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2,065,649

METHOD AND MEANS FOR PACKAGING COILS

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2 Sheets-Sheet 1

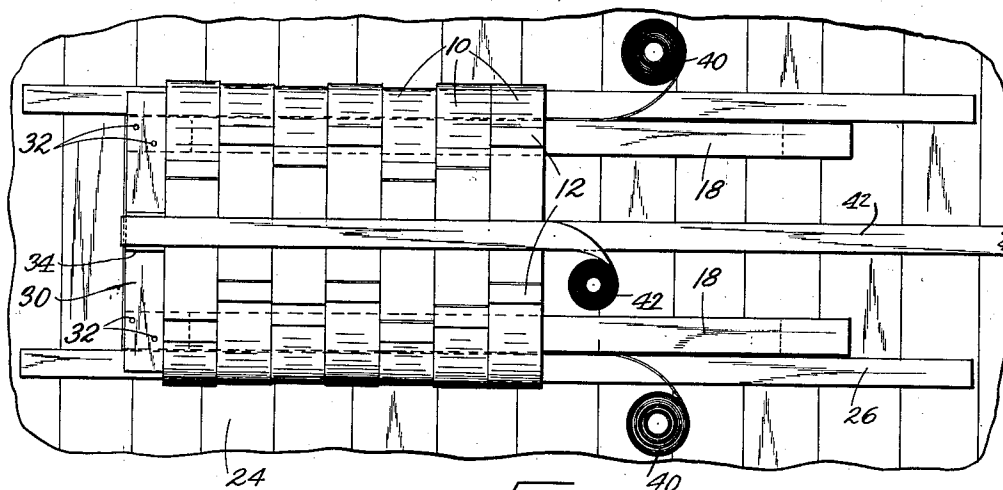


Fig 1

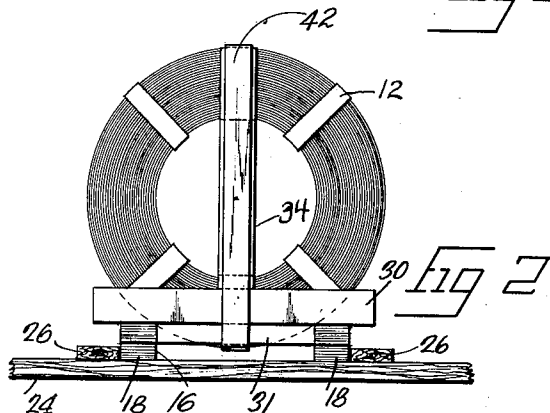


Fig 2

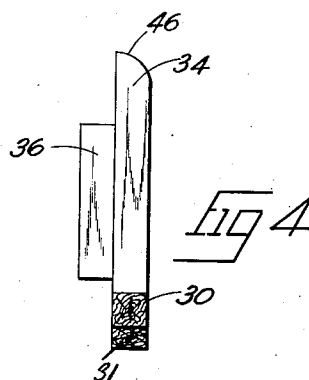


Fig 4

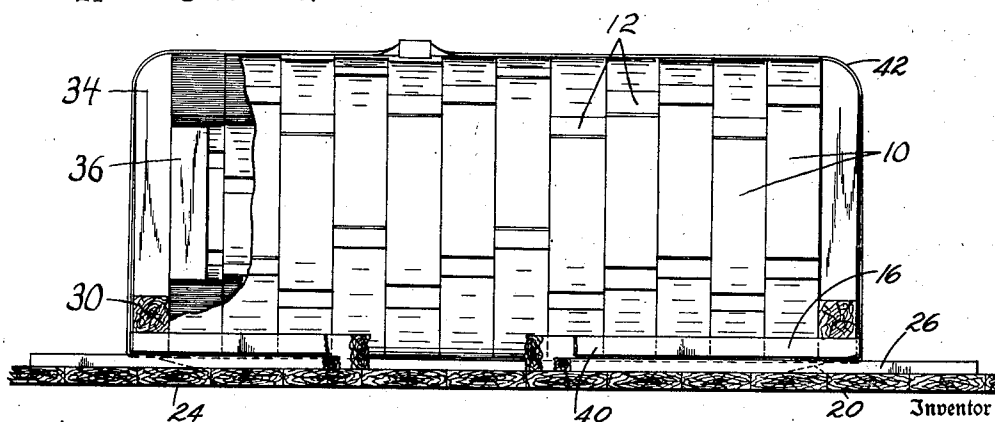


Fig 3

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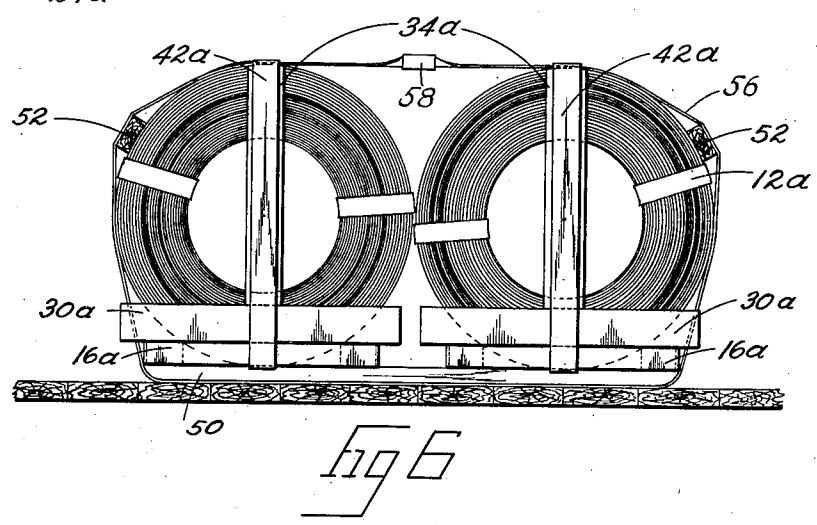
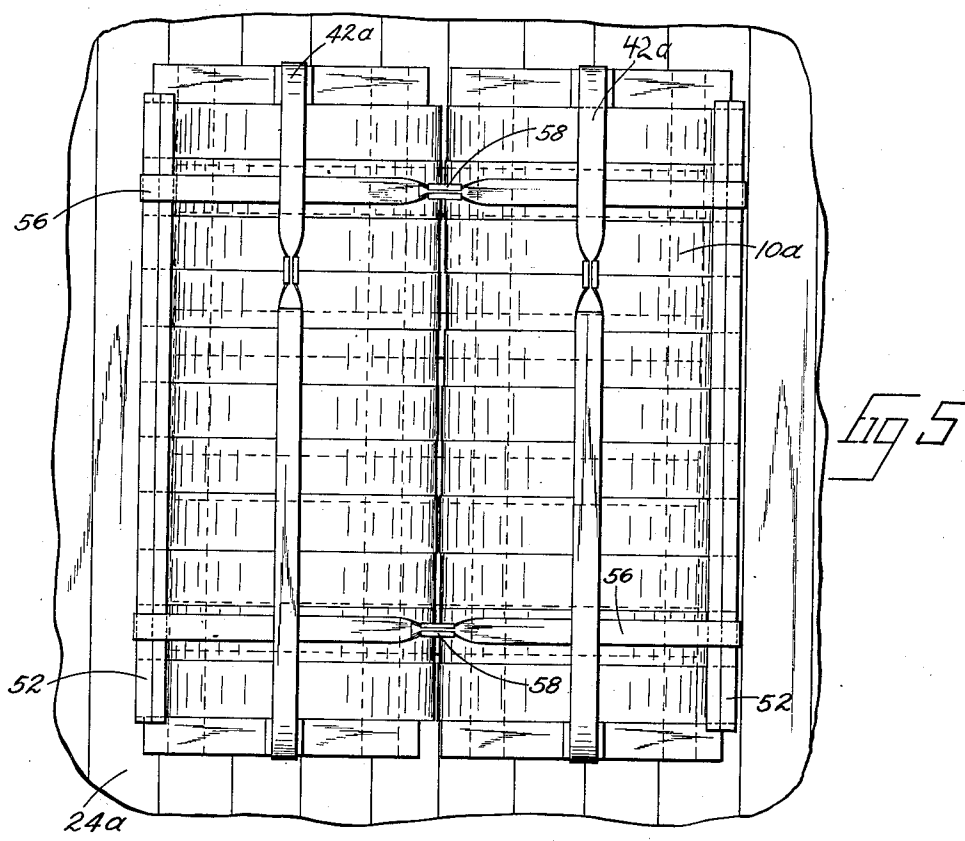
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METHOD AND MEANS FOR PACKAGING COILS

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2 Sheets-Sheet 2



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METHOD AND MEANS FOR
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Application December 16, 1933, Serial No. 702,705

12 Claims. (Cl. 206—65)

This invention relates to packing and shipping coiled material and is more particularly concerned with the provision of an inexpensive practical method and means for handling, packing and transporting heavy metal coils.

Prior to the present invention the transportation of heavy sheet metal coils, such as are employed in the manufacture of tin cans, pressed objects and the like, has entailed considerable difficulty due to the fact that sheet metal coils of this character were extremely heavy and hard to hold by ordinary binding means during shipping, particularly in view of the jars and bumps received in transit. Coils of the specified character were in the past individually fastened with wire or like binding means and the coils were thereafter stacked, in one practice, in end to end relation at the ends of a box car and wooden bulkheads were nailed to the floor and sides of the box car which were supposed to retain the coils in the proper position during shipment. As a matter of fact, the heavy weight of the coils and the rather severe shocks and jars encountered during an ordinary journey of the box car caused the coils to either break through the bulkheads or to unwind or "clock spring" so that in many instances the coils arrived at their destination in damaged or unsatisfactory condition. In certain instances, the bulkheads were smashed, in others, the ends of the car were damaged and in others the "clock springing" of the coils and "egg shaping" resulted in having the coiled material substantially filling the end of the transporting vehicle so that it was very difficult to recoil and remove. "Clock springing" also resulted directly from prior methods of packaging because the usual radial binding force tended to flatten or "egg shape" the coils to oval shape which led to the breaking of the coil bindings or the slipping of the binding means to the bottom.

It has also been tried to ship heavy coiled sheet or strip metal by binding up a plurality of the coils and laying the same down flat upon the floor of the transporting vehicle. However, in practicing this method, the lower portions of the bottom coil have been damaged upon the floor of the transporting vehicle and it is moreover, difficult to satisfactorily hold the individual coils together and to prevent breaking of retaining means such as are ordinarily used to position the coils.

Again it has been proposed to employ metal forms and clamps for packaging the coils for shipment. This process entails considerable expense in initial equipment and likewise necessi-

tates the return of the forms and clamps after shipment which is expensive and unsatisfactory.

By the present invention, the foregoing and other difficulties in the prior known methods of packing and shipping coils, have been avoided or overcome by the provision of a simplified, practical and inexpensive method and means for binding the coils into a unit or package which can be readily handled and transported by usual methods without resulting in the breaking open of the package or unit with damage to the coils. By the present invention it is unnecessary to provide expensive means for securing the coils together during shipment so that any return of such equipment to the shipper after the coils have arrived at their destination is obviated. The coil packages or units are left free to float or shift on the floor of the transporting vehicle so that the unit can adjust itself to any jars or shocks encountered by the vehicle in transit. The package of coiled material can be readily produced by unskilled workmen with simple apparatus, with a minimum of time and effort and by the use of inexpensive equipment and supplies.

The foregoing and other advantages and subjects of the invention will become apparent as the description proceeds having reference to the accompanying drawings wherein:—

Fig. 1 is a plan view of one form of the present invention;

Fig. 2 is an end view of the embodiment of the invention illustrated in Fig. 1;

Fig. 3 is a side elevation of the package illustrated in Figs. 1 and 2;

Fig. 4 is a side elevation of the end posts forming a part of the package illustrated in Figs. 1, 2, and 3;

Fig. 5 is a plan view of another embodiment of the invention;

Fig. 6 is an end elevation of the embodiment of the invention illustrated in Fig. 5.

Throughout the drawings and specification like parts have been designated by like reference characters.

Referring to Figs. 1, 2, 3, and 4 of the drawings which illustrate one form of the invention, each of the numerals 10 indicates a coil of sheet or strip material which is preferably individually bound up by suitable fastening straps 12. It is a part of the concept of the present invention to replace the usual light wire binding means, such as have been employed in individually fastening the coils, with high tension flat steel bands which function to bind each individual coil together in a much tighter and more satis-

factory manner. The flat steel tension bands 12 are readily applied about the individual coil 10 by suitable tightening and locking tools particularly adapted to handle flat strip steel. The coils 10 of sheet or strip metal are ordinarily from about 1 to 5 feet in diameter, 1 inch to 10 inches wide and are usually quite heavy, being made up from sheet metal of thicknesses ranging from about 1/4 inch down to very thin gauge.

The coils 10 are mounted upon a cradle-like support or base indicated generally by the numeral 16 which cradle comprises longitudinal members 18 and transverse ties 30 which are ordinarily secured thereto by any suitable means such as screws or nails 32, the ties 30 being provided with filler blocks 31. These longitudinal members 18 and transverse ties 30 may, of course, be of any material but are usually of wood and may take different cross sectional dimensions such as 2" x 4", 1" x 3", 3" x 3", 4" x 4", etc. The ends of the longitudinal members 18 are preferably tapered upwardly as indicated at 20 so that the cradle will be free to slide upon the surface of the transporting vehicle shown at 24. Suitable guides 26 may be secured to the surface of the transporting vehicle 24 to serve as guides for confining or controlling the movement of the cradle and the coils 10 carried thereon.

It will be seen that the coils 10 are placed in transverse vertical positions and in end to end relation on the cradle or base, that is the ends of the coils are in end to end abutting relation and are disposed in a vertical plane while the axes of the coils extend in a horizontal plane. Suitable end members are provided for clamping the coils together on the cradle and these members may take the form of end posts 34 which have a portion 36 that extends within the end coil 10 thereby serving to vertically position the end post 34 and coil 10 at both ends of the cradle or base. The end posts 34 may be secured to the transverse ties 30 or not as is best fitted for the particular installation. Again the invention contemplates securing the posts 34 to the transverse ties 30 which are, in this particular modification of the invention, not secured to the longitudinal members 18. In this form of the invention the transverse ties 30 are normally provided with shoulder portions for supporting the ties on the members but which permit movement of each tie 30 and its attached post 34 along the longitudinal members 18 when the end members are clamped against the ends of the coils.

The cradle or base 16 can be strengthened by surrounding the same with a horizontal binding strap 40 of flat sheet metal. This strap 40 prevents the cradle or base 16 from spreading or opening up due to the heavy weight of the coils 10 thereon.

The coils 10 are securely bound together in end to end relation on the cradle or base 16 by a longitudinal binding arrangement which preferably takes the form of a flat high tension steel band 42 that extends longitudinally along the bottom of the cradle 16 up around the ends of the ties 30 and end posts 34 and back over the center of the upper portion of the coils where it is tightened to clamp the coils, end members and cradle or base securely together, whereupon it is locked to form a unitary package or unit of the coils. The tightening and locking operation is achieved by any standard tightening and locking tool for use with flat steel bands.

The upper ends of the end posts 34 are preferably

curved as at 46 to allow the longitudinal band 42 to be readily turned about the upper corner of the post and to permit tightening and locking of the band. The end posts 34 are ordinarily made to extend slightly above the end coils 10 so that crimping of the coils at the upper corners is avoided. Incidentally the coils 10 can be of somewhat different diameters and of widely varying widths without affecting the packaging thereof.

From the foregoing it will be seen that the individual coils 10 are clamped very securely together in an end to end relation by single longitudinal binding means which, as directly distinguished from the usual radial binding means, holds the coils in end to end clamping contact without "clock springing". The coils are mounted upon a cradle or base in such a manner that the whole unit is free to move upon the floor of the transporting vehicle in case of shocks or jars. Although as shown in the drawings, the axes of the coils when positioned on the cradle or base normally extend in a horizontal direction, the coils may be positioned on the base in end to end abutting relation in such a manner that the axes of the assembled coils extend in a vertical direction. However, in either case the binding means which secures the assembled coils to the base extends parallel to the axes of the coils. The bound package or unit is ordinarily positioned so that it extends longitudinally of the transporting vehicle so that it will float on the floor of the vehicle when subjected to longitudinal jars such as comprise the majority of shocks upon such vehicles.

The package is inexpensive and can be quickly and satisfactorily made by an ordinary workman with little instruction. No parts need be returned to the shipper and the few binding means can be thrown away or salvaged in part as the purchaser of the goods sees fit.

In the embodiment of the invention illustrated in Figs. 5 and 6 a pair or more of packages or units, such as illustrated in Figs. 1 to 4 and described above, have been bound together to form a combination package or unit thus, like parts in the drawings in Figs. 5 and 6 will be indicated by the same numerals as in Figs. 1 to 4 except that the exponent (a) will be added. Accordingly, the numerals 10^a indicate coils which are preferably individually bound together by strap binding means 12^a with cradle or base members 16^a supporting the coils. Cross ties 30^a and end posts 34^a are provided for the individual packages or units with the longitudinal binding straps 42^a serving to secure the coils 10^a, cradles 16^a, cross ties 30^a, and end posts 34^a together as has been described above with respect to Figs. 1 to 4. The individual packages or units, thus formed are positioned transversely of the floor 24^a of the transporting vehicle and are mounted upon skid members 50. A plurality of the skid members 50 are positioned at transversely spaced distances below the individual packages and these are ordinarily fastened in any desired manner to the cradles 16^a. Longitudinal batten members 52 are provided at the upper front and back portions of the combination unit with the said battens being held in position by a plurality of transversely extending binding means, which preferably are in the form of flat high tension steel bands 56 that extend around certain of the skid members 50 and over the top of the combination unit where they are tightened and locked as at 58.

The combination package is positioned transversely of the transporting vehicle so that longitudinal shocks upon the vehicle will cause movement of the combination package upon the skids 50 in the direction that the skids 50 extend. The transverse width of the combination package can be such that it fits snugly within the end of a box car, for example, so that the sides of the box car function to guide the package in any floating movement that it has.

It will be appreciated that the combination unit just described need not necessarily be made up from two units such as disclosed in Figs. 1 to 4 but that the combination unit can be made up originally from the various parts with the same being assembled in a manner which will be apparent from the description herein. The number of individual packages or units in the combination unit can be varied and likewise the particular manner of placing the combination unit on the floor of the transporting vehicle can be altered as found desirable or advantageous.

The combination unit possesses advantages similar to those described above with respect to the single unit or package in that it is substantially impossible for the individual coils to "clock spring" or to damage themselves or to break from their retaining means during transit. All necessity for expensive bulkheads is obviated, there is no nailing upon the floor or sides of the transporting vehicle as is necessary when bulkheads are employed. The package is inexpensive and rapidly made by the usual workman with inexpensive materials and equipment. There is no need to return the binding means to the shipper and the same can be scrapped or salvaged by the purchaser as he desires. Although the invention is particularly concerned with packaging and shipping coils of sheet or strip metal it will be appreciated that the principles thereof are applicable to handling, binding and transporting substantially any known type of coiled, rolled, or arcuate material.

While several forms of the invention have been illustrated and described in detail in accordance with the patent statutes, it will be understood that the invention is not limited thereto or thereby but is defined in the appended claims.

I claim:

1. In combination, a flat rectangular cradle formed of wooden members about 4' x 4' in cross section, a plurality of coils of sheet metal positioned in transverse vertical relation on the cradle so that the coils are in end to end contact, posts at each end of the aligned coils and extending from the cradle to approximately the top of the end coils and having portions thereof fitting within the end coils, a flexible steel band extending longitudinally below the cradle and up around the end posts and longitudinally over the top of the aligned coils and securing the cradle, coils and posts together, a flexible steel band surrounding the cradle and preventing the same from horizontal spreading and means for guiding the cradle on a support.

2. In combination, a flat rectangular cradle, a plurality of coils of sheet metal positioned in transverse vertical relation on the cradle so that the coils are in end to end contact, posts at each end of the aligned coils and extending from the cradle to approximately the top of the end coils and having portions thereof fitting within the end coils, a flexible steel band extending longitudinally below the cradle and up around the end

posts and longitudinally over the top of the aligned coils and securing the cradle, coils and end posts together, and a flexible steel band surrounding the cradle to prevent the same from horizontal spreading.

3. In combination, a flat rectangular cradle, a plurality of coils of sheet metal positioned in transverse vertical relation on the cradle so that the coils are in end to end contact, posts at each end of the aligned coils and extending from the cradle to approximately the top of the end coils and having portions thereof fitting within the end coils, flexible means extending longitudinally below the cradle and up around the end posts and longitudinally over the top of the aligned coils and securing the cradle, coils and posts together, flexible means surrounding the cradle and preventing the same from horizontal spreading.

4. In combination, a flat rectangular cradle, a plurality of coils of sheet metal positioned in transverse vertical relation on the cradle so that the coils are in end to end contact, posts at each end of the aligned coils and extending from the cradle to approximately the top of the end coils and having portions thereof fitting within the end coils, tensioned flexible means extending longitudinally below the cradle and up around the end posts and longitudinally over the top of the aligned coils and securing the cradle, coils and posts together.

5. In combination, a flat rectangular cradle, a plurality of coils of sheet metal positioned in transverse vertical relation on the cradle so that the coils are in end to end contact, posts at each end of the aligned coils and extending from the cradle to approximately the top of the end coils and having portions thereof fitting within the end coils, flexible means extending longitudinally below the cradle and up around the end posts and longitudinally over the top of the aligned coils and securing the cradle, coils and posts together.

6. In combination, a flat rectangular cradle, a plurality of coils of sheet metal positioned in transverse vertical relation on the cradle so that the coils are in end to end contact, posts at each end of the aligned coils and extending from the cradle to approximately the top of the end coils, flexible means extending longitudinally below the cradle and up around the end posts and longitudinally over the top of the aligned coils and securing the cradle, coils and posts together.

7. A combination shipping unit comprising a plurality of packages each package consisting of a plurality of coils positioned in end to end abutting relation, parallel means extending below the packages and supporting the same in side by side relation, batten members extending along the upper side portions of the combination unit and flexible binding means extending transversely about the coils and securing the batten members, the supporting means and the packages together.

8. A combination shipping unit comprising a plurality of packages each package consisting of a plurality of coils positioned in end to end abutting relation, means extending below the packages and supporting the same in side by side relation, batten members extending along the upper side portions of the combination unit and flexible binding means securing the batten members, the supporting means and the packages together.

9. A combination package comprising a plurality of individually bound coils, said coils being positioned in a plurality of rows with the coils in each row being in end to end contact and with

the plane of each coil substantially vertical, means for supporting each row of coils, means for supporting the row supporting means, means securing each row of coils together as a row and
5 means for securing the rows of coils together as a unit.

10. A shipping package comprising a base having parallel runners and cross members thereon, a plurality of coils of sheet metal positioned on
10 said base in end to end abutting relation, and means including a tensioned band for securing the assembled coils and base together for movement as a unit on said runners, said band extending parallel to the longitudinal axis of the
15 assembled coils and around at least one of said cross members.

11. A shipping package comprising a base having parallel runners and cross members thereon, a plurality of coils of sheet metal positioned on
20 said base in end to end abutting relation, means

for securing each individual coil against unwinding, and means including a tensioned band encircling the assembled coils and extending around the cross members for securing the coils and base together for movement as a unit on said runners, said band extending parallel to the horizontal axis of the assembled coils.

12. A shipping package comprising a plurality of aligned coils disposed in end to end abutting relation with the axis about which the coils are
10 wound being disposed horizontally, means for securing each individual coil against unwinding, a base for supporting said coils having parallel runners and cross members thereon, and means including a tensioned band encircling the assembled
15 coils and cross members and securing the same together as a unit for movement on said runners, said band being disposed between the runners and extending parallel thereto.

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