

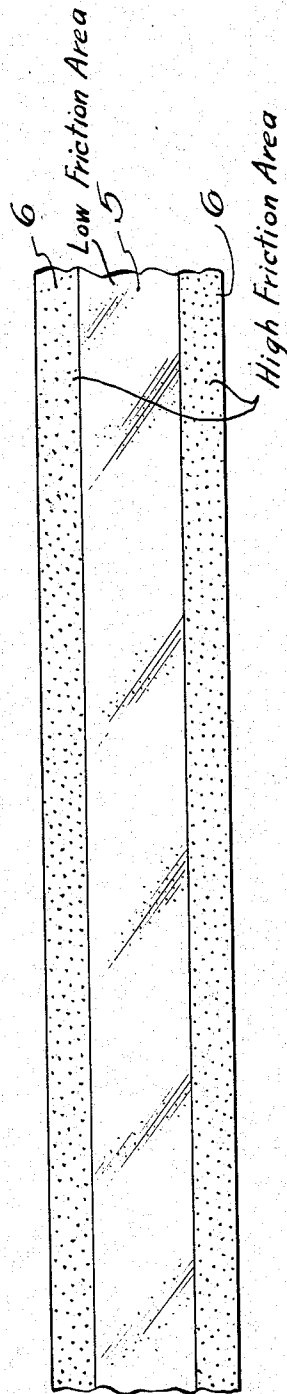
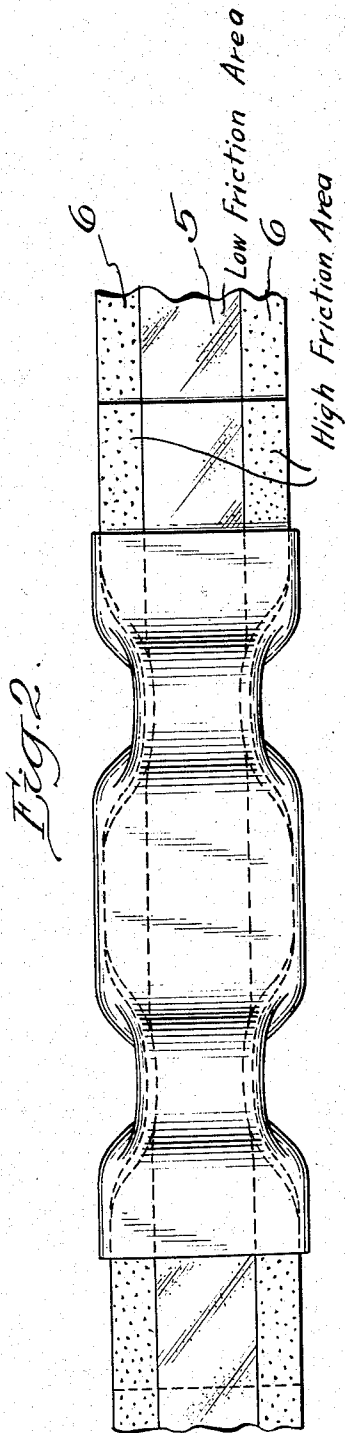
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METALLIC PACKAGE-BINDER STRAP

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METALLIC PACKAGE-BINDER STRAP

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My invention relates to metallic package-binder strap such as used for binding individual packages and for binding groups of packages into units—the results attained being security, reinforcement, ease of handling and reduction in damage incident to shipment.

Ordinarily the binders are looped around and tensioned upon the package or group of packages and then overlapping portions are securely joined and sealed together to render the encircling loop permanent. Since the tension is usually applied by a tool located at one side of a package or group of packages it is important, particularly if the packages are sharp-cornered, that the binder slip as easily as possible over the surfaces of the package—especially the corners. Otherwise the tendency will be to confine the tension to the side where the tensioning tool is located—the tension not being properly communicated around corners to all sides—and undue looseness of the loop as a whole cannot be avoided.

In addition to low friction between binders and packages, it is important with some types of tensioning tools (Flora Patent No. 1,149,569 and Bergstrom Patent No. 1,969,115 illustrating typical examples) that the friction between superposed contacting portions of binder be as low as possible, because such tools provide the tension by sliding upon and past one another the superposed ends of the binder loops. In order to provide for easy slippage between binder and package and between contacting portions of binder, it has long been the practice to coat such strap with a thin layer or film of anti-friction material or lubricant, such as paraffine. Not only does the paraffine provide the easy-slippage property, but it also protects the strap against moisture and prevents rusting.

On the other hand, where the union or joint between the overlapping end portions of the tensioned binder loop is produced by crimping those portions together more or less edgewise—such, for example, as set forth in Flora Patent No. 1,252,680, in Leslie Patent No. 1,445,330, or in Porter Patent No. 1,969,152—much of the joint strength depends upon the amount of friction existent between the binder surfaces which are in most intimate or close contact with each other within the joint, viz., in the edge regions where the principal deformation and closest engagement exist.

Thus, in short, the surface characteristics desired of package-binder strap are low friction for tension and high friction for strength of crimped

joints. Attempts have been made to provide binder strap possessing these two diverse, not to say antagonistic, properties, but so far as I am aware there has not been heretofore proposed any satisfactory practical solution of the problem. As a matter of fact, the common practice of entirely coating binder strap with paraffine or other lubricant in order to decrease the friction with the package, and thereby the better to distribute the tension, has a rather marked joint-weakening effect.

The object of my invention is to provide a metallic binder strap which, to an adequate extent, will possess both low and high surface friction.

Another object is to provide a strap having these dual characteristics and which lends itself to practical commercial production.

In general, my improved strap has a longitudinally disposed area—preferably centrally disposed relative to the edges—of relatively low coefficient of surface friction and a longitudinally disposed edge area—preferably along both edges—of relatively high coefficient of surface friction.

In the drawing:

Fig. 1 is a plan of a portion of binder embodying my invention, and

Fig. 2 is a top plan of a typical joint of the edgewise folded or crimped variety.

I have found that if only the central longitudinal area of one surface of the strap is coated with a thin film of anti-friction material or lubricant such as paraffine or other suitable substance of low friction coefficient, the desired easy-slippage characteristic of strap entirely coated with lubricant is not at all seriously impaired. For all practical purposes it slips about package corners and upon itself as easily as a completely lubricated strap.

I have also found that if the coefficient of surface friction is high in only the regions bordering the strap edges, the strength of crimped joints is very materially increased and yet the easy-slippage property is not materially reduced. The width of the area of high surface friction coefficient to give the best results will depend upon the depth of edgewise crimp employed. It should be wide enough so that the major part of the high-friction surface in the region of the edgewise crimp will be embraced within the crimp where the overlapping strap portions are most tightly pressed together.

In practice I have found that with a strap $\frac{5}{8}$ " wide good results are obtained if the paraf-

fined or lubricated—and consequently relatively low surface friction—central longitudinal area 5 is in the form of a stripe $\frac{1}{8}$ " wide and the longitudinal edge areas 6 of relatively high surface friction are each $\frac{1}{8}$ " wide.

Paraffine is an admirable lubricant because it possesses adequate anti-friction properties, is satisfactorily moisture-proof to prevent rusting, may be applied in a very thin film which will remain in place under ordinary conditions and can be applied effectively and inexpensively. It can be applied hot by passing the strap past a wheel partly immersed in a bath of the paraffine heated to liquefaction or by a brush. Instead of applying the paraffine hot it may be cut or thinned to the proper consistency by suitable and well known solvents, such as naphtha. When so applied, the evaporation of the solvent will leave the solid paraffine in a very thin film upon the surface of the strap.

The relatively high surface-coefficient stripes 6 along the edges of the strap may be provided in various ways. Thus, these edge stripes may be provided by oxidizing or sand blasting, or otherwise roughening the strap surface. As a matter of fact, for hot rolled strap, the oxidation of surface normal with this method of production will, under some conditions, provide the desired high friction—particularly as the surface becomes scaly during the deformation of joint production. Or they may be provided by coating the edge areas with a suitable high friction substance, such as resinous paints, of which shellac is an example. Coating the edge areas is preferable to oxidizing or sand blasting because—like the lubricant—it can serve as a weatherproof protection.

When a strap of dual surface characteristics, such as heretofore described, is looped and drawn tight about a package or group of packages the low friction or lubricated area provides easy slippage over the package surfaces and, if tensioning tools of the type hereinbefore mentioned

are used, between the superposed strap end portions of the loop. Thus, adequate and properly distributed tension in the entire loop can be assured. Also, when the superposed strap ends of the loop are edgewise crimped together to form the joint, the high friction areas, located where the greatest deformation and consequently the most intimate surface contact occurs, resist slippage tendencies within the joint and a tighter and stronger union is insured.

For some purposes sufficient lubrication of the central areas and a sufficiently high friction of the marginal areas will be obtained by treatment of only one side of the strap. For other purposes, it will be desirable to obtain greater efficiency in tensioning properties and in joint strength and both sides of the strap may be treated.

Having thus illustrated and explained the nature and an embodiment of the invention, what I claim and desire to secure by United States Letters Patent is as follows:

1. A metallic package binder strap having a flat unbroken surface with a longitudinally disposed area of high surface friction and a longitudinally disposed area of low surface friction.

2. A metallic package binder strap having a flat unbroken surface with a centrally disposed longitudinal stripe of low surface friction and an edge stripe of high surface friction.

3. A metallic package-binder strap having one of its flat unbroken surfaces longitudinally and centrally striped with a film of lubricant, which retains its place under ordinary conditions, and its edges treated to provide high surface friction.

4. A metallic package-binder strap having one of its flat unbroken surfaces centrally and longitudinally coated with a lubricant, which retains its place under ordinary conditions, and along the edges coated with a high friction substance.

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