

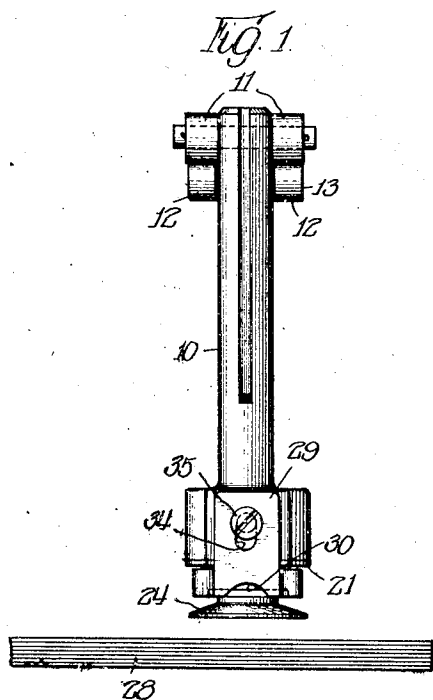
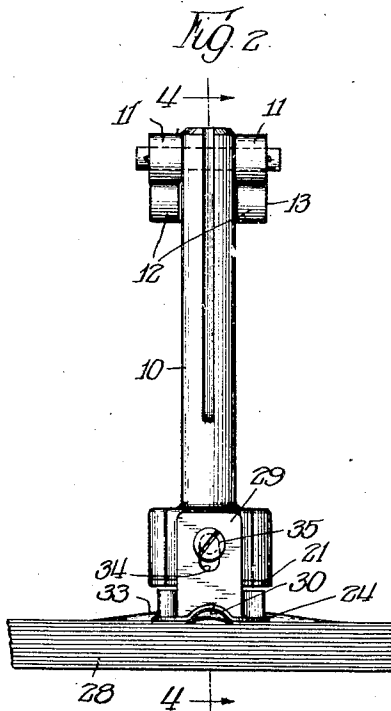
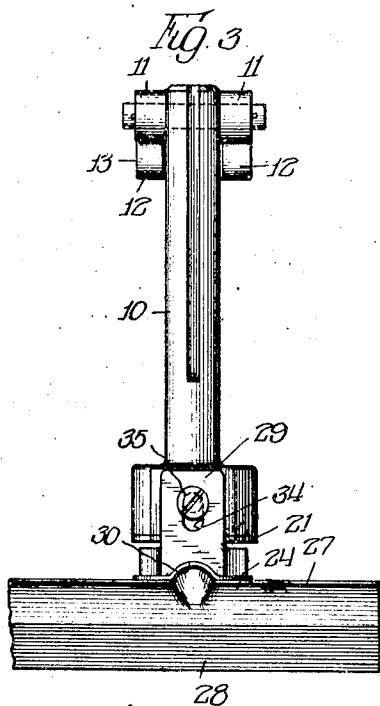
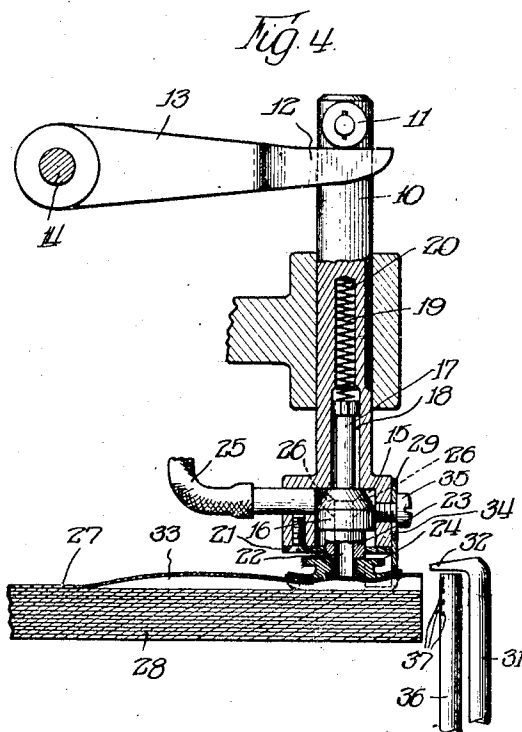
May 18, 1926,

J. R. BLAINE

1,585,368

SHEET PICK-UP MECHANISM

Filed May 3, 1924



Witness:
R. Burkhardt

Inventor:
Joseph R. Blaine,
By *Milkinson, Hussey, Byron & Knight*
attys.

UNITED STATES PATENT OFFICE.

JOSEPH R. BLAINE, OF OAK PARK, ILLINOIS, ASSIGNOR TO MIEHLE PRINTING PRESS & MANUFACTURING CO., OF CHICAGO, ILLINOIS, A CORPORATION OF ILLINOIS.

SHEET-PICK-UP MECHANISM.

Application filed May 3, 1924. Serial No. 710,753.

This invention relates to sheet separating and pick-up mechanism for use in connection with printing presses and the like.

One object of the invention is to provide a simple, reliable and efficient sheet separating and pick-up mechanism in which the various parts and members cooperate to obtain the best results.

Another object is to provide sheet separating and pick-up mechanism adapted to meet the various requirements under service conditions.

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

Figure 1 is a front elevation of sheet separating and pick-up mechanism embodying my invention, the suction shoe being shown slightly above the pile of sheets;

Figure 2 is a similar view showing the suction shoe way down with respect to the other parts and also showing a portion of the flexible suction shoe drawn up into the crimping means for crimping the top sheet of paper for facilitating separation thereof from the second sheet;

Figure 3 is a similar view showing the whole mechanism raised slightly away from the pile in a complete separating movement; and

Figure 4 is a sectional view taken in the plane of line 4—4 showing various parts of the mechanism and fluffing and blast means cooperating with the other parts of the mechanism for facilitating the separation of the top sheet from a second sheet.

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 preferred form of my sheet separating and pick-up mechanism includes a casing member 10, the upper end of which is provided with rollers 11 which ride upon the upper surface of the forked portion 12 of an arm 13 mounted upon a rock shaft 14 which causes an upward movement of the casing, the latter moving downwardly of its own weight.

The casing has an enlarged chamber 15 in which a piston 16 is slidably mounted. The piston has a stem 17 extending upwardly through a smaller opening 18 in the casing

which stem is backed by a spring 19 within a pocket 20 in the casing normally for holding the piston in its lowermost position with respect to the casing. The chamber 15 in the casing is closed by a cover plate 21 which also acts as a stop to limit the downward movement of the piston 16. The upper portion of the piston is beveled away to form an annular space in the chamber 15 between the casing and the upper portion of the piston 16. A plurality of apertures are extended from the beveled-off portion of the piston to a central passageway 22 in the piston which extends downwardly through a depending cylindrical portion 23 of the piston. Secured to the lower end of the cylindrical portion 23 of the piston is an annular flexible suction shoe 24.

In the operation of the device thus far described, and with the piston 16 in its lowermost position, the casing 10 is permitted to lower by the lowering of the arm 13. The chamber 15 being connected to a source of vacuum represented by the tube 25, suction extends through the inclined openings 26 and central opening 22 in the piston, air being drawn upwardly through the piston and out through the tube 25 until the top sheet 27 of material of the pile 28 is drawn upwardly against the suction shoe, sealing the latter. The suction shoe upon becoming sealed rises with the piston, as shown in Figures 2, 3 and 4. In this connection it is to be borne in mind that the suction shoe need not pass down into engagement with solid pile and that after the suction shoe is sealed by the rising top sheet, the mechanism as a whole is given a rising movement through the arm 13.

Means is provided for crimping the flexible suction shoe, for in turn crimping the top sheet of material for the purpose of facilitating separation of the top and second sheets. This crimping means takes the form of a metal plate 29 secured to the front of the enlarged portion of the casing 10. The lower extremity of the plate 29 is adjacent the lower end of the suction shoe and has an arc-shaped slot or recess 30 therein into which one portion of the flexible suction shoe is drawn during the upward movement of said suction shoe. The portion of the suction shoe thus crimped up into the recess 30, causes the top sheet of paper adhering to the suction shoe also to be crimped

to facilitate separation of the top sheet from the second sheet. In the crimping of the top sheet a channel or air passage is formed in said top sheet and extending back of the suction shoe as at 33. A blast tube 31 is provided having a nozzle 32 for directing a blast of air between the top sheet and pile after the sheet is partially lifted in order to separate or free the rear or tail of the sheet.

The degree of crimp may be varied by varying the position of the plate 29 on the casing 10. In this connection it will be noted that the plate is provided with an elongated slot 34 through which a set screw 35 passes, the latter being threaded into the enlarged portion of the casing 10. A tube 36 is provided having a plurality of apertures 37 for directing jets of air against the edge of the pile 28 for fluffing the latter and forming the pocket of air 33 mentioned.

By means of the mechanism and arrangement hereinabove described, the top sheet of material in a pile may be picked up and separated from the second sheet in a manner to meet all of the requirements of service conditions.

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 sheet separating and pick-up mechanism, the combination of a flexible suction shoe against which a sheet is drawn, and means for crimping the suction shoe for in turn crimping the sheet to facilitate sheet separation.

2. In sheet separating and pick-up mechanism, the combination of a flexible suction shoe against which a sheet is drawn, means for crimping the suction shoe for in turn crimping the sheet to facilitate sheet separation, and means for varying the degree of crimping.

3. In sheet separating and pick-up mechanism, the combination of a flexible suction shoe against which a sheet is drawn, means for crimping the suction shoe for in turn crimping the sheet to facilitate sheet separation, and means for shooting air under the crimped portion of the sheet to form a relatively large pocket of air between the top and second sheets.

4. In sheet separating and pick-up mechanism, the combination of a flexible shoe against which a sheet is drawn, a crimping member, and means whereby said suction shoe is moved into operative association with said crimping member for crimping a sheet of material gripped by said suction shoe for facilitating sheet separation.

5. In sheet separating and pick-up mechanism, the combination of a casing, a piston operable in said casing, a suction shoe operatively connected to said piston, means

whereby when a sheet of material is gripped by said suction shoe the piston and suction shoe are caused to rise, and means associated with said suction shoe for crimping the latter and the sheet of material as said piston rises for facilitating sheet separation.

6. In sheet separating and pick-up mechanism, the combination of a casing, a piston operable in said casing, a suction shoe operatively connected to said piston, means whereby when a sheet of material is gripped by said suction shoe the piston and suction shoe are caused to rise, means associated with said suction shoe for crimping the latter and the sheet of material as said piston rises for facilitating sheet separation, and means whereby the degree of crimping may be varied.

7. In sheet separating and pick-up mechanism, the combination of a casing, a piston operable in said casing, a suction shoe operatively connected to said piston, means whereby when a sheet of material is gripped by said suction shoe the piston and suction shoe are caused to rise, means associated with said suction shoe for crimping the latter and the sheet of material as said piston rises for facilitating sheet separation, and means for shooting air under the crimped portion of the sheet to form a relatively large pocket of air between the top and second sheets.

8. In sheet separating and pick-up mechanism, the combination of a casing, a piston operable in said casing, a spring, normally for holding the piston in the lower portion of said casing, a flexible suction shoe operatively connected to said piston, means whereby said suction shoe and piston are caused to rise against the tension of said spring when a sheet is gripped, means on said casing for crimping said flexible suction shoe and said sheet as said suction shoe and sheet are raised.

9. In sheet separating and pick-up mechanism, the combination of a casing, a piston operable in said casing, a spring normally for holding the piston in the lower portion of said casing, a flexible suction shoe operatively connected to said piston, means whereby said suction shoe and piston are caused to rise against the tension of said spring when a sheet is gripped, means on said casing for crimping said flexible suction shoe and said sheet as said suction shoe and sheet are raised, and means for shooting air under the crimped portion of the sheet to form a relatively large pocket of air between the top and second sheets.

10. In sheet separating and pick-up mechanism, a flexible suction shoe against which a sheet is drawn, means for crimping the suction shoe for in turn crimping the sheet to facilitate sheet separation, means for fluffing the sheet material in the pile, al-

lowing the flow of air under the crimped portion of the sheet to form a relatively large pocket of air between the top and second sheets and means for shooting a blast of air between said top and second sheets for separating same.

11. In sheet separating and pick-up mechanism, the combination of a casing, an apertured piston operable in said casing, a flexible suction shoe operatively connected to said piston, said piston moving upwardly carrying a sheet when the shoe has become sealed by a sheet, and means for crimping said shoe to crimp said sheet to facilitate sheet separation.

12. In sheet separating and pick-up mechanism, the combination of a casing, an apertured piston operable in said casing a flexible suction shoe operatively connected to said piston, said piston moving upwardly carrying a sheet when the shoe has become sealed by a sheet, means for crimping said shoe to crimp said sheet to facilitate sheet separation, and means for shooting air under the crimped portion of the sheet to form a relatively large pocket of air between the top and second sheets.

Signed at Chicago, Illinois, this 8th day of April, 1924.

JOSEPH R. BLAINE.