

Aug. 18, 1931.

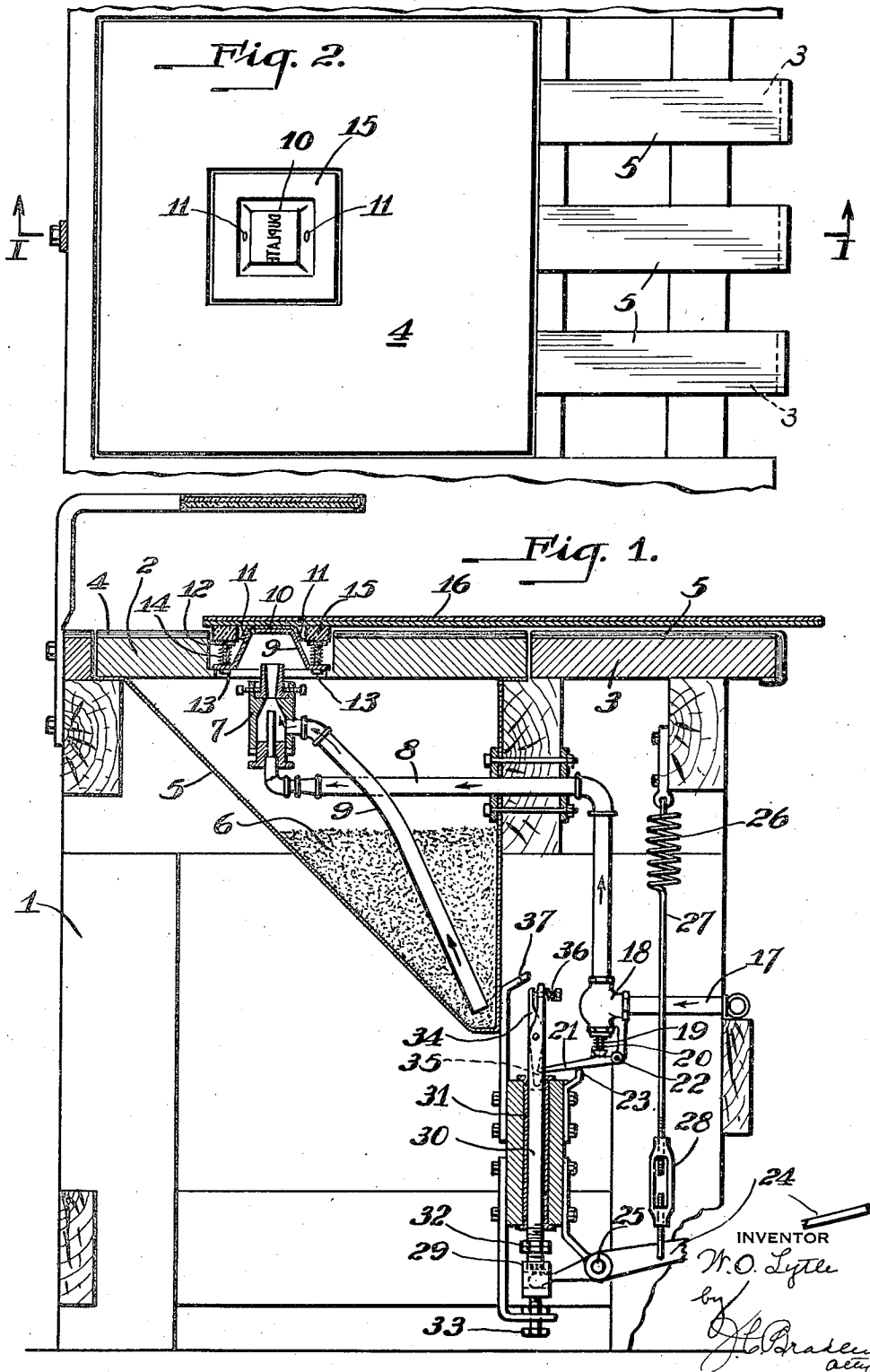
W. O. LYTLE

1,819,331

SAND BLASTING APPARATUS

Filed June 22, 1929

2 Sheets-Sheet 1



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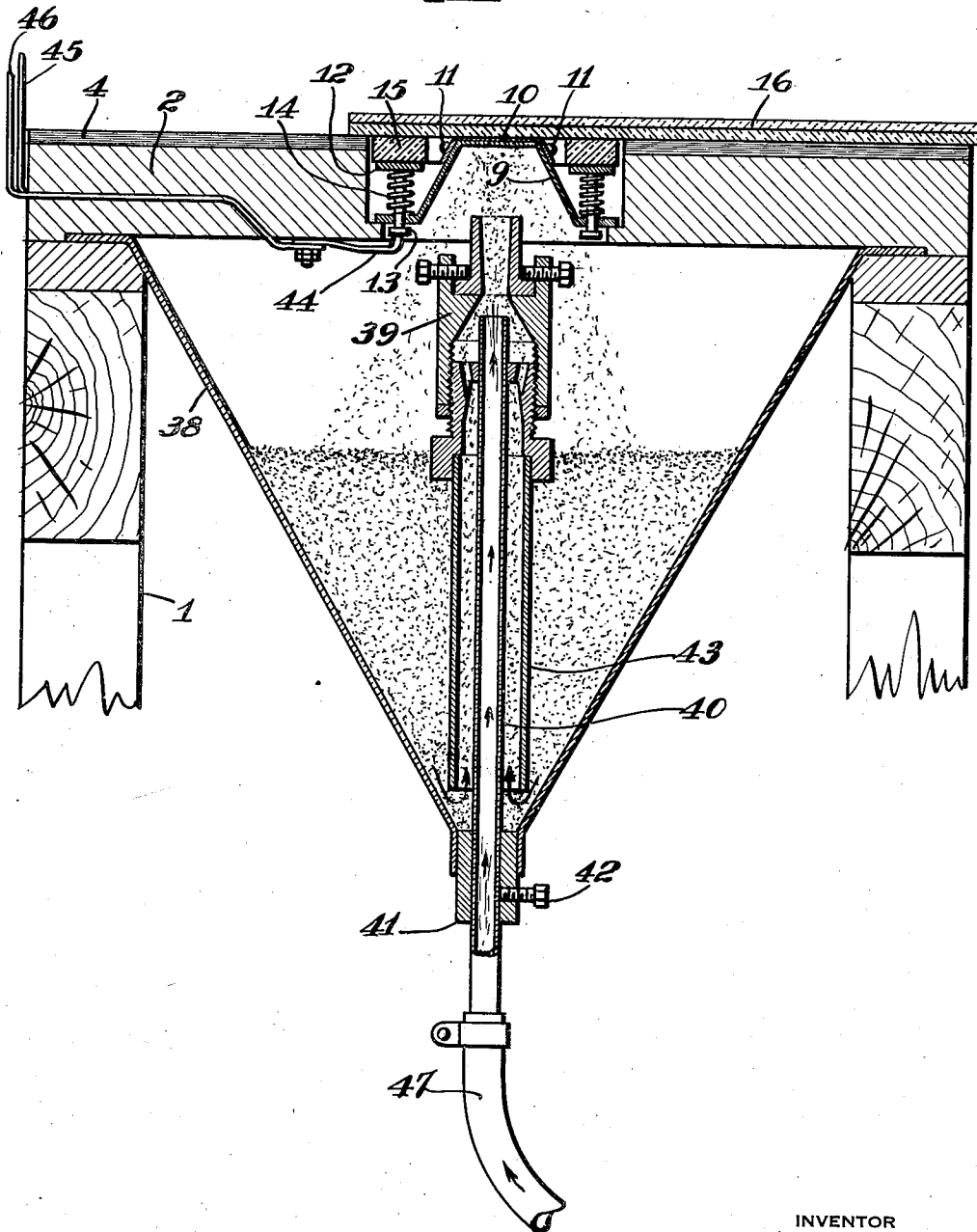
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Fig. 3.



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UNITED STATES PATENT OFFICE

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SAND BLASTING APPARATUS

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The invention relates to sand blasting apparatus for marking hard substances, such as glass. The particular apparatus shown is designed for marking the trade-mark "Duplate" on sheets of composite glass, but designs of various kinds may be applied upon articles of a variety of shapes and of different materials upon which a sand blast will act effectively. The principal objects of the invention are to provide an improved apparatus, which can be operated with rapidity and precision, which avoids scratching the glass, and which is economical in operation, both as to sand and air. Certain embodiments of the invention are illustrated in the accompanying drawings, wherein:

Figure 1 is a vertical section on the line I—I of Fig. 2. Fig. 2 is a plan view. And Fig. 3 is a vertical section through a modification.

Referring to the drawings, 1 is the framework of the apparatus provided with a table made up of the members 2 and 3, the members 3 being in the form of separated slats. The parts 2 and 3 are preferably of wood covered with sheets of felt 4, 5 to provide a cushion for the glass sheets for which the apparatus is used. Supported beneath the top member 2 is a hopper 5 carrying the sand 6 which is employed in the marking operation. A nozzle 7 is also located in the hopper, such nozzle being provided with an air supply pipe 8 and a sand supply pipe 9, the connections to the nozzle being as indicated in Fig. 1.

An opening through the table top is provided opposite the nozzle and in this opening is seated the conical shield 9 supporting a stencil plate 10, preferably of soft steel. This plate is cut through so as to form the word "Duplate". This plate is removably held in position by screws 11, to permit its ready replacement as it becomes worn by the sand blasting operation. In the space surrounding the shield 9 is mounted a metal plate 12 guided for vertical movement by means of the bolts 13 and yieldingly held in upper position by means of springs 14 surrounding the bolts. The upper face of this plate is covered with a layer of soft rubber 15 whose sur-

face projects above the surface of the stencil plate and above the surface of the felt 4, as indicated in Fig. 1. When the composite plate 16 is slid into position over the stencil plate, it rides over the soft rubber layer 15 without contacting with such plate so that there is no danger of scratching the glass. When the sand blast is brought into play, the plate 16 is pressed down so that its lower face closely approaches or engages the stencil plate 10. In this position the letter openings through the stencil plate are completely closed and the sand blast acts through such letter openings to give a clear cut reproduction of the stencil.

The air is supplied to the pipe 8 from the pipe 17 past a valve in the casing 18. This valve is provided with a stem 19 and the valve is yieldingly held in closed position by means of a spring 20. The stem 19 is engaged by a lever 21 pivoted at 22 and engaging the stop 23 when the valve is closed. The valve is opened from the foot treadle 24 pivoted at 25 and normally held in the position shown by means of the spring 26 which has its lower end connected to the lever by means of the wire 27 and turn-buckle 28. The short end of the lever 24 has rocking engagement with the block 29 carried by the lower end of the rod 30, such rod being slidably mounted in the sleeve 31. The nuts 32 carried by the rod 30 serve to limit its upward movement, while the downward movement is limited by means of the bolt 33. The rod 30 carries at its upper end a latch 34 provided with the hook 35 at its lower end and engaged at its upper end by a spring 36 which normally presses the upper end of the latch to the left. When the parts are in the position shown and the rod 30 moves upward, the hook 35 engages the end of the lever 21 and causes it to move up, thus opening the valve in the casing 18. On a further movement upward of the rod 30, the upper end of the latch 34 is engaged by the trip member 37, and such upper end is cammed to the right, thus disengaging the hook 35 from the lever 21 and permitting the spring 19 to close the valve in the casing 18. It will thus be seen that the movement of the treadle 24 in one direction first opens

the valve and then permits it to snap closed. The parts are adjusted so that this control movement of the treadle gives just the right amount of opening to the valve to secure the desired sand blasting effect upon the glass. Very little judgment is, therefore, required on the part of the operator. This results in a uniform sand blasting effect upon each plate and the life of the stencil is increased. Sufficient sand is supplied at each operation of the treadle, but there is no waste of sand and air due to a too prolonged opening of the air valve. Increased speed of operation is also secured due to this method of operation as only a single movement is required in order to control both movements of the air valve. The arrangement shown with the hopper beneath the stencil plate also permits the sand to be used over and over again as there is practically no loss.

Fig. 3 illustrates a modification in which the shape of hopper 38 is modified and the method of controlling the air valve is changed. The air is conducted to the nozzle 39 through the pipe 40 secured in position in the block 41 by means of the screw 42. The sand supply pipe 43 is arranged concentric with the air supply pipe and terminates adjacent the lower end of the hopper. When a plate to be marked is placed upon the table and the plate 12 is pressed down, the head of one of the bolts 13 makes a connection between a pair of adjacent contact members 44 completing an electrical circuit through the wires 45, 46, these wires lying in a power circuit including the winding of a solenoid arranged so as to control an air valve in the connection 47. Therefore, when the plate 12 is pressed down, and the solenoid is actuated, air is admitted through the pipe 47 and the sand blasting action is continued as long as the glass plate is pressed down against the stencil plate 10. When the glass plate is lifted, the plate 12 moves up, breaking the connection between the contacts 44 and interrupting the electric circuit which maintains the air valve open. This arrangement relieves the operator of the necessity of operating a separate device, such as the treadle 24 of Fig. 1 for securing the application of the air. In order to avoid a waste of sand and air, the solenoid may be arranged to operate a device such as that shown in Fig. 1 and including the parts 21, 30, 31, etc. While the apparatus is referred to as a sand blasting apparatus, it will be understood that it is not limited to use with sand as an abrasive. Crushed steel, garnet, silica or the like may be employed, although sand is preferred.

What I claim is:

1. Sand blasting apparatus comprising a table for supporting an article to be marked and provided with an opening, a stencil plate in such opening at substantially the level of the table, vertically movable means

having a face of soft material also lying in said opening and surrounding said plate with said face held yieldingly above the surface of the plate, a nozzle beneath the plate in line therewith, and means whereby abrasive under air pressure is supplied through the nozzle.

2. Sand blasting apparatus comprising a table for supporting an article to be marked and provided with an opening, a stencil plate in such opening at substantially the level of the table, a vertically movable guard plate also lying in said opening surrounding the stencil plate and having a surface of soft material, yielding means holding said guard plate with its surface above the level of the stencil plate, a nozzle beneath the plate in line therewith, and means whereby abrasive under air pressure is supplied through the nozzle.

3. Sand blasting apparatus comprising a table for supporting an article to be marked having a supporting surface of soft material, and provided with an opening, a stencil plate in such opening at substantially the level of the surface of the table, a vertically movable guard plate also lying in said opening surrounding the stencil plate and having a surface of soft material, yielding means holding said guard plate with its surface above the level of the stencil plate, a nozzle beneath the plate in line therewith, and means whereby abrasive under air pressure is supplied through the nozzle.

4. Sand blasting apparatus comprising a table having an opening carrying a stencil plate, a nozzle behind the plate in line therewith having connection with an abrasive supply, and an air supply pipe, a valve in the air supply pipe, an operating lever, and means intermediate the valve and said lever whereby the movement of the lever in one direction opens and closes the air valve.

5. Sand blasting apparatus comprising a table having an opening carrying a stencil plate, a nozzle behind the plate in line therewith having connection with a sand supply and an air supply pipe, a valve in the air supply pipe, yieldingly held close, an operating lever, and means intermediate the valve and said lever whereby the movement of the lever in one direction first opens the valve and then releases it, permitting it to snap shut.

In testimony whereof, I have hereunto subscribed my name this 5th day of June, 1929.

WILLIAM O. LYTLE.