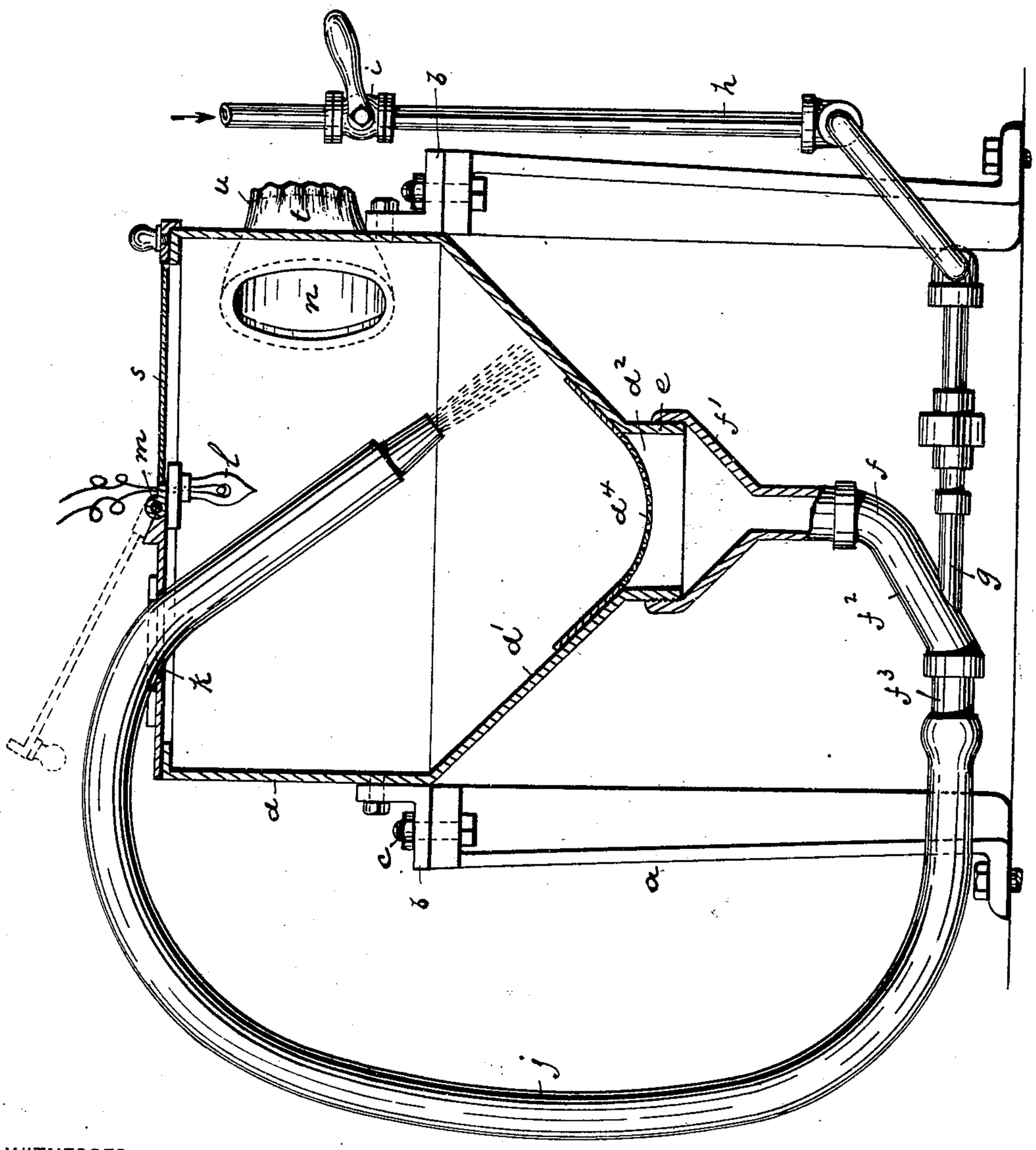
No. 646,740. Patented Apr. 3, 1900.

W. H. KING.

SAND BLAST FOR SURFACING METAL, GLASS, &c.

(No Model.) (Application filed Sept. 14, 1899.)



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SAND-BLAST FOR SURFACING METAL, GLASS, &c.

SPECIFICATION forming part of Letters Patent No. 646,740, dated April 3, 1900.

Application filed September 14, 1899. Serial No. 730,471. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM H. KING, a citizen of the United States, residing at Newark, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in Sand-Blasts for Surfacing Metal, Glass, &c.; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawing, and to letters of reference marked thereon, which forms a part of this specification.

The objects of this invention are to facilitate the operation of giving to the surface of articles of metal or glass or other substances the effects commonly produced by a sand-blast, to secure such result by the use of a smaller amount of sand, which when of the quality preferably employed is expensive, to enable the surfacing operations to be effected with increased ease and convenience to the operator, to enable the sand-impelling means to be more effective in operation, and to secure other advantages and results, some of which may be referred to hereinafter in connection with the description of the working parts.

The invention consists in the improved sand-blast apparatus and in the arrangements and combinations of parts of the same, all substantially as will be hereinafter set forth and finally embraced in the clauses of the claim.

Referring to the accompanying drawing, which is a vertically-sectional view of the improved apparatus, *a* indicates a suitable stand, support, or frame upon which is arranged and secured by brackets or angle-pieces *b* and bolts *c* or other suitable means a box or inclosure *d*, the body of which is preferably of sheet metal. The interior of said box serves as a work-chamber in which the articles to be finished are subjected to the sand-blast. The bottom *d'* of said box is funnel or hopper shaped, the inclined bottom walls converging toward a low central point, where the said bottom is perforated or provided with an out-passage d^2 for the sand. Said out-passage is preferably guarded by a screen d^4, of woven wire, a perforated plate, or the like. Beneath said bottom, coupled or connected to a tubular extension *e*, is a tube or pipe *f*, having an enlarged head *f'* and inclined extension f^2, the lower end of which is horizontal, as at f^3, and through said extension or otherwise connected therewith is an air-injecting nozzle *g*, disposed in axial alinement with the lower horizontal extremity f^3 of said pipe and forming an acute angle with said inclined extension. The sand gravitating from the hopper-like bottom of the box *d* into the pipe *f* is gently turned in its course, so as to be given a lateral movement in the direction of the injector-blast before falling under the power of the blast of air from the injecting-nozzle *g*, and thus the energy stored in the sand, due to gravity and the air pressure or current of the blast on the sand from above, is not lost, as it would be by an abutment lying at right angles to the direction of gravitation. The return movement of the sand to the box is thus with increased velocity and the sand is rendered more effective in operation. The air-injecting nozzle is in pipe or hose connection with a blower or air-forcing device (not shown) of any suitable construction, and the connecting-pipe *h* may be provided with a valve *i* to cut off the supply of air at the will of the operator. The pipe *f*, connected to the bottom of the box *d* near where it is entered by the nozzle *g*, is in connection with a rubber pipe or hose *j* or a pipe or hose of other soft or elastic material, such as will not be cut and quickly damaged by the sharp sand rapidly passing therethrough, and the said pipe or hose *j* is turned upward in its course to or near to the top of the box, where it extends through an aperture *k* and is turned downward to a point convenient to effect a flow of sand upon the article held in the hand of the workman.

At the top or front of the box the same is provided with a window or transparent pane *s* of glass or the like, through which the operator may observe the progress of his work, and the interior chamber of said box is illuminated by an electric lamp *l*, so that the detail results may be more clearly seen. The

transparent window or pane may be on hinges *m* to permit more convenient access to the interior of the box.

At the front of the box the same is provided with hand-openings *n*, through which the operator may pass his hands containing the work to be finished, etched, or surfaced by the sand, the said openings being of a size to be closed more or less completely by the arms and clothing of the operator, so that little or no sand will be lost through said openings. Said openings *n* may be guarded by other means than the garments of the operator. For example, collars *t*, of woven fabric, may be applied to the box at the hand-openings, one edge of each of said collars being fastened around the edge of the opening and at its opposite edge said collar being gathered by means of an elastic draw-string *u*, so that it may hug the arm. In this event the arm or hand holes or openings may be larger, so as to give increased freedom to the hands and arms when manipulating the article. The woven collars, being pervious to air, permit an easy outflow of the air from the injecting-nozzle without permitting an out-passage of sand and dust, to the inconvenience of the operator and loss of the sand.

In operating the device the workman turns the valve of the air-supply pipe so that the air forces the sand, which has gravitated from the hopper-like bottom into the pipe *f*, upward through the rubber hose or pipe *j*, and thence downward with considerable force against the surface of the article in the hands of the workman. The sand then falls by gravity to the bottom of the box, whence it is again directed into the pipe *f*. Thus the sand is repeatedly used without loss of time on the part of the workman, such as occurs from time to time in connection with the sand-blasts heretofore commonly employed when arranging the sand reservoirs and receivers and without the employment of complicated transferring devices.

Having thus described the invention, what I claim as new is—

1. The improved sand-blast, comprising a box having a hopper-shaped bottom having, at the low center thereof, an out-passage for sand formed in the tubular extension *e*, a pipe *f*, having an enlarged head coupled to said tubular extension, said pipe *f*, below said extension, being turned aside from the vertical line of said extension and arranged at an incline, an air-injector *g*, connecting with the turned or inclined part of said pipe *f*, and a rubber hose attached to said pipe at a point distant from vertical line of the extension *e*, in the line of the injector *g*, said hose extending upward and entering the box above the hopper-shaped bottom and at its free end being adapted to be turned to direct the sand against any portion of the article to be ornamented, substantially as set forth.

2. The improved sand-blast, comprising a box having the hopper-shaped, centrally-open bottom, a pipe *f*, attached to said bottom at the opening and extending downwardly therefrom and inclined to one side, an air-injector *g*, connecting with said inclined pipe at a point distant from the vertical line of the central opening, and a flexible hose connecting with the said pipe *f*, in the line of the said air-injector and extending upwardly therefrom and then downwardly into the box, substantially as set forth.

In testimony that I claim the foregoing I have hereunto set my hand this 7th day of September, 1899.

WILLIAM H. KING.

Witnesses:
CHARLES H. PELL,
JOHN R. FRANCIS.