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D. BEAN

2,620,190

TIP FOR DARTS AND ARROWS

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Fig. 1.

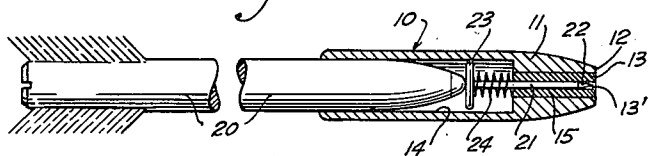


Fig. 2.

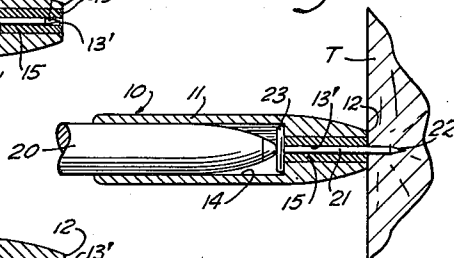


Fig. 3.

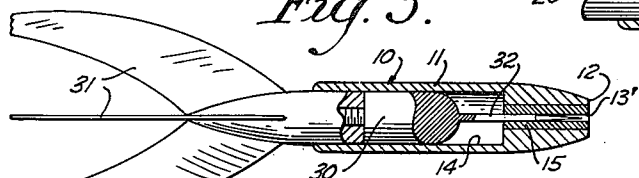


Fig. 4.

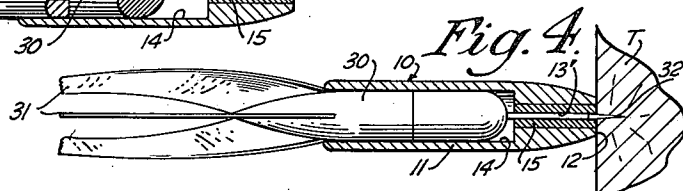


Fig. 6.

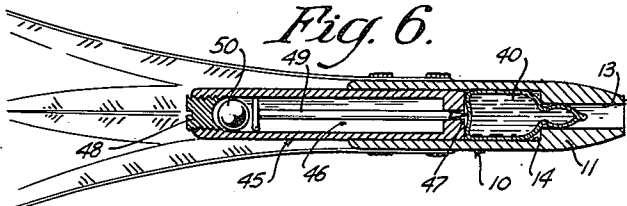


Fig. 5.

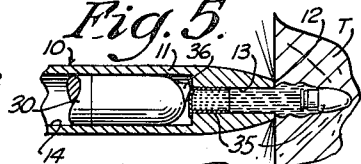


Fig. 7.

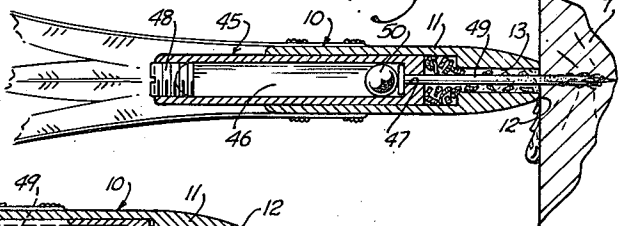


Fig. 8.

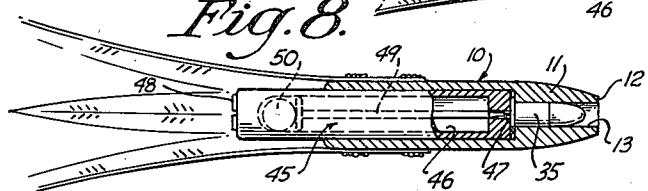


Fig. 9.

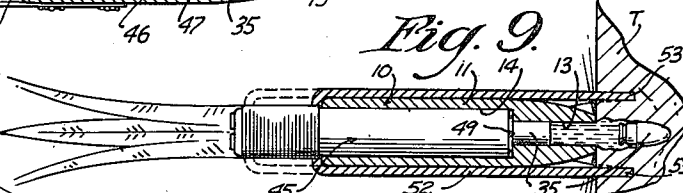
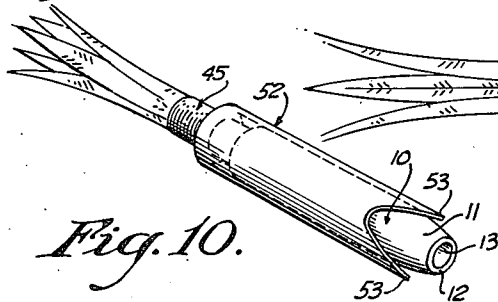


Fig. 10.



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TIP FOR DARTS AND ARROWS

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10 Claims. (Cl. 273-106.5)

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This invention relates to a missile and more particularly to improvements in darts, arrows or the like, and has as its primary object to provide a simple yet effective tip for such type of missiles.

Darts and arrows are generally alike in that they each consist of a shank or body having a pointed leading end and a finned trailing end, the main difference being in the length of the shank or body. The present invention contemplates providing darts or arrows with a tip which may be applied during manufacture or which may be sold separately for application to the dart or arrow by the person who desires to use the same.

One object of the present invention is to provide a dart or arrow tip embodying a moveable element adapted to be effected by momentum, upon impact of the tip against an object, for continued movement forwardly of the tip.

Another object is to provide a guard for the leading end of a dart or arrow for preventing injury of the user by the pointed forward end of the same.

Another object is to provide a dart or arrow tip which may be made at a minimum of cost so that its destruction, upon use, will amply satisfy the need of the user.

A further object is to provide an arrow tip in which a plurality of momentum actuated elements can be arranged in tandem for adapting the tip for various uses with equal effectiveness.

Other objects and advantages of the present invention will appear more fully from a reading of the following specification in the light of the accompanying drawings in which:

Fig. 1 is a longitudinal section through a missile tip embodying the present invention.

Fig. 2 is a view similar to that of Fig. 1.

Fig. 3 is a view of the tip of Figs. 1 and 2 employed on a dart.

Fig. 4 is similar to that of Fig. 3.

Fig. 5 is a fragmentary section of a tip having another type of missile associated therewith.

Fig. 6 shows a modification of the tip shown in Fig. 3.

Fig. 7 is another view of the tip shown in Fig. 6.

Fig. 8 is an illustration of a different manner of using the tip of Fig. 6.

Fig. 9 shows a modified form of tip; and

Fig. 10 is a perspective view of the tip shown in Fig. 9.

The present invention generally comprises a sleeve-like cap or cover 10 adapted to be applied to the leading end of a missile such as a dart or an arrow which is to be hurled through the air. The simple form of cap 10 shown in the drawings

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consists of an elongated, preferably tubular body 11 having a tapered leading end 12 provided with a passage 13 of substantially smaller diameter than the inner bore 14 of the tubular member 11.

The passage is of any size suitable for receiving a piercing instrumentality so as to permit movement of the latter through the passage 13 and while the passage may be of a fixed dimension, it is preferably formed to receive interchangeable sleeves, such as the insert 15 provided with a passage 13', to suit the particular form of piercing instrumentality it is desired to employ.

Referring now to Figs. 1 to 5 it will be noted that the inner bore 14 of the tubular body 11 is adapted to receive the pointed end of an arrow 20. The arrow 20 fits more or less snugly with respect to the inner bore 14 so that the tip will stay on the arrow shaft during flight, but is sufficiently loose with respect to the bore 14 as to permit its sliding within the bore when the leading end of the body hits an obstruction. Consequently, when the arrow is shot from a bow against a target T the shaft of the arrow 20 will remain juxtaposed with respect to the body 11, but will continue to move forwardly under its own momentum when the tip is obstructed by target T.

In Fig. 1, the piercing instrumentality is in the form of a nail or pin 21 having its pointed end 22 arranged for sliding movement in the passage 13' of the insert 15 in the passage 13 of the body 11. The head 23 of the pin 21 is disposed within the inner bore 14 of the body and is adapted to abut against the pointed end of the arrow 20. If desired, a coil spring 24 is arranged on the pin, i. e. between the head 23 of the pin and the forward wall of the bore 14, so as to maintain the pin in a retracted position with respect to the leading end of the tip. In this manner the pointed end of the pin 21 is held back in the passage 13' where it will not be likely to catch onto a person's clothing while the tip is carried in one's pocket and moreover will not scratch or otherwise injure the person handling the tip.

When the arrow 20 of Fig. 1 is shot at the target T in the manner as explained above, and the tip is obstructed by the target, the arrow constitutes a hammer which continues to move forward under its own momentum, forcing the pin 21 forwardly against the action of the spring 24 thereby driving the pointed end 22 of the pin 21 out of the passage 13' and into the target T. Consequently, the pointed end of the pin pierces the target and will remain in the same, as illustrated in Fig. 2.

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From the foregoing it will be appreciated that during competitive archery each contestant may be supplied with tips of a distinct color so that even though the arrows may rebound from and become detached from the tip, the latter will remain stuck in the target to indicate the hits made by each particular contestant. In the event the tips are made of material which will be broken upon impact with the target, the pins can be colored so that despite the destruction of the tip, the pin remaining in the target will indicate the hits and will enable proper identification of the pin with the person scoring the hit.

Moreover, from the foregoing it is apparent that the target need not be the conventional straw filled type usually required in order to prevent breakage of the arrows. In other words, the tip acts as a shock absorber and therefore the full impact of the arrow against the target is lessened so that damage to the arrow is improbable. Therefore it is not essential that a regulation target be used, since any wooden wall such as a fence or the side of a barn may serve as a target. Being able to use boards or logs for targets is advantageous especially during informal hikes and outings.

The tip being suitable for adapting the missile for projection against a wooden wall or the like is particularly advantageous when the tip is employed with a dart 30 in the manner as shown in Figs. 3 and 4. In such event the dart 30 may be a weighted body having fins 31 at its trailing end and a piercing point 32 at its leading end for movement through the passage 13' in the sleeve 15 of the body 11.

The dart 30 fits into the bore 14 in the same manner as did the shaft of the arrow 20 so that the pointed end of the pin 32 is maintained well within the passage 13'. In this manner the dart with tip attached may be carried in the pocket of one's clothing without danger of the pin 32 injuring the person carrying the dart.

The sleeve 15, when withdrawn from the tip body 11 leaves the passage 13 clear for the reception of a bullet 35, such as a .22 calibre cartridge, see Figs. 5, 8 and 9. The tip of Fig. 5 may be employed with either a dart or an arrow in the manner illustrated in Figs. 3 and 1, respectively, and it will be noted that the leading end of the dart or arrow provides a firing pin or hammer adapted to strike the cap of the cartridge to detonate the same. In this adaptation of the present invention, upon impact of the tip with an obstruction, the momentum of the body behind the firing pin causes the latter to fire the cartridge whereupon the bullet is shot from the passage 13 directly into the object struck by the tip. Should the cartridge 35 be of the "rim-fire" type, the firing pin may be offset as shown at 36 in Fig. 5 so as to properly detonate the "rim-fire" cap in the cartridge.

The modification shown in Figs. 6 and 7 illustrate the tip of the present invention in use with an ampule of drug. The ampule 40 has its neck inserted in the passage 13 and its main body disposed in the bore 14 just in advance of the momentum actuated member associated with the tip. It is apparent that either the dart or the arrow may be employed as a momentum actuated member in a tip loaded with an ampule. However, in Figs. 6 and 7 the form of momentum actuated member is in principle, similar to the types hereinbefore explained, except that it constitutes a self contained unit 45. This unit com-

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prises an elongated hollow body 46 having an opening 47 in its leading end and a plug 48 threaded into its opposite end. The body 46 fits in the bore 14 as did the dart and arrow, and may carry the fins or the fins may be secured to the body 11. A piercing pin 49 is disposed in the hollow of the body 46 with its pointed end in the opening 47 and its headed end within the hollow body 46. A weight in the form of a ball 50 is also disposed in the hollow body 46 in back of the headed end of the pin 49 for exerting a force against the pin due to momentum when the tip meets an obstruction during flight. Upon impact of the tip against an object the ball 50 exerts a sudden forward thrust against the pin 49 and the pin 49 is thereby driven through the ampule 40. The ampule 40 is therefore broken and the pin 49 wet with the drug as it advances through the passage 13 and enters the object struck by the tip.

The foregoing is especially useful as a missile for inoculating animals to render them temporarily insensible for a sufficient lapse of time as to permit the capture and transfer of such animals to a cage.

Fig. 8 illustrates a variation of the present invention in which the momentum unit 45 of Fig. 6 is shown in use with the bullet 35 of Fig. 5 instead of the ampule 40. The same arrangement as above explained is embodied in the modification of Fig. 9. In this structure the momentum device 45 carries the fins and a sleeve-like outer shell 52 is slidably mounted on the body 11. The forward end of the shell 52 is provided with pointed tines 53 adapted to pierce the object or target T so as to secure the tip thereagainst upon impacting with the same and incident to the discharge of the cartridge 35. It is apparent that if the tip is made up with the insert 15 in the passage 13 and with the pin 21 of Fig. 2 disposed in the passage 13', the device of Fig. 9 operates in the same manner as explained above except that the pin 21 will enter the target T as do the tines 53.

I desire that it be understood that the various elements herein described may be interchanged with each other in numerous ways other than the specific examples mentioned and that while I have described these elements in detail it will be appreciated by those skilled in the art that the same may be altered and/or varied in construction without departing from the spirit of this invention. I therefore desire to avail myself of all variations, modifications and alterations in construction as come within the purview of the appended claims.

What I claim as new and desire to protect by Letters Patent is:

1. A tip for an arrow or dart comprising a sleeve-like body adapted to be mounted for sliding movement upon the leading end of such arrow or dart, said body having a passage in its leading end, a piercing pin in said passage, means for maintaining said piercing pin in a retracted position within said body and adapted to yield upon impact of said body with a target and the force of said arrow or dart against the inner end of said piercing pin for effecting continued movement of said piercing pin beyond the leading end of said body and into said object.

2. A missile comprising a body adapted to be hurled through space toward an object and having a passage in its leading end and a finned trailing end, a piercing pin carried entirely within said body in axial alignment with the passage therein, and a weight means arranged for free

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axial movement within said body behind said piercing pin and adapted to move forwardly under its own momentum within said body upon impact of said body with an object for driving said piercing pin through said passage and into said object.

3. In a missile of the finned trailing end type, a sleeve-like body having an axial passage in its leading end, piercing means carried by said body for sliding movement within the axial passage thereof, said piercing means being normally disposed in a position with its pointed end rearwardly of the forward tip of said body, and a freely moveable weight within said sleeve-like body adapted, upon impact of the forward tip thereof with an object, to strike said piercing means for driving the pointed end of the latter beyond the forward end of said body for securing said body against the object struck thereby.

4. A tip for a missile comprising a weighted body having a finned trailing end, a retractable piercing pin mounted for free sliding movement within and relative to said body, means yieldingly holding said pin in retracted position so that its piercing point is wholly confined within said body, and momentum actuated means freely movable within said body to the rear of said pin for hitting the same when the leading end of said body strikes an object after flight, to thereby drive the piercing point of said pin beyond the leading end of said body and into said object.

5. A tip for a missile comprising a hollow body having a reduced passage in its leading end, a piercing pin slidable in said passage, means for yieldingly urging said pin into said hollow body with the point of said pin wholly confined within said passage, and weight means freely movable relative to the trailing end of said body for movement therewith toward a target and for movement due to momentum relative to said body when the leading end of the latter hits the target for effecting continued movement of said piercing point of said pin out of said passage and into the target.

6. A missile comprising a body having a passage in its leading end and a hollow trailing end, a piercing pin disposed in said passage and normally extending into the hollow end of said body with its piercing point confined within said passage, and a momentum actuated weight arranged for free sliding movement in the hollow end of said body for exerting a force against said piercing pin due to the forward motion of said weight relative to said body upon impact of said body within an object for effecting movement of the piercing point of said piercing pin beyond the leading end of said body.

7. A missile comprising an elongated hollow body having a reduced guide passage in its fore portion adjacent its leading end, freely slidable momentum means disposed within the trailing end of said hollow body and adapted to assume a rearmost position in said hollow body during flight thereof and to continue to move forwardly relative to and within said hollow body upon impact of the latter with an obstruction, a piercing instrumentality disposed for sliding movement in the reduced guide passage in the fore portion of said body and with its pointed forward end retracted beyond the leading end of said body, said piercing instrumentality having its inner end

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adapted to be struck by said momentum means as the latter moves forwardly under its own momentum when the leading end of said body hits an obstruction for striking said piercing instrumentality to thereby effect movement of the pointed forward end thereof beyond the leading end of said body.

8. A tip for a missile comprising an open ended sleeve-like jacket having a forward portion provided with a guide passage adjacent the leading end of said jacket, penetrating means in said guide passage and adapted to have its pointed fore end disposed rearwardly of the leading end of said jacket during flight of said jacket, said penetrating means being adapted to move through said guide passage upon the application of a force against the inner end of said penetrating means, the open end of said jacket having the leading end of a dart or an arrow disposed therein for free sliding movement relative to said jacket and for continued forward movement relative thereto under its own momentum when said jacket has impact with the object for applying force against said penetrating means for causing movement of the latter through said guide passage and beyond the leading end of said jacket for entry into the object.

9. A tip for an arrow or a dart comprising a sleeve-like body adapted to be mounted for sliding movement upon the leading end of such arrow or dart, said body having an elongated guide passage in its forward portion adjacent the leading end of said body, a penetrating instrumentality arranged for sliding movement in said elongated guide passage, means for retracting said penetrating instrumentality wholly into said elongated guide passage with the inner end of said penetrating instrumentality exposed for contact by the leading end of said dart or arrow whereby upon impact of said body with an object said penetrating instrumentality will be struck by the leading end of said arrow or dart due to the momentum thereof for forcing said penetrating instrumentality into the object.

10. A tip for a missile comprising an open ended hollow body having a reduced passage in its leading end, a penetrating instrumentality disposed in said passage and normally retracted within the same relative to the leading end of said body, the open end of said body being freely slidable upon the leading end of a dart or an arrow so disposed as to be actuated due to its own momentum to strike said penetrating instrumentality upon impact of the leading end of said body with an object for effecting emission of said penetrating instrumentality through said passage and into said object.

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