Dec. 3, 1935. E. G. S. VAUGHAN 2,023,059

METAL STRAP JOINT AND METHOD OF MAKING THE SAME

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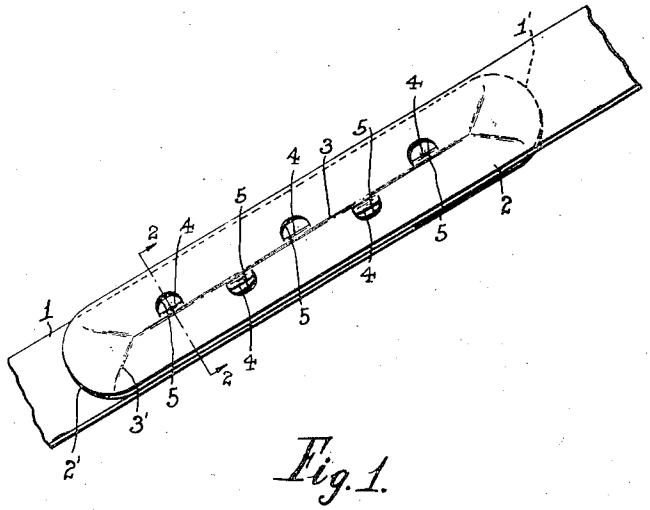


Fig. 1.

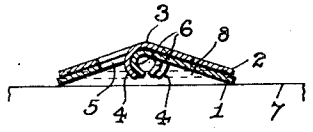


Fig. 2.

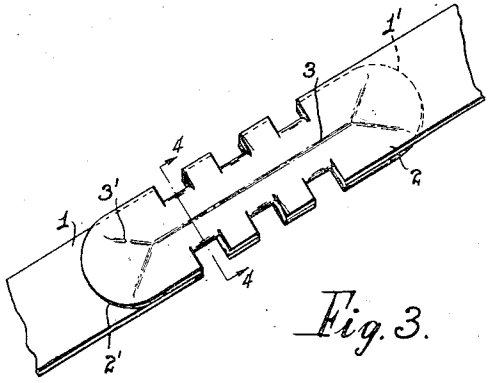


Fig. 3.

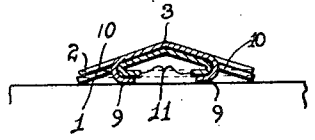


Fig. 4.

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METAL STRAP JOINT AND METHOD OF MAKING THE SAME

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13 Claims. (Cl. 24—20)

This invention relates to an improved method of joining the ends of metal strappings for cases, bales and the like.

It is well known to join the ends of metal strappings by forming tongues in one of the overlaid ends of the strapping, which engage in corresponding slots formed in the other end of the strapping. In some cases the tongues and slots have been formed in the longitudinal edges of the overlapping strap ends, and in other cases the tongues and slots have been formed in the body of the strapping, between the longitudinal edges.

The object of the present invention is to provide a joint of the kind having tongues engaging with slots, wherein the tongues are protected from damage or displacement (which would weaken or sever the joint), as for example when cases bound with these metal strappings are being piled one on another, and secondly to provide a joint in which the tongues are so placed that they cannot injure the person handling the strapped case or bale, nor are liable to injure or scratch any other object coming in contact therewith.

The method of joining the ends of metal strappings according to the present invention consists in laying one end of the strap over the other end, ridging the overlapping portions of the strap and forming tongues in one overlapping portion which engage in slots in the other overlapping portion and lie in a position where they are below the upper level of the ridged portion.

In the preferred form the overlapping portions are ridged longitudinally and tongues formed in the upper overlapping part engage in slots in the lower overlapping part and lie beneath the ridged overlapping portions of the strip.

The tongues may be formed in the ridged part itself and arranged to lie, in the finished joint, between the underside of the ridged portion and the plane containing the longitudinal edges of the overlapping ends so that they do not contact with and damage the surface of the strapped case or bale, and furthermore, with this arrangement, displacement of the strapping on the case cannot bend or break the tongues.

In another aspect therefore the method of joining the ends of metal strappings for cases, bales and the like according to the invention consists in ridging longitudinally overlapping portions of the strap and forming in the ridged portion tongues in one end of the strap which engage in slots in the other end of the strap and lie between the underside of the ridged portion and the plane in which lie the longitudinal edges of the overlapping ends.

The invention further consists in the improved metal strappings, the ends of which are joined by the methods described above.

Two embodiments of the invention are illustrated by way of example in the accompanying drawing, in which

Fig. 1 is a plan view of a finished joint,

Fig. 2 is a view in cross section on the line 2—2 of Fig. 1 and on an enlarged scale,

Fig. 3 is a plan view of a finished joint of an alternative form, and

Fig. 4 is a sectional view on an enlarged scale and on the line 4—4 of Fig. 3.

Referring to the drawing a strapping having been disposed about a case or bale (not shown) the two ends 1 and 2 are overlapped and the strapping tensioned by any known or suitable means. Thereupon the overlapped parts 1 and 2 or the greater parts thereof are ridged or domed longitudinally as for example by bending approximately about lines 3 and 3' by means of suitable dies. The bending or ridging is carried out so that the extremities 1' and 2' of the strap ends 1 and 2 remain in close contact with the adjacent portions of the strap. To form the joint illustrated in Figs. 1 and 2 there are then formed on both sides of the ridged part 3 itself as by means of suitable punches and dies, tongues 4 in the upper strap end 2 and slots 5 in the lower strap end 1 and the tongues 4 are forced through the slots 5. The tongues 4 on each side of the ridge 3 are bent or rolled slightly inward and upward as clearly shown in Fig. 2, so that the overlapped ends 1 and 2 can neither be withdrawn from one another in a direction normal to the strapping nor be displaced laterally nor longitudinally with regard to one another. The tongues 4 and slots 5 on one side of the ridge 3 alternate with the tongues 4 and slots 5 on the other side of the ridge, so that a staggered row of tongues and slots is formed. In the case illustrated the slots 5 are formed by turning down tongues 6 from the material forming the lower strap end 1 and these tongues 6 are also bent or rolled behind the tongues 4 of the upper strap end.

When the joint is completed the longitudinal edges of the joined ends 1 and 2, as also the remainder of the strapping, will lie close to the surface 7 of the strapped case or bale, and the downwardly projecting tongues 4 and 6 are housed in the space 8 beneath the ridged or domed overlapping end, so that they neither

damage the surface 7 of the case or bale, nor do they engage therewith, so that displacement of the strapping on the case cannot bend or break the tongues 4. At the same time the joint presents no upstanding portion which can be injured by the stacking or moving of other cases on top of the joint.

In making the joint according to Figs. 3 and 4, the ends 1 and 2 of the strapping are overlapped, the strap tensioned and the overlapped ends ridged or domed longitudinally as in the previously described example. Thereafter, by means of suitable punches or dies, tongues 9 are formed in the edges of the upper strap end 2 and slots 10 in the edges of the lower strap end 1, these tongues and slots being arranged at convenient intervals.

The tongues 9 are bent or rolled downwardly through the slots 10 and inwardly as clearly shown in Fig. 4, where their ends lie beneath the ridged or domed strap ends and in this position relative movement between the strap ends 1 and 2 in any direction is made impossible. Here again the slots in the lower strap end are formed by bending down tongues from the material of the lower strap end 1 and these tongues shown at 11 in the finished joint lie behind the tongues 9. Here again it is to be observed that the tongues are above the plane containing the longitudinal edges of the strap ends 1 and 2. It is however to be understood that the tongues may project slightly below this plane where there is no objection to the tongues contacting with the surface of the strapped case or bale.

A further advantage arising from longitudinal ridging of the jointed portion of the strapping is that the upper, outer strap end 2' is stiffened so that there is no danger of its being turned upwards in the course of the bale being handled and thus constituting a possible source of injury to persons handling the bale. In other words, the end 2' of the outer strap end is bent downwardly from the level of the top of the ridge or dome 3 to the level of the adjacent flat portion of the strap 1. This downward bending, when taken in conjunction with the ridge, produces an end shaped somewhat like a fingernail and is exceedingly stiff and resistant to upward bending. Moreover, as the free end 2' has no sharp corners or projections, it may be readily handled without danger of injury to the hand.

I claim:

1. Joint for flat metal strapping, comprising two ridged overlapping strap ends, one of which is slotted whilst the other has tongues formed therein engaged in the slots with the edges of the tongues abutting the edges of the slots and with said tongues disposed below the upper level of the ridge.

2. Joint for flat metal strapping, comprising two ridged overlapping strap ends, one of which is slotted between its longitudinal edges whilst the other has tongues formed between its longitudinal edges, engaged in the slots with the edges of the tongues abutting the edges of the slots and with said tongues disposed below the upper level of the ridge.

3. Joint for flat metal strapping, comprising two ridged overlapping strap ends, one of which is slotted in the longitudinal edges thereof whilst the other has tongues formed on its longitudinal edges, engaged in the slots with the edges of the tongues abutting the edges of the slots and with said tongues disposed below the upper level of this ridge.

4. Joint for flat metal strapping, comprising two longitudinally ridged overlapping ends, one of which is slotted on each side of and close to the axis of the ridge, whilst the other has tongues formed on each side of and close to the axis of the ridge, engaged in the slots with the edges of the tongues abutting the edges of the slots and with said tongues disposed below the upper level of the ridge.

5. Joint for flat metal strapping, comprising two longitudinally ridged overlapping ends, the lower of which is slotted, whilst the upper has tongues formed therein, said tongues extending downwards through the slots with the edges of the tongues abutting the edges of the slots and with said tongues disposed in the space between the ridge and the plane containing the longitudinal edges of the overlapping ends.

6. Joint for flat metal strapping, comprising two longitudinally ridged overlapping strap ends, the summit of the ridge being straight for the greater part, and the upper end terminating in a portion shaped so that all parts of the surface thereof are inclined to the plane containing the adjacent flat portion of the strip, while the edges of the overlapped portions including said shaped portion lie substantially in that plane, and means connecting said ridged overlapping ends and disposed below the upper level of the ridge.

7. Joint for flat metal strapping, comprising two longitudinally ridged overlapping strap ends, the summit of the ridge being straight for the greater part, and the longitudinal edges of the overlapping parts being parallel to the ridge throughout substantially the whole length of the ridged portion, the upper strap end terminating in a portion shaped so that all parts of the surface thereof are inclined to the plane containing the adjacent flat portion of the strap, while the edges of the overlapped portions including said shaped portion lie substantially in that plane and means connecting said ridged overlapping ends and disposed below the upper level of the ridge.

8. Joint for flat metal strapping, comprising two longitudinally ridged overlapping strap ends, the summit of the ridge being straight for the greater part and the parts of the overlapping ends on each side of the ridges being disposed in planes which meet at an obtuse angle at the ridge, the upper of said overlapping ends terminating in a portion shaped so that all parts of the surface thereof are inclined to the plane containing the adjacent flat portion of the strap, while the edges of the overlapped portions including said shaped portion lie substantially in that plane, and means connecting said ridged overlapping ends and disposed below the upper level of the ridge.

9. Joint for flat metal strapping, comprising two longitudinally ridged overlapping strap ends of uniform width throughout substantially their whole length, the summit of the ridge being straight for the greater part, the edges of which overlapping ends lie substantially in the plane of the adjacent flat parts of the strap and the parts bounded by said edges lie wholly above the plane containing the adjacent flat portion of the strap and means connecting said ridged overlapping ends and disposed below the upper level of the ridge.

10. Joint for flat metal strapping, comprising two longitudinally ridged overlapping strap ends, the summit of the ridge being straight for the greater part and the edges of the overlapping portions lying substantially in the plane containing the adjacent flat portion of the strap, and

the upper overlapping end terminating at each end in a portion which extends at an inclination from the summit of the ridge to the plane containing the adjacent flat parts of the strap and at the free end makes edge contact with the adjacent flat portion of the strap and means connecting said ridged overlapping ends and disposed below the upper level of the ridge.

11. Joint for flat metal strapping comprising two longitudinally ridged overlapping strap ends, the upper end of which terminates in a portion shaped so that all parts of the surface thereof are inclined to the plane containing the adjacent flat portion of the strap and the edge of said shaped portion lies substantially in that plane, one of said overlapping ends being slotted and the other having tongues formed therein engaged in the slots and disposed below the upper level of the ridge.

12. Joint for flat metal strapping comprising two longitudinally ridged overlapping strap ends, the upper end of which terminates in a portion shaped so that all parts of the surface thereof are inclined to the plane containing the adjacent flat portion of the strap and the edge of said shaped portion lies substantially in that plane, one of said overlapping ends being slotted between its longitudinal edges whilst the other has tongues formed between its longitudinal edges engaged in the slots and disposed below the upper level of the ridge.

13. Joint for flat metal strapping comprising two longitudinally ridged overlapping strap ends, the upper end of which terminates in a portion shaped so that all parts of the surface thereof are inclined to the plane containing the adjacent flat portion of the strap and the edge of said shaped portion lies substantially in that plane, one of said overlapping ends being slotted in the longitudinal edges thereof whilst the other has tongues formed on its longitudinal edges engaged in the slots and disposed below the upper level of this ridge.

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