Oct. 6, 1931. E. C. PAGEL 1,826,018

SEAL

Filed July 7, 1930

Fig. 1.

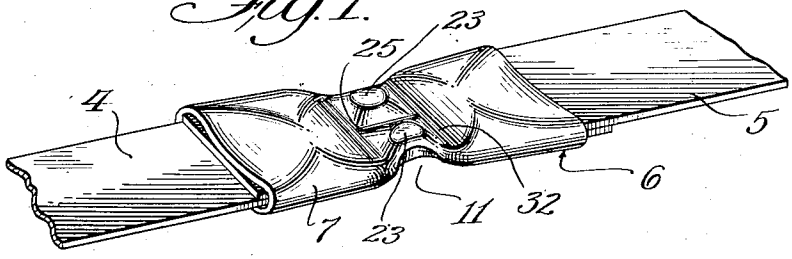


Fig. 2.

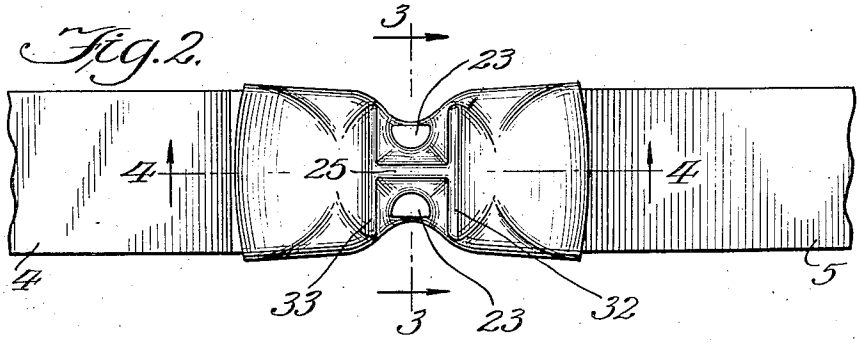


Fig. 3.

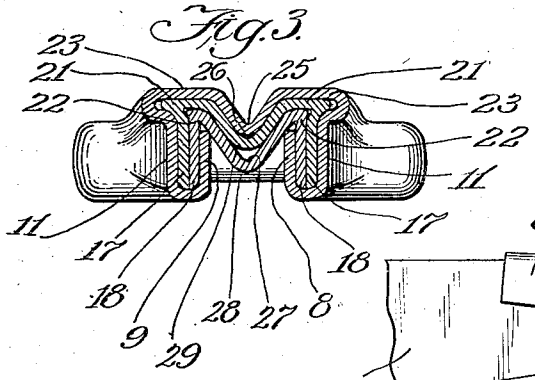


Fig. 5.

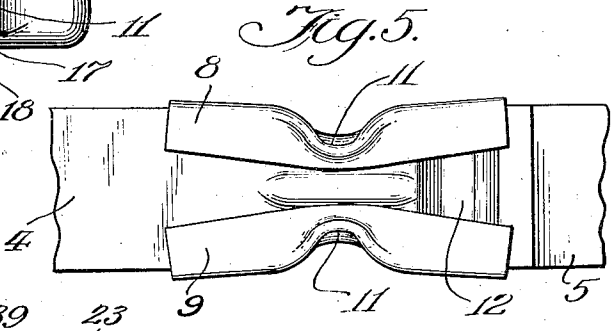
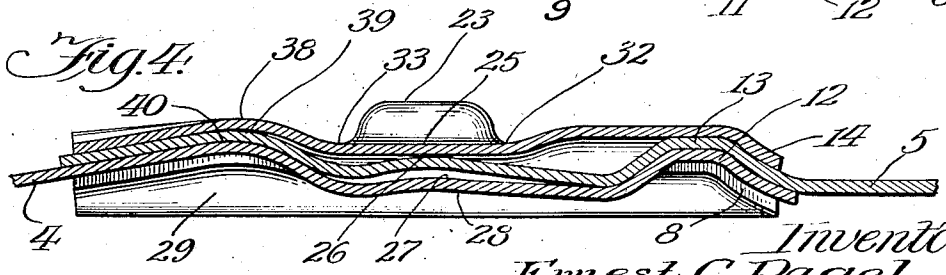


Fig. 4.



Inventor

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Attys.

Patented Oct. 6, 1931 1,826,018

UNITED STATES PATENT OFFICE

ERNEST C. PAGEL, OF CHICAGO, ILLINOIS, ASSIGNOR TO SIGNODE STEEL STRAPPING COMPANY, OF CHICAGO, ILLINOIS, A CORPORATION OF DELAWARE

SEAL

Application filed July 7, 1930. Serial No. 466,054.

This invention relates to improvements in seals, and more particularly seals for securing together the overlapped ends of metal straps or bands such as are used in the binding of boxes, bales, packages and the like.

The present seal is an improvement over the seal disclosed in the Flora Patent No. 1,252,680, granted January 8, 1918.

An object of my invention is the provision of an improved seal of the type specified, which is so formed as to greatly increase its tensile strength. I have accomplished this object by making certain additional deformations conjointly in the sleeve and in the overlapped ends, and in such positions with respect to the marginal deformations that the parts are caused to firmly interlock and prevent relative longitudinal movement.

In the formation of my improved seal I make marginal deformations in the parts to be sealed together and simultaneously form interlocking shoulders on the seal by making crosswise deformations therein, the shoulders being forced up between the depressions by the marginal deforming pressure. I may further strengthen the seal by making a longitudinal depression in the top of the seal between the crosswise depressions.

In the accompanying drawings illustrating one specific embodiment of my invention,

Figure 1 is a perspective view of an improved seal made in accordance with my invention;

Figure 2 is a plan view of the seal shown in Figure 1;

Figure 3 is a section taken on the line 3—3 of Figure 2;

Figure 4 is a section taken on the line 4—4 of Figure 2; and

Figure 5 is a bottom plan of the seal shown in Figure 2.

The seal, indicated as a whole by numeral 6, comprises the overlapped strap ends 4 and 5 on which is fitted a sleeve 7 having return bent flanges 8 and 9 thereon, which initially extend inwardly in a plane parallel with the top of the sleeve but which are forced into a substantially vertical position at the central portion of the seal when the marginal deformations 11 are made in the sleeve. The strap ends 4 and 5 are preferably provided with interlocking raised portions 12 and 13 illustrated in Figures 4 and 5, which portions aid in restraining the strap ends from relative longitudinal movement while the seal is being formed. They also serve this function to some extent after the completion of the seal owing to the fact that the end 14 of the sleeve, together with the flange 8, securely embraces the portions 12 and 13 and holds them in their initial position.

The deformations 11 made in the margins of the seal cause the edges 17 and 18 of the strap to bend downwardly as shown in Figure 3, and force the intermediate portions 21 and 22 upwardly into shoulders and within the shoulders 23 of the sleeve. Between the shoulders 21, 22 and 23 the sleeve and the strapping are conjointly deformed, forming the depression 25 in the sleeve and depressions 26 and 27 in the strapping. These latter deformations produce the downwardly extending ridges 28 and 29 on the strapping, which securely hold the central portions of the flanges 8 and 9 in their substantially vertical position and very substantially strengthens the tensional resistance of the seal.

At opposite sides of the marginal deformations 11 and at opposite ends of the longitudinal deformation 25 I form crosswise deformations 32 and 33 which, together with the longitudinal deformation 25 produce an H-shaped depression. Between the parallel deformations 32 and 33 the marginal deformations 11 are formed, causing the elements of the seal to firmly interlock in the manner shown in Figure 3. The crosswise deformations 32 and 33 also produce interlocking shoulders 38, 39 and 40 longitudinally spaced from the crosswise deformations which materially strengthen the seal. Although the parts as indicated in Figure 4 do not appear to be extremely well interlocked at the exact center of the seal, it will be readily understood from an examination of Figures 3 and 5 that at both sides of the center the elements of the seal are formed into very firmly interlocking shoulders by the various deformations formed therein, and

more particularly because of the specific relative positions of the various deformations. It has been proven from extensive experiment that a seal made in accordance with this invention has a tensional strength equal to that of any other portion of the band or strap.

Although I have shown and described only one specific embodiment of my invention, it will be understood by those skilled in the art that modifications may be devised for accomplishing the objects of this invention without departing from the spirit thereof, and I desire to avail myself of such modifications as come within the scope of the appended claims.

I claim as my invention.

1. A tension resisting joint for package strapping comprising in combination, the portions of the strapping to be joined, and a sealing sleeve embracing said strapping and comprising two flanges in which crimped deformations are made, such that the inner edges of said flanges at the center extend substantially vertically, the portion of the strapping between the vertical portions of said flanges being crimped downwardly by a longitudinal deformation.

2. A tension resisting joint for package strapping comprising in combination, the portion of the strapping to be joined, and a sealing sleeve embracing said strapping and comprising two flanges in which crimped deformations are made, such that the inner edges of said flanges at the center extend substantially vertically, the portion of the strapping between the vertical portions of said flanges being crimped downwardly by a longitudinal deformation, the top of said sleeve having parallel crosswise deformations adjacent the crimped deformations.

3. A tension resisting joint for box strapping comprising in combination, portions of the strap to be joined, and a reinforcing member embracing said strap, the reinforcing member and the strap portions having interlocking tension resisting engagement formed by conjoint marginal deformations, and intersecting conjoint deformations on the top adjacent the marginal deformations.

4. A tension resisting joint for box strapping comprising in combination, portions of the strap to be joined, and a reinforcing member embracing said strap, the reinforcing member and the strap portions having interlocking tension resisting engagement formed by conjoint marginal deformations, and a conjoint longitudinal deformation between the marginal deformations.

5. A tension resisting joint for box strapping comprising in combination, portions of the strap to be joined, and a reinforcing member embracing said strap, the reinforcing member and the strap portions having interlocking tension resisting engagement formed by conjoint marginal deformations and crosswise conjoint deformations on the top adjacent the marginal deformations, and there being a longitudinal deformation extending between the crosswise deformations.

6. A tension resisting joint for package strapping comprising in combination, the portion of the strapping to be joined, and a sealing sleeve embracing said strapping and comprising two flanges in which crimped deformations are made, such that the inner edges of said flanges at the center extend substantially vertically, the portion of the strapping between the vertical portions of said flanges being crimped downwardly by a longitudinal deformation, said portions of strapping having interlocking crosswise raised portions adjacent one end of the sleeve.

7. A tension resisting joint for package strapping comprising in combination, the portions of the strapping to be joined, and a sealing sleeve embracing said strapping and comprising two flanges in which crimped deformations are made, such that the inner edges of said flanges at the center extend substantially vertically, the portion of the strapping between the vertical portions of said flanges being crimped downwardly by a longitudinal deformation, the top of said sleeve having parallel crosswise deformations adjacent the crimped deformations, said portions of strapping having interlocking crosswise raised portions adjacent one end of the sleeve.

8. A tension resisting joint for overlapping metal strap ends comprising in combination, the ends of the strap to be joined, and a reinforcing sleeve embracing said overlapped ends, said ends having crosswise raised interlocking portions adjacent one end of the sleeve, and there being intersecting conjoint deformations in the top of the sleeve.

9. A tension resisting joint for overlapping metal strap ends comprising in combination, the ends of the strap to be joined, and a reinforcing sleeve embracing said overlapped ends, said ends having crosswise raised interlocking portions adjacent one end of the sleeve, and there being longitudinal conjoint deformations in the top of the sleeve.

10. A tension resisting joint for overlapping metal strap ends comprising in combination, the ends of the strap to be joined, and a reinforcing sleeve embracing said overlapped ends, said ends having crosswise raised interlocking portions adjacent one end of the sleeve, and there being conjoint H-shaped deformations substantially centrally of said sleeve and strap ends.

11. A tension resisting joint for overlapping metal strap ends comprising in combination, the ends of the strap to be joined, and a reinforcing sleeve embracing said overlapped ends, said ends having crosswise raised interlocking portions adjacent one end of the

sleeve, and there being conjoint H-shaped deformations substantially centrally of said sleeve and strap ends, and marginal deformations in said sleeve and strap ends, adjacent the parallel portions of the H-shaped deformations.

12. A tension resisting joint for package strapping comprising in combination, the portion of the strapping to be joined, and a sealing sleeve embracing said strapping and comprising two flanges in which crimped deformations are made, such that the inner edges of said flanges at the center extend substantially vertically, the portion of the strapping between the vertical portions of said flanges being crimped downwardly by a longitudinal deformation, there being a conjoint substantially H-shaped deformation in the top of the sleeve and strap ends, to interlock them against tensional stress.

In witness whereof, I hereunto subscribe my name this 1st day of July, 1930.

ERNEST C. PAGEL.