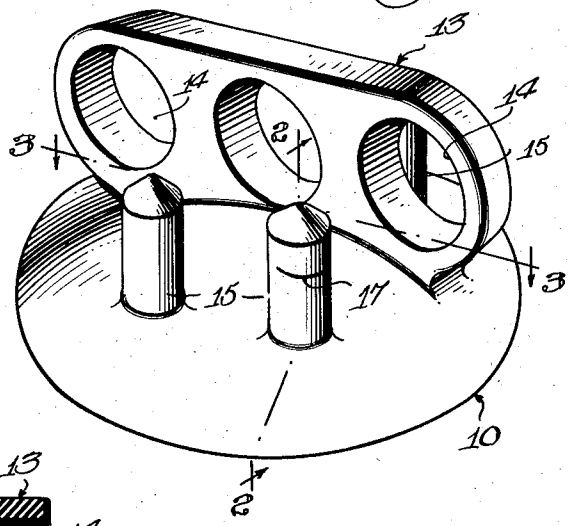
March 12, 1929. L. JONES 1,705,221

VACUUM LIFTER

Filed May 16, 1928

Fig. 1.



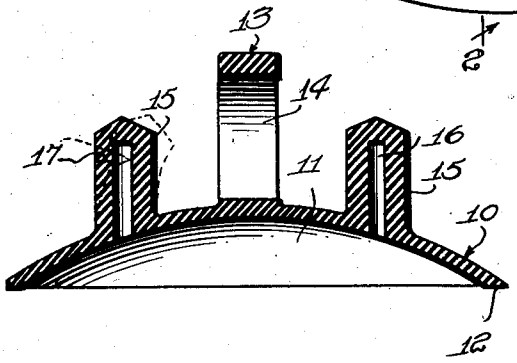


Fig. 2.

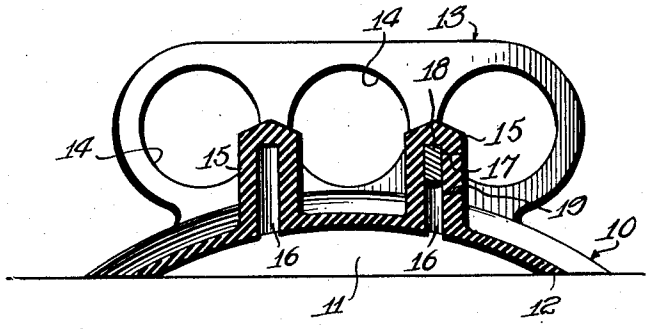


Fig. 3.

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UNITED STATES PATENT OFFICE.

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VACUUM LIFTER.

Application filed May 16, 1928. Serial No. 278,217.

This invention relates to vacuum lifters, and more particularly to such a device which is adapted for use in picking up sheet material such as glass, sheet metal, etc.

The handling of sheet metal usually is accomplished manually, and it frequently occurs that the hands of the operator become scratched and cut by the rough edges of the sheets, as when attempting to pick single sheets from tops of sheet packs.

The present invention has for an object the provision of a vacuum lifter which readily may be held by the operator and employed for picking up a corner portion of a sheet to permit the sheet more readily to be grasped by the hand of the operator.

A further object is to provide novel means for connecting the interior of the cup to the atmosphere when it is desired to release the vacuum to drop the sheet.

A further object is to provide a device of the above mentioned character which is provided with openings for the reception of the operator's fingers, the means for breaking the vacuum being readily operative by the thumb of the operator while the device is in operative position against a sheet.

A further object is to provide upwardly extending portions on the cup and provided with openings communicating with the interior of the cup, the device and the projections preferably being formed of rubber whereby a knife may be employed for cutting through the projection to afford communication between the cup and the surrounding atmosphere when the projection is flexed to open the cut therein.

A further object is to provide a device of the character just mentioned wherein means is provided for closing a cut in the projection after the cut ceases to perform its functions properly, whereby a new cut may be made to eliminate the necessity for discarding the device.

Other objects and advantages of the invention will become apparent during the course of the following description.

In the drawings I have shown one embodiment of the invention. In this showing,

Figure 1 is a perspective view,

Figure 2 is a section transversely of the handle taken on line 2—2 of Figure 1, and,

Figure 3 is a similar view parallel to the handle, taken on line 3—3 of Figure 1.

Referring to the drawings the numeral 10 designates the body of the device which is preferably formed of rubber or similar resilient material and is of an inverted cup shape to provide an interior space 11. The edge portion of the cup is preferably flattened as at 12 whereby the cup is adapted to seat perfectly against the surface of a sheet to be lifted.

Any suitable handle means may be employed for facilitating the operation of the device, and in the present instance a relatively heavy handle 13 is illustrated which is also preferably formed of rubber and formed integral with the body portion. The handle is provided with a plurality of finger receiving openings 14. Any number of openings may be provided, but for handling relatively heavy sheets, it is preferred that three openings be employed for receiving the first three fingers of an operator's hand, the thumb remaining disengaged, as will be apparent.

The body of the device is provided with a plurality of projections 15 having openings 16 formed therein and communicating at their lower ends with the space 11. One or more of these projections may be cut as at 17, preferably by employing an ordinary knife. In the drawings, four of the projections 15 have been illustrated, but as will become apparent, the device is fully operative with a single projection and the plurality of these elements is provided to lengthen the life of the device as will be explained.

The cut 17 may be formed when the device is ready for use, and preferably is provided in one of the projections 15 adjacent the upper end thereof, as shown in Figure 2. If the cut thus provided later becomes inoperative to perform its desired function, a plug 18 may be inserted in the opening 16 of the corresponding projection 15, whereupon a second cut 19 may be formed in the projection.

The operation of the device is as follows:

The device preferably is formed of resilient molded rubber without the cut 17 provided therein, this cut readily being made by the operator when he is ready to use the device. An ordinary pocket knife may be employed for making the cut 17, the latter preferably being formed adjacent the upper end of one of the projections. The operator inserts the first three fingers of one hand within the opening 14 and presses downwardly upon the device to bring it into firm

engagement with the surface of the sheet, the air within the space 11 escaping beneath the edges of the body portion 10 or through the opening 17. Upward movement of the handle then will lift the sheet, and the device is readily adapted for handling sheets of material weight.

When it is desired to release the sheet, it merely is necessary for the operator to flex the projection in which the cut 17 is formed, as shown in dotted lines in Figure 2. Thus air will be admitted into the space 11, and the cup will become disengaged from the sheet. If the cut 17 becomes clogged with dirt, or if the corresponding projection 15 becomes permanently flexed, whereby air escapes through the opening 17, a plug 18 may be inserted in the opening 16 and the cut 19 may be made at a lower point along the projection.

It is preferred that the device be provided with several of the projections 15 so that new cuts may be made therein. For example, after the cut 19 ceases to function in the proper manner, a second, or a longer plug may be inserted into the corresponding opening 16 to seal the cut 19, whereupon one of the other projections 15 may be provided with one of the cuts 17, and the device may be used as previously stated. Thus, the life of the device is materially increased.

The device is particularly useful in sheet metal mills for picking up a corner portion of a sheet to permit it to be grasped by the hand of the operator instead of requiring the operator to loosen the corner portion of the pack from the sheet by hand, and thus subjecting himself to the danger of lacerating his fingers and hands as frequently occurs in actual practice. The lifting of the sheets also is greatly facilitated, a given number of sheets being adapted to be handled in less time than usually is required.

It is to be understood that the form of the invention herewith shown and described is to be taken as a preferred example of the same and that various changes in the shape, size and arrangement of parts may be resorted to without departing from the spirit of the invention or the scope of the subjoined claims.

I claim:

1. A device of the character described comprising a suction cup, and a projection carried by said cup and having a passage communicating with the interior thereof, said projection being deflectable to afford communication between the interior of said cup and the atmosphere through said passage.

2. A device of the character described comprising a suction cup, and a projection carried by said cup and having an opening therein, said projection being deflectable to open said opening to afford communication between the interior of said cup and the atmosphere.

3. A device of the character described comprising a suction cup, a handle carried by said cup, a projection carried by said cup and extending upwardly therefrom, said projection being adapted to be cut to provide an opening therein, said projection being deflectable by a digit of the hand to afford communication between the interior of said cup and the atmosphere.

4. A device of the character described comprising a suction cup, a handle carried by said cup, a projection formed of resilient material carried by said cup and extending upwardly therefrom, said projection being provided with a passage communicating with the interior of said cup and adapted to be provided with a cut extending into said passage, said projection being deflectable by a digit of the hand to afford communication between the interior of said cup and the atmosphere.

5. A device of the character described comprising a resilient suction cup, an integral handle carried by said cup, and an integral upstanding projection carried by said cup and provided with a vertically elongated passage communicating at its lower end with the interior of said cup, said projection being adapted to be provided with a cut extending into said passage and being deflectable by a digit of the hand to afford communication between the interior of said cup and the atmosphere through said cup and said passage.

6. A device of the character described comprising a suction cup, a handle carried by said cup, a projection formed of resilient material carried by said cup and extending upwardly therefrom, said projection being provided with a passage communicating with the interior of said cup and adapted to be provided with a cut extending into said passage, said projection being deflectable by a digit of the hand to afford communication between the interior of said cup and the atmosphere, and a plug adapted to be snugly received in said passage to close said cut whereby said projection may be provided with a second cut beneath the lower end of said plug.

In testimony whereof I affix my signature.

LEWIS JONES.