PACKAGING OF SHEET MATERIAL

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Fig. 1

Fig. 2

Fig. 3

Fig. 4

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The invention relates to packages of sheet material, and more particularly to the formation of packages of sheet steel cut to length and stacked in tiers of two or more units in height.

Sheets of steel and the like are usually shipped from the mill in bundles bound with steel bands or strapping the ends of which are connected together by sheet metal seals.

The customer usually specifies the weight of the bundles of sheets to be shipped to him and the bundles of sheets are banded together in separate units at the mill for shipping.

It is common practice, therefore, to stack the sheets upon a truck or skid as they come off the shears or the like and as the stack of sheets reaches the required height necessary to make a bundle of the weight desired by the customer, the truck or skid with the stack of sheets thereon is removed and another truck placed in position at the shears.

The stack of sheets is then banded or bundled as a unit with steel strapping or bands fastened together with sheet metal seals and the bundle is ready for shipment.

Owing to the fact that heretofore there has not been any banding machine or tool in use which will satisfactorily band or bundle sheets after they have been tiered two or more high, it is common practice to band each bundle of sheets as a unit, thus, requiring a considerable number of trucks or skids to be used since a truck or skid is thus required for each single unit or bundle.

The present invention is predicated upon the discovery that sheets in cut lengths may be made up in any size units and tiered two or more high and at any time thereafter may be satisfactorily banded or bundled into unit bundles by the use of a banding machine or tool forming the subject matter of a copending application for patent which I have executed as of even date herewith.

An object of the present invention is to provide for the bundling or banding of a plurality of single units or bundles of sheets tiered two or more high.

A further object is to provide for banding or packaging a plurality of such bundles tiered two or more high so that the several bundles may be moved as a unit.

A still further object is to provide for the use of wood blocks upon which the packages are mounted, said blocks having longitudinal and transverse grooves in their under surfaces to receive longitudinal and transverse bands for banding the package together.

The above objects together with others which will be apparent from the drawing and following description or which may be later referred to may be attained by packaging sheets of steel or the like in the manner hereinafter described and illustrated in the accompanying drawing in which Figure 1 is a side elevation of a truck showing a plurality of stacks of sheets mounted in tiers thereon, preparatory to banding or bundling the stacks of sheets into single units or bundles.

Fig. 2, a similar view showing the several bundles or units banded by steel bands or strapping;

Fig. 3, a similar view showing the plurality of banded bundles or units banded or packaged together in a single package; and

Fig. 4, a transverse section through the package taken as on the line 4—4, Fig. 3.

Similar numerals refer to similar parts throughout the several views.

In carrying out the invention to form bundles or packages of sheets cut to length as they come from a shears or other apparatus, a truck or skid is placed in position adjacent to the shears or the like to receive the cut sheets therefrom.

For the purpose of illustration a truck is illustrated generally at 10 and the same may be positioned adjacent to the shears.

Under present practice when a sufficient number of sheets is stacked upon the truck to form a single bundle or unit the truck must then be removed from this position so that the stack of sheets may be banded or bundled while another truck is placed in position adjacent to the shears to receive the next stack of sheets.

Under the present invention when sufficient sheets are stacked to form a bundle a truck may remain in position at the shears and one or more additional stacks may be tiered thereon and when the truck is loaded to capacity it may be moved to another location and each stack of sheets may be separately bundled without removing them from the truck, after which, if desired, the several bundles may be banded together in a single package.

For the purpose of the invention a plurality of elongated blocks 11, preferably of wood, are placed transversely across the platform of the truck in position to support the center and end portions of a stack of sheets as indicated generally at 12, which represents a sufficient number of sheets to form a bundle of desired size and weight.

Each of the blocks 11 is provided in its under side with a longitudinal groove 13 and is also
preferably provided with a centrally disposed transverse groove 4 for a purpose to be later described.

When the stack 2 has been completed a plurality of blocks 11a similar to the blocks 11, but preferably having only the longitudinal grooves 13a, are located transversely across the top of the stack 12 being preferably staggered relative to the blocks 11 as indicated in the drawing. A second stack of sheets 11a is then placed upon the blocks 11a which space the same from the stack 12.

Additional stacks may be tiered above those already described, depending upon the weight of each stack of sheets and the capacity of the truck or skid.

In the drawing, a third stack is indicated at 12b supported upon the blocks 11b which may be identical with the blocks 11a.

When the desired number of stacks of sheets is arranged in tiers and separated by the wood blocks as indicated in Figure 1, has been placed upon the truck it may be moved away from the shears and by means of the improved banding machine or tool above referred to each stack of sheets, and the wood blocks upon which it is supported, may be banded or bundled with steel strapping or bands to form separate units or bundles, without removing the same from the truck, and it desired, the several units or bundles may then be banded together in a single package while they remain upon the truck.

As shown in Fig. 2 each stack of sheets on the truck may be separately banded or bundled by means of the steel bands 15 wrapped transversely around each stack of sheets and the wood blocks upon which they are supported, the bands being located through the longitudinal grooves on the under side of the wood blocks, the bands being wrapped tightly around the bundles by means of the improved banding machine or tool above referred to which is so constructed that it may be inserted between adjacent stacks of sheets for operation.

With the type of banding machines now in common use it is not possible to band or bundle a plurality of stacks of sheets piled in tiers owing to the fact that such banding machines cannot be inserted between tiered stacks and operated to tighten the bands around the bundles.

After each band is tightly stretched around the bundle the usual metal seals indicated at 16 are applied in conventional manner to clamp the ends of each band together, these seals being applied either on the top of the bundle, or where the bundle is of sufficient height or thickness, as indicated in the drawing, these seals may be applied to the bands on the sides of the bundle.

After each stack is separately banded or bundled as shown in Fig. 2, the several bundles may, if desired, be banded together in a single package by means of a longitudinal band 17 located around the several bundles and through the transverse grooves 14 in the lower wood blocks 11, and by a transverse band 18 centrally located around the several bundles, the conventional seals 16 being applied to clamp the ends of these bands together.

This package may then be shipped as a unit and the customer may cut the bands 17 and 18 and then handle each bundle separately.

From the above it will be seen that a new method is provided for banding or bundling and packaging stacks of sheets cut to length permitting the stacks of sheets to be piled in tiers to any desired height before the truck or skid is removed from the shears or other loading point, the stacks of sheets being then banded in separate units or bundles and then if desired, banded in a single package without removing them from the truck or skid upon which they are stacked.

1. The method of packaging metal sheets which consists in positioning upon a horizontal support, a plurality of longitudinally spaced, transversely disposed blocks having longitudinal grooves in their lower surfaces, then positioning a stack of sheets on top of said blocks, then positioning another plurality of longitudinally spaced, transversely disposed blocks having longitudinal grooves in their lower surfaces, on top of said stack of sheets and vertically staggered relative to the first named blocks, then positioning another stack of sheets on top of said blocks, then positioning another plurality of longitudinally spaced, transversely disposed blocks having longitudinal grooves in their lower surfaces, on top of said stack of sheets and vertically staggered relative to the first named blocks, then positioning another stack of sheets on top of said blocks, forming superimposed tiers of sheets, and then separately wrapping flat steel bands transversely around each stack of sheets and through the grooves of its supporting blocks to form a plurality of superimposed tiers of separately banded bundles of sheets.

2. The method of packaging metal sheets which consists in positioning upon a horizontal support, a plurality of longitudinally spaced, transversely disposed blocks having longitudinal and transverse grooves in their lower surfaces, then positioning a stack of sheets on top of said blocks, then positioning another plurality of longitudinally spaced, transversely disposed blocks having longitudinal grooves in their lower surfaces, on top of said stack of sheets and vertically staggered relative to the first named blocks, then positioning another stack of sheets on top of said blocks, forming superimposed tiers of sheets, and then separately wrapping flat steel bands transversely around each stack of sheets and through the grooves of its supporting blocks to form a plurality of superimposed tiers of separately banded bundles of sheets.

3. A package comprising a plurality of superimposed bundles, each bundle comprising a stack of metal sheets positioned upon longitudinally spaced, transversely disposed supporting blocks, said blocks having longitudinal grooves in their lower surfaces, the blocks of the lowest bundle also having transverse grooves in their lower surfaces, independent, transversely disposed flat steel bands located around each stack of sheets and received in the longitudinal grooves of its supporting blocks, seals clamping the ends of the bands together for binding each stack of sheets and its supporting blocks together forming a plurality of separate, independently movable, superimposed bundles, and transversely and longitudinally disposed bands located around all of said bundles binding them together in a single package, said transverse band being received in the longitudinal groove of one of the lowest blocks, and the longitudinal band passing through the transverse grooves in the lowest blocks.

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