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SELF-CLINCHING BUNDLING STRAP

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Fig. 1 Fig. 2 Fig. 3

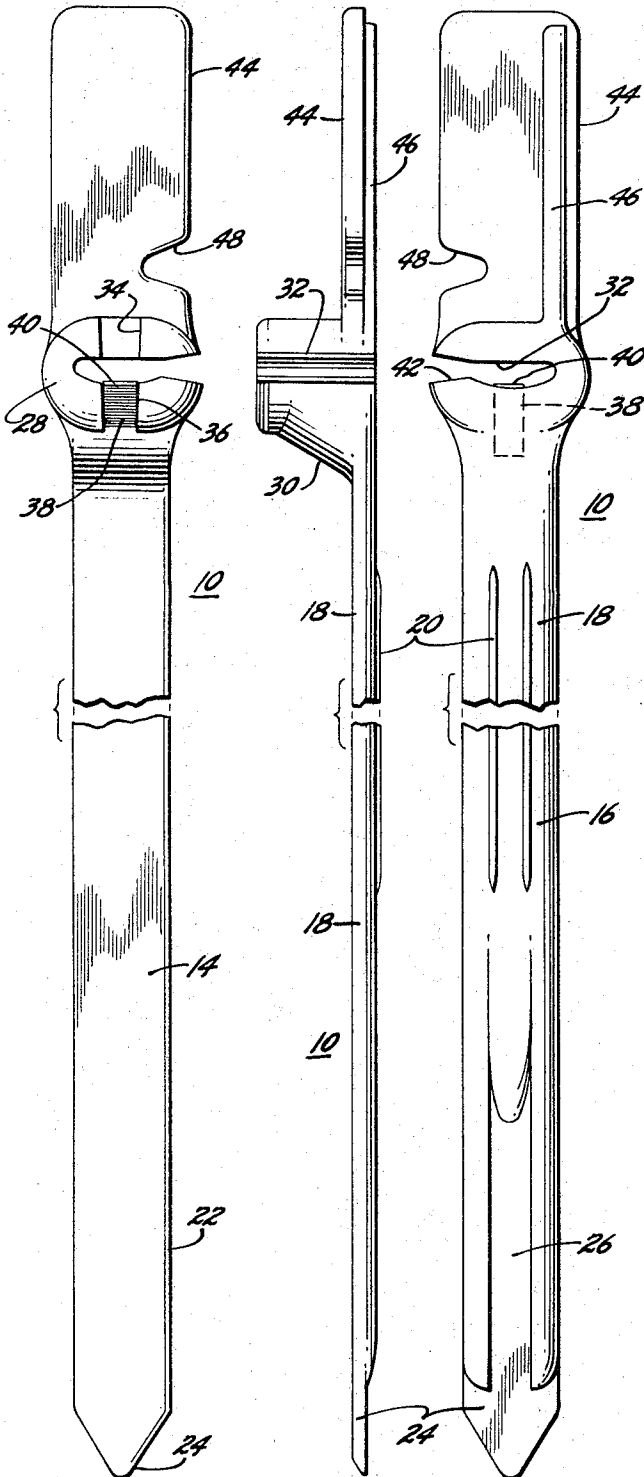


Fig. 4

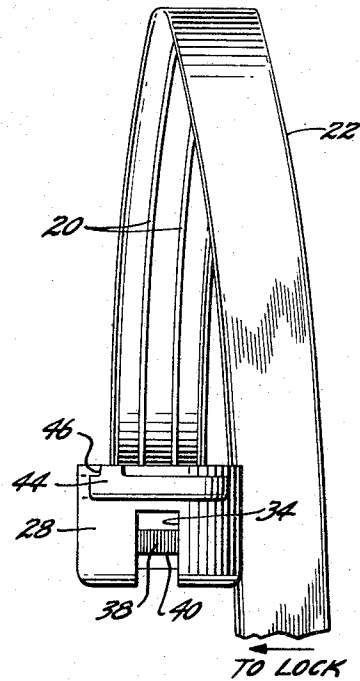
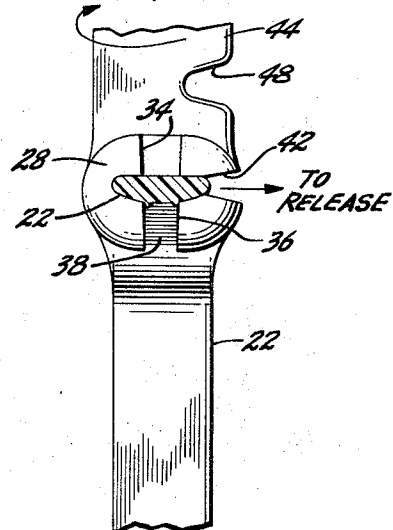


Fig. 5



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1

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SELF-CLINCHING BUNDLING STRAP

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1 Claim. (Cl. 24—16)

The present invention relates to bundling straps adapted for tying linear articles in bunched parallelism and more particularly to improvements in self clinching bundling straps of the general character exemplified in Schwester et al. Patent No. 3,186,047, which improvements permit assembly on the articles without the necessity for threading the free end thereof through the apertured head, and which strap may be quickly released if desired.

Heretofore considerable time was required to initially thread or insert the tail-end portion of such bundling straps axially through the apertured head-end portion thereof and drawing the same taut, when the looping of a large number of such straps in spaced relation about a plurality of insulated electric conductors in a trunk line thereof, is considered.

Accordingly, it is an object of the present invention to provide improvements in a plastic bundling strap of the character identified which is adapted to be looped and drawn taut about a plurality of bunched parallel electric conductors with facility and dispatch in a minimum of time.

A further object of the invention is to provide an improved bundling strap of the character described which is adapted to be released for subsequent use after being secured taut about a bundle of insulated electric conductors.

Another object of the invention is to provide an improved bundling strap of the character specified which is adapted to be looped about a bundle of linear articles in self clinching relation without passing its tail-end portion axially through its apertured head-end portion into looped position.

A further object of the invention is to provide an improved bundling strap of the self clinching type which is adapted to be quickly released from a taut, looped condition without damage to the strap.

Another object of the invention is to provide an improved bundling strap of the character specified in which the apertured head-end thereof is of the side entry type adapted for receiving the tail-end portion of the strap laterally of its head-end portion.

A further object of the invention is to provide an improved, self clinching bundling strap of the character specified which includes side entry means whereby its body portion including its tail-end portion may, at any point thereon, be inserted radially into its apertured head-end portion into coactable relation with a clinching means in said head-end portion.

Another object of the invention is to provide an improved self clinching bundling strap of the character specified wherein its tail-end portion is adapted to be drawn axially through the apertured head-end portion of said strap in clearance relation to a clinching means in said head-end portion.

With the above and other objects in view, the invention resides in the novel construction, combination, and arrangement of elements, the novel features of which are set forth with particularity in the appended claim, the invention itself, however, both as to its organization and manner of operation, together with additional objects and advantages thereof, being best understood from the following description of a specific embodiment thereof,

2

when taken in connection with the accompanying drawing in which:

FIGURE 1 is a view in elevation of the improved bundling strap showing its outer side;

FIGURE 2 is an edge view of the same;

FIGURE 3 is an elevational view of the improved bundling strap showing its inner, ribbed side thereof;

FIGURE 4 is a perspective view showing the bundling strap in looped position with respect to its head-end portion and the manner in which the looped body portion of the strap is inserted laterally of its head-end portion; and

FIGURE 5 is a fragmentary detail view in elevation and in cross-section illustrating the tail-end portion of the strap in clinched position and the manner in which it is released.

Referring to the drawing, the improved bundling or self clinching tie strap 10 of molded nylon, for example, comprises an elongated body portion having a flat outer side 14, a convex inner side 16, and rounded, parallel marginal edges 18, presenting a somewhat oval configuration in cross-section as in FIGURE 5.

The convex side 16 of the body portion of the strap 10 includes a pair of spaced, parallel, relatively narrow ribs 20 formed integral therewith, which extend throughout the major length thereof as in the herein identified patent. One end of the body portion of the strap 10, comprising its tail-end portion 22, has a pointed tip-end 24 of reduced thickness with a central clearance slot or channel 26 extending said reduced thickness lengthwise therefrom whereby to initially clear a clinch means now to be described.

The opposite or head-end portion of the strap 10 comprises an oval shaped clinching eyelet 28 presenting an end face projecting laterally from the flat side 14 of the strap and extending at right angles to the body portion with an inclined fillet or gusset 30 continuing the flat side 14 to the end-face of the eyelet 28 on the strap side thereof, the eyelet 28 having a transverse, substantially elliptical aperture 32 therethrough presenting a convex side, an opposite flat side and opposite rounded marginal edges of such size and radii as to correspond to the cross-sectional area of the body portion of the strap 10.

As and for the purpose described in Patent Number 3,186,047, the projecting end face of the eyelet portion 28 is provided with aligned, rectangular slots 34 and 36 formed centrally across the aperture 32 therein, the slot 34 extending through the wall of the eyelet 28 to the full thickness thereof to provide a clearance path to the slot 36 which extends only to the fillet or gusset 30 whereby a rectangular recess is formed within the eyelet portion 28 on the strap side thereof and inwardly of its end face for the forced insertion of a thin, flat flexible pawl-like member or tongue 38 of stainless steel into the gusset 30 of the eyelet portion 28 at an acute angle to the axial center of its transverse aperture 32. The free end portion of the steel tongue 38 presents an angular or beveled end face defining a line or knife edge 40 square therewith which extends into the aperture 32, transversely of and across its axial center but within the projecting end face of the eyelet portion 28 whereby to engage the body portion of the strap 10 when looped upon itself through the aperture 32 in the eyelet portion 28 of the strap.

In accordance with the invention the circumference of the eyelet portion 28 of the strap 10, is interrupted as at 42 by an outwardly diverging slot formed therein radially of and extending lengthwise in parallelism with the axial center of the aperture 32 of said eyelet into which it opens for the side-wise entry of the body portion of the strap 10, including its tail-end portion 22, into coactable engagement with the pawl-like metal insert 38 comprising the clinching means integral with said strap. The

3

eyelet portion 28 of the strap 10 includes an integral finger piece 44 co-extensive therewith and in alignment with the ribbed face of the body portion thereof as best shown in FIGURES 1 and 5, the flat finger piece 44 including a reinforcing rib 46 along one marginal edge thereof and on its opposite marginal edge with an inwardly extending notch 48, whereby the width of the member 44 is substantially reduced in the region of said notch whereby it is readily adapted to be twisted in the direction indicated in FIGURE 5 to flex the upper half of the eyelet portion 28 sufficiently out of the plane of the strap body portion, when securely looped about a bundle of articles, to disturb and thus release the clinching action of the pawl 38 on the looped strap without injury thereto. Thus, the invention also provides a bundling strap which is particularly adapted for repeated use in temporary applications.

While the invention has been illustrated and described with respect to one embodiment thereof, it is to be expressly understood that various changes and modifications may be made therein without departing from the inventive concept underlying the same. Therefore, the invention is not to be limited except as is necessitated by the prior art and the scope of the appended claim.

What is claimed is:

A self clinching bundling strap comprising a head end portion, a tail end portion and a body portion extending therebetween, said head end portion having a transverse aperture therethrough adapted to receive said body portion, a gusset in said head end portion adjacent to said aperture, a resilient metallic tongue having one end por-

4

tion thereof anchored in said gusset and its opposite end portion extending into said aperture presenting a line edge transversely of said aperture adapted for locking the body portion of said strap in position against movement axially of the aperture when the same is looped upon itself and placed in said aperture, a radial slot in said head end portion communicating with said aperture adapted to admit the body portion of the strap into said aperture and into engagement with said tongue, means on said head end portion for axially distorting part of said head end portion whereby said body portion is out of engagement with said tongue and radially movable from said aperture through said radial slot comprising an integral finger piece co-extensive with and in alignment with said head end portion on one side of said slot, said finger piece being provided with a notch extending inwardly from one edge thereof whereby said finger piece when twisted will flex part of said head end portion and said one side of said slot out of the plane of the remaining part of said head end portion.

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