Aug. 23, 1960 A. G. ROYER 2,950,107

CONTINUOUS SHEET FEEDING METHOD AND PALLET THEREFOR

Filed Nov. 25, 1957 4 Sheets-Sheet 1

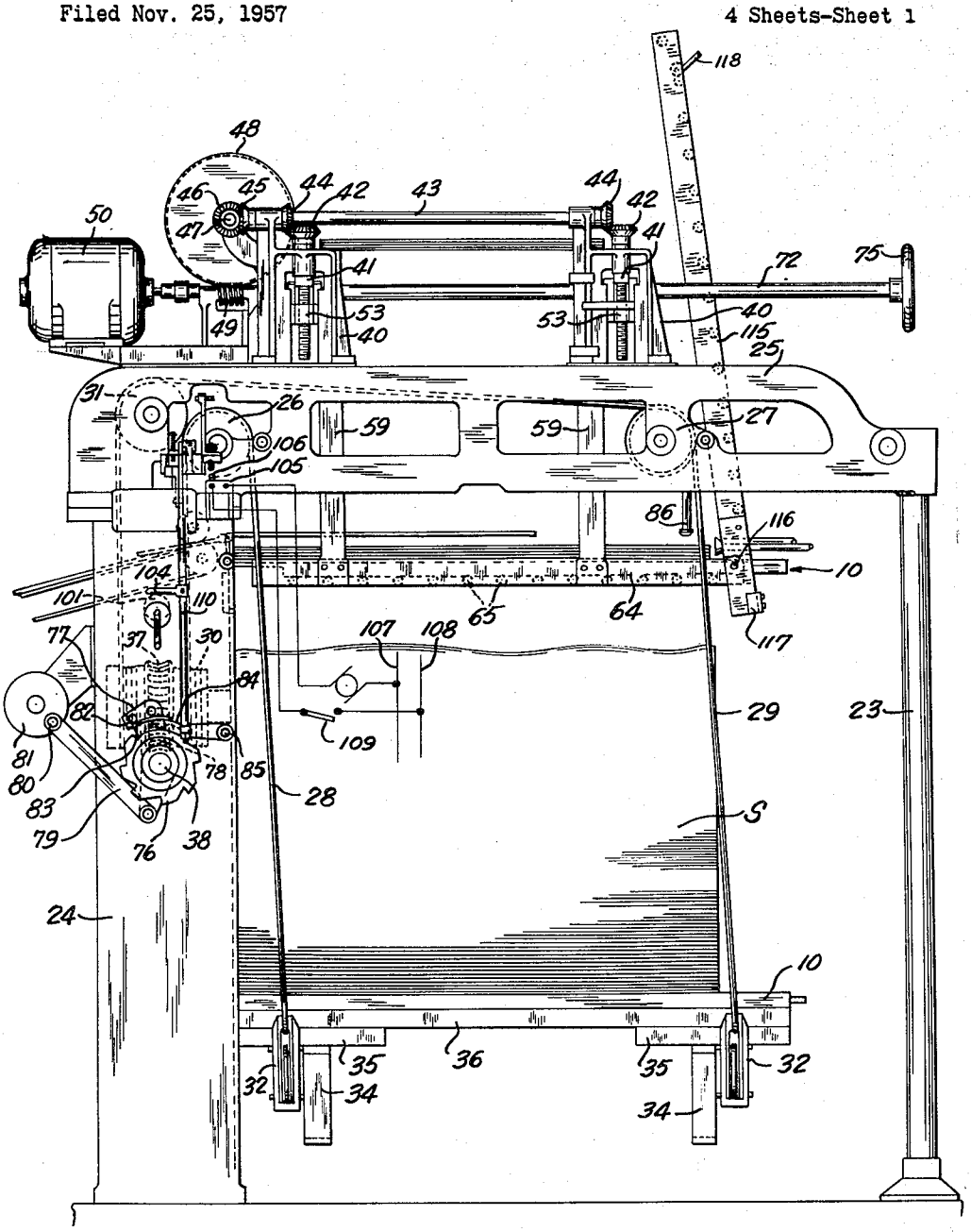


FIG. 1

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CONTINUOUS SHEET FEEDING METHOD AND PALLET THEREFOR

Filed Nov. 25, 1957 4 Sheets-Sheet 2

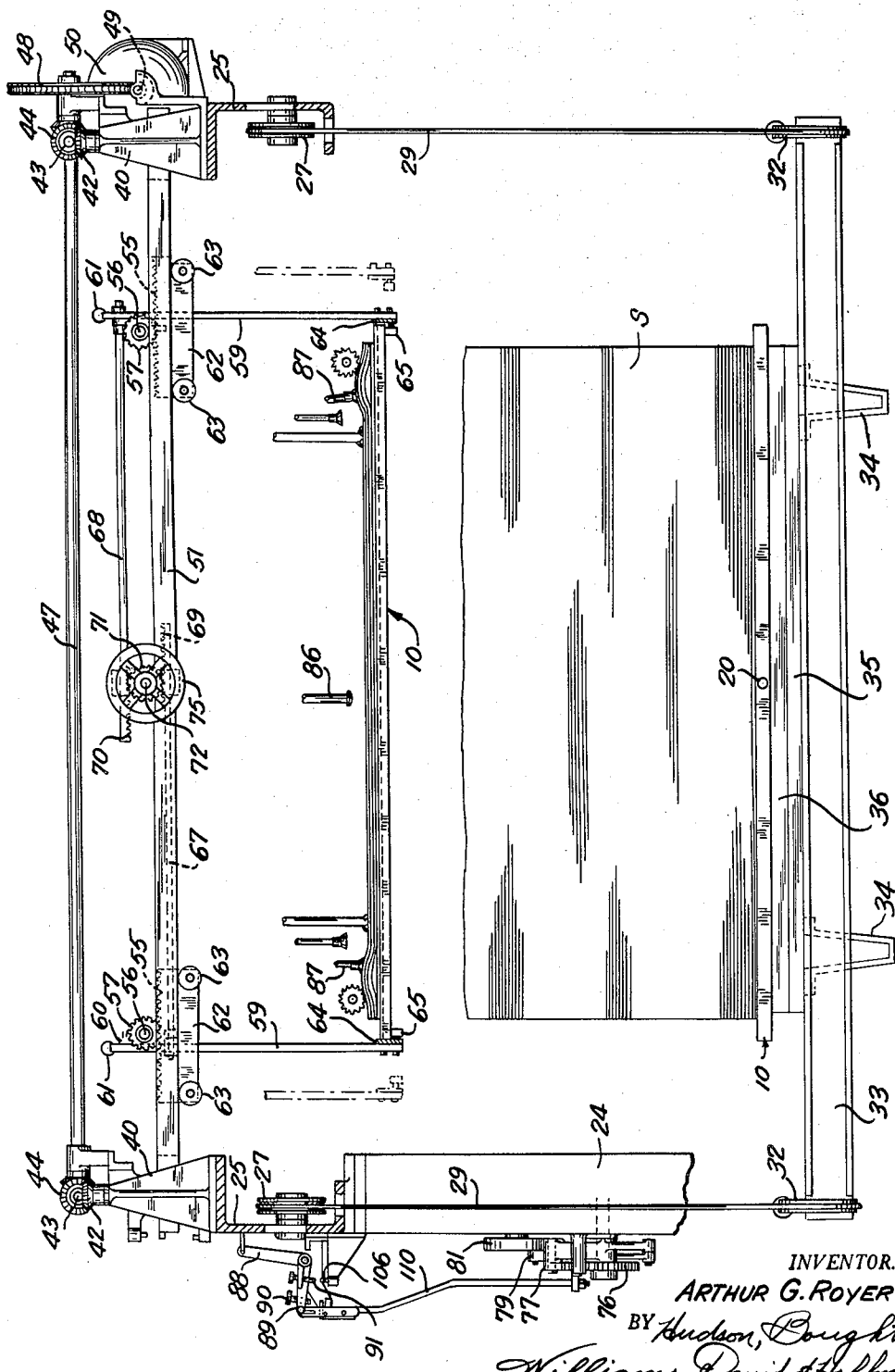


FIG. 2

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CONTINUOUS SHEET FEEDING METHOD AND PALLET THEREFOR

Filed Nov. 25, 1957 4 Sheets-Sheet 3

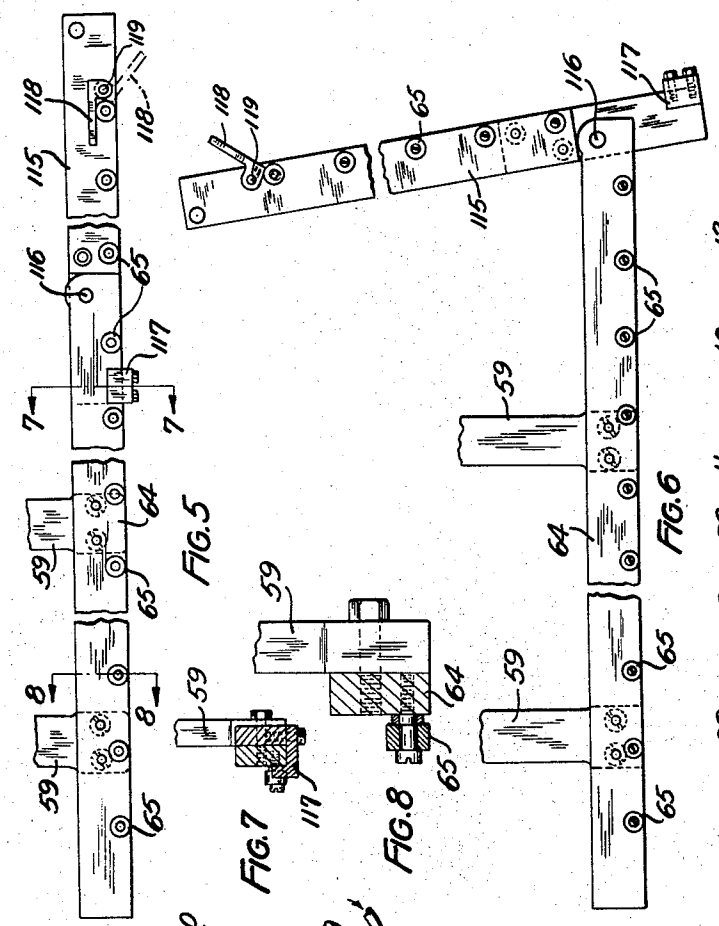


FIG. 5

FIG. 6

FIG. 7

FIG. 8

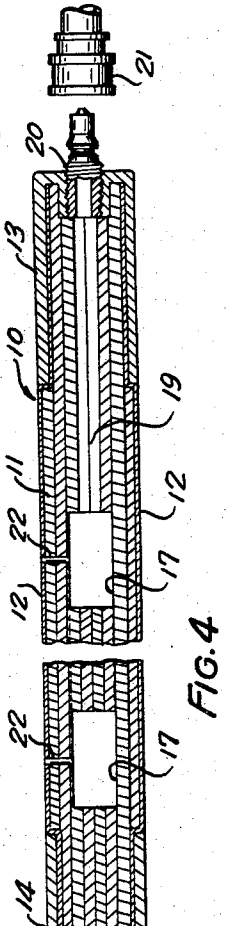


FIG. 4

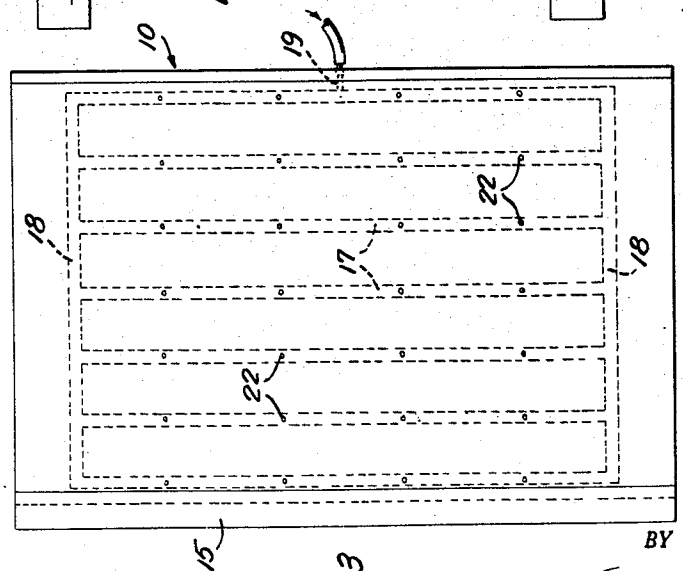


FIG. 3

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CONTINUOUS SHEET FEEDING METHOD AND PALLET THEREFOR

Filed Nov. 25, 1957 4 Sheets-Sheet 4

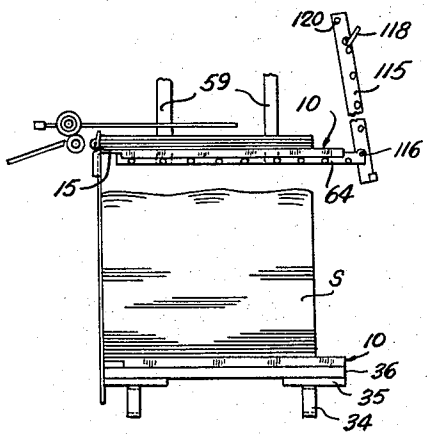


FIG. 9

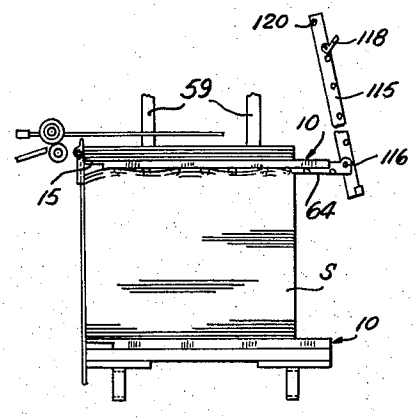


FIG. 10

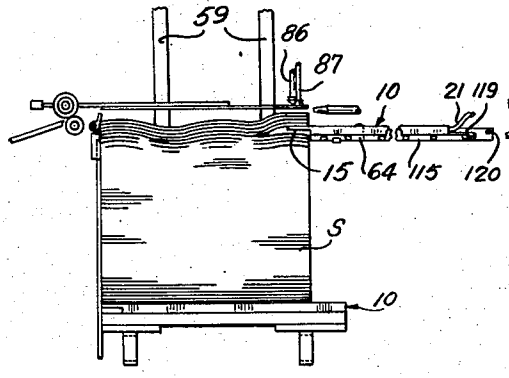


FIG. 11

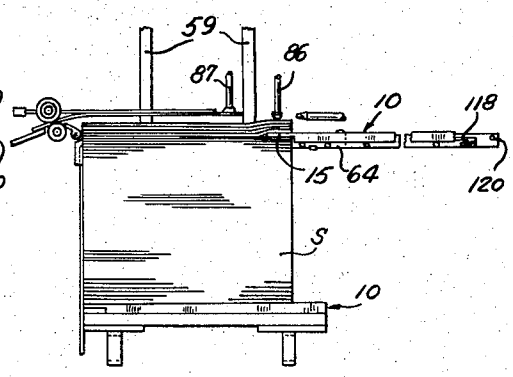


FIG. 12

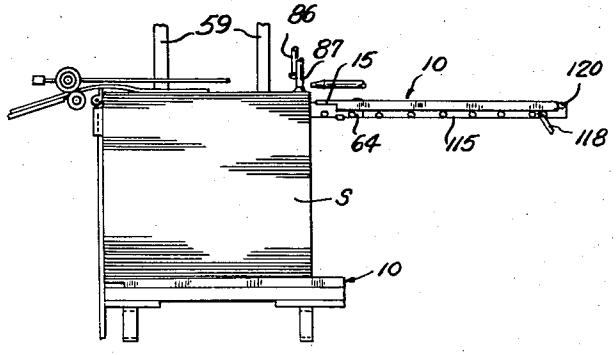


FIG. 13

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United States Patent Office 2,950,107 Patented Aug. 23, 1960

2,950,107

CONTINUOUS SHEET FEEDING METHOD AND PALLET THEREFOR

Arthur G. Royer, Cleveland Heights, Ohio, assignor to Harris Intertype Corporation, Cleveland, Ohio, a corporation of Delaware

Filed Nov. 25, 1957, Ser. No. 698,430

21 Claims. (Cl. 271—61)

This invention relates to improvements in continuous sheet feeding method and pallet therefor. More specifically the invention has to do with pallets for supporting depleted piles in a pile feeder, which pallets are of a character to make possible continuous operation of the feeder. It is obviously desirable to eliminate completely the time interval consumed in shifting from a depleted pile to a new pile, in other words to make the feeding operation continuous. Not only does this save the time of an expensive machine, but interruption in the printing operation, as occurs when the shifting is not instantaneous, tends to build up ink on the inking rollers and to cause the first sheets printed after resumption of operation to receive too much ink and the printing to be uneven from one end of the sheet to the other.

In accordance with the invention, each stack of sheets is piled on a pallet of novel construction. The upper surface of the pallet is flat and smooth throughout its extent, but it has a thin forward transverse section, preferably from about one-eighth to one-quarter inch thick, thus leaving a notched out or rabbeted surface on the lower forward end of the pallet extending entirely across its width.

In the operation of the printing or other machine which is to be supplied with sheets, the latter are fed off into the machine from the top of the pile. As the sheets are used up the pile is raised automatically an increment at a time, the elevating mechanism being under the control of a pile height gauge or feeler to maintain the top of the pile at approximately a constant height. When the pile becomes depleted the operator causes an auxiliary support to engage beneath the pallet, and then discontinues the first mentioned automatic pile elevating mechanism and brings into action a second automatic elevating means that is effective on the auxiliary support. The feed of the sheets from the auxiliary support which now carries the pallet, continues while a new pile is brought into position therebeneath. This new pile is raised under manual control until its top sheet approaches closely the undersurface of the pallet. The pallet is then withdrawn partially, that is until only the rear portion of the depleted pile remains supported on the thin section of the pallet, the forward portions resting on the new pile. The relation of the rear portion of the depleted pile to the height gauge and sheet separating mechanism is thus not changed at this time. The operator then raises the new pile an additional amount under manual control and when the top of the new pile engages the bottom of the thin section, he again institutes automatic elevation of the new or main pile. The pallet may now be completely withdrawn, which suddenly lowers the rear end of the pile which stands beneath the gauge, but by a distance so short that the normal functioning of the sheet separating mechanism is not interfered with. The conventional sheet separating mechanism comprises the usual telescoping suckers which operate over a range generally

from one-half to three-quarters of an inch. Sheets will be picked up by the suckers when the top of the pile is within their reach, but should the top drop below a minimum height, a sheet will be missed and the press will trip "off."

It is, therefore, an object of this invention to provide a continuous feeder with a novel pallet and support adapted to maintain the top level of the pile within the limits of reach of the separating mechanism during withdrawal of the pallet.

Another object is to provide a pallet for use with a continuous feeder having sheet separating mechanism operable within prescribed limits, said pallet comprising a thin transverse portion of a thickness less than the operating limits of the separating mechanism and a thicker main pile-supporting portion of a thickness sufficient to support a maximum height depleting pile, and means supporting said pallet for withdrawal in its plane whereby the thicker portion may be removed to deposit the main part of the depleting pile on a subjacent new pile while the thin portion continues to support that part of the pile below the separating mechanism, thus affording an opportunity for the new pile to be raised to the bottom of the thin portion so that subsequent withdrawal of the thin portion will permit the remainder of the depleting pile to drop to the new pile only a distance corresponding to the thickness of the thin portion.

An ancillary object is to provide that such thick and thin portions of the pallet be integral and have coextensive top surfaces.

A further object is the provision of releasable stop means for limiting the extent of withdrawal of the thicker portion of the pallet in the first stage of the operation.

Another and important object of the invention is the provision of a method of continuous feeding of sheets utilizing the pallet of the invention.

Other objects and features of novelty will appear as I proceed with the description of that embodiment of the invention which, for the purposes of the present application, I have illustrated in the accompanying drawings, in which:

Fig. 1 is a side elevation of a sheet feeder embodying the invention, illustrating a new pile about to be raised into contact with the pallet of the depleted pile.

Fig. 2 is a rear elevation, some of the parts being shown schematically.

Fig. 3 is a plan view of my improved pallet.

Fig. 4 is a longitudinal sectional view of the pallet on a larger scale.

Fig. 5 is a side elevational view of one of the tracks with its extension lowered into operative position.

Fig. 6 is a similar view with the extension swung forwardly and upwardly to inoperative position.

Fig. 7 is a cross-sectional view taken substantially on the line **7—7** of Fig. 5.

Fig. 8 is a sectional view on a larger scale taken substantially on the line **8—8** of Fig. 5, and

Figs. 9 to 13 inclusive are schematic side views of the feeder, illustrating different stages in the operation thereof.

Referring first to Figs. 3 and 4 in which my novel pallet is illustrated, the pallet generally is indicated at **10**. It has a body **11** which may be built up of a series of thin layers of wood or other suitable material, the whole being covered throughout its top, bottom and side surfaces with a thin smooth sheet metal sheath **12**. The over-all thickness of the pallet is controlled by many factors, the primary ones being the weight of the maximum pile which it is to support, and the size of the sheets, which of course determines the distance the pallet must

span. One inch in thickness has been found satisfactory for presses handling sheet 42 inches long, 52 inches wide and 7 inches high. The weight of such a maximum pile approximates 700 pounds.

At the rear end of the pallet there is a channel shaped armor and reenforcement 13 of heavier sheet metal which may be suitably bonded to the sheath 12 and is flush with the top and bottom surfaces of the major part of the pallet. At the front end there is another armor and reenforcement 14 which is flush with the top and bottom surfaces of the pallet, but this member 14 extends forward flush with the upper surface of the pallet for a distance of the order of three or four inches forming a redoubled thin flat section 15, which leaves a transverse rabbet or recess 16 on the lower front side of the pallet. The length of the flat section 15 should be at least as great as the distance from the rear of the pile to the front of the sheet separating mechanism. Means is provided for supplying compressed air to the interior of the pallet throughout a major part of its extent. Preferably, the body of the pallet is formed with a series of transverse passages 17 and a pair of lengthwise passages 18 connecting the transverse passages. There is also a short passage 19 leading to fitting 20 constituting part of a two-way shutoff valve, the other part being contained in a hose connection 21. When the hose connection 21 is pushed onto the fitting 20, both valves are opened and when the connection is broken both valves close automatically. Such connections are conventional and require no specific illustration. At intervals throughout the passages 17 small ports 22 extend from the passages to the upper surface of the pallet. Accordingly, when the pallet is supporting a pile of sheets and the coupling parts 20 and 21 are connected together, air under pressure flows outwardly through the ports 22 and provides an air film between the pallet and the pile of sheets, which makes it relatively easy to withdrawn the pallet and leave the pile undisturbed.

Figs. 1 and 2 show the invention embodied in a machine similar to that of Patent 2,701,136 to Schmidt et al., dated February 1, 1955. In this machine the feeder frame comprises uprights 23 and 24 and overhead frame members 25. Each of the overhead members carries a pair of sheaves 26 and 27 over which run cables 28 and 29. Each of the two cables 28 extends from sheave 26 directly to a winding drum 30, of which there are two, while each of the cables 29 runs from its sheave 27 over a second sheave 31 and thence down to one of the drums 30. The lower ends of these four cables are secured to stirrups 32 which may be slipped over the flat ends of I-beams 33 that together constitute the carriers for the main pile support.

The latter support may be in the form of a skid which comprises four legs 34 that are attached in pairs to heavy planks 35 which are secured to transverse bars or other platform material 36. On top of the skid there is placed my pallet 10, upon which the sheets S are piled. Pallet 10 extends rearwardly of the pile as shown in Fig. 1. Hand holds, not shown, may be formed in or upon this rear end part of the pallet.

Turning with each of the two drums 30 there is a worm wheel 37 which meshes with one of a pair of worms that are fixed to a shaft 38 journaled in the frame of the machine. The shaft may be turned continuously in one direction by conventional means to operate the drums 30 for lowering or raising the I-beams 33, or it may be turned intermittently in one direction for elevating the I-beams an increment at a time, also by conventional means.

Four brackets 40 are mounted upon and extend upwardly from the overhead frame members 25. In these brackets four vertical shafts 41 are rotatably mounted. The lower portions of these shafts are threaded as appears in Fig. 1. On their upper ends are bevel gears 42. The brackets 40 also carry bearings for two shafts 43 upon which are fixed bevel gears 44. On the forward ends of shafts 43 there are bevel gears 45 which mesh with bevel gears 46 on a transverse shaft 47, at one end of which there is a worm wheel 48 that is driven by a worm 49 which is keyed to the shaft of a small reversible electric motor 50 supported upon one of the frame members 25.

As a part of the overhead auxiliary pile support there is provided a pair of transverse rails 51. These rails extend into the brackets 40, where they carry nuts 53 which receive the threaded parts of the shafts 41. Consequently when the screw shafts 41 are turned in one direction or the other the rails 51 are raised or lowered. The operation is uniform throughout since the screw shafts are identical and are driven at the same rate of speed. Spaced inwardly somewhat from the ends of the rails, racks 55 are rigidly attached thereto, the teeth of the two racks at each side of the machine being accurately aligned.

Longitudinal shafts 56 have pinions 57 keyed thereto which pinions mesh with the racks 55. Depending from each of shafts 56 are two hangers 59 which are metal straps that are mounted upon the shafts by means of pillow blocks 60 that are bolted to the straps. Preferably the upper ends of each pair of straps are rigidly interconnected by a bar 61.

In order to prevent the hangers from swaying on shafts 56 a horizontal bar 62 is set into a recess in each strap 59 and secured thereto as by welding, and this bar carries near its ends studs upon which are journaled rollers 63 that bear against the undersurface of the rail 51.

Secured to the lower ends of each pair of straps 59 there is a track member 64. These tracks carry on their inner sides a series of antifriction rollers 65 upon which the pallet is adapted to rest or move.

The two sets of hangers carrying the tracks 64 are interconnected for simultaneous operation to move the hangers inwardly or outwardly as indicated by the full and dotted line positions of Fig. 2. Means for accomplishing this purpose may comprise rods 67 and 68 attached at their outer ends to the hangers and having racks 69 and 70 at their inner ends which engage and mesh with the upper and lower sides of a pinion 71 that is fixed upon a shaft 72 which is supported in suitable bearings carried by the two rails 51. The rear end of the shaft is provided with a hand wheel 75 for convenient manual operation.

When the rods 67 and 68 are pulled inwardly this pull is transmitted to the two rear straps 59 and thence to the shafts 56 and because the pinions 57 are keyed to these shafts the pinions travel along the racks 55 and maintain parallel the two shafts 56 and the tracks 64 depending therefrom.

The elevating mechanism for the main pile support is mechanical. It comprises a pair of drums 30 previously described. On the shaft 38 which carries the two worms that mesh with the worm wheels 37, there is keyed a ratchet wheel 76. The pawl 77 cooperating with the ratchet is pivoted on one end of a lever 78 that is mounted to oscillate upon the shaft 38, being operated by a link 79 connected at one end to the lower end of the lever and at the other end to a crank 80 on a disk 81 which turns once for each sheet fed. Pawl 77 carries a roller 82 which is adapted to run upon a curved track 83 which forms a part of a masking lever 84 that is pivoted to the frame at 85. Ovbviously when the lever 84 is swung down somewhat the pawl 77 will advance the ratchet 76 one step for each oscillation of the lever 78, but when the lever 84 is raised to the extent illustrated in Fig. 1, the roller 82 merely rides back and forth on the masking track 83 and the ratchet remains stationary.

When the main pile elevating mechanism is in operation, as it is during the major part of the time, mechanical means disclosed with some particularity in the Schmidt et al. patent referred to above, is provided for enabling

the height gauge to control the vertical movements of a rod **110** connected to the masking lever **84**. When the pile is high enough the gauge cannot descend to its full working stroke and it prevents rod **110** from descending far enough to permit pawl **77** to advance ratchet **76**. When, however, the pile level is low enough, rod **110** descends accordingly and the ratchet is advanced at least one step, raising the pile.

There is disposed above the rearward edge of the pile of sheets a height gauge **86** which moves up and down for each cycle of the feeder. The maximum movement of the height gauge is accomplished only when the height of the pile does not interfere with and limit the downward motion of the gauge.

The mechanism by means of which the height gauge **86** is reciprocated is not fully disclosed herein, as it forms no part of the present invention. Furthermore, it is disclosed in detail in the Schmidt et al. patent referred to above.

This mechanism also causes movement of one arm **88** of a bell crank lever, the other arm **89** of which carries electrical contact means that induces momentary energization of the motor **50** whenever the height gauge permits the arm **89** to descend sufficiently.

The elevation of the auxiliary pile support is thus effected by the small motor **50**. The control is such that the circuit for the motor is closed momentarily only and the rotation of the motor shaft while the current is on plus the coasting of the motor rotor thereafter is sufficient to raise the auxiliary pile support appreciably. The motor circuit is indicated diagrammatically in Fig. 1. It comprises a switch **105** operated by a pushbutton **106** when the bell crank arm **89** descends sufficiently. The circuit from line wires **107** and **108** also includes a switch **109** which is normally open but is closed when the control for the motor is to be employed, that is when the feed of sheets is taking place from the depleted pile carried by the auxiliary support. It will be apparent that when the level of the pile descends sufficiently the height gauge travel will permit the bell crank arm **89** to descend far enough to close switch **105** for an instant, which will result in a short operation of motor **50** to raise the level of the pile. The succeeding oscillations or reciprocations of the height gauge, being of a smaller extent will not operate switch **105** until the height of the pile descends far enough to cause pushbutton **106** to be depressed.

Operation. When a pile becomes depleted to a given extent the operator moves the tracks **64** inwardly toward each other by manipulation of the wheel **75**, and by manual control of motor **50** he raises the tracks until the rollers **65** engage the undersides of the pallet. This condition is illustrated in Fig. 9. He now latches up the rod **110** by suitable means such as that illustrated in Fig. 1 where an eccentric disk **101** may be caused to engage an arm **104** on the rod **110**. At the same time he closes switch **109** to cause automatic operation of the motor **50** under the control of the height gauge. The operator then causes a new pile to be placed beneath the depleted pile, and by manual control causes the new pile to be raised into proximity with the depleted pile. See Fig. 10. When this has been accomplished he may swing the track extensions **115** down on their pivots **116** from the position of Fig. 6 to that of Fig. 5. Each of the extensions **115** will then be positioned in alignment with its track **64** and held against sagging by an angular block **117** which is bolted to the extension and engages beneath the track **64**. Fig. 11 shows the extensions swung down into their operative position. As also indicated in Fig. 11 the operator now begins the withdrawal of the pallet **10**.

A stop **118** on one of the extensions **115** is mounted on a short shaft **119** so that it may occupy the full line position of Fig. 5 or that of Fig. 6. When the pallet is about to be drawn rearwardly the stop **118** is swung into the full line position of Fig. 5 and Fig. 11. It is so located on the extension that when the rear end of the pallet engages the stop the relatively thick major part of the pallet will lie entirely behind the rear edge of the pile, as shown in Fig. 11, and the thin forward section **15** of the pallet will underlie the depleted pile beneath the height gauge **86** and sheet separating mechanism illustrated by lifting telescoping suckers **87**, and will support the rear end of the depleted pile. As the pallet is withdrawn in the first stage of its operation the major part of the depleted pile will of course fall onto the new pile.

When the parts and piles are in the condition of Fig. 11, the new pile is raised manually a small amount until it reaches the bottom of the thin forward section of the pallet. At this time, the stop **118** is swung to its inoperative position and the pallet is withdrawn the rest of the way. The operator then throws the disk **101** to the full line position of Fig. 1 to set in motion the automatic mechanism for elevating the main pile. The combined piles will now be in the position of Fig. 13.

Obviously the stop **118** may be supported on a horizontally adjustable member to provide for proper positioning of the stop for different length sheets. The pallet **10** may now be lifted off the extensions **115** in a leisurely manner, after which the extensions **115** may be swung upwardly and forwardly out of the way as illustrated in Fig. 6 and in Figs. 9 and 10.

Having thus described my invention, I claim:

1. In a continuous pile feeder, a support for a depleted pile comprising a pallet, mechanism for elevating the depleted pile, a pile height gauge disposed above the rear of the pile for controlling said pile elevating mechanism, said pallet having a continuous flat upper surface and a front section of a uniform depth no more than half that of the remainder of the pallet, and said thin front section having a front to rear dimension no less than the horizontal distance between said gauge and the rear of the pile.

2. A continuous pile feeder as defined in claim 1, comprising horizontal track extensions for said side tracks and roller means interposed between said tracks with their extensions and said pallet for facilitating the movement of the pallet on said tracks and extensions.

3. A continuous pile feeder as defined in claim 1, wherein said support for the depleted pile comprises side tracks on which said pallet may be moved rearwardly, and rearward extensions for said side tracks adapted to support said pallet at a constant level when drawn rearwardly to position and said thin front section only beneath the pile.

4. A continuous feeder as defined in claim 3, comprising a releasable stop carried by one of said extensions for temporarily limiting rearward motion of the pallet when its thicker portion clears the rear end of the pile.

5. A continuous pile feeder as defined in claim 3, comprising rollers on said tracks and on said extensions upon which said pallet rests and is adapted to move, and means for discharging air from a plurality of ports in the top of said pallet to reduce friction between the upper surface of the pallet and the bottom sheet of said depleted pile as the pallet is being withdrawn.

6. A continuous pile feeder as defined in claim 4, wherein mechanism is provided for raising a pile into position beneath the depleted pile, whereby when the pallet is withdrawn rearwardly until it engages said stop the rear portion of the depleted pile rests on said thin section, whereupon the new pile may be elevated until it engages said thin section from beneath and raises the depleted pile in advance of said thin section, after which said stop may be released and the pallet may be completely withdrawn.

7. In a continuous pile feeder, a support for a depleted pile comprising a pallet, a support for a new or main pile, a pile height gauge and sheet separating mechanism disposed above the rear of the depleted pile, said pallet having a continuous flat upper surface and a thin front section of a depth no more than half that of the remainder

of the pallet, said thin front section having a front to rear dimension no less than the horizontal distance between said sheet separating mechanism and the rear end of the pile, whereby the new pile may be raised until it underlies closely said pallet, means for elevating the depleted pile an increment at a time, means for elevating the new pile an increment at a time, each of said elevating means being controllable by said gauge, said pallet as it is withdrawn rearwardly lowering said depleted pile progressively onto said new pile, and means for stopping said withdrawal when said thin section only of the pallet underlies said gauge and separating mechanism, whereupon the new pile may be raised until it engages said thin section of the pallet, after which the pallet may be completely withdrawn, and operation of the elevating means for the depleted pile may be discontinued and operation of the elevating means for the new pile begun.

8. The combination in a pile feeder of a main pile elevating mechanism, a pallet adapted to support a depleted pile, elevating mechanism for the depleted pile adapted to be brought into operative connection with said pallet, means for separating, lifting and forwarding sheets from the top of said depleted pile, a pile height gauge adapted to engage the top of the pile at the rear thereof for controlling said last named elevating mechanism, said pallet having a transverse thin section at the forward end thereof flush with the top surface of the remaining portions of the pallet, side tracks on said supporting means having means for reducing friction as the pallet is pulled rearwardly, means for stopping the rearward movement of the pallet when its thin section reaches a position underneath said pile height gauge, means for raising the side tracks for the depleted pile an increment at a time as the gauge calls for such movement, whereby the pallet may be withdrawn rearwardly until the thin section underlies the said gauge, after which the main pile may be raised to cause the depleted pile to rest thereupon and upon said thin section, after which the pallet may be withdrawn completely, and manually operable connections to shift the gauge control from the depleted pile support to the main pile support.

9. For use in a continuous pile feeder having main and auxiliary pile supports and sheet separating mechanism operable within prescribed narrow limits along the top rear edge of an upper pile, a pallet adapted to be supported on said auxiliary support, said pallet comprising a main supporting portion of a thickness greater than the operating limits of the separating mechanism and a thin transverse portion along its leading edge of a thickness less than said operating limits, said pallet being adapted when a new pile is brought into position immediately below the pallet to be withdrawn rearwardly until its thick portion is removed from supporting position but the thin portion continues to support the depleted pile beneath the separating mechanism, thus permitting the new pile to be raised additionally until the piles are separated by the thickness of the thin portion of the pallet whereby the thin portion may be removed to drop the upper pile onto the new pile while the top of the upper pile is maintained within the operating limits of the separting mechanism.

10. The invention set forth in claim 9 wherein means is provided for maintaining the pallet in one plane during removal.

11. The invention set forth in claim 10 wherein the top surfaces of said thin and thick portions of the pallet are coplanar.

12. The invention set forth in claim 7 wherein the front to rear dimension of the thin portion of the pallet is greater than the horizontal distance between the separating mechanism and the rear edge of the pile.

13. The method of feeding sheets continuously, which comprises piling a stack of sheets on a pallet having a continuous upper surface, a relatively thick major portion and a uniform thin forward transverse section, feeding sheets from the top of the pile, lifting the pile an increment at a time to maintain the top of the pile at a predetermined level until the pile is depleted, raising the depleted pile an increment at a time and feeding sheets from the top thereof, positioning a new pile beneath the depleted pile, raising the new pile until it approaches closely the pallet of the depleted pile, withdrawing the pallet in its plane until its thin section alone supports the rear portion of the depleted pile, lifting the new pile until it substantially engages the thin section of the pallet, completing the withdrawal of the pallet, raising the combined new pile and depleted pile an increment at a time, and feeding from the top of the combined pile.

14. The method of replenishing a pile of sheets being fed continuously from a pallet having a relatively thick main portion and a relatively thin forward transverse flat section, which comprises feeding sheets from the top of the pile, elevating the pile an increment at a time to maintain the top of the pile at a predetermined level until the pile is depleted, positioning a new pile beneath the depleted pile, raising the new pile until it approaches closely the pallet carrying the depleted pile, withdrawing the pallet until its thin section alone supports the rear portion of the depleted pile, elevating the new pile until it substantially engages the thin section of the pallet and thereafter completing withdrawal of the pallet.

15. The method of replenishing a depleted pile of sheets for use with a continuous feeder of the type in which a depleting pile of sheets is replenished from below by a new pile and sheet separating mechanism operable within prescribed narrow limits vertically works along one top edge of the pile, comprising the steps of providing a pallet including a main support for the bottom of the depleted pile of a thickness sufficient to adequately support a maximum height depleted pile, bringing a new pile into juxtaposition with the bottom of the support, withdrawing said support from beneath the depleted pile to deposit all of the depleted pile but that portion operated on by said separating mechanism onto the new pile, supporting said portion on a thin member of a thickness less than the operating limits of the separating mechanism while the remainder of the depleted pile rests on the new pile to maintain the rear part of the depleted pile within said operating limits when the main support is withdrawn, raising the new pile until the bottom of the depleted pile and top of the new pile below the separating mechanism are separated by the thickness of the thin supporting member, and thereafter withdrawing the thin supporting member to deposit the remainder of the depleted pile onto the new pile.

16. The method according to claim 15 including the additional step of introducing a film of air between the main support and the depleted pile during the withdrawal by ejecting air under pressure from within the support.

17. The method according to claim 15 wherein the sheet separating mechanism operates upon the rear edge of the pile and the main part of the pile support is completely withdrawn rearwardly in a first withdrawal stage, and after the new pile is raised additionally, the thin member is withdrawn rearwardly in a second stage to remove it from beneath the remainder of the depleted pile.

18. The method according to claim 17 wherein the main support and the thin member are moved in unison and wherein discontinuance of the first withdrawal stage is effected after the main pile support clears the rear edge of the pile.

19. A pallet for a continuous pile feeder, comprising a major portion of a strength and thickness sufficient to support a depleted pile of sheets of a given maximum weight, the forward transverse portion of said pallet having a smooth upper surface continuous with that of the major portion of the pallet and being of a uniform thickness reduced from that of the major portion and of a strength sufficient to support the rear edge portion of a depleted pile while the remaining portion of the pile is otherwise supported.

20. The method of replenishing a depleting pile of sheets from below with a new pile while feeding sheets in a continuous feeder having main and auxiliary pile supports and sheet separating mechanism operable on the top rear edge of the depleting pile within prescribed high and low limits defining an operating range, comprising the steps of supporting the undersurface of the depleting pile with said auxiliary support to support the pile with the top thereof substantially planar, maintaining the top level of the depleting pile within the operating range of the separating mechanism by raising said auxiliary support as required, providing a new pile of sheets on said main support and raising said support independently of the auxiliary support until the top of the new pile is in juxtaposition with the auxiliary support, removing the auxiliary support from beneath all of said depleting pile, except for the rear edge thereof operated on by the separating mechanism, when the top of the rear edge thereof is above the lower limit of said range to drop that portion of the pile from which the support is removed to a level wherein its top is below the lower limit of the separating mechanism while supporting the rear edge at a level at least as high as it was at the start of the removal of the support for the remainder of the depleting pile, raising the main support additionally to bring the top level of the combined portions of the piles to a level above the lower limit of the operating range of the separating mechanism while maintaining the top level of the area on which the separating mechanism operates within said range, removing the remaining support from below the rear edge of the depleting pile to fully combine the piles, and thereafter maintaining the top level of the combined piles within said range by raising the main support as required.

21. The method of combining a depleting pile on a pallet with a new pile supported below the pallet and in which the depleted pile is periodically elevated to maintain the top thereof at approximately a given operating level as the top sheets are separated therefrom, the sheets being separated from the depleting pile by separating mechanism operating on the top of the pile adjacent to a rear side thereof and having a limited range of operation below the normal operating level of the top of the pile at the time the piles are to be combined and said pallet having a forward portion along one edge thereof opposite to said rear side of the depleting pile and of a thickness no greater than said range and a main portion rearwardly of said forward portion and thicker than said range, the top of said forward portion forming a substantially planar continuation of the top of said main portion, said method comprising the steps of moving the new pile to a position where the top thereof is disposed in juxtaposition to the underside of the main portion of said pallet, withdrawing said pallet from underneath the pile thereon by moving it rearwardly in the plane of the pallet to dispose the main portion of the pallet outwardly of the piles and so that the forward portion only of the pallet is disposed under the depleting pile adjacent said rear side thereof, raising the new pile until the top thereof is above the level of the underside of the main portion of said pallet and no further from the top of the forward portion than the extent of said range, and then completing the withdrawal of the pallet.

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CERTIFICATE OF CORRECTION

Patent No. 2,950,107 August 23, 1960

Arthur G. Royer

It is hereby certified that error appears in the printed specification of the above numbered patent requiring correction and that the said Letters Patent should read as corrected below.

Column 7, line 67, for the claim reference numeral "7" read -- 9 --.

Signed and sealed this 4th day of April 1961.

(SEAL)

Attest: ERNEST W. SWIDER

XXXXXXXXXXX

Attesting Officer

ARTHUR W. CROCKER

Acting Commissioner of Patents