

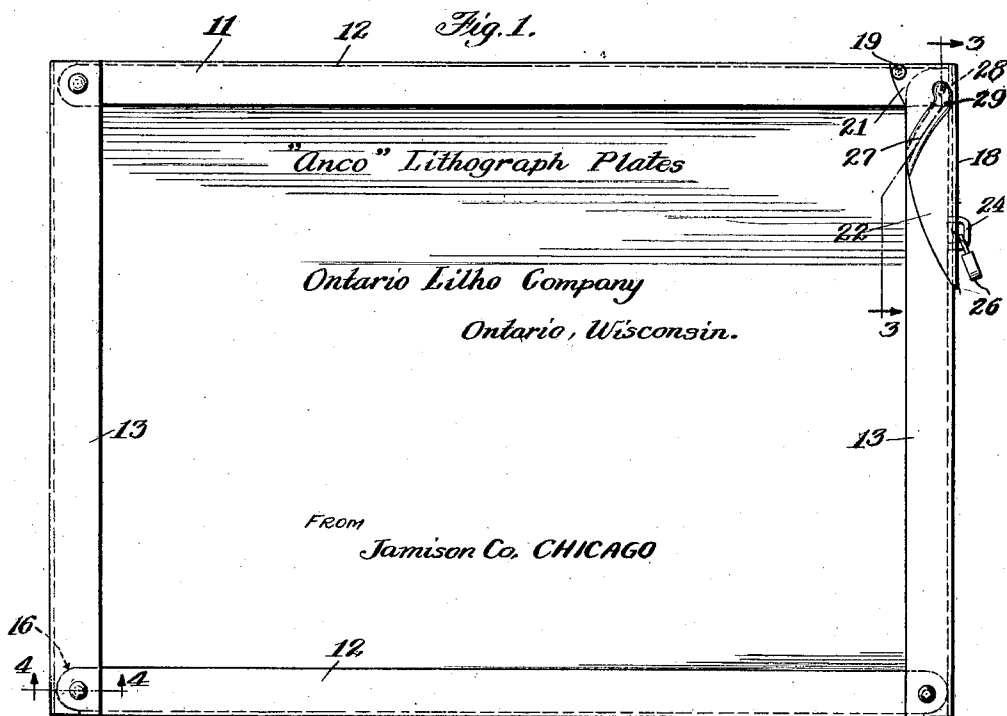
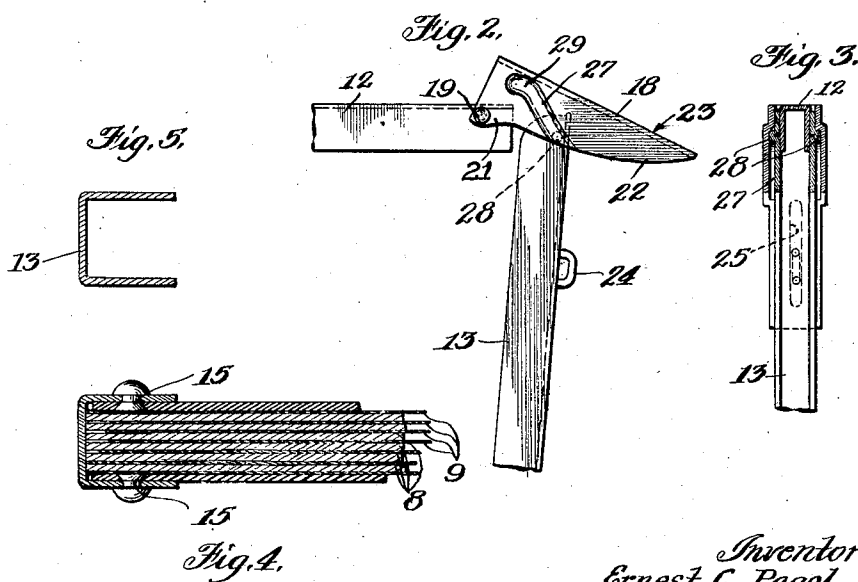
April 1, 1930.

E. C. PAGEL

1,752,996

PACKAGE

Filed June 22, 1925



*Inventors*  
*Ernest C. Pagel.*

*Williams, Bushby*  
*Mc Calister & Kinkadee*  
*Attys.*

## UNITED STATES PATENT OFFICE

ERNEST C. PAGEL, OF CHICAGO, ILLINOIS, ASSIGNOR, BY MESNE ASSIGNMENTS, TO  
SIGNODE STEEL STRAPPING COMPANY, A CORPORATION OF DELAWARE

## PACKAGE

Application filed June 22, 1925. Serial No. 38,657.

My invention relates to a package, and more particularly to a package which will protect a stack of metal plates or other flat articles, and which will facilitate the shipment and handling thereof.

Steel and other metal plates, both plain and lithographed, are used for a great variety of industrial purposes. To be economically handled and shipped, they must be packaged or crated in units each consisting of a plurality of superposed plates.

Heretofore it has been difficult, on account of the excessive weight of the plates, when assembled, securely to package and handle the same. Crates which are nailed together or screwed together for the carrying of such plates are invariably of excessive bulk and are subject to the very serious objection that the nails or screws of the crate often start out in handling and cause serious wounds. Moreover, such crates are usually so much damaged in shipment that it is not feasible to use them a second time. Furthermore, it is impracticable to reship crates ordinarily employed on account of their bulk and the labor involved in knocking them down and reconstructing them.

With these considerations in view, my invention contemplates the provision of:

(a) A package of stacked plates which, while very rugged and secure, is only slightly larger than the stack of plates which it contains.

(b) A package of stacked plates which need be only slightly heavier than the unpacked plates.

(c) A package of stacked plates which is or may be formed entirely of metal.

(d) A package of stacked plates comprising an articulated frame embracing the edges of the plates.

(e) A package of stacked plates comprising an articulated frame which can be readily opened for receiving the plates, and readily closed for locking the plates therein.

(f) A package of stacked plates comprising an enclosing frame which can be readily knocked down into a relatively small bundle for returning to the shipper.

(g) A package of stacked plates compris-

ing an enclosing frame which can be locked against the removal of one or more plates except by the person holding the authorized key for unlocking the frame.

(h) A package so constructed as to afford a stack of metal plates or the like maximum protection at the points where they require protection most,—that is, at the edges of the plates.

Other features, objects and advantages of my invention will appear from the following detailed description, wherein reference is made to the accompanying drawings, in which—

Figure 1 is a side elevational view of a completed package employing the devices of my invention;

Figure 2 is a fragmentary elevational view showing the clamp or link at the corner of the frame swung outwardly in position for opening the frame;

Figure 3 is a sectional view taken approximately on the plane of the line 3—3 of Figure 1 and looking in the direction indicated by the arrows;

Figure 4 is a transverse sectional view through one corner of the frame, such as on the line 4—4 of Figure 1; and

Figure 5 is a transverse sectional view through one of the channel members of the frame.

The lithographed plates, sheets or other articles which are to be packaged are indicated at 8 (Fig. 4), it being understood that these sheets or plates 8 are representative of any flat article or articles which it is desired to bind in package form. Where such sheets or plates have surfaces which it is desired to protect, intervening sheets 9 of fibre, pasteboard or any other suitable material may be placed between the plates or articles, as also shown in Fig. 4. Such protecting sheets 9 may also be placed over the outer sides of the outermost plates 8 for protecting the outer surfaces thereof.

After the plates 8, and whatever protecting sheets 9 may be employed, have been stacked or brought together, as shown in Fig. 2, the edges of the stack or group of plates are enclosed in a metallic protecting frame

11. This frame is of articulated construction, comprising four channel members pivoted together at three corners of the frame and arranged for opening at the fourth corner of the frame for placing the stack of plates therein. The upper and lower channels 12—12 and the end channels 13—13 are of standard channel section, as shown in Fig. 5, one pair of channels being of narrower width than the other pair of channels for nesting between the side flanges of the latter pair of channels. Preferably, the horizontal channels 12—12 are of narrower width than the end channels 13—13 for engaging the ends of the horizontal channels between the side flanges of the end channels, although this arrangement may be reversed if desired, or, the nesting of one channel within the other may be alternated at the corners of the frame.

The ends of the channels are pivotally connected by pairs of aligned rivets 15 which pass through the flanges of both channels. The inner heads of the rivets are countersunk in the flanges of the inner channel (Fig. 4) so as to lie flush with the inner faces of these flanges. This leaves the full width of the inner channel available for receiving the plates 8 and protecting sheets 9. The side flanges of each of the channel rails may be given a slight divergence, if desired, although I find the parallel-sided sectional form, as shown in Fig. 5, to be preferable to a flared form of channel. The corners of the inner channels, which, in the arrangement shown in Fig. 1 are the channels 12, are rounded as indicated at 16 so that the frame can be knocked down in its entirety for returning to the shipper in the form of a relatively small, compact bundle.

The corner of the frame which is left open for the insertion of the stacked plates and protecting sheets is adapted to be closed by a camming clamp or link 18 which is pivoted at 19 to one of the channel rails for swinging down over the adjacent channel rail at this corner of the frame. This clamp or link is of channel cross section having extending ears or lugs 21 through which are passed the rivets or pins 19 which pivotally connect the clamp or link to one rail of the frame. The inner heads of the pivot pins or rivets 19 are countersunk in the flanges of the channel 12, similarly to the arrangement shown in Fig. 4, so as not to reduce the effective width between the flanges of the channel 12. The side flanges 22 of this clamp or link 18 are adapted to embrace the side flanges of the frame channel 13, and the web portion 23 is adapted to abut against the outer side of the channel 13. An eye or loop 24 is rigidly secured in the web portion of this channel 13 for passing through a slot 25 in the web portion 23 of the clamp or link 18. After the clamp or link member 18 has been

swung into closed position over the channel 13, a padlock or seal 26 may be passed through the loop 24 for locking or sealing the frame over its package of plates.

Camming means may be embodied in the clamp or link member 18 to facilitate the closing of the frame over the stack of plates 8. Such camming means may comprise inclined grooves 27 punched outwardly in the side flanges 22 of the member 18, these camming grooves cooperating with pins or other cylindrical protuberances 28 projecting laterally from the upper end of the channel member 13. The upper ends of these camming grooves or slots 27 have lateral offsets 29 which receive the pins or projections 28 and which function to lock the link member 18 in closed position when these projections 28 are engaging in the offset portions of the camming grooves 27.

The provision of these camming grooves and the projections 28 also facilitates opening of the frame in the event that there should be any tendency of the frame to bind over the stack of plates. As illustrated in Fig. 2, an outward or rotative effort applied to the link member 18 is effective through the internal grooves 27 and projections 28 to cam the ends of the channels 12 and 13 apart. The lower ends of the grooves 27 are, of course, open so that the channels can be completely separated at this corner of the frame for placing the stack of plates therein. In closing the frame over the stack of plates, the projections 28 are started in the lower ends of the cam grooves 27 after which outward pressure on the end of the link member 18 is effective to cam the adjacent ends of the channel members 12 and 13 together. The locking relation established at this corner of the frame will close the frame over the plates with the necessary rigidity effectively to protect the same during shipment. It will be noted that there is an entire absence of nails, screws or any other sharp or pointed surfaces which might inflict wounds in handling.

The name and address of the consignee, and any desired advertising matter may be printed on the side of the package (Fig. 1), on the outer fibre protecting sheet 9 or directly on the outermost plate or like article where no outer protecting sheet is employed.

The ability to reuse the frame is very important advantage these days. In returning the frame, the same may be locked together in the erected position shown in Fig. 1, or it may be knocked down into a comparatively long, narrow bundle by releasing the link or clamp member 18 and swinging the one pair of channel members 12—13 down into substantial parallelism with the other pair of channel members 12—13. It will also be noted that all of the parts of the frame are permanently linked together so that no part

or parts thereof can become lost in returning the frame to the shipper.

Although in the drawing and in the above description I have confined myself to what I consider the preferred embodiment of this invention, it is to be understood that various modifications are contemplated and the invention should, therefore, be limited merely by the scope of the appended claims.

Having now described my invention, what I consider as new and desire to secure by Letters Patent is:

1. A shipping frame for goods of the class described, comprising four channel members pivotally connected together with the end of one channel member engaging between the side flanges of another channel member, the ends of the inner channel member or members being rounded whereby said frame can be knocked down for bringing all of said frame members into substantial parallelism, and means for fastening said frame over the goods.

2. The combination with a plurality of substantially flat plates and protecting sheets between said plates, of a shipping frame therefor comprising four channel members pivoted together at three corners of the frame, said channel members embracing the edges of said plates and protecting sheets, a link pivoted to one of said channel members at the open corner of said frame comprising side flanges, inclined cam grooves formed in the inner faces of the side flanges of said link, and projecting members extending laterally from the adjacent channel member for engaging in said cam grooves.

3. In a shipping crating for metal sheets or the like, the combination of four channeled metal members pivotally secured to each other end to end, certain of said channeled members being of less width and adapted to be partially received in adjacent channeled members when said crating is in collapsed position, and means for securing said channeled members upon said sheets.

4. In a shipping crating for metal sheets or the like, the combination of four channeled metal members pivotally secured to each other end to end, certain of said channeled members being of less width and adapted to be partially received in adjacent channeled members when said crating is in collapsed position, and means for securing said channeled members upon said sheets, comprising a channeled member carried by one end of said crating for camming and nesting engagement with the other end of said crating.

5. In a shipping package, the combination of a plurality of metal sheets forming a stack, with a crating for protecting the edges of said sheets comprising a plurality of channeled members having flanges located to enclose the edges of said sheets, and means for securing said channeled members together at

the corners of said sheets, including rivets pivotally connecting the flanges of successive channeled members together, certain of said channeled members being adapted to nest in other channeled members when said crating is in collapsed position.

6. In a shipping package, the combination of a plurality of metal sheets forming a stack, with a crating for protecting the edges of said sheets comprising a plurality of channeled members having flanges located to enclose the edges of said sheets, and means for securing said channeled members together at the corners of said sheets, including rivets pivotally connecting the flanges of successive channeled members together, and force multiplying means for actuating the ends of said crating comprising a channeled member pivotally mounted at one end of said crating and having camming engagement with the other end of said crating.

7. In a shipping package, the combination of a plurality of metal sheets forming a stack, with a crating for protecting the edges of said sheets comprising a plurality of channeled members having flanges located to enclose the edges of said sheets, and means for securing said channeled members together at the corners of said sheets, including rivets pivotally connecting the flanges of successive channeled members together, and force multiplying means for actuating the ends of said crating comprising a channeled member pivotally mounted at one end of said crating and having camming engagement with the other end of said crating, said force multiplying means being adapted to cam said crating to open or to closed position.

In witness whereof, I hereunto subscribe my name this 18th day of June, 1925.

ERNEST C. PAGEL.