Nov. 22, 1960 C. RESTAINO ET AL 2,960,795

HOOP-ROLLING GUIDE

Filed Jan. 19, 1960

FIG. 1.

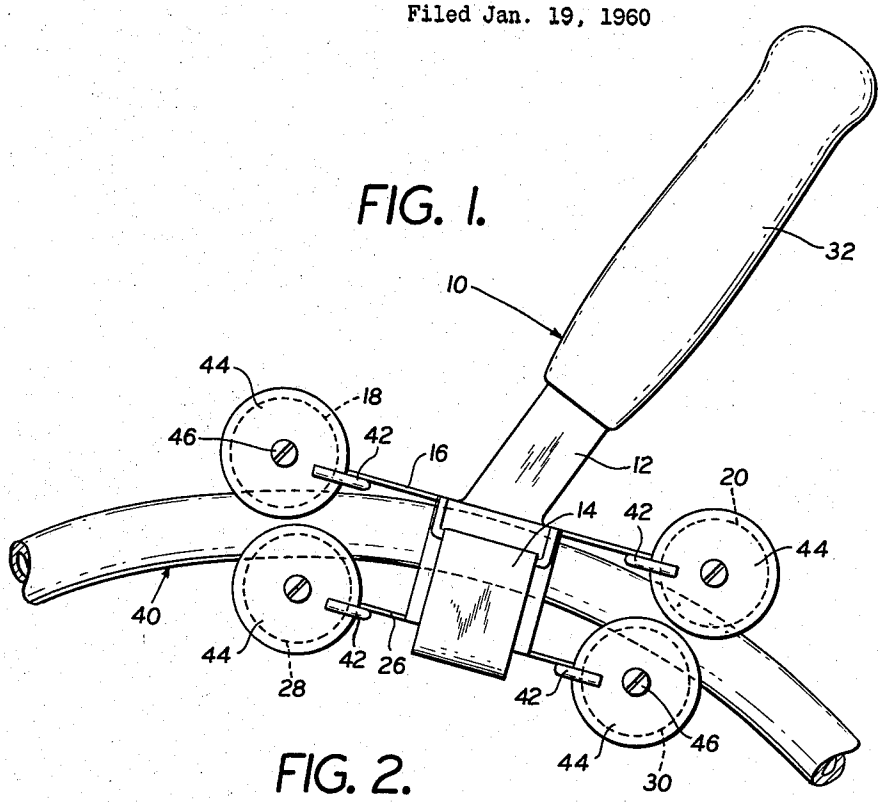


FIG. 2.

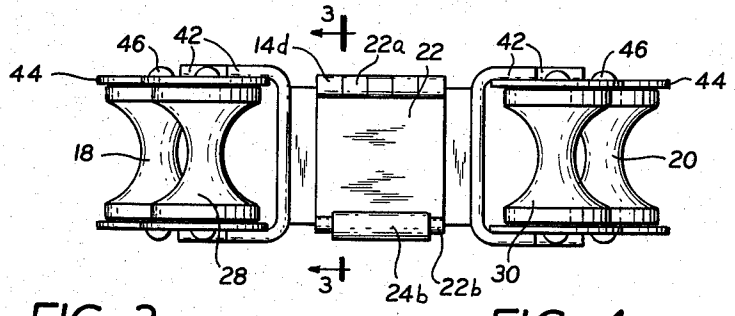


FIG. 3.

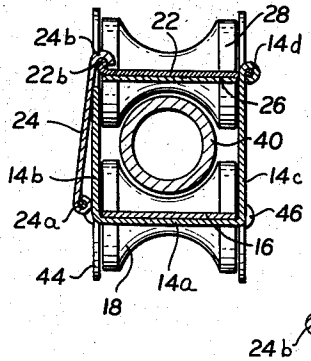
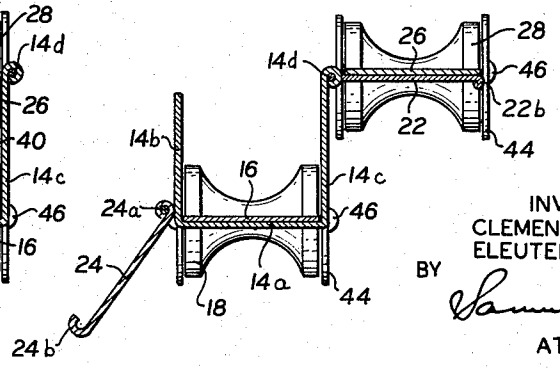


FIG. 4.



INVENTORS
CLEMENTE RESTAINO
ELEUTERIO VIANA

BY Samuel J. Stone

ATTORNEY.

United States Patent Office 2,960,795
Patented Nov. 22, 1960

2,960,795

HOOP-ROLLING GUIDE

Clemente Restaino, 216—08 Spencer Ave., Queens Village 27, N.Y., and Eleuterio Viana, 30—31 49th St., Long Island City, N.Y.

Filed Jan. 19, 1960, Ser. No. 3,435

3 Claims. (Cl. 46—220)

This invention relates to a hoop-rolling guide.

Hoop-rolling guides have previously been devised and patented. However, for various reasons they have not proved commercially successful. In some cases the guide does not properly engage the hoop and consequently does not adequately control it in motion. In other cases the hoop is fully engaged but the guide must be precisely oriented and held relative to the hoop in order to avoid binding. This detracts from the practicality of the guide in the hands of relatively young people who cannot be expected to maintain the proper relationship between guide and hoop at all times. In still other cases excessive friction between the guide and the hoop prevents free rolling of the hoop and thereby reduces the value of the guide. In no case is the hoop suited both for rolling the hoop on the ground and for supporting it in various positions and for various purposes in the air.

The principal object of the present invention is the provision of a hoop-rolling guide which properly engages the hoop for adequate guidance and control. This device engages the hoop along its inner and outer peripheries as well as at its sides. The hoop is adequately controlled for both forward and rearward movement and also against lateral shifting. Moreover, the use of a hoop-rolling guide of this general character, engaging the hoop as it does both along the inner and outer peripheries and at its sides, renders it possible to steer the hoop in either sideward direction.

An important feature of the invention is the use of annularly grooved or pulley-shaped rollers, two of such rollers engaging the outer periphery of the hoop and two of them engaging the inner periphery. These rollers minimize friction between the guide and the hoop and render it possible to both push and pull the hoop without frictionally restraining its rolling movement. The use of these four rollers also renders it possible to support the hoop in the air as well as to roll and guide it on the ground. Used dexterously, the present device renders it possible to support the hoop in the air while rotating.

An important object of the invention is the provision of spring supports for the hoop-engaging rollers. These spring supports are biased to enable the rollers which engage the outer periphery of the hoop to move independently of each other toward and away from the rollers which engage the inner periphery and by the same token said inner rollers are adapted to move independently of each other toward and away from the outer rollers. This feature adapts the present guide to hoops of various diameters and it prevents binding of the hoop under all conditions of normal use and play whether the hoop is being pushed or pulled on the ground or supported in the air and whether it is moved in a straight line or steered to either side. It is this spring feature more than any other which distinguishes the present device from the prior art. The combination of said spring feature and the four rollers also serves to distinguish the present device over the prior art.

The invention is illustrated in the accompanying drawing, in which

Figure 1 is a side view of a hoop-rolling guide made in accordance with the principles of this invention.

Figure 2 is a bottom view thereof.

Figure 3 is a transverse section on the line 3—3 of Figure 2 showing the device in closed positon.

Figure 4 is a similar view showing it in open position.

Hoop-rolling guide **10** shown in the drawing has the following major component parts: a handle **12**, a frame **14** to which the handle is connected, an upper leaf spring **16** which is connected to said frame, a pair of annularly grooved or pulley-shaped rollers **18** and **20** supported by said upper leaf spring **16**, a plate **22** hingedly connected to frame **14** and serving as a closure therefor, a locking plate or latch **24** hingedly connected to said frame and engageable with said plate **22** to hold the plate in closed position, a second or lower leaf spring **26** supported by said hinged plate **22**, and a second pair of annularly grooved or pulley-shaped rollers **28** and **30** supported by said second leaf spring **26**.

Handle **12** may be a tubular member made of any suitable material such as metal or plastics and it may have a hand grip **32** thereon, made of rubber, plastics or the like. In one form of the invention the tubular handle **12** is made of metal and it is welded or otherwise secured to frame **14** which is similarly made of metal. It will be noted in Figure 3 that frame **14** is U-shaped, handle **12** being secured to the yoke **14***a* and its two side walls **14***b* and **14***c*, respectively, depending from said yoke in parallel relation to each other and in perpendicular relation to the yoke. Although in the preferred form of this invention said U-shaped frame **14** is made of metal, it will be understood that it may also be made of other suitable materials such as plastics.

A hinge element **14***d* is formed along the lower edge of side wall **14***c* of the U-shaped frame. A cooperative hinge element **22***a* is formed on the cover plate **22** and it is by means of these two hinge elements and the usual pin or pintle which joins them that said cover plate **22** is hingedly supported on side wall **14***c* of U-shaped frame **14**. Latch element **24** is hingedly connected by means of hinge **24***a* to side wall **14***b* of said U-shaped frame **14**. A catch element or keeper **24***b* on latch element **24** engages a protuberance **22***b* on cover plate **22** and thereby locks said cover plate in closed position on the U-shaped frame, said cover plate being disposed in substantially parallel relation to the yoke **14***a* of frame **14**. A four-sided enclosure is thereby formed, frame **14** providing three of the sides of said enclosure and cover plate **22** covering the fourth side. It is within said four-sided enclosure that the hoop **40** is confined. Cover plate **22** may be opened to provide ingress or egress for the hoop and it may be closed to confine the hoop within the guide. It is not possible in the normal use of this device for the hoop to become dislodged from the guide or vice versa.

It has been indicated that the upper leaf spring **16** is secured to the yoke of U-shaped frame **14** and the lower leaf spring **26** is secured to cover plate **22**. Since said yoke and said cover plate occupy substantially parallel planes when the cover plate is in closed position, so will the two leaf springs **16** and **26**. It is not essential that these leaf springs be straight and flat when in untensioned condition but this is preferred, as shown in the drawing. At the two ends of leaf spring **16** is a pair of U-shaped elements **42**, each arm of said U-shaped elements supporting a disc **44**. Leaf spring **26** also has at both ends a pair of such U-shaped elements **42** and again each arm of said U-shaped elements supports a disc **44**. Thus, there is one pair of discs at each end of each leaf spring, a total of eight of such discs. The discs of each pair are

situated co-axially in parallel planes and an axial bolt, rivet or pin 46 connects them in the manner shown. It is on the four bolts, rivets or pins 46 of the four pairs of discs 44 that the annularly grooved rollers 18, 20, 28 and 30 rotate. Discs 44 serve as bearing walls for the rollers, preventing axial dislodgment of said rollers, while permitting them to rotate on said bolts, rivets or pins 46. This is merely one form of the invention and it will be appreciated that discs 44 are not an essential element of the invention. All that is required is that the rollers be rotatably supported at the ends of the leaf springs. In the preferred form of the invention, the two leaf springs, the U-shaped elements 42 and discs 44 are all made of metal but, again, this is purely illustrative and other materials such as plastics may also be used. The rollers in the preferred form of the invention are made of wood but this too is illustrative and they may be made of metal or plastics or any other suitable material.

In the use of this device the hoop is inserted into the enclosure defined by the U-shaped frame 14 and the hinged plate 22. The hoop is thereby also confined by the four pulley-shaped rollers and, indeed, in the normal use of this device only the rollers engage the hoop and prevent contact between the hoop and the walls of said U-shaped frame and said hinged plate 22. As shown in the drawing, the handle is disposed at a small angle relative to the yoke of the U-shaped frame and it projects in generally upward direction. This renders it convenient to hold while rolling the hoop on the ground. It will be understood that the present device may be made to engage the hoop at any other angle and from any other position. Thus, the handle may be held horizontally while the rollers engage the side walls of the hoop rather than its outer and inner peripheries. There are many variations in the use of this device, as will occur to the user thereof.

The foregoing is illustrative of a preferred form of the invention and it will be understood that this form may be modified and other forms provided within the broad spirit of the invention and the broad scope of the claims.

We claim:

1. A hoop-rolling guide of the character described, comprising a frame, a handle secured to said frame, a pair of spring elements connected to said frame and a pair of hoop-engaging rollers mounted on each spring element, each pair of rollers being disposed opposite the other pair to receive the hoop between them, said spring elements being a pair of leaf springs supported in spaced, substantially parallel relation to each other, each leaf spring provided at its ends with means for rotatably supporting said rollers on parallel axes.

2. A hoop-rolling guide of the character described, comprising a frame, a handle secured to said frame, a pair of spring elements connected to said frame and a pair of hoop-engaging rollers mounted on each spring element, each pair of rollers being disposed opposite the other pair to receive the hoop between them, said spring elements being a pair of leaf springs supported in spaced, substantially parallel relation to each other, each leaf spring provided at its ends with means for rotatably supporting said rollers on parallel axes, said frame consisting of a U-shaped component and a hinged plate, the yoke of said U-shaped component supporting one of said leaf springs, the hinged plate supporting the second of said leaf springs, said hinged plate being adapted to swing into open position for ingress and egress of a hoop relative to said U-shaped component, said hinged plate being swingable to closed position to confine the hoop within said U-shaped component, and a latch being provided for locking said hinged plate in closed position on said U-shaped component.

3. A hoop-rolling guide of the character described, comprising a handle, a pair of spring elements supported by the handle and a pair of hoop-engaging rollers on each spring element, the rollers on one of said spring elements being adapted to cooperate with the rollers on the other spring element to confine a hoop between them, said two spring elements being a pair of leaf springs supported intermediate their ends in spaced, generally parallel relation to each other, the ends of said leaf springs being free to flex toward and away from each other and said rollers being rotatably supported on said ends, whereby the rollers are adapted to move toward and away from each other to accommodate a hoop of any size without binding same during use.

References Cited in the file of this patent

UNITED STATES PATENTS

1,427,070	Cole	Aug. 22, 1922
2,562,522	Boyd	July 31, 1951