

J. C. FUCHS & O. W. COOK.
 SHEET HANDLING IMPLEMENT.
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1,302,028.

Patented Apr. 29, 1919.

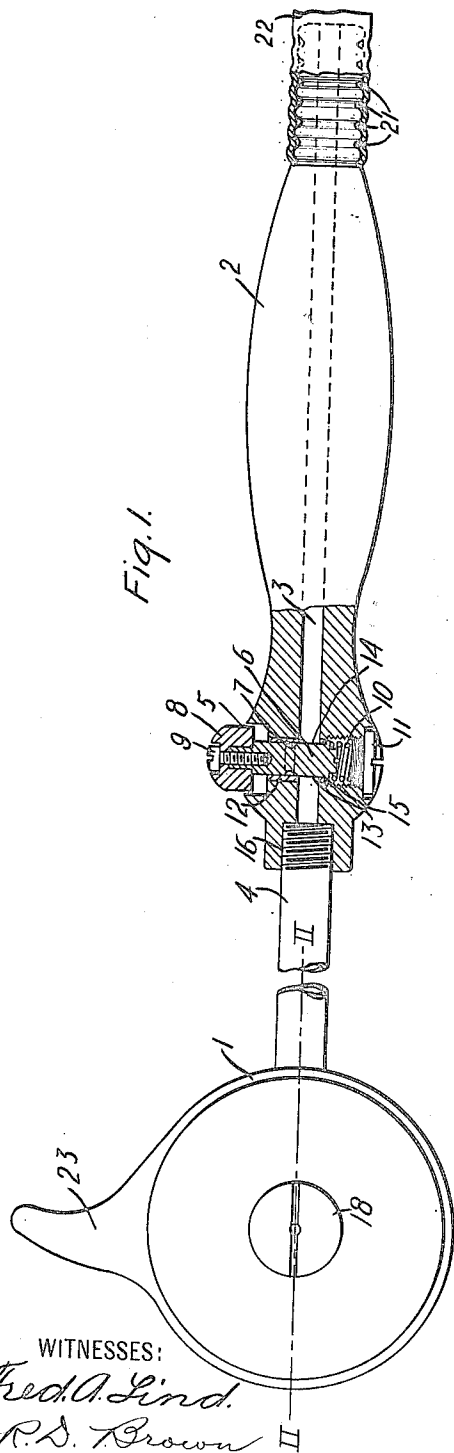


Fig. 1.

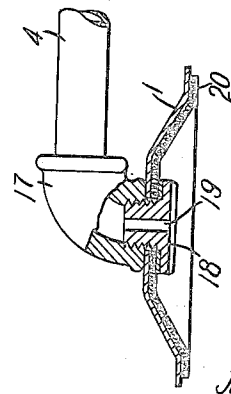


Fig. 2.

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JOHN C. FUCHS, OF PITTSBURGH, AND OTTO W. COOK, OF WILKINSBURG, PENNSYLVANIA, ASSIGNORS TO WESTINGHOUSE ELECTRIC AND MANUFACTURING COMPANY, A CORPORATION OF PENNSYLVANIA.

SHEET-HANDLING IMPLEMENT.

1,302,028.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that we, JOHN C. FUCHS, a citizen of the United States, and a resident of Pittsburgh, in the county of Allegheny and State of Pennsylvania, and Otto W. Cook, a citizen of the United States, and a resident of Wilkinsburg, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Sheet-Handling Implements, of which the following is a specification.

Our invention relates to sheet-handling apparatus, and it has special reference to hand-operated pneumatic implements for feeding blanks of sheet material to presses and similar machines.

The object of our invention is to provide an implement of the above-indicated character which shall be of simple and durable construction, and which shall enable operators to feed blanks to stamping machines, punch presses and other machines that operate upon sheet material without danger of injuries to fingers and arms which frequently occur when such machines are fed entirely by hand.

Stamping machines which operate upon sheet metal have heretofore been supplied with blanks without the use of tools, and, in placing such blanks in their proper positions, the operator's fingers are likely to be caught and crushed between the dies. We propose to minimize the danger of such accidents, which are likely to be of frequent occurrence in establishments that operate many machines of this character, by providing an implement consisting of a suction lifter connected to a handle by a supporting tube of such length that the lifter may be introduced between the machine dies for inserting blanks without the hand of the operator being brought near any of the engaging parts of the machine.

For a better understanding of our invention, reference may now be had to the accompanying drawing, in which Figure 1 is a partially sectionalized elevational view of an implement embodying our invention, and Fig. 2 is a sectional view of the suction cup comprised in the device shown in Fig. 1, the section being taken substantially along the line II-II of Fig. 1.

The device shown in the drawing comprises a suction cup or lifter 1, a handle 2,

having an opening or passage 3 extending through it from end to end, and a tube 4 connecting the suction cup with the handle and affording communication between the interior of the suction cup and the opening 3 in the handle. The suction cup, the tube and the handle may be of any suitable material, and the tube may be of any convenient length. We find it convenient to form the suction cup and the tube of brass and the handle of aluminum, magnalium or other light material.

A valve 5, which may be of any suitable or preferred construction, is disposed in the handle 2 in order to open and close the passage 3. As shown in the drawing, the valve comprises a cylindrical block 6 having an annular groove 7 about midway between its ends, and a button 8 secured to the block 6 by means of a screw 9 and protruding from the handle 2. The block 6 and the button 8 are yieldingly maintained in their outward position in which they are shown in the drawing, by a spring 10 that is confined between the block 6 and a screw 11 which is screwed into the side of the handle opposite the button 8. A cylindrical sleeve 12, having two opposed openings 13 and 14, surrounds the block 6 and permits the block to slide endwise for a limited distance, the extent of such movement being limited by a flange 15 at one end of the block and by the button 8 at the other end of the block. When the valve is in the position shown in the drawing, the passage 3 through the handle is closed, but, when the button 8 is forced inwardly, the annular groove 7 is brought opposite to the openings 13 and 14 in the sleeve 12, and communication is thereby established between the passage 3 in the handle and the tube 4, which is screwed into the end of the handle at 16, or is otherwise disposed in alinement with the handle. If desired, the valve may be provided with a port communicating with the atmosphere, so disposed that, when the valve is in the position shown in the drawing, air is admitted to the tube 4 and the suction cup 1.

The tube 4 may be attached to the suction cup 1 in any convenient manner, and its axis may be either parallel to the engaging edges of the suction cup, as shown in the drawing, or in any other desired angular relation to

the suction cup. As shown in the drawing, the tube 4 is screwed into one end of an elbow 17, the other end of the elbow being screw-threaded to receive a screw 18 which passes through a central opening in the suction cup 1, in the manner shown. The screw 18 is provided with a central opening 19 through which communication is effected between the interior of the suction cup 1 and the elbow 17. If desired, the suction cup 1 may be provided with a lining disk 20 of flexible material, such as leather or rubber, so as to insure intimate contact between the suction cup and the articles to be lifted.

The end of the handle 2 that is farthest removed from the suction cup 1 is of reduced diameter, and is provided with annular grooves 21 to facilitate the attachment of a tube 22, which may lead to any suitable suction-producing device, such, for example, as an air pump.

The metal suction cup 1 may be provided with a hook or ear 23, preferably formed integral with the suction cup and extending laterally from its edge. Such a hook is useful, when the implement is used in connection with punch-presses, for removing pieces of scrap from the plate of the machine.

When large sheets of material are to be handled, it may sometimes be found convenient to provide two or more suction cups, arranged side by side, and connected by short branch tubes to the main tube 4.

These branch tubes may, if desired, be flexible, in order that the suction cups may conform to the surfaces of articles of uneven contour, and, for similar service, it may sometimes be desirable to provide two or more suction cups disposed in different planes. It is obvious that a single handle may be provided with a series of interchangeable suction cups of different sizes and forms, the tubes 4, in such case, being removably held in the handle 2.

In the operation of our implement, the operator, grasping the handle 2, places the suction cup upon the blank to be lifted and

depresses the button 9 with his thumb, thus establishing communication between the suction cup and a vacuum pump or other suction-producing device. As long as the valve is thus held open, the suction in the pipe line holds the sheet material against the suction cup, and the blank may be placed in position between the dies of the machine. The operator then releases the thumb pressure on the button 9, thus interrupting the suction and releasing the blank.

Our implement is, of course, adapted for use in connection with machines other than stamping machines and punch presses, and in connection with material other than sheet metal, since it can be used for lifting and transporting many articles of moderate weight having at least one side with which the suction cup may engage. We have found that an implement of about the size and proportions shown in the drawing is very satisfactory in practice, but the size and proportions of the parts may, of course, be varied in accordance with the particular circumstances under which the implements are to be used. We wish it to be understood that our invention comprehends all such variations and, in general, all modifications that fall within the scope of the appended claims.

We claim as our invention:

1. A sheet-handling implement comprising a handle and a suction cup provided with a laterally projecting ear at one side of its edge.

2. A sheet-handling implement comprising a handle and a suction cup provided with an ear projecting laterally from its edge at substantially ninety degrees from the handle.

In testimony whereof, we have hereunto subscribed our names this 1st day of July, 1914.

JNO. C. FUCHS.
OTTO W. COOK.

Witnesses:

J. R. LANGLEY,
B. B. HINES.