

(No Model.)

2 Sheets—Sheet 1.

J. J. SACHS.

SAND BLAST APPARATUS.

No. 299,270.

Patented May 27, 1884.

Fig. 1.

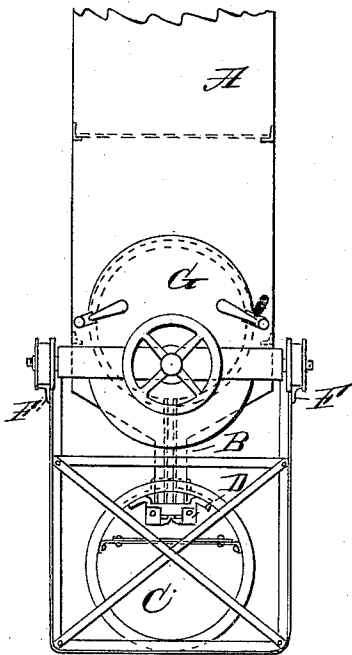


Fig. 4.

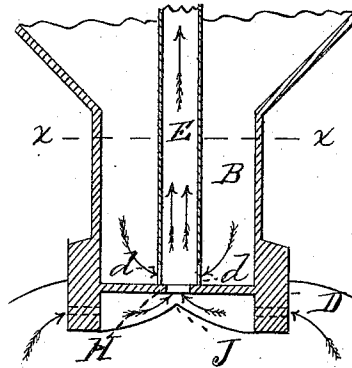
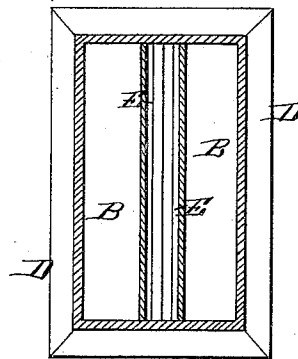


Fig. 5.



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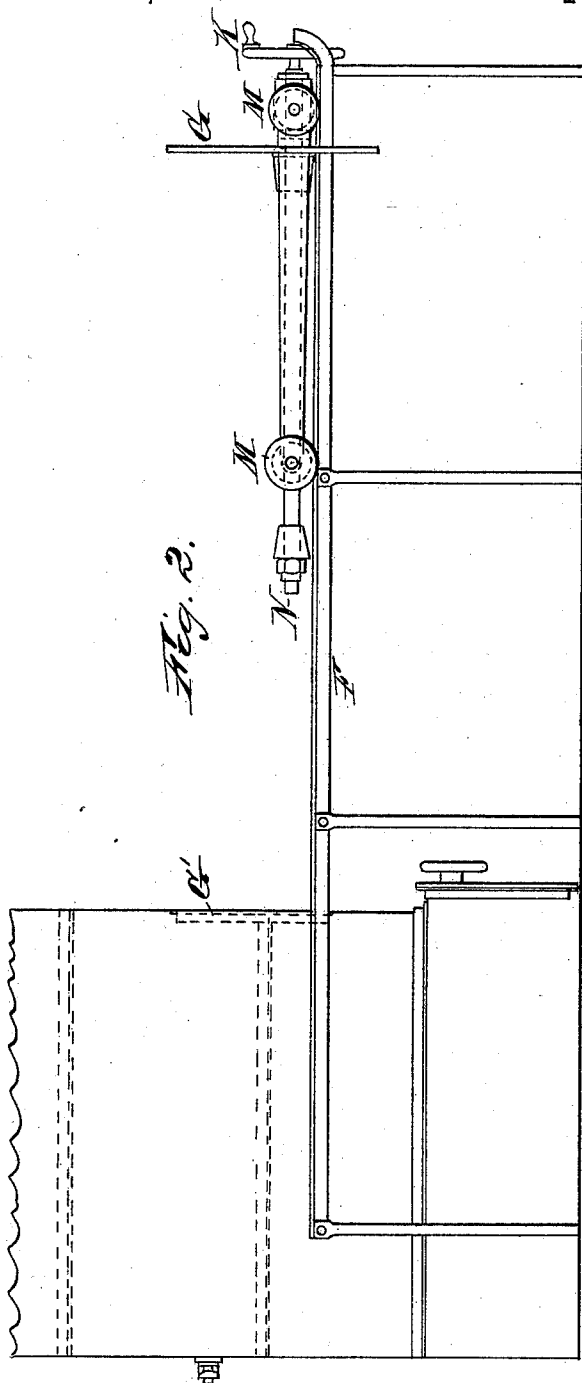
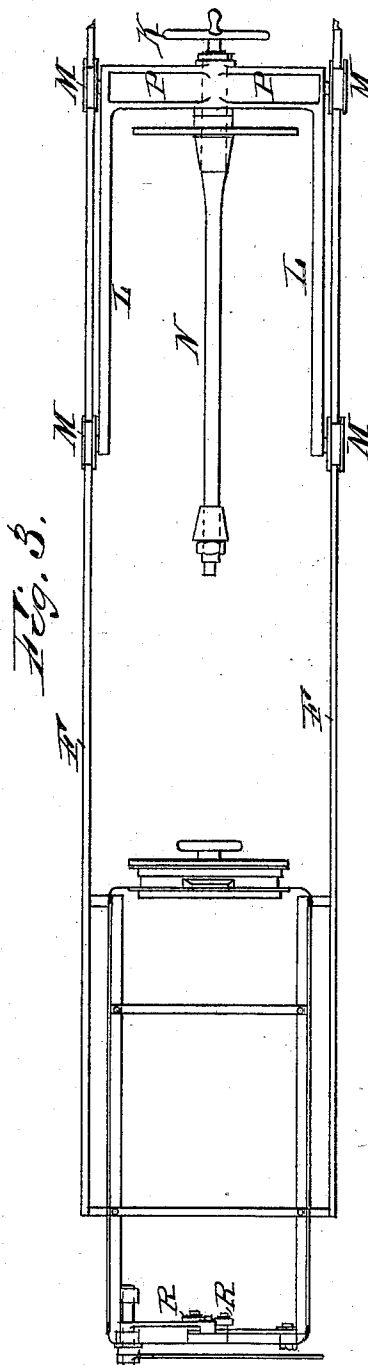
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UNITED STATES PATENT OFFICE.

JOSEPH JULIUS SACHS, OF LONDON, ENGLAND.

SAND-BLAST APPARATUS.

SPECIFICATION forming part of Letters Patent No. 299,270, dated May 27, 1884.

Application filed July 17, 1883. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH JULIUS SACHS, of London, England, have made a new and useful Improvement in Sand-Blast Apparatus; of which the following is such full, clear, and exact description as will enable others skilled in the art to make and use the same, when taken in connection with the accompanying drawings, in which—

Figure 1 is an end view of the apparatus. Fig. 2 is a side view of the apparatus, a track for the car, and the car. Fig. 3 is a top view of the same. Fig. 4 is an enlarged cross-section of Fig. 1 of the air-blast, hopper, and sand-trunk. Fig. 5 is a top view at line *xxx* of Fig. 4.

This invention relates to the preparation by the sand-blast of metal surfaces for printing, etching, or engraving according to various processes patented to me by Letters Patent of the United States No. 247,418, of 1881, and No. 274,519, of 1883. In carrying out the said processes the metal or other surface to be etched or otherwise treated is first coated with a material which is termed a "resist." The resist may consist of varnish, asphaltum, or any suitable material or substance—for instance, a thin film of metal not acted on by the solution or a metallic or galvanic bath may be used. The design or pattern or picture to be transferred to the surface to be treated may consist of any spun or woven open or closed fabric or material or substance, or thin films of metal, cotton, silk, woolen, or other threads, which can be wound round the roller or surface by machinery or otherwise, and the open part treated by the sand-blast, while the part protected by the thread or other part of the pattern is not affected by the blast. The design or drawing or pattern to be transferred to the surface to be treated may be also produced by the action of light, or in any other suitable way. For instance, they may be cut out by hand-work, or may be etched through thin sheets of metal, or produced in any other suitable way. The fabric or material used must be of such a nature as will resist the action of the sand-blast or similar contrivance. The design to be etched on the surface is then drawn upon the resist, and such parts as are to be removed are picked

out, leaving the metal surface exposed. When the design is fairly plain, this can be readily effected; but when the design is of a complicated nature—such, for instance, as a piece of lace—the time taken up in removing the resist would be very great, and the cost of the etching or engraving would thus become a matter of considerable moment.

In experiments made we have found that the resist can with facility be removed by the sand-blast from the most complicated designs; and the object of the present invention is to produce an apparatus to be used in the application of the sand-blast to this purpose. The apparatus consists, by preference, of an oblong chamber, A, of considerable height, in which the metal surface to be acted on is placed. This chamber also serves as a settling-chamber for the sand, and is provided at its upper end with a flue, by which the current of air employed to project the sand, and with it the finer particles or dust of the sand, can escape. The bottom of the chamber A is hopper-shaped, so that the sand shall always return after use to a trunk, B, with which the hopper is provided. The trunk B extends downward to an air-chamber, C, preferably of cylindrical form, to the lower part of which air is supplied under pressure from a suitable blower. The bottom of the trunk is closed by a metal casting, D, in the center of which the air-jet E projects upward through the trunk into the oblong chamber. On either side of the jet a row of holes, *d d*, is made through the casting to allow for the passage of the sand. These holes are capable of being closed by a suitably-arranged slide. The sand, as it passes out of these holes in small streams, is met by the current of air, which drives it up the jet E on the surface to be acted upon. The lower part of the trunk, air-jet, and holes are enlarged at Fig. 4 in vertical cross-section, and Fig. 5 is an enlarged top view of the trunk and air-jet, which are shown in oblong cross-section. They may, however, be made in other shapes.

The air-box A, in which the plate to be treated is placed, has a rail, F, on either side, and door G in the side, on a level with the rails F F, so that a roll to be subjected to the blast may be placed on the shaft and passed through

the door G, so as to be in a position over the jet E. By turning the shaft N by the wheel K the entire face may be subjected to the action of the blast. The door G is closed during the operation, so that the air and dust will be carried up the box A and out a flue provided at the top for that purpose. The sand returning down the trunk comes again into the air-blast at the plate, and is thus carried up by the blast. The roll to be treated may be centered on the shaft by the conical nuts on either end of the shaft.

Should it be desired to treat a flat plate in this apparatus, it will only be necessary to arrange on the shaft a carriage which will gradually move the plate from side to side of the box, as it may be acted upon by the blast.

The carriage consists of the frame L, having the four wheels M M M M, and but one cross-head or end piece, P, into which cross-head is journaled the shaft N, having on the outer end the wheel K, by which the shaft is revolved.

In order that the air under pressure shall act in the most perfect manner on the sand, we place horizontally across the air-jet E, a short distance below the lower end thereof, a baffle-plate, H, which deflects the air from the center of the air-shaft and turns it toward the sides thereof, so that it is driven against the sand issuing from the trunk. There may also be introduced the plate J J just below the lower end of the air-jet, which will further concentrate the currents of air, and also receive the sand, which will fall over the edge thereof toward the plate H and be caught by the draft or current of air passing between them and carried up through the air-jet E. The article to be treated is placed on the carriage, which runs on rails, arranged as above described. The rails extend beyond the casing or chamber, and are supported at their outer end by suitable standards. When a flat surface is to be operated on, the carriage will be provided with means for traversing the article from side to side over the jet of sand, so that the whole surface may be acted on. When a cylindrical

surface is to be treated, which will most usually be the case, (a cylinder being more convenient for printing from,) the cylinder is centered on the spindle N, which rests at one end on a pair of friction-rollers carried by the carriage, and is provided with a hand-wheel, by which it may be slowly rotated as the operation of sand-blasting proceeds. At the other end the shaft N is supported by the friction-rolls R R, on which the shaft rests when the carriage is fully in the chamber.

A suitable opening, G', is made in one end of the oblong chamber A for the withdrawal and entrance of the carriage, and a door, G, is provided on the carriage, to close the opening during the working of the apparatus when the carriage is in the forward or closed position.

What I claim as new, and desire to secure by Letters Patent, is—

1. In a sand-blast apparatus, the combination of a sand-trunk inclosing the air-jet and connecting therewith by perforations, as specified.

2. In a sand-blast apparatus, the combination of the sand-trunk inclosing the air-jet connecting therewith by perforations, and the baffle-plate below the said perforations, substantially as specified and set forth.

3. In a sand-blast apparatus, the combination of a sand-trunk inclosing the air-jet connecting with perforations, and a deflecting-plate beneath the same, substantially as specified.

4. In a sand-blast apparatus, the combination of a sand-trunk inclosing the air-jet connecting with perforations, a baffle-plate, and deflecting-plate, as specified.

5. The carriage consisting of a frame having two sides and only one end piece, and a door, G, substantially as specified and set forth.

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