D. J. MORRISSEY.

PRINTING PRESS.

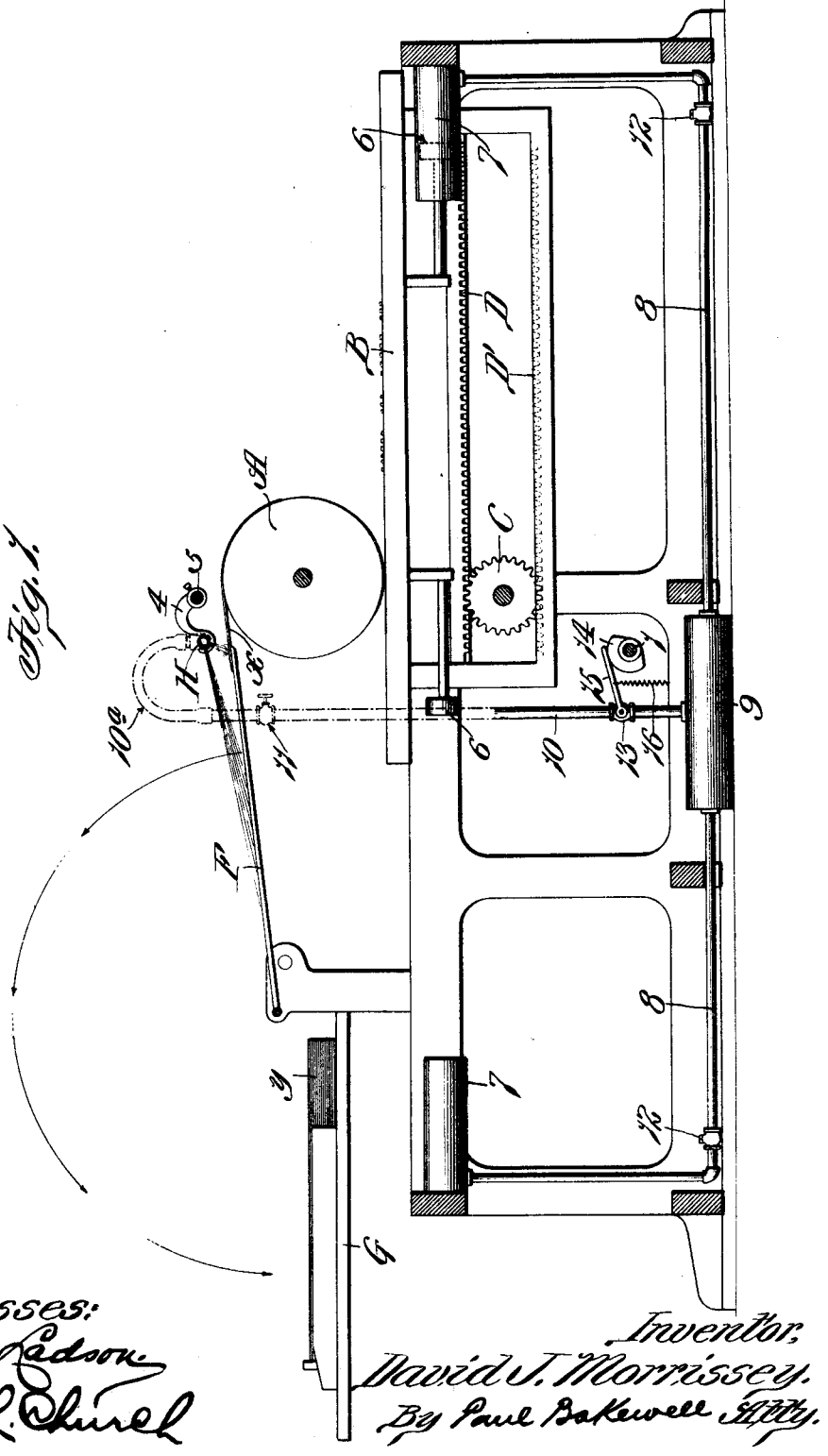
APPLICATION FILED SEPT. 11, 1911.

1,066,645.

Patented July 8, 1913.

3 SHEETS—SHEET 1.

Fig. 1.



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3 SHEETS—SHEET 2.

Fig. 1.

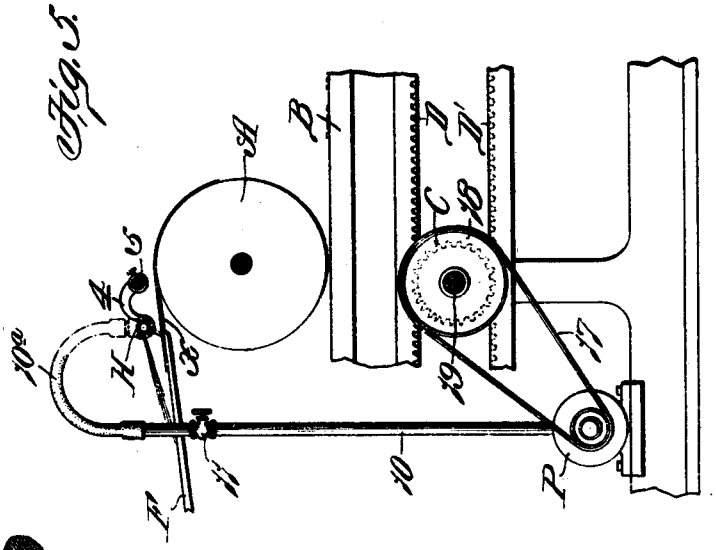


Fig. 2.

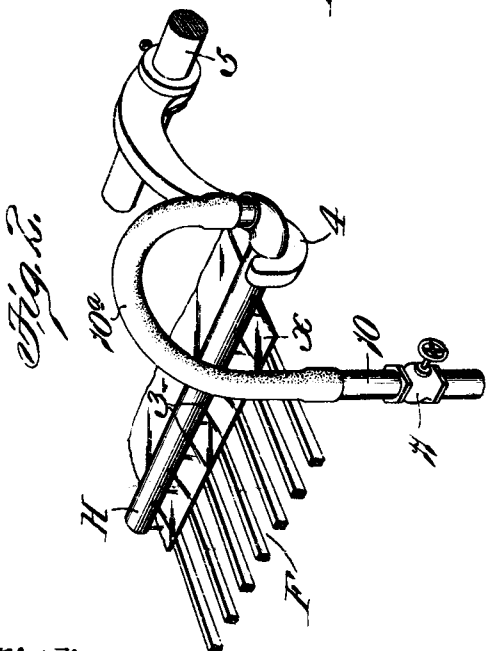


Fig. 4.

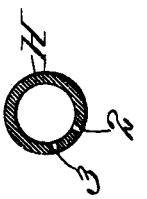
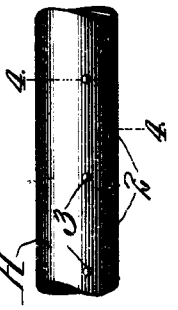


Fig. 3.



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3 SHEETS—SHEET 3.

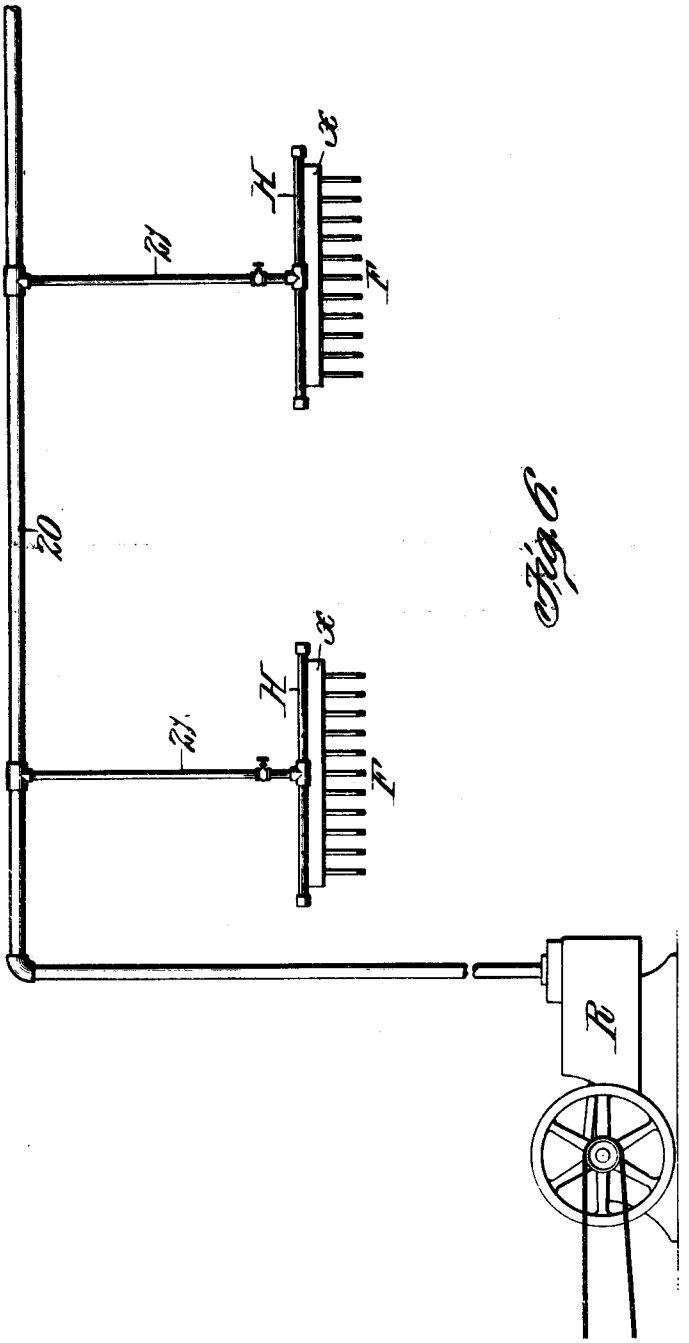

Fig. 6.

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UNITED STATES PATENT OFFICE.

DAVID J. MORRISSEY, OF ST. LOUIS, MISSOURI, ASSIGNOR OF ONE-HALF TO CON P. CURRAN, OF ST. LOUIS, MISSOURI.

PRINTING-PRESS.

1,066,645. Specification of Letters Patent. Patented July 8, 1913.

Application filed September 11, 1911. Serial No. 648,850.

To all whom it may concern:

Be it known that I, DAVID J. MORRISSEY, a citizen of the United States, residing at St. Louis, Missouri, have invented a certain new and useful Improvement in Printing-Presses, of which the following is a full, clear, and exact description, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to printing presses of the type which comprise an oscillating fly for receiving the printed sheets from the cylinder of the press and transferring said sheets to the table on which the printed sheets are arranged in a pile.

Heretofore a great deal of trouble has been experienced with printing presses of the type referred to by reason of the printed sheets curling up in such a manner that the corners of same turn under when the sheets drop from the fly onto the pile of sheets on the table. The sheets also have a tendency to wrinkle; especially if they are of thin paper and therefore it is necessary to run the press at a comparatively slow speed. Even when the press is running at a slow speed the sheets wrinkle so badly that it is not practicable to use a mechanical feeding device for feeding the sheets from the table and therefore it has heretofore been necessary to feed the sheets manually from the table when thin sheets were being run through the press. Various attempts have been made to remedy this defect such, for example, as providing the press with a member or members that pressed the sheets downwardly onto the fly, but such devices have not proved satisfactory because they blurred or smeared the wet ink on the sheets.

One object of my invention is to provide a printing press which is so designed that the sheets will not curl up or wrinkle on the fly or member which transfers the sheets from the cylinder to the table on which the sheets are piled, thereby permitting the press to be run at a high speed.

Another object is to provide a printing press of the character referred to in which the means that prevents the sheets from wrinkling or curling up on the fly has no tendency to blur or smear the wet ink on the sheets.

Other objects and desirable features of my invention will be hereinafter pointed out.

Briefly stated, my invention consists in a printing press provided with means for directing jets of air or a current of air onto the sheets when they pass from the cylinder onto the fly so as to cause the sheets to lie flat upon the fly. Various means may be used for accomplishing this but I prefer to equip the press with a perforated pipe arranged transversely of the press above the fly, the air being supplied to said pipe from any suitable source.

Figure 1 of the drawings is a vertical longitudinal sectional view of a printing press constructed in accordance with my invention; Fig. 2 is an enlarged perspective view of the transversely arranged air-pipe from which the jets of air emerge and a portion of the fly which transfers the sheets from the cylinder to the table; Fig. 3 is an enlarged elevational view of said air-pipe; Fig. 4 is a transverse sectional view of said air-pipe; Fig. 5 is a vertical longitudinal sectional view of a press constructed in accordance with my invention and provided with a pump for forcing air into the air-pipe; and Fig. 6 is a view illustrating how a battery of printing presses can be equipped with air-pipes for directing jets of air onto the sheets as they pass from the cylinders of the presses onto the flies.

Referring to Fig. 1 of the drawings which illustrates one form of my invention, A designates the cylinder of a printing press that coöperates with a reciprocating type-carrier B which is moved back and forth by means of a gear C that is shifted into and out of engagement with racks D and D′ on the type-carrier. An oscillating fly F is employed for receiving the sheets from the cylinder A and transferring them to a table G on which the sheets are arranged in a pile, said fly being rocked or oscillated back and forth as indicated by the arrows in Fig. 1, by a suitable means not shown which is actuated by a rotating shaft 1 that extends transversely of the press. The fly herein shown consists of a plurality of spaced fingers, as shown in Fig. 2, but it will, of course, be obvious that that particular construction of the fly and the other parts of the press are immaterial so far as my broad idea is concerned.

The means which I prefer to use for preventing the sheets from wrinkling or curling up consists of an air-pipe H arranged trans-

versely of the press above the cylinder A and adjacent the front end of the fly F when said fly is in receiving position, as shown in Fig. 1, said air-pipe being provided with slots or orifices which are so arranged that currents or jets of air will be directed downwardly onto a sheet x when it passes from the cylinder onto the fly and thus cause the sheet to lie flat upon the fly. The air-pipe H is preferably provided with two rows of orifices 2 and 3, the orifices 2 being arranged on the under side of the air-pipe and the orifices 3 being arranged on the front side of the pipe H and inclined downwardly slightly, as shown in Fig. 4. By constructing the air-pipe in this manner I distribute the air uniformly over the sheet and cause the sheet to hug the fly closely, practically throughout the entire length and breadth of the fly, the jets of air which emerge from the orifices 2 acting to force the sheet downwardly onto the fly as soon as the sheet passes onto the fly and the jets of air which shoot forwardly and downwardly from the orifices 3 acting to hold the sheet down on the fly while the sheet is moving toward the inner end of the fly, as shown in Fig. 1.

A printing press of the construction above described can be run at a high speed even when thin sheets are being fed through the press because the air which emerges from the air-pipe H holds the sheets down upon the fly and prevents them from wrinkling or curling up in such a manner that they will fold under or wrinkle when they drop from the fly onto the pile y on the table G. Therefore, it is possible to use a mechanical feeding device for feeding the sheets from the table G because all of the sheets in the pile lie perfectly flat. My invention not only makes it possible to run a printing press to its full capacity but it also tends to prevent the sheets in the pile y from sticking together, this being due to the fact that the air which is discharged onto the sheet tends to cling to the sheet when the fly swings over and thus remains trapped in the form of a thin film on the under side of the sheet when it is deposited on the pile y.

The air-pipe H is preferably supported by arms 4 on a rock shaft 5 that extends transversely of the press but any other suitable means could be employed for supporting the air-pipe. In the form of my invention shown in Fig. 1 the air which is supplied to the air-pipe H is obtained from the pneumatic buffers which are employed for absorbing the shocks of the reciprocating type-carrier or bed B of the press. Said buffers are of well-known construction and consist of pistons 6 on the type-carrier B that pass into and out of cylinders 7 and thus compress the air in said cylinders. Pipes 8 lead from the cylinders 7 to a storage tank 9, and a pipe 10 leads from said storage tank to one end of the air-pipe H, said pipe 10 having a flexible portion 10^a so as to provide for the movement of the rock shaft 5 whose arms 4 support the air-pipe. The pipe 10 is preferably arranged on the side of the machine at which the operator stands and, if desired, it may be provided with a valve 11 for controlling the supply of air to the air-pipe H. The air which is compressed and forced into the storage tank 9 at each cycle of operations of the press is prevented from escaping from said tank by means of check-valves 12 in the pipes 8 and, if desired, an intermittently-operated valve 13 can be arranged in the pipe 10 so as to automatically cut off the flow of air from the air-pipe H after a sheet has passed from the cylinder A onto the fly and thus prevent the air from being wasted while the fly is transferring the sheet from the cylinder onto the table G. One convenient way of operating the valve 13 is to provide the shaft 1 with a cam 14 that coöperates with an arm 15 on the stem of said valve to move the valve in one direction, the valve being moved in the opposite direction by means of a spring 16, as shown in Fig. 1.

Another way of supplying air to the air-pipe H is shown in Fig. 5 wherein a pump P is employed for forcing air through the pipe 10, said pump being operated by a belt 17 that passes over a pulley 18 secured to one of the rotating shafts of the press as, for example, the shaft 19 which carries the gear C that moves the type-carrier or bed B of the press. In case it is desired to equip a battery of presses with air-pipes H a compressor R can be used for supplying air to a header 20 from which branches 21 lead to the air-pipes H of the different presses, as shown in Fig. 6. It is immaterial so far as my broad idea is concerned what particular means is employed for supplying air to the device which discharges the air onto the sheets, and the particular construction of the air-discharging device is also immaterial. Therefore, I do not wish it to be understood that my invention is limited to the means herein shown for preventing the sheets from wrinkling or curling up.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent is:

A printing press comprising a cylinder, a reciprocating type-carrier or bed that coöperates with said cylinder, an approximately horizontally disposed oscillating fly for receiving the sheets from the cylinder and transferring them to the table of the press, pneumatic buffers for absorbing the shocks of said type-carrier, a device for directing air downwardly onto the sheets which lie upon the fly so as to force them against the fly, a storage tank for supplying

air to said device, a connection between said storage tank and said pneumatic buffers whereby the air which is compressed in said buffers is supplied to said tank, and an intermittently operated valve for controlling the flow of air from said storage tank to said air-supplying device.

In testimony whereof I hereunto affix my signature in the presence of two witnesses, this seventh day of September 1911.

DAVID J. MORRISSEY.

Witnesses:
WELLS L. CHURCH,
GEORGE BAKEWELL.