May 6, 1924. 1,493,167

B. D. STEVENS

SHEET CONTROL MECHANISM

Filed March 25, 1922

Fig. 1.

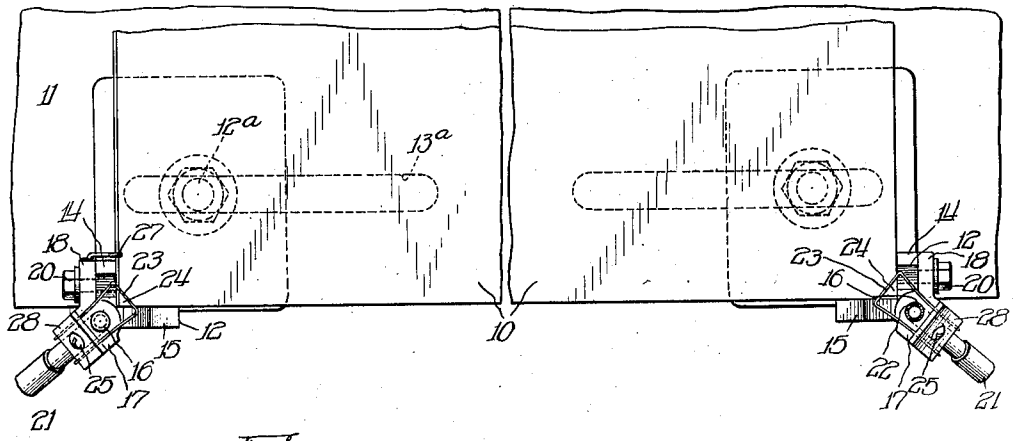


Fig. 2.

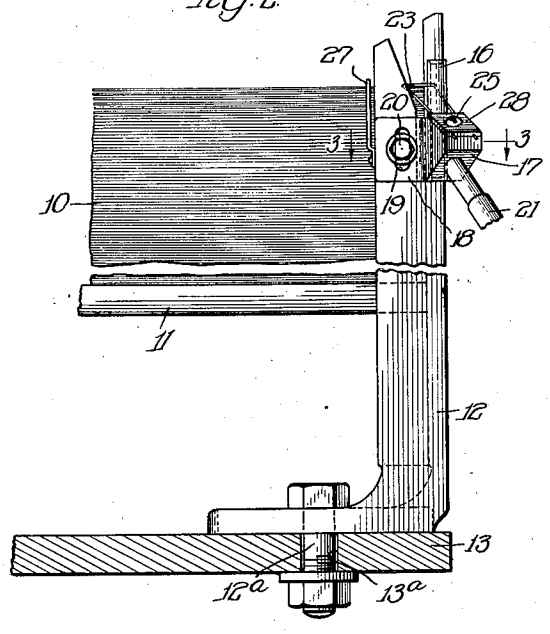


Fig. 3.

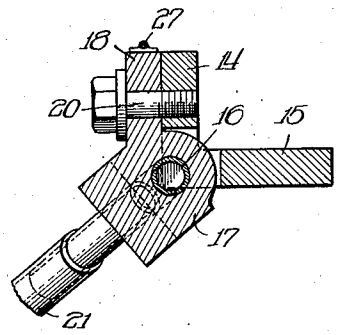


Fig. 5.

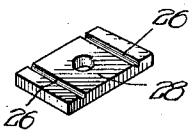
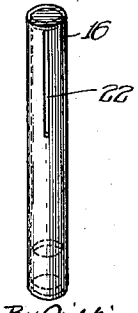


Fig. 4.



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UNITED STATES PATENT OFFICE.

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SHEET-CONTROL MECHANISM.

Application filed March 25, 1922. Serial No. 546,717.

To all whom it may concern:

Be it known that I, BURT D. STEVENS, a citizen of the United States, residing at Evanston, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Sheet-Control Mechanism, of which the following is a specification.

This invention relates to printing presses and more particularly to sheet control mechanism forming a part thereof.

The separation of sheet material in the stock pile and the control of such sheet material prior to the time it is fed progressively in the press, is a problem which has been given considerable thought and is of great importance. The question of accessibility and convenience of the various parts of a printing press also is of great importance.

Accordingly, one object of this invention is to provide simple, efficient and reliable sheet separating means in which the top sheets in the pile are floated and given a snap-like bending action for facilitating separation and, at the same time, maintain the floating sheets in positive control with the minimum number of adjustments.

Another object of the invention is to position the floating sheets so that the latter may be fed forwardly in an accurate manner.

Another object is to provide sheet separating and control mechanism which may be arranged accessibly and in a manner to meet all of the requirements for successful commercial use.

These and other objects are accomplished by means of the arrangement disclosed on the accompanying sheets of drawings, in which—

Figure 1 is a fragmentary top plan view of stock pile sheet control mechanism embodying my invention;

Figure 2 is a fragmentary front elevation of such control mechanism;

Figure 3 is a sectional view taken in the plane of line 3—3 of Figure 2;

Figure 4 is a detail perspective view of an air jet tube forming a part of the sheet separating mechanism; and

Figure 5 is a perspective view of a clamp for one of the sheet control members.

The various novel features of the invention will be apparent from the following description and drawings, and will be particularly pointed out in the appended claims.

Referring to the figures of the drawings, it will be noted that my invention is illustrated in connection with a printing press sheet stock pile 10 mounted upon any suitable table 11 which preferably is raised by any suitable mechanism, (not shown) in accordance with the rate at which sheets are removed from the top of the pile. For guidedly maintaining the pile in a predetermined position pile guides 12, which are secured to any suitable support 13, are mounted at corners of the stock pile, it being understood that the table 11 with its pile 10 moves guidedly in a vertical direction and the pile moves between and within said pile guides 12. The pile guides 12 are adjustably mounted on the table 13 to accommodate sheets of all sizes within the range of the press. In this connection it will be noted that the table 13 is provided with elongated slots 13^a in which bolts 12^a, secured to pile guides 12, are slidably mounted. These pile guides 12 include flanges 14 and 15 which are arranged at an angle with respect to each other and at their upper ends are separated by an open space for the reception of the jet tubes 16 and a portion of the supporting brackets 17 therefor. Each supporting bracket in this particular instance is provided with an ear 18 having an elongated slot 19 therein whereby said bracket may be adjustably secured to one of the flanges 14 of the pile guides by means of a screw 20. Preferably the jet tubes 16 are arranged vertically in their supports 17 and have open communication with air supply connecting members 21. The upper half of each of the jet tubes is provided with a vertically arranged slot 22 which preferably is pointed to an associated corner of the stock pile whereby a blast of air may be directed into and between the top sheets of material in the stock pile for separating and, it might be said, floating such top sheets. As shown, such jet tubes 16 are arranged at the two forward corners of the stock pile so that two separate jets of air are directed into and between the top group of sheets in the stock pile. Accordingly a relatively large film of air is directed between such top sheets, and were retaining means not provided, the top sheet especially would float out of position in an uncontrolled manner.

However, to prevent such uncontrolled floating movement of the top sheet, means

is provided for controlling the position of such floated sheet. Such means, in this instance, takes the form of a loop of wire 23, the loop portion extending over the associated corner of the stock pile in a manner such that one of the corners of the top sheet engages such wire loop and is yieldably held in check thereby. Two of such wire loop members are shown at the forward corners of the stock pile and cooperate in performing the function above mentioned. These wire loop members 23 also perform another function in that when feed grippers, not shown, engage the top sheet of paper to lift and carry the latter away from the stock pile, such top sheet, if flexible, is caused to bend at its forward corners to cause such forward corners 24 of the top sheet temporarily to remain in check by the wire loops 23 as said top sheet is lifted away from the pile. Such bending action insures the separation of the top sheet from the second sheet in the event that a second sheet adhered to the top sheet. As shown, the resilient or wire loop members 23 extend diagonally over the corners of the pile in an upward and inward direction with respect thereto, and are held in such position by a clamp member 28 which is secured to the supporting bracket 17 in any suitable manner, such as by a screw 25. To accurately position the wire loop member 23 on the support and in the clamp 28 the latter is provided with grooves 26. These spring loop members need no adjustment for their action is compensatory. In explanation of such statement, attention is called to the fact that when very thin paper is being fed, the spring members 23 are not required to yield. If a thicker but still fairly flexible paper is used, both the paper and spring members 23 will yield. If card board is used, such will yield very little, if any, in which event the spring members will do all of the yielding.

As the top sheet of material is floatably raised, it also is fed slightly to the right, as shown in Figure 1, by a member 27 which extends upwardly, inwardly and over one corner of the stock pile. By thus guidedly forcing the top sheet of paper to one side against the side flange 15 of the proper pile guide 12 when said sheet is caused to float by the jets of air, such top sheet is accurately placed in a position to facilitate the registering of said sheet when the latter is fed progressively in the printing press. Preferably such member 27 is in the form of a bent wire and is secured to one of the supports 17. This arrangement is provided to compensate for sheets which are not trimmed accurately.

Attention is called to the fact that the jet tubes 16, control loop paper holding wires 23 and the guide member 27 are all carried by their associated support member 17 each of which is carried by a pile guide 12 and arranged in an accessible manner at all times.

Furthermore, when the pile guides 12 are adjusted to accommodate paper of different sizes, the jet tubes 16, spring loops 23 and guide members 27 are all shifted with the pile guides and require no separate adjustment themselves.

It is my intention to cover all modifications of the invention falling within the spirit and scope of the following claims.

I claim;

1. In stock pile sheet control mechanism, the combination of means for separating a top sheet from a second sheet of material in the pile, and means extending over said top sheet to prevent its accidental displacement, said means being yieldable in accordance with the relative stiffness of the sheet material being fed.

2. In stock pile control mechanism, the combination of means for separating a top sheet from a second sheet of material in the pile, and means extending over said top sheet to prevent its accidental displacement, said means being yieldable a maximum amount when relatively stiff sheet material is fed, being yieldable a less amount when relatively less stiff sheet material is fed, and being substantially non-yieldable when exceedingly flexible sheet material is fed.

3. In stock pile sheet control mechanism, means operable on the top sheet to prevent its accidental displacement, said means being yieldable in accordance with the relative stiffness of the sheet material being used.

4. In stock pile sheet control mechanism, the combination of means for directing a jet of air between sheets of material in the pile, and yieldable means for limiting the vertical movement of the top sheet to prevent its accidental displacement.

5. In stock pile sheet control mechanism, the combination of means for separating a top sheet from a second sheet of material in the pile, and yieldable means extending over said top sheet to prevent its accidental displacement.

6. In stock pile sheet control mechanism, the combination of means for separating a top sheet from a second sheet of material in the pile, and means extending over such top sheet and yieldably engaging the top sheet for preventing its accidental displacement.

7. In stock pile sheet control mechanism, the combination of means for directing a jet of air between sheets of material in the pile, a yieldable member extending over the top sheet for limiting the vertical movement thereof to prevent its accidental displacement.

8. In stock pile sheet control mechanism, the combination of means for directing a jet

of air between sheets of material in the pile, and a wire loop member for yieldably engaging the top sheet to prevent its accidental displacement.

9. In stock pile sheet control mechanism, the combination of a supporting member, an air jet member carried by said support member for directing a jet of air between sheets of material in the pile, and means associated with said jet and carried by said support arranged to prevent the top sheet from being accidentally displaced.

10. In stock pile sheet control mechanism, the combination of a supporting member, a jet member carried by said supporting member and by which a jet of air may be directed between sheets of material in the pile, and a yieldable member for limiting vertical movement of the top sheet to prevent its accidental displacement.

11. In stock pile sheet control mechanism, the combination of a pile guide, a supporting member carried thereby, a jet member carried by said supporting member and by which a jet of air may be directed between sheets of material in the pile, and a retaining member carried by said supporting member for limiting vertical movement of the top sheet of material to prevent its accidental displacement.

12. In stock pile sheet control mechanism, the combination of means for floating the top sheet of material, and means for limiting the vertical movement of said floating sheet to prevent its accidental displacement.

13. In stock pile sheet control mechanism, the combination of means for floating the top sheet of material, and means for yieldably engaging said floating sheet to prevent its accidental displacement.

14. In stock pile sheet control mechanism, the combination of means for floating the top sheet of material, means for limiting the vertical movement of said sheet to prevent its accidental displacement, and means for directing said sheet to one side for facilitating the register thereof.

15. In stock pile sheet control mechanism, the combination of means for directing a jet of air between sheets of material in the pile, means for limiting the vertical movement of the top sheet to prevent its accidental displacement, and means for directing the lateral movement of said sheet to facilitate registration thereof.

16. In stock pile sheet control mechanism, the combination of a support, means carried by said support for directing a jet of air between sheets of material in the pile, means carried by said support for limiting vertical movement of the top sheet to prevent its accidental displacement, and means carried by said support for directing the movement of said sheet in one direction to facilitate registration of the latter.

17. In stock pile sheet control mechanism, the combination of a support, a pile guide adjustably mounted thereon, an air jet carried by said pile guide, and means for preventing the top sheet of paper being accidentally displaced also carried by said pile guide whereby when said pile guide is adjusted to accommodate sheet material of different dimensions, said air jet and said means move with said pile guide and require no separate adjustment.

18. In stock pile sheet control mechanism, the combination of a support, a pile guide adjustably mounted thereon to accommodate sheet material of different dimensions, and paper control means carried by said pile guide whereby when said pile guide is adjusted said control means also is moved and requires no separate adjustment.

Signed at Chicago, Illinois, this 2nd day of March, 1922.

BURT D. STEVENS.