

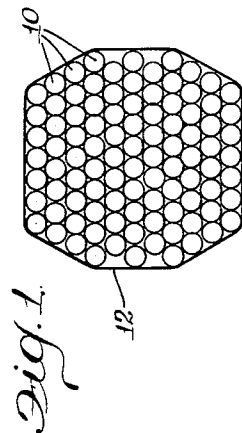
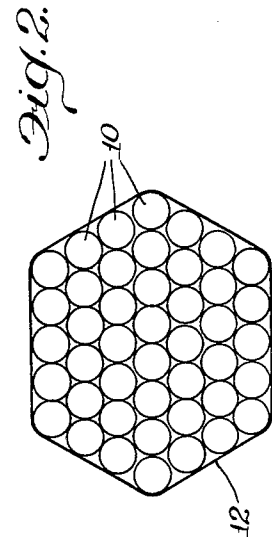
Nov. 30, 1965

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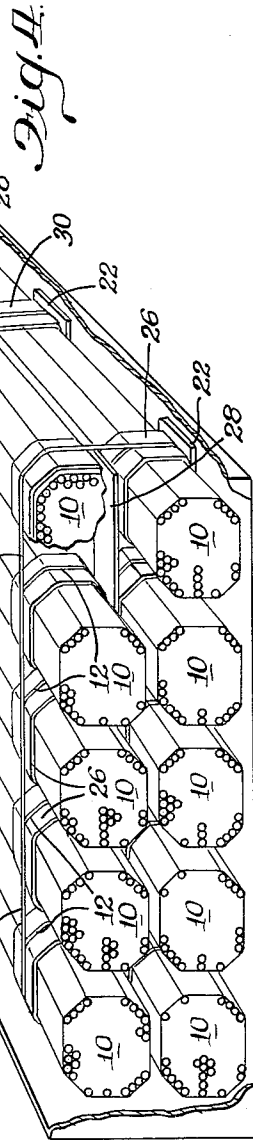
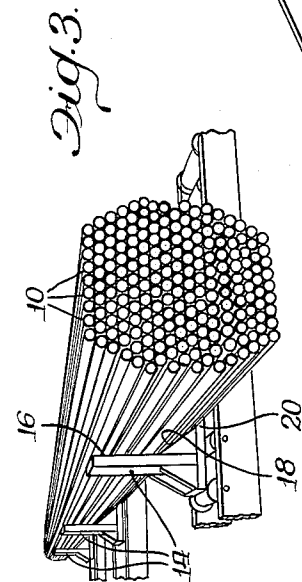
3,220,583

BUNDLING OF ELONGATED ARTICLES

Filed Sept. 26, 1962



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3,220,583

BUNDLING OF ELONGATED ARTICLES

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Filed Sept. 26, 1962, Ser. No. 226,387

1 Claim. (Cl. 214—152)

This invention relates to the bundling, for transportation purposes, of elongated articles, such as pipe or rod.

When elongated articles such as pipe or rod are to be transported in, for example, railway cars or highway trucks, they are customarily bulkloaded as individual pieces. This procedure results in a considerable problem at the time of unloading when the articles must be removed from the carrying vehicle one piece at a time or, with considerable manipulation, a few pieces only at a time. The problem is accentuated when coated articles, as for example enamel or plastic coated lengths of pipe, are involved because such individual handling results in damage to the coating and renders the coating virtually worthless.

The primary object, therefore, of the present invention is the provision of a bundling arrangement which will facilitate the loading and unloading of elongated articles into and out of railway cars or highway trucks.

Another object of the invention is the provision of such a bundling arrangement which will greatly reduce the incidence of damage where coated articles are involved.

Other objects and advantages will be apparent from the following specification and accompanying drawings, wherein:

FIGURE 1 is an end elevational view of a preferred form of bundle of elongated articles;

FIGURE 2 is an end elevational view of another form of bundle incorporating features of the invention;

FIGURE 3 is a perspective view of a plurality of elongated articles, in this instance coated lengths of pipe, positioned in a plurality of aligned fixtures utilized to facilitate the stacking of the articles in the preferred cross-sectional shape of a completed bundle; and

FIGURE 4 is a perspective view of a plurality of bundles of elongated articles as positioned, for example, in a railway car.

According to the present invention, it has been found that articles strapped into bundles can be loaded into a vehicle just as rapidly as can bulk articles. The rate of unloading bundled articles, on the other hand, is up to eight times faster than the rate of unloading bulk articles. However, the bundling may not be done in a haphazard manner. If, for example, elongated articles are bundled and strapped in the cross-sectional configuration of a circle, the entire weight of the bundle is supported by one or two articles at the bottom of the bundles. Where coated articles are involved, this may result in considerable damage to the coating. Attempts to remedy this situation by preparing oval shaped bundles in order to broaden the base have been unsuccessful because oval shaped bundles can rarely be made tight enough to prevent change of shape when they are placed on skids or in a railway car. The relative movement of the articles in such a bundle can cause serious damage to coating.

It was determined, therefore, that a larger bearing surface should be presented at the bottom of a bundle which would also resist relative movement of the articles compressing the bundle. It was believed that a larger bearing area would also be helpful at the sides and top of the bundle. The increased bearing area at the top enables the bundles to accommodate vertical stacking, while the increased bearing area at the sides accommodates side

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pressure produced by the tension of the steel strapping utilized to hold the entire load together in a vehicle.

A polygon in the form of a square would, of course, meet these requirements, but it was found that a square bundle was very unstable and easily deformed. The preferred form of polygon was finally determined to be that shown in FIGURE 1 wherein a plurality of articles 10 are stacked in the cross-sectional configuration of an octagon and are confined in that configuration by means of one or more steel straps 12.

The polygon with the least number of sides which will remain stable under loading was found to be a hexagon. Such a configuration is shown in FIGURE 2 wherein once again a plurality of articles 10 are confined in the desired form of bundle by means of straps 12.

The preferred manner of forming individual bundles is best seen in FIGURE 3 wherein a plurality of articles in the form of coated pipe 10 are stacked in the form of an octagon. To facilitate such stacking, there are provided two or more fixture assemblies 14, open at the top and having the sides and bottom thereof forming five sides of an octagon. In FIGURE 3, only three sides of the octagon are seen, namely sides 16, 18 and 20. The articles are loaded into the aligned fixtures so as to conform to the contour thereof and the upper portion of the bundle is stacked so as to be symmetrical with the lower portion thereof whereby the polygon is completed. The bundle is then securely strapped at two or three points along its length. In the case of coated pipe, the steel straps are placed over pads made of excelsior or the like so that no damage will be done to the coating.

FIGURE 4 shows the preferred manner of loading a plurality of polygonal bundles of elongated articles, each bundle being strapped at two points, into a vehicle for transportation purposes. The vehicle is provided first, in this instance, with three bottom boards 22 extending transversely of the vehicle, the endboards being spaced so as to later underlie the straps holding individual bundles. Main straps 24 are then placed over the boards and are covered with a pad 30 of excelsior or the like. It will be understood that, in those instances where the individual bundles are tied with straps only and without pads, such pads 30 will be utilized for each main strap 24. However, as illustrated in FIGURE 4, each individual bundle may be provided with a protective pad 26 under the strap 12 and, in this instance, only one pad 30 will be necessary to protect the articles if they are coated. A bottom tier of bundled articles is then placed into the vehicle so that the bands 12 overlie the end bottom boards 22. Spacer boards 28 are next placed over the straps 12 and a second tier of bundled articles is stacked into the vehicle. The purpose of the spacer boards which may be padded, if desired, to prevent coating damage, is to provide vertical spacing between the floor of the vehicle and the first tier of bundles and also between the first and second tier of bundles to ensure adequate room for the insertion of handling slings when the bundles are to be unloaded. The main straps are then wrapped around the bundles to hold the entire load in a tight package. In the event that the individual bundles were originally padded and secured by three straps, the extra layer of padding 30 need not be placed under the main straps unless extra protection is desired to protect the coating material which might be covering the articles.

When the articles are to be unloaded, the main straps 24 are first cut and the bundles are lifted out of the vehicle by means of a crane operated sling (not shown). As mentioned heretofore, unloading such bundles greatly decreases the unloading time and also results in less damage to the articles in those instances where they have been coated prior to bundling.

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I claim:

A method of loading a plurality of coated elongated articles into a transport vehicle comprising the steps of: stacking said articles in parallel relationship with each other into bundles having the form of a polygon of not less than five nor more than eight sides wherein each side includes at least three of said articles; strapping the articles in each bundle to confine the articles to the stacked shape; loading a plurality of said bundles into said vehicles with spacers therebetween to maintain said bundles in spaced relationship with each other; and strapping said plurality of bundles together to prevent relative movement therebetween.

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