Oct. 21, 1924. 1,512,648

B. D. STEVENS

STOCK PILE FEED MECHANISM

Filed March 24, 1922

Fig. 1

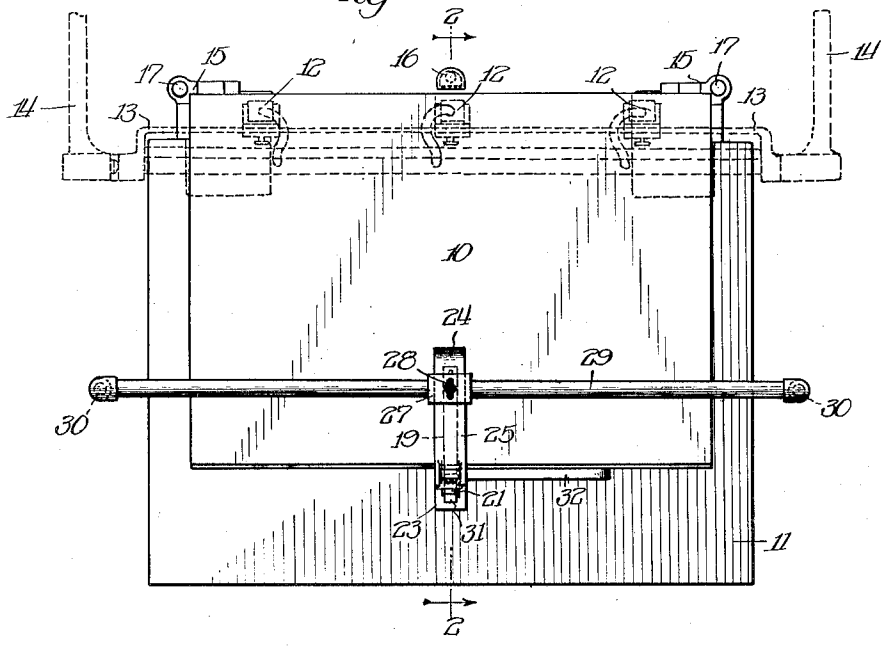


Fig. 2

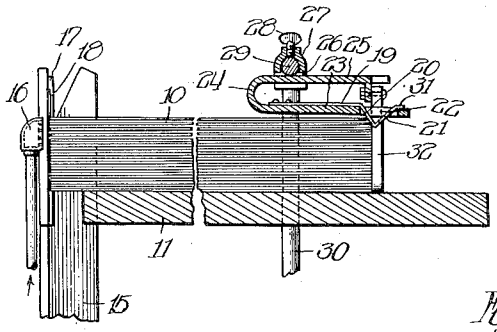


Fig. 4

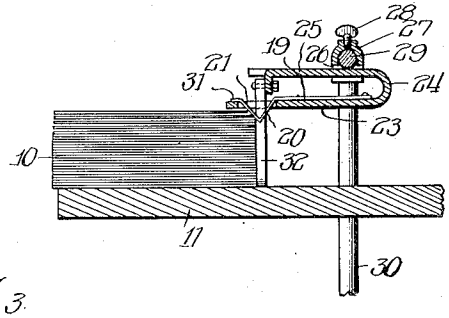
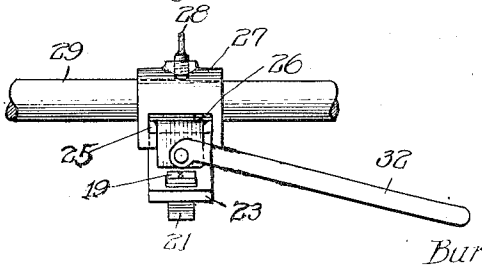


Fig. 3



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UNITED STATES PATENT OFFICE.

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STOCK-PILE-FEED MECHANISM.

Application filed March 24, 1922. Serial No. 546,457.

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 Stock-Pile-Feed Mechanism, of which the following is a specification.

This invention relates to printing presses and more particularly to stock pile feed mechanism thereof.

One object of the invention is to provide simple and efficient means for separating a top sheet from a second sheet in a pile of stock of sheet material and controlling the positioning of such top sheet preparatory to its being progressively fed in the press.

Another object is to provide stock pile feed mechanism in which the various parts are accessible and co-operate 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 sheet of drawings, in which—

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

Figure 2 is a sectional view thereof taken in the plane of line 2—2 of Figure 1;

Figure 3 is a rear elevational view of the spring sheet advancing or forwarding member; and

Figure 4 is a sectional view similar to that shown in Figure 2 but showing a spring sheet forwarding member connected to its support in a reversed manner for advancing sheets which are shorter in length.

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 the pile 10 of sheet material is mounted upon a support or table 11 which, preferably, is automatically raised as sheets are removed therefrom by any suitable means, such as the suction members 12 mounted on a cross-bar 13 carried in feeder arms 14, which, it will be understood, are reciprocated back and forth between the stock pile and the impression member or cylinder of the press. When the pile 10 is placed on the table 11, the pile guide members 15 are adjusted with respect to the pile for properly locating the latter on said table. When the pile guides 15 are once adjusted for a given width of sheet material such material may be added indefinitely without further adjusting the pile guide members 15.

For separating the top sheet of material from the adjacent sheet, I have provided means whereby jets of air may be directed and shot in between sheets of material in the upper portion of the pile. In this connection an air nozzle 16 is provided just in advance of the front central portion of the pile, and if desirable, other jet members 17 having air jet openings 18 may be used for directing jets of air between the top sheets of material at the front corners thereof. The effect of these jets of air is to separate the top sheets of material one from the other and, more particularly, to float the top sheet of paper by a film of air directed between the top sheet and the sheet directly thereunder.

The top sheets of material would float rearwardly off the pile were not some means provided to prevent such action. Also it is desirable to yieldably engage and advance the top sheets of material, and more particularly the top sheet, toward the front pile guide members so that it will be in a proper position to be picked up and advanced progressively in the press by the gripper and forwarding mechanism, including the parts 12, 13 and 14. To this end I have provided a leaf spring member 19 having inclined walls 20 and 21, which together form a V. The V-shaped portion of the spring preferably extends through an opening or slot 22 in one arm 23 of a U-shaped support 24. This support 24 protects the spring 19 from injury and from being accidentally knocked out of position. The other arm 25 of the U-shaped support 24 is received in a slot 26 of a clamping member 27 which is secured by a thumb screw 28 to a cross-bar 29. This cross-bar 29 preferably is stationary with the frame of the stock pile and is carried by side bars 30. The bar 29 extends completely across and over the feed table 11.

As shown in Figure 2, the front inclined wall 20 of the spring 19 engages the rear edges of the sheets of material in the top of the pile. This spring is relatively light and of itself would not effectively force the top sheets of material forwardly in the pile.

However, such inclined portion or wall 20 of the spring yieldably engages the top sheets of material and directs and causes the top sheets of material, and particularly the topmost sheet, to advance forwardly as such top sheets are floated and as the result of the propelling action of the air which floats the sheets. It will be appreciated that as the top sheet, for example, is floated above the second sheet and rises therefrom, the front wall 20 of the spring 19 will have a guiding action in advancing such top sheet forwardly. As a result thereof the top sheets, and particularly the topmost sheet, is separated and advanced forwardly to its proper position with respect to the pile guides 15. The support 24 for the spring 19, and accordingly the spring therewith, may be adjusted forwardly and rearwardly with respect to the bar 29 by loosening the set screw 28 for accommodating sheets of material of different lengths in the direction of feed. The range of adjustment and adaptability of the yieldable sheet advancing the spring member 19 is greatly increased by providing such spring with the two directing and advancing walls 20 and 21 and by providing for reversing the position of the support 24 in the clamp 27, as shown in Figure 4, in which position the inclined wall 21 of the spring member is the active wall. It will be noted in Figure 4 that the sheets of material being fed are of much less length in the direction of the feed of the machine than the sheets of paper shown in Figure 2.

The downward movement of the spring is limited by its lip 31 engaging an underlying portion of the supporting arm 23. The spring may have an upward movement with respect to its supporting arm 23 caused both by an upward movement of the stock pile table 11 and by a bobbing or dancing action resulting from the fluttering of the floated sheets of material. Such fluttering or vibrating action of the spring prevents such spring from having a pinching action which would result in pressing the top sheet against the second sheet. However, this vibrating action of the sensitive and yieldable spring 19 prevents any such pinching action and also advances the floated sheet material into engagement with the pile guides 15 preparatory to such sheet being advanced in the printing press. The clamp 27, and accordingly the spring 19, with its support 24, may be adjusted transversely with respect to the pile. Preferably the spring advancing member 19 is located midway the width of the sheets. If desired, a plurality of spring advancing members may be used, one near each side at the rear of the pile, but it is found in practice that a single spring at the middle of the rear of the pile is more efficient and gives better results than a plurality of such springs.

Pivotally secured to the end of arm 25 is a finger 32 which extends downwardly back of and in engagement with the pile 10. It will be noted that the finger 32, although offset laterally with respect to the apex of the V-portion of the spring 19, extends downwardly in the same vertical plane with the apex so that said finger not only prevents sheets below the apex from shifting rearwardly in the pile, but guides said sheets vertically in a straight line to the active inclined spring wall. The finger is pivotal in a vertical direction and moves upwardly when engaged by the table 11 at the upper limit of movement of the latter. Its downward pivotal movement is limited by stop portions on it and its support.

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 feed mechanism, the combination of means for floating the top sheet of the pile, and yieldable means for guidably advancing the position of such top sheet as a result of its being floated and propelled by the floating means, said yieldable guiding means advancing the sheet in a direction opposite to the flow of the floating means.

2. In stock pile feed mechanism, the combination of means at the front of the pile for floating the top sheet of the pile, and yieldable means at the rear of said pile for guidably advancing the position of such floating top sheet as a result of the propelling action of the floating means.

3. In stock pile feed mechanism, the combination of fluid pressure means at the front of the pile for floating the top sheet of the pile, and yieldable means at the rear of said pile for guidably advancing the position of such floating top sheet as a result of the propelling action of the floating means.

4. In stock pile feed mechanism, the combination of means in a given position with respect to the pile for floating the top sheet thereof, and yieldable means oppositely arranged for guidably advancing said top sheet as it floats upwardly as a result of the propelling action of said floating means.

5. In stock pile feed mechanism, the combination of a support and a spring having walls in the form of a V, which walls under different adjusted conditions may advance the top sheet of material.

6. In stock pile feed mechanism, the combination of a support having a slot therein, and a spring secured to said support and having an active portion extending through said slot whereby the spring is protected from injury and for advancing sheet material of the pile.

7. In stock pile feed mechanism, the combination of supporting means and means

which may be reversibly carried by said supporting means for advancing sheet material in piles of sheet material having different lengths.

8. In stock pile feed mechanism, the combination of supporting means, a U-shaped supporting member reversibly mounted in said supporting means, and a resilient sheet engaging and advancing member carried by said supporting member.

9. In stock pile feed mechanism, the combination of supporting means, a supporting member carried by said supporting means, a yieldable sheet engaging member carried by said supporting member for advancing the top sheet of material of the pile, said supporting member being both adjustably mounted with respect to said supporting means and reversibly mounted with respect thereto for accommodating piles of sheet material of different lengths.

10. In stock pile feed mechanism, the combination of supporting means, a U-shaped supporting member carried by said supporting means, a yieldable sheet engaging member secured to one of the arms of said supporting member and adapted to advance the position of the top sheet of material of the pile, said other arm of said supporting member being both adjustable with respect to said supporting means and reversibly mounted with respect thereto for accommodating piles of sheet material of different lengths.

11. In stock pile feed mechanism, the combination of means for directing a flow of separating medium for separating the top sheet of the pile from an adjacent sheet and floating it, means for guidably advancing in an opposite sense the position of such top sheet as a result of propelling action of said separating means, and means for preventing a shift of sheet material in a given direction in said pile and guiding such material to said advancing means.

12. In stock pile feed mechanism, the combination of means for directing a flow of separating medium for separating the top sheet of the pile from an adjacent sheet, means for guidably advancing in an opposite sense the position of such top sheet as a result of propelling action of said separating means, and pivotally mounted means associated with said advancing means for preventing a shift of sheet material in a given direction in said pile and guiding such material to said advancing means.

Signed at Chicago, Illinois, this 21st day of March, 1922.

BURT D. STEVENS.