

Aug. 13, 1968

S. L. ESTEP

3,396,971

ARCHERY TARGET OF BUNDLED PLASTIC RODS

Filed Oct. 19, 1965

FIG. 1.

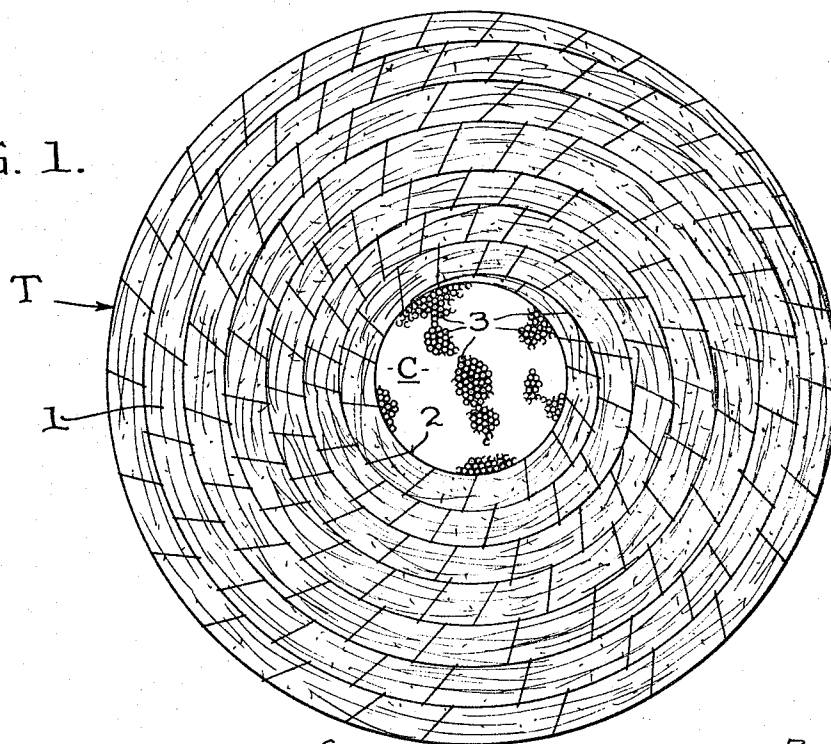


FIG. 2.

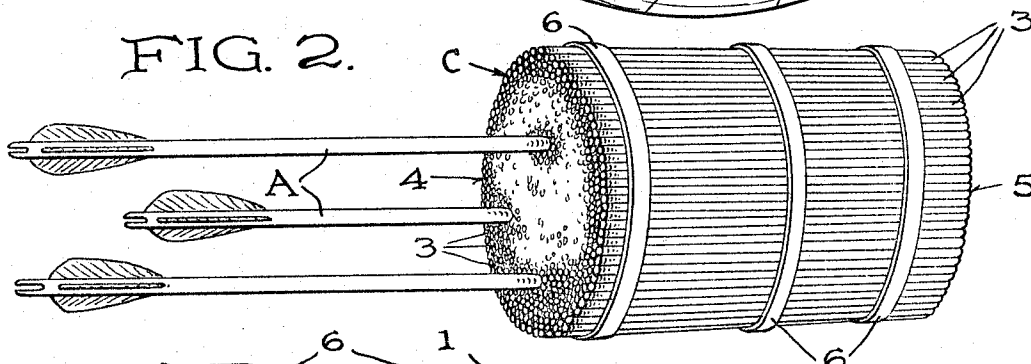
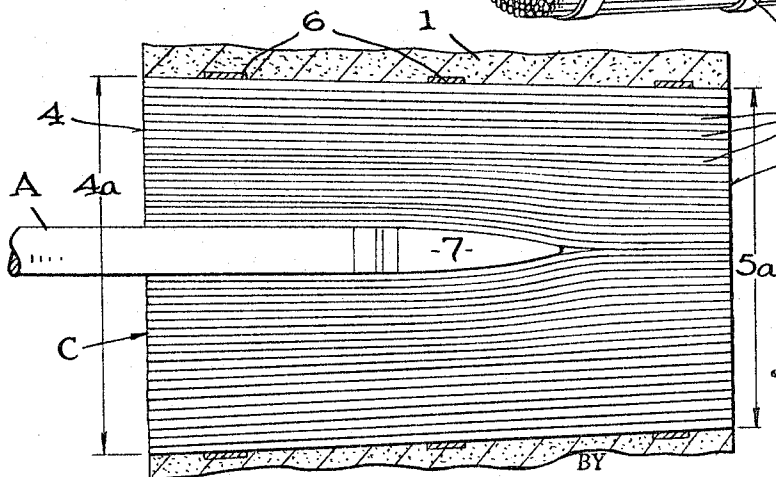


FIG. 3.

INVENTOR

Shelby L. Estep

Ernest L. Groff Jr.  
ATTORNEY

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## ARCHERY TARGET OF BUNDLED PLASTIC RODS

Shelby L. Estep, Greentown, Ohio, assignor, by mesne assignments, to Victor Comptometer Corporation, Chicago, Ill., a corporation of Illinois

Filed Oct. 19, 1965, Ser. No. 497,925

8 Claims. (Cl. 273—102)

### ABSTRACT OF THE DISCLOSURE

A target having a body comprising a plurality of bundled plastic rods held in compressive tension a progressively increasing degree from the face to the rear thereof whereby a projectile landed therein meets with constantly increasing resistance during penetration.

This invention relates generally to a target, and more specifically to a projectile or archery target or butt.

From an economical standpoint, and particularly in view of the expandable nature thereof, archery targets for several hundred years have been formed of a compressed fibrous material such as straw which is usually wound and secured by suitable means in a manner to provide a spiral arrangement perpendicular to the face of the target. Most of the participants enjoying the sport of archery soon achieve such a skill in their art that the majority of the arrows let loose towards a target find their mark in a relatively small area directed towards the center of the target. It is little wonder that the common target as now used, which may be subjected to thousands upon thousands of arrows day after day, soon becomes so torn up in the center portion thereof that it is impossible to land a solid hit in the vicinity of the bull's-eye in view of the damaged construction of the fibrous material in this area. Even though it is a common practice to overlay a sheet of flexible material over the face of the target, this sheet of flexible material usually containing a bull's-eye and scoring rings thereon to enable the archer to maintain a running total score of his hits, it is impossible to land solid shots in the target if the underlying foundation of the butt or target is itself severely damaged.

In the past, an attempt was made to increase the overall useful life span of the target by providing for a replaceable or removable center core section usually comprising the bull's-eye portion of the target. In this manner, since by far the majority of the arrows are landed in this center bull's-eye portion, it would be a relatively simple maneuver, as well as an economical provision, to replace the center core which is the initial portion of the target to become useless, with a fresh new center core section. The prior known types of center cores, however, still lack sufficient resistance to the constant penetration by the archer's arrows to last for any considerable amount of time and although it was not necessary to replace the entire main body of the target as often as beforehand, nevertheless, this center core portion had to be changed quite often.

Accordingly, one of the objects of the present invention is to provide an archery target including a removable center core having an improved construction adapted to far outlast the previously known forms of center cores.

Another object of the present invention is to provide an archery target center core constructed of a plurality of tightly grouped longitudinal rods disposed in a direction substantially parallel to the flight of the arrow.

A further object of the present invention is to provide an archery target center core including a plurality of plastic rods grouped together to provide minute open

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spaces therebetween exposed to the on-coming arrow-heads.

Another object of the present invention is to provide an improved archery target center core including a plurality of longitudinal rod-like members assembled to provide an increasing degree of resistance to the passage of an arrow shaft therebetween from the front exposed face of the center core to the rear thereof.

Still another object of the present invention is to provide a novel method of making a target comprising a plurality of bundled and compressed longitudinal rods.

With these and other objects in view which will more readily appear as the nature of the invention is better understood, the invention consists in the novel construction, combination, and arrangement of parts hereinafter more fully described, illustrated and claimed.

A preferred and practical embodiment of the invention is shown in the accompanying drawing in which:

FIGURE 1 is a front elevation of the target according to the present invention;

FIGURE 2 is a perspective view of the removable center core section of the target of FIGURE 1 and illustrating a plurality of arrow shafts imbedded therein;

FIGURE 3 is a longitudinal sectional view taken through the center core section of the target of FIGURE 1 and illustrating the head of an arrow shaft imbedded therein.

Similar reference characters designate corresponding parts throughout the several views of the drawing.

Referring now to the drawing, particularly FIGURE 1, it will be seen that the target T forming the present invention comprises a main body portion 1 formed of any suitable material such as spirally wrapped fibrous material, for example, straw. When initially formed, the body 1 is provided with a centrally disposed opening 2 having any selected diameter. By way of example, this opening 2 may be of a diameter on the order of ten inches while the depth or thickness of the body 1 may be approximately sixteen inches.

The replaceable center core, generally designated C and more clearly illustrated in FIGURES 2 and 3, comprises a plurality of parallel longitudinally disposed rods 3 which are gathered together in sufficient numbers to produce a center core section C having a diameter at least as great as the diameter of the opening 2 in the main body portion 1 of the target. It will be understood that the center section C may be formed in any suitable shape other than the circular form shown, such as, a square, octagon, etc. Experience has shown that a suitable diameter for each of the circular rods 3 is .03 inch which is substantially smaller than the outer diameter of the conventional target arrows. Any of numerous types of polyplastics may be used in the construction of the rods 3 which may be of cylindrical cross section or any other suitable configuration. Suitable examples have been found to include the impact polystyrenes, as well as polypropylene and polyethylene, all of which possess an inherent degree of resilience or yieldability.

The method of forming the target of the present invention is very critical in order to achieve the ultimate result therefrom. After selecting a sufficient number of extruded plastic rods in order to obtain a finished core C having a diameter equal to the opening 2 in the body portion of the target, the rods 3 are compressed to increase the density of the core. This compression of the bundled rods 3 is increased from the front face 4 of the core towards the rear 5 thereof in a progressively increasing degree. This arrangement will be most clearly realized when viewing the longitudinal section in FIGURE 3 wherein it will be seen that the diameter indicated by the line 4a at the front of the core is greater than the diameter indicated by the line 5a at the rear of the core

C. The assembled plurality of rods 3 are thus banded in their compressed condition by any suitable means such as stainless steel bands 6 disposed around the periphery or circumference of the core. It will be understood from the foregoing description that the rearmost band 6 is yielding a greater pressure upon the assembled core C than its next foremost band 6. In this manner, not only is a greater compressive force placed upon the mass of each of the plastic rods 3 towards the rear of the core C, but also the minute spaces between each of the rods at the rear of the core will be smaller than the corresponding spaces between the forward end portions of the rods at the face 4 of the core.

The bands 6 are merely illustrative of one manner of progressively compressing the bundled rods 3 into their final assembled position. It will be understood that any other suitable means may be utilized in order to achieve the aforementioned desired result. For example, the bundled rods 3 may be wrapped with a skin of any of numerous materials which, if used together with the bands, may be placed under or over the compressive bands. Likewise, once the rods 3 have been compressed to the desired degree, the outer periphery of the core C may be treated such as by conduction heating in order to seal the outermost layer of rods 3, thereby forming an outer skin every portion of which is rigidly locked together. Regardless of the particular manner of banding or sealing the outer circumference of the core C, it has been found desirable to seal off the rear face 5 of the core by heat treating such as with a welding torch or other open flame thereby providing a final or positive barrier at the rear of the core to prevent longitudinal displacement of the rods 3 and to preclude the tip of an arrow from emerging at this point even though it has been driven into the core with an exceedingly tremendous amount of force by the archer.

Two properties inherent in the preferred plastic material mentioned herein for construction of the rods 3, are an extremely low coefficient of friction and the ability or desire of the plastic material to return to its original position once it has been displaced therefrom by an external force. FIGURE 3 illustrates an arrow A which has been lodged in the core C of the target. As will be seen, the pointed arrowhead 7 is imbedded between adjacent displaced rods 3 and during its course of travel into the core has forced its way by a wedging action until its forward momentum is halted by the friction of the increasing compressive resistance of the banded rods 3. This compressive resistance is great enough to halt the passage of the arrow before it emerges from the rear 5 of the core, while the low coefficient of friction of the rods 3 not only minimizes any damage to the juxtaposed surfaces of the displaced rods 3 contacting the arrow shaft, but also facilitates the ready withdrawal of the arrow A by merely pulling rearwardly as is the conventional practice. The second mentioned property of the polyplastics used in the formation of rods 3 thereafter causes the heretofore spread apart rods 3 surrounding the bore made by the entrance of the arrowhead 7 to resume more or less their original position.

It is to be understood that the invention is not limited to the specific features shown, but that the means of construction herein disclosed comprise the preferred form of several modes of putting the invention into effect and the invention will therefore be understood in any of its forms or modifications within the legitimate and valid scope of the appended claims.

I claim:

1. A target for projectiles, comprising, a plurality of bundled straight and smooth-walled rods disposed substantially parallel to one another and each having one end thereof facing the direction from which the projectiles are launched, said rods formed of a resilient synthetic plastic having a substantially low coefficient of friction and possessing an inherent memory property and means on the periphery of said bundle of rods maintaining said rods under compressive tension.

2. A target for projectiles, according to claim 1, wherein, said plurality of rods are compressed a progressively increasing degree towards one end thereof.

3. A target for projectiles, according to claim 1, wherein, said means comprises a plurality of bands encircling the circumference of said bundled rods and said bands exert an increasing degree of compression from the face to the rear of said bundled rods.

4. An archery target, including, a main body portion having an outer face provided with a centrally disposed opening, a replaceable center core section adapted to be fitted within said opening, said core comprising a plurality of bundled straight and smooth-walled rods disposed within said opening, said rods formed of a resilient synthetic plastic having a substantially low coefficient of friction and possessing an inherent memory property, said rods having their longitudinal axes disposed normal to the plane of said outer face, and means maintaining said rods under compressive tension.

5. An archery target, according to claim 4, wherein, said plurality of rods are compressed a progressively increasing degree towards one end thereof.

6. An archery target, according to claim 4, wherein, said means comprises a plurality of bands encircling the circumference of said bundled rods, and said bands exert an increasing degree of compression from the face to the rear of said bundled rods.

7. A target for projectiles, comprising, a plurality of bundled rods disposed substantially parallel to one another and each having one end thereof facing the direction from which the projectiles are launched, and means on the periphery of said bundle of rods maintaining said rods under compressive tension a progressively increasing degree toward one end thereof.

8. An archery target, including, a main body portion provided with a centrally disposed opening, a replaceable center core section adapted to be fitted within said opening, said core comprising a plurality of bundled rods axially disposed within said opening, and means maintaining said rods under compressive tension a progressively increasing degree toward one end thereof.

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ANTON O. OECHSLE, *Primary Examiner*.

M. R. PAGE, *Assistant Examiner*.