W. K. HODGMAN.

SHEET PILING MECHANISM FOR PRINTING PRESSES.

APPLICATION FILED SEPT. 12, 1913.

1,140,157.

Patented May 18, 1915.

3 SHEETS—SHEET 1.

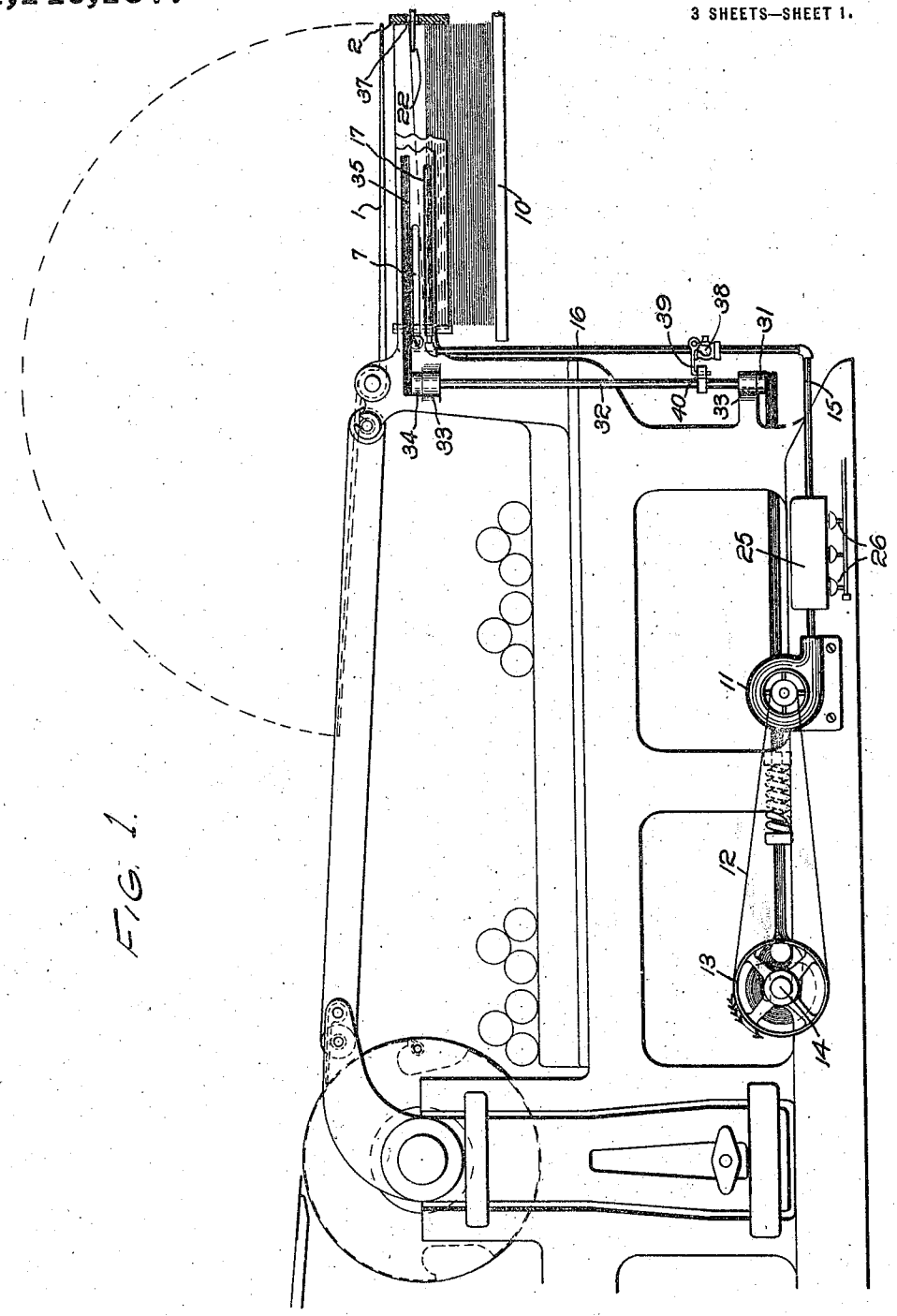


FIG. 1.

WITNESSES:

Llewellyn Richards

Horace A. Crossman

INVENTOR.

WILLIS K. HODGMAN.

BY Emery, Booth, Janney & Varney

ATTY'S.

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3 SHEETS—SHEET 2.

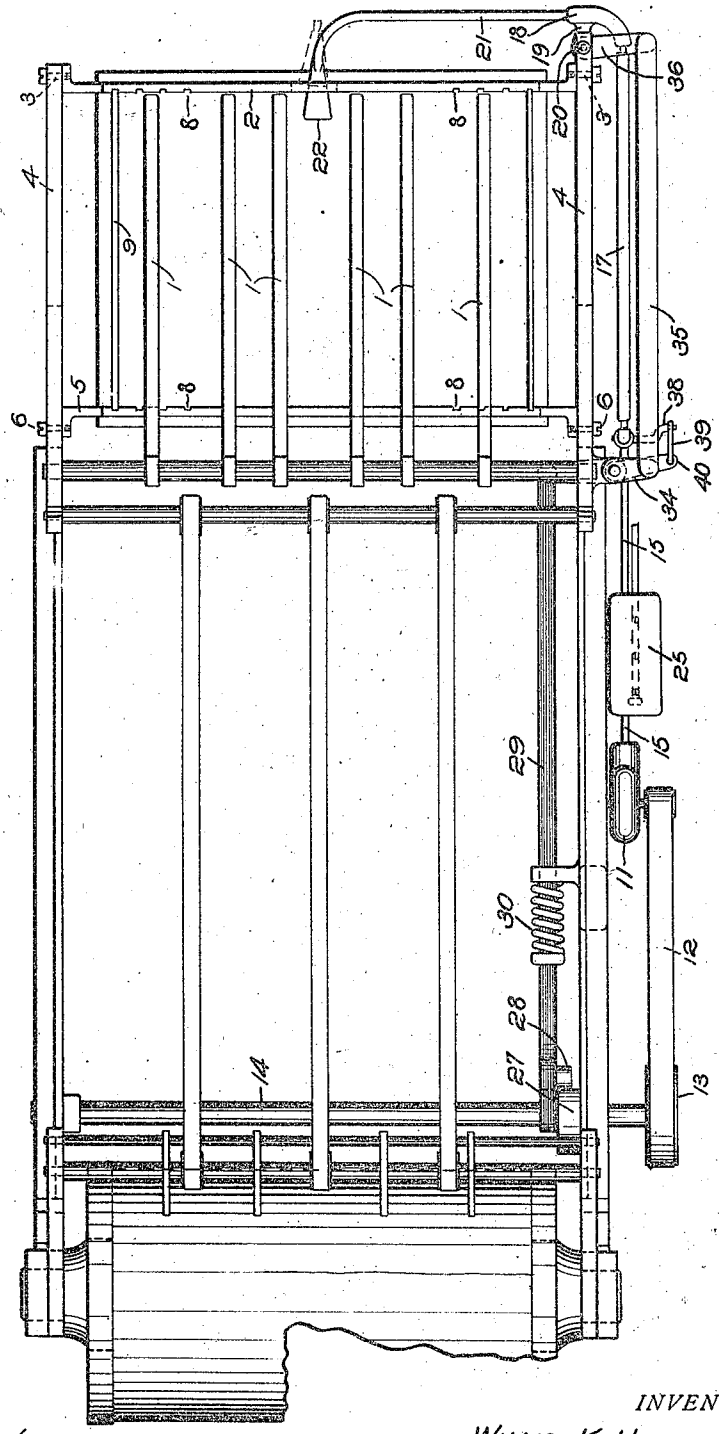


FIG. 2

WITNESSES:

Llewellyn Richards

Horace A. Crossman

INVENTOR.

WILLIS K. HODGMAN.

BY Dewey, Booth, Jamison & Varney

ATTYS

W. K. HODGMAN.

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3 SHEETS—SHEET 3.

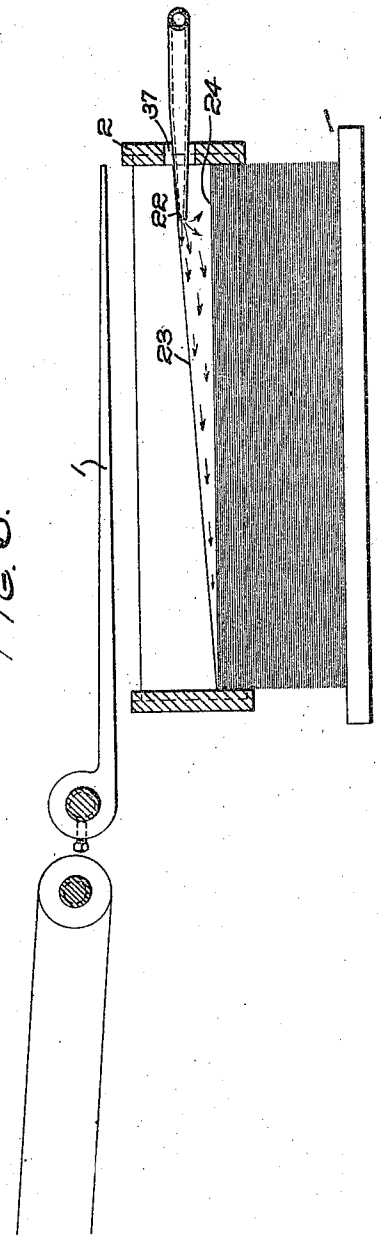


FIG. 3.

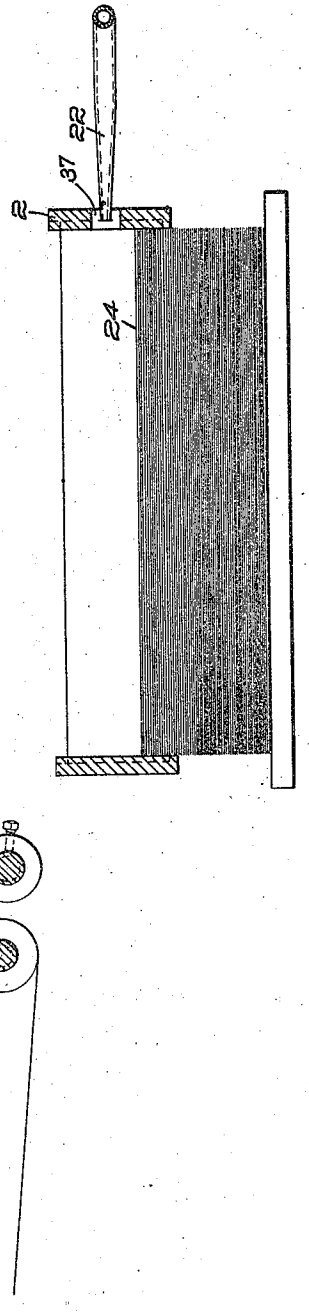


FIG. 4.

WITNESSES:

Llewellyn Richards

Horace A. Eggman

INVENTOR

WILLIS K. HODGMAN.

BY Emery, Booth, Janney & Varney

ATTYS.

UNITED STATES PATENT OFFICE.

WILLIS K. HODGMAN, OF TAUNTON, MASSACHUSETTS, ASSIGNOR TO THE HUBER-HODGMAN PRINTING PRESS COMPANY, OF TAUNTON, MASSACHUSETTS, A CORPORATION OF MASSACHUSETTS.

SHEET-PILING MECHANISM FOR PRINTING-PRESSES.

1,140,157. Specification of Letters Patent. Patented May 18, 1915.

Application filed September 12, 1913. Serial No. 789,533.

To all whom it may concern:

Be it known that I, WILLIS K. HODGMAN, a citizen of the United States, and a resident of Taunton, in the county of Bristol and State of Massachusetts, have invented an improvement in Sheet-Piling Mechanism for Printing-Presses, of which the following description, in connection with the accompanying drawings, is a specification, like characters on the drawings representing like parts.

This invention relates to sheet piling mechanism for printing presses and particularly to means to prevent freshly printed sheets from offsetting.

In order that the principle of this invention may be readily understood, I have disclosed a single embodiment thereof in the accompanying drawings, wherein—

Figure 1 is a side elevation of a printing press having my invention applied thereto; Fig. 2 is a plan view of the mechanism shown in Fig. 1; and Figs. 3 and 4 are enlarged views, partially in side elevation and partially in vertical section, representing details of the sheet piling mechanism at different stages in the operation.

The object of my invention is to prevent freshly printed sheets from offsetting, while they are being accumulated in a pile, such offsetting being caused by the weight of the pile upon the sheets not then sufficiently dry and by static electricity with which the sheets have become charged when passing through the press and which causes them to cling together when being piled.

According to the disclosed embodiment of my invention I accomplish my object by injecting suitable gaseous matter preferably air and preferably in a heated condition between the freshly printed sheets as they are being piled, such gaseous matter floating and drying the sheets and dissipating any static electricity. I shall throughout the specification and claims employ the term "air" in a generic sense to include any suitable gaseous matter. Preferably, however, atmospheric air is employed for the purpose.

I have shown my invention as applied to a standard two revolution bed and cylinder printing press, but I desire it to be understood that the invention may be applied to any desired type of printing press having any kind of delivery, as, for example, a delivery of the fly type or a printed side up delivery.

Referring more particularly to the drawings, I have herein represented a press of the fly type of delivery, the fly being represented at 1 and being adapted to receive the printed sheets in any suitable manner from the printing mechanism proper.

I preferably provide a sheet piling box to receive the sheets from the fly 1. I have herein represented the piling box as having a fixed side 2 suitably connected as indicated at 3—3 to the side frames 4 of the press and an adjustable side 5, the ends whereof are secured by screws 6 adjustable along longitudinal slots 7 in the said side frames, thus permitting the side 5 to be adjusted toward and from the side 2 to accommodate different sized sheets. The sides 2 and 5 are notched as indicated at 8 to receive adjustable ends 9, thus permitting transverse adjustment of the sides of the box. The sides and ends of the box should be so positioned and adjusted as to surround and substantially fit the sheets piled therein, thus preventing the air from freely escaping between the last few sheets, and thereby floating or separating the sheets in a measure and giving the ink thereon an opportunity to dry before the weight of the accumulating sheets is sufficient to expel all of the air and to cause offsetting to occur.

I preferably provide a vertically movable bottom or piling board 10, which is supplied with supporting means (not shown) whereby it forms the bottom of the piling box when in its upper position and can be gradually lowered as the pile accumulates and is finally landed on a truck. Any suitable or usual means co-acting with the piling board 10 may be employed.

While I may employ any suitable means to introduce air between the sheets as they are being piled, I preferably provide the following mechanism: I provide a suitable blower 11 driven by belt 12 from a pulley 13 upon shaft 14 and which may be any suitable shaft of the printing mechanism, or if desired the blower may be driven from some external source of power. From the blower extends a pipe 15 herein represented as having an upstanding portion 16 extending to the plane of the piling box and a horizontal

portion 17, which in this embodiment of my invention is flexible, being connected to the portion 16 by any suitable coupling. The flexible portion 17 is in suitable communication with a curved pipe portion 18 having a lateral lug or extension 19, by which it is pivoted at 20 to a suitable stud. From the pivoted pipe portion 18 extends a pipe member 21 terminating in a preferably flattened nozzle 22, which, in the disclosed embodiment of my invention, not only performs the function of discharging the jet of air into the piling box, but also, as indicated in Fig. 3, that of receiving and temporarily supporting the uppermost sheet 23 while discharging the air between said sheet and the next adjacent sheet 24.

Preferably I heat the air as I have found that the best results are so secured. For this purpose I may employ any suitable means, and have in Fig. 1 diagrammatically indicated a heating chamber 25 in communication with the pipe 15 and gas jets 26 therefor. Preferably the air is discharged only intermittently; and in the disclosed embodiment of the invention substantially coincidently with the depositing of each sheet by the fly 1. For this purpose and in order to move the nozzle 22 into and out of the path of the piling sheets, so as temporarily to support the uppermost sheet, I may employ any suitable mechanism. Herein, I have represented the shaft 14 as provided with a cam 27 with which a roller or projection 28 on the connecting rod 29 is held in engagement by a suitable coil spring 30. The rod 29 is connected as represented in Figs. 1 and 2 to a lever arm 31 on the lower end of a rock shaft 32 mounted in suitable bearings 33 in the framework of the press. At its upper end the said rock shaft is provided with a lever arm 34 connected to a link 35 whose outer end is connected to a lever arm 36 suitably connected at its inner end to the stud 20, so that when longitudinal movement is imparted to the link 35, the nozzle 22 is moved into and out of the path of the descending sheets, as represented in Figs. 3 and 4.

The timing of the parts is such that the nozzle 22 is projected through an opening 37 in the fixed side 2 of the piling box in time to receive the sheet 23 as it is discharged from the fly 1, and therefore to support it temporarily in substantially the position indicated in Fig. 2. The continued operation of the parts withdraws the nozzle 22 into the position shown in Fig. 4. Within the scope of my invention, however, I may employ a fixed nozzle or other device or plurality thereof for discharging air between the depositing sheets, and if desired may provide any suitable means coöperating with the nozzle to support the depositing sheet temporarily in substantially the position indicated in Fig. 3, so as to confine the air temporarily as described.

In order intermittently to cut off the flow of air through the nozzle 22, I have herein represented the upstanding pipe portion 16 as provided with a suitable valve 38 connected as indicated at 39 with a lever arm 40 upon the rock shaft 32, so that upon each movement of the nozzle 22 into the position indicated in Figs. 2 and 3, the valve 38 is opened and the air is discharged through the nozzle.

I am aware that piling boxes have long been used to receive freshly printed sheets and that the intermittent deposit of sheets therein serves to confine for a very short space of time a small volume of air beneath the uppermost sheet. This, however, in practice is insufficient to prevent offsetting. I therefore employ suitable means, of which one type is herein illustrated, to furnish a positive discharge of air, preferably heated, below the topmost sheet before it can contact throughout its area with the next underlying sheet. The air when heated not only serves to dry the ink more quickly, but also more rapidly dissipates the static electricity. Because of the employment of my invention, I can deposit the sheets at a high rate of speed without danger of offsetting.

Having thus described one illustrative embodiment of my invention, I desire it to be understood that although specific terms are employed they are used in a generic and descriptive sense and not for the purposes of limitation, the scope of the invention being set forth in the following claims.

Claims:

1. In a sheet piling mechanism for printing presses, a delivery table, means to drop the sheets in superposed alinement thereon, means to discharge a jet of air wholly under the freely dropping sheet, and means temporarily to confine said air beneath the dropping sheet.

2. In a sheet piling mechanism for printing presses, a delivery table, means to deposit sheets in superposed alinement thereon, means to discharge a jet of air wholly under the depositing sheet while in substantial alinement with the previously discharged sheets, and means temporarily to confine said air beneath the dropping sheet.

3. In a sheet piling mechanism for printing presses, a delivery table having a receiver into which the sheets are adapted to be piled in alinement and whereby the air between the sheets is temporarily confined, sheet piling means to deposit the sheets in superposed alinement therein, and means to discharge a jet of air wholly beneath a sheet as it is received in said receiver.

4. In a sheet piling mechanism for printing presses, sheet piling means to pile sheets in superposed alinement, a receiver for the

piled sheets having means temporarily to confine the entrained air beneath a sheet as it is received by the receiver, and co-acting means to discharge a jet of air wholly beneath the said sheet while it is being so received.

5. In a sheet piling mechanism for printing presses, sheet piling means to pile sheets in superposed alinement, a receiver for the piled sheets having means temporarily to confine the entrained air beneath a sheet as it is received by the receiver, and co-acting means to discharge a jet of heated air wholly beneath said sheet while it is being so received.

6. In a sheet piling mechanism for printing presses, a piling box substantially fitting sheets piled therein in superposed alinement, means to deposit printed sheets in superposed alinement in said box, whereby air is entrained between the sheets, and means distinct from said piling means to discharge a jet of air wholly beneath a sheet as it is received in said box.

7. In a sheet piling mechanism for printing presses, a piling box having a bottom and substantially fitting sheets piled therein in superposed alinement, means to deposit printed sheets in superposed alinement in said box, whereby air is entrained between the sheets, and means distinct from said piling means to discharge a jet of air wholly beneath a sheet as it is received in said box.

8. In a sheet piling mechanism for printing presses, a delivery table having means to receive and retain sheets in superposed alinement, sheet piling means to deposit the sheets in such superposed alinement, means distinct from the sheet piling means to discharge a jet of air wholly beneath the sheet as it is thus deposited, and means to move said jet discharging device underneath the depositing sheets temporarily to support the sheet that is being deposited and then to withdraw said jet discharging means.

9. In a sheet piling mechanism for printing presses, a delivery table having means to receive and retain sheets in superposed alinement, sheet piling means to deposit the sheets in such superposed alinement, means distinct from the sheet piling means to discharge a jet of air wholly beneath a sheet as it is thus deposited, and connections to effect an intermittent discharge of air through said air discharging means, and to move said means underneath the depositing sheets as each is being piled by said sheet piling means thereby temporarily to support each sheet as it is being deposited and then to withdraw said air discharging means.

10. In a sheet piling mechanism for printing presses, a delivery table, co-acting sheet piling means, means to discharge a jet of air wholly beneath the topmost sheet as it is deposited upon previously piled sheets on the delivery table, and means to move said jet discharging means into and out of the path of the piled sheets.

11. In a sheet piling mechanism for printing presses, a delivery table, co-acting sheet piling means, an air jet discharging device coöperating therewith, and connections to effect an intermittent discharge of air through said device and to move said device the path of the piling sheets and temporarily to support each of said sheets as it is being deposited, and to withdraw said device from said depositing-sheet-supporting position.

12. In a sheet piling mechanism for printing presses, a delivery table, co-acting sheet piling means, an air jet discharging and depositing-sheet-supporting device coöperating therewith, a valve controlling the flow of air therethrough, a shaft, and connections from said shaft intermittently to operate said valve and intermittently to move said device into the path of the piling sheets and into depositing-sheet-supporting position.

13. In a sheet piling mechanism for printing presses, a delivery table, co-acting sheet piling means, a blower, a pivoted jet discharging and depositing-sheet-supporting arm, air conveying connections between the arm and blower, and means to move said arm into and out of the path of the piling sheets thereby to support intermittently each sheet as it is being deposited.

14. In a sheet piling mechanism for printing presses, a delivery table, co-acting sheet piling means, a blower, a pivoted jet discharging and depositing-sheet-supporting arm, air conveying connections between the arm and blower, and means to move said arm into and out of the path of the piling sheets and intermittently to interrupt the flow of air therethrough thereby to support intermittently each sheet as it is being deposited.

15. In a sheet piling mechanism for printing presses, a delivery table, co-acting sheet piling means, a blower, a pivoted jet discharging and depositing-sheet-supporting device, air conveying connections between said device and blower and having a valve, a shaft, a connecting rod reciprocated thereby, a rock shaft operatively connected to said rod, and operating connections between said rock shaft and said valve and jet discharging device thereby to move said device intermittently into depositing-sheet-supporting position.

16. In a sheet piling mechanism for printing presses, a delivery table, means to deposit the sheets in superposed alinement therewith by freely dropping said sheet thereon, and means to discharge a jet of air under the depositing sheet only while the latter is freely dropping upon the delivery table.

17. In a sheet piling mechanism for printing presses, a delivery table, means to deposit the sheets in superposed alinement therewith, and means to discharge a jet of air wholly under the depositing sheet only while the latter is freely dropping upon the delivery table.

In testimony whereof, I have signed my name to this specification, in the presence of two subscribing witnesses.

WILLIS K. HODGMAN.

Witnesses:
FREDERICK M. ATWOOD,
NOBLE W. ASHLEY.