No. 697,374. Patented Apr. 8, 1902.

J. A. STUART & B. F. UPHAM.

POWDER DISTRIBUTER.

(Application filed Oct. 25, 1900.)

(No Model.) 2 Sheets—Sheet 1.

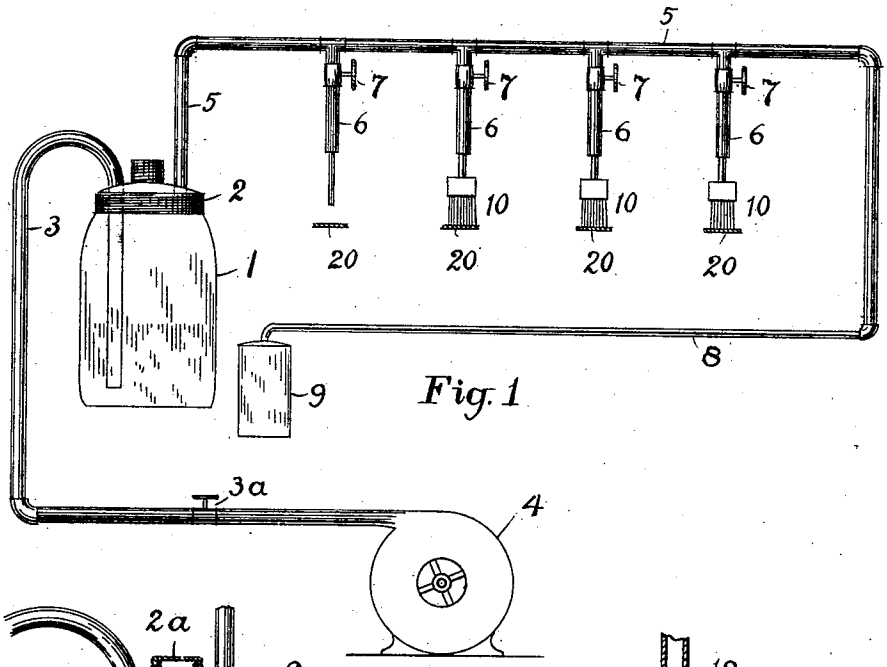


Fig. 1

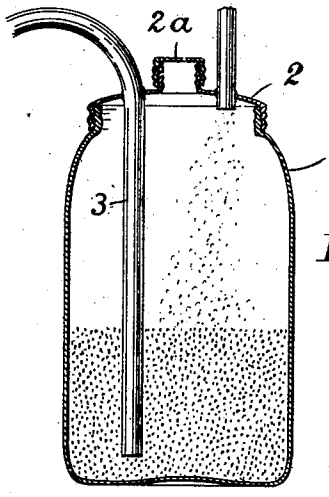


Fig. 2

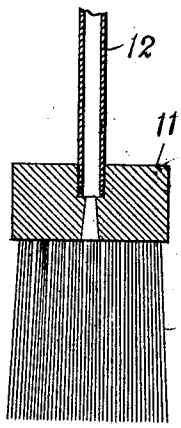


Fig. 3

Witnesses;

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By A. B. Upham,

Their Attorney.

THE NORRIS PETERS CO. PHOTO-LITHO., WASHINGTON, D. C.

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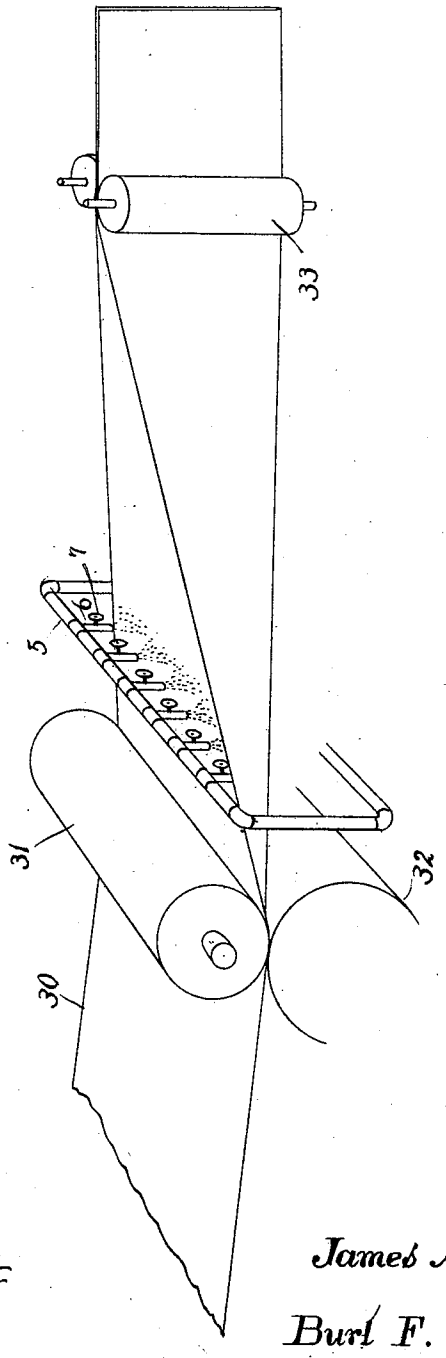
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(No Model.) 2 Sheets—Sheet 2.

Fig. 4



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UNITED STATES PATENT OFFICE.

JAMES A. STUART, OF QUINCY, AND BURT F. UPHAM, OF BOSTON, MASSACHUSETTS.

POWDER-DISTRIBUTER.

SPECIFICATION forming part of Letters Patent No. 697,374, dated April 8, 1902.

Application filed October 25, 1900. Serial No. 34,300. (No model.)

To all whom it may concern:

Be it known that we, JAMES A. STUART, a resident of Quincy, and BURT F. UPHAM, a resident of Boston, in the State of Massachusetts, citizens of the United States, have invented certain new and useful Improvements in Powder-Distributers, of which the following is a full, clear, and exact description.

The object of our invention is the construction of improved means for evenly distributing talc, chalk, and other powder upon surfaces, such as the traveling tapes carrying the freshly-inked paper in a folding-machine or upon the freshly-printed surfaces of paper itself.

Our invention for this purpose consists in directing a dust-laden current of air upon the desired surfaces in such a manner as to evenly distribute the dust or powder.

Referring to the drawings forming part of this specification, Figure 1 is an elevation of our preferred apparatus for accomplishing the result. Fig. 2 is a vertical section of the powder-receptacle. Fig. 3 is a sectional view of one of the powder-distributing brushes and Fig. 4 is a perspective view showing our invention applied to freshly-printed paper.

One of the difficulties met with in connection with printing-presses, folding-machines, and other appliances dealing with freshly-inked surfaces is the offsetting of the latter upon other portions of the paper or upon supporting parts of the machinery and therefrom to the paper. To prevent this offsetting, we have found that the best results are accomplished by applying a limited quantity of finely-pulverized talc upon the surfaces and that the best method of applying the same is by charging an air-current with the powder and evenly directing it over the said surfaces, while the most perfect means for charging the air with the powder consists in forcing the air through a quantity of the powder and receiving the dust cloud thus formed into a suitable conduit for conveyance to the surfaces desired. Our means for thus forcing an air-current through the powder comprises an air-tight receptacle 1, containing the powder, and having the air-blast created by a fan-blower 4 brought through the tube 3 to within a very short distance of the bottom of said receptacle. From the top of this receptacle a tube 5 conducts the air from said receptacle to the surfaces desired, the passage of the air from the mouth of the tube 3 up through the powder raising a cloud of the latter, which effectually and evenly charges the air therewith. Said receptacle 1 is preferably a glass jar provided with a screw-top 2, at the center of which is a removable cap 2^a for the introduction of fresh supplies of the powder. The tubes 3 and 4 are tightly fitted into said screw-top in order that the receptacle 1 may be practically air-tight.

From the tube 5 project several branches 6 for the purpose of directing the air-blast upon the surfaces to be treated, as the tapes 20 (indicated in Fig. 1) or the printed face of the paper 30. (Shown in Fig. 4.) Each branch 6 is provided with a valve 7 and in the case of moving tapes 20 with a brush 10. From the extremity of said tube 5 extends a return 8, which terminates in the receiver 9, which is preferably located in the vicinity of the receptacle 1 and the purpose of which will be set forth hereinafter. This receiver should not, of course, be air-tight, and its use is not absolutely essential to the working of the apparatus, although from motives of economy and cleanliness it becomes practically necessary.

The tube 3 is preferably provided with a valve 3^a in order that the operation of the powder-distributer may be quickly stopped without interfering with the motion of the fan 4, which is usually connected with other parts of the machinery to run continuously therewith. The apparatus is therefore set in operation either by starting the fan or by opening the valve 3^a. The air-current at once then flows through the tube 3, and issuing from the mouth thereof near the bottom of the receptacle 1 rises upward through the powder in the receptacle, charging itself therewith, and passing out through the tube 5. If all the valves 7 be closed, this current of dust and air passes on through the extension or return 8 to the receiver 9, where the dust is deposited and the air escapes. If now one or more of the valves 7 are opened, a portion of the dust-laden air discharges through the branch or branches thus opened and issues

in a fine stream upon the surfaces to be powdered, as the tapes 20. If all the valves 7 be opened, the powder issues from all, and a considerably-reduced amount is carried onto the receiver 9; but we so plan the strength of the blast from the fan 4 and the back pressure in the receiver 9 that no matter whether one, two, or all the valves 7 are opened the amount of dust-laden air issuing from each branch 6 remains practically uniform. Were there no such back pressure and the tube 5 terminated directly over a pan or similar open receiver for the dust, the opening of a single branch 6 might cause a sufficient amount of powder to issue therefrom, but as more branches were opened the quantity delivered at each would be quickly diminished. A similar trouble would arise in case the tube 5 were closed at its outer end. If the blast were regulated to give a proper supply of dust to each branch when all were opened, the closure of a part thereof would unduly increase the discharge at the others; but by thus having a continuous passage of the dust-laden air with a proper back pressure we find that the discharge from each branch 6 remains practically constant, independent of the number opened or closed.

To better distribute the dust at the points of application, we prefer to introduce a small hollow brush at the end of each branch 6. These brushes are provided with a tubular handle 12, designed to slip friction-tight into a branch 6, said tubular handle opening through the brush-head 11 to the bristles 10. By having such brush drag upon the tape 20 or other traveling surface the powder is applied thereto with great uniformity and for the entire width of the brush.

The object in bringing the extension or return 8 back near to the receptacle 1 is twofold—first, to locate the receiver 9 near enough to said receptacle to make it easy to pour the contents of the receiver back into the receptacle, and, second, to give the length to said extension which we find it needs in order that the friction of the air within it shall give the back pressure required. We find a back pressure obtained in this way to be much more reliable and constant than by reducing the capacity of its outlet, the latter being liable to get more or less clogged and to be otherwise uncertain.

It often happens in printing operations that the press requires the paper after being printed on one side to be folded longitudinally with the freshly-inked lines in contact. This is illustrated in Fig. 4, where 30 indicates the paper passing between the type-cylinder 31 and the impression-cylinder 32 and then being brought together between feed-rolls 33, thus causing the freshly-printed surfaces to come in close contact, and hence liable to offset one against the other. By locating the tube 5 over the printed surface of the paper, and so enabling the branches 6 to suitably discharge the powder-laden air thereon, this objectionable offsetting is wholly prevented. It is evident that in this case the brushes 10 must be dispensed with, for the reason that their drag over the freshly-printed lines would more or less smutch the paper. Hence we have the several branches 6 direct, the air and dust in close proximity one to the other upon the paper, and so suitably affect the entire surface of the same, the air-blast acting to convey the powder to the points desired without injurious contact.

In case certain parts of the paper are being printed with heavy black type while other parts receive but light impressions, the valves 7 are adjusted to throw a lessened stream of powder upon the latter portions of the paper.

In certain lines of printing it is often necessary to slip a sheet of blank paper between every two printed sheets in order to prevent offsetting. This must be done by hand, a blank sheet being laid upon every printed sheet as the latter are removed from the press and placed in a pile, and hence renders the work very materially slower. We are enabled to avoid all such requirement of slip-sheets and the consequent delay by automatically spraying powder upon each printed sheet as laid upon the pile. To economize the powder, it is better to have the discharge thereof intermittent and applied to each freshly-printed sheet for an instant after it has been laid in the pile. Such intermittent discharge is readily obtained by connecting the valve 3^a with any suitably-moving parts of the press.

What we claim as our invention, and desire to secure by Letters Patent, is as follows, to wit:

1. In a means for preventing offsetting, a powder-receptacle constructed to receive a current of air, and a tube constructed to conduct the dust-laden air from said receptacle and direct the same upon the surface to be protected, substantially as described.

2. In a means for preventing offsetting, the combination with the traveling tapes for carrying freshly-printed sheets, of a tube constructed to receive a dust-laden current of air and provided with outlets discharging the dust-laden air upon said tapes, substantially as described.

3. In a means for preventing offsetting, the combination with the traveling tapes for conveying freshly-printed sheets, of a tube receiving a dust-laden current of air, a plurality of branches opening from said tube, one for each tape, and a valve for each branch, substantially as described.

4. In a means for preventing offsetting, the combination with the traveling tapes for conveying freshly-printed sheets, of a tube constructed to receive a dust-laden current of air, branches from said tube, one for each tape, the tube extension or return, and the receiver at the end of said return, substantially as described.

5. The combination with the tube receiving dust-laden air, of the brush constructed

to receive the said air and discharge it from between the bristles thereof, substantially as described.

6. In a means for preventing offsetting, the combination with the traveling tapes for conveying freshly-printed sheets, of a brush for each tape constructed with a hollow head receiving a dust-laden air and delivering the same between the bristles thereof, substantially as described.

7. In a means for preventing offsetting, the combination with ink-receiving surfaces, of means for directing a dust-laden current of air thereon, substantially as described.

8. The combination with a means for supplying a dust-laden current of air, of a tube for receiving the same, a plurality of closable branches leading from said tube, a dust-receiver at the outer end of said tube, and means for giving a back pressure to the said outer end, substantially as described.

9. In a powder-distributer, the combination of the air-tight powder-receptacle, the tube delivering an air-current near the bottom of said receptacle, the tube opening at one end through the top of said receptacle, the plurality of branches opening from said tube and having each a valve, the tube extension or return, and the receiver at the end of said return, substantially as described.

In testimony that we claim the foregoing invention we have hereunto set our hands this 19th day of October, 1900.

JAMES A. STUART.
BURT F. UPHAM.

Witnesses:
A. B. UPHAM,
H. L. HOLBROOK.