

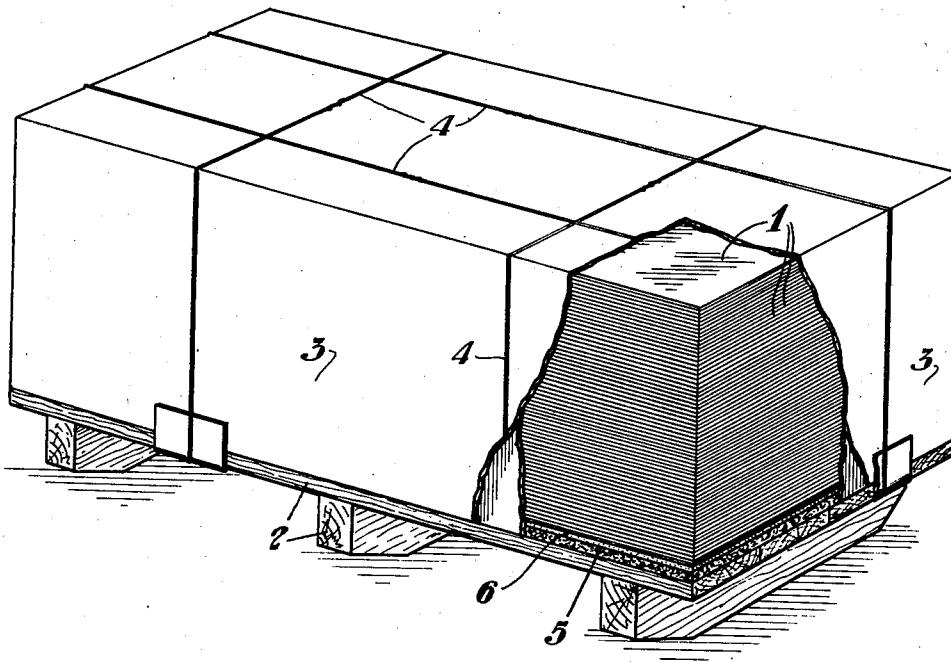
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G. S. JENKS

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SHIPPING TIN PLATE

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INVENTOR.
GEORGE S. JENKS,
BY: *Anna S. Hunter*
HIS ATTORNEYS.

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SHIPPING TIN PLATE

George S. Jenks, Pittsburgh, Pa.

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3 Claims. (Cl. 206—60)

This invention is concerned with the shipping of tin plate, but its principles may be applicable to the shipping of other highly finished sheet products.

Tin plate is customarily shipped in the form of packages, each consisting of eleven hundred twenty sheets horizontally arranged in a pile, the latter being placed on a shipping platform, covered with paper, and the whole bound into a unit. The idea is that when these packages are under way they will be free to shift about as units in the carrier so as to prevent the creation of forces of sufficient magnitude to cause their breakage, it being understood that tin plate is relatively heavy whereby its restraint is difficult.

During shipment the surfaces of the plate, particularly in the case of the lower sheets, usually acquire what the trade calls "black spots". The term is descriptive and needs no explanation. The reason for the formation of these "black spots" is a subject of considerable controversy, but it is well settled that they are prone to form whenever tin plate is shipped by any of the ordinary modes of transportation, and that they are more apt to form when the shipment is made by railroad.

The present inventor has discovered that the formation of these "black spots" can be eliminated, or at least retarded to a considerable degree, if in the case of each package the pile of plate is dampened against vibration, and particularly high frequency vibration, by which is meant vibration having a frequency at least sufficiently high to be within the audible range.

The theory involved is that although the different sheets in a pile of tin plate are bound together so that they cannot shift relative to one another in a noticeable manner, each sheet may vibrate individually when the pile is subject to vibration of such high frequency as to result in the amplitude being so small as to permit such individual vibration in spite of the restrictions placed upon the movement of the individual sheets. It is to be understood that what has been here said is not intended to mean that the packages are restrained against movement as units, the idea being to dampen the pile of plates in each package against vibration as compared to what might be termed shaking, bouncing, or sliding around in the carriers.

A specific example of the invention is illustrated by the accompanying drawing, which is a partially broken away perspective view of a package of tin plate.

As previously mentioned, the tin plate 1 is hor-

izontally arranged in a pile consisting of eleven hundred twenty sheets. It might be best to mention here that tin plate is also packed with one hundred twelve sheets to the package, but whenever it is to be shipped any distance it is commonly made up into what is called a "ten package container". The present invention is particularly concerned with the latter type of package because it is in these packages that the "black spots" are particularly prone to form, this being believed due partly to extra weight on the lower sheets and partly to the fact that such packages are shipped longer distances.

Continuing, the pile of tin plate 1 is carried by a shipping platform 2, covered with paper 3, and the whole bound into a unit package by wire 4.

It has been found that the desired dampening of the pile of tin plate 1 against vibration having a frequency tending to cause the formation of "black spots" on the surfaces of plate, may be effected by inserting a layer of hair-felt 5 between the pile of the plate and the platform 2. This felt is in the form of a continuous unbroken layer. It functions as a layer of vibration-absorbing material between the plate and the platform. It has been found that hair-felt is capable of producing the dampening effect by absorbing the vibrations mentioned. Other elastic material may be used providing it is "dead" to vibrations of the frequencies described.

Although the hair-felt is relatively soft, experience has shown that the bottom surface of the lowermost sheet of tin plate may be marred by its contact. This may be prevented if a sheet of relatively stiff material 6 is arranged between the bottom sheet of tin plate and the felt layer. The sheet may be made of fiber-board of sufficient thickness.

When the described package is placed in any of the ordinary carriers it can shift about at will. However, when the platform 2 begins to vibrate with a frequency sufficient to cause the formation of "black spots", the vibration is absorbed to a large extent by the felt layer before it can reach the tin plate. Some vibration may be transmitted to the pile of tin plate by reason of its being tightly bound to the platform with the wire 4. The felt layer then functions to dampen the pile against any tendency to acquire a vibratory period which might cause the formation of "black spots".

Although the invention is disclosed in part by means of an illustrative specific example in accordance with the patent statutes, it is not in-

- tended to thereby limit the appended claims exactly to this example. The number of sheets of tin plate may vary. Various forms of platforms may be used, and the paper covering may be arranged in various manners. The fundamental idea is to constantly retard the tendency of the pile of tin plate to vibrate at relatively high-frequency, and consequently low-amplitude, at all times during its shipment. However, the package specifically disclosed is believed to possess certain advantages.

I claim:

1. A package of metal sheets having finished surfaces including a shipping support, a sufficient number of the sheets piled horizontally on this support to involve a tendency for black spots to form on their finished surfaces during shipment of the package by ordinary modes of transportation, means binding the sheets on the shipping support and making the package a unit with the sheets practically unable to individually shift relative each other, and a layer of material bound into the package between the sheets and shipping support, which material is capable of absorbing the energy from vibrations having frequencies and amplitudes which will result in individual localized movements of the sheets if the same receive these vibrations.
2. A package of metal sheets having finished surfaces including a shipping support, a sufficient number of the sheets piled horizontally on this support to involve a tendency for black spots to

form on their finished surfaces during shipment of the package by ordinary modes of transportation, means binding the sheets on the shipping support and making the package a unit with the sheets practically unable to individually shift relative each other, and a layer of material bound into the package between the sheets and shipping support, which material is capable of absorbing the energy from vibrations having frequencies and amplitudes which will result in individual localized movements of the sheets if the same receive these vibrations, said material being hair felt.

3. A package of metal sheets having finished surfaces including a shipping support, a sufficient number of the sheets piled horizontally on this support to involve a tendency for black spots to form on their finished surfaces during shipment of the package by ordinary modes of transportation, means binding the sheets on the shipping support and making the package a unit with the sheets practically unable to individually shift relative each other, and a layer of material bound into the package between the sheets and shipping support, which material is capable of absorbing the energy from vibrations having frequencies and amplitudes which will result in individual localized movements of the sheets if the same receive these vibrations, said material being a felted elastic substance.

GEORGE S. JENKS.