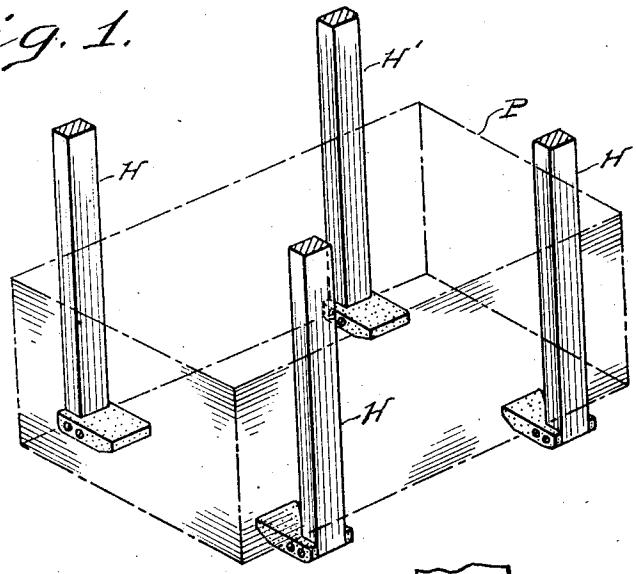
Dec. 15, 1931. J. B. CHALMERS 1,836,576

LIFTING HOOK

Filed July 23, 1930

Fig. 1.



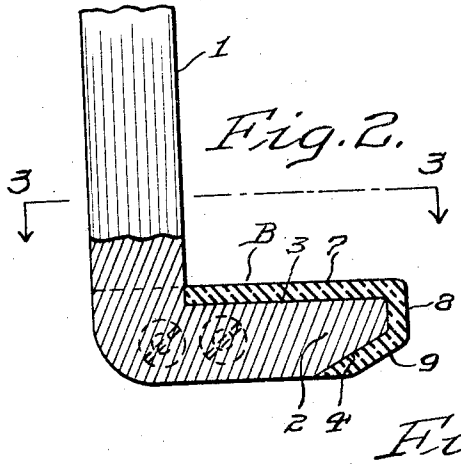


Fig. 2.

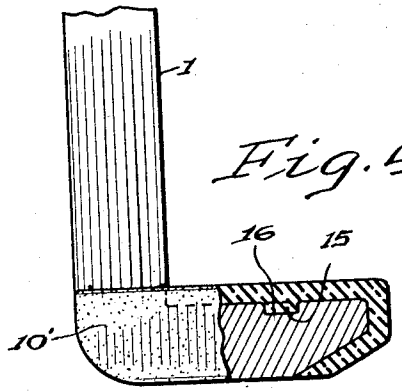


Fig. 4.

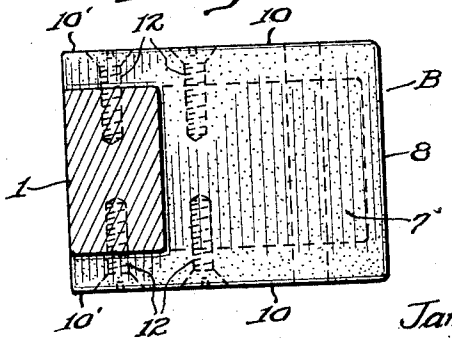


Fig. 3.

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WITNESS

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Patented Dec. 15, 1931

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UNITED STATES PATENT OFFICE

JAMES B. CHALMERS, OF GARY, INDIANA

LIFTING HOOK

Application filed July 23, 1930. Serial No. 470,089.

My invention relates more especially to the hooks or tongs customarily employed for lifting packs or piles of steel sheets when moving them about, loading them on cars or the like, although the invention may be employed with advantage in connection with hooks or tongs primarily intended for other lifting purposes.

Steel or other metallic sheets during certain phases of their manufacture and when being shipped to the consumer are customarily piled one above the other until a pack or stack of suitable height and considerable weight is formed and the pack then moved about or loaded for shipment as a unit through the medium of lifting hooks or tongs having toes adapted to engage beneath the bottom sheet of the pack. While these hooks or tongs are of various types they ordinarily comprise a pair of generally vertically extending shanks respectively adapted to lie adjacent or in engagement with the opposite sides of the pack of sheets when the tongs are in operative position, and each provided with an inwardly projecting toe at its lower end adapted to engage beneath the bottom sheet of the pack as aforesaid, so that when two or more pairs of the tongs are engaged over the pack and a lifting force applied to their upper extremities the pack can be readily raised and carried about as desired.

The tongs are usually made of steel or other material which is substantially as hard or sometimes even harder than the sheets themselves with the result that when the toes of the tongs are being engaged beneath the bottom sheet some scratching or abrasion of the lower face of that sheet frequently occurs and, what is of more importance, when the pack is raised the weight of the superposed sheets tends to form in the lower sheets of the pile dents or impressions generally conforming in contour to the toes of the tongs, thereby rendering not only the bottom sheet but frequently three or four sheets lying above it unsuitable for their intended purpose, for example, the manufacture of automobile bodies, in consequence of which these sheets have to be discarded. The waste and loss entailed in this manner is a material item as will readily be appreciated when it is considered that out of a carload of fifty packs of sheets which have been loaded into the car by means of the lifting hooks or tongs heretofore in use, the consumer frequently has to scrap from 150 to 200 sheets, that is, three or four sheets from each pack, while the losses arising during process of manufacture of the sheets as the packs are necessarily moved about also constitute a material item in the cost of their production.

It is an object of the present invention to prevent the undesirable results to which I have just referred by providing the toes of the lifting hooks or tongs with suitable resilient covers or boots so arranged as to provide a slightly yielding support for the sheet pack when engaged by the tongs in such manner that all deformation of, abrasion or other injury to the lowermost sheets in the pack is entirely avoided both while the tongs are being engaged therewith and while the pack is subsequently being lifted.

A further object of the invention is the provision of resilient means in the form of a boot or cover adapted for convenient operative association with lifting hooks or tongs of the character of those customarily used for lifting packs of sheets and the like; which may be readily removed from and replaced upon the hooks so that when worn out it is but a momentary job to substitute a new cover; which is low in cost and which, when operatively associated with the hook, does not in any way interfere with its ordinary method of use and operation.

My invention further includes other objects, advantages and novel features of design, construction and arrangement herein-

after more particularly pointed out or which will be apparent from the following description of certain embodiments of the invention as illustrated in the accompanying drawings.

In the drawings, Fig. 1 is a fragmentary perspective view showing a pack of sheets being lifted in the usual way by two pair of lifting hooks or tongs embodying my invention; Fig. 2 is an enlarged fragmentary view partially in side elevation and partially in vertical section of the toe or foot of one of the tong elements shown in Fig. 1 and a portion of the adjacent shank; Fig. 3 is a transverse section on line 3—3 in Fig. 2, looking in the direction of the arrows, and Fig. 4 is a view generally corresponding to Fig. 2 showing a slightly modified form of the invention. The same symbols of reference are used to designate the same parts in the several figures.

When lifting a pack of sheets two pairs of complementary lifting hooks H, H, H′, H′ are usually employed to properly balance and support the pack P, the toes of one pair of hooks being entered under the pack adjacent one of its ends and the toes of the other pair being similarly entered adjacent the other. The shanks of the hooks extend upwardly beyond the pack and are there brought together and connected to a suitable lifting device such as a crane or the like (not shown) which forms no part of the present invention.

As more particularly shown in Figs. 2 and 3, the lower part of each hook comprises a vertically extending shank 1 which is customarily of rectangular cross-section and is adapted when the hook is in operative position to lie adjacent or engage the side of the pack as shown in Fig. 1. At the lower end of the shank is formed an integral inwardly extending toe 2 which is usually of the same width as the shank and of sufficient length to engage beneath the bottom sheet of the pack and afford the requisite support thereto, the upper face 3 of the toe being flat and extending at right angles to the shank. Customarily the forward extremity of the toe is cut away as at 4 so as to avoid a sharp corner at this point and facilitate the introduction of the toe beneath the sheet pack. Hooks of this general character are in common use and thus require no further description.

In accordance with my invention I provide a boot or cover, generally designated as B of rubber or other resilient material, preferably so formed as to seat over the toe of the hook and enclose all of those surfaces thereof which, under ordinary conditions of operation, can possibly come into contact with any portion of the sheet pack. This cover is desirably molded as an integral unit of such shape as to conform to the configuration of the toe and may thus comprise a flat top 7 adapted to seat on the upper face 3 of the toe, an end 8 adapted to seat over the front end of the toe, a portion 9 extending rearwardly therefrom adapted to seat against the beveled face 4, and sides 10 adapted to lie against the sides of the toe so as to fully enclose all of the exposed surfaces of the latter save its bottom in the rear of said beveled surface. Desirably the sides of the boot or cover are carried back as at 10′ along the adjacent sides of the shank as shown in Fig. 3, thereby enhancing the tendency of the boot to grip the toe and remain in position thereon.

Any suitable means are provided for securing the boot in place on the toe, such, for example, as screws 12 extending oppositely inwardly through holes in the sides of the boot and into suitably internally threaded bores formed in the body of the toe, this arrangement facilitating removal and replacement of the boot when and as required. Under other conditions the toe may be drilled transversely from one side to the other and the cover riveted in place by rivets extending through these holes and the sides of the boot and headed over against the latter.

In Fig. 4 I have shown another means of securing the boot in position on the toe without the use of screws or rivets and which may frequently be desirably employed, said means comprising a cylindrical lug or boss 15 formed on the under side of the top 7 of the boot and adapted to seat in a corresponding depression 16 formed in the upper face of the toe; although the boot is designed to hug the toe tightly when in position thereon, it is possible when this construction is employed to work the yielding or resilient boot over the toe without much difficulty until the lug 15 is brought into registry with the depression 16 and seated therein, thus preventing the boot from thereafter slipping off the end of the toe under normal conditions of use.

It will thus be observed that the upper face of the toe upon which the weight of the sheet pack is supported when the tongs are in use, is provided, in accordance with my invention, with a resilient or yielding pad of appreciable thickness which thus lies between the toe proper and the bottom sheet of the pack when the latter is being lifted. As the material of this covering is of yielding nature and much softer than the sheet, it gives or yields under the superposed weight of the pack sufficiently to prevent any deformation of the bottom sheet of the pack or the formation of a mark or dent therein generally corresponding to the shape of the toe of the hook, while, of course, any direct abrasion or scratching of the under face of the bottom sheet while the toe is being entered thereunder or withdrawn therefrom is avoided, so that by the use of my invention it is possible to move the packs about or load them in cars for shipment without injury to any of the sheets with consequent avoidance of

the wastage and loss incident to the methods heretofore employed. Furthermore, as the top of the boot is necessarily wider than the upper face of the toe by an amount equal to the combined thickness of the sides of the boot, the area of the pack-engaging surface of the toe is correspondingly increased, thereby enhancing the grip of the tongs on the pack.

While the wear and tear upon the covering pads or boots is relatively slight so that after once being adjusted to the hooks they remain in serviceable condition for comparatively long periods, it will be apparent that when ultimately worn out they can be readily replaced in a few minutes and at a relatively small expense.

While I have herein shown and described certain forms of my invention in connection with a lifting hook of a type in common use, it will be understood that the invention is equally adapted for employment with other forms of hooks, and that under such circumstances the boots will, of course, be molded or otherwise formed to suitably conform to the toes thereof, and further that while the invention particularly lends itself to use in connection with hooks intended for lifting packs of sheets and the like, it may be employed to advantage in connection with hooks or tongs intended for other purposes if desired, while the details of construction and design of the resilient boots and the means for securing them in operative position on the toes of the hooks are capable of considerable variation without departing from the spirit and scope of the invention as defined in the appended claims.

Having thus described my invention, I claim and desire to protect by Letters Patent of the United States:

1. The combination with a lifting hook comprising a shank and a toe extending laterally therefrom adjacent its lower end having a flat upper face adapted to engage beneath an article to be lifted, of a molded rubber boot conforming in shape to said toe and enclosing the upper face, end and sides thereof, and means extending through the sides of the boot and into the body of the toe for removably securing the boot in adjusted position on the toe.

2. The combination with a lifting hook comprising a shank and a toe extending laterally therefrom adjacent its lower end having a flat upper face adapted to engage beneath an article to be lifted and provided with a depression, of a molded rubber boot conforming in shape to said toe, enclosing the upper face, end and sides thereof and having a lug projecting from the under surface of its upper portion seating in said depression and operative to retain the boot in adjusted position on the toe.

3. The combination with a sheet pack lifting hook having a toe adapted to be engaged beneath the sheet pack and a shank extending upwardly from one end of the toe, of a rubber covering boot enclosing the toe and covering its upper surface, free end and sides, the sides of the boot extending rearwardly and covering the adjacent sides of the shank, and means operative to positively retain the boot in adjusted position on the toe.

In witness whereof, I have hereunto set my hand this 11th day of July, 1930.

JAMES B. CHALMERS.