No. 886,901. PATENTED MAY 5, 1908.

F. W. VICKERY.

FEEDING MECHANISM OF PRINTING, RULING, AND LIKE MACHINES.

APPLICATION FILED FEB. 16, 1907.

3 SHEETS—SHEET 1.

Fig. 1.

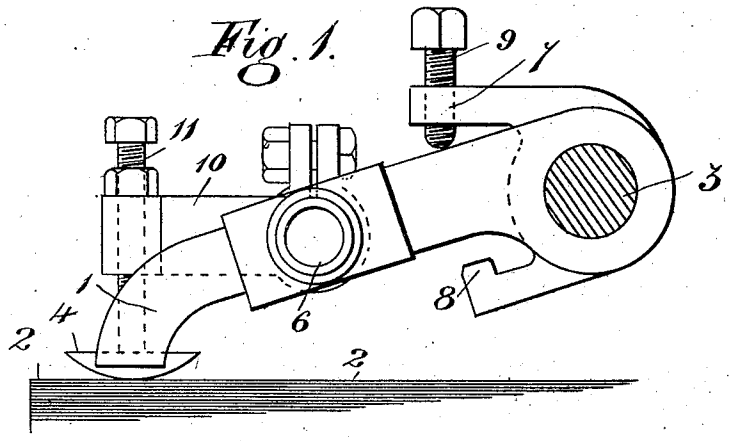
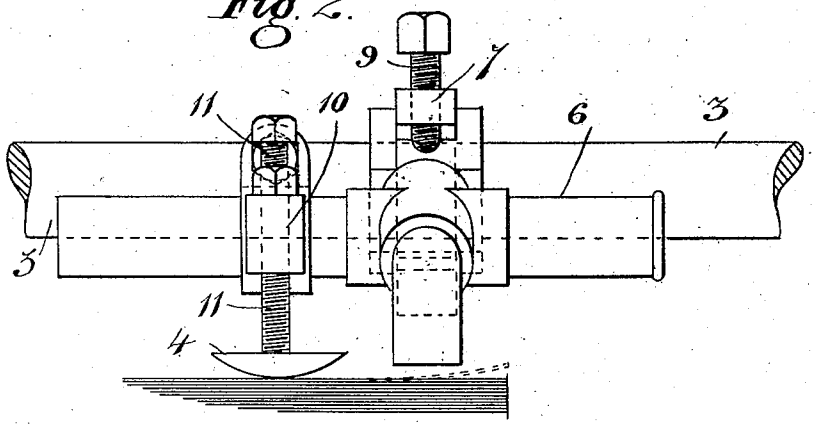


Fig. 2.



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3 SHEETS—SHEET 2.

Fig. 3.

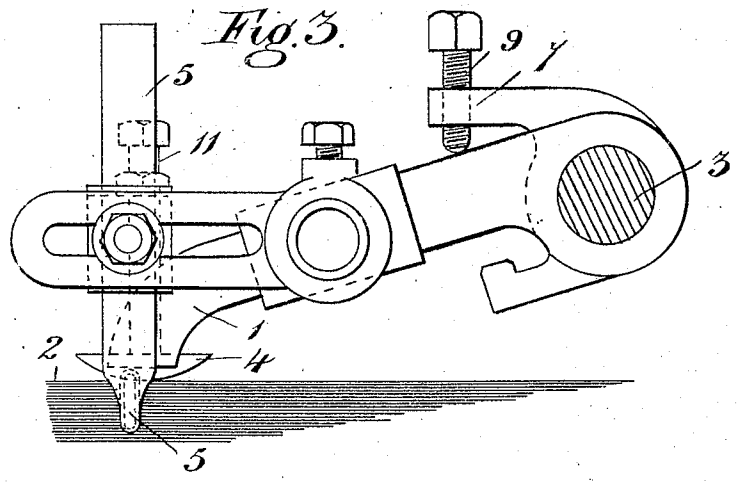
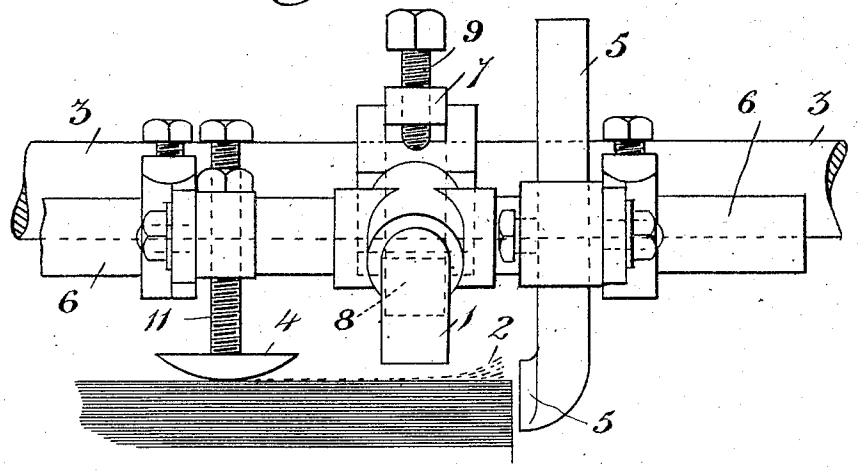


Fig. 4.



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3 SHEETS—SHEET 3.

Fig. 5.

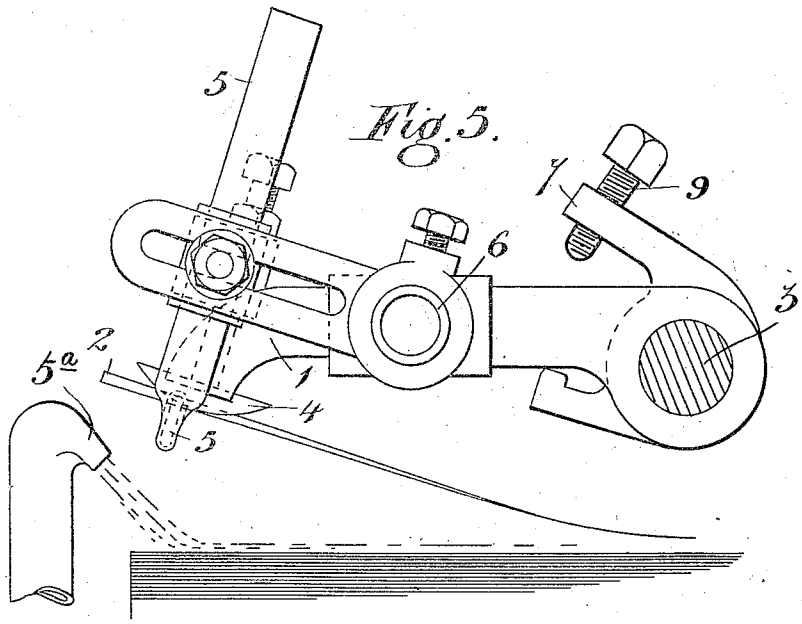
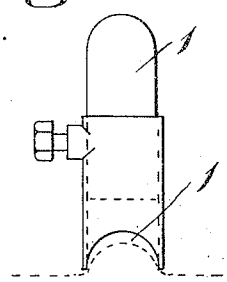


Fig. 6.



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UNITED STATES PATENT OFFICE.

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FEEDING MECHANISM OF PRINTING, RULING, AND LIKE MACHINES.

No. 886,901. Specification of Letters Patent. Patented May 5, 1908.

Application filed February 16, 1907. Serial No. 357,743.

To all whom it may concern:

Be it known that I, FREDERICK WILLIAM VICKERY, a subject of the King of Great Britain, residing at Glenborn House, King Edwards Road, Bushey, county of Hertford, England, have invented certain new and useful Improvements in and Connected with Feeding Mechanism of Printing, Ruling, and Like Machines, of which the following is a specification.

My invention relates to improvements in and connected with feeding mechanism of printing, ruling, and like machines, and especially that class of apparatus wherein suction is employed to lift a sheet of paper from the pile and carry it to the feed rollers.

My invention will be clearly understood from the following description aided by the accompanying drawings in which:—

Figure 1. is a side view of a suction nozzle and adjustable guard pivoted to a reciprocating axle operated from any part of a printing, ruling or like machine, the guard being shown resting on a pile of paper. Fig. 2. is a front elevation of same. Fig. 3. is a similar view to Fig. 2, but with an adjustable blower attached. Fig. 4. is a front elevation of Fig. 3. Fig. 5. is a side elevation showing the suction nozzle and guard in the raised position and with the top sheet of paper lifted, a downwardly blowing nozzle being situate at the front of the pile of paper. Fig. 6, is a front elevation of a nozzle having a curved nose.

My invention consists principally of positioning the suction nozzle 1 at the required distance from the top sheet 2 of paper by means of adjustable guards or distancing pieces which rest on the pile of paper, so that the suction will draw or attract the top sheet 2 toward the nozzles 1 more efficiently, and thus create a better release from the next sheet.

The nozzles 1 are arranged in independent bearings such as on a rotating axle 3, and preferably at opposite corners of the sheet, and used in conjunction with adjustable guards or distancing pieces 4, which find a bearing on the paper, will only lift the corners previous to retiring and carrying the top sheet with it.

In some cases, in addition to the suction nozzles 1, and guard 4, I may arrange blowing nozzles 5^a, which act on the edge of the sheet or sheets as they are raised and then under the top sheet for more effectual action, as will be understood by Fig. 5, or the nozzles 5 may be arranged to blow on the edge or edges of the pile of paper to separate the sheets before the suction takes place, as will be understood by Figs. 3 and 4.

Instead of the guards or distancing pieces 4 being attached to or forming part of the nozzles, they may be separate, and the position of such guards or distancing pieces is determined by the thickness of paper being printed on; the thicker the paper, the closer the nozzle is to it.

In some cases, the mouth of the nozzle may be of well known concave or convex formation as at Fig. 6, or the guards positioned so as to form a corrugation so as to corrugate the sheet at that part, and such nozzle may be of curved formation, and after the sheet has been held to it or them by suction, the movement of the nozzles to carry the sheet upwards will kink the paper, and in so doing, positively release a second sheet should by any chance one be attached or held to the top sheet.

In the drawings, the suction nozzle 1 is pivotally connected to a reciprocating rod 3, moved by any part of the machine, and such nozzle 1 is provided with a tube or nipple 6 to which is attached a flexible tube connected with a pump operated from the machine.

On the axle 3 to each nozzle, I secure two lugs 7, 8, which have action on the suction nozzles 1 to lift and lower them, and one lug 7 is provided with an adjusting screw 9 to lower the nozzles to the proper distance.

On the tube or nipple 6 as at Figs. 1 and 2, I attach a lug 10, this carrying a screw 11 having the guard 4, which is positioned to hold the nozzle at the determined position according to the thickness of paper being fed, and in some cases I also connect to the tube or nipple 6 a blowing nozzle 5, as at Figs. 3, 4 and 5, a flexible tube being connected to the nipple 6 from a pump operated by the machine.

Any number of suction nozzles and blowers may be employed in one machine, and each be connected by flexible tubing to the pump.

The blowing nozzles may have independent bearing on the paper to insure the air meeting the top sheets, or the distance may be determined by a distance guard as on suc-

tion nozzles. In all cases, the lifting is done by suction.

What I claim and desire to secure by Letters Patent is:—

1. Feeding mechanism of the class described comprising a rotary axle, a suction nozzle mounted in pivotal relation thereto, lugs on said axle for advancing and retracting the nozzle relatively to a pile of paper, an air exhausting tube communicating with the nozzle, and positioning guards movable with the suction nozzle for determining the distance between the latter and the pile of paper when the nozzle is at its lowermost position.

2. Feeding mechanism of the class described comprising an operating shaft, a suction nozzle operatively connected thereto and movable toward and from a stack of paper, a positioning guard mounted in fixed relation to and at a fixed distance to one side of said nozzle and movable therewith, the guard being arranged to press upon a pile of paper when the nozzle is in its lowermost position, a blowing nozzle arranged at the opposite side of the suction nozzle with respect to said guard and means for adjusting the guard relatively to the nozzle in a plane parallel to the plane of movement of the latter to vary the distance between the nozzle and the stack of paper.

3. Feeding mechanism of the class described comprising a rock shaft, a nozzle pivotally mounted thereon and provided with an air exhausting tube, a guard movable with the nozzle and arranged to coöperate with the top of a stack of paper to position the nozzle a proper distance therefrom, and a pair of oppositely arranged operating lugs mounted on said shaft and arranged to coöperate with the nozzle to elevate and depress the latter, one of the lugs being provided with an adjusting screw whereby the position of the nozzle relatively to the top of the stack may be adjusted.

4. Feeding mechanism of the class described comprising a rock shaft, a suction nozzle operatively connected to said shaft and movable toward and from a stack of paper, a positioning guard mounted in fixed relation to the nozzle and arranged to press upon the stack at one side of the nozzle when the nozzle is in its lowermost position, and a blowing nozzle carried by and mounted in fixed relation to the suction nozzle, the blowing nozzle having an orifice arranged on the opposite side of the suction nozzle with respect to said guard and adjacent to the edges of the sheets composing the pile.

5. Feeding mechanism of the class described comprising an operating shaft, a suction nozzle operatively connected thereto and movable toward and from a stack of paper, a positioning guard mounted in fixed relation to and at one side of the nozzle and adapted to press upon the stack of paper when the said nozzle is in its lowermost position; a blowing nozzle also carried by and mounted in fixed relation to the suction nozzle at the opposite side of the latter with respect to said guard and having an orifice for discharging air against the edges of the sheets of the stack, and a supplemental blowing nozzle stationary with respect to the stack and having an orifice for directing air downwardly upon the tops of the sheets in a path transverse to the path of the air from the blowing nozzle first mentioned.

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

FREDERICK WILLIAM VICKERY.

Witnesses:
PERCY E. MATTOCK,
WM. O. BROWN.