

Dec. 18, 1928.

1,696,008

W. C. LUDWIG

APPARATUS AND METHOD FOR PACKAGING PAPER

Filed Sept. 4, 1924

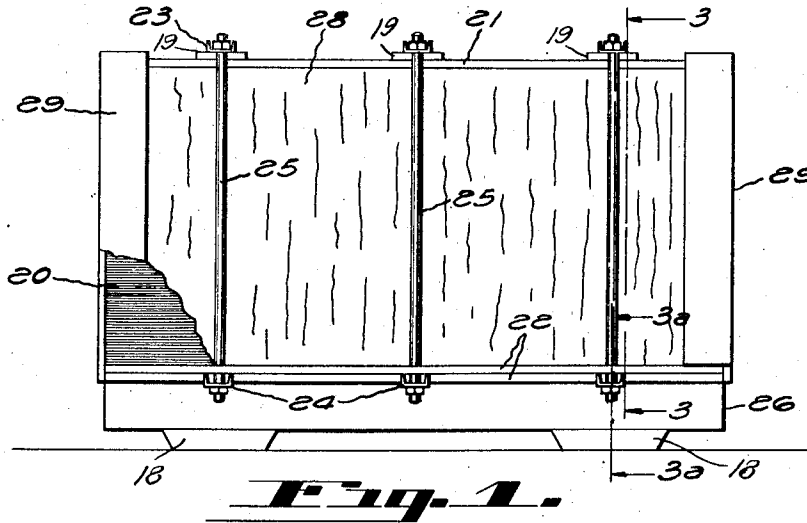


Fig. 1.

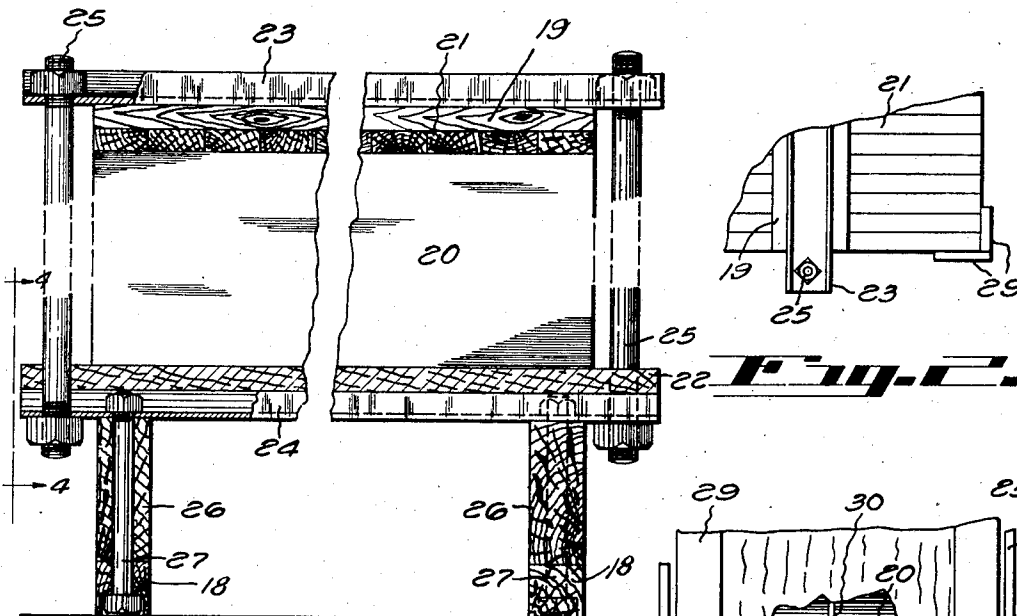


Fig. 2.

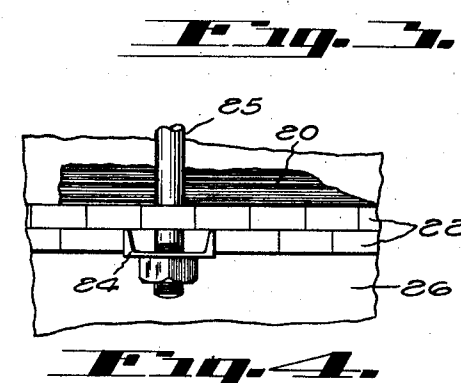


Fig. 3.

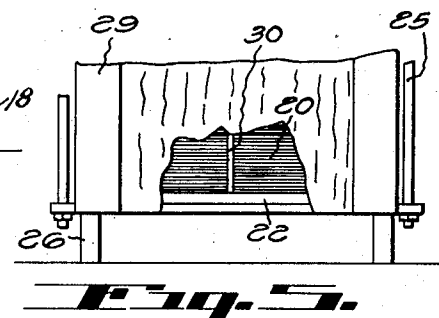


Fig. 4.

Inventor

William C. Ludwig

By Marshall and Fehr

Attorneys

UNITED STATES PATENT OFFICE.

WILLIAM C. LUDWIG, OF CHILLICOTHE, OHIO, ASSIGNOR TO THE MEAD PULP & PAPER COMPANY, OF DAYTON, OHIO, A CORPORATION OF OHIO.

APPARATUS AND METHOD FOR PACKAGING PAPER.

Application filed September 4, 1924. Serial No. 735,894.

The present invention relates to the packaging and transporting of paper and particularly to the packaging and transporting of sheet paper adapted to be piled or formed into stacks.

One of the principal objects of the present invention is to provide a novel method and apparatus for packaging and transporting sheet paper, which eliminates the damage normally occurring during shipment and also makes for easier handling.

Another object is to provide such a method which involves the principle of maintaining a heavy external pressure upon the stack of paper during transportation in order to prevent movement of the sheets of paper with respect to one another.

Further objects of the present invention will be apparent from the following description when taken in connection with the accompanying drawings, wherein:

Fig. 1 is a side elevation of a stack of sheet paper packaged according to the present invention and ready for shipment;

Fig. 2 is an enlarged plan view of a portion of Fig. 1;

Fig. 3 is a vertical sectional view taken on the lines 3—3 and 3^a—3^a of Fig. 1;

Fig. 4 is a fragmentary view in elevation taken at 4—4 of Fig. 3; and

Fig. 5 is a fragmentary elevational view indicating how the present invention may be employed in shipping a plurality of stacks of paper as a single unit.

Referring to the drawings, 20 denotes the sheet paper to be transported, the sheets of paper being preferably disposed horizontally and piled or formed into a stack. In contact with the upper and lower surfaces of the stack are upper and lower plates or members 21 and 22, respectively. These plates are of substantially rigid construction and are preferably, though not necessarily, of solid construction. They may be constructed of wood or any other suitable material, but are shown as composed of one inch boards. Lying along the upper and lower surfaces of the stack of paper and in engagement with the plates 21 and 22 are plurality of rigid reinforcing members 23 and 24 preferably of channel iron or similar rigid construction. Preferably the upper or cover plate 21 is provided with cross reinforcing members 19, and the cross members 23, which constitute

parts of metallic bands encircling the completed package of paper sheets, are positioned to overlie and contact with these reinforcing members 19. These upper and lower members 23 and 24 are arranged in pairs and each pair is connected by two clamping bolts 25 extending upwardly alongside the stack of paper and connecting corresponding ends of the paired upper and lower cross members 23 and 24.

As will be seen from Fig. 3, the upper and lower plates 21 and 22 together with the members 23 and 24 and clamping bolts 25 constitute a rigid frame completely encircling the stack of paper, the clamping bolts 25 being disposed substantially normal to the sheets of paper in the stack. The clamping bolts 25 are provided with screw threaded nuts, or other suitable adjusting means, whereby the plates 21 and 22 may be drawn together to exert any desired external pressure on the paper and to maintain such pressure upon the paper while the latter is being transported. By thus placing the paper under compression the friction between the sheets of paper may be increased to such an amount as to prevent substantially all slipping or movement of the sheets of paper with respect to one another and to their supporting structure. The stack of sheet paper and its supporting structure is, in effect, a bale, and this bale is the shipping unit.

The lower channel members 24 are preferably, though not necessarily, countersunk or embedded in the lower surface of the lower plate 22 as indicated in Figs. 3 and 4. As shown, this is accomplished by building the bottom plate of two thicknesses of boards with certain boards in the lower layer omitted to give the desired grooves for receiving these members 24. But if desired the bottom member may be made of single board with suitable grooves formed therein, or the grooves may be formed in the skids. To facilitate the movement of the stack of paper from place to place within the factory or into or out of freight cars, or to enable the units to be closely packed together in the freight car, the bottom of each shipping unit or bale is provided with spaced apart skids or runners 26 lying along the bottom face of the stack and disposed at right angles to the several members or channels 24. In this manner the

stack is elevated a sufficient distance from the ground to receive an elevating truck thereunder, and the stacks of paper may thus be readily moved from place to place.

6 The skids are preferably nailed or otherwise secured to the lower plate 22 and are also secured to the several channel iron members 24 by means of bolts 27. By thus bolting the skids to the iron members the skids which
10 are ordinarily made of wood are greatly strengthened and danger of their bending over or breaking under their heavy load is practically overcome. When the runners are provided with feet 18 as shown in Fig. 1, these
15 feet are liable to be broken off in shipping unless prevented by means of the construction herein described.

While the stack of paper and its confining structure has been described as a bale or unit
20 having skids or runners secured thereto, in practice the lower plate 22 together with the channel iron members 24 and the skids 26 are connected together as a unitary structure, this unitary structure being a skid platform. The
25 plate 22 constitutes the top or supporting member of the skid platform. In operation, the sheet paper is piled upon the platform or plate 22 to form the stack 20, and when the stack or pile of paper has reached the
30 desired height it is preferably enwrapped with a suitable protective covering, as for example, a water-proof paper 28, although it will be understood that the use of such a protective covering may be dispensed with
35 if desired. The top plate 21, top members 23 and clamping bolts 25 are placed in position, and the stack of paper is then clamped or bound to the platform or lower plate 22 by turning up the adjustable clamping bolts
40 25. Wooden or other protecting strips 29 may then be fastened to the upper and lower plates 21 at the corners of the stack to protect the corners from possible injury during shipment. The stack of paper is now ready
45 for storage or shipment as desired.

The paper may be readily handled for shipment or otherwise; the skids permitting the placing of an elevating truck underneath the skid platform or lower plate 22 either for
50 loading into a freight car or for unloading therefrom or transporting at any time or place required. The stack or shipping unit is thus maintained in its original horizontal position as it is moved from place to place
55 and is not subject to racking strains as is the ordinary and well-known packing box which is ordinarily raised upon one edge or tilted in order to receive a truck thereunder. Also this permits of greatly increasing the
60 quantity of paper that may be included in a single package. An important advantage of this construction is that a number of stacks, bales or shipping units may be readily placed in position in a freight car with their ends
65 abutting against one another and against the

end of the car so that the stacks support one another thereby to a large extent relieving the stacks of paper from the shocks arising during starting and stopping and moving of
70 the train. By placing each stack of paper under suitably heavy compression alone, or by placing it under a lesser compression and abutting the ends of a number of stacks as described above, it is possible to so package
75 sheet paper that the stack will maintain its original shape and condition notwithstanding the severe shocks and rough treatment of the paper during shipment. This is an important advantage particularly in the ship-
80 ment of high-grade paper inasmuch as shifting of the paper would probably irreparably damage it.

Another advantage resides in the saving in the cost of the package for the paper. As
85 much paper may be easily handled in one package of the character herein disclosed as is ordinarily included in a considerable number of crates of the heretofore conventional character. Consequently the quantity of lum-
90 ber required is comparatively small, and the single package is considerably lighter in weight for any given weight of paper than in the usual form of packing cases. This results in a saving in freight charges and also
95 makes it possible to load a greater quantity of paper within a given space in a freight car.

Another advantage is the saving in the handling of the paper, particularly in un-
100 packing. Heretofore it has been customary to construct a solid packing box of the required size, to place the sheet paper therein a little at a time and finally to nail the cover thereon. Also the packing box had to be of the
105 exact size of the paper in order to prevent undue damage during shipment. According to the present invention the paper is piled upon the platform and since the platform is out in the open this may be done quickly and with-
110 out damaging the edges of the sheets of paper. The stack being formed to the proper size and then covered by the protective covering, the confining structure may be quickly and easily
115 built up about the stack of paper as already described. When the paper reaches its destination it may be unpacked by simply removing the confining and binding structure which leaves the stack of paper upon the platform
120 completely exposed and ready for use. As heretofore practiced considerable damage to the paper almost invariably occurred during unpacking of paper from crate boxes. It is not necessary at this stage to unpack the paper
125 a little at a time as in the case of the ordinary packing box. Where it is desirable to season the paper prior to its use on the press, as is the case of high grade paper, the paper need not be transferred from the platform to a truck, as heretofore, but may be left on the platform
130 and placed in storage for the length of time

required for proper seasoning of the paper, and then withdrawing from storage as required.

From the foregoing it will be evident that the present apparatus and method of packaging and shipping paper effects a great saving in wastage due to the fact that there is less handling of the paper than heretofore, and this is an item of considerable importance in the case of high grade expensive sheet paper.

A still further advantage resides in the fact that much material and expense may be saved by the reuse of the skid platforms. After the paper is removed from the skid platform, the latter, together with the channel iron members, clamping bolts and the top plate 21 may be readily returned in compact form to the shipper.

The present invention is not limited in its application to the packaging of large sheets of paper corresponding in size to the skid platform, but may also be used in the shipment of small sheets of paper. Such paper is arranged in the desired number of stacks of equal height over the surface of the lower plate or skid platform 22, as indicated in Fig. 5, these stacks being separated by suitable vertical separators 30. The several stacks of paper being positioned in place the top and bottom sections are pulled together by manipulation of the members 25 thus binding the sheets of the several stacks firmly in place, against slippage. Also it is not essential that members 23 and 24, positioned transversely as shown, be used. If the top and bottom members are made sufficiently rigid without the use of these members the desired results may be secured. But where the channel irons are used as shown, they are preferably bolted or otherwise secured together to encircle and contact the top and bottom members respectively so that the top and bottom members, and the respective cross members each function as a unit.

While the form of apparatus herein described constitutes a preferred embodiment of the invention, it is to be understood that the invention is not limited to this precise form of apparatus, and that changes may be made therein without departing from the scope of the invention which is defined in the appended claims.

What is claimed is:

1. Apparatus of the character described for packaging and transporting a stack of sheet paper, comprising means for holding the sheets of paper together under heavy compression during shipment, said means including a substantially rigid metallic band encircling said stack of paper and adapted to bear upon the upper and lower faces of said stack, and skids secured to said metallic band whereby to maintain the lower part of said

frame and said stack a sufficient distance above the ground to receive an elevating truck thereunder.

2. Apparatus of the character described for packaging and transporting a stack of sheet paper, comprising means for holding the sheets of paper together under heavy compression during shipment, said means including a plurality of substantially rigid metallic bands encircling said stack of paper, said bands comprising substantially rigid spaced-apart top and bottom members lying along the top and bottom surfaces respectively of said stack, and adjustable means for drawing said top and bottom members toward each other to place said stack under heavy compression, and skids disposed transversely to said bottom members underneath the stack and rigidly secured to the bottom members whereby to elevate the bottom members and stack a sufficient distance above the ground to receive an elevating truck thereunder.

3. Apparatus of the character described adapted for packaging sheet paper for shipment and storage, comprising a platform for receiving the sheets of paper in a stack thereon, a cover plate for positioning upon the stack of paper piled upon the platform for shipment and storage, reinforcing means carried by said cover plate, compression means encircling said platform and cover plate and stack of paper sheets therebetween, said encircling compression means overlying said reinforcing means across the said cover plate and constructed for manipulating to urge the cover plate toward the platform when the paper is to be shipped to place a heavy pressure upon the paper substantially normal to the surface thereof, to maintain sufficient frictional resistance between the several sheets to hold the sheets of paper substantially immovable with respect to each other, and with respect to the platform, during shipment, said encircling compression members being readily removable to permit removal of the cover plate so that the paper may be stored upon said platform at its destination; and skids adapted for attachment to the platform to facilitate handling of the completed package of paper.

4. Apparatus of the character described adapted for packaging sheet paper for shipment and storage, comprising a platform for receiving the sheets of paper for stacking thereon, a cover plate for positioning upon the stack of paper piled upon the platform for shipment and storage, encircling means separate from said platform and cover plate lying closely adjacent the sides of the stack and constructed for manipulating to urge the cover plate toward the platform when the paper is to be shipped to place and hold a heavy pressure upon the paper substantially normal to the surface thereof and maintain

the whole form rigid, to hold said sheets of paper against movement with respect to each other and with respect to the platform during shipment, said encircling means being readily
5 removable to permit removal of the cover plate so the paper may be stored upon said platform at its destination for convenient use; and skids adapted to be attached to the platform to facilitate handling of the completed package of paper.
10

5. Apparatus of the character described adapted for packaging sheet paper for shipment and storage, comprising means for holding the sheets of paper together under heavy
15 pressure during shipment, said means including a platform and a cover plate adapted to receive the stack of paper sheets therebetween and a metallic band encircling said platform and cover plate and said stack of
20 paper, and constructed for manipulating to urge the cover plate toward the platform, skids extending at substantially right angles to said metallic band for supporting said platform, and means for securing said skids
25 to support said platform to maintain said platform a sufficient distance above the

ground to receive an elevating truck thereunder.

6. Apparatus of the character described for packaging and transporting a stack of
30 sheet paper, comprising a platform for receiving the sheets of paper for stacking thereon, a cover member for positioning upon the stack of paper piled upon the platform for
35 shipment and storage, compression means encircling said platform and cover member and the stack of paper therebetween, and constructed for manipulating to urge the cover
40 plate toward the platform when the paper is to be shipped to place and hold a heavy pressure upon the paper substantially normal to the surface thereof to hold the sheets of paper
45 substantially immovable with respect to each other and with respect to the platform during shipment, and skids for supporting said platform, the portion of the encircling means contacting with the said platform passing between said platform and said skids.

In testimony whereof I hereto affix my signature.

WILLIAM C. LUDWIG.