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FASTENINGS FOR METAL STRAPS

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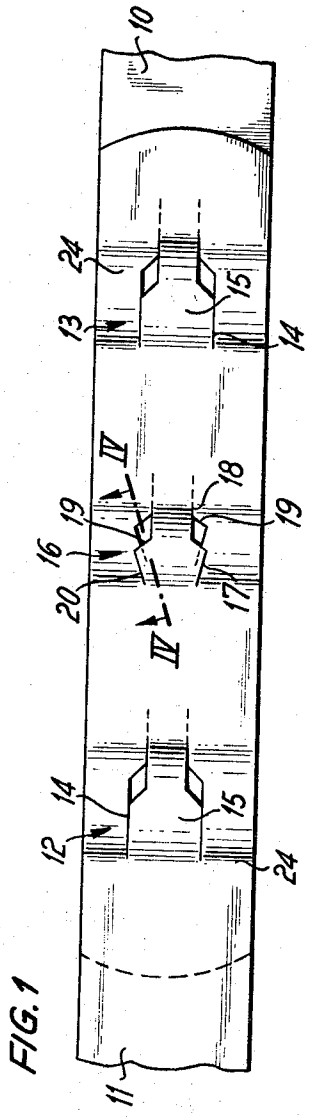


FIG. 1

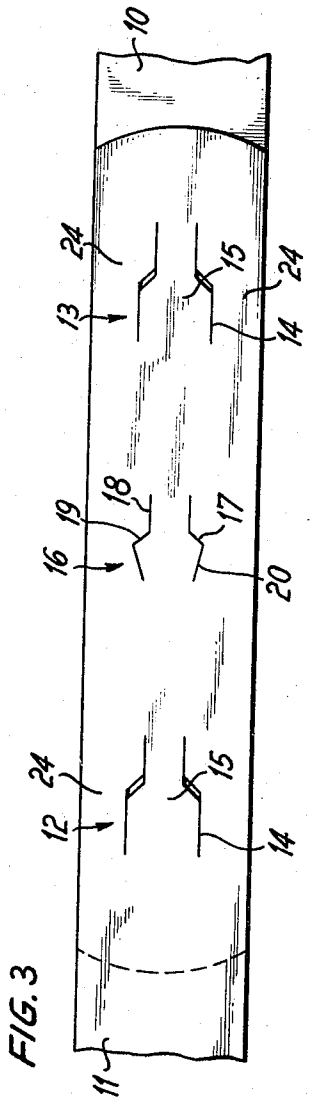


FIG. 3

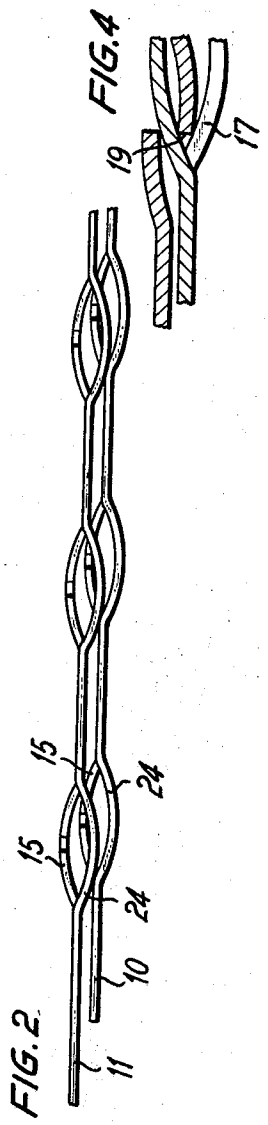


FIG. 2

FIG. 4

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FASTENINGS FOR METAL STRAPS

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ABSTRACT OF THE DISCLOSURE

A strapping band for packages and the like is provided in the region of its opposite end portions with interengaging web portions provided by longitudinally slotting sections of the end portions. Overlapping of the end portions and movement of one thereof with reference to each other in a sense tending to separate them effects interengagement of the web portions after the movement has progressed by a predetermined distance. Interengaging locking portions are also provided on the end portions and are operative for preventing separation of the interengaging web portions as well as for interengaging themselves in a sense assisting the web portions in response to movement of the one end portion by the aforementioned predetermined distance.

This invention relates to metal straps for packages wherein the overlapping ends of the straps are fastened together without a sleeve by means of at least two fastening catches each comprising webs bent out of the plane of the metal strap from between pairs of longitudinally extending stepped slits formed in each of the overlapping ends of the strap, the web bent out from one strap end engaging behind the web bent out from the other strap end in the stepped slot formed by bending out said web in said other end, and wherein said ends are additionally fastened together by means of a locking catch engaging between the overlapping ends of the strap.

An example of the invention is illustrated in the accompanying drawing, in which:

FIG. 1 is a plan view of the overlapping ends of a metal strap which are fastened in accordance with the invention and have a locking catch to prevent unintentional opening.

FIG 2 is a side view of the overlapping ends of the metal strap.

FIG. 3 is a plan view of the overlapping ends of the metal strap in a position in which the lock catch is cut; and

FIG. 4 is a section taken along the line IV—IV in FIG. 1.

For the sake of simplicity, only the two overlapping end portions **10** and **11** of a metal strip forming the fastening strap for a package are shown in the drawing. The two ends of the strap **10** and **11**, are interconnected by two fastening catches **12** and **13** aligned longitudinally in the strip. Each of the fastening catches has a pair of stepped slits **14** arranged symmetrically on either side of the centre line. The region between two paired slits **14** is defined as the web **15**. The web is pressed out of the plane of the strap ends, whereas the lateral webs **24** are pressed out of the plane of the strap ends in the opposite direction. Due to the stepped conformation of the slits **14**, and the web **15** has portions of different widths, viz, a wide portion to the left and a narrow portion to the right of the drawing. The webs **15** in both fastenings are unidirected, i.e., the two wide and the two narrow portions point in the same direction.

The webs **15** of the underlying strap end engage behind the bent-out web of the overlying strap end and when the two ends of the strap are pulled apart, either by the tension produced in the hoop when it was wrapped around the package or by a special operation of the fastening apparatus in use the broad part of the web of the lower end **10** in both fastenings is drawn into the slot in the upper end portion. (See FIGURE 1 where the closed position is shown.) Thus fastenings are obtained with the broad portion of the web **15** of the lower strap end located between the narrow portion of the upper web **15** and the undeformed region of the upper strap end.

In order to prevent these fastenings from opening unintentionally, as may happen if the tension in the hoops is relaxed, a lock catch **16** is provided between the two fastenings catches **12** and **13**. This catch may be formed, for example, by an additional operation of the fastening punch. The lock catch is again formed as a sleeveless fastening with zigzag slits. However, the zigzag slits **17** of the locking catch **16** are different from the stepped slits **14** of the fastenings **12** and **13**. Firstly, the zigzag slits **17** are symmetrically placed on either side of the centre line of the strap ends. Each zigzag slit **17** has a first portion **18** which extends parallel with the longitudinal centre line. Adjoining one end of this portion is the second portion **19**, which is directed obliquely outwardly, i.e., towards the outer edge of the strip. At the end of the second portion **19** the zigzag slit again changes its direction and is directed obliquely inwards towards the centre line of the metal strip. The distance between the ends of the third portions **20** of each pair of slits is greater than the distance between the two first portions **18** of the slits **17**. As shown by FIG. 4, this effects, that in the engaged position of the lock catch, the ends of the slits **17**, formed by the third sections **20** of the underlying strap end, are in contact as an additional lock with the obliquely directed second portion **19** of the superimposed strap end **11**.

The total length of the catch **16** is less than that of the two fastenings **12** and **13**. It should also be notched (see FIGS. 1 and 3) that the angle of the second portion **19** relative to the centre line is greater than the angle of the third portion **20**.

As shown by FIG. 3, the lock catch **16** is cut into the overlapping strap **10, 11** ends after part of the movement of the locking **12, 13** towards the final engaged position, and the second part of the movement of the locking **12, 13** towards the final engaged position corresponds to the total movement of the lock catch **16**, which is formed by shorter slits **17**. This effects that the lock catch **16** operates as an additional locking means.

As already mentioned, this embodiment is only an example of the invention. The invention is not restricted thereto, and many other constructions and applications are possible. Thus the application of the invention may also be used for connecting used straps.

What I claim is:

1. A strapping device, comprising an elongated flexible band having opposite end portions, said band being formed in the region of each of said end portions with a pair of struck-out fastening portions having zigzag-shaped struck-out locking catches positioned therebetween and arranged to slidably engage one another only after said fastening portions have already partially slidably engaged one another so as to assist the further sliding engagement of said fastening portions, said locking catches being so dimensioned as to lock together in a sense limiting the extent of said further sliding engagement of the fastener portions to resist undesired stresses in the direction of sliding engagement of the latter, said locking

catches being so configurated as to be slidable away from each other to thereby enable release of said locking catches and fastening portions from each other when desired.

2. A strapping device as defined in claim 1 wherein said band consists of metallic material.

3. A strapping device as defined in claim 1 wherein said locking catches each comprise a pair of transversely spaced longitudinally extending slots said slots of each pair extending mirror-symmetrically with reference to the longitudinal axis of said band and each including a first section paralleling said axis, a second section diverging outwardly toward the respective band edge from said first section at an angle to the latter, and a third section extending inwardly from said second section towards said axis at an angle to the same and to said second section, said third sections having respective free

ends remote from said second sections and the distance between said free ends exceeding the spacing between said first section so as to enable, in interengaged condition of said locking portions, limited movement of said end portions of said band relative to one another.

References Cited

UNITED STATES PATENTS

3,137,047	6/1964	Mosey	24—20

FOREIGN PATENTS

906,318	3/1954	Germany.
751,748	7/1956	Great Britain.
1,010,487	11/1965	Great Britain.

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