Sept. 25, 1934. R. RUEMELIN, JR 1,974,470

ADJUSTABLE HOLDER FOR SAND BLAST NOZZLES

Filed July 6, 1931 2 Sheets-Sheet 1

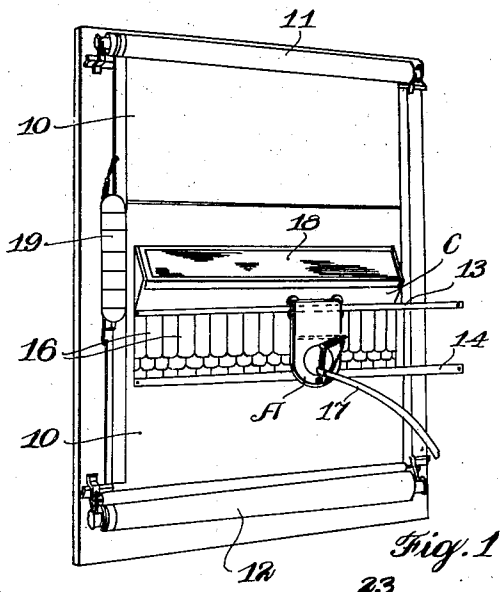


Fig. 1

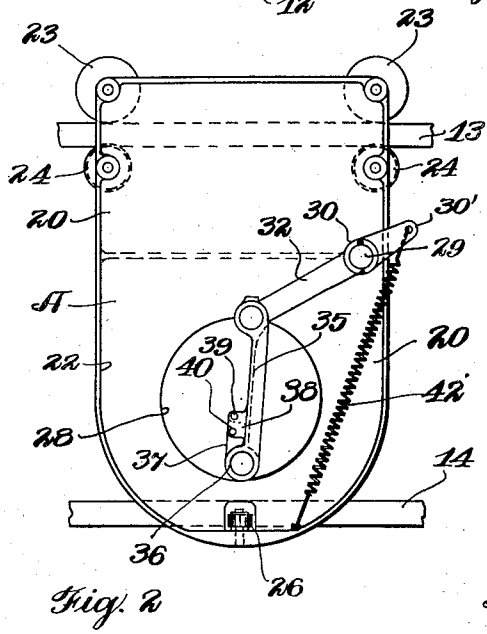


Fig. 2

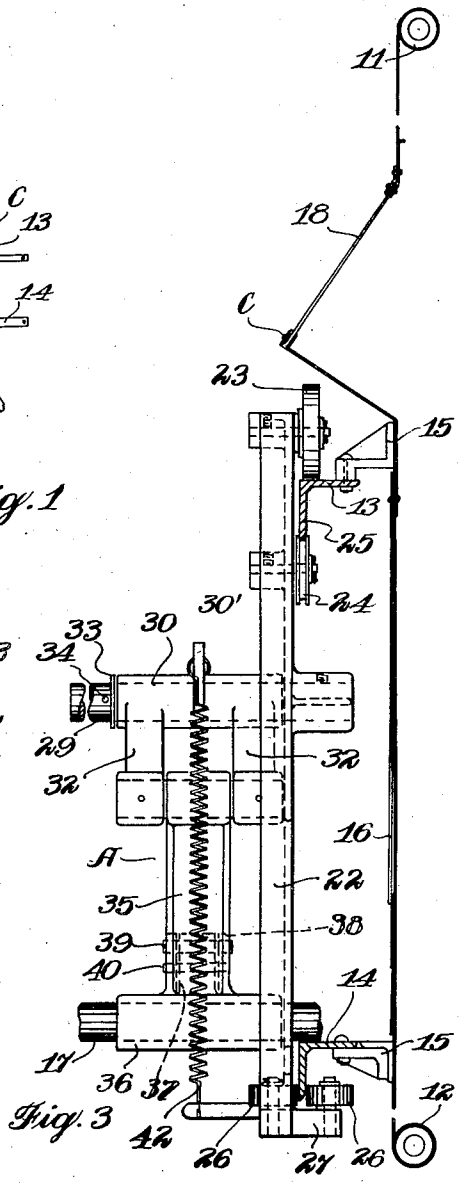


Fig. 3

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Sept. 25, 1934. R. RUEMELIN, JR 1,974,470

ADJUSTABLE HOLDER FOR SAND BLAST NOZZLES

Filed July 6, 1931 2 Sheets-Sheet 2

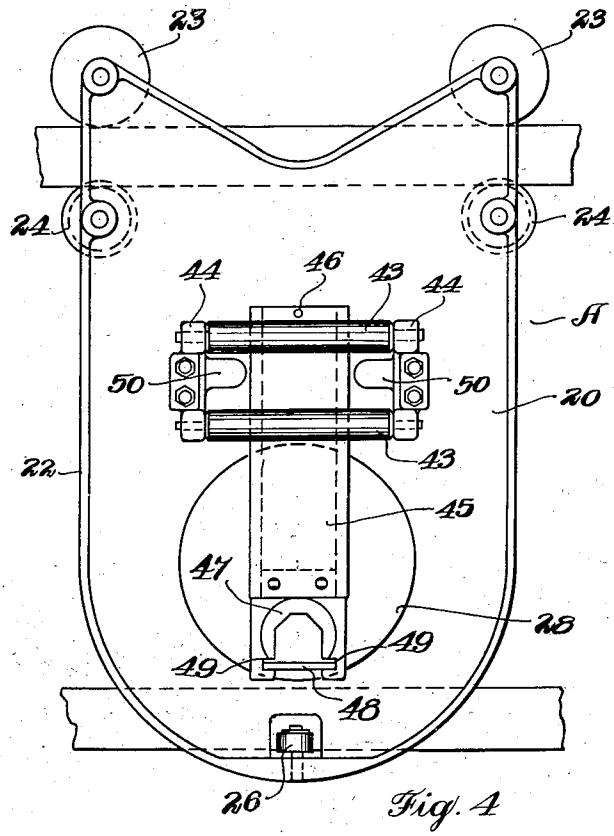


Fig. 4

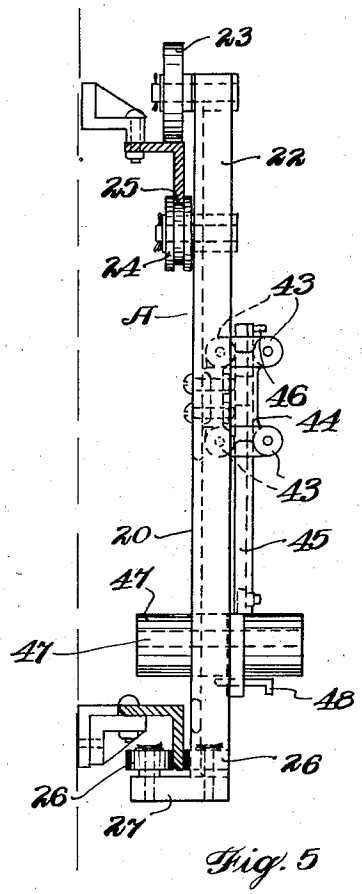


Fig. 5

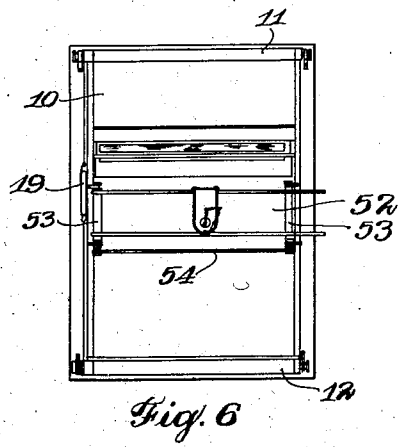


Fig. 6

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UNITED STATES PATENT OFFICE

1,974,470

ADJUSTABLE HOLDER FOR SAND BLAST NOZZLES

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Application July 6, 1931, Serial No. 548,752

11 Claims. (Cl. 51—8)

My invention relates to an adjustable holder for sand blast nozzles, and has for its primary object the holding of the sand blast nozzle pointed toward the work being sand blasted to insure uniform operation thereof. By means of my holder, a large part of the responsibility now placed upon the operator, as well as a large degree of the labor of operation may be obviated.

It is the object of my invention to provide a nozzle holder which will hold the nozzle pointed toward the work being sand blasted regardless of the movement of the nozzle over the surface of the work. In this manner the operator may concentrate upon properly moving the nozzle to uniformly sand blast the work, without constant through of keeping the nozzle always at right angles therewith. My holder also relieves the strain as well as the vibration on the operator's hands in holding the nozzle firmly through which the blasting sand is passing, thus eliminating much of the labor and strain connected with sand blasting.

It is a purpose of my invention to hold the sand blast nozzle in such a manner that the nozzle may be moved over the entire surface of the work. This is accomplished by means of a track and trolley means mounted upon a vertically adjustable curtain. The nozzle is held firmly but adjustably within the holder, the holder is horizontally movable upon a track, and the track is vertically adjustable upon a screen or curtain. It may be seen that the nozzle may be directed toward any desired portion of the work quickly and easily.

My holder is adapted to hold the nozzle in a manner to permit the same to be moved vertically, horizontally, or in circles within the holder itself, enabling the operator to keep the nozzle constantly in motion, without moving the position of the holder. Thus an area of the work may be blasted uniformly and the nozzle kept in constant motion to prevent any part of the work being worn down in one particular spot, without moving the position of the holder.

The holder of my design is adapted to hold the nozzle free to move in virtually every direction, and at the same time always keep the nozzle pointing squarely at the work. The work can thus be blasted more uniformly and easily, and with much less skill necessary on the part of the operator.

In the drawings forming a part of this specification:

Figure 1 is a front perspective view of my sand blast nozzle holder as it would appear in position upon a track mounted on a shielding curtain with a sight window.

Figure 2 is a front elevation view of my nozzle holder.

Figure 3 is a side view of the same, showing the manner of connecting the holder to the curtain.

Figure 4 is a front elevation view of a modification of my holder.

Figure 5 is a side view of the type of holder illustrated in Figure 4.

Figure 6 illustrates an alternate form of curtain construction.

My nozzle holder is constructed to hold the sand blast nozzle free to move in virtually every direction, being guided by the operator. The work to be sand blasted is usually placed in a cabinet or chamber closed off on one side by means of a curtain 10, which is supported at the top and bottom by horizontal rollers 11 and 12 upon which the curtain is wound. A pair of angle members 13 and 14 are secured to the curtain 10 by brackets 15, and form a track for the trolley wheels supporting the nozzle holder A.

The curtain 10 is cut away between the track members 13 and 14, and the opening thus formed is closed by a multiplicity of suspended leather strips 16 which depend from the upper edge of the opening and which overlap to form a shutter B. The sand blast nozzle 17 is adapted to extend through the shutter B, and as the holder A moves along the track members 13 and 14, the strips 16 will automatically separate and close behind the nozzle. As illustrated in Figure 1, the track is extended at one end to permit the nozzle holder to be rolled from in front of the curtain 10 when the nozzle is operated by hand.

Above the track members 13 and 14 I position a frame member C which is provided with a window 18 through which the operator may view the work at all times, as well as the position of the nozzle 17 and its relation to the work.

The curtain 10 is wound upon the rollers 11 and 12 at the top and bottom sufficiently to allow the curtain to be raised or lowered, in order to raise and lower the track, nozzle holder and window supported by the curtain. A counterweight 19 is associated with the curtain in a manner to make the curtain raise and lower easily upon the rollers 11 and 12.

The nozzle holder A is formed of a body plate portion 20 which is preferably square at the top and arcuated at the bottom in the manner illustrated in the drawings, and having a reinforcing rib or flange 22 extending about the periphery of the same. The weight of the holder A is sup-

ported mainly by a pair of rollers 23 mounted at the upper edge of the plate 20, and the rollers 23 are guided along the upper surface of the track angle member 13 by means of a pair of grooved rollers 24 which engage the lower edge 25 of the vertical surface of the angle member 13 to prevent the rollers 23 from slipping off the horizontal surface of the angle member 13. A pair of rollers 26 engage the lower track angle member 14 along the vertical surface thereof, one roller acting against the inner surface and the other rolling against the outer surface in the manner illustrated in Figure 3 of the drawings. The inner roller 26 is pivoted to a lug 27 or flange projecting from the plate 20 below the track 14, so that the entire holder A may be removed from the track members 13 and 14 at the ends thereof when desired. By means of the various rollers, the holder A may be moved along the track transversely to the curtain with ease, there being little friction.

The plate 20 is provided with a circular aperture 28 in the lower portion thereof through which the nozzle 17 is adapted to pass. The nozzle 17 is supported to the plate 20 by means of an arrangement of levers which permits free movement of the nozzle within the aperture 28, so that the nozzle 17 may be moved around in or to any portion of the aperture easily and readily.

A short shaft or pivoting pin 29 projects from the surface of the plate 20, and is secured against turning with reference to the plate 20. A sleeve 30 to which are secured parallel spaced arms 32 forming a yoke is rotatably placed upon the pin 29, and is held in position by means of a washer 33 and pin 34. Pivotally connected between the arms 32, I provide an arm 35. The free end of the arm 35 is equipped with one half of the tubular bearing for the nozzle 17. The sleeve 36 is split to permit the insertion of the nozzle 17, half of this bearing being formed on the end of the arm 35, and the other half being provided with a lug 37 which is pivoted between ears 38 on the arm 35. In operation, to insert the nozzle, the lug 37 is pivoted upon the pin 39 to separate the halves of the bearing, the nozzle is inserted in place, the bearing closed and then locked by means of a locking pin 40 passing through the lug 37 and the ears 38.

To partially counterbalance the weight of the nozzle 17, I provide a spring 42 which is connected between the lower portion of the plate portion 20 and an extended end 30' projecting from the sleeve 30 and integrally connected through the sleeve to the arms 32. This spring assists in balancing the nozzle within the aperture 28.

It is sometimes advisable to support the nozzle to the plate portion 20 of the nozzle holder A in a slightly different manner, as is illustrated in Figures 4 and 5 of the drawings. In this modification, two pairs of rather long rollers 43, spaced apart, are mounted upon the bracket 44 which is secured to the plate portion 20 of the holder A. The rollers 43 of each pair are spaced apart, to allow the insertion of a channel or bar member 45 between the same. A pin 46 through the member 45 prevents the removal of this member accidentally. A grooved or trough-shaped housing 47 is secured to the lower end of the member 45 to contain the nozzle 17, and a locking plate 48 sliding in grooves 49 adjacent the open side of the grooved housing 47 may be inserted to hold the nozzle 17 in proper position until the removal thereof.

The bracket 44 is provided with a pair of lugs 50 having rounded ends between which the bar-like member 45 moves. It is possible to move the member 45 upwardly or angularly to any position within the aperture 28. Thus the same resulting motion may be obtained from this modification as from the first modification, and the nozzle may be adjusted to the same positions within the aperture 28.

The housing 47 is at right angles to the plane of the body portion 20 of the holder A, so that the nozzle 17 is always pointed directly toward the work. The operator may move the nozzle about to any desired position within the aperture 28, and may move the holder A horizontally on the tracks 13 and 14. Vertical adjustment is accomplished by means of the curtain 10, so that any position of the nozzle may be obtained over any portion of the work.

While the holders A in the different figures of the drawings show a structure where the nozzle 17 is held at right angles to the supporting plate 20, it is apparent that the sleeve 36 or 47 may be set at an angle in relation to the plate 20, if it is desired, so that the sand blast may be directed from the nozzle accordingly. Ordinarily it is desirable to have the sand blast nozzle held virtually at right angles to the curtain 10 and as the plate 20 is positioned parallel in relation to the curtain, the nozzle 17 is ordinarily held at right angles to the work inside of the cabinet, which is not shown in the drawings, of which the curtain 10 is positioned at one side, so that the sand blast from the nozzle will be held in a manner to relieve the operator from any undue strain and free to concentrate on moving the nozzle around in the opening 28 without having to worry about holding the nozzle square so as to cut evenly into the article being sand blasted.

The holder A provides a suitable means for supporting the sand blast nozzle so that it may be moved back and forth by the trolley-like holder A and the opening 28 provides a working opening for the nozzle so that the operator may freely move the nozzle around within the opening 28 without concentrating on holding the same, as far as directing the sand blast is concerned. With this trolley-like support and the means for freely supporting the nozzle, the operator may use a rotary motion in directing the sand blast nozzle which is most effective in doing fine work with sand blast equipment. In this manner the operator can rotate the nozzle, making small circles or larger circles within the opening 28 or may move angularly therein so as to accomplish the very best results with the operation of the sand blast nozzle.

The slitted shutter B is eliminated in the modification illustrated in Figure 6, and a curtain sheet closure is substituted therefor. The sheet 52 is rolled upon rollers 53 mounted vertically at each end of the shutter opening. A belt or cable 54 connects the rollers 52, and causes the same to operate together, winding on one roller and unwinding from the other. A suitable nozzle opening is provided in the sheet 52. The closure thus formed is tight and positive, and yet the nozzle opening may be readily adjusted as to position.

In accordance with the patent statutes, I have described the principles of operation of my adjustable holder for sand blast nozzles, and while a particular construction and arrangement of the parts is set forth, I desire to have it understood that these are only suggestive of a means

of carrying out the best embodiment thereof and that ordinary changes made by those skilled in the art within the scope of the following claims shall be considered as a part of this invention.

I claim:

1. A sand blast nozzle support including, a plate, trolley means for supporting said plate freely slidable horizontally, an opening formed in said plate for receiving a sand blast nozzle, pivotal means for supporting the nozzle extending through said opening, and means on said support for counter-balancing said nozzle supporting means to overcome the weight of the nozzle on said holding means.

2. The combination, an adjustable sand blast curtain for blast cabinets, means for counter-balancing and rolling up the ends of said curtain, a window in said curtain, a sand blast nozzle shielded opening formed transversely in said curtain, track means formed along said nozzle opening, a trolley freely slidable along said track, an opening formed in said trolley, and lever means on said trolley for supporting a sand blast nozzle with free counter-balanced movement in said trolley.

3. A sand blast nozzle support including, a slidable trolley in combination with a shielding curtain, an opening formed in said trolley through which the nozzle is adapted to project, lever and link means for supporting the nozzle projecting through said opening, and counter-balance means on said trolley secured to said lever means for equalizing the weight of the nozzle carried by said lever means while projecting through said opening.

4. A sand blast nozzle support including, a pair of tracks, a plate slidably mounted in relation to said tracks, rollers for supporting said plate to said tracks, an opening in said plate through which a sand blast nozzle is adapted to project, a pivotally supported lever, a link pivoted to said lever, adapted to support the sand blast nozzle movable for sand blasting small areas by moving around in said opening while supported by said link and lever to extend squarely through said plate, and said trolley and track means being adapted to support the nozzle freely movable along the same.

5. A sand blast nozzle support comprising, a trolley plate, tracks for supporting said plate, carrying rollers at the top of said plate adapted to run along one of said tracks, guide rollers engaging below the track on which said carrying rollers operate, guide rollers for engaging the other track centrally of the plate, a marginal reinforcing flange formed around said plate, an opening formed in said plate through which a sand blast nozzle is adapted to project, and means including a lever pivoted to the plate and a link pivoted to said lever for supporting the sand blast nozzle freely movable in said opening and adapted to project in a set position in relation to said plate.

6. A sand blast nozzle support including, trolley means, curtain means for shielding the operator, said trolley including means slidable in relation to said curtain, link and lever nozzle supporting means within the trolley to permit the nozzle to be operated with a free rotary movement and simultaneously movable transversely and vertically, and spring means tending to raise said nozzle.

7. A sand blast nozzle support including, a horizontally slidable trolley, means on which said trolley may slide, an opening in the trolley through which the sand blast nozzle projects, means for supporting the nozzle freely rotatable in said opening, said means including members supported by the trolley spaced from the front of and operable across the front of said opening in said trolley to leave said opening clear for movement of the nozzle therein.

8. A sand blast nozzle trolley including, a plate member, an opening in said plate, and relatively pivoted link and lever means for supporting the sand blast nozzle by said plate freely operable within said opening, said supporting means being free of said opening to permit the nozzle to move within the area of said opening.

9. A sand blast nozzle support including, a horizontally movable trolley, an opening through said trolley, a lever pivoted between its ends to said trolley, means for supporting a nozzle to one end of said lever, and a spring interposed between the other end of said lever in said trolley for balancing the weight of the nozzle.

10. A sand blast nozzle support including, a horizontally movable trolley, an opening through said trolley, a lever pivoted between its ends to said trolley, a link pivoted to one end of said lever, means for supporting a nozzle to the free end of said link, and a spring interposed between the other end of said lever and said trolley for balancing the weight of the nozzle.

11. A sand blast nozzle support including, a trolley, guiding means for supporting said trolley, said supporting means supporting said trolley freely slidable horizontally and vertically for greater area movements, and a lever pivoted to said trolley, a link pivoted to said lever having a nozzle supporting thereupon adapted to support the nozzle for small area movements rotatably and angularly.

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