 30 meters by means of a slingshot or other elastic propelling device in the manner of an arrow shot from a bowstring, thus serving for target-shooting in which great marksmanship can be acquired by practice.

The toy projectile is made from suitable inexpensive flexible material, preferably cardboard, which is cut to the proper shape, folded and secured in its folded condition in the manner herein described and illustrated.

The toy projectile according to the invention owes its exceptional efficiency in target-shooting to a novel construction of its head portion which is reinforced and enlarged or expanded so as to compensate structural irregularities and assure balance throughout its trajectory.

The projectile according to the invention may assume two different forms of construction, viz:

(*a*) It may be formed with means whereby the head portion thereof is secured permanently in its enlarged or expanded condition or

(*b*) The members of the head portion thereof may be arranged so that they cause the said enlargement or expansion to be formed automatically when the elastic propelling means applied to it is drawn for shooting.

It is to be noted, however, that both constructions involve the same principle, embodied in the blank which is used for forming the toy projectile and which, by itself, is covered by the invention as an article of manufacture to be sold in its flat, cutout form, being provided with score lines and with a securing device integral therewith, so that the users themselves may fold and secure it in the folded conditions to form the projectile, without employing tools of any kind.

All this is clearly shown in the accompanying drawings in which

Figure 1 is a perspective view of the variant in which the head or tip of the projectile is permanently constructed;

Figure 2 is a top view of the head or tip;

Figure 3 is a perspective view of the second variant in which the head or tip of the projectile is movable to be enlarged when launched, showing the head or tip in the flat position;

Figure 4 is a similar view of the variant shown in Figure 3, with the movable head or tip in the expanded position to which it is brought by the action of a propelling rubber band;

Figure 5 is a plan of the blank or base piece which is identical for both variants, showing in dotted lines the projections which are omitted for the variant of Figures 3 and 4;

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Figure 6 is a perspective view of the front end of the blank piece showing the manner in which the principal folding operation is to be performed in order to use the projectile.

As seen from Figure 1, the projectile according to the invention comprises a head portion 1, a body portion 2 and a tail portion 3, all of one single piece of cardboard or other suitable flexible material. The head portion is made up of four plies of material which are obtained by its being folded twice, first transversely and then, longitudinally together with the body and tail portions, which gives a certain rigidity to the whole. The inner plies 4 of the head are connected with the outer plies 5 along transverse fold lines 6 forming the nose of the projectile, and the outer plies 5 are connected with each other along the longitudinal fold line 7. From the forward end of this fold line to the upper part of the transverse nose lines 6 extends a central longitudinal opening 8. Additional score lines 9 for creasing are provided on the front part of the outer plies which lines are disposed parallel and close to the said nose lines. The whole projectile is maintained in its folded position, ready for use, by means of a lateral projection 10 which is integrally formed with the outer ply on one side of the head portion and the hooked end of which is turned so as to be inserted into a notch or cut 11 formed in the outer ply of the other side of the head portion, which notch preferably is formed as an extension of the said longitudinal opening 8. The head portion presents at its rearward lower end an undercut recess 12 to which the impelling device is applied for shooting. The depth of this recess 12 is approximately equal to half of the width of the projectile at that point. This serves the purpose of imparting to the projectile a straight-line impulse, the bottom of the recess thus being on a line perpendicular to the center of the nose line 6.

In Figure 1, the head portion of the projectile has on the lower edge of its inner plies 4 lateral projections 13 and 14 between which the hook portion 10 is firmly held, whereby the outer plies 5 of the head portion are also firmly secured in their laterally expanded position and the nose portion 6, 9 (Fig. 2) remains equally arched in conformity with the additional score lines 9.

In accordance with an alternative construction, shown in Figure 3, the projection 14 of the inner plies may be omitted, whereby the outer plies 5 of the head portion become movable. In this case, the outer plies 5 lie flat upon the inner plies 4, the rear edges 12 of the outer plies projecting slightly beyond the rear edges 12, of the inner

plies; in consequence, when the impelling device 15 is applied as in Figure 4 to the undercut recess formed by the edges 12 of the outer plies 5, these latter are pushed forward and expand laterally and, at the same time, the nose portion of the projectile is arched along score lines 9 until the rear edges 12 of the outer and inner plies coincide, which expanded and arched condition is substantially maintained during the travel of the projectile.

The invention also includes as an article of manufacture, a blank consisting of a single piece cut out from a suitable flexible material and used for forming the projectile which is the object of the present invention.

In its outline, as shown in Figure 5, the blank comprising head 1, body 2 and tail 3 forming portions, foldable along a central longitudinal crease line 16. The head forming portion 1 shows an approximately medial transverse score line 6 and an additional score line 9 parallel and close to the medial score line and disposed forwardly thereof. The forward part of the head forming portion is provided with an elongated opening 8 centrally and longitudinally disposed therein, which opening extends as shown, slightly beyond the said medial score line 6, but in accordance with the invention, it may also extend as far as the medial score line 6. The head forming portion further is provided with four undercut recesses, two forwardly and two rearwardly, forming the four corners 12, the depth of the undercuts being substantially a quarter of the whole width of the blank at those points. One side of the head forming portion is provided forwardly with a lateral hook-shaped projection 10, integral therewith, and oppositely thereto, cut into the other side of the head forming portion is a notch 11, preferably formed as a transverse extension of the opening 8. The said rearward undercuts 12 are preferably at a slightly shorter distance from the said medial score line 6 so that on transverse folding along that score line 6, as shown in Figure 6, the forward undercuts 12 slightly overlap the rearward undercuts 12, and upon subsequent longitudinal folding of the whole blank along line 16 and inserting the hook 10 into the notch 11, the projectile is formed, ready for use, substantially as shown in Figures 1 and 3.

It is to be understood, of course, that the models of projectiles as shown and described may be executed still within the scope of the invention claimed, that is, without any change in its essential features, in such a manner, that on transverse folding and subsequent longitudinal folding of the head portion, its forward part lies inside forming the inner plies. No essential changes at all take place as far as constructions and operation for expansion and arching are concerned.

Having thus described the invention, what is claimed as new and desired to be secured by Letters Patent is:

1. A toy projectile for use with an impelling device such as a sling and formed from a single piece of flexible sheet material cut and folded so as to include head, body and tail portions, the head portion comprising, in combination, outer plies connected with each other along the longitudinal crease line of the projectile, inner plies connected with each other along the said longitudinal crease line, transverse score lines forming the nose of the projectile and connecting the outer and inner plies of each side of the projectile, an elongated opening formed forwardly along the top of the outer plies and extending at least to the said transverse score lines, additional score lines provided on the front part of the outer plies and disposed parallel and close to the said transverse score lines, so that on operating the projectile, the forward portions of the outer plies expand and the nose portion becomes arched along the said additional score lines.

2. A toy projectile according to claim 1, further comprising an undercut recess constituting the lower rearward end of the four-ply head portion and deep enough for its bottom to be in a line perpendicular to the center of the nose line of the projectile.

3. A toy projectile according to claim 1, further comprising the combination of a hook-shaped projection integrally formed with the outer ply on one side of the head portion and a notch or cut formed in the outer ply on the other side thereof and preferably connected with the said elongated opening on the top thereof, so that by insertion of the said hook into the said notch, the four plies of the head portion are held together.

4. As an article of manufacture, a blank cut from a single piece of flexible sheet material, presenting head, body and tail forming portions of a projectile and having a central longitudinal crease line, the head forming portion being provided with a transverse score line for folding its forward part backwards so as to lie on its rearward part, additional score lines parallel to and forwardly of the said transverse score line, and an elongated opening centrally and longitudinally disposed in the head forming portion and extending at least to the said score lines.

5. As an article of manufacture, a blank according to claim 4 in which the head forming portion is provided on each side with undercuts, two forwardly and two rearwardly of the transverse score line, the former being preferably at a slightly greater distance from the said transverse score line than the latter and the bottoms of the undercuts being on a line perpendicular to the center of each half of the said transverse score line.

6. As an article of manufacture, a blank according to claim 4, in which one side of the head forming portion is provided with a lateral hook-shaped projection integral therewith and the opposite side has a notch preferably formed as a transverse extension of the said centrally and longitudinally disposed elongated opening.

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