

[54] **PENETRABLE TARGET SCREEN**

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[22] Filed: Oct. 30, 1970

[21] Appl. No.: 85,607

[52] U.S. Cl.273/181 R, 273/185 B, 273/105.1, 350/117

[51] Int. Cl.A63b 69/36

[58] Field of Search.....273/181, 182, 183, 184, 185, 273/102.4, 105.1, 103, 176, 105; 350/117

[56] **References Cited**

UNITED STATES PATENTS

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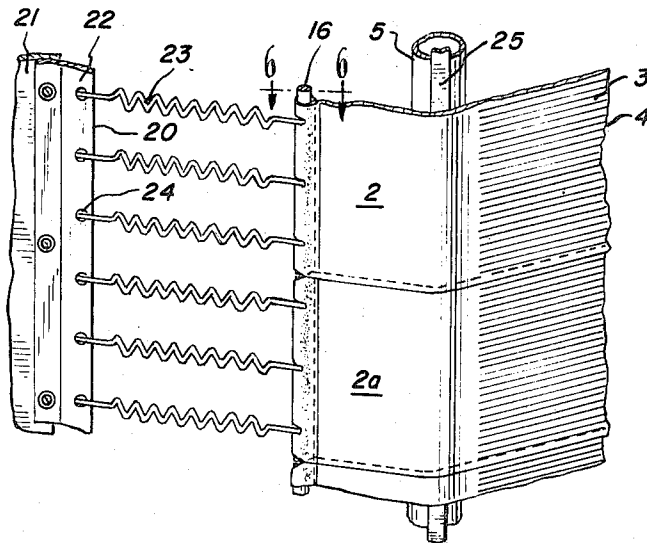
Primary Examiner—George J. Marlo

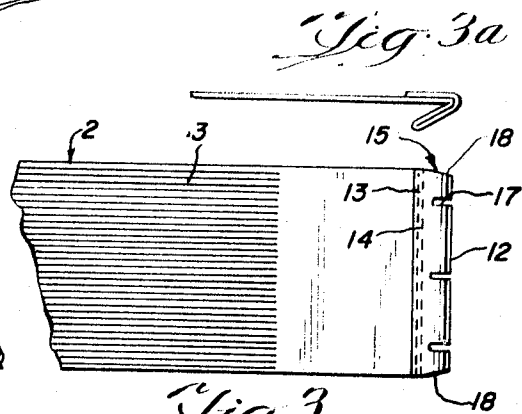
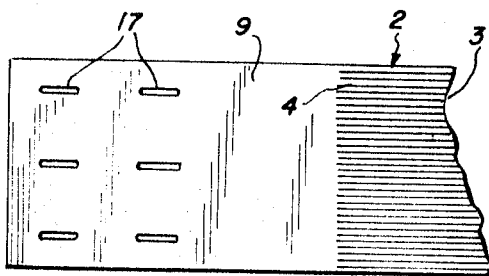
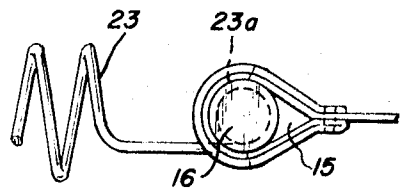
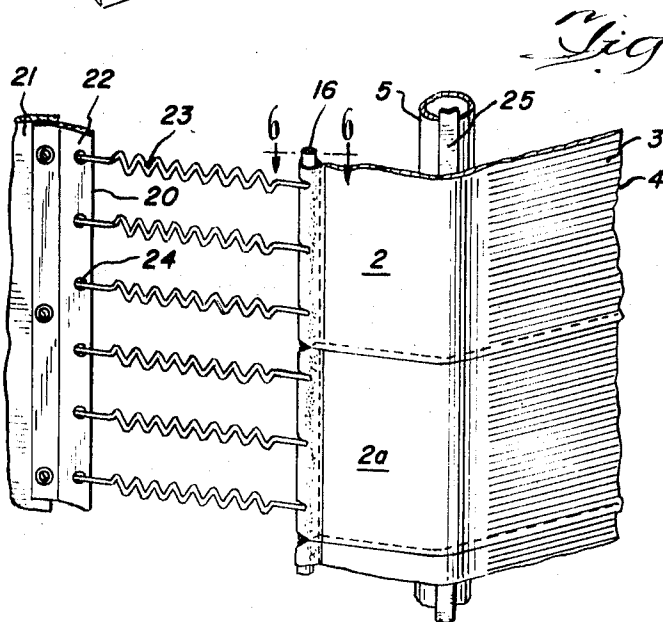
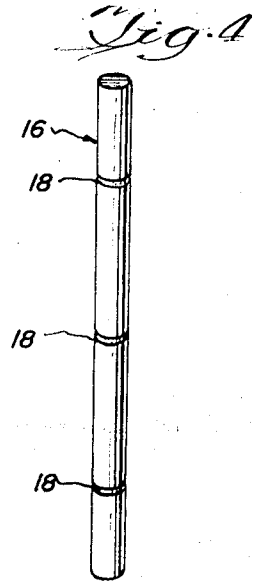
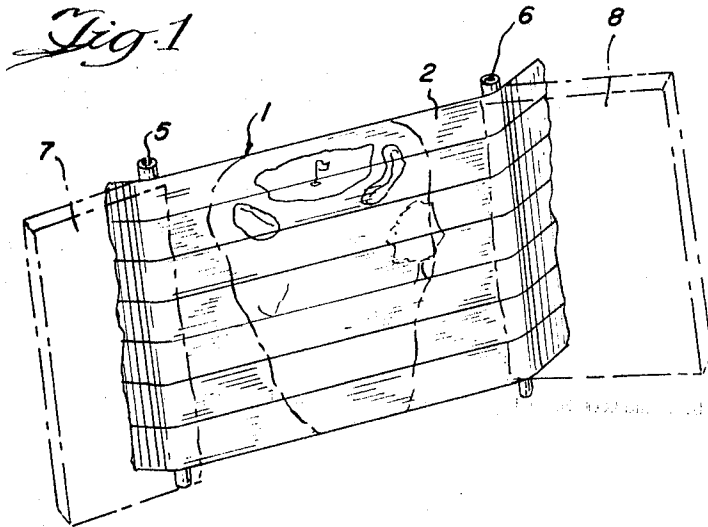
Attorney—Donald S. Olexa, Jerome M. Teplitz, John G. Heimovics, William G. Lawler, Jr. and Hofgren, Wegner, Allen, Stellman and McCord

[57] **ABSTRACT**

The invention is an improvement in the construction of a penetrable target screen comprised of an adjacent series of narrow parallel strips of tape so mounted as to permit target images to be projected thereon and the passage therebetween of an object propelled at the target. The improved screen is comprised of a relatively small number of individually mounted broad tape sections, which sections are slit providing a multitude of adjacent narrow parallel strips supported by common end portions between which a projectile may pass. Stiffening pins are located in cylindrical pockets at the ends of the broad tape sections. Tension springs connect the stiffening pins to a supporting frame. The broad tape sections slightly overlap each other and bear against strips of low friction material provided on two parallel spaced apart upright supporting members.

7 Claims, 7 Drawing Figures





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PENETRABLE TARGET SCREEN

BACKGROUND

The invention is in the field of game targets, and more particularly penetrable target screens made up of a multiplicity of adjacent strips of reflective material upon which target images may be projected.

Earlier models of this type of screen are disclosed in U.S. Pat. No. 3,072,410 to L. G. Simjian and U.S. Pat. No. 3,420,524 to W. D. Cornell et al. In each of the above patents, individual narrow tape-like strips of material comprise a target screen surface and are individually mounted by resilient means which retain them in the target forming position. The Cornell disclosure further teaches a mechanism for periodically off-setting alternate strips from the plane of the target screen to free adjacent strips of any tangle which may have developed during play.

One of the objections common to each of these prior art targets was that each tape or strip of the target screen was individually mounted. It was thus necessary to provide a spring and mounting bracket for each end of each strip, and upon assembly to attach each end of each strip to the mounting bracket separately. Further, because they were mounted individually, the strips were more subject to twisting, and other disorientation which resulted in a degradation of the appearance and reflective quality of the surface of the target screen.

It is therefore an objective of the invention to overcome the above objections by providing a penetrable target screen comprised of a plurality of relatively broad tape sections, each such section comprising a multiplicity of adjacent parallel narrow strips in an integral unit.

It is a further objective of the invention to provide for the mounting of a multiplicity of adjacent parallel narrow strips through the mounting of a plurality of relatively broad tape sections, each comprising a multiplicity of such narrow strips.

It is another objective of the invention to provide an improved target screen which can be manufactured at a considerable cost saving.

SUMMARY

The invention is an improvement over screen-type penetrable targets comprised of a multitude of individually mounted narrow strips of material. The target of the invention is comprised of a plurality of tape sections, each of which is longitudinally slit over its exposed surface providing a multiplicity of narrow strips which will permit the passage of a projectile therebetween. Means are provided for mounting the tape sections, which mounting automatically accomplishes the mounting of the multiplicity of narrow strips which comprise a target. Resilient mounting means stretch the tape sections between spaced screen positioning means, with the edges of said tape sections slightly overlapped. The mounting means for said tape sections includes stiffening means disposed across the ends thereof and tensioning means attached to said stiffening means to urge the ends of said tape sections apart and into line across the positioning means.

A primary advantage of the invention is the ease with which a target made up of the tape sections thereof may be assembled. It has been found that a target made up of the tape sections of the invention may be assembled in a fraction of the time required for the assembly of similar targets comprised of individually mounted narrow strips.

A further advantage of the invention is the reduced number of resilient tensioning means required to position the tape sections and their integral strips across the target screen positioning means.

Additionally, it has been found that the individual strip members of each tape section of the invention maintain their alignment significantly better than the individually mounted strips of the prior art.

Other objectives, advantages and various further features of novelty and invention will be pointed out or will occur to those

skilled in the art from a reading of the following specification in conjunction with the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a simplified perspective view of the target of the invention.

FIG. 2 is a plan view of an unassembled end of a tape section of the invention.

FIG. 3 is a plan view of an assembled end of a tape section of the invention.

FIG. 3a is a cross-sectional view of a partially completed end fold of a tape section of the invention.

FIG. 4 is a perspective view of an anchor pin of the invention.

FIG. 5 is a fragmented view of a portion of the tape section anchoring means of the invention.

FIG. 6 is a top view of a portion of the tape anchoring means of the invention taken along line 6-6 of FIG. 5.

DETAILED DESCRIPTION OF THE INVENTION

FIG. 1 illustrates an erected target of the invention. The target is comprised basically of a target face 1 made up of a series of relatively broad tape sections 2, each of which includes a multiplicity of adjacent parallel narrow strips 3 formed as hereinafter described. These broad tape sections 2 overlap a fraction of an inch so as to form a solid screen against which a picture may be projected, such as the golf course fairway and green illustrated in FIG. 1. The tape sections 2 are stretched between two vertical screen positioning posts 5 and 6, which posts are protected from projectiles aimed at the target by angled shields 7 and 8 placed on either side of the target 1.

The target 1 illustrated is designed to be penetrable by golf balls. Each tape section 2 measures approximately 9 inches by 15 feet and is preferably made of a spun bonded olyfin having a smooth reflective surface and a thickness of approximately 0.01 inch.

Each tape section 2 is slit longitudinally approximately every 0.225 inches forming slits running between a pair of vertical reference lines positioned approximately 16 inches inwardly from the respective ends thereof. This results in each tape section 2 comprising about 35 narrow strips 3. The tape sections 2 may, of course, be made of other durable materials having qualities suited to a particular type target.

FIG. 2 illustrates the configuration of an end portion 9 of a tape section 2 prior to being folded and sewn to the finished form as illustrated in FIG. 3.

FIG. 3 illustrates a completely assembled end of a tape section 2 in which the end portion 12 is double folded, as illustrated in FIG. 3a, and stitched along two lines 13 and 14 parallel to and across the fold. The double folds provide an opening 15 therebetween into which an anchor pin 16 (FIG. 4) is fitted. The anchor pin 16 serves to distribute the force of the retaining springs 23 evenly over the unslit portion of the tape section, avoiding wrinkles therein and tension variation between the narrow strips extending therefrom.

Referring to FIGS. 2, 3 and 3a, a series of slots 17 are cut in each end of tape sections 2. These slots are arranged in two adjacent verticle rows of three each, so that when the end portion 9 is folded as indicated in FIG. 3a, the slots 17 will extend around and to each side of the end fold 12. The purpose of the slots 17 is to permit the hooked end 23a of a tape tensioning spring 23 to pass therethrough and engage the anchor pin 16, disposed within the opening 15, as illustrated in FIG. 6. As illustrated in FIG. 4, three annular notches 18 are turned into the anchor pin 16, which notches serve to retain the hooked ends 23a of the tensioning springs 23 in position around the anchoring pin 16.

FIG. 5 illustrates an assembly for mounting the tape sections 2 across and between two positioning posts 5 and 6 to make up a target face. Only a portion of one side of the target is shown for clarity, the remainder of the mountings being the same. A mounting bar 20 is secured to an upright stanchion 21 posi-

tioned outside and slightly behind the front face of post 5. A flange 22 extends from the mounting bar 20 inwardly toward the target 1, along a line tangent to the front face of positioning post 5. Three tension springs 23 serve to attach an end of a tape section 2 to a mounting bar 20, replacing the 35 or so springs required to mount an equivalent number of strips of the prior art. These tension springs 23 are provided with hooks 23a and 23b at the respective ends thereof. One hook 23a extends through a slot 17 and engages the anchor pin 16, and the other hook 23b engages the flange 22 through a hole 24 lying opposite the slot 17. A strip of friction reducing material 25 such as teflon tape is placed on the posts 5 and 6 to permit the tape sections 2 to assume a smooth contour thereover.

A series of spring retaining holes 24 are positioned on the mounting bar flange 22 so as to cause adjacent tape sections 2 and 2a to overlap approximately one-fourth of an inch. To make this overlap possible, the corner 18 of each end portion 12 of the sections 2 are beveled, and the length of the anchor pins 16 limited, so as to prevent any interference between the end portions 12 when the sections 2 are overlapped. This overlap eliminates any open space between the adjacent tape sections 2 which would be visibly offensive. All of the end portions of tape sections 2 utilized to make up a target screen are attached to the mounting frame in precisely the same manner as above described, so that the target face in between the verticle positioning posts 5 and 6 is a smooth planar surface. The sections 2 are mounted and the posts 5 and 6 so spaced that the slits 4 fall in between the posts, so that the portions of tape sections 2 in contact with posts 5 and 6 are unslit.

As each tape section includes approximately 35 narrow strips, the time saved in mounting the tape sections 2, as opposed to mounting each of the 35 narrow strips individually as in the prior art, can readily be appreciated. The face of the target 1 is also improved by the invention as it distributes the tension of three springs 23 over the reinforced common end portion 12 of each tape. This results in a more uniform tensioning of the individual narrow strips, and consequently produces a more uniform appearance. The end result is a target which retains its shape over a longer period of time and serves as a superior reflective surface.

While the principles of the invention have been described in connection with the above specific apparatus, it is to be clearly understood that this description is made only by way of example and not as a limitation to the scope of the invention.

I claim:

1. In a target screen comprising a screen supporting structure, a multiplicity of parallel juxtaposed narrow elongated strips arrayed upon said supporting structure, each of said strips being adapted to be displaced from its neighbor so as to permit a missile to pass therebetween, and means for attaching said strips to said supporting structure, an improvement

wherein said array is comprised of a plurality of elongated tape-like sections, each of said sections having a plurality of slits therein parallel to its longitudinal axis and extending between common end portions of said tape sections so as to comprise a multiplicity of said narrow elongated strips.

2. A penetrable target screen comprising a plurality of elongated sections of flexible material, and means for arraying a plurality of said sections so as to form a target surface, each of said sections having a multiplicity of slits therein parallel to its longitudinal axis and extending over a substantial portion of the length thereof between preselected points proximate the distal ends thereof, so that each of said sections comprises a multiplicity of parallel narrow strips extending between common end portions.

3. The device of claim 2 wherein said elongated sections include stiffening means disposed across each end thereof, and means for accommodating said stiffening means in the respective ends of said sections, and wherein said means for arraying said sections includes means for longitudinally stretching said sections, including means engaging said stiffening means.

4. The device of claim 3 wherein said stiffening means comprises an elongated anchor pin, and said means for accommodating said stiffening means in the respective ends of said sections comprises a cylindrical pocket therein sized to receive said pin and having a plurality of apertures therein through which said stretching means engages said anchor pin.

5. The device of claim 4 wherein said stretching means comprises a plurality of tension springs attached to a supporting frame, and wherein the number of said plurality of tension springs is very substantially less than the number of strips in any one of said slit elongated sections.

6. The device of claim 5 wherein said means for arraying said elongated sections to form a target further includes two spaced apart supporting members disposed in parallel and having load bearing faces falling within a common plane, and strips of low friction material attached to said load bearing faces, and wherein said plurality of elongated sections are arrayed in parallel across said load bearing faces with adjacent edges of adjacent sections overlapping not more than the width of one narrow strip.

7. A penetrable target comprised of a plurality of adjacent parallel bands of flexible mildly resilient material arrayed within a common plane, means supporting said bands within said array including resilient means removably engaged with the respective ends of said bands for stretching said bands, each of said bands being comprised of a multiplicity of narrow parallel strips disposed immediately adjacent one another and joined by an integral common portion at each end thereof, whereby the positioning and stretching of one of said bands results in the positioning and stretching of a multiplicity of said strips.

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