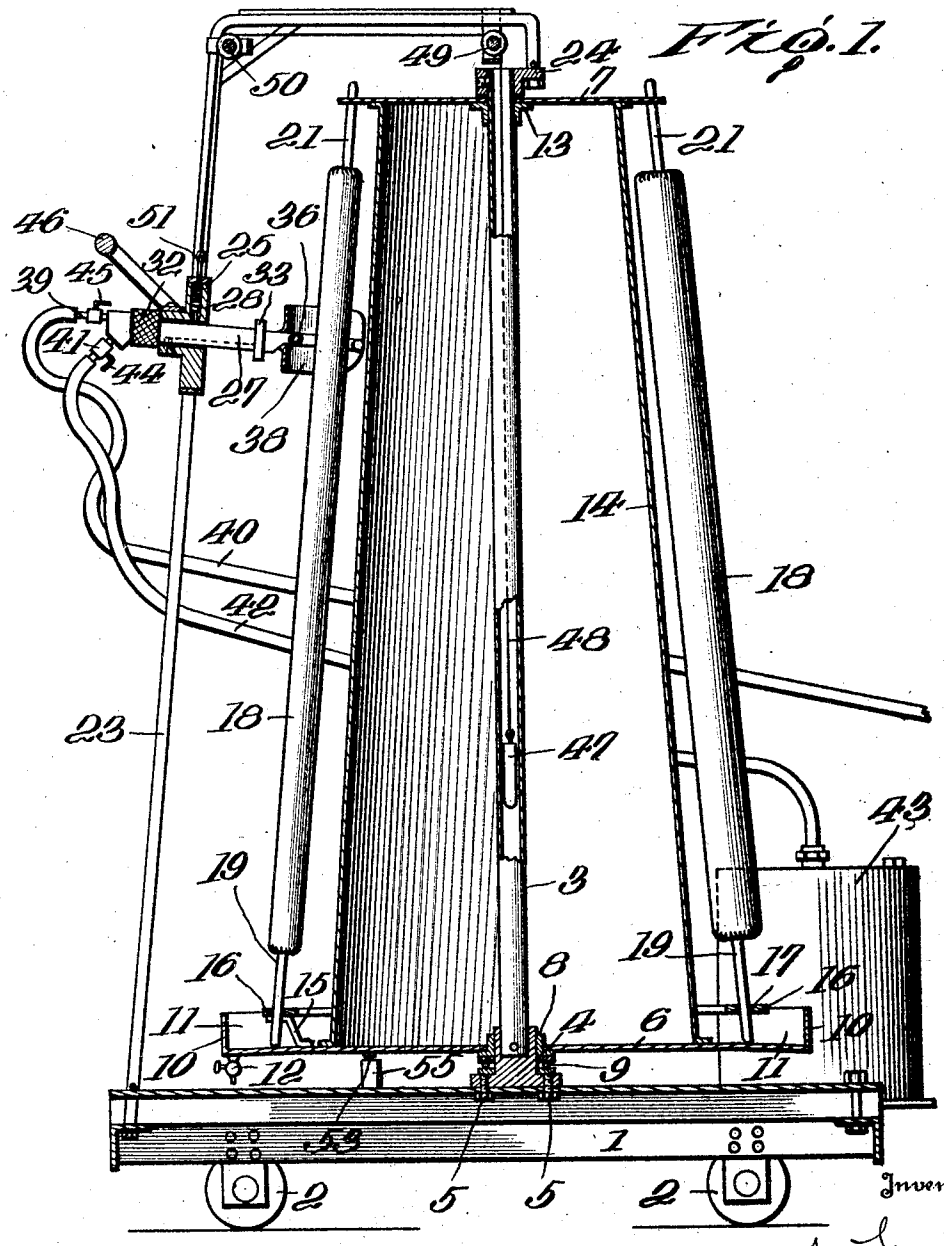
Oct. 26, 1926. 1,604,405

A. H. FOX

APPARATUS FOR CLEANING LITHOGRAPH ROLLS

Filed April 4, 1923 3 Sheets-Sheet 1



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APPARATUS FOR CLEANING LITHOGRAPH ROLLS

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Fig. 2.

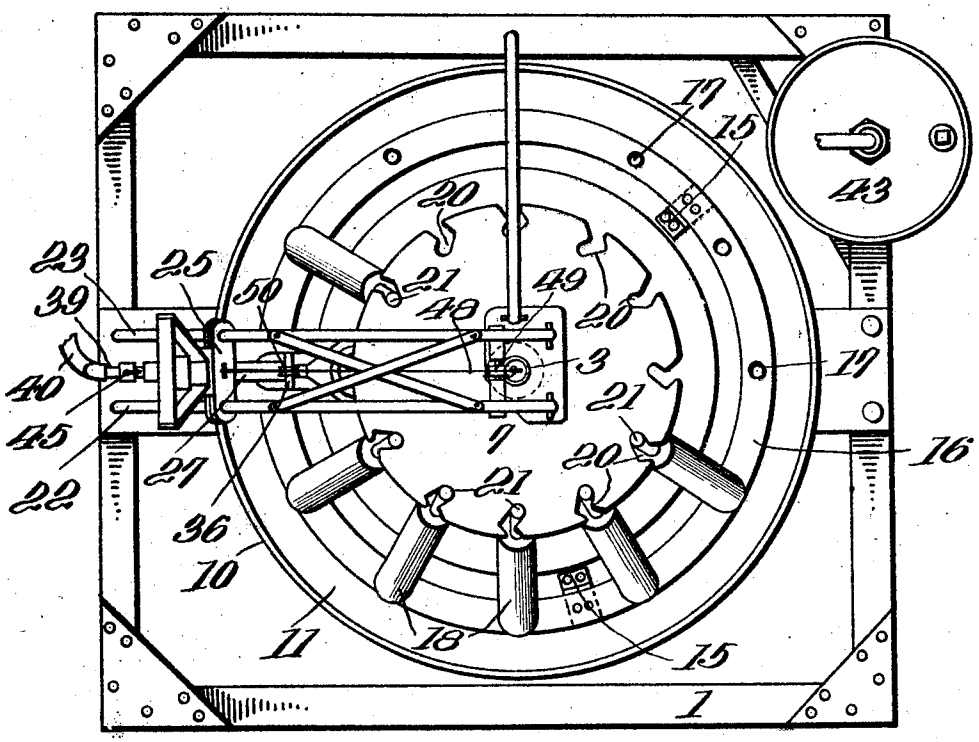
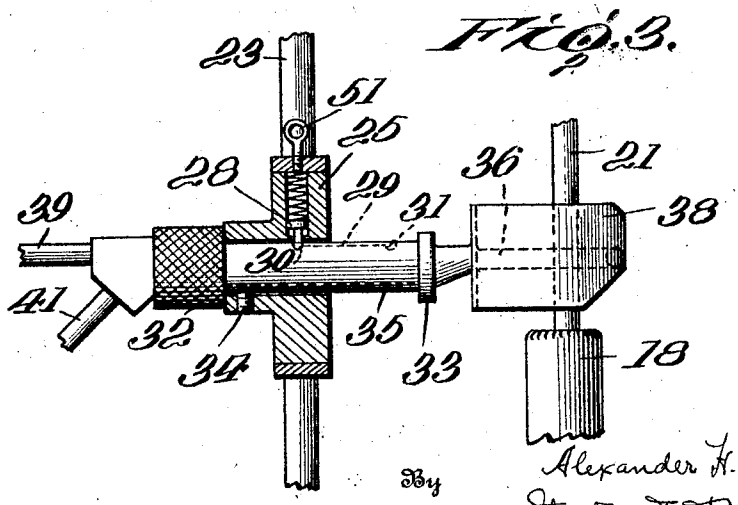


Fig. 3.



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Fig. 4.

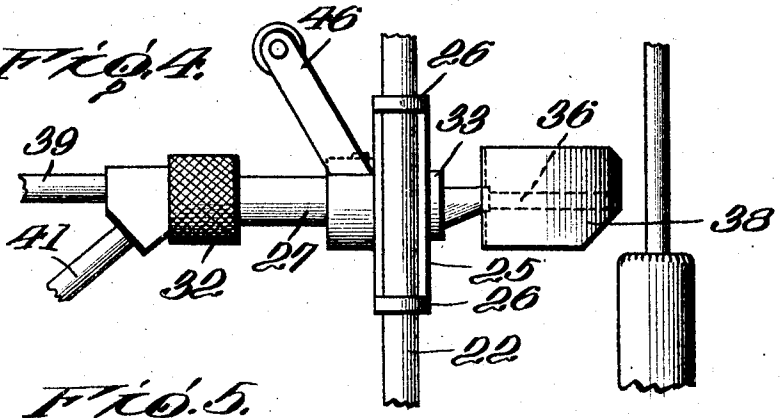


Fig. 5.

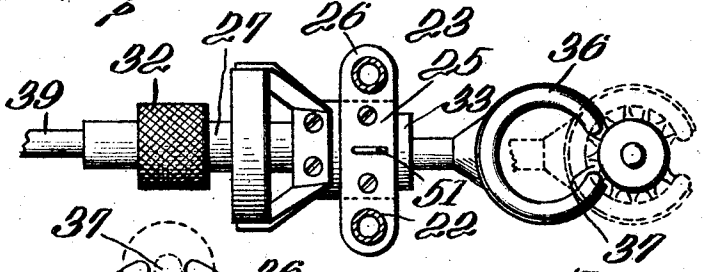


Fig. 7.

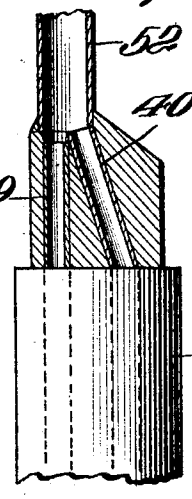


Fig. 6.

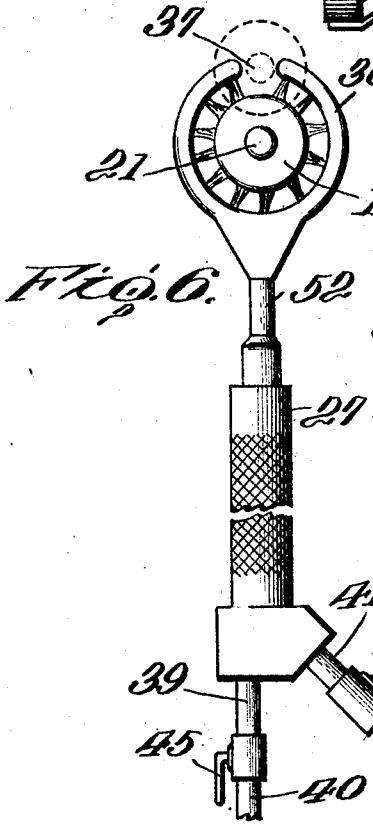
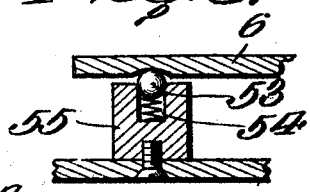


Fig. 8.



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Patented Oct. 26, 1926. 1,604,405

UNITED STATES PATENT OFFICE.

ALEXANDER H. FOX, OF BROOKLYN, NEW YORK, ASSIGNOR TO PHOENIX-HERMETIC COMPANY, OF BROOKLYN, NEW YORK, A CORPORATION OF NEW YORK.

APPARATUS FOR CLEANING LITHOGRAPH ROLLS.

Application filed April 4, 1923. Serial No. 629,953.

The invention relates to new and useful improvements in an apparatus for cleaning lithograph rolls.

An object of the invention is to provide an apparatus whereby the cleaning fluid may be forcibly projected against the cleaning roll substantially throughout the circumference thereof and progressively from one end of the roll to the other.

A further object of the invention is to provide an apparatus wherein the lithograph rolls may be supported in substantially vertical position and wherein the spray nozzle substantially encircling the lithograph roll may be moved from end to end thereof for forcibly projecting the spray of cleaning fluid against said roll.

A further object of the invention is to provide an apparatus of the above type with means for preventing the re-bounding cleaning fluid from striking the operator.

A still further object of the invention is to provide an apparatus of the above type with means whereby the spray nozzle may be moved parallel to and in predetermined relation to the lithograph roll, and wherein said spray nozzle may be moved toward and from the lithograph roll for placing the nozzle about the roll after the roll has been placed in its supporting means.

These and other objects will in part be obvious and will in part be hereinafter more fully disclosed.

In the drawings which show by way of illustration one embodiment of the invention—

Figure 1 is a view partly in section and partly in side elevation showing the apparatus embodying my improvements;

Fig. 2 is a plan view of the same;

Fig. 3 is an enlarged view partly in section showing the spray nozzle and the head supporting the same;

Fig. 4 is a similar view without the portion being sectioned and showing the spray nozzle retracted;

Fig. 5 is a plan view of the parts shown in Fig. 4, also showing in broken lines the spray nozzle moved forward in proper relation for cleaning the roll;

Fig. 6 is a plan view of the supporting sleeve and spray nozzle;

Fig. 7 is a sectional view on the line 7—7 of Fig. 6, and

Fig. 8 is a sectional view showing the yielding stop mechanism for holding the rack in a given position.

The invention is directed broadly to an apparatus for cleaning lithograph rolls. The lithograph rolls are placed in a suitable rack or casing and preferably set in a substantially vertical position. Suitable bearings are carried by the rack or casing, in which the journals of the lithograph rolls may be placed for supporting the roll. Associated with said rack are guide rods on which is mounted a sliding head. These rods are so positioned that the head may be moved back and forth in a direction parallel with the roll to be cleaned. Mounted on the head is my improved spray nozzle which consists of a sleeve carrying at its outer end a tube which is curved to conform to the surface of the roll to be cleaned, and said tube extends substantially about the entire circumference of the roll, there being only sufficient space left to permit the journal of the lithograph roll to pass through so that the spray nozzle may be placed over the journal and then moved endwise over the roll. The sleeve carrying the spray nozzle is mounted in the sliding head and can be moved endwise in said head for the placing of the spray nozzle over the journal of the lithograph roll or removing the spray nozzle when the roll has been cleaned. Suitable means is provided for holding this sleeve in its inner and outer positions. The sliding head is also preferably counterbalanced so that the head may be readily moved up and down. The spray nozzle is connected to a source of air pressure and also to a source of cleaning fluid which is preferably a low grade gasoline, although any desired cleaning fluid may be used. The air pressure will project the cleaning fluid in a fine spray against the surface of the roll to be cleaned, and the nozzle is moved longitudinally of the roll until the entire surface has been washed by the cleaning fluid. I preferably begin at the upper end of the roll and move the nozzle downwardly, thus washing the ink down the roll into the receiving receptacle at the bottom of the rack. I have also provided a hood which extends partially about the nozzle so as to prevent the cleaning fluid which is projected against the roll, rebounding and striking the operator.

Referring more in detail to the drawings, my improved apparatus consists of a car-

riage 1 which is preferably mounted on suitable rollers 2, 2 so that it may be readily moved about. Mounted on the carriage is a standard 3 which is preferably in the form of a sleeve. This sleeve is secured to a support 4 which in turn is bolted by means of suitable bolts 5, 5 to the carriage. Mounted on this sleeve and turning about the same, is a rack, which consists of a lower member 6 and an upper member 7. The member 6 is carried by a plate 8 which is mounted on balls 9 carried by the support 4. This bottom member 6 has an upwardly projecting ledge or flange 10 which forms a receptacle 11 adapted to collect the cleaning fluid running off from the lithograph roll. The cleaning fluid may be drawn from the receptacle 11 through a stop cock 12. The upper member 7 is carried by a flanged collar 13 so that the two members 6 and 7 are spaced on the sleeve 3. This sleeve 3 does not rotate, but the members 6 and 7 rotate thereon, being principally supported by the ball bearing at the lower end of the sleeve. There is also a vertical housing member 14 which is set back from the edges of the members 6 and 7. Mounted on the member 6 are brackets 15 which carry a ring member 16 having suitably spaced openings 17 therein which are adapted to receive one of the journals of a lithograph roll indicated at 18 in the drawings. The journal 19 is the journal referred to, and this journal passes through the opening in the ring member 16. At the outer edge of the upper member 7 there are slots 20. These slots 20 are formed at a slight acute angle to a radial line at their outer end and are then deflected substantially at right angles so that the upper journal 21 of the lithograph roll can be placed in this slot and will be in a measure held therein against direct outward radial movement. The rolls to be cleaned are placed in the rack in the manner above described. The rack as shown in the drawings is adapted to accommodate twelve rolls, although it will be obvious that the rack may be made for a greater or less number of rolls as desired.

Secured to the carriage are two guide rods 22 and 23. These guide rods extend upwardly parallel with the lithograph roll to a point above the upper member 17 where they are bent at substantially right angles to a point adjacent the vertical sleeve 3 and are then bent downwardly and secured to a sleeve 24 attached to the upper end of the sleeve 3. These guide rods, of course, do not rotate with the rack, but remain in a fixed position relative thereto. Mounted to slide up and down within said guide rods 22 and 23 is a head 25. This head 25 is provided with laterally extending members 26, 26 at each side thereof, which slide on the respective guide rods. Said head has a central opening therethrough in which is mounted a sleeve 27. This sleeve is capable of endwise movement in the supporting head and will be held in one of two predetermined positions by means of a spring pressed bolt 28 which is adapted to run in a groove 29 and drop into the recess 30 or 31. It will readily be seen that by a little pressure, the sleeve may be moved endwise, and when in its inner position, it will be held against too free movement by this yielding bolt 28 engaging the recess 30 and when in its outer position as shown in Fig. 4, it will be held by said yielding bolt engaging the recess 31. Mounted on the sleeve is a collar 32 which limits the inward movement, and a collar 33 which limits the outward movement of the sleeve. A pin 34 extending into a groove 35 in the sleeve prevents the sleeve from rotating in the head. At the inner end of the sleeve, I have provided a spray nozzle 36 which is in the form of a ring broken so as to provide a space 37. This ring is also provided with a series of perforations as clearly indicated in Fig. 6 and the broken line view in Fig. 5, where the sprays are shown as issuing from the openings. Surrounding the ring is a hood or shield 38. This hood or shield 38 conforms to the outer circumference of the ring nozzle and extends above and below the same as clearly shown in Figures 3 and 4. Connected with the sleeve 27 is a pipe 39 which is adapted to be connected to an air pressure tank by means of a flexible pipe 40. Also connected to the sleeve 27 is a pipe 41 which is adapted to be connected by means of a flexible pipe 42 to a supply tank 43 for the cleaning fluid. A suitable valve 44 will control the amount of cleaning fluid passing through the pipe and sleeve, and a suitable valve 45 will control the air pressure passing to the nozzle.

The pipe 41 extends through the sleeve 27 and leads into a pipe 52 which is formed as a part of the spray nozzle pipe 36, while the pipe 40 likewise opens into this pipe 52. The air rushing from the pipe 39 will draw the cleaning fluid from the pipe 41 and the two will pass together from the pipe 52 to the spray nozzle 36. The air rushing through to the nozzle will draw the cleaning fluid from the supply tank and will cause the cleaning fluid to be projected in fine jets against the surface of the lithograph roll to be cleaned.

As shown in Fig. 8 of the drawings, I have provided a yielding stop 53 which is in the form of a ball seated on a spring 54 in a bracket housing 55 which is stationary. The ball is adapted to engage recesses in the bottom of the member 6 and thus serves as a means for stopping said member with the lithograph roll in proper position to be operated upon by the spray nozzle.

The operation of my apparatus is as follows. The lithograph rolls are placed in the rack and while these rolls are being placed, the nozzle is retracted as shown in Fig. 4. After the rolls have been placed, the head 25 is raised to bring the nozzle beyond the end of the lithograph roll. After the head has been so positioned, the sleeve 27 is moved forward to the position shown in Fig. 3, which carries the cleaning nozzle to a position substantially encircling the upper end journal of the lithograph roll. The air is turned on and this will draw the cleaning fluid from its receptacle and forcibly project the same through the ports in the spray nozzle. The spray nozzle is then gradually lowered by a handle 46, and as it is gradually lowered, the roll will be thoroughly washed and cleaned and the cleaning fluid will flow down the roll into the receptacle at the bottom of the rack.

As a means for aiding in the movement of the head carrying the spray nozzle, I have provided a counterbalance consisting of a weight 47 which runs in the sleeve 3. The flexible cord 48 runs over a pulley 49 and also a pulley 50 and is attached to the sliding head 25 at 51.

It will be obvious of course, that my improved apparatus may be readily changed, as to construction and arrangement of parts, the essential features consisting in the spray nozzle which substantially surrounds the lithograph roll so that it will be simultaneously sprayed and cleaned throughout its circumference and the progressing of the spray nozzle endwise along the roll until the entire surface is cleaned. While I prefer to use guiding means, from certain aspects of the invention, this nozzle may be supported by hand, and good effects accomplished therewith.

Having thus described the invention, what I claim as new and desire to secure by Letters-Patent, is—

1. An apparatus for cleaning lithograph rolls comprising a support for the roll, a spraying head including a perforated nozzle adapted to extend circumferentially about the roll and substantially concentric therewith whereby the cleaning fluid may be projected against the entire circumference of the roll, and means for supporting said spraying head whereby the same may be moved longitudinally of the lithograph roll.

2. An apparatus for cleaning lithograph rolls comprising a support for the roll, a spraying head including a perforated nozzle adapted to extend circumferentially about the roll and substantially concentric therewith whereby the cleaning fluid may be projected against the entire circumference of the roll, and a hood extending outside of said perforated nozzle and above and below the same.

3. An apparatus for cleaning lithograph rolls comprising a support for the roll, a spraying head including a perforated nozzle adapted to extend circumferentially about the roll and substantially concentric therewith whereby the cleaning fluid may be projected against the entire circumference of the roll, a hood extending outside of said perforated nozzle and above and below the same, and means for supporting said spraying head whereby the same may be moved longitudinally of the lithograph roll.

4. An apparatus for cleaning lithograph rolls comprising a support wherein the roll may be placed in substantially a vertical position, a spraying head including a perforated nozzle adapted to extend circumferentially about the roll and substantially concentric therewith, and means for supporting said head whereby the same may be moved in a direction parallel with the longitudinal axis of the supported roll.

5. An apparatus for cleaning lithograph rolls comprising a support for the roll, a spraying head including a perforated nozzle adapted to extend circumferentially about the roll and substantially concentric therewith, a pipe leading to the nozzle for compressed air, and a pipe leading to said nozzle for the cleaning fluid, said pipes being so disposed that the compressed air will atomize the cleaning fluid and forcibly project the same against the lithograph roll.

6. An apparatus for cleaning lithograph rolls comprising a support for the roll, a spraying head including a perforated nozzle adapted to extend circumferentially about the roll and substantially concentric therewith, a pipe leading to the nozzle for compressed air, a pipe leading to said nozzle for the cleaning fluid, said pipes being so disposed that the compressed air will atomize the cleaning fluid and forcibly project the same against the lithograph roll, and means for moving said head longitudinally of said lithograph roll.

7. An apparatus for cleaning lithograph rolls comprising a support for the roll, a spraying head including a perforated nozzle adapted to extend circumferentially about the roll and substantially concentric therewith, a pipe leading to the nozzle for compressed air, a pipe leading to said nozzle for the cleaning fluid, said pipes being so disposed that the compressed air will atomize the cleaning fluid and forcibly project the same against the lithograph roll, and a hood located outside of said nozzle and extending above and below the same for protecting the operator from the cleaning fluid rebounding from the lithograph roll.

8. An apparatus for cleaning lithograph rolls comprising a support for the roll, a spraying head including a perforated nozzle circular in form with the ends thereof

slightly spaced so that the journal of a lithograph roll may pass through said space and the nozzle placed about the lithograph roll, said nozzle being substantially concentric to the roll, the perforations in the nozzle being located in the face of the nozzle adjacent the lithograph roll.

9. An apparatus for cleaning lithograph rolls comprising a support for the roll, a spraying head including a perforated nozzle circular in form with the ends thereof slightly spaced so that the journal of a lithograph roll may pass through said space and the nozzle placed about the lithograph roll, said nozzle being substantially concentric to the roll, the perforations in the nozzle being located in the face of the nozzle adjacent the lithograph roll, and a hood secured to the nozzle at the outer face thereof and extending above and below the same, said hood being likewise spaced at the ends of the nozzle.

10. An apparatus for cleaning lithograph rolls comprising a support for the roll, a spraying head including a perforated nozzle circular in form with the ends thereof slightly spaced so that the journal of a lithograph roll may pass through said space and the nozzle placed about the lithograph roll, said nozzle being substantially concentric to the roll, the perforations in the nozzle being located in the face of the nozzle adjacent the lithograph roll, and means for supporting said nozzle whereby the same may be moved longitudinally of said roll.

11. An apparatus for cleaning lithograph rolls comprising a supporting rack having means for supporting lithograph rolls to be cleaned in a substantially vertical position, vertical supports, and means whereby said rack and supports may be moved relative to each other so as to position the lithograph roll adjacent the supports for cleaning, a spraying head mounted to move vertically on said supports, said spraying head having a nozzle, and means associated therewith for projecting the spray of cleaning material forcibly against the surface of the roll.

12. An apparatus for cleaning lithograph rolls comprising a supporting rack having means for supporting lithograph rolls to be cleaned in a substantially vertical position, vertical supports, means whereby said rack and supports may be moved relative to each other so as to position the lithograph roll adjacent the supports for cleaning, a spraying head mounted to move vertically on said supports, said spraying head having a nozzle, means associated therewith for projecting the spray of cleaning material forcibly against the surface of the roll, and means for counterbalancing said head whereby it may be readily moved up and down the supports by hand.

13. An apparatus for cleaning lithograph rolls comprising a rack for supporting the rolls in substantially vertical position, supports extending parallel with the rolls in the racks, means whereby the supports and the rack may be moved relative to each other to position the roll relative to the supports for cleaning, a head movable vertically on said supports, a perforated spray nozzle circular in form with the ends of the nozzle spaced to permit the journal of the lithograph roll to pass between the ends thereof, a sleeve connected to said nozzle, said sleeve being movable in said head toward and from the roll for positioning the nozzle about the roll, and means for yiedingly holding said sleeve in its inner and outer positions.

14. An apparatus for cleaning lithograph rolls comprising a rack for supporting the rolls in substantially vertical position, supports extending parallel with the rolls in the racks, means whereby the supports and the rack may be moved relative to each other to position the rolls relative to the supports for cleaning, a head movable vertically on said supports, a perforated spray nozzle circular in form with the ends of the nozzle spaced to permit the journal of the lithograph roll to pass between the ends thereof, a sleeve connected to said nozzle, said sleeve being movable in said head toward and from the roll for positioning the nozzle about the roll, means for yieldingly holding said sleeve in its inner and outer positions, and a hood carried at the outer face of the nozzle and extending above and below the same.

15. An apparatus for cleaning lithograph rolls comprising a rack for supporting the rolls in substantially vertical position, supports extending parallel with the rolls in the racks, means whereby the supports and the rack may be moved relative to each other to position the roll relative to the supports for cleaning, a head movable vertically on said supports, a perforated spray nozzle circular in form with the ends of the nozzle spaced to permit the journal of the lithograph roll to pass between the ends thereof, a sleeve connected to said nozzle, said sleeve being movable in said head toward and from the roll for positioning the nozzle about the roll, means for yieldingly holding said sleeve in its inner and outer positions, and means for counterbalancing the weight of the head and nozzle whereby the same may be readily raised and lowered by hand.

16. An apparatus for cleaning lithograph rolls comprising a support, a vertical sleeve fixed therein, a rotatable rack mounted on said sleeve, said rack having means for supporting lithograph rolls in substantially vertical position, devices mounted on said support at the lower end thereof and connected to said sleeve at the upper end thereof, said devices being substantially parallel with the roll to be cleaned, a head slidable vertically

on said devices, a sleeve movable endwise in said head and toward and from the roll to be cleaned, a circular perforated nozzle carried by said sleeve and having the ends thereof spaced to permit the journal of the roll to pass therebetween, said nozzle having its perforations located in the inner face thereof adjacent the roll, and means for yieldingly holding the sleeve in its inner and outer positions.

17. An apparatus for cleaning lithograph rolls comprising a support, a vertical sleeve fixed therein, a rotatable rack mounted on said sleeve, said rack having means for supporting lithograph rolls in substantially vertical position, devices mounted on said support at the lower end thereof and connected to said sleeve at the upper end thereof, said devices being substantially parallel with the roll to be cleaned, a head slidable vertically on said devices, a sleeve movable endwise in said head and toward and from the roll to be cleaned, a circular perforated nozzle carried by said sleeve and having the ends thereof spaced to permit the journal of the roll to pass therebetween, said nozzle having its perforations located in the inner face thereof adjacent the roll, means for yieldingly holding the sleeve in its inner and outer positions, and means for yieldingly holding the rotatable rack with the lithograph roll in position for cleaning.

18. An apparatus for cleaning lithograph rolls comprising a support, a vertical sleeve fixed therein, a rotatable rack mounted on said sleeve, said rack having means for supporting lithograph rolls in substantially vertical position, devices mounted on said support at the lower end thereof and connected to said sleeve at the upper end thereof, said devices being substantially parallel with the roll to be cleaned, a head slidable vertically on said devices, a sleeve movable endwise in said head and toward and from the roll to be cleaned, a circular perforated nozzle carried by said sleeve and having the ends thereof spaced to permit the journal of the roll to pass therebetween, said nozzle having its perforations located in the inner face thereof adjacent the roll, and means for yieldingly holding the sleeve in its inner and outer positions, said rack having a receptacle at the lower end thereof adapted to collect the cleaning fluid.

In testimony whereof, I affix my signature.

ALEXANDER H. FOX.