Sept. 8, 1936. F. P. PRINDLE 2,053,739

SEAL FOR METAL STRAPS

Filed Oct. 6, 1934

Fig. 1

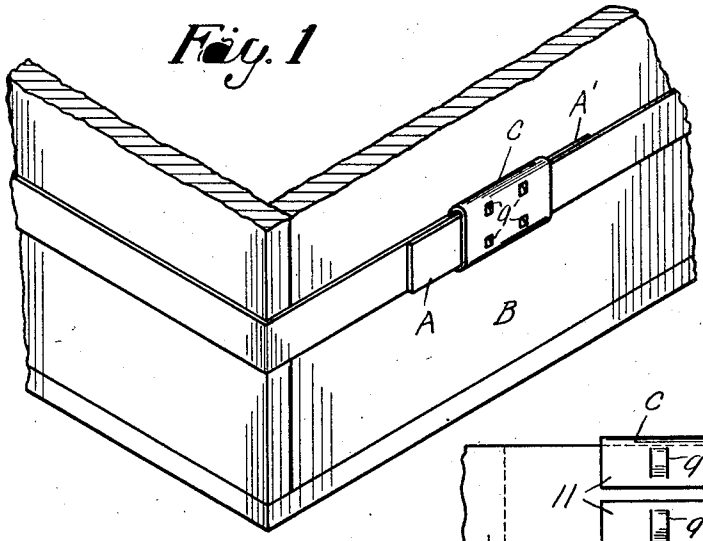


Fig. 2a

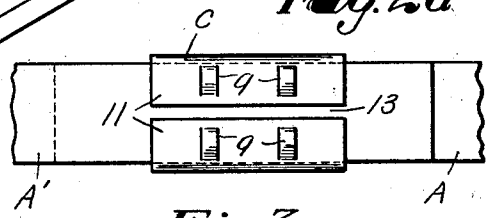


Fig. 2

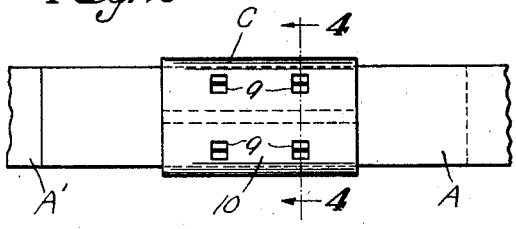


Fig. 3



Fig. 4

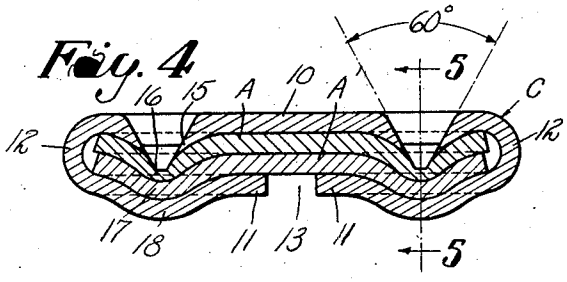


Fig. 5

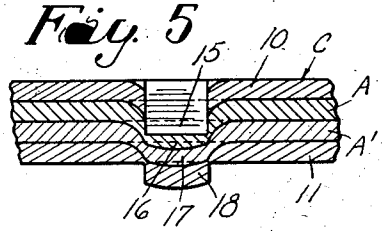


Fig. 6

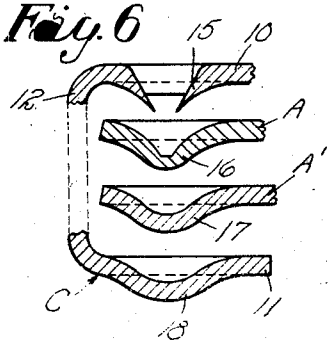
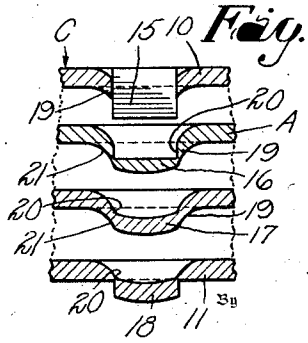


Fig. 7



Inventor

Frank P. Prindle

H. Clay Lindsay.

Attorney

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SEAL FOR METAL STRAPS

Frank P. Prindle, New Britain, Conn., assignor to The Stanley Works, New Britain, Conn., a corporation of Connecticut

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3 Claims. (Cl. 24—23)

The present invention relates to seals for securing together the ends of metal straps such, for example, as are applied to boxes, and has particular reference to a seal of the type having a sleeve about the overlapped strap ends, the sleeve and the interposed strap ends being deformed so as to interlock the same.

The aim of the invention is to provide an improved seal of this sort which has a very high degree of efficiency in that the strap ends are very securely held together thereby and substantially the full strength of the strap at the seal is retained. More particularly, in accordance with the present invention, I provide an improved seal arrangement wherein the interlocks between the strap ends and sleeve are so constructed and positioned as to produce a joint having a holding power which closely approximates the tensile strength of the strap itself without materially weakening the strap.

A further aim of the invention is to provide an improved joint having the above and other advantages and which may be very readily formed with small effort as compared with the increased holding power of the joint.

Other objects will be in part obvious, and in part pointed out more in detail hereinafter.

The invention accordingly consists in the features of construction, combination of elements and arrangement of parts which will be exemplified in the construction hereinafter set forth and the scope of the application of which will be indicated in the appended claims.

In the accompanying drawing, wherein I have shown one embodiment which the present invention may take,

Fig. 1 is a perspective view of a portion of a shipping box to which a strap is applied, the ends of the strap being secured together by my improved seal;

Fig. 2 is a top or front view of the seal;

Fig. 2*a* is a bottom or rear view of the seal;

Fig. 3 is an edge view thereof;

Fig. 4 is a transverse section through the seal, this view being taken substantially on line 4—4 of Fig. 2;

Fig. 5 is a longitudinal sectional view through a portion of the seal, this view being taken substantially on line 5—5 of Fig. 4;

Fig. 6 is a view similar to Fig. 4 but showing the parts spaced apart; and

Fig. 7 is a like view taken on the same section as is Fig. 5.

Referring to the drawing in detail, A and A' designate generally the ends of a metal strap such, for example, as may be applied to a shipping box B. C designates the sleeve enclosing the overlapped strap ends. The strap, as is usual, comprises a strip of thin, flat metal of high tensile strength. The sealing member C is constructed of a piece of metal bent to form a flat sleeve or tube of such size and shape as to more or less closely receive the overlapping strap ends. The sleeve has a front or base wall 10; a rear wall formed by the flanges 11, and marginal edge or connecting portions 12. The rear wall is longitudinally split along its medial line, as at 13.

In accordance with the present invention, the seal is provided, to each side of its medial longitudinal line and adjacent, but spaced inwardly from, each side edge of the sleeve, with a plurality of deformations 9 spaced apart longitudinally of the sleeve. In the present instance, two such deformations are shown adjacent each side edge of the sleeve, but obviously the number thereof may be varied to suit requirements. Each deformation comprises a series of registering and interlocking humps or indentations formed in the front and rear walls of the seal and the intervening strap ends, the humps being relatively narrow in width and relatively short in length, and extending transversely of the sleeve. These indentations may be formed by means of a tool having for each indentation a wedge-shaped male die and a complementary female die.

In the particular embodiment of the invention illustrated, each deformation comprises a series of indentations or nested humps 15, 16, 17, and 18 respectively provided in the front wall of the sleeve, the front strap end, the rear strap end, and the rear wall of the sleeve. The humps are relatively narrow in width, the width of the humps preferably being no greater than the thickness of the seal. The humps start adjacent the side edges of the strap ends and terminate short of the split 13. The humps 16, 17, and 18 are unbroken. The first indentation 15 is broken at its central portion due to the fact that the metal of the base plate 10 of the sleeve is drawn out by the male die to a greater extent than the metal of the succeeding layers. Each hump has, at each side, a side wall 19 extending generally transversely with respect to the length of the sleeve and disposed at an angle to the plane of the member of which it forms a part, so that each hump has internal side shoulders 20 and external side shoulders 21. By preference, each hump has as its central portion a height at least as great as the thickness of the strap ends. Each hump projects into the recess provided by the next suc-

ceeding hump, and the external shoulders 21 of each hump are in engagement with the internal shoulders 20 of the next succeeding hump. The triangular recess within each series of humps is substantially as deep as the thickness of the sleeve, and the inclined walls of this recess are at substantially 60° relatively to one another.

There is thus provided a plurality of deformations each comprising a series of humps, adjacent humps having transversely extending, interengaging, and interlocking shoulders which prevents separation of the strap ends when a pulling or stretching force is exerted on the strap. With the arrangement described, a joint of maximum holding is obtained, while at the same time the extent to which the strap ends are slit or deformed and, therefore, weakened, is maintained at a minimum consistent with the requirement that the strap ends be securely held against being pulled apart. I have found that a seal of increased efficiency may be very easily and readily made by providing the deformations of the character described of relatively narrow width and of relatively short length, it being apparent with this arrangement the strain is distributed over a plurality of localities, weakening of the strap ends or the sleeve at any particular point is reduced to a minimum, and splitting or deforming the edges of the strap or seal is avoided.

As many changes could be made in the above construction and many apparently widely different embodiments of this invention could be made without departing from the scope thereof, it is intended that all matter contained in the above description or shown in the accompanying drawing shall be interpreted as illustrative and not in a limiting sense.

It is also to be understood that the language used in the following claims is intended to cover all of the generic and specific features of the invention herein described and all statements of the scope of the invention which, as a matter of language, might be said to fall therebetween.

I claim as my invention:

1. A seal for metal straps comprising, overlapping strap ends and a flat metal sleeve encircling the same, said seal having at each side and within but adjacent to the margin of said sleeve a plurality of depressed deformations spaced apart longitudinally of the sleeve, each deformation comprising a series of nested, generally arch-shaped, narrow humps extending transversely of the sleeve and having side walls providing transversely extending internal and external shoulders, each hump extending into the recess of the next succeeding one and having the entire extent of its external shoulders in abutting engagement with the respective internal shoulders of said succeeding one, and the recess within each deformation having a width no greater than the thickness of the sleeve and having a depth substantially equal to the thickness of the seal.

2. A seal for metal straps comprising overlapping strap ends and a flat metal sleeve encircling the same, said sleeve having a base wall, marginal portions, and a rear wall divided on its longitudinal medial line, said seal having, between each marginal portion and the longitudinal medial line of the sleeve, a plurality of longitudinally spaced apart narrow arch-shaped deformations with V-shaped recesses having their side walls disposed generally at right angles to the plane of the sleeve, each deformation comprising a series of interlocking nested humps extending transversely of the sleeve, and each hump having an arched wall and a side wall at each side providing internal and external transversely extending shoulders, said external shoulders of one hump abutting throughout their entire extents with the respective internal shoulders of the next hump, whereby the humps will lie in mating interlocked engagement throughout their entire contours and the strap ends will be rigidly secured together.

3. A seal for metal straps comprising overlapping strap ends and a flat metal sleeve encircling the same, said seal having, at each side and between each marginal portion and the longitudinal medial line of the sleeve, a plurality of longitudinally spaced apart narrow arch-shaped imperforate deformations, each deformation comprising a series of nested humps extending transversely of the sleeve and each hump having an arched transversely extending wall providing transversely extending shoulders disposed at an angle to the plane of the sleeve, each deformation having a wedge-shaped recess therein of a width no greater than the thickness of the sleeve and having internal and external transverse side faces disposed substantially at right angles to the plane of the sleeve whereby the internal and external faces of adjacent nested humps will lie in respective abutting engagement throughout their entire extents.

FRANK P. PRINDLE.