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3,237,796

METHOD OF PROTECTING AND STACKING BARS

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FIG. 1

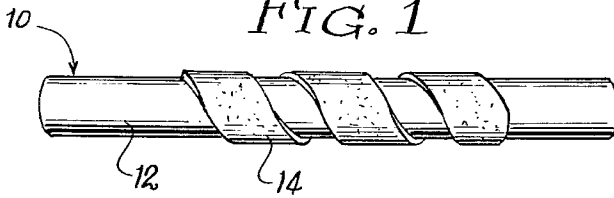


FIG. 2

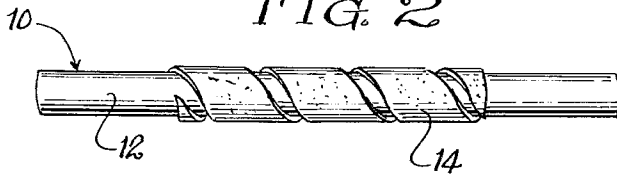


FIG. 3

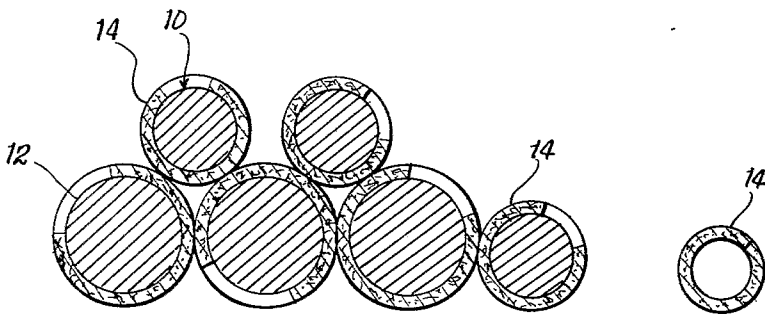
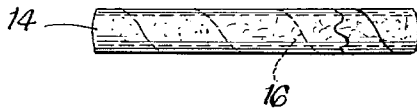


FIG. 4

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METHOD OF PROTECTING AND  
STACKING BARS

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2 Claims. (Cl. 214-152)

This invention relates to a method of handling bars  
which are subject to surface damage when brought into  
contact with other objects. In particular, the invention  
is concerned with the provision of protective means  
around the outer surfaces of metal bars whereby con-  
tact of these surfaces with other bars or with other ob-  
jects can be avoided.

It is well known that metal bars are in many cases  
ground and/or polished to provide a smooth, defect-  
free surface finish. It is obvious that in the handling  
of these bars, either during production, during shipping,  
or after they are received by a user, the smooth surface  
finish can be damaged. Thus, contact between bars  
being shipped or otherwise handled, or contact of the  
bars with other objects can easily result in scratching  
of the bar surface, or in the formation of nicks or  
indentations therein.

It is obvious that the surfaces of such bars could be  
protected if they were individually handled and in-  
dividually wrapped contact with foreign objects could  
be avoided. It is also obvious, however, that such a  
procedure would be extremely expensive from the stand-  
point of the cost in time and material for accomplishing  
this result.

It is an object of this invention to provide an im-  
proved method of protecting the surfaces of metal bars,  
and the like, which surfaces would otherwise be sub-  
ject to damage during handling and shipping.

These and other objects of this invention will appear  
hereinafter, and for purposes of illustration but not of  
limitation, specific embodiments of this invention are  
shown in the accompanying drawings, in which—

FIGURE 1 is an elevational view of a metal bar  
having the protecting means of this invention applied  
thereto;

FIGURE 2 is an elevational view of a metal bar  
of different dimensions having the protecting means ap-  
plied thereto;

FIGURE 3 is an elevational view of the protecting  
means of this invention; and

FIGURE 4 is a cross-sectional view illustrating the  
manner in which the protecting means maintains the  
metal bars in spaced-apart relationships.

The instant invention generally relates to protecting  
means formed of a material which normally assumes a  
tubular configuration. The internal dimensions of the  
protecting means are such that they do not exceed the  
external dimensions of the bars upon which they are  
disposed. Accordingly, when these protecting means  
are applied over the surfaces of metal bars, they are  
adapted to expand or to at least snugly engage the sur-  
faces of the metal bars.

The protecting means of this invention comprise a  
length of material wound in a spiral manner. When  
the protecting means is normally situated, the respective  
turns of the configuration engage each other so that  
the protecting means assumes the configuration of a  
closed tube. When the protecting means is associated  
with a bar having external dimensions exceeding the  
internal dimensions of the protecting means, then the  
turns become spaced apart. The amount of spacing  
between the turns will vary, depending upon the size of  
the particular bar with which the protecting means is

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associated. However, in any case, the protecting means  
will hold the bar in spaced-apart relationship with respect  
to any objects situated adjacent to the bar. Thus, a  
plurality of bars can be stacked in a group and bars  
can be situated adjacent to any surface without actually  
contacting such surface. It will be understood that the  
protecting means can be employed for receiving bars  
having external dimensions approximately equal to the  
internal dimensions of the protecting means. However,  
bars having significantly smaller external dimensions  
are preferably not handled in this manner since relative  
movement of the bars with respect to the protecting  
means can itself tend to form defects in the bar surfaces.

The accompanying drawing illustrates in FIGURE 1  
a bar 10 of the type contemplated for use in accordance  
with this invention. The exterior surfaces 12 of this  
bar, if ground and polished, or if otherwise treated,  
are subject to damage if brought into contact with other  
surfaces. The spiral member 14 comprises the protecting  
member associated with the bar to prevent such damage  
to the surfaces 12.

In accordance with this invention, the member 14 may  
comprise a strip of cardboard of substantially uniform  
width which is formed in the shape of a tube. This  
configuration is illustrated in FIGURE 3. As suggested  
by comparing FIGURES 1 and 2 with FIGURE 3, the  
respective turns of the member 14 are spaced apart  
when associated with a bar 10. This occurs when the  
external dimensions of a bar 10 exceed the internal  
dimensions of an associated protecting member 14. In  
the examples illustrated, the bar 10 of FIGURE 1 is  
larger than the bar 10 of FIGURE 2, and for that reason  
the turns of the member 14 are spaced apart to a wider  
degree.

A comparison of the FIGURES 1, 2 and 3 illustrates  
one of the major advantages of the protecting means  
of this invention. Thus, bars of a wide variety of sizes  
can be protected through the use of the same size pro-  
tecting means. Accordingly, a single inventory of the  
members 14 can be employed for protecting all of the  
production within a relatively wide range of diameters.  
For example, cardboard tubes having a one-inch internal  
diameter have been effectively employed for protecting  
all bars having external diameters between one inch  
and three and one-half inches. It will be appreciated,  
however, that the principles of this invention are adapted  
for use where the relative sizes of bars and protecting  
members vary over a wide range.

There are various ways of achieving protecting mem-  
bers which employ the characteristics of this invention.  
In this connection, the invention is not necessarily limited  
to the use of cardboard for forming the protective mem-  
bers. However, cardboard is particularly suitable for  
this purpose since it provides a cheap source of material  
and since conventional manufacturing practices provide  
an efficient procedure for providing protecting members  
suitable for use in the manner claimed.

In many cases cardboard tubes are formed through the  
use of a length of material disposed in a spiral fashion  
with the adjacent edges of the respective turns in contact  
whereby a continuous tube will be formed. In such in-  
stances the tube can be slit along the spiral dividing lines  
whereby open turns will be provided. Thus, if the tube  
10 shown in FIGURE 3 is slit along the lines 16, a suit-  
able spiral tube can easily be made available.

In some instances suitable materials can be formed  
into a tubular configuration by winding the materials on  
a mandrel in a spiral fashion. It is also contemplated  
that the spiral tube be formed of two or more laminated  
layers. One layer can be formed of a relatively thin ma-  
terial and associated with the thicker, outer layer or lay-  
ers. With such an arrangement a spiral slit can be cut

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through the thicker layers while the inner layer holds the configuration in a more or less tubular fashion. When the protecting means is to be used, the tube can be twisted to break the thin layer and to then provide a protecting means of the type described. This arrangement has the advantage of reducing problems associated with handling of the spiral tubes which would tend to bend and flop around too easily if slit completely through. When only partially slit, the tubes will be easier to handle and the inner layer can be broken just prior to use.

The instant invention provides distinct advantages over prior arrangements employing collars which have been fitted around the ends of bars to hold them in spaced-apart relationship. With the use of such collars a separate inventory is necessary to accommodate each size of bar. Furthermore, any discrepancies between the dimensions of the collars and the bars provided loose fits which cause the collars to fall off or which has in itself contributed to damaged surfaces. With the instant invention a single inventory of protecting members can be employed. Furthermore, there is an inherent tendency for the spiral tubes to cling to the surface of the bars with which they are associated. Thus, the spiral tubes have spring-like characteristics since they tend to assume their normal configuration wherein the adjacent turns are in contact and wherein the internal dimensions are smaller.

With larger varieties in the bar sizes to be handled, the protecting member can be employed in two or three different sizes. In any case, these protecting members insulate the respective surfaces of bars which are stored in cartons, boxes or other containers, or which are held on racks, trays or other supporting devices. The protection of the surfaces is carried out during processing, transportation and storage. The instant invention provides additional advantages since the protecting means can easily be employed for combining product identification data or advertising information with each production item. This advantage overcomes difficulties previously encountered where attempts have been made to directly mark the surfaces.

It will be appreciated that in the appended claims the reference to bars is used in a generic sense to include tubular objects as well as solid bars. Furthermore, materials other than steel can obviously be protected from surface damage with the use of the means of this invention. Metallic and non-metallic materials are contemplated in this regard. It should also be noted that a completely solid outer surface or circular cross section is not a limiting aspect of the invention since the protecting means obviously exhibit the ability to cling to various surfaces.

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It will be understood that various changes can be made in the means and methods above described which provide the characteristics of this invention without departing from the spirit thereof, particularly as defined in the following claims.

I claim:

1. In a method for the stacking of steel bars which are subject to surface damage when encountering solid objects and which have a generally circular cross section, said bars being aligned in parallel relationship in the stack and resting one on top of the other, the improvement comprising the steps of providing a plurality of lengths of flexible covering material, forming each of said lengths of material into spiral configurations whereby the lengths define a plurality of elongated tubular configurations, disposing one of said spiral lengths around and frictionally gripping each of said bars to cover at least substantial portions of the surfaces thereof, the inner diameter of any one length being not greater than the outer diameter of the bar with which it is associated whereby the lengths will tend to cling snugly around each bar, and stacking said bars with the spiral lengths thereon upon each other whereby said lengths will maintain the outer surfaces of said bars in spaced-apart relationship.

2. A method in accordance with claim 1 wherein said configuration is formed by winding a length of said material on a mandrel to form a cylindrical tube formed of an open spiral.

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