# United States Patent [19]

**Brudy**

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[54] **BUNDLING STRAP**


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[52] **U.S. Cl.** ..... **24/16 PB**

[51] **Int. Cl.** ..... **B65d 63/00**

[58] **Field of Search** ..... 24/16 PB, 17 AP, 30.5 P, 24/73 PB, 206 A; 248/74 PB



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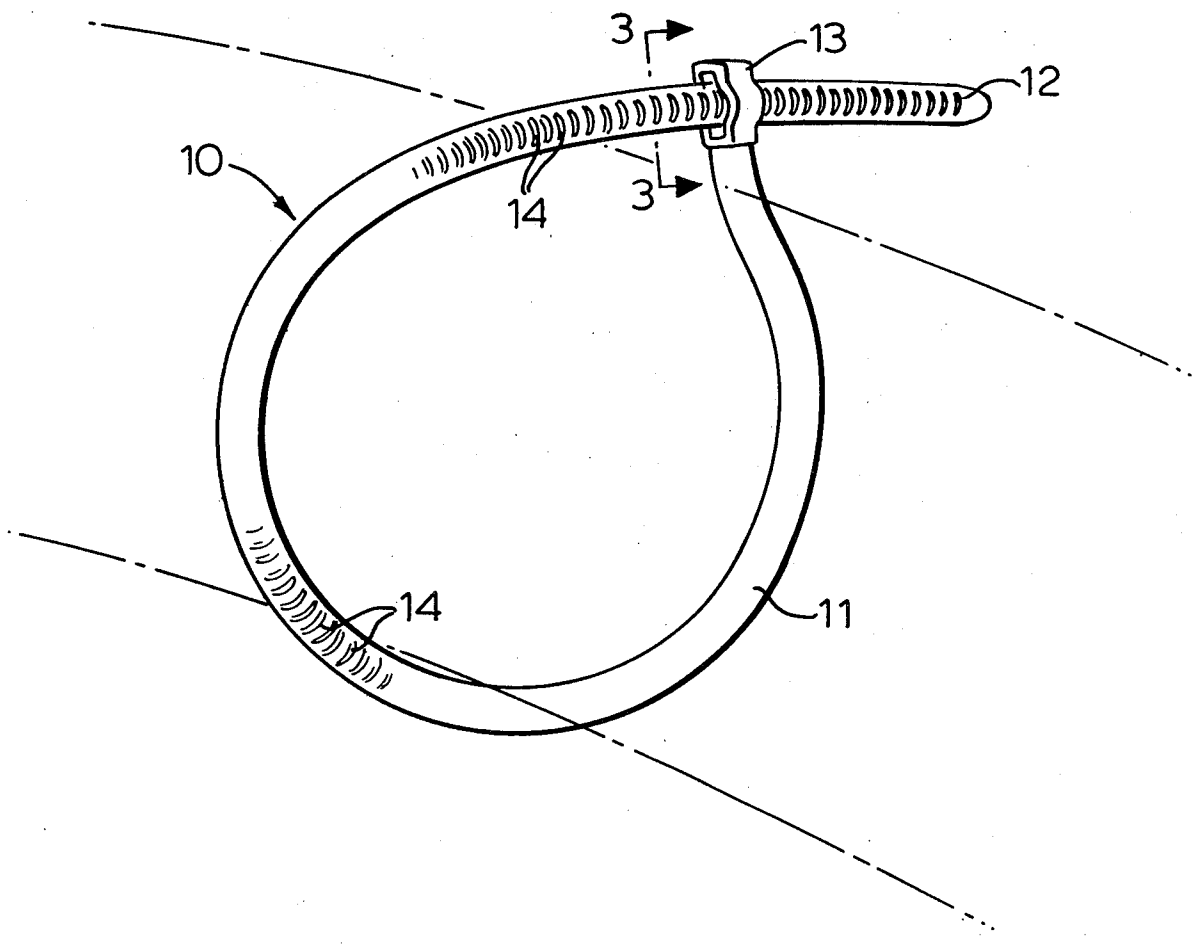
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[57] **ABSTRACT**

A bundling strap comprising a one-piece strap including an elongated main body portion, a free end portion, and a head portion through which the free end portion is adapted to be inserted to encircle one or more articles. The head portion has an opening therethrough adapted to receive the free end portion of the strap and at least a part of the main body portion. At least that portion of the body portion which is adapted to extend through said opening of the head portion is formed with diametrically opposed teeth. The head has opposed lateral surface portions adjacent the opening adapted to be engaged by the teeth and thereby hold the strap in position. The opening in the head portion is elongated transversely at an angularly spaced relation with respect to the opposed surface portions such that bodily rotation of the part of the body portion of the strap within the head will cause the teeth to disengage from said surface portions of the head so that the strap can be released.


**4 Claims, 4 Drawing Figures**



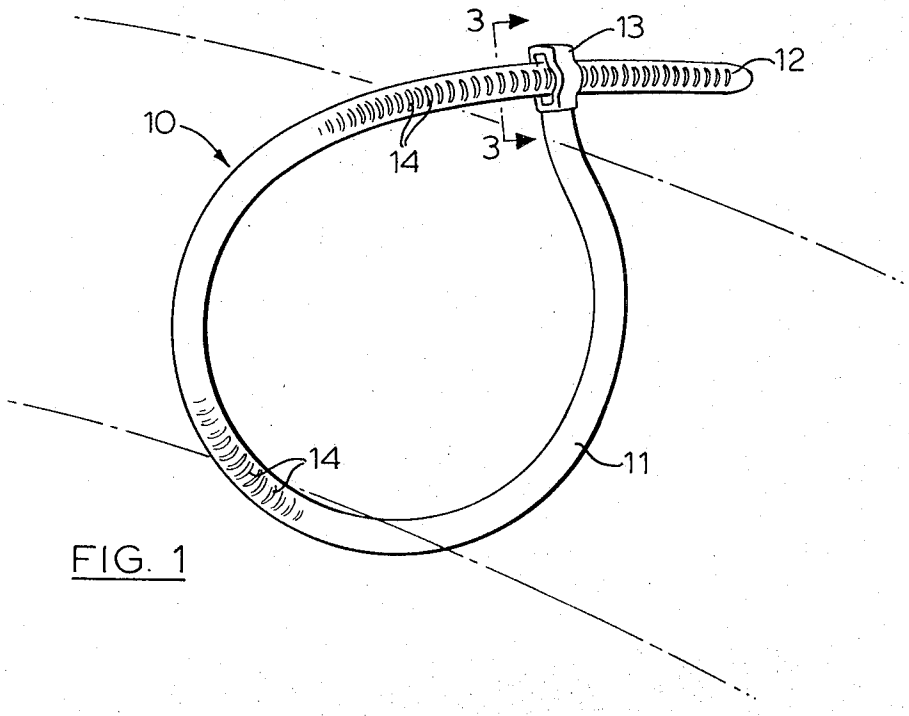



FIG. 1

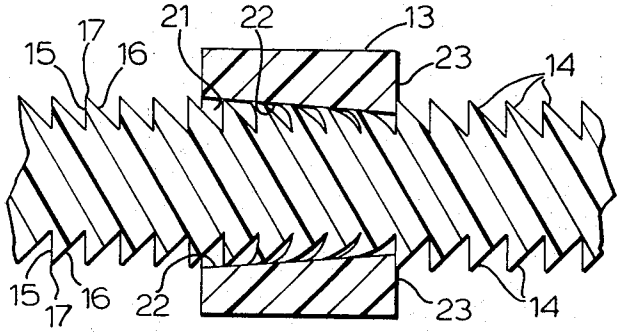



FIG. 2

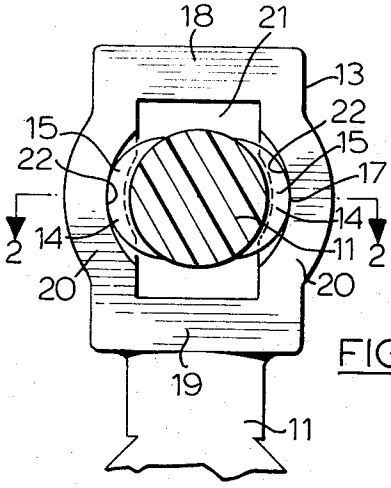



FIG. 3

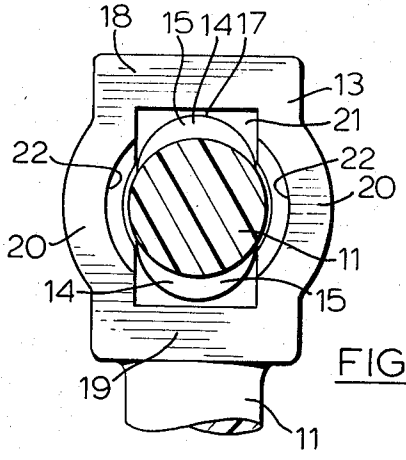



FIG. 4

# BUNDLING STRAP

This invention relates to bundling straps.

## BACKGROUND OF THE INVENTION

In bundling articles of various types, it has become common to utilize a bundling strap including an elongated main body portion having teeth thereon, a free end portion and a head portion for receiving the free end portion and engaging the teeth. Such straps are commonly devised to have a pawl or similar device in the head which pawl must be released in order to release the strap.

Among the objects of the invention are to provide an improved bundling strap which does not require the use of a separate pawl, which can be readily released by rotating the free end of the strap with respect to the head portion, which can be readily attached without special alignment or orientation, and which can be produced readily at low cost without complex molds or other machinery.

## SUMMARY OF THE INVENTION

The bundling strap embodying the invention comprises a one-piece strap including an elongated main body portion, a free end portion, and a head portion through which the free end portion is adapted to be inserted to encircle one or more articles. The head portion has an opening therethrough adapted to receive the free end portion of the strap and at least a part of the main body portion. At least that portion of the body portion which is adapted to extend through said opening of the head portion is formed with diametrically opposed teeth. The head has opposed lateral surface portions adjacent the opening adapted to be engaged by the teeth and thereby hold said strap in position. The opening in the head portion is elongated transversely at an angularly spaced relation with respect to the opposed surface portions such that bodily rotation of the part of the body portion of the strap within the head will cause the teeth to disengage from the surface portions of the head so that the strap can be released.

## DESCRIPTION OF THE DRAWINGS

FIG. **1** is a perspective view showing the binding strap as it may be applied around one or more articles.

FIG. **2** is a fragmentary sectional view on an enlarged scale taken along the line **2—2** in FIG. **3.**

FIG. **3** is a fragmentary sectional view on an enlarged scale taken along the line **3—3** in FIG. **1.**

FIG. **4** is a view similar to FIG. **3** showing the relative positions of the parts during release of the binding strap.

## DESCRIPTION

Referring to FIG. **1,** the binding strap **10** embodying the invention is made of flexible plastic material such as nylon and comprises a main body portion **11,** having a free end **12** at one end and a head portion **13** at the other end. The body portion **11** is circular in cross section and is provided with opposed teeth **14** each of which has a radial surface **15** and inclined surface **16.** The outer edge **17** of each tooth at the point of intersection of the surfaces **15, 16** is arcuate and has a lesser radius than the radius of the main portion of the body portion **11.**



The head portion **13** is generally rectangular and includes end walls **18, 19** connected by arcuate side walls **20.** End wall **19** is connected with the body portion **11.** An opening **21** extends through the head portion **13,** the axis of the opening being at a right angle to the longitudinal axis of the body portion **11** where the body portion **11** is joined to the head portion **13.** The opening **21** has side wall portions **22** on the inner surface of the walls **20** which are tapered in a direction axially of the opening **21.** Side wall portions **22** are arcuate in transverse cross section and have a common radius with the body portion when the body portion is in position as presently described. The opening **21** is elongated in a direction extending **90°** to the surfaces **21** and extending along the axis of the body portion **11.**

In order to utilize the binding strap, it is wrapped around one or more articles, the free end **12** is inserted through the opening **21** of the head portion **13** and the body portion **11** is pulled through the opening **21.** As the body portion **11** is pulled through the opening **21,** the teeth **14** are compressed by the inclined surfaces **22.** As the teeth **14** pass through the opening **21,** they successively engage the outer end surface **23** of the head portion **13.** This engagement between the radial surfaces **15** of the teeth **14** and the end surface **23** causes a locking action which prevents the strap from becoming released.

In order to release the strap, the end **12** is grasped and rotated with respect to the head portion **13** to the position shown in FIG. **4** to release the teeth **14** from engagement with the surface **23** as well as contact with the inclined surfaces **22.** Since the opening **21** is elongated in a direction angularly rotated by 90° with respect to the surfaces **22** a distance greater than the cross-sectional distance between the edges of opposed teeth **14,** the body portion **11** can be freely moved axially through opening **21** to release the strap.

The teeth **14** are preferably located on the body portion **11** so that they extend outwardly in the direction of the side wall portions **22** when the body portion **11** is in the untensioned or untwisted state. In other words, when the teeth are in engagement as shown in FIG. **3,** the body portion **11** is not under torsion.

I claim:

**1.** In a bundling strap, the combination comprising a one-piece strap made of flexible synthetic plastic material and including an elongated main body portion having a circular cross section,

a free end portion,

and a head portion through which the free end portion is adapted to be inserted to encircle one or more articles,

said head portion having an opening therethrough adapted to receive the free end portion of the strap and at least a part of the main body portion,

at least that portion of the body portion which is adpated to extend through said opening of said head portion being formed with diametrically opposed teeth,

said head having opposed lateral end surface portions adjacent the opening adapted to be engaged by said teeth and thereby hold said strap in position,

the sides of said opening in said head portion which extend to said end surface portions that are engaged by said teeth being tapered,

said teeth having radial and inclined surfaces,

said teeth having arcuate peripheral edges,

said sides of said opening which are engaged by said teeth being arcuate in transverse cross section,

said opening in said head portion being elongated transversely at an angularly spaced relation with respect to said opposed surface portions such that bodily rotation of the part of the body portion of the strap within the head will cause said teeth to disengage from said surface portions of said head so that the strap can be released.

**2.** The combination set forth in claim **1** wherein said teeth are circumferentially oriented with respect to said body portion and said head such that there is substantially no torsional force on the body portion when the teeth are in engagement with said head portion.



**3.** The combination set forth in claim **2** wherein the opening in said head portion extends transversely to the longitudinal axis of the body portion of the strap.

**4.** The combination set forth in claim **3** wherein the elongated portion of said opening extends in a direction generally longitudinally of the body portion attached to the head portion.

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