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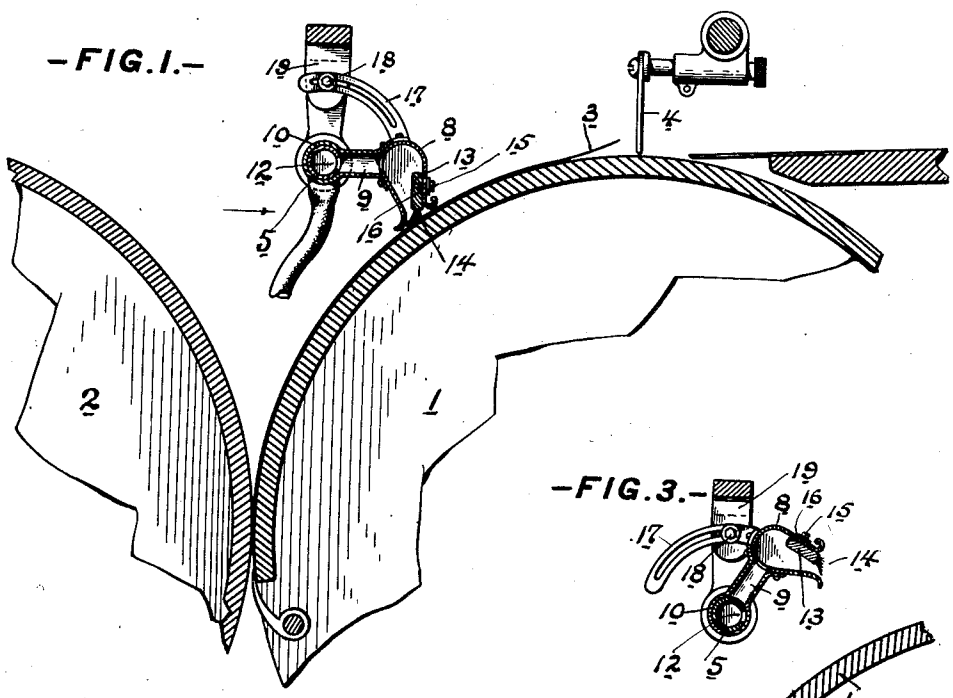
PAPER CLEANING DEVICE.

APPLICATION FILED MAR. 9, 1912.

1,120,840.

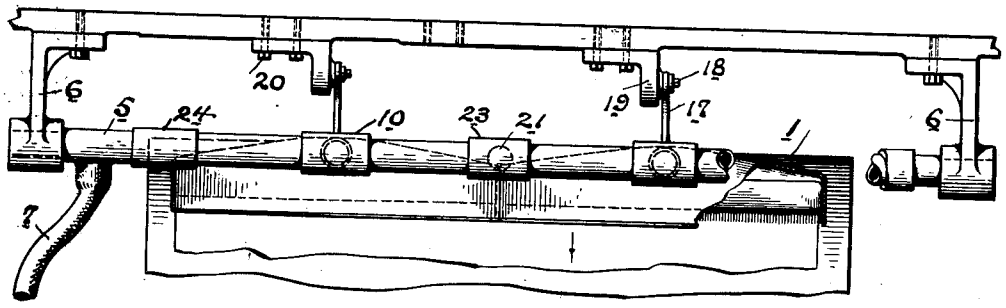
Patented Dec. 15, 1914.

-FIG. 1.-

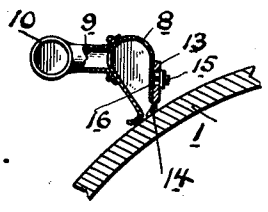


-FIG. 3.-

-FIG. 2.-



-FIG. 4.-



WITNESSES.

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UNITED STATES PATENT OFFICE.

IRVING F. NILES, OF PLAINFIELD, NEW JERSEY, ASSIGNOR TO R. HOE AND CO., OF NEW YORK, N. Y., A CORPORATION OF NEW YORK.

PAPER-CLEANING DEVICE.

1,120,840. Specification of Letters Patent. Patented Dec. 15, 1914.

Application filed March 9, 1912. Serial No. 682,725.

To all whom it may concern:

Be it known that I, IRVING F. NILES, a citizen of the United States, residing at Plainfield, county of Union, and State of New Jersey, have invented certain new and useful Improvements in Paper-Cleaning Devices, fully described and represented in the following specification and the accompanying drawings, forming a part of the same.

This invention relates to certain improvements in paper cleaning devices for use in connection with printing and similar machines.

The paper used in printing machines has adhering to its surface a certain amount of fuzz or dust. In certain classes of printing, and particularly where solid colors are employed, if the ink be applied over this fuzz or dust, the small particles of which it consists become detached and flake off, carrying the ink with it. The result of this is that the colored surface shows white spots or specks instead of being solid, as desired. It has been heretofore proposed to remove this dust or fuzz by means of brushes which act upon the paper before printing. The fuzz or dust, however, collects on the brushes, making it necessary to remove and clean them. Further, if the brushes are allowed to contact with the bare surface of the cylinder carrying the paper they will become dirty and soil the paper. For this reason when brushes have been practically employed, it has been necessary to supply operating means for the brushes which lift them as the tail of the sheet passes under them to keep the brushes from contact with the cylinder.

It is the object of this invention to produce an improved cleaning device for use on printing and similar machines of such a character that dirt or dust which is removed from the paper thereby does not adhere to the cleaning device, the construction being further such as to make it unnecessary to employing lifting means to prevent the device from coming in contact with the bare surface of the cylinder.

With this and other subsidiary objects not necessary to particularly refer to in view, the invention consists in certain constructions and in certan parts, improvements and combinations as will be hereinafter fully described and then specifically pointed out.

Referring to the accompanying drawings, Figure 1 represents in sectional elevation parts of the cylinders of a rotary printing couple, a cleaning device constructed in accordance with the invention being shown as coacting with the impression cylinder. Fig. 2 is a plan view of the cleaning device illustrated in Fig. 1. Fig. 3 is a detail sectional view illustrating the cleaning device of Fig. 1 in inoperative position. Fig. 4 is a detail sectional view illustrating a modified form of construction.

Referring to the drawings, 1 represents the impression and 2 the printing cylinder of a rotary printing couple, the paper being illustrated at 3, and the front stops at 4. These parts may be of any usual or approved construction.

Paper cleaning devices constructed in accordance with the invention will embody a suction nozzle and suitable suction creating means. The particular construction of the nozzle and suction creating means, and of the connections employed may be varied within wide limits. As shown, the suction creating means includes a pipe, as 5, supported in brackets 6, extending from a suitable part of the machine frame, the pipe having connected to it another pipe 7 which leads to any suitable suction creating source, such, for instance, as a vacuum pump. The form of nozzle employed in carrying the invention into effect and the connections by which suction is created therein may be considerably varied. In the particular construction illustrated a plurality of nozzles are shown, these nozzles being marked 8. Each nozzle has extending from it a short pipe-section 9, each pipe section connecting with a hub 10 supported on the pipe 5. The pipe is provided with perforations or openings 12. The hubs are arranged to rotate on the pipe and the construction has the advantage of enabling the nozzle to be placed in operative or inoperative position, the suction being turned on or shut off from the nozzle as the same is moved.

In the best constructions embodying the invention a brush will be arranged to cooperate with the nozzle and to act on the paper within the field or range of suction of the nozzle. While this brush may be variously located, in what are regarded as the best constructions the bristles of the

brush will be arranged to underlie the mouth of the nozzle. In the construction illustrated in Fig. 1, the brush comprises a bar 13 carrying bristles 14, the bar being located in the interior of the nozzle. In the construction illustrated in Fig. 4, the bar 13 is located on the exterior of the nozzle but positioned so that the bristles 14 extend beneath or underlie the mouth of the nozzle. With this construction it is apparent that when the device is in operation the dust or fuzz on the paper will be stirred up by the brush and will be carried away by the suction, so that the brush remains clean. It is important that the brush be so positioned with respect to the cylinder carrying the paper that it will contact with the paper on the cylinder but will not contact with the bare surface of the cylinder after the paper has passed under the brush. In the particular construction illustrated, the bar 13 is connected to the nozzle by means of bolts 15 passing through slots 16 in the nozzle, so that the brush may be accurately positioned with respect to the mouth of the nozzle. As shown, the nozzle has connected to it a slotted sector 17, the slot in the sector being engaged by a bolt 18 which passes into a bracket 19 connected to the frame by bolts 20, or in any other suitable manner. This construction enables the position of the nozzle to be accurately adjusted with respect to the paper and if the brush is properly adjusted on the nozzle it will also be in proper relation with the paper. When the suction is operating it tends to slightly lift the paper from the surface of the cylinder, so that the action of the brush is improved.

It will usually be found desirable to use a plurality of nozzles, particularly where the sheets printed are of considerable width. In the construction shown in Fig. 2, two nozzles are shown. By using a plurality of nozzles it is possible to reduce the width of each nozzle, so that the construction is better controlled. Where a plurality of nozzles is employed, it is desirable to provide a suction pipe with an additional opening or openings, such an additional opening being indicated at 21 in Fig. 2, the opening being shown as closed by a collar 23. In the particular construction shown, the right hand nozzle may be raised so as to be in inoperative position and the collar 23 slid along to the right. The left hand nozzle may then be brought into register with the opening 21, its hub 10 being slid along the pipe for this purpose, and the opening left thereby closed in any suitable way, as by an additional slip collar 24. This brings the nozzle into the center of the cylinder and makes it possible to employ only a single nozzle.

Changes and variations may be made in the construction by which the invention claimed is carried into effect. The invention claimed is not, therefore, to be confined to the particular construction herein shown and described.

What is claimed is:—

1. In a paper cleaning device for use on printing and similar machines, the combination with suction creating means, of a suction nozzle having a restricted suction mouth, a stationary brush mounted at one side of the suction mouth and coacting therewith, and means for positioning the nozzle and brush in close relation to the paper.

2. In a paper cleaning device for use on printing and similar machines, the combination with suction creating means, of a suction nozzle having a restricted suction mouth, a stationary brush mounted at one side of the suction mouth and coacting therewith, and arranged to operate on the paper within the suction range of the nozzle.

3. In a paper cleaning device for use on printing and similar machines, the combination with suction creating means, of a suction nozzle having a restricted suction mouth, a stationary brush carried on the nozzle at one side of the mouth and positioned so that the bristles of the brush lie under the mouth of the nozzle when the same is in operative position, and means for positioning the brush and nozzle in close relation to the sheet.

4. The combination with a cylinder, of a nozzle, suction creating means, a brush coacting with the nozzle, and means for so positioning the nozzle and brush that the brush will act on paper carried by the cylinder but will clear the surface of the cylinder when there is no paper thereon.

5. The combination with a cylinder, of a nozzle, suction creating means, a brush coacting with the nozzle and arranged to operate on the paper within the suction range of the nozzle, and means for so positioning the brush that it will contact with the paper on the cylinder but will clear the surface of the cylinder when there is no paper thereon.

6. The combination with a paper carrying cylinder, of a suction pipe, a suction nozzle, devices for connecting the nozzle to the pipe, said devices permitting the nozzle to be placed either in operative or inoperative position and including means by which the suction is cut off when the nozzle is in inoperative position.

7. The combination with a paper carrying cylinder, of a suction pipe, a suction nozzle, an opening in the pipe, devices for connecting the nozzle to the pipe in register with the opening, said devices permitting the nozzle to be placed in operative or inoperative position and operating to open or close the opening according to the position of the nozzle, a suction opening with which

the nozzle may be operatively connected, and means for temporarily closing the opening.

8. The combination with a paper carrying cylinder, of a suction pipe having a plurality of openings, a plurality of suction nozzles less in number than the openings, a plurality of hubs rotatable on the pipe and arranged to open and close the opening, pipe sections connecting the nozzles and hubs, an additional opening in the pipe, means with which a nozzle and its hub may be caused to register, and means for closing the opening when a nozzle is not in register therewith.

In testimony whereof, I have hereunto set my hand, in the presence of two subscribing witnesses.

IRVING F. NILES.

Witnesses:
RICHARD KELLY,
JOHN M. W. JORDAN.