Dec. 29, 1925. 1,567,182

E. CHESHIRE

SHEET FEEDING MECHANISM

Filed June 28, 1920

Fig. 1.

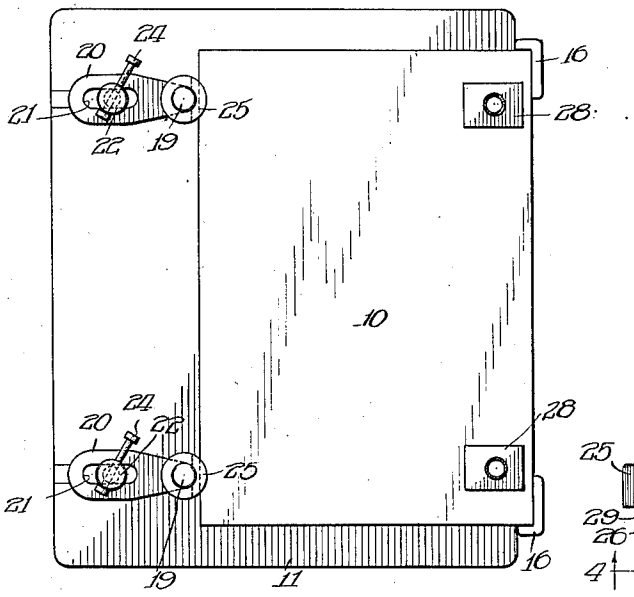


Fig. 3

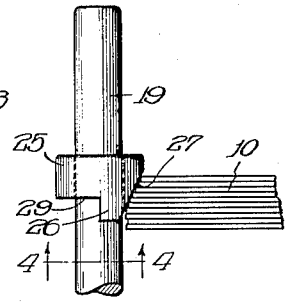


Fig. 2.

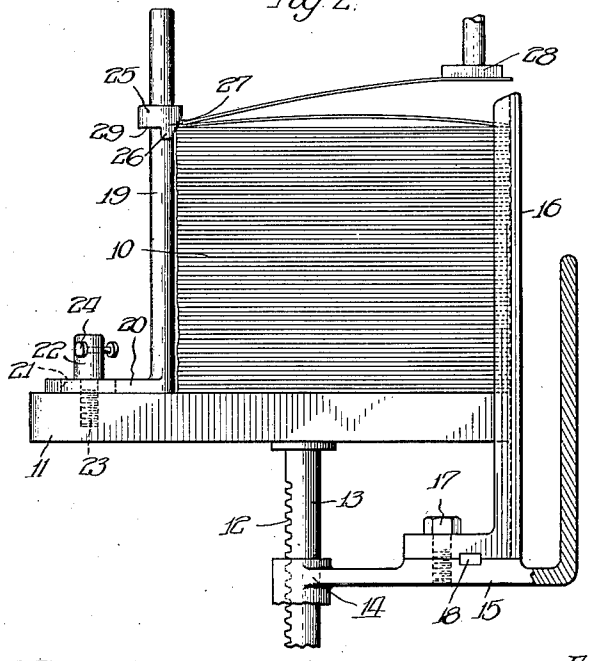
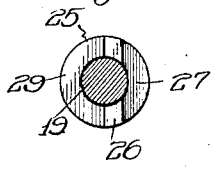


Fig. 4.



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UNITED STATES PATENT OFFICE.

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SHEET-FEEDING MECHANISM.

Application filed June 28, 1920. Serial No. 392,452.

To all whom it may concern:

Be it known that I, EDWARD CHESHIRE, a citizen of the United States, residing at Milwaukee, in the county of Milwaukee and State of Wisconsin, have invented certain new and useful Improvements in Sheet-Feeding Mechanism, of which the following is a specification.

This invention relates to sheet feeding mechanism and more particularly to paper pile feeding.

One object of the invention is to simplify and improve sheet feeding mechanism whereby paper or other sheet material in a pile may be properly placed and fed regardless of varying dimensions of the separate sheets of material within certain predetermined limits.

Another object is to facilitate the separation of the top sheet of material from the next sheet on the pile in a simple and efficient manner.

Another object is to provide a simple, reliable and efficient sheet feeding mechanism adapted to meet the various requirements for successful commercial operation.

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 the preferred form of my sheet feeding mechanism which is adapted for use particularly in connection with printing presses;

Figure 2 is a side elevation of the same;

Figure 3 is a detail enlarged side elevation of gravity actuated means for advancing the separate sheets of material toward a limiting means and for assisting in separating the top sheet from a second sheet; and,

Figure 4 is a view taken in the plane of line 4—4 of Figure 3.

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 I have shown a pile 10 of sheet material which may be paper, the sheets of which are fed one by one, for example, to a printing press, of which the arrangement disclosed herein may be an attachment. This pile of sheet material is placed upon a table 11 which is automatically fed upwardly in a well known manner through suitable gearing, including a rack 12 formed on a post 13, which passes through a suitable opening in a bracket 14 forming a part of a frame 15 to which guide or limiting members 16 are secured by any suitable means, such as studs 17, each guide 16 being properly positioned by a suitable key 18. These guides are angular in shape and extend vertically upwardly from the frame 15 in front of the table 11 and so positioned in accordance with the length of the pile of sheet material to accurately receive and maintain the pile of sheet material in a certain predetermined position preparatory to the separate sheets being fed from the pile, for example, to impression means of a printing press. It will be understood that the guides 16 may be adjusted lengthwise of the table and relative to each other for accommodating piles of sheets of different lengths, the studs 17 first being loosened and after the adjustment, replaced in one of any number of openings. If preferred, a suitable clamp, or any other means, may be used for holding the guides 16 in any adjusted position. These vertical corner guides 16 have for their main function the supporting of the pile of sheet material in vertical alignment and limiting movement of said material beyond a certain predetermined point.

Also I have provided two movable vertical guides 19 having feet 20 with elongated slots 21 therein, each of which receives a clamping stud 22, the threaded portion 23 of which screws into the table 11. The clamping studs are provided with handles 24 for assisting in clamping tightly the movable guides 19 in any adjusted position. Preferably the pile of sheet material is placed on the table 11 and pushed up into proper engagement with the vertical guide 16 when the movable guides are loosened and in a removed position, after which said movable guides 19 may be moved up into engagement with the opposite edge of the pile and clamped in such position for retaining the pile in contact with the vertical guides 16, it being assumed for the time being that each sheet in the pile is of a uniform width.

However, such sheets are not always of uniform width and accordingly, even though certain of the sheets in the pile are pressed into engagement with the vertical guides 16 by the adjustable guides 19, others of the sheets in the pile do not engage the vertical guides 16.

In this connection I have provided means for automatically advancing the upper sheets of material in the pile toward and into engagement with the vertical guides 16 regardless of the width of the individual sheets within certain predetermined limits. Said means takes the form of a gravity-actuated cam member 25, which is vertically slidably mounted upon its associated adjustable guide member 19. In this case two such gravity-actuated members 25 are shown, there being two such adjustable vertical guides 19. These gravity-actuated members preferably are annular and have an elongated portion 26 to increase the beveled or cam surface 27 thereof. The cam surface 27 in each case is presented to one edge of each of the upper sheets and is positioned with respect thereto in a manner automatically to advance or force said upper sheets toward and into engagement with the vertical guides 16. Obviously, from an inspection, particularly of Figure 3, the top sheet will be advanced the greatest amount. In this connection it will be appreciated that possibly the top sheet originally was in engagement with the vertical guides 16, and under such conditions the gravity-actuated member 25 would cause said top sheet to buckle upwardly for admitting air between the top and second sheets, thereby facilitating the separation of said sheets. It will be appreciated also that if the top sheet originally was not in engagement with the vertical guide 16, the gravity-actuated cam member 25 would advance said top sheet to the vertical guide 16 and then cause said top sheet to buckle for admitting air thereunder to facilitate removing the top sheet from the second sheet, it being assumed that the cam or beveled edge 27 is of such pitch or capacity to accomplish said results. It will be understood, of course, that the pitch and length of the gravity-actuated sheet advancing members 25 may be made in accordance with requirements. As the top sheet of material is removed by any suitable means, such as suction shoes 28, the members 25 automatically will lower as a result of their weight, thereby treating each sheet individually, as well as in a collective manner. The action of these gravity sheet advancing and sheet buckling members 25 is automatic from start to finish throughout the whole pile. It will be noted that each of said members 25 is provided with a recessed portion 29 to receive the associated feet 20 to permit the beveled edge to treat even the lower sheets of material in the pile.

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 mechanism for feeding sheet material from a pile, the combination of means for limiting movement of sheet material in one direction, and gravity-actuated means for advancing said sheet material toward said limiting means normally causing the sheet to buckle for separating the latter from the next sheet.

2. In mechanism for feeding sheet material from a pile, the combination of means for limiting movement of the sheet material in one direction, and normally vertically movable gravity-actuated means which as it moves vertically downwardly advances said sheet material longitudinally toward said limiting means.

3. In mechanism for feeding sheet material from a pile, normally vertically movable gravity-actuated means which as it moves vertically downwardly moves one edge of a sheet of material in a longitudinal direction.

4. In mechanism for feeding sheet material from a pile, gravity-actuated means which as it moves downwardly moves one edge of a sheet of material in a given direction and under certain conditions causes said sheet of material to buckle.

5. In mechanism for feeding sheet material from a pile, gravity-actuated means for causing the top sheet of material to buckle for facilitating the separation of the top sheet from the next sheet.

6. In mechanism for feeding sheet material from a pile, the combination of vertical guide means for the pile of material, and slidably mounted means for moving the top sheet of material into engagement with said guide means.

7. In mechanism for feeding sheet material from a pile, the combination of vertical guide means for the pile of material, and slidably mounted means for moving the top sheet of material into engagement with said guide means and for buckling said top sheet to facilitate separation of said top sheet from the adjacent sheet.

8. In mechanism for feeding sheet material from a pile, the combination of vertical guide means for the pile of material, and vertical slidably mounted means for moving the top sheet of material into engagement with said guide means and for buckling said top sheet to facilitate separation of said top sheet from the adjacent sheet.

9. In mechanism for feeding sheet material from a pile, vertical guide means for said pile of sheet material, an adjustable guide member for generally positioning a

pile with respect to said vertical guide means, and means mounted on said adjustable guide means for definitely positioning sheet material in a pile with respect to said vertical guide means.

10. In mechanism for feeding sheet material from a pile, vertical guide means for said pile of sheet material, an adjustable guide member for generally positioning a pile with respect to said vertical guide means, and gravity-actuated means mounted on said adjustable guide members for definitely positioning sheet material in a pile with respect to said vertical guide means.

11. In mechanism for feeding sheet material from a pile, the combination of a stock table upon which the pile is carried, vertical guide members for said pile, movable guide members for generally positioning said pile with respect to said vertical guide members adjustably mounted on said table, and means associated with said movable guide members for definitely positioning a given sheet of material in said pile with respect to said vertical guide members.

12. In mechanism for feeding sheet material from a pile, the combination of a stock table upon which the pile is carried, vertical guide members for said pile, movable guide members for generally positioning said pile with respect to said vertical guide members adjustably mounted on said table, and gravity-actuated cam means mounted on said movably mounted guide members for definitely positioning a given sheet of material in said pile with respect to said vertical guide members.

13. In mechanism for feeding sheet material from a pile, normally vertically movable gravity-actuated sheet buckling means for successively treating each sheet of material as the sheets of material are removed from the pile.

Signed at Milwaukee, Wisconsin, this 25th day of June, 1920.

EDWARD CHESHIRE.