

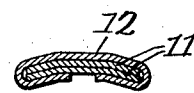
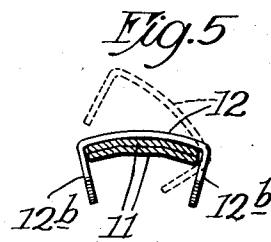
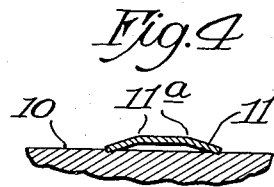
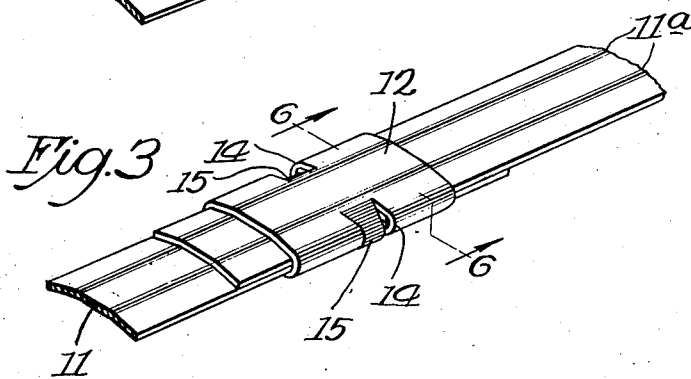
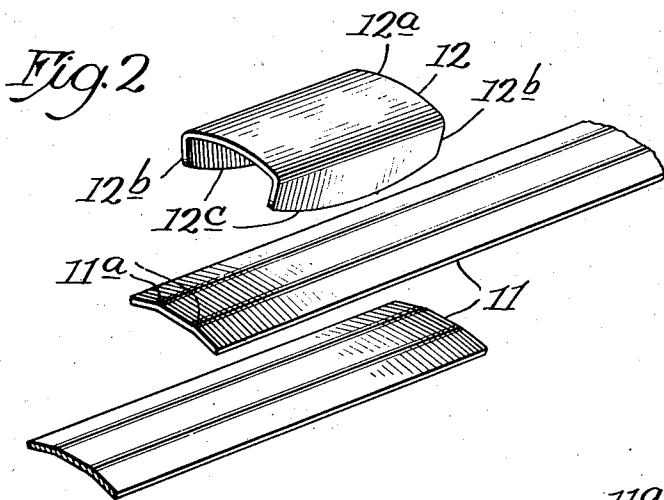
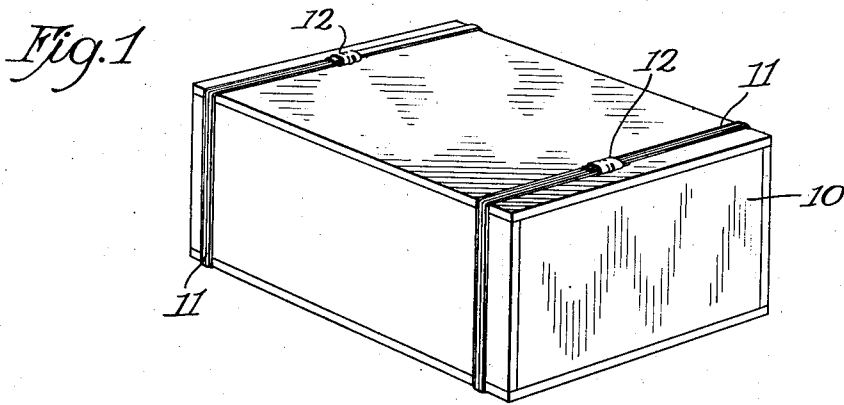
Feb. 12, 1935.

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1,991,215

STRAP SEAL

Filed Jan. 29, 1934



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UNITED STATES PATENT OFFICE

1,991,215

STRAP SEAL

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Application January 29, 1934, Serial No. 708,803

7 Claims. (Cl. 24—23)

This invention relates to improvements in strap seals adapted for use in uniting the overlapping ends of steel straps and the like, such as are employed for reenforcing boxes or packages or for binding a group of articles together. For several years it has been the common practice in this art to unite the overlapping ends of such reenforcing or binding straps by means of seals which embrace the overlapping strap ends and which are operated upon by a suitable sealing tool to cause the seal and the strap ends to be deformed to form an interlocking joint, as, for example, by shearing the lateral edges of the strap and seal at a plurality of points and laterally deflecting the intervening portions of the metal. It is sometimes desirable to employ steel strapping having a generally curved cross-section, transversely of the length of the strap, so that when it is placed around a box or package and drawn taut, the surface of the strap is convexed outwardly with respect to the surface of the box and the lateral edges of the strap tend to bite into the wood or other material of which the box is formed, so that there is little tendency for the strap to be accidentally removed or to catch upon surrounding objects during the movement of the box or package. The seals which are preferably employed are in the form of open channels which may be placed over the overlapping strap ends with the side walls of the channel extending downwardly, thus permitting a sealing tool to be brought into position over the seal and the strap ends, preliminary to actuating the sealing tool to cause it to bend the side walls of the seal into contact with the under surface of the lowermost strap end and to effect the deformation of the seal and strap end which is required to form an interlocking joint. When the reenforcing strap has a curved cross section transversely of its length, for the purpose indicated above, it is found that it is difficult to maintain an open seal in position on the overlapping strap end during the operation of bringing a sealing tool into place and it is the principal purpose of the present invention to overcome this difficulty.

The principal object of the present invention is to provide an open, metallic channel-shaped seal having side walls adapted to extend on opposite sides of the overlapping ends of a reenforcing strap and having a back wall which is constructed to conform substantially to the contour of the uppermost strap end, so that the seal readily maintains itself in position during the operation of bringing a sealing tool into engagement with the seal and during the subsequent operation of

forming the interlocking joint by the deformation of the seal and strap. Another object of the present invention is to provide an improved metallic seal of channel form having side walls connected by a back wall having a transverse, outwardly convex curvature to conform substantially to the curvature of a binding strap to which it may be applied. Other objects of the invention relate to various features of construction and arrangement which will appear more fully hereinafter.

The nature of the invention will be understood from the following specification taken with the accompanying drawing in which one embodiment is illustrated.

In the accompanying drawing,

Figure 1 is a perspective view of a box reenforced by two steel straps which are drawn taut along the end portions of the box and which have overlapping ends united by means of metallic seals embodying the features of the present invention.

Fig. 2 is a perspective view, on an enlarged scale, of the overlapping strap ends and the open channel-shaped seal of the present invention before it is applied thereto;

Fig. 3 is a perspective view of the overlapping strap ends after the seal illustrated in Fig. 2 has been bent into close engagement with the surfaces of the strap and after the lateral edges of the strap and seal have been sheared and deflected to form an interlocking joint;

Fig. 4 shows a vertical section through a portion of the surface of the box illustrated in Fig. 1, showing the transverse curvature of the strap which causes the lateral edges thereof to engage closely the box surface;

Fig. 5 shows a transverse section through the overlapping strap ends with the channel-shaped seal of the present invention applied thereto in readiness to receive the embracing portions of a sealing tool; and

Fig. 6 shows a transverse section through the completed joint on the line 6—6 of Fig. 3.

In Fig. 1 of the drawing there is shown a box having two strip steel binding straps 11 passed around the end portions thereof with their ends overlapping and united with each other by means of seals 12. The straps 11 are of curved cross section as shown in Fig. 4, so that they have a transverse curvature away from the surface of the box with a corresponding tendency of the lateral edges of the straps to bite into the wood or other material of the box when the straps are drawn taut preliminary to the application of the

seals 12 thereto. In the embodiment illustrated the straps, instead of having a smooth continuous transverse curvature, are made up of parallel longitudinal portions which are angularly disposed, thus providing longitudinal ribs or apices 11^a which give additional stiffness to the strap. The improved seal 12 of the present invention has the form illustrated particularly in Figs. 2 and 5, being constructed as an open channel-shaped member, comprising a back wall 12^a and a pair of side walls or flanges 12^b which are themselves longitudinally curved along their lower edges as shown at 12^c, and which preferably converge downwardly from the back wall. The back wall 12^a of the seal is curved transversely between the side walls or flanges 12^b, the curvature being the same as the transverse curvature of the strap 11, so that when the ends of the strap are overlapped and the open seal is placed thereon, as shown in Fig. 5, the seal conforms more or less closely to the curvature of the uppermost strap end, depending upon the smoothness of the curvature of the strap, and the side walls or flanges 12^b extend downwardly and inwardly in proximity to the lateral edges of the strap ends, thus causing the seal to be maintained in place while the sealing tool is brought into position over the seal, preliminary to the actuation of the tool to effect the required bending and deformation of the seal and the strap ends to form the interlocking sealed joint shown in Fig. 3. Where the side walls of the seal converge downwardly, to assist in holding the seal in place, the seal may be placed on the strap ends by first placing it in the position shown by dotted lines in Fig. 5 and then tilting it downwardly to the position shown by full lines.

The sealing tool which is employed in forming this interlocking joint may be of the form described and claimed in the United States patent of Messrs. MacChesney and Ott, No. 1,730,669, dated October 8, 1929. When such a tool is operated, after being brought into position over the seal and the strap ends, the side walls 12^b of the seal are first bent under the strap ends and into close engagement with the lower surface of the lowermost strap end, after which the continued actuation of the tool causes the lateral edges of the seal and strap to be sheared transversely as shown at 14 with the intermediate portions 15 of the seal and strap deflected laterally so that the overlapping portions of the seal and strap interlock with each other along shoulders which extend transversely of the strap. The parts of the sealing tool which engage the seal and strap are, preferably, curved transversely to conform to the

transverse curvature of the strap and the back wall of the seal and the resulting sealed joint is of the form described and claimed in the United States patent of Ralph H. Norton, No. 1,260,016 dated March 19, 1918. The completed joint made according to the present invention has, however, a transverse curvature corresponding to the initial transverse curvature of the strap and seal, as shown in Fig. 6.

Although one form of the invention has been shown and described by way of illustration, it will be understood that it may be constructed in various other forms coming within the scope of the appended claims.

I claim:

1. A strap seal adapted to engage overlapping strap ends, comprising a channel-shaped member having a back wall of the same width as said strap ends and connected side walls, said back wall being transversely curved between said side walls.

2. A strap seal adapted to engage overlapping strap ends, comprising a channel-shaped member having a back wall of the same width as said strap ends and connected side walls, said back wall being transversely curved between said side walls, said side walls converging away from said back wall.

3. A strap seal for uniting overlapping strap ends comprising a metallic member of channel form having a back wall provided with an outwardly convex curvature throughout its width.

4. A strap seal for uniting overlapping strap ends comprising a metallic member of channel form having a back wall provided with an outwardly convex curvature and having side walls converging away from said back wall, each of said side walls lying entirely in one plane.

5. A strap seal for uniting overlapping strap ends comprising a channel-shaped member having depending side walls which are united with a back wall having an outwardly convex transverse curvature throughout its width.

6. The combination with overlapping strap ends which are transversely curved, of a channel-shaped strap seal having a wall which is transversely curved to conform to the curvature of said strap ends.

7. The combination with overlapping strap ends having a transverse curvature, of a channel-shaped seal comprising a back wall curved transversely to conform to the curvature of said strap ends and side walls depending in proximity to the lateral edges of said strap ends.

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