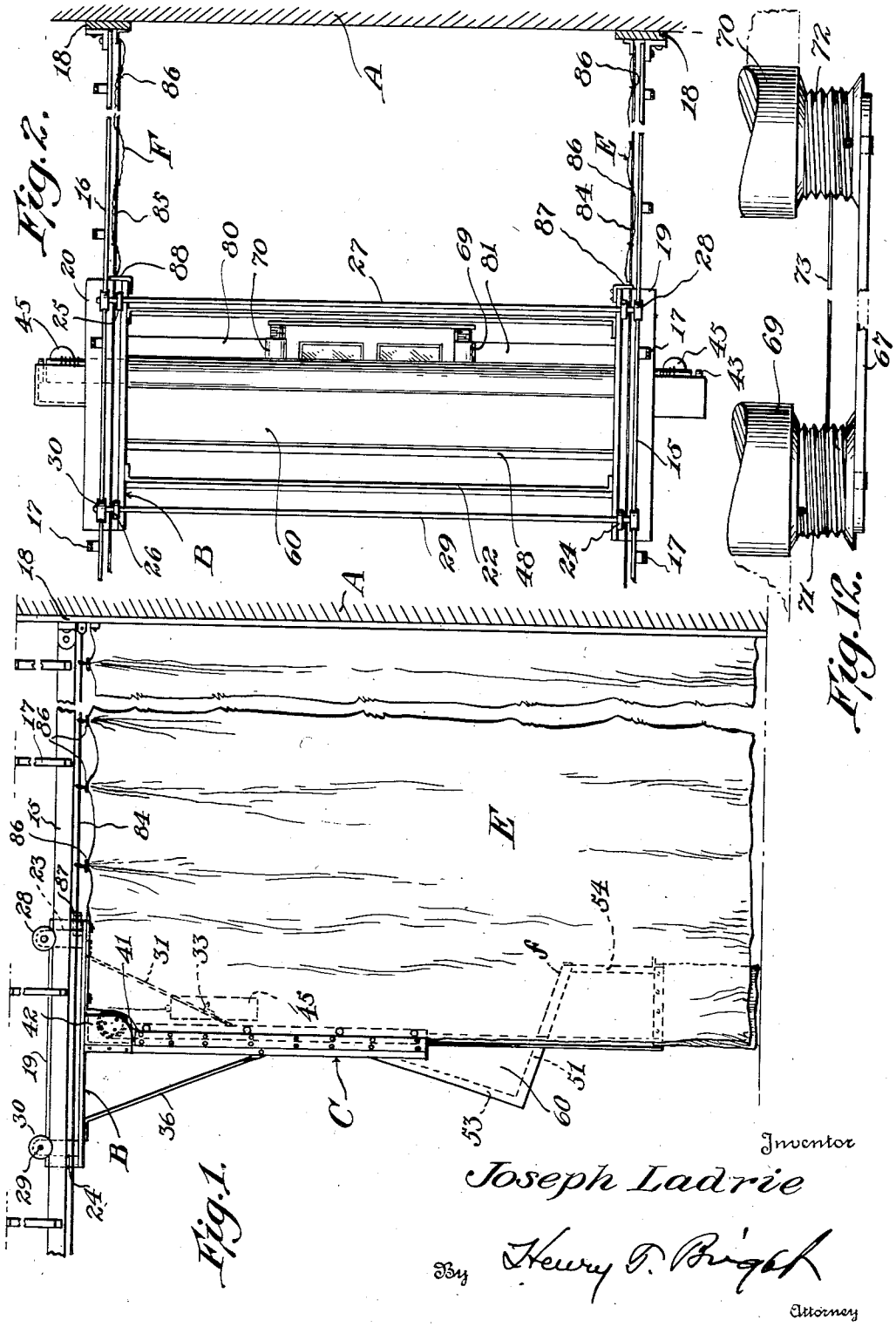
July 3, 1934. J. LADRIE 1,964,920

SAND BLAST CURTAIN

Filed July 26, 1932 3 Sheets-Sheet 1



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SAND BLAST CURTAIN

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Fig. 3.

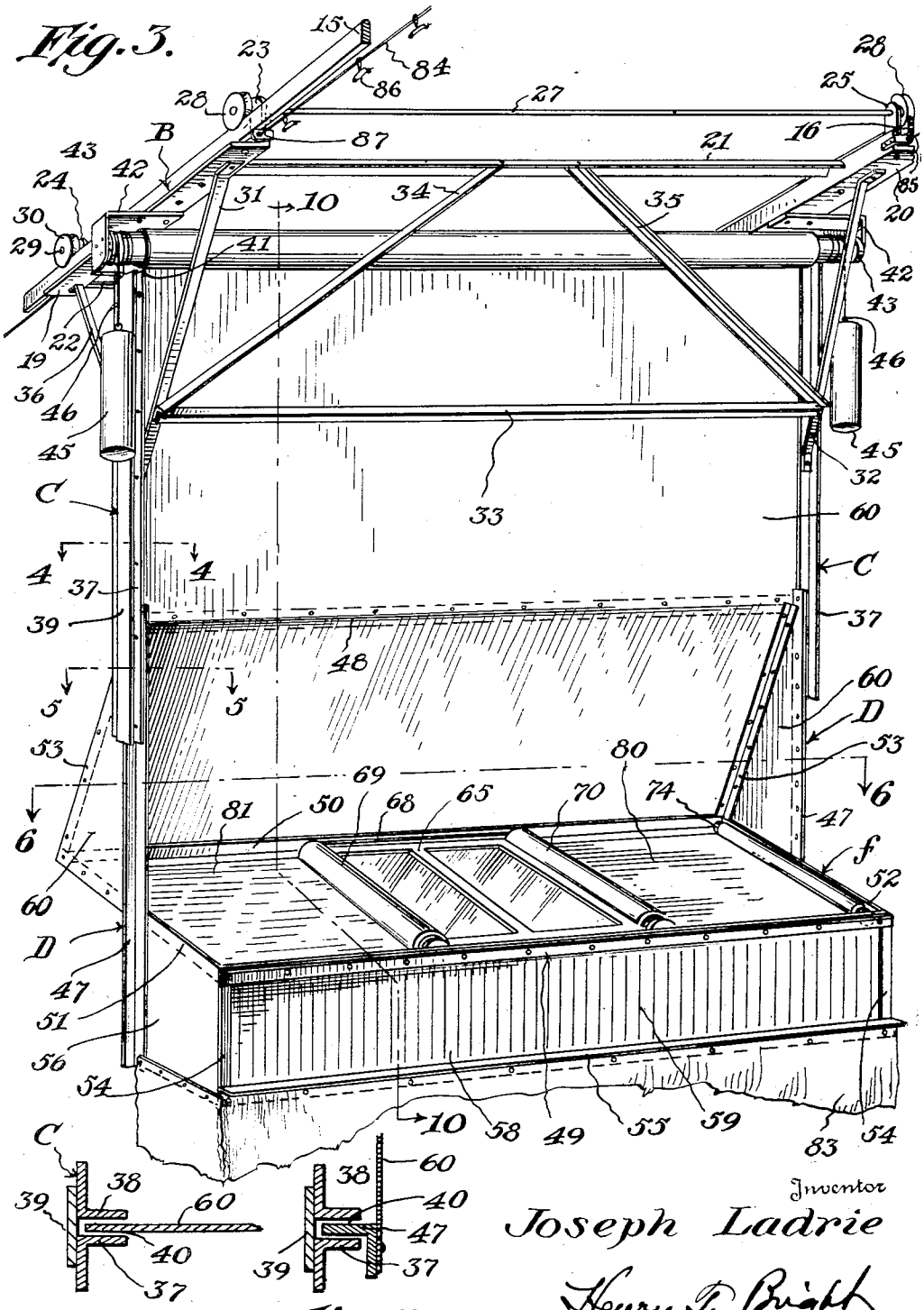


Fig. 4.

Fig. 5.

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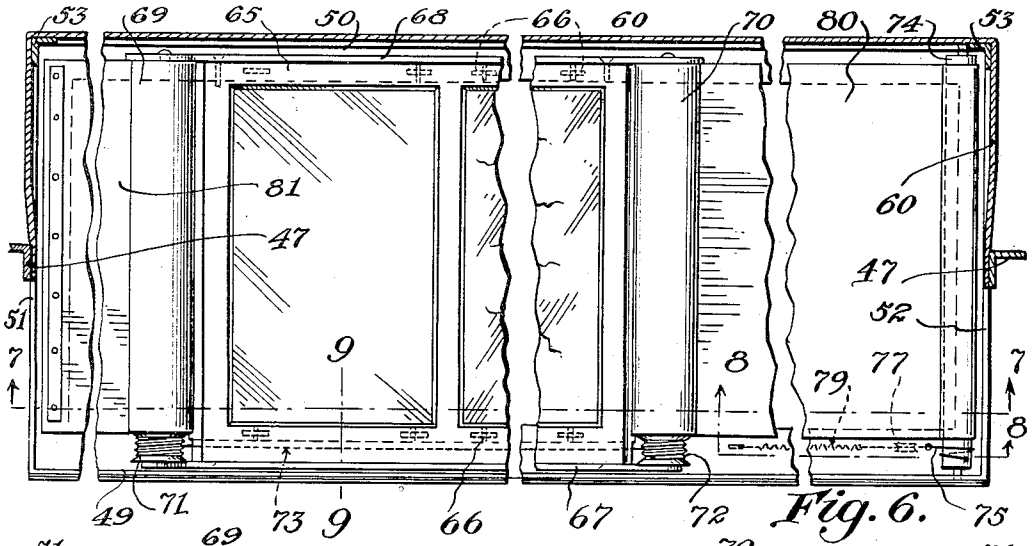


Fig. 6.

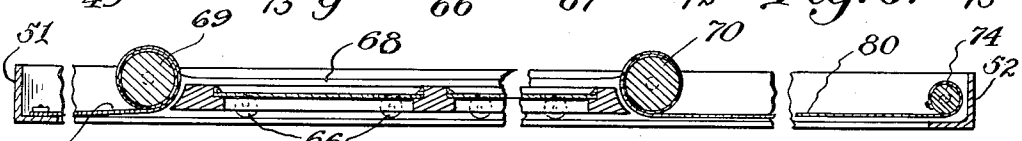


Fig. 7.

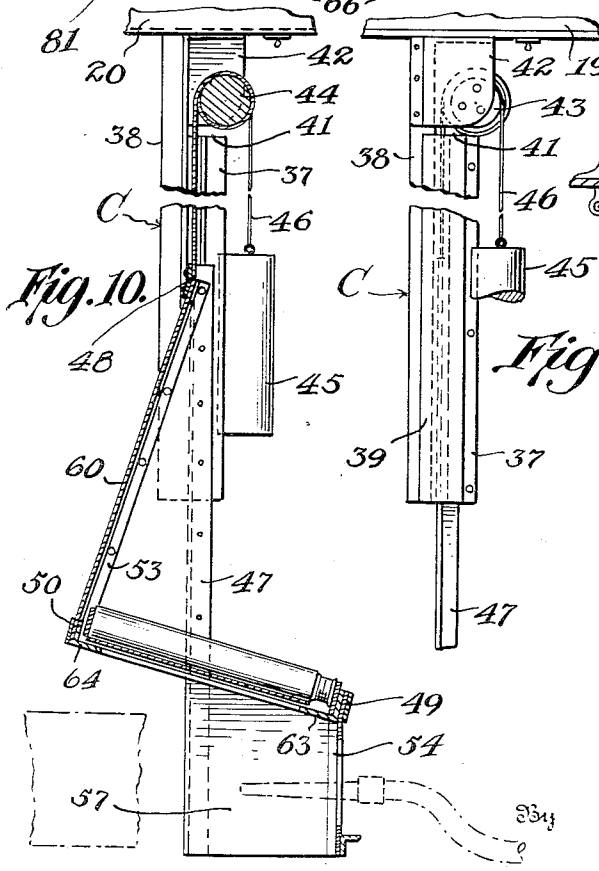


Fig. 10.

Fig. 11.

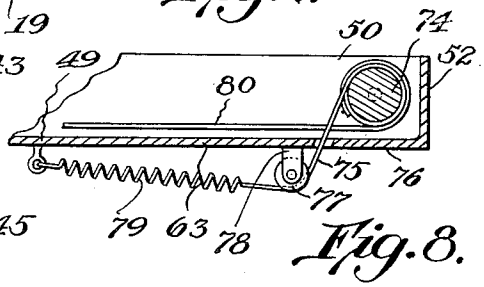


Fig. 8.

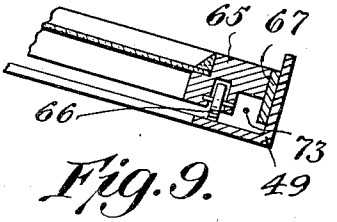


Fig. 9.

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UNITED STATES PATENT OFFICE

1,964,920

SAND BLAST CURTAIN

Joseph Ladrie, Barre, Vt.

Application July 26, 1932, Serial No. 624,881

7 Claims. (Cl. 51—8)

My invention relates to a sand blast curtain for protecting the operator from flying sand, particles of steel or particles of carborundum during the process of working upon stone with a sand blast.

As is well known a window is embodied in such curtains so that the operator can at all times vision the progress of the work. Heretofore such window has extended completely across the curtain and has embodied a relatively large number of glass panes, usually five or six, and during the operation of the sand blast these panes become scratched from being contacted by abrasive material to an extent that will render them visually defective in fifteen or twenty minutes and necessitate their replacement. My invention contemplates materially decreasing the size of such window and the number of glass panes embodied therein and at the same time to so mount the window that it can be shifted back and forth entirely across the curtain to permit any desired portion of the work to be viewed therethrough. In addition my invention contemplates the provision of means for maintaining closed at all times those openings in the curtain which would normally result from shifting the window transversely of the curtain.

My invention also contemplates engaging the curtain with an overhead track for movement therealong so that said curtain can be easily shifted to and from the work to be operated upon and thus obviate the necessity of any great accuracy in initially positioning heavy work with respect to the curtain.

My invention still further contemplates, as an additional measure of protection for the operator, the provision of supplemental side curtains which are connected to the track engaging main curtain and a fixed member, such as a wall of the room, so as to be expanded and contracted as the main curtain is moved from and toward the fixed member.

My invention further provides a device of such structural form as to enable substantially all of the frame portions thereof to be constructed of standard angle and plain iron bars with a resulting low cost of production.

I will describe my invention in the best form known to me at present but it will be understood that the same is susceptible to changes in form and proportions and to desirable additions with the exercise of only ordinary mechanical skill without departing from the scope of the invention.

In the drawings chosen to illustrate my invention the scope whereof is set forth in the appended claims:

Figure 1 is a side elevation of my invention;

Figure 2, a plan view of what is shown in Figure 1;

Figure 3, a perspective view of the main curtain, the supplemental side curtains being removed;

Figure 4, a section on the line 4—4 of Figure 3;

Figure 5, a section on the line 5—5 of Figure 3;

Figure 6, a section on the line 6—6 of Figure 3;

Figure 7, a section on the line 7—7 of Figure 6;

Figure 8, a section on the line 8—8 of Figure 6;

Figure 9, a section on the line 9—9 of Figure 6;

Figure 10, a section on the line 10—10 of Figure 3;

Figure 11, a side elevation of the upper portion of the main curtain; and

Figure 12, an enlarged plan view of the connected ends of the rollers which are associated with the main curtain.

It will be understood that my invention is set up as a whole for operation in a room of a suitable building or factory and one wall A of such room is shown in Figures 1 and 2.

In detail my invention embodies an overhead track formed of rails 15 and 16, said rails being supported intermediately by brackets 17 and secured at corresponding ends to the wall A as at 18 in Figures 1 and 2. Mounted for travel on the rails 15 and 16 is a carriage B which comprises side members 19 and 20 formed from L-bars. The member 19 has one of its arms disposed along the inner face of the rail 15 and its other arm across the bottom edge of said rail. The arms of the member 20 are correspondingly disposed with respect to the rail 16. Cross-connecting the members 19 and 20 are bars 21 and 22. Mounted on the member 19 are upwardly extending spaced brackets 23 and 24, while corresponding brackets 25 and 26 are mounted on the member 20. Supported by the brackets 23 and 25 and extending through each of the latter is a cross-connecting rod 27 upon each end of which is rotatably mounted a grooved wheel 28 and these wheels are engaged respectively with the rails 15 and 16. A cross-connecting rod 29 is similarly supported by the brackets 24 and 26 and has rotatably mounted on each end a grooved wheel 30, said wheels being also engaged respectively with the rails 15 and 16. The foregoing construction completes the carriage B and the adaptability of such carriage to move along the overhead track formed by the rails 15 and 16 will be obvious.

Extending downwardly from the members 19 and 20 are vertical guides C, said guides being supported from one end of the carriage B by brace hangers 31 and 32, the former of which connects one guide with the carriage member 19 and the latter of which connects the other guide with the carriage member 20. This connection of the guides C with the carriage B is strengthened by a cross-connecting bar 33 and by braces 34 and 35 the former of which connects the bar 21 and brace hanger 31, while the latter connects said bar 21 and the brace hanger 32. The guides C are further supported from the other end of the carriage B by brace hangers 36, one of which connects the member 19 with its related guide C, while the other connects the member 20 with its related guide.

Each of the guides C is constructed of two L-bars 37 and 38 mutually connected by a flat bar 39. The bars 37 and 38 of each guide are oppositely disposed and spaced apart to form a groove 40. The bar 38 of one guide has its upper end in contact with the member 19 and the bar 38 of the other guide has its upper end in contact with the member 20, while the upper ends of the bars 37 and 39 of each guide are spaced inwardly from the upper end of the bar 38 to provide a recess 41 in the guide at that point for a purpose that will presently appear. Secured to the undersides of the carriage members 19 and 20 respectively and also to the upper portion of the bars 38 and extending outwardly with respect to said carriage members are brackets 42. The outer end of each of said brackets 42 overlies its related recess 41 and carries an anti-friction bearing 43. A roller 44 has its ends journaled in the bearings 43 and said roller is partly contained in the recesses 41. Counterweights 45 are associated with the roller 44 through the instrumentality of flexible cables 46 and said counterweights constantly tend to rotate the roller 44 in a predetermined direction for a purpose that will presently become apparent.

My curtain further embodies a vertically adjustable section D which comprises side members 47 formed of L-bars each having one arm slidably engaged in a related groove 40 as clearly shown in Figure 5. The upper ends of the bars 47 are cross-connected at an intermediate point by a rectangular frame *f*. This frame is inclined downwardly toward the operator's side of the curtain and is made up of L-bars 49, 50, 51, 52, the bars 49 and 50 extending crosswise of the curtain and the bars 51 and 52 being connected respectively to the bars 47. The corners of the frame *f* remote from the operator's station are respectively connected to the bars 47 by braces 53. Secured to the frame *f* at the corners thereof formed by the bars 49, 51 and 52 are downwardly extending vertical bars 54 whose lower ends are cross-connected by a bar 55. The space defined by the bar 51 and its related bars 47 and 54 is closed by a metal sheet 56, while the space defined by the bar 52 and its related bars 47 and 54 is closed by a metal sheet 57. The various spaces defined by the bars 47, 48, 51, 52 and 53 are closed by a suitably shaped sheet of rubber 60 which sheet extends upwardly from the bar 48 with its side edge portions engaged in respective grooves 40 and then wound upon the roller 44. The sheet 60 is secured in a suitable manner to the bars 48, 51, 52, 53 and 47. The counterweights 45 act upon the roller 44 to hold that portion of the rubber sheet 60, which lies between the bar 48 and roller 44, taut at all times. The space defined by the bars 49, 54 and 55 is closed by a rubber sheet 58 having numerous vertical slits 59 therein through which a sand blast nozzle is adapted to be selectively inserted and thus locate the sand blast on the opposite side of the curtain from the operator.

In the formation of the frame *f* one arm of the bar 49 provides a track 63, while one arm of the bar 50 provides a track 64. Mounted for movement on these tracks crosswise of the curtain is a two pane window 65, said window carrying rotatable wheels 66 engaging the tracks 63 and 64. Secured to the edge of the window adjacent the bar 49 is a flat plate 67. A similar plate 68 is secured to the edge of the window adjacent the bar 50. The plates 67 and 68 extend beyond both sides of the window and journalled in these plates on one side of the window is a roller 69, while a similar roller 70 is journalled in the plates on the other side of the window. The ends of the rollers 69 and 70 adjacent the bar 49 are threaded as at 71 and 72 respectively and said rollers are connected by a cable 73 anchored to each roller and adapted to engage in the grooves of the threads of either roller when wound upon that particular roller, it being noted that when the cable 73 is wound upon one roller it is unwound from the other roller and that the portion of said cable between the rollers extends beneath the window 65. The purpose of this cable connection between the rollers is to cause both rollers to rotate at the same speed. Journalled in the bars 49 and 50 directly over the lower arm of the bar 52 is a take-up roller 74 and anchored to this roller is a cable 75, the latter being trained through an opening 76 in the bar 49 and then over a pulley 77 mounted in a bracket 78 secured to the bar 49. The cable 75 is then secured to one end of a tension spring 79, the other end of said spring being anchored to the bar 49. The action of the spring 79 and cable 75 is to constantly tend to rotate the roller 74 in a predetermined direction for a purpose that will presently appear. Wound upon the rollers 70 and 74 and closing at all times the space defined by said rollers and the bars 49 and 50 is a rubber sheet 80 all as clearly shown in Figures 6 and 7. Wound upon the rollers 69 and having its free end secured along the bar 51 is a rubber sheet 81 adapted to close at all times the space defined by the roller 69, bar 51, bar 49 and bar 50. It will be apparent from the foregoing that the window 65 can be shifted crosswise of the curtain to any position desired within the limits of the frame *f* for observing different portions of the work during the operation of the sand blast. Should the window be shifted to the right in Figure 6 the sheet 81 will be unwound from the roller 69 and laid over the space in the frame *f* that would otherwise be left open. The rotation of roller 69 would operate through the cable 73 to rotate the roller 70 in a direction to wind the sheet 80 thereon. Should the window 65 be moved to the left in Figure 6 the operation just described will be reversed. During either movement of the window the take-up roller 74 will be operated by the spring 79 to maintain the sheets 80 and 81 taut in a manner that will be obvious. It will thus be apparent that the shifting of the window 65 in no way impairs the protective efficiency of the curtain and at the same time enables me to employ a window with a minimum number of panes and secure a material saving in cost incident to pane replacements. To maintain the protective efficiency of the curtain in all vertical adjustments of the section D I secure to the plates 56 and 57 and the bar 55 a depending fabric apron

83 of sufficient length to touch the floor of the room in which the device is located, when the section D is at the greatest elevation that would be required in the use of the curtain.

As a further protection to the operator over that afforded by the main curtain previously described I associate with the latter, as shown in Figures 1 and 2, supplemental side curtains E and F preferably of fabric, I suspend these curtains upon wires 84 and 85 respectively through the medium of clips 86 slidably engaged on these wires 84 and 85. These wires 84 and 85 are secured at corresponding ends to the wall 18 and at their other ends to an opposite wall (not shown). The wire 84 is engaged through an opening in a bracket 87 carried by the member 19. while the wire 85 is engaged through an opening in a bracket 88 carried by the member 20. These brackets 87 and 88 engage the adjacent clips 86 as the main curtain is moved toward the wall 18 and thereby facilitate the contraction of the curtains E and F. A portion of the top edges of the curtains E and F are secured to the members 19 and 20 respectively, while the side edges of said curtains are secured respectively to adjacent guides C and to the wall 18. From this construction it will be apparent that as the main curtain is moved on the overhead track toward the wall 18 the curtains E and F will be contracted and that when said main curtain is moved away from the wall 18 the curtains E and F will be expanded.

An important feature of my invention is the disposition of the window 65 at an inclination to the vertical and rearwardly of the curtain portion located below the window. Because of this construction a stone can be placed under the window with the face to be operated upon uppermost. This allows the operator to be squarely above working surface. Forward and rearward movement of the curtain will enable the operator to easily vary the overlying relation of the window to the working surface. The conditions just specified avoid the necessity and disadvantage of having the working surface of the stone in an upright position when it is to be finished with the modern type of "feather-edge" and "shaped" carvings, it being substantially impossible to execute such type of work with the working surface of the stone disposed upright and facing the curtain. As it is necessary to vary the relative positions of a stone and curtain several times in order to obtain the desired effect of the above mentioned "shaped" carvings a further and distinct advantage is gained by the use of my invention as it is much easier to move the curtain than the stone.

I claim:

1. A vertically adjustable sand blast curtain including a frame disposed at an angle to the vertical and extending completely across said curtain, a window mounted for movement in said frame from side to side of the latter, a spring operated take-up roller journaled in the frame at one side of the latter, rollers carried by and at each side of the window respectively, a flexible sheet wound upon one of the rollers carried by the window and also upon the take-up roller, a second flexible sheet wound upon the other roller carried by the window and anchored to the side of the frame remote from the take-up roller, and connections between the rollers carried by the window whereby sheet unwinding rotation of one will produce a sheet winding rotation of the other.

2. A sand blast curtain comprising an overhead support, spaced side members depending from said support, each of said side members being formed of oppositely disposed angle iron bars, a plate mutually connecting the bars in spaced relation to provide a groove therebetween, a frame including side members of angle bars having portions respectively and slidably engaged in the grooves of said depending side members, a roller carried by the support, a sheet wound upon the roller and secured to the upper end of said frame, the side edges of the sheet being engaged in the grooves of the aforesaid depending side members, and means closing at all times the space defined by said frame.

3. In a device of the class described, a sand blast curtain, and means supporting said curtain for horizontal movement in a direction at an angle to a horizontal line connecting the sides of the curtain.

4. In a device of the class described, a horizontal overhead track, a carriage movable on the track, and a sand blast curtain depending from the carriage and movable therewith, said curtain being positioned with respect to the carriage to cause its movement with the carriage to be in a direction at an angle to a horizontal line connecting the sides of the curtain.

5. In a device of the class described, a main sand blast curtain, means for supporting said curtain for horizontal movement in a direction at an angle to a horizontal line connecting the sides of the curtain, a fixed member in parallel spacement to the main curtain, and supplemental side curtains supported for expansion and contraction, said supplemental curtains being connected at corresponding sides to respective sides of the main curtain and at their other corresponding sides to the fixed member.

6. In a device of the class described, a sand blast curtain having offset upper and lower portions, a frame connecting said portions, a window mounted in said frame, and means supporting said curtain for horizontal movement in a direction at an angle to a horizontal line connecting the sides of the curtain.

7. A sand blast curtain including upper and lower terminal portions disposed in different vertical planes respectively, an intermediate portion connecting the terminal portions whereby work may be positioned under said intermediate portion, and a window mounted in the intermediate portion for observing sand blast operations on the top face of work from points vertically above and overlying said face.

JOSEPH LADRIE.