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APPARATUS FOR SHIPPING SHEET METAL AND OTHER COMMODITIES

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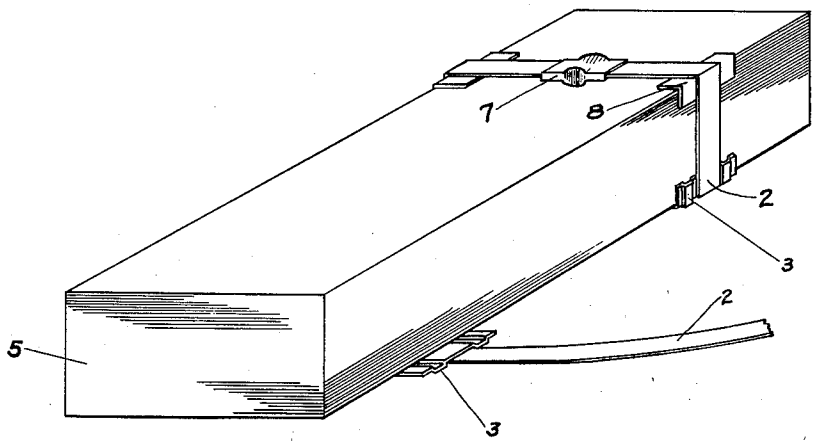


Fig. 1

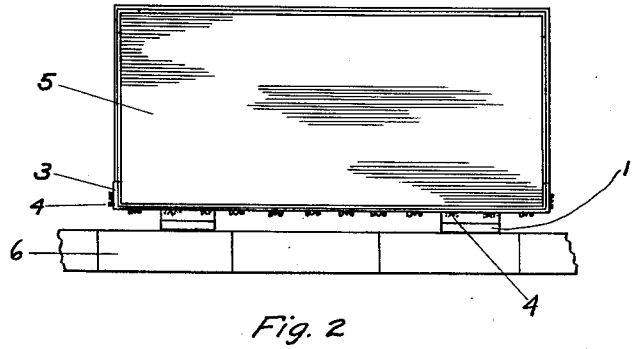


Fig. 2

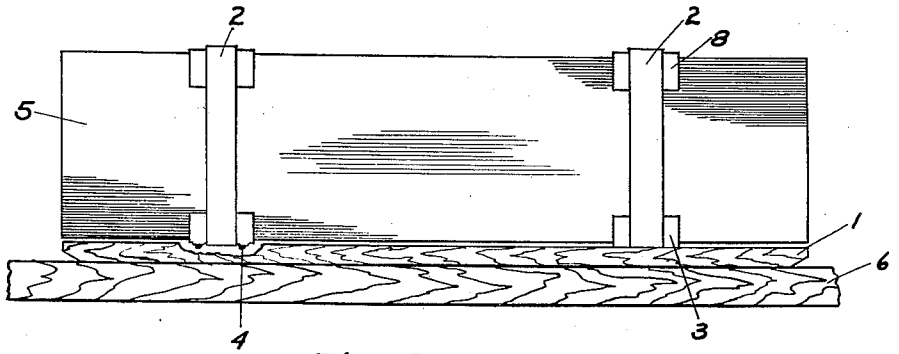


Fig. 3

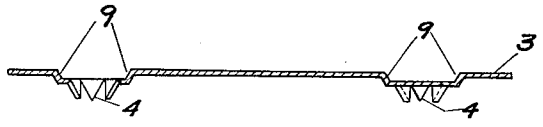


Fig. 4.

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APPARATUS FOR SHIPPING SHEET METAL AND OTHER COMMODITIES

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4 Claims. (Cl. 206—60)

This invention relates to the preparation and handling of articles of merchandise, sheet metal, and particularly strip, sheet or bar steel, for the purpose of shipping the same in railroad cars, motor trucks, ships, carriers and the like; the object of the invention being to provide a new and more efficient apparatus and method of securely binding the package as a unit, to the apparatus and interposed means or skids, thus permitting the structure to move as a complete unit on the floor of a carrier during transit.

In customary practice metal sheets have been arranged for loading in packs or stacks, suitably bound and placed on the freight car floor and transported to destination. Each pack, or stack of sheets, weighing frequently as much as five to ten tons, has been supported either directly or through the medium of wood members, platforms, or skids, preferably of wood, on the car floor with the individual sheets piled flatwise and held in the stacks by means of binding elements, such as steel bands or wire. Moreover, according to conventional practices, the stacks have either been braced or anchored to the car floor against movement, or freely supported to permit the stack or pack to shift as a whole, as a result of shocks or jolts to which the car is subjected in transit.

The prevailing practice in shipping sheet metal is to use flexible steel bands, or wire, and where these are used, to bind the unit pack. The free movement or sliding on the car floor of the pack, to take up the shocks, has been considered advantageous in order to minimize the relative sliding of the sheets (which are usually oiled) or to prevent the breaking of the binders and the scattering of the sheets over the carrier floor. This modern system reduces the amount of dunnage by eliminating a substantial amount of wood bracing formerly used.

The unit packs of sheet metal may be made up on the shipping room floor of the rolling mill and transported into the freight car, as a unit, by truck, crane or the like, or they may be assembled in the car. When the units are received at destination, it is customary and advantageous to take them out of the car, as a unit, by means of a lifting device, or an electric lift truck instead of breaking the bundle and removing the sheets one or more at a time.

In some cases, means are provided for guiding the unit pack or travel of the stack in a straight longitudinal line and this guiding means tends to prevent the bundle from shifting sidewise in transit.

In shipping sheet steel, the number of bundles or packs to be placed in a car varies with the length and width of the sheets, weight of the bundle, and capacity of car. In some cases, it is desired to place four or five packs in a box or gondola car, that is, one in each corner and one in the center. In other cases, where the sheets are extremely wide and long, and the bundles heavy, it is only feasible to place two such packs, one in each end of the car. In other cases, where short sheets are involved, it is sometimes customary first to make up three or more separate units, place them in the car and then bind the separate units into one composite unit, having one unit in each end of the car.

The unit method of shipping sheet steel has been found to be satisfactory, economical and practical. The primary object of this invention is the provision of an improved type of package for metal sheets or other articles of merchandise, in which the sheets or articles are adequately protected from damage during shipment.

Another object of this invention is to provide means whereby the unit package of sheets or other articles and the skids, or means interposed between the articles and the carrier floor, remain intact, as a unit, when subjected to severe jolts and jars in transit.

Another object of this invention is the provision of a more economical way of bundling metal sheets and articles of heavy materials for shipment.

Another object is the provision of a package for transportation which can be made up in much less time and with less effort than was possible heretofore.

Another object of this invention is the provision of a package of sheet metal or other articles which when arriving at destination is intact so that the removal of the unit from the carrier is possible and less expensive.

Before explaining in detail the present invention, it is to be understood that the invention is not limited in its application to the details of construction and arrangement of parts illustrated in the accompanying drawing, since the invention is capable of other embodiments and of being practiced or carried out in various ways.

It is to be understood that the phraseology and terminology employed herein is for the purpose of description and not of limitation, as it is not intended to limit the invention beyond the requirements of the prior art.

It is also to be understood that this invention may be applied to any form of modern unit sliding pack of strip, sheet, or bar metal, or articles

of merchandise, or any commodity, when shipped in unit packs, that is, when transported in form other than what is commonly known as American Railway Association rigid blocking or solid bracing.

The nature of the invention will be understood from the following specification, taken with the accompanying drawing, in which, for purposes of illustration, but one embodiment is shown.

In the drawing:—

Fig. 1 is a unit package of sheets of metal in process of being made.

Fig. 2 is an end view of a unit pack of sheet metal, with means interposed between the carrier floor and the metal.

Fig. 3 is a side view of the unit pack of sheet metal shown in Fig. 2.

Fig. 4 shows the reinforcing band of metal, shown as 3 in Figs. 1, 2 and 3, indented, and with projections thereunder.

In the several drawings for the purpose of a clear showing, the relative thickness and dimensions of certain parts has been exaggerated.

In Figs. 2 and 3 of the drawing there is illustrated one of the preferred methods of forming a load unit made up of a plurality of flat sheets, such as sheets of steel, or the like, whereby a unit is obtained of sufficient size and weight to retain itself against substantial displacement in the car under ordinary shocks in transit by reason of its frictional contact with the car floor.

This load unit comprises a plurality of imposed metal sheets 5 which are preferably of equal area and uniform shape so that their corners and edges are located in substantial alignment in vertical planes when the sheets are piled. Metal sheets of this character have a pronounced tendency to slide on each other, especially when oiled, but this difficulty is overcome by placing tensioning bands, or wire 2, around the unit usually at a plurality of interspaced points. The binders may run both crosswise and lengthwise of the pack, or, in the case of dry sheets, we have found that crosswise bands are sufficient. When wire is used, it is generally the practice to use two strands, but in the case where a narrow steel band is used, one will answer the purpose.

Heretofore it has been common practice to use wide strips of reinforcing metal bands 3 between the bands or wire 2 and the bundle of sheets so that the edges of the sheets will be protected and also to provide a means of binding the skeleton of the apparatus rigid with the load. In making up one of these unit packs, formerly in common use, we first place upon a supporting surface a sufficient number of skids or members 1 as shown in Figs. 2 and 3, two generally being used. We then lay the bands or wire 2, which we propose to use as tie bands, on top of the skids 1. We then attach the reinforcing bands 3 to skids 1, by means of light weight nails, they being driven into the skids 1 through holes previously provided in the reinforcing bands 3. The purpose of the nails is to hold the skids in proper position while the bundle is being made up. The wooden skids are generally about 1 x 3½" and are as long or slightly longer than the bundle of sheets to be shipped, although we have used 2 x 4" and other larger sizes. The wood members 1 are laid on the carrier floor parallel to each other, lengthwise of carrier, and a proper distance apart according to the width of sheets. The tie bands 2 are laid across the skids 1 at right angles. The reinforcing bands 3 are generally of 18 or 20 gauge metal, about 4" wide and about 8" longer than the width of the sheets to be bundled. The nails which are placed through the reinforcing bands 3 and into the skids 1 do not pass through the tie bands 2, the tie bands 2 resting and held between the two rows of nails.

We then place the stack of metal, two or three sheets at a time, or lift the entire pack 5, in position on top of the skeleton composed of skids 1, tie bands 2 and reinforcing bands 3. As the reinforcing bands 3 are longer than the width of the sheets to be bundled, the extension is bent up, or turned, to about 90° at each end, so as to protect the bottom corners of the unit bundle of sheets. After this, we bind or seal the tie bands 2, at the same time pulling them under tension, by means of tools now upon the market which are found to be commercially satisfactory and practical. Corner plates 8 (Fig. 1) are generally placed under the tie bands 2 on each corner at the top of the bundle, so as to protect the edges of the top sheets.

The skids 1 are shown tapered at the ends to permit movement when the carrier floor is rough or uneven.

If this unit pack is assembled and bound on the shipping room floor, the skids 1 will be lifted with the bundle when transporting by truck into the carrier. If the unit pack is made up on the carrier floor, the skids, it is understood, will be a part of the pack and will be free to move with the pack as a unit.

In Fig. 2, which is the end view of our bundle of sheets, 6 represents the carrier floor, which is also shown in Fig. 3.

In Fig. 1 we have shown one tie band 2 and reinforcing band 3 in position under the bundle, and before being tensioned and tied; while on the other end of the bundle the reinforcing band 3 and tie band 2 are shown in place with the tie band 2 tensioned and sealed as at 7.

The above description illustrates the apparatus and method used in preparing a unit of sheet metal to be transported from mills to customer and by long and continued use of this system, we have developed improvements thereon which, as pointed out in the objects hereinbefore set out, enables us to ship sheet metal hundreds of miles over the railroads, or by other means, in a more satisfactory, safer and economical manner, eliminating damage to sheets and also the possibility of the bundle of sheets moving off the skids or interposed means in transit.

Owing to these skid wood members 1 being extremely light, generally about 1 x 3½", it is impossible to securely fasten the reinforcing bands 3, by means of nails, to the wood members 1 and have the nails and skids remain in position during transit. When the car is subjected to severe jolts or jars, the nails generally pull loose, permitting the bundle of sheets to move excessively relative to the skids. When this occurs, the nails pull up and the heads turn over and gouge their way into the highly polished under-side of the lower sheet of the bundle. The great weight of the entire mass of sheets cause the nail heads to make indentations in many of the sheets in the under side of the bundle, often as many as nine sheets, and sometimes the skids 1 remain stationary while the package of steel slides off of the skids, or tie bands 2 break. We have therefore been experiencing complaints from our customers of damaged sheets in each bundle. When these sheets arrive at destination they are unfit for use

and must either be scrapped or returned to the mill and the mill is charged accordingly.

When the skids are displaced in transit and are no longer a part of the unit, it is impossible at destination to use an electric lift truck or crane to move the sheets out of the car as a unit. In cases of this kind it is necessary to break the tie bands 2 and remove the sheets from the carrier by manual labor, one or more at a time.

We have also found cases where the nails do not pull but the skids become detached and move out of position, and the tie bands 2, due to severe strain, break, and the sheets are scattered upon the car floor, which means extra labor in removing them at destination, besides many sheets being damaged by moving about in the car during transit.

Our invention makes it possible to ship flat metal sheets, or other articles of merchandise, without damage and enables the entire unit being removed at destination in practically the same condition as when it was placed in the carrier.

Our new unit pack of sheet metal or other articles is made up exactly as described above with the following exceptions.

In our invention we have omitted the nails in the reinforcing bands 3 and in place of the usual reinforcing band 3, as described above, we have substituted a reinforcing band 3 of the same dimensions, placed exactly the same way but having a series of projections, or burrs, 4 thereunder. These projections 4 are obtained by previously punching or rolling a series of holes in the reinforcing bands 3, permitting the punched out metal to remain on the one side of the band 3 in the form of rigid, sharp projections. These projections gouge or indent themselves into the wood surfaces of the skid members 1 when the heavy mass of sheet metal 5 is placed thereupon, making of the members 3 and 1, one composite unit. This sealing or gripping means between members 3 and 1 insures the entire unit of sheet metal and supporting means being held in unitary position while receiving heavy jolts or jars in transit.

In Fig. 4 we show an endwise view of one of these reinforcing bands 3, indented at 9 for holding the tie bands 2 in position and with the projections 4 in position under the indented portion. However, these bands 3 need not necessarily be indented. The projections 4 extend in two rows along a line parallel to the sides of the bands 3 and about one-half inch from the edges. We have generally provided ourselves with reinforcing bands 3 having projections 4 about one inch apart and the burrs or fins extending downward about one-quarter to one-half inch, although our invention is not limited to any certain number of projections and the projections may be of any consistent size.

The purpose of having the continued line of perforations on reinforcing bands 3 resides in the fact that regardless of the width of the sheets, or the spacing of the interposed means 1 the reinforcing bands 3 are always in gripping engagement with said interposed means.

Fig. 3 shows at 4 a portion of the skid 1 broken away to show the projections 4 on member 3 in position in the skid 1.

Instead of having the reinforcing bands 3 made with burrs or punches therein, the edges of these members may be turned down to accomplish the same result.

Our invention lies in the perforated reinforcing bands 3 and the manner they operate during movement of the unit in transit.

We have found that a shipment made up in this manner arrives at destination with the skids in approximately the original position, the entire unit having moved in transit during shocks and jolts, but the apparatus and material included having remained intact, as a single unit, thus eliminating all of the complaints occasioned by former practices.

The gripping means on reinforcing bands 3, while normally holding the entire apparatus and bundle of sheets as a unit, under extremely severe or heavy shocks, may permit the unit of articles to move more than the skids 1. In this event, the gripping means 4 on reinforcing band 3 simply gouge their way along the skids 1 a short distance, but in no case have we ever observed the bundle moving excessively with respect to the skids, nor do we ever find the entire unit moving off the skids, as was experienced with the old method. By this restricted movement of the bundle on the skids 1 under excessive strain, the tie bands 2 are never strained to the point of breakage.

Having thus described our invention, what we claim as new and desire to secure by Letters Patent, is:

1. An apparatus for transporting commodities in a carrier, such as metal sheets, comprising tie bands, skids or members interposed between the bundle of sheets and the carrier floor, members between the interposed members and the commodities constructed with projections in such a way that the weight of the commodities, such as sheets of metal, will keep the interposed members in place, said bands engaging and holding said last mentioned members.

2. An apparatus for transporting commodities in a carrier, such as metal sheets, comprising tie bands, skids or members interposed between the bundle of sheets and the carrier floor, reinforcing members between the interposed members and the commodities, having projections therebeneath for gripping them to the interposed members, said reinforcing members being engaged and held by said bands.

3. An apparatus for transporting commodities in a carrier, such as metal sheets, comprising tie bands, skids or members interposed between the bundle of sheets and the carrier floor, reinforcing members between the interposed members and the commodities, said reinforcing members having projections therebeneath for gripping them to the skids, thereby permitting some relative movement between the reinforcing members and the skids under severe shocks but sufficient gripping strength to hold said skids in position under the load.

4. An apparatus for holding articles of merchandise, such as metal sheets for transportation, comprising tie bands, supporting members, reinforcing and protecting means between the supporting members and the commodities, said reinforcing means being turned under on their lower edges to support the tie bands and having projections on the under side thereof for combining with the supporting and sliding members as a unit.

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