Jan. 28, 1930. G. R. SWART ET AL 1,744,814

SHEET FEEDER

Filed Jan. 2, 1925 3 Sheets-Sheet 1

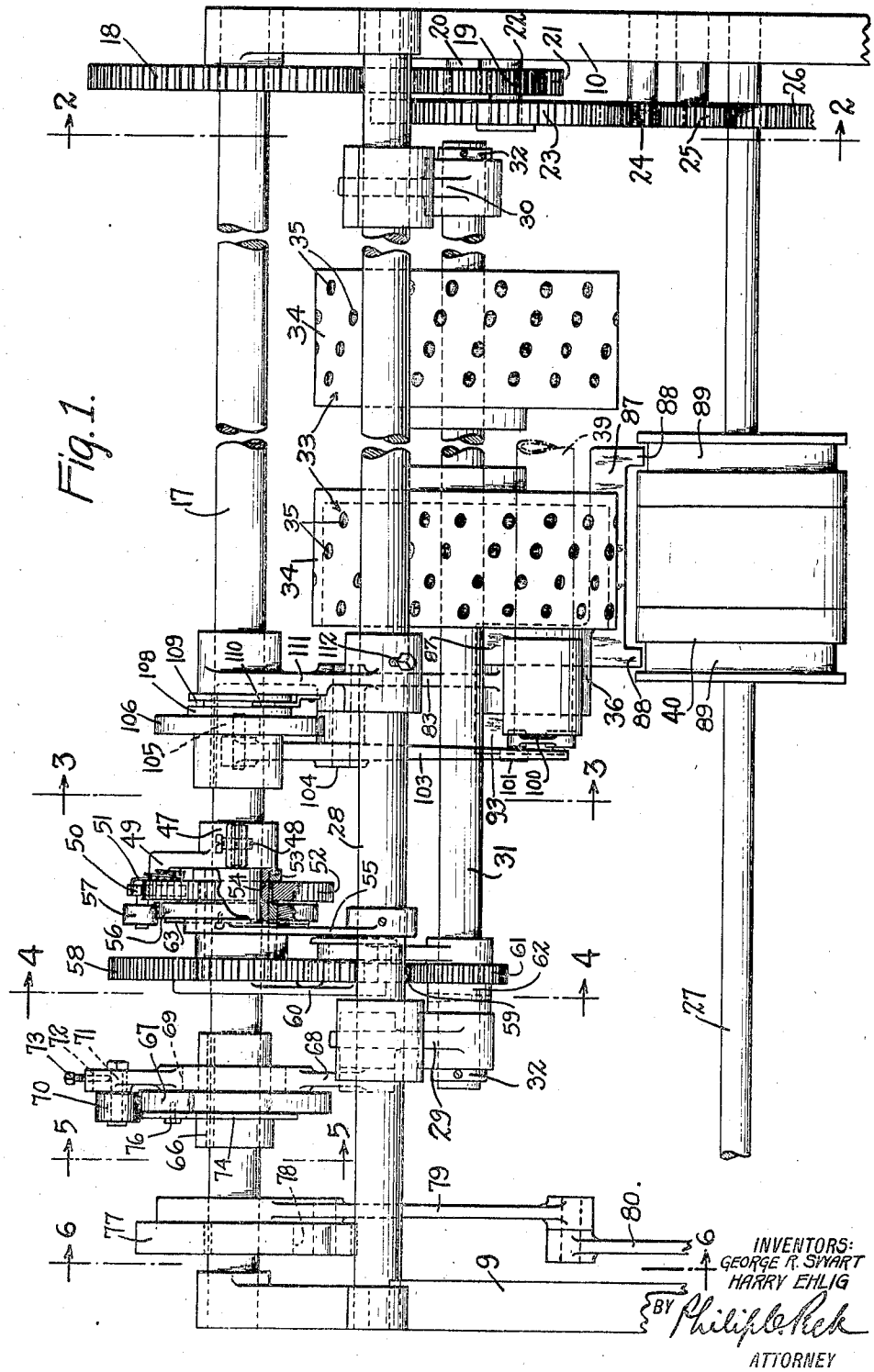


Fig. 1.

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SHEET FEEDER

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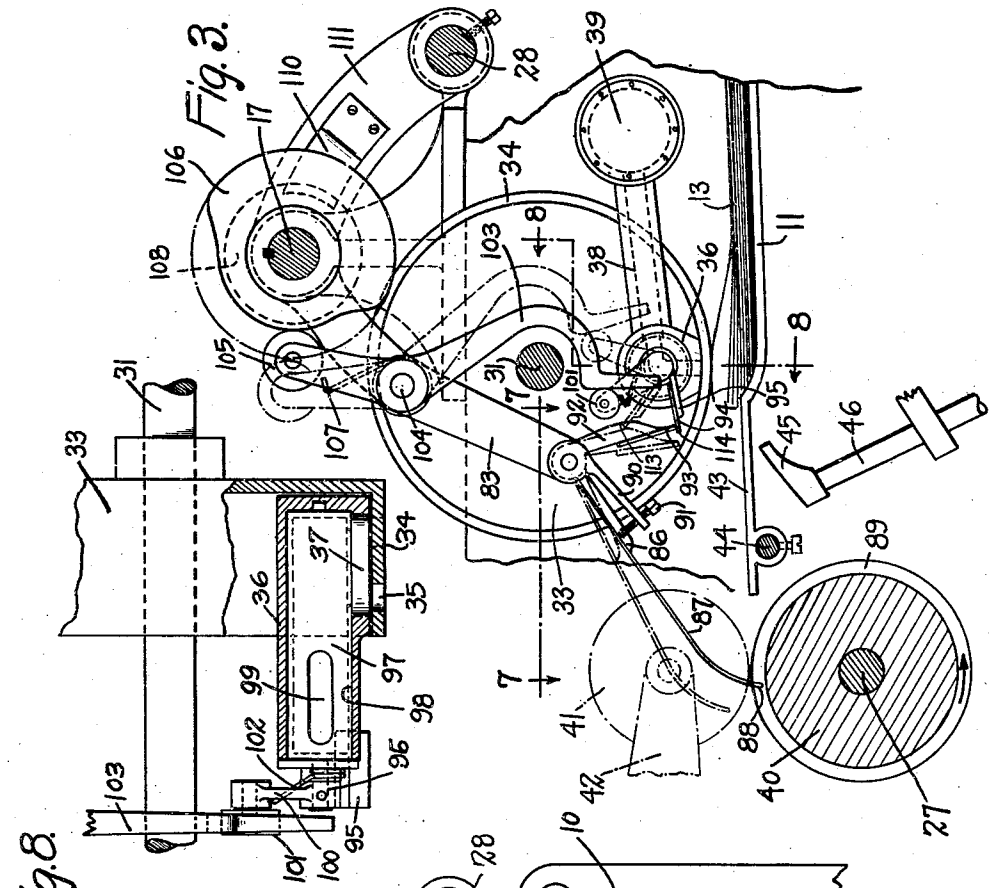


Fig. 3.

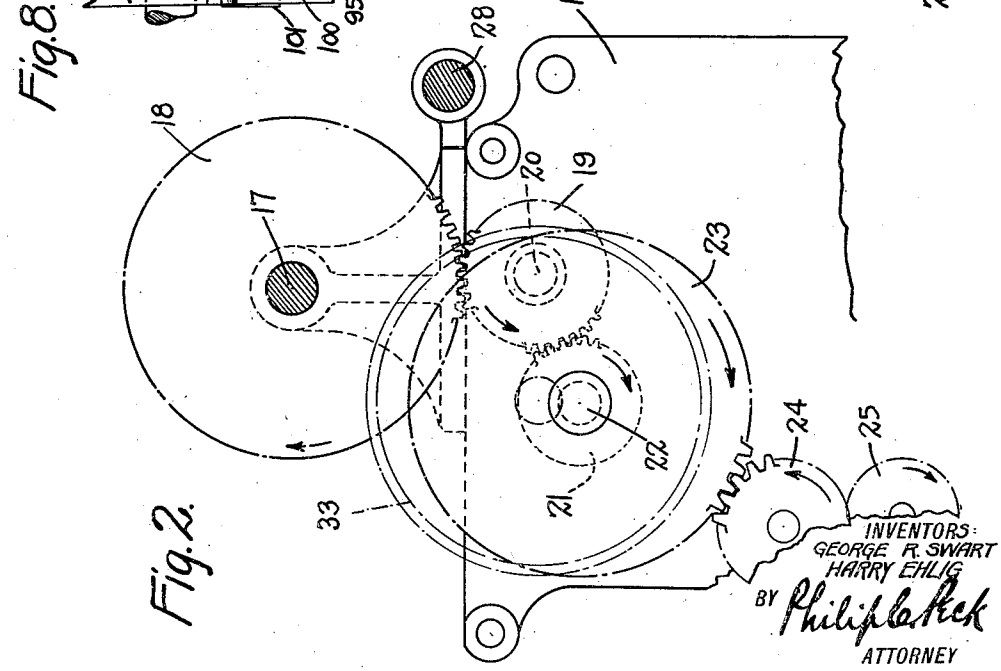


Fig. 8

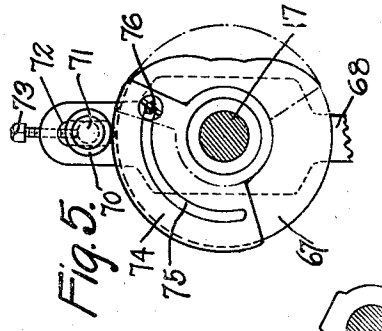
Fig. 2.

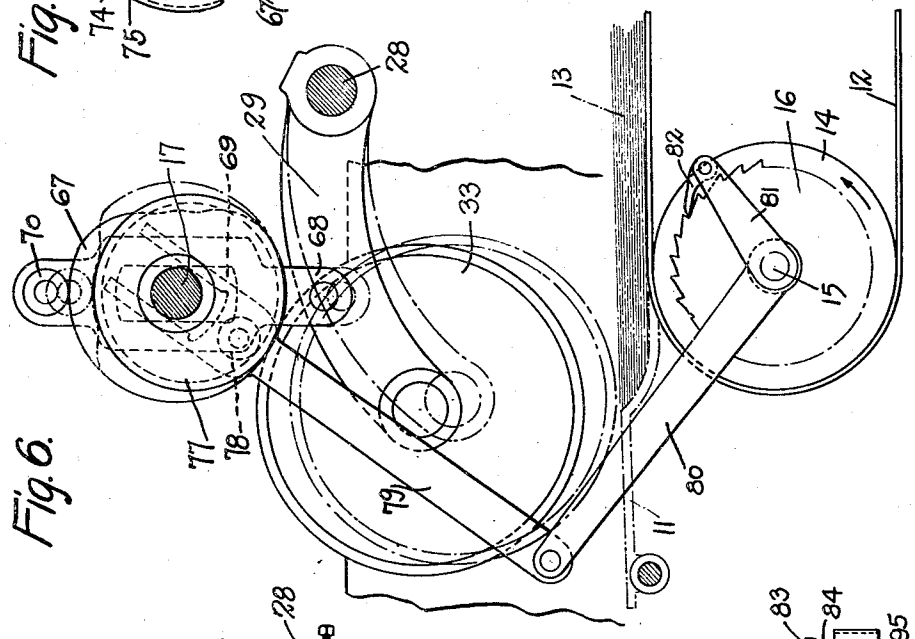
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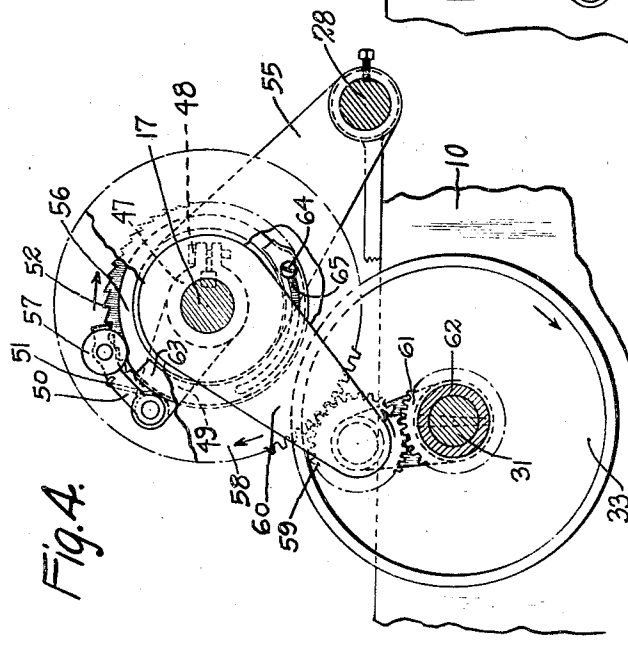
Jan. 28, 1930. G. R. SWART ET AL 1,744,814

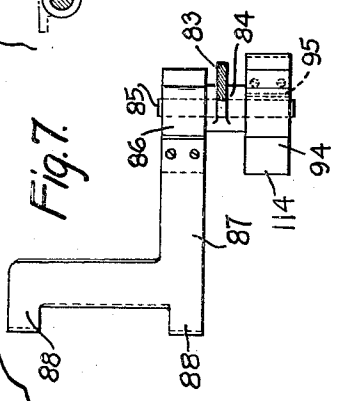
SHEET FEEDER

Filed Jan. 2, 1925 3 Sheets-Sheet 3









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Patented Jan. 28, 1930 1,744,814

UNITED STATES PATENT OFFICE

GEORGE R. SWART, OF HACKENSACK, NEW JERSEY, AND HARRY EHLIG, OF PEARL RIVER, NEW YORK, ASSIGNORS, BY MESNE ASSIGNMENTS, TO DEXTER FOLDER COMPANY, OF NEW YORK, N. Y., A CORPORATION OF NEW YORK

SHEET FEEDER

Application filed January 2, 1925. Serial No. 77.

Our invention relates generally to improved sheet-feeders used for automatically separating and forwarding successive sheets of paper or other impression-receiving material to printing, folding or ruling machines, or to such other types of machines as are devised to operate thereafter on such sheets.

The objects of our invention are, among other things, mainly to provide a sheet-feeder of this character having a simplified design and embodying therein separate mechanisms capable of performing rapid and efficient work in separating sheets of different sizes as well as of varying thicknesses and grades, and such mechanisms also being very sensitive in action under different conditions of sheet-separation, yet they are not likely to get out of order, and may be readily shifted and adjusted for different runs by the operator. These devices are preferably incorporated in a feeder of the "continuous" type in which the sheets are separated and advanced from the front top portion of a fanned-out bank of paper on the feed-board.

With these aims in view we have devised a front-edge feeder having a novel and improved suction feeding-off device which is usually arranged in pairs across the feeder, the operation of each device being controlled by a separate cut-out finger located between the usual feed-rolls and actuated by the sheet advanced to limit the forward movement of the suction feeding-off device and also to control the shutting off of the suction from such device promptly to release the advancing sheet when seized by the feed-rolls.

A further feature is to embody in such a feeder a rotatable suction fed-wheel which will be automatically raised and lowered in each cycle to pick up and feed off the successive sheets, with novel mechanisms to control the timing of the rotary movement of the wheel so that the front margin of the top sheet is seized by the wheel while at rest, and immediately thereafter such wheel is lifted and begins its sheet-forwarding rotary movement.

A further feature of our invention is to provide improved means not only to vary the extent of the partial revolutions of the suction feed-wheel so as to adjust the separating devices for sheets of different lengths, but also to enable the suction feed-wheel to rotate continuously whereby a continuous separation of the sheets from the bank is ensured.

A further feature is to provide an automatic resetting device for the cut-out finger which controls the intermitting of the suction in the feed-wheel with means to adjust the position of this finger between the feed-rolls so as to predeterminedly advance or retard the cutting off of the suction applied to the feed-wheel, combined with a novel device automatically lifting and holding the cut-out finger in upraised position off the body of the sheet which has been seized and is being advanced by the feed-rolls.

A further feature is to provide an improved form of suction cut-off valve mounted in the suction shoe which rides on the inner rim of the suction feed-wheel, which valve will function effectively in its opening and closing to atmosphere without in any way disturbing the exhaust pressure normally maintained in the pipe and arm connections leading to the suction shoe, thereby providing an exceptionally rapid and certain control in the action of the feed-wheel in picking up and afterwards in releasing the sheets.

A further feature is to provide a simplified device for adjusting the height of the vertically movable suction feed-wheel relatively to the bank of sheets so as to allow for stock of varying thickness, combined with means by which the feed-wheel may set in a fixed position for continuous separation and feeding, or may be allowed to be automatically raised and lowered in each cycle in picking up a sheet while the wheel is at rest, followed by its lifting movement and subsequent rotation in separating and advancing the sheet from the bank of paper.

Our improved sheet-feeder also embodies other advantageous features of novelty and improvement in which the various operating members are greatly simplified in form, arrangement and interaction, in the performance of their intended functions under varying conditions of usage with different kinds

of paper stock, all of which will be hereinafter described and then particularly pointed out in the appended claims.

The accompanying drawings show our improvements in their preferred embodiment in a continuous sheet-feeder; such improvements, however, are not to be restricted to any particular type of sheet-feeder, as these features of invention may be incorporated in various forms of feeders with similar advantages and results.

Of the drawings, Fig. 1 is an end elevation of our feeder illustrating the suction feeding-off devices and looking from the rear end forwardly, with a portion of the suction feed-wheel operating mechanism shown in cross-section;

Fig. 2 is a section taken on the line 2—2 of Fig. 1 showing the driving gears for the cam-shaft;

Fig. 3 is a section taken on the line 3—3 of Fig. 1 showing the suction feed-wheel with the cut-out finger and resetting devices therefor, the operation of the finger being illustrated in outline;

Fig. 4 is a section taken on the line 4—4 of Fig. 1 showing the mechanism for rotating the feed-wheel;

Fig. 5 is a section taken on the line 5—5 of Fig. 1 showing how the suction feed-wheel may be held fixed in its raised position or the timing of the lowering of the wheel may be predeterminedly varied and controlled;

Fig. 6 is a section taken on the line 6—6 of Fig. 1 showing the mechanism for periodically raising and lowering the suction feed-wheel relatively to the bank of sheets, the adjustable cam-plate shown in Fig. 5 being omitted;

Fig. 7 is a detail section on the line 7—7 of Fig. 3 showing the cut-out finger which controls the suction cut-off in the feed-wheel; and

Fig. 8 is an enlarged section on the line 8—8 of Fig. 3 showing the suction shoe and the control barrel valve with operating mechanism for the latter.

Similar numerals refer to similar parts throughout the several figures.

Referring to the drawings, the side frames 9 and 10 of the feeder are suitably supported on standards (not shown) and secured between the side-frames 9 and 10 is the feed-board 11 over which travel a series of feed-belts 12 to advance the fanned-out bank of sheets 13 along the feed-board 11. The belts 12 (only one being shown in Fig. 6) pass forwardly around the drum 14 mounted on the cross-shaft 15 journalled in suitable bearings in the side-frames 9 and 10. The shaft 15 carries the ratchet 16 by which the feed-belts 12 are intermittently advanced over the feed-board 11 to carry the bank of fanned-out sheets 13 to the sheet separating and feeding devices arranged across the front edge of the feed-board 11 as shown in Fig. 3.

In the present embodiment of our feeder, the sheet separating and forwarding devices are duplicated upon either side of the machine and are adjustable laterally in the machine; a description of one set of such devices will be sufficient, since both sets are built and operate in a similar manner. The main cam-shaft 17 extends across the feeder and is suitably supported in bearings in the side-frames 9 and 10 as shown in Fig. 1. This shaft 17 is driven in a clockwise direction (Fig. 2) by the gear 18 secured thereto, which gear 18 engages the pinion 19 mounted on the stub shaft 20 secured in the side-frame 10; the pinion 19 meshes with the gear 21 affixed to the stub-shaft 22 on which is mounted the gear 23 meshing with the idler gear 24 which is driven by another idler gear 25 which engages the gear 26 secured to the main power shaft 27 suitably journalled in the side-frames 9 and 10 (the left end of the shaft 27 being broken off in Fig. 1. The arrows in Fig. 2 show the respective directions of rotation of the several gears and pinions with the power shaft 27 rotated in an anti-clockwise direction (Fig. 3).

Extending across the feeder between the side-frames 9 and 10 is the tie-shaft 28 on which are rotatably secured the rock-arms 29 and 30 in the forward ends of which arms are journalled the outer ends of the feed-wheel shaft 31 held in position by the collars 32 (Fig. 1). Affixed to the shaft 31 are the suction feed-wheels 33 (two being shown in Fig. 1), the rim 34 of each wheel 33 having spaced-apart perforations 35 preferably arranged in staggered relation as shown in Fig. 1; the suction-shoe 36 with its nozzle 37 rides along the inner face of the rim 34 (Figs. 3 and 8), and is held in position on the end of the hollow arm 38 connected to the cross suction-tube 39 suitably secured in the side-frames 9 and 10. The nozzle 37 registers intermittently with the successive perforations 35 in the feed-wheels 33 as the latter are rotated in a clockwise direction (Figs. 3 and 4). The required suction to operate the feed-wheel 33 is applied to the tube 39 by any suitable air-exhausting means not shown. The forward portion of the top sheet from the bank 13 adheres to the exterior surface of the rim 34 opposite the nozzle 37 (Fig. 3), and is separated and advanced to the bite of the usual lower feed-roll 40 and upper drop-roll 41 by the wheel 33.

The feed-roll 40 is rigidly mounted on the main power-shaft 27 (Figs. 1 and 3), while the drop-roll 41 is mounted on the rock-arm 42 which is actuated in the usual manner to seize and convey forwardly the advancing sheet when its leading edge has passed over the guide-plate 43 mounted on the rod 44; the front edges of the sheets comprising the

bank 13 are kept separated by a blast of air from the nozzle 45 mounted on the pipe 46 connected with any suitable air pump not shown.

Means are provided to rotate the suction feed-wheel 33 either continuously or with a partial revolution which may be varied in extent and controlled according to sheets of different lengths. In the present embodiment the split collar 47 is clamped to the revolving cam-shaft 17 by the set-screw 48 (Figs. 1 and 4); the collar 47 carries the pawl-arm 49 having pivoted thereto the pawl 50 forced downwardly by the spring 51 to engage the ratchet 52 secured to the sleeve 53 which is journalled on the bushing 54 carried by the cam-shaft 17 as shown in Fig. 1. The tie-shaft 28 carries the supporting arm 55 to which is removably secured the stationary cam 56 arranged adjacent to the ratchet 52; the pawl 50 has pinned thereto the cam-roller 57 which rides on the cam 56 by the force of the spring 51 as the pawl-arm 49 revolves in a clockwise direction (Fig. 4). Journalled on the sleeve 53 is the gear 58 which engages the gear 59 pivoted to the end of the arm 60, and the gear 59 drives the gear 61 affixed to the collar 62 keyed to the feed-wheel shaft 31, the arrows in Fig. 4 indicating the respective directions of revolution of the several gears and the feed-wheel 33. When the cam-roller 57 rides along the drop of the cam 56, the pawl 50 engages the ratchet 52 to revolve the wheel 33; when the cam-roller 57 rides out the drop of the cam 56, the pawl 50 is disengaged from the ratchet 52 and the wheel 33 is no longer actuated to advance the sheets. Adjustably secured to the side of the cam 56 is the cam-plate 63 which may be shifted about the sleeve 53 and held in any position by the set-screw 64 passing through the arcuate slot 65 cut in the plate 63 and tapped in the side of the cam 56. By shifting the cam-plate 63 the extent of the drop of the cam 56 may be raised to properly fix the peripheral distance of the partial revolution of the feed-wheel 33 to accommodate sheets of different lengths.

We also have provided means to enable the feed-wheel 33 to revolve continuously in order that the successive sheets may be advanced from the bank 13 in a continuous flow. The cam 56 is released from its engagement with the sleeve 53 and shifted to the left in Fig. 1 so that the cam-roller 57 will no longer ride on the cam 56 and the pawl 50 will be forced downwardly in locking engagement with the ratchet 52 to form a positive operative connection between the cam-shaft 17 and feed-wheel 33.

Means are also provided to raise and lower the suction feed-wheel 33 for each cycle to accommodate for banks of sheets of stock having different thicknesses and textures, combined with an adjustable device by which the feed-wheel 33 may be set in any fixed position relatively to the bank 13, or may be allowed to raise and lower in each cycle in picking up the top sheet from the fanned-out bank. Such means may be widely varied in structure and operation. In the present embodiment shown in Figs. 1, 5 and 6, the cam-shaft 17 has secured thereto the collar 66 to which is affixed the cam 67. Pivoted to rock-arm 29 is the vertically-disposed strap 68 having the slot 69 formed therein which encloses the cam-shaft 17 as shown. The upper end of the strap 68 adjustably carries the cam-roller 70 pivoted on the pin 71 which is slidably held in the slot 72 by the cap-screw 73. The roller 70 rides on the cam 67 and is held in engagement therewith by the weight of the rock-arm 29 and associated devices. The cam 67 is set in timed relation with the feed-wheel 33 so that the latter will be lowered to pick up the front margin of the top sheet at rest and then raised and simultaneously rotated forwardly to separate the top sheet and advance same to the cut-out finger or trip in the bite of the rolls 40 and 41. Journalled on the collar 66 is the segmental cam-plate 74 having the arcuate slot 75 cut therein through which passes the set-screw 76 tapped into the cam 67 (Fig. 1), by which the drop of the cam 67 may be blocked off with the roller 70 riding on the dwell of the cam so as to hold the suction feed-wheel 33 in fixed position over the bank which position may be adjusted vertically through shifting the pin 71 in the slot 72 to increase or diminish the effective length of the strap 68.

The means for intermittently advancing the bank of sheets 13 along the feed-board 11 may be widely varied: In the present embodiment shown in Figs. 1 and 6, such devices comprise the box cam 77 secured to the cam-shaft 17, which cam is engaged by the cam-roller 78 pinned to the link 79 forked at its upper end to ride on the shaft 17, which link is pinned to the bell-crank lever 80 journalled on the shaft 15. The arm 81 of the lever 80 carries the spring-pressed pawl 82 which engages the successive teeth of the ratchet 16 to rotate the drum 14 in an anti-clockwise direction (Fig. 6) with each revolution of the cam 77 whereby the feed-belts 12 are moved forwardly.

Means are provided to shut off the suction from the nozzle 37 immediately upon the lifting of a cut-out finger or trip by the advancing sheet which means may be widely varied in structure and operation. In the present embodiment, the bracket 83 carries the collar 84 at its lower end in which collar is fixed the cross-pin 85 (Fig. 7) on which is pivoted the rock-arm 86 to which is affixed the cut-out finger 87, the forward end being forked with the tips 88 riding in parallel grooves 89 formed in the lower feed-roll 40 as shown in Figs. 1 and 3. Projecting below the rock-arm

86 from the collar 84 is the lug 90 having the adjusting cap-screw 91 threaded therein and swiveled in the arm 86 by which the position of the finger 87 in the grooves 89 may be shifted either to advance or retard the timing of the shutting-off of the suction in the nozzle 37. Projecting rearwardly from the collar 84 is the latch-arm 92 with its tip 93 bearing on the upper surface of the latch-plate 94 secured to the arm 95 affixed to the collar 96 which is fastened to the hollow barrel valve 97 telescoped within the bore 98 of the suction shoe 36 as shown in Fig. 8. The valve 97 has the slot 99 cut therein to register with the forward end of the hollow arm 38 when suction is to be applied to the nozzle 37. The collar 96 has also mounted thereon the arm 100 having pinned to its outer end the roller 101 which is forced by the spring 102 against the rock-lever 103 pivoted on the pin 104 fastened to the bracket 83. Pinned to the upper end of the lever 103 is the cam-roller 105 which is forced against the cam 106 keyed to the cam-shaft 17 by the spring 107 which is of sufficient strength to overcome the spring 102 and cause the cam-roller 105 to follow the cam 106. The hub 108 of the cam 106 is cut with the groove 109 into which projects the plate 110 fastened to the support 111 which is adjustably held on the tie-shaft 28 by the set-screw 112 to provide a lateral adjustment between the side-frames 9 and 10. Referring to Fig. 3 when the finger 87 is moved to its dotted line position by the advanced sheet, the tip 93 of the latch-arm is dislodged from its engagement with the latch-plate 94 which is then free to swing upwardly in a clockwise direction under the force of the spring 102 to rock the valve 97 in the bore 98 to throw the slot 99 out of register with the bore of the hollow arm 38, thereby instantly cutting off the suction or exhaust pressure in the nozzle 37 and the sheet is released from the feed-wheel 33. The cam 106 is so set on the shaft 17 that the roller 105 will ride out of the drop of the cam 106 when the cut-out finger 87 operates the latch-arm 92 to swing the rock-lever 103 rearwardly, and simultaneously the valve 97 is opened to suction in the arm 38. The latch-arm 92 will be reset on the latch-plate 94 by the cam-roller 105 riding on the dwell of the cam 106 which makes a complete revolution in each cycle of the feed-wheel 33, as heretofore explained.

We have also provided novel means to lift and then hold the cut-out finger 87 or trip in its raised position off the body of the advanced sheet while forwarded by the feed-rolls 40 and 41: Referring to Fig. 3, the rear side of the arm 92 has the cam-surface 113 formed thereon which is adapted to be engaged by the tip 114 of the latch-plate 94, as the tip 114 is swung upwardly to the dotted line position when the suction is shut off from the feed-wheel 33. By this device the trip finger 87 is readily maintained in its lifted dotted line position until the tail end of the sheet has passed through the rolls 40 and 41, and the resetting mechanisms have been actuated by the cam 106 to lower the tip 114 in latching engagement with the tip 93 of the latch-arm 92 as shown by the full lines in Fig. 3.

The operation of our sheet-feeder is substantially as follows: When the feed-wheels 33 have been lowered in a state of rest, and suction has been applied to the nozzle 37, the top sheet is picked up as shown in Fig. 3 and then the wheels 33 are raised and simultaneously begin their rotations (partial or otherwise) by the mechanisms heretofore described and shown particularly in Figs. 1, 2 and 4. When the top sheet has adhered to the wheels they are immediately lifted from the bank 13 when the roller 70 passing out of the drop of the cam 67 (Fig. 6) lifts the strap 68 with the wheels 33 moving from the dotted line to the full line posistion shown in Fig. 6. As soon as the leading edge of the sheet has been advanced by the revolving wheels 33 so that it lifts the cut-out finger 87 with the sheet in position to be seized by the feed-rolls 40 and 41, the tip 93 of the latch arm 92 is drawn off the latch-plate 94 which immediately snaps upwardly from the full line to the dotted line position in Fig. 6 under the force of the spring 102 (the arm 103 having already been moved to its dotted line position in Fig. 3) which movement rocks the barrel valve 97 in a clockwise direction (Fig. 3) to shut off the suction from the nozzle 37 without disturbing or destroying the exhaust pressure in the hollow arm 38 and suction tube 39, thereby ensuring a quick release of the sheet from the wheels 33 after the sheet has been seized by the feed-rolls 40 and 41. As the latch plate 94 snaps upwardly its tip 114 rides up the cam-surface 113 of the arm 95 thereby holding the finger 87 off the body of the sheet as shown by dotted lines in Fig. 3. As the tail end of the sheet is passing through the feed rolls 40 and 41, the roller 105 will ride into the drop of the cam 106 thereby forcing the rock-lever 103 from its dotted line to full line position (Fig. 3) which simultaneously opens the valve 97 to restore the suction to the nozzle 37 and resets the tip 114 of the latch plate 94 below the tip 93 of the latch arm 92 which movement lowers the cut-out finger 87 into operative position with the tips 88 in the grooves 89 as shown in Fig. 1. This movement places the suction shoe 36 again under suction in readiness for the feed-wheels 33 to take up the next sheet in the succeeding cycle of operation, the shutting off of the suction being directly controlled by the actuation of the cut-out finger by the advancing sheet.

The foregoing constructions embody the essential features and principles of our invention as embodied in a continuous sheet-feeder

which will have a wide range of "flexibility" through the control of the extent of the partial revolutions of the suction feed-wheels (as well as enabling the latter to rotate continuously), combined with means to raise and lower such feed-wheels in each cycle (as well as hold same fixed at a variable height relatively to the bank); also the quick and effective valve movement in controlling the suction within the suction feed-wheels themselves adjacent, the perforated rims 34 with an adjustable cut-out finger enables our improved feeder to separate and forward sheets of stock of varying grades of thickness and quality with great rapidity and certainty without smearing or damaging the successive sheets. Manifestly various changes may be made in the structural details of our feeder without departing from the scope of our improvements or sacrificing its chief advantages. However, the foregoing is sufficient to disclose the underlying principles and features of the invention as particularly applied to a continuous sheet-feeder.

We claim as our invention:—

1. In a sheet-feeder, a suction feed-member intermittently rotatable only in one direction for advancing sheets forwardly from a pile of sheets, and means for lowering said member to the pile to pick up a sheet and for thereafter raising and simultaneously rotating said member.

2. In a sheet-feeder, a suction feed-member intermittently rotatable only in one direction for advancing sheets forwardly from a fanned-out bank, and means for lowering said member to the bank to pick up a sheet and for thereafter raising and simultaneously rotating said member in each cycle of movement.

3. In a sheet-feeder, a suction feed-member intermittently rotatable only in one direction for advancing sheets forwardly from a fanned-out bank, and means operable through the continued movement of the feeder for lowering said member while at rest to the bank to pick up a sheet and for thereafter raising and simultaneously rotating said member.

4. In a sheet-feeder, a suction feed-member intermittently rotatable only in one direction for advancing sheets forwardly from a fanned-out bank, and means operable through the continued movement of the feeder for lowering said member while at rest to the bank to pick up a sheet and for thereafter raising and simultaneously rotating said member in each cycle of movement.

5. In a sheet-feeder, a rotary suction feed-member for advancing successive sheets forwardly from a pile of sheets, means for lowering said member while at rest to pick up a sheet and for thereafter raising and simultaneously rotating said member, and means for varying the extent of the rotary movement of said member.

6. In a sheet-feeder, a rotary suction feed-member for advancing successive sheets forwardly from a fanned-out bank, means for lowering said member while at rest to pick up a sheet and for thereafter raising and simultaneously rotating said member, and means for predeterminedly varying the extent of the rotary movement of said member.

7. In a sheet-feeder, a rotatable suction feed-member for advancing successive sheets forwardly from a fanned-out bank, means for lowering and raising said member and starting the rotation of said member during its lifting movement, and means to variably disconnect said means from said member to control the peripheral movement thereof.

8. In a sheet-feeder, a rotatable suction feed-member for advancing successive sheets forwardly from a fanned-out bank, means for lowering and raising said member and starting the rotation of said member during its lifting movement, and adjustable means to variably disconnect said means from said member to control the peripheral movement thereof.

9. In a sheet-feeder, a rotary suction feed-member for advancing successive sheets forwardly from a pile of sheets, means for lowering and raising said member to and from said pile and starting the rotation of said member during its lifting movement, and means to vary the extent of the rotary movement of said member.

10. In a sheet-feeder, a rotary suction feed-member for advancing successive sheets forwardly from a fanned-out bank, means for lowering and raising said member to and from said bank, in each cycle of said member and starting the rotation of said member during its lifting movement, and means to vary the extent of the rotary movement of said member.

11. In a sheet-feeder, a rotary suction feed-member for advancing successive sheets forwardly from a fanned-out bank, means for lowering and raising said member to and from said bank and starting the rotation of said member during its lifting movement, and means to vary predeterminedly the extent of the rotary movement of said member.

12. In a sheet-feeder, a rotary suction feed-member for advancing successive sheets forwardly from a fanned-out bank, means for lowering and raising said member to and from said bank in each cycle of said member and starting the rotation of said member during its lifting movement, and means to vary predeterminedly the extent of the rotary movement of said member.

13. In a sheet-feeder, a suction feed-member rotatable only in one direction for advancing successive sheets forwardly from a pile of sheets, means to lower said member to

said pile while at rest, and means for raising said member and simultaneously rotating said member.

14. In a sheet-feeder, a suction feed-member rotatable only in one direction for advancing successive sheets forwardly from a fanned-out bank, means to lower said member to said bank to pick up a sheet while at rest, and separate means for raising said member and sheet and simultaneously rotating said member to advance said sheet.

15. In a sheet-feeder, a rotatable suction feed-member for advancing successive sheets forwardly from a fanned-out bank, means for lowering and raising said member to and from said bank, means to rotate said member, and means to variably disconnect said rotating means from said member to predeterminedly vary the extent of its rotative movement.

16. In a sheet-feeder, a rotatable suction feed-member for advancing successive sheets forwardly from a fanned-out bank, means for lowering and raising said member to and from said bank, in each cycle of said member, means to rotate said member, and means to variably disconnect said rotating means from said member to predeterminedly vary the extent of its rotative movement.

17. In a sheet-feeder, a rotatable suction feed-member for advancing successive sheets forwardly from a fanned-out bank, means for lowering and raising said member to and from said bank, while at rest, means to rotate said member, and means to variably disconnect said rotating means from said member to predeterminedly vary the extent of its rotative movement.

18. In a sheet-feeder, a rotatable suction feed-member for advancing successive sheets forwardly from a fanned-out bank, means for lowering and raising said member to and from said bank, while at rest, means to rotate said member when raised from the bank, and means to variably disconnect said rotating means from said member to predeterminedly vary the extent of its rotative movement.

19. In a sheet-feeder, an intermittently rotatable suction feed-member for advancing successive sheets forwardly from a fanned-out bank, and means for varying the height of said member from the bank to accommodate for stock of different thicknesses.

20. In a sheet-feeder, a feed-member rotatable only in one direction for advancing sheets forwardly from a pile of sheets, means for lowering said member to the pile while at rest so as to pick up a sheet, means for thereafter raising and rotating said member, and means for varying the height of said member from the sheets to accommodate for stock of different thicknesses.

21. In a sheet-feeder, a rotary suction feed-member for advancing sheets forwardly from a fanned-out bank of sheets, means for lowering said member to the fanned-out bank to pick up a sheet, means for thereafter raising and rotating said member forwardly, and means for varying the height of said member from the sheets to accommodate for stock of different thicknesses.

22. In a sheet-feeder, a suction feed-member for advancing successive sheets forwardly from a pile of sheets, means for imparting a variable rotary movement in one direction to said member less than a complete revolution, and means for varying the height of said member from the sheets to accommodate for stock of different thicknesses.

23. In a sheet-feeder, a suction feed-member for advancing successive sheets forwardly from a fanned-out bank, means for imparting a predeterminedly variable rotary movement to said member less than a complete revolution, and means for varying the height of said member from the sheets to accommodate for stock of different thicknesses.

24. In a sheet-feeder, a suction feed-member for advancing successive sheets forwardly from a pile of sheets, means for imparting variable rotary movements to said member, and means for varying the height of said member from the sheets to accommodate for stock of different thicknesses.

25. In a sheet-feeder, a suction feed-member for advancing successive sheets forwardly from a fanned-out bank, means for imparting predeterminedly variable rotary movements to said member, and means for varying the height of said member from the sheets to accommodate for stock of different thicknesses in each cycle.

26. In a sheet-feeder, a suction feed-member for advancing successive sheets forwardly from a fanned-out bank, means for imparting rotary movements to said member other than a complete revolution in each cycle, and interchangeable means for continuously rotating said member.

27. In a sheet-feeder, a suction feed-member for advancing the successive sheets, means for lowering and raising said member to and from the sheets, means for imparting rotary movements to said member other than a complete revolution in each cycle, and interchangeable means for continuously rotating said member.

28. In a sheet-feeder, a suction feed-member for advancing the successive sheets, means for lowering and raising said member to and from the sheets, means for imparting an intermittent rotary movement to said member other than a complete revolution, and interchangeable means for continuously rotating said member.

29. In a sheet-feeder, a suction feed-member for advancing the successive sheets, means for lowering and raising said member to and from the sheets, means for imparting an intermittent rotary movement to said

member other than a complete revolution and in one direction only, and interchangeable means for continuously rotating said member.

30. In a sheet-feeder, a suction feed-member for advancing the successive sheets, means for lowering and raising said member to and from the sheets, means for imparting a variably intermittent rotary movement to said member other than a complete revolution, and interchangeable means for continuously rotating said member.

31. In a sheet-feeder, a suction feed-member for advancing the successive sheets, means for lowering and raising said member to and from the sheets, means for imparting a variably intermittent rotary movement to said member other than a complete revolution and in one direction only, and interchangeable means for continuously rotating said member.

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