Aug. 25, 1959 G. M. MARTIN 2,901,250

AUTOMATIC SHEET STACKER APPARATUS

Filed April 1, 1957 4 Sheets-Sheet 1

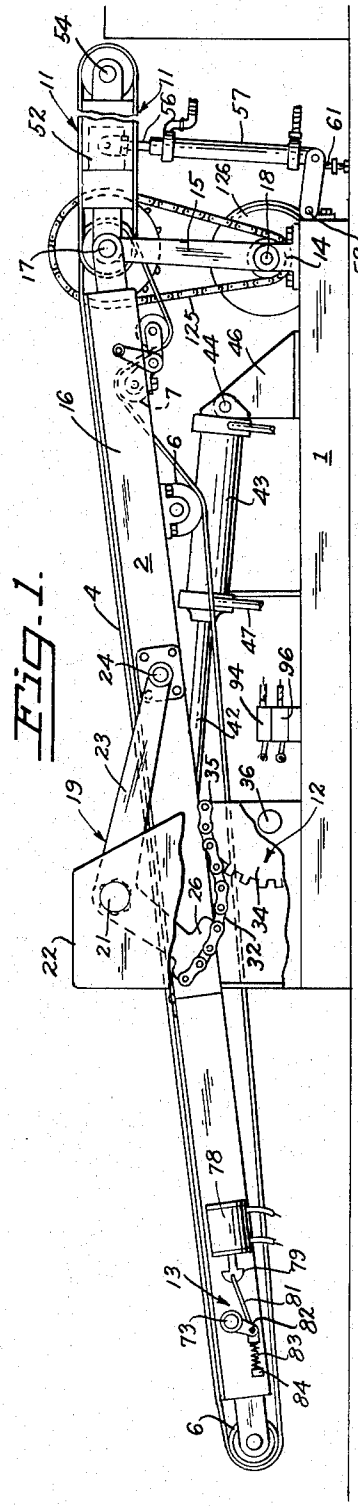


Fig. 1.

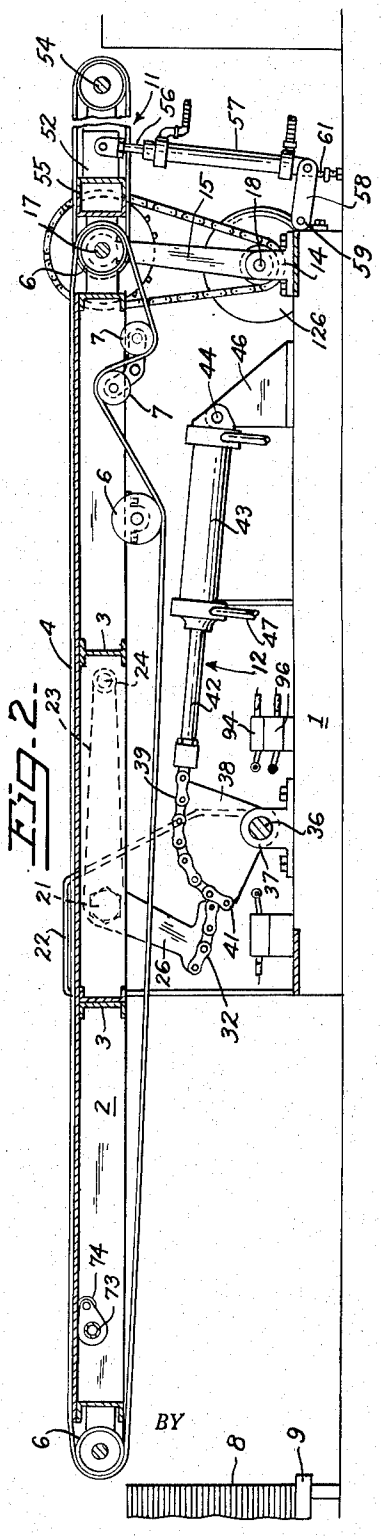


Fig. 2.

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AUTOMATIC SHEET STACKER APPARATUS

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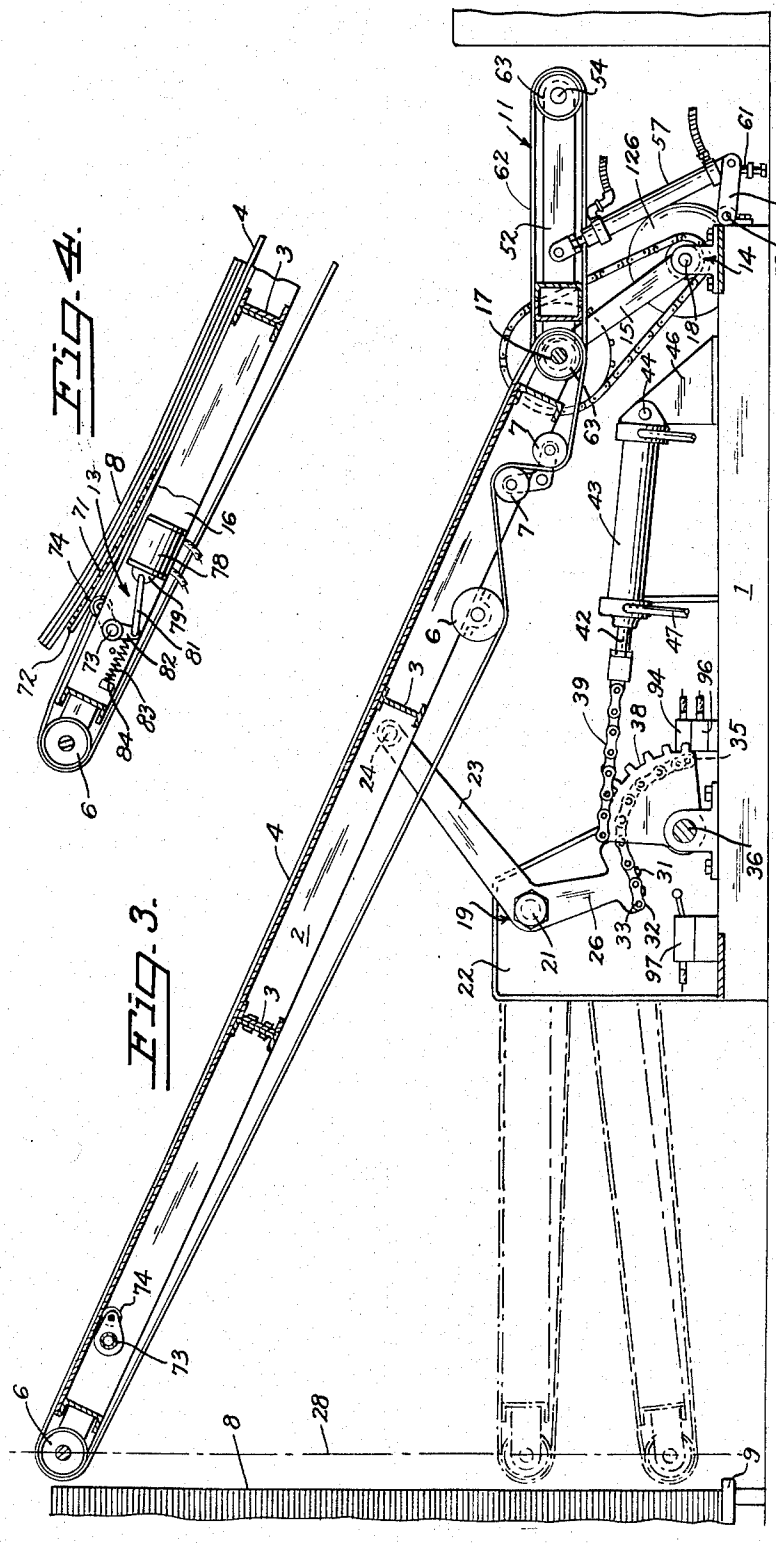


Fig. 3.

Fig. 4.

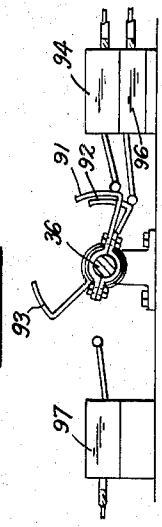


Fig. 8.

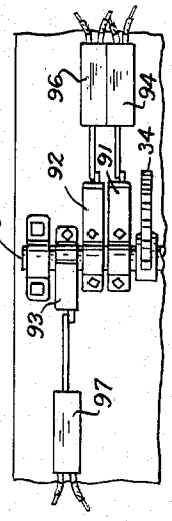


Fig. 7.

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AUTOMATIC SHEET STACKER APPARATUS

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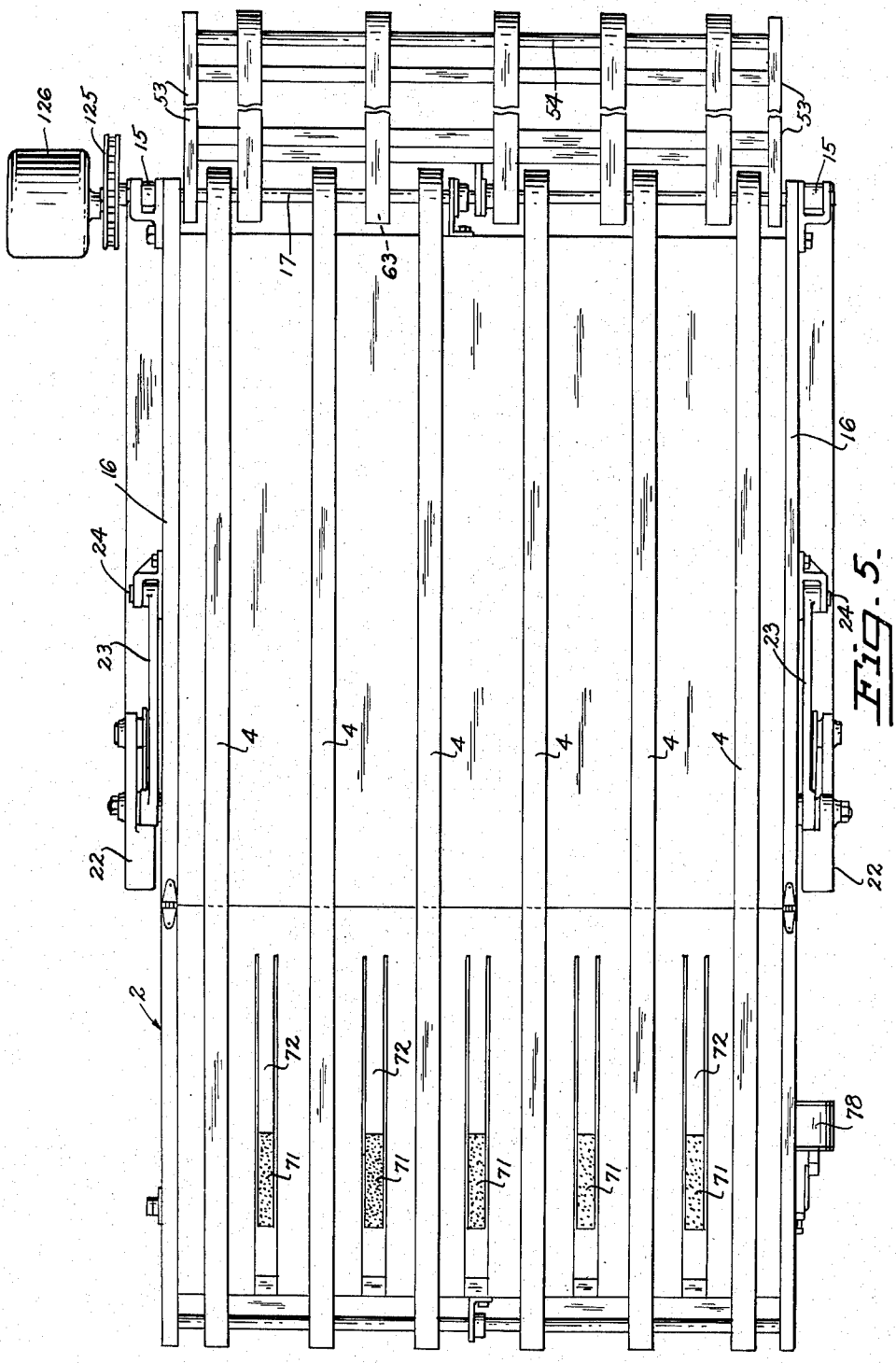


Fig. 5.

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AUTOMATIC SHEET STACKER APPARATUS

Filed April 1, 1957 4 Sheets-Sheet 4

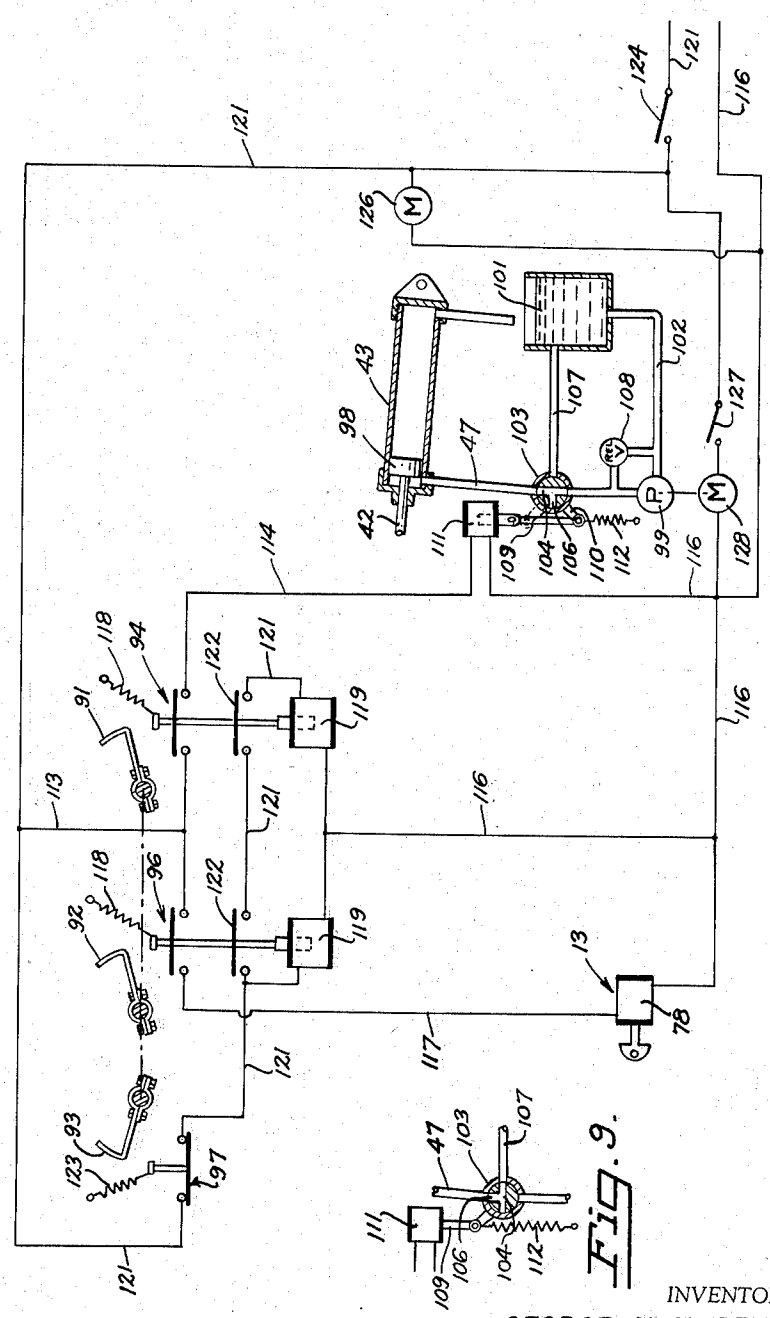


Fig. 6.

Fig. 9.

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United States Patent Office 2,901,250
Patented Aug. 25, 1959

2,901,250

AUTOMATIC SHEET STACKER APPARATUS

George M. Martin, Emeryville, Calif.

Application April 1, 1957, Serial No. 649,867
22 Claims. (Cl. 271—68)

This invention relates to automatic sheet stacker apparatus.

Heretofore, so-called sheet stackers were provided primarily between a printer-slotter machine and the conveyors or pallets for carrying away from the printing machines the printed slotted sheets such as cardboard sheets printed and slotted for preparing boxes. The purpose of such stackers is to receive the printed sheets from the printing and slotting machines and then stack the sheets in straight vertical stacks. The main disadvantages of stackers heretofore utilized was that as the stacker was rising substantially in proportion to the piling of the stack, the rate of speed varied and the outlet end of the stacker did not move on a truly perpendicular path, therefore it did not stack the sheets in straight stacks. Another disadvantage of such previous stackers was that the so-called layboy which first received the sheets from the printer and slotter and by which these are transferred to the stacker did not coact with the stacker properly for continuous automatic operation.

The primary object of this invention is to provide a sheet stacker which is fully automatic and which is operated at a substantially uniform rate on a substantially perpendicular delivery path to raise uniformly and to pile the printed sheets on pallets into uniformly straight stacks; and which is automatically returned for the continuing operation of piling another stack as the first pallet is filled and cleared at a pre-set rate of return.

Another object of this invention is to provide a combination of stacker and the so-called lay-boy wherein the two are so united that the lay-boy works in synchronism with the movement of the stacker, yet can be easily swung into an out-of-the-way position.

Another object of the invention is to provide a novel device in stackers for piling of printed sheets on pallets or the like, for raising the delivery end of the stacker at a substantially uniform rate, and at the same time to move the stacker so that its delivery end is constantly maintained in the same vertical relation to the pallet so that it moves generally on a straight perpendicular line; means being provided for causing a lay-boy to move in synchronism with the swinging of the stacker while the stacker follows the raising of the pile of sheets.

I am aware that some changes may be made in the general arrangements and combinations of the several devices and parts, as well as in the details of the construction thereof without departing from the scope of the present invention as set forth in the following specification, and as defined in the following claims; hence I do not limit my invention to the exact arrangements and combinations of the said device and parts as described in the said specification, nor do I confine myself to the exact details of the construction of the said parts as illustrated in the accompanying drawings.

With the foregoing and other objects in view, which will be made manifest in the following detailed description, reference is had to the accompanying drawings for

the illustrative embodiment of the invention, wherein:

Fig. 1 is side view of a stacker constructed in accordance with my invention, shown partly in section at its lowered position.

Fig. 2 is a partly sectional view of my stacker in partially raised position.

Fig. 3 is a partly sectional view of my stacker and layboy combination at the top elevated position.

Fig. 4 is a fragmental partly sectional view showing the device on my stacker to stop the delivery of sheets in the highest elevated position of the stacker.

Fig. 5 is a top plane view of my stacker; and

Fig. 6 is a wiring diagram illustrating the electrical control of my stacker.

Fig. 7 is a fragmental detail plan view of the relative arrangement of the switch actuating cams and the respective switches for controlling the operation of the stacker mechanism;

Fig. 8 is a fragmental, partly sectional side view of side switch actuating cams and switches showing them in the position for lowering the stacker; and

Fig. 9 is a fragmental view of the wiring diagram showing the valve in by-passing position for the return movement of the stacker.

The basic parts of my device as heretofore known generally include a base **1** on which is swingably or pivotally mounted a stacker frame **2** having suitable cross-frame members **3**, and a series of belt conveyors **4** mounted on suitable pulleys **6** and on tension pulleys **7** to deliver and carry sheets **8** and to pile them into a stack on suitable pallets or conveyors **9**. A so-called layboy **11** is provided at the intake end of the conveyors **4** for the purpose of receiving sheets from a printing or slotting machine, not shown, and conveying them onto the stacker. However in my the layboy is such that it can be moved out of the way and give access to the printing machine when needed.

My invention includes a stacker elevating mechanism **12**, the mounting and compensating fulcruming of the pivoted stacker on the base **1** for true vertical stacking; the relationship and particular combination with the swinging layboy **11** which facilitates operation and access to press set up and clearing; the power actuation of the layboy to move it to out of the way position; the mechanism **13** for stopping the sheets when the stacker reaches its highest elevated position and the top of the pile for which it was adjusted; and the convenient automatic actuation of the stacker.

At an end of the base **1** near the layboy **11** are provided a pair of brackets **14** aligned respectively with the opposite longitudinal sides **16** of the stacker frame **2**. On each bracket **14** is pivoted an arm **15** which extends generally upwardly and has its upper end pivoted on the intake or receiving end of the stacker frame **2** and forms a journal for a conveyor pulley shaft **17** extended transversely across the intake end of the stacking frame **2**. In this manner the stacker frame **2** is supported pivotally about the intake conveyor shaft **17** and also swingably on the arm **15** fulcrumed on the lower pivots **18** of the arms **15** in the brackets **14** of the base **1**. Thus the stacker frame **2** can be swung upwardly about the conveyor shaft **17** as a pivot, but this conveyor shaft **17** is shiftable generally horizontally in proportion and oppositely to the horizontal component of the normal arc of pivotal movement of the frame **2**.

For control of this compensating shifting of the stacker frame pivot, a bell crank lever **19** is journalled on a fulcrum **21** on a bracket **22** on the base **1** at each outside longitudinal side **16** of the skeleton frame **2** so that the lever arm **23** thereof initially extends toward the intake end of the stacker frame **2**.

The relative location of the crank lever pivot **24** relatively to the length of the stacker frame **2** is such that

the crank lever pivot **24** moves on an arc, the horizontal component of which causes the stacker frame **2**, as it is elevated about its pivot pulley shaft **17**, to also swing horizontally toward the delivery or stacking end of the stacker so as to negative said arc and thus cause said delivery end to move on a generally vertical line **28** as indicated on Fig. 3.

In the present dimensions of said stacker this is accomplished by spacing the crank lever pivot **24** from the pivot shaft **17** or fulcrum of the frame or about one-third of the length of the stacker. For instance, on a 13 foot length stacker frame, the bell crank pivot axis aligns with pivot axis in the top of the fulcrum arm **15**, substantially horizontally when the stacker frame **2** is horizontal or is within about 1° of horizontal. The bell crank lever has a constant crank angle but the arcuate drive hereinafter described has a shifting angle. For this purpose it is significant that the stacker is raised in a clockwise direction around its pivot shaft **17**, but the bell crank lever **19** turns in a contra-clockwise direction to accomplish the said raising and negative shifting of the stacker. Thus as the bell crank lever **19** is turned in a contra-clockwise direction viewing Fig. 3, so that the crank lever **23** is turned toward the delivery or stacker end of the stacker, and simultaneously the bell crank lever **23** is moved upwardly and away from the base **1**, it not only turns the entire stacker upwardly in a clockwise direction, but it also pulls the stacker frame so as to turn the pivot arms **15** also in a contra-clockwise direction, and allows the raising and simultaneous swinging of the stacker frame toward its delivery or stacker end in such proportion as to maintain the delivery or stacker end of the stacker constantly in about the same perpendicular plane.

The mechanism for turning the bell crank **19** is such as to apply a constant speed of turning. In the herein illustration the inner end of each crank arm **26** of the bell crank lever **19** is in the form of a gear segment or toothed head **31** the teeth of which are in mesh with a suitable sprocket chain **32**. The anchor end **33** of the sprocket chain **32** is anchored at the end of the head **31** nearest to the delivery end of the stacker frame **2**. The sprocket chain **32** is played over a segmental sprocket or head **34** and has its other end **35** anchored on the end of the segmental sprocket **34** farthest from the delivery end of the stacker frame **2**. Thus the sprocket chain **32** engages both sprockets generally tangentially with respect to the arc of the heads or segments so that during the turning of the sprockets the chain **32** moves at a constant lineal speed and thus exerts pull upon the bell crank **19** at a constant speed, thus the pivoted end of lever arm **23** moves at a constant peripheral speed.

The sprockets **34** are fixed on a transverse shaft **36** which is journalled in brackets **37** on the base **1**. Intermediate between the ends of the shaft **36** is provided a transmission segment sprocket **38** which is fixed on the shaft **36**. A drive sprocket chain **39** is played over the teeth of the segmental drive sprocket **38** and has an end **41** thereof anchored on the end of the segmental drive sprocket **38** nearest to the delivery end of the stacker frame **2**. The other end of the drive sprocket chain **39** is secured to the end of a plunger rod **42** connected to a plunger which works in a hydraulic or pneumatic cylinder **43**. The cylinder **43** is connected by a pivot **44** to a vertical bracket **46** on the base **1**. A suitable conduit **47** conveys fluid to the hydraulic cylinder **43** which is controlled by suitable automatic device and valve system. In the initial position, where the stacker frame is in its lowermost position (Fig. 1) the segmental drive sprocket **38** is in a position where its last teeth are in generally perpendicular position with respect to the sprocket shaft **36** and as pull is exerted on the plunger rod **42**, by reason of the engagement of the sprocket chain **39** always tangentially at the top of the drive sprocket **38**, the drive sprocket **38** is turned at a constant peripheral speed.

In other words, drive is transmitted by the chains always through the teeth of the sprocket in line with the chain and the chain functions somewhat similarly to a rack of a rack and gear transmission. The principle of operation involves the application of a lineal generally parallel uniform pull tangentially of the respective arcuate heads through a flexible pulling line.

In my device a layboy is so arranged that it moves in synchronism with the relative shifting of the position of the stacker as heretofore described and in the same direction. My layboy **11** includes a skeleton frame **52** side members **53** (Fig. 5) of which are journalled on the intake pulley shaft **17**. A layboy pulley shaft **54** is journalled in the side frame members **53** at the end thereof spaced from the previous journalled end. To a middle transverse box frame **55** is pivotally connected a fluid operated plunger rod **56**. The plunger of the rod **56** works in a fluid cylinder **57**, the lower end of which is journalled on a base link **58**. The base link **58** is in turn journalled on a pivot **59** at the adjacent end of the base **1**. An adjustable screw abutment **61** projects downwardly from the fluid cylinder **57** to determine parallelism or angle in the initial position of the layboy. The axis of the cylinder **57** is generally parallel with the arms **15** so as to function in swinging as a parallelogram to maintain the layboy at level position.

A plurality of belt conveyors **62** are placed around pulleys **63** of the layboy shaft **54** and also around pulleys **63** on the intake pulley shaft **17** of the stacker. The layboy is adjacent to the printer and slotter machine so that printed sheets are fed upon the layboy at suitable height and are carried by the belt conveyors **62** thereof unto the belt conveyors **4** on the stacker, and are carried by the latter belt conveyors **4** to the delivery end of said conveyors **4** and to the stack, as the stacker is moved upwardly in the manner heretofore described.

When the stacker reaches its uppermost elevated position shown in Fig. 3, then the pile is completed and the further piling of sheets is prevented until the stacker is lowered again. For this purpose I provide a plurality of friction pads **71**. Each pad **71** is supported on a spring arm **72** normally holding the pad **71** below the level of the belt conveyor **4**, so that the pad can be pushed upwardly between adjacent stacker conveyors **4** and against the respective sheets passing thereover. As shown in Fig. 4, a cam shaft **73** extends transversely and is journalled in the side members **16** of the stacker, and carries a plurality of roller cams **74** positioned below the respective pads **71**. As the shaft **73** is turned, it will turn the eccentric cams **74** so as to force the respective friction pads **71** against the adjacent sheets **8** as shown in Fig. 4, and prevent their movement over and off the stacker.

In the present form the stacker **2** is covered by a wood flooring and the upper run of the conveyors **4** move over said flooring. The spring arms **72** are formed in this form by slits in the flooring separating a strip which could be flexed upwardly sufficiently to bring the pads **71** into operative position when needed.

For the actuation of this last described anti-friction sheet restraining device there is provided a solenoid **78**, mounted on the stacker frame **2** which when energized pulls its core **79** inwardly so as to pull a link **81**, thereby to turn a crank arm **82** which latter is keyed on the cam shaft **73**, so as to turn the shaft **73** in contra clockwise direction viewing Fig. 4. After the stacker is returned to its initial position, the solenoid **78** is deenergized and a coil spring **83** connected to the crank arm **82** and anchored on an ear **84** returns the crank arm **82** to its initial position and thereby allows the spring strip **72** to lower the friction pad **71** below the level of the stack conveyors **4** and allow the sheets to again pass off the end of said stacker frame **2** onto the pile.

For the automatic control of the lowering and raising of the stacker there are provided cams **91**, **92** and **93**

on the shaft **36** so that as the shaft **36** is turned in clockwise direction, viewing Fig. 7, during the raising of the stacker, the cams **91** and **92** also turn in clockwise direction and are so adjusted that at the top position of the stacker the cams **91** and **92** engage respectively switches **94** and **96** for actuating the brake mechanism **13**, and for by-passing the pressure medium from the hydraulic cylinder **43** thereby allowing the lowering of the stacker mechanism. The third cam **93** is adjusted oppositely to the first cams **91** and **92** so as to abut a switch **97** to brake a relay electric circuit to be hereinafter described and release the said brake mechanism **13** and connect the pressure medium to the hydraulic cylinder **43** for raising the stacker.

The sequence of operation is diagrammatically illustrated in the wiring diagram of Fig. 6 which explains the automatic operation and actuation of the stacker. In the cylinder **43** works a piston **98** on the end of the plunger rod **42**. The pressure medium is introduced through the conduit **47** ahead of the piston **98** so as to push the piston inwardly of the cylinder **43** thereby to pull the plunger rod **42** and the sprocket chain **39** so as to turn the sprockets on the transverse shaft **36** in clockwise direction viewing Figs. 1 and 2 for raising the stacker at a constant speed in the manner heretofore described. The pressure medium is provided through a pump **99** which takes the fluid from a reservoir **101** through an intake pipe **102**. Suitable valves are connected in the line **47** which for the sake of simplicity of diagrammatic illustration are represented by a three-way by-pass valve **103**. This by-pass valve **103** has a straight passage **104** for direct connection through the line **47**. The valve **103** also has a by-pass connection **106** at right angles to one side so that when turned in a clockwise direction viewing Fig. 6, the passage **104** is aligned with a by-pass passage **107** leading back to the reservoir **101** and the bypass passage **106** is aligned with the portion of the conduit **47** leading from the cylinder **43**, as shown in Fig. 9. There is provided a suitable relief valve **108** in the pump circuit so that when the conduit **47** is blocked from the pump **99** the increase of pressure will operate the relief valve and by-pass the pump fluid back to the intake conduit **102** and the reservoir **101**.

In the diagrammatic view in Fig. 6 the valve **103** is illustrated as a cock valve the handle **110** of which is turned by a link **109** connected to the core of a solenoid **111**. Whenever the solenoid **111** is energized, it turns the valve **103** into the by-passing position shown in Fig. 9. A suitable spring **112** pulls the valve **103** back to its pressure position when the solenoid **111** is deenergized.

For clarity of illustration in the wiring diagram in Fig. 6, the three cams **91**, **92** and **93** are shown separately adjacent to the exploded diagrammatic view of the three respective switches **94**, **96** and **97**.

The switch **94** is for closing the circuit from line **113** to line **114** leading to the solenoid **111** from which latter a line **116** leads to the other terminal of the source of electricity. When the cam **91** closes the switch **94**, the solenoid **111** is energized and the bypass valve **103** is operated so as to bypass the pressure from the cylinder **43** and the pump and to allow the lowering of the stacker.

The switch **96** is for closing the circuit between line **113** and line **117** to the solenoid **78** of the brake device **13** which latter solenoid **78** is then connected to line **116** to the other terminal of the source of electricity.

The switches **94** and **96** are held normally open by any suitable device such as springs **118**. The cam **92** is advanced somewhat with respect to the cam **91**, as shown in Fig. 8, so as to operate the brake device **13** slightly in advance of the lowering of the stacker.

Each of the switches **94** and **96** is held in a circuit closing position by relays or solenoids **119** respectively. The intake lines **121** of the solenoids **119** are broken respectively by a switch **122** operably coupled with the switch **94** and **96** respectively, so that when the switches **94** and **96** are closed respectively by the cams **91** and **92**, then the relay switches **122** are closed also so as to energize the solenoids **119** and thereby hold the switches **94** and **96** in circuit closing position until the stacker again reaches its lowermost position, as shown in Fig. 1. In this lowest position of the stacker the cam **93** abuts and opens the normally closed switch **97** for breaking the circuit in line **121** and thereby deenergizing the solenoids **119** and permitting the opening of switches **94** and **96** for the resuming of the raising of the stacker. For this purpose, the switch **97** is in series in the circuit with the intake line **121** and the relay solenoids **119** and is held normally in circuit closing position by suitable means such as a spring **123**.

In operation the machine is started in the usual manner by turning on a main switch **124** in the line **121** (Fig. 6), which main switch also controls a motor **126** which through a suitable chain **125** drives the conveyor shaft **17**.

Thus the conveyors are continuously in operation on both the stacker and layboy. Then the pump motor switch **127** (Fig. 6) is turned on for operating the pump motor **128** and thereby applying the pressure medium into the cylinder **43**. As the piston **98** moves back into the cylinder **43**, it pulls the plunger rod **42** which latter pulls the sprocket chain **39** and turns the segment sprockets and the sprocket shaft in the manner heretofore described so that the bell cranks are swung in a contra-clockwise direction viewing Fig. 1. This movement causes upward pivoting or lifting of the stacker end of the stacker about the conveyor shaft **17** and the simultaneous swaying of the supporting arms **15** and the layboy **11** in the opposite direction in proportion to compensate for and take up the horizontal component of the arc of movement of the stacker end of the stacker, with a resultant lineal vertical path of the stacker end of the stacker. The conveyors **4** carry the sheets **8** on the stacker and deposit them in substantially true alignment in the vertical stack.

As the stacker reaches its uppermost position shown in Fig. 3, then first the cam **92** closes the switch **96** to apply the brake device **13** for retarding movement of sheets **8** on the stacker conveyors **4**. Immediately thereafter the cam **91** closes the switch **94** for closing the circuit of the by-pass valve relay or solenoid **111** so as to turn the by-pass valve into the position shown in Fig. 9. The weight and leverage of the stacker device pulls the piston **98** with comparative rapidity down into the lowest dotted line position shown in Fig. 3.

The double switch arrangement of switches **94** and **96** causes the simultaneous closing of the relay switches **122** for energizing the solenoids **119** which keep the switches **94** and **96** in circuit closing position until the stacker is lowered into the lowest dotted line position shown in Fig. 3. When the stacker reaches this lowermost position, the release cam **93** engages the release switch **97** so as to open the same and thereby deenergize the relays **119** and permit the opening of the switches **94** and **96**, which in turn, results in deenergizing the solenoids **78** and **111** so that the brake device is released and the valve **103** is turned to connect the pressure medium from the pump **99** to the cylinder **43** and thus resume the constant uniform raising of the stacker for stacking sheets as heretofore described. During this lowering and raising operation, the layboy swings correspondingly so as to feed in constant relation to the stacker conveyors and allow the aforesaid compensation for the varying horizontal components of the arc of swinging movement of the stacker.

The particular structure of the layboy also permits the easy lifting of the layboy about its pivot shaft by operating the hydraulic or pressure cylinder device **57** so as to push the layboy up and into an out of the way position. Before operation the layboy must be lowered into its operative position as shown. It is to be noted that even the pressure lifting device of the layboy is suitably pivoted to follow

with the swinging movement of the layboy and the stacker supports for the aforesaid take-up of the horizontal component of movement in order to cooperate in accomplishing the result of constant, uniform and true vertical stacking.

I claim:

1. In a sheet stacker of the character described, in combination, a base, a stacker frame having a receiving end and a stacking end and including a plurality of conveyors longitudinal on said frame to carry sheets along said frame from said receiving end to said stacking end so as to deposit such sheets in stacks, support means on said base for pivotally supporting the receiving end of said frame, the pivot axis of said frame being along said receiving end and transverse to said frame, said support means being swivelable about an axis beneath and generally parallel with said pivot axis and said receiving end so as to permit said frame to shift its position longitudinally during its movement about said pivot axis; lifting elements fulcrumed on said base beneath said stacker frame and pivotally connected to said frame for shifting said frame upwardly about said pivot axis and longitudinally toward the stacking end while the frame is raised so as to compensate oppositely for the horizontal component of the arc of movement of the frame about said pivot axis and maintain said upward movement of said stacker end on a generally perpendicular plane, operating means to turn said lifting elements about their respective fulcrums so as to impart generally constant and uniform lifting force to said lifting elements, and control devices actuated by the positioning of said frame to render said operating means operative from the lowermost position to the top position of said stacking frame and render said operating means ineffective at said top position so as to permit the frame to turn to its lowermost position.

2. In a sheet stacker of the character described, in combination, a base, a stacker frame having a receiving end and a stacking end and including a plurality of conveyors longitudinal on said frame to carry sheets along said frame from said receiving end to said stacking end so as to deposit such sheets in stacks, support means on said base for pivotally supporting the receiving end of said frame, the pivot axis of said frame being along said receiving end and transverse to said frame, said support means being swivelable about an axis beneath and generally parallel with said pivot axis and said receiving end so as to permit said frame to shift its position longitudinally during its movement about said pivot axis; lifting elements fulcrumed on said base beneath said stacker frame and pivotally connected to said frame for shifting said frame upwardly about said pivot axis and longitudinally toward the stacking end while the frame is raised so as to compensate oppositely for the horizontal component of the arc of movement of the frame about said pivot axis and maintain said upward movement of said stacker end on a generally perpendicular plane, operating means to turn said lifting elements about their respective fulcrums so as to impart generally constant and uniform lifting force to said lifting elements, and control devices actuated by the positioning of said frame to render said operating means operative from the lowermost position to the top position of said stacking frame and render said operating means ineffective at said top position so as to permit the frame to turn to its lowermost position, and a layboy frame pivotally supported on said support means in registry with said receiving end so as to shift longitudinally together with said stacker frame.

3. In a sheet stacker of the character described, in combination, a base, a stacker frame having a receiving end and a stacking end and including a plurality of conveyors longitudinal on said frame to carry sheets along said frame from said receiving end to said stacking end so as to deposit such sheets in stacks, support means on said base for pivotally supporting the receiving end of said frame, the pivot axis of said frame being along said receiving end and transverse to said frame, said support means being swivelable about an axis beneath and generally parallel with said pivot axis and said receiving end so as to permit said frame to shift its position longitudinally during its movement about said pivot axis; lifting elements fulcrumed on said base beneath said stacker frame and pivotally connected to said frame for shifting said frame upwardly about said pivot axis and longitudinally toward the stacking end while the frame is raised so as to compensate oppositely for the horizontal component of the arc of movement of the frame about said pivot axis and maintain said upward movement of said stacker end on a generally perpendicular plane, operating means to turn said lifting elements about their respective fulcrums so as to impart generally constant and uniform lifting force to said lifting elements, and control devices actuated by the positioning of said frame to render said operating means operative from the lowermost position to the top position of said stacking frame and render said operating means ineffective at said top position so as to permit the frame to turn to its lowermost position, and a layboy frame pivotally supported on said support means in registry with said receiving end so as to shift longitudinally together with said stacker frame, and a device between said base and said layboy frame actuated by controlled pressure medium for pivotally adjusting said layboy frame about said support means into and out of the way position and into registering operative position selectively.

4. In a sheet stacker of the character described, in combination, a base, a stacker frame having a receiving end and a stacking end and including a plurality of conveyors longitudinal on said frame to carry sheets along said frame from said receiving end to said stacking end so as to deposit such sheets in stacks, support means on said base for pivotally supporting the receiving end of said frame, the pivot axis of said frame being along said receiving end and transverse to said frame, said support means being swivelable about an axis beneath and generally parallel with said pivot axis and said receiving end so as to permit said frame to shift its position longitudinally during its movement about said pivot axis; lifting elements fulcrumed on said base beneath said stacker frame and pivotally connected to said frame for shifting said frame upwardly about said pivot axis and longitudinally toward the stacking end while the frame is raised so as to compensate oppositely for the horizontal component of the arc of movement of the frame about said pivot axis and maintain said upward movement of said stacker end on a generally perpendicular plane, operating means to turn said lifting elements about their respective fulcrums so as to impart generally constant and uniform lifting force to said lifting elements, and control devices actuated by the positioning of said frame to render said operating means operative from the lowermost position to the top position of said stacking frame and render said operating means ineffective at said top position so as to permit the frame to turn to its lowermost position, and a layboy frame pivotally supported on said support means in registry with said receiving end so as to shift longitudinally together with said stacker frame, and a pressure operated pivoted cylinder and piston connection between said base and said layboy frame for lifting said layboy frame into an out of the way position and lowering said layboy frame into an operative registering position with said receiving end at will, said layboy frame having longitudinal conveyors thereon to carry sheet s to said receiving end of said stacker frame.

5. In a sheet stacker of the character described, in combination, a base, a stacker frame having a receiving end and a stacking end and including a plurality of

conveyors longitudinal on said frame to carry sheets along said frame from said receiving end to said stacking end so as to deposit such sheets in stacks, support means on said base for pivotally supporting the receiving end of said frame, the pivot axis of said frame being along said receiving end and transverse to said frame, said support means being swivelable about an axis beneath and generally parallel with said pivot axis and said receiving end so as to permit said frame to shift its position longitudinally during its movement about said pivot axis; lifting elements fulcrumed on said base beneath said stacker frame and pivotally connected to said frame for shifting said frame upwardly about said pivot axis and longitudinally toward the stacking end while the frame is raised so as to compensate oppositely for the horizontal component of the arc of movement of the frame about said pivot axis and maintain said upward movement of said stacker end on a generally perpendicular plane, operating means to turn said lifting elements about their respective fulcrums so as to impart generally constant and uniform lifting force to said lifting elements, and control devices actuated by the positioning of said frame to render said operating means operative from the lowermost position to the top position of said stacking frame and render said operating means ineffective at said top position so as to permit the frame to turn to its lowermost position, and a layboy frame pivotally supported on said support means in registry with said receiving end so as to shift longitudinally together with said stacker frame, and a pressure operated pivoted cylinder and piston connection between said base and said layboy frame for lifting said layboy frame into an out of the way position and lowering said layboy frame into an operative registering position with said receiving end at will, said layboy frame having longitudinal conveyors thereon to carry sheets to said receiving end of said stacker frame, and means to drive the conveyors on said stacker frame and on said layboy frame in synchronism.

6. In a sheet stacker of the character described, in combination, a base, a stacker frame having a receiving end and a stacking end and including a plurality of conveyors longitudinal on said frame to carry sheets along said frame from said receiving end to said stacking end so as to deposit such sheets in stacks, support means on said base for pivotally supporting the receiving end of said frame, the pivot axis of said frame being along said receiving end and transverse to said frame, said support means being swivelable about an axis beneath and generally parallel with said pivot axis and said receiving end so as to permit said frame to shift its position longitudinally during its movement about said pivot axis; lifting elements fulcrumed on said base beneath said stacker frame and pivotally connected to said frame for shifting said frame upwardly about said pivot axis and longitudinally toward the stacking end while the frame is raised so as to compensate oppositely for the horizontal component of the arc of movement of the frame about said pivot axis and maintain said upward movement of said stacker end on a generally perpendicular plane, operating means to turn said lifting elements about their respective fulcrums so as to impart generally constant and uniform lifting force to said lifting elements, and control devices actuated by the positioning of said frame to render said operating means operative from the lowermost position to the top position of said stacking frame and render said operating means ineffective at said top position so as to permit the frame to turn to its lowermost position, said support means including a pair of spaced parallel arms, the lower ends of said arms being pivoted on said base and forming said pivot axis of said support means and the upper ends of said arms being pivoted to said receiving end of said stacker frame.

7. In a sheet stacker of the character described, in combination, a base, a stacker frame having a receiving end and a stacking end and including a plurality of conveyors longitudinal on said frame to carry sheets along said frame from said receiving end to said stacking end so as to deposit such sheets in stacks, support means on said base for pivotally supporting the receiving end of said frame, the pivot axis of said frame being along said receiving end and transverse to said frame, said support means being swivelable about an axis beneath and generally parallel with said pivot axis and said receiving end so as to permit said frame to shift its position longitudinally during its movement about said pivot axis; lifting elements fulcrumed on said base beneath said stacker frame and pivotally connected to said frame for shifting said frame upwardly about said pivot axis and longitudinally toward the stacking end while the frame is raised so as to compensate oppositely for the horizontal component of the arc of movement of the frame about said pivot axis and maintain said upward movement of said stacker end on a generally perpendicular plane, operating means to turn said lifting elements about their respective fulcrums so as to impart generally constant and uniform lifting force to said lifting elements, and control devices actuated by the positioning of said frame to render said operating means operative from the lowermost position to the top position of said stacking frame and render said operating means ineffective at said top position so as to permit the frame to turn to its lowermost position, and a layboy frame pivotally supported on said support means in registry with said receiving end so as to shift longitudinally together with said stacker frame, and a pressure operated pivoted cylinder and piston connection between said base and said layboy frame for lifting said layboy frame into an out of the way position and lowering said layboy frame into an operative registering position with said receiving end at will, said layboy frame having longitudinal conveyors thereon to carry sheets to said receiving end of said stacker frame, a conveyor drive shaft transverse at said receiving end for driving the conveyors on said stacker frame and on said layboy, said support means including a pair of spaced parallel arms, the lower ends of said arms being pivoted on said base and forming said pivot axis of said support means and the upper ends of said arms being pivoted to said conveyor drive shaft, the receiving end of said stacker frame and said layboy frame being journalled on said conveyor drive shaft.

8. In a sheet stacker of the character described, in combination, a base, a stacker frame having a receiving end and a stacking end and including a plurality of conveyors longitudinal on said frame to carry sheets along said frame from said receiving end to said stacking end so as to deposit such sheets in stacks, support means on said base for pivotally supporting the receiving end of said frame, the pivot axis of said frame being along said receiving end and transverse to said frame, said support means being swivelable about an axis beneath and generally parallel with said pivot axis and said receiving end so as to permit said frame to shift its position longitudinally during its movement about said pivot axis; lifting elements fulcrumed on said base beneath said stacker frame and pivotally connected to said frame for shifting said frame upwardly about said pivot axis and longitudinally toward the stacking end while the frame is raised so as to compensate oppositely for the horizontal component of the arc of movement of the frame about said pivot axis and maintain said upward movement of said stacker end on a generally perpendicular plane, operating means to turn said lifting elements about their respective fulcrums so as to impart generally constant and uniform lifting force to said lifting elements, and control devices actuated by the positioning of said frame to render said operating means operative from the lowermost position to the top position of said stacking frame

and render said operating means ineffective at said top position so as to permit the frame to turn to its lowermost position, said lifting elements comprising spaced parallel bell crank levers, means on said base for fulcruming said bell crank levers on an axis transverse with respect to said stacker frame and between said base and said stacker frame, an arm of each bell crank lever being pivoted to said stacker frame and extending generally from said fulcrum toward said receiving end, and the other arm of each bell crank lever being connected to said operating means for applying force about said fulcrum.

9. In a sheet stacker of the character described, in combination, a base, a stacker frame having a receiving end and a stacking end and including a plurality of conveyors longitudinal on said frame to carry sheets along said frame from said receiving end of said stacking end so as to deposit such sheets in stacks, support means on said base for pivotally supporting the receiving end of said frame, the pivot axis of said frame being along said receiving end and transverse to said frame, said support means being swivelable about an axis beneath and generally parallel with said pivot axis and said receiving end so as to permit said frame to shift its position longitudinally during its movement about said pivot axis; lifting elements fulcrumed on said base beneath said stacker frame and pivotally connected to said frame for shifting said frame upwardly about said pivot axis and longitudinally toward the stacking end while the frame is raised so as to compensate oppositely for the horizontal component of the arc of movement of the frame about said pivot axis and maintain said upward movement of said stacker end on a generally perpendicular plane, operating means to turn said lifting elements about their respective fulcrums so as to impart generally constant and uniform lifting force to said lifting elements, and control devices actuated by the positioning of said frame to render said operating means operative from the lowermost position to the top position of said stacking frame and render said operating means ineffective at said top position so as to permit the frame to turn to its lowermost position, said lifting elements comprising spaced parallel bell crank levers, means on said base for fulcruming said bell crank levers on an axis transverse with respect to said stacker frame and between said base and said stacker frame, an arm of each bell crank lever being pivoted to said stacker frame and extending generally from said fulcrum toward said receiving end, and the other arm of each bell crank lever being connected to said operating means for applying force about said fulcrum, the axes of said fulcrums and of the pivoting of said arms of said bell crank levers being so spaced from each other and from the axis of the pivot of said receiving end that all said axes are substantially on the same general horizontal plane when the stacker frame is in horizontal position.

10. In a sheet stacker of the character described, in combination, a base, a stacker frame having a receiving end and a stacking end and including a plurality of conveyors longitudinal on said frame to carry sheets along said frame from said receiving end of said stacking end so as to deposit such sheets in stacks, support means on said base for pivotally supporting the receiving end of said frame, the pivot axis of said frame being along said receiving end and transverse to said frame, said support means being swivelable about an axis beneath and generally parallel with said pivot axis and said receiving end so as to permit said frame to shift its position longitudinally during its movement about said pivot axis; lifting elements fulcrumed on said base beneath said stacker frame and pivotally connected to said frame for shifting said frame upwardly about said pivot axis and longitudinally toward the stacking end while the frame is raised so as to compensate oppositely for the horizontal component of the arc of movement of the frame about said pivot axis and maintain said upward movement of said stacker end on a generally perpendicular plane, operating means to turn said lifting elements about their respective fulcrums so as to impart generally constant and uniform lifting force to said lifting elements, and control devices actuated by the positioning of said frame to render said operating means operative from the lowermost position to the top position of said stacking frame and render said operating means ineffective at said top position so as to permit the frame to turn to its lowermost position, said lifting elements comprising spaced parallel bell crank levers, means on said base for fulcruming said bell crank levers on an axis transverse with respect to said stacker frame and between said base and said stacker frame, an arm of each bell crank lever being pivoted to said stacker frame and extending generally from said fulcrum toward said receiving end, and the other arm of each bell crank lever being connected to said operating means for applying force about said fulcrum, the axes of said fulcrums and of the pivoting of said arms of said bell crank levers being so spaced from each other and from the axis of the pivot of said receiving end that all said axes are substantially on the same general horizontal plane when the stacker frame is in horizontal position, said operating means including a transverse shaft journalled on said base beneath the axis of said bell crank fulcrum and offset horizontally from said fulcrum toward the receiving end of the stacker frame, a drive element extended generally radially from the shaft adjacent to each bell crank, coacting generally horizontally spaced heads on each drive element and the adjacent other arm of the crank lever, an arcuate periphery on each head, a flexible pull line anchored at its opposite ends tangentially on each pair of coacting arcuate peripheries so as to apply tangential pulling force and motion to said heads at uniform peripheral speed respectively, and a driven element extended generally radially from said shaft, a head on said driven element having an arcuate periphery, a powered puller device, and a flexible line tangentially anchored to the head of said driven element and connected to said puller device to exert a lineal tangential pull on said head of said driven element to turn all said heads and said bellcrank levers at constant speed for elevating said stacker frame about its pivot.

11. In a sheet stacker of the character described, in combination, a base, a stacker frame having a receiving end and a stacking end and including a plurality of conveyors longitudinal on said frame to carry sheets along said frame from said receiving end of said stacking end so as to deposit such sheets in stacks, support means on said base for pivotally supporting the receiving end of said frame, the pivot axis of said frame being along said receiving end and transverse to said frame, said support means being swivelable about an axis beneath and generally parallel with said pivot axis and said receiving end so as to permit said frame to shift its position longitudinally during its movement about said pivot axis; lifting elements fulcrumed on said base beneath said stacker frame and pivotally connected to said frame for shifting said frame upwardly about said pivot axis and longitudinally toward the stacking end while the frame is raised so as to compensate oppositely for the horizontal component of the arc of movement of the frame about said pivot axis and maintain said upward movement of said stacker end on a generally perpendicular plane, operating means to turn said lifting elements about their respective fulcrums so as to impart generally constant and uniform lifting force to said lifting elements, and control devices actuated by the positioning of said frame to render said operating means operative from the lowermost position to the top position of said stacking frame and render said operating means ineffective at said top position so as to permit the frame to turn to its lowermost position, said lifting elements comprising spaced

parallel bell crank levers, means on said base for fulcruming said bell crank levers on an axis transverse with respect to said stacker frame and between said base and said stacker frame, an arm of each bell crank lever being pivoted to said stacker frame and extending generally from said fulcrum toward said receiving end, and the other arm of each bell crank lever being connected to said operating means for applying force about said fulcrum, the axes of said fulcrums and of the pivoting of said arms of said bell crank levers being so spaced from each other and from the axis of the pivot of said receiving end that all said axes are substantially on the same general horizontal plane when the stacker frame is in horizontal position, said operating means including a transverse shaft journalled on said base beneath the axis of said bell crank fulcrum and offset horizontally from said fulcrum toward the receiving end of the stacker frame, a drive element extended geenrally radially from the shaft adjacent to each bell crank, coacting generally horizontally spaced heads on each drive element and the adjacent other arm of the crank lever, an arcuate periphery on each head, a flexible pull line anchored at its opposite ends tangentially on each pair of coacting arcuate peripheries so as to apply tangential pulling force and motion to said heads at uniform peripheral speed respectively, and a driven element extended generally radially from said shaft, a head on said driven element having an arcuate periphery, a powered puller device, and a flexible line tangentially anchored to the head of said driven element and connected to said puller device to exert a lineal tangential pull on said head of said driven element to turn all said heads and said bell crank levers at constant speed for elevating said stacker frame about its pivot, each of said arcuate peripheries of said heads including a series of teeth and said flexible lines being chains anchored on the respective heads so as to constantly apply tangential lineal pull on the respective coacting heads.

12. In a sheet stacker of the character described, in combination, a base, a stacker frame having a receiving end and a stacking end and including a plurality of conveyors longitudinal on said frame to carry sheets along said frame from said receiving end of said stacking end so as to deposit such sheets in stacks, support means on said base for pivotally supporting the receiving end of said frame, the pivot axis of said frame being along said receiving end and transverse to said frame, said support means being swivelable about an axis beneath and generally parallel with said pivot axis and said receiving end so as to permit said frame to shift its position longitudinally during its movement about said pivot axis; lifting elements fulcrumed on said base beneath said stacker frame and pivotally connected to said frame for shifting said frame upwardly about said pivot axis and longitudinally toward the stacking end while the frame is raised so as to compensate oppositely for the horizontal component of the arc of movement of the frame about said pivot axis and maintain such upward movement of said stacker end on a generally perpendicular plane, operating means to turn said lifting elements about their respective fulcrums so as to impart generally constant and uniform lifting force to said lifting elements, and control devices actuated by the positioning of said frame to render said operating means operative from the lowermost position to the top position of said stacking frame and render said operating means ineffective at said top position so as to permit the frame to turn to its lowermost position, said lifting elements comprising spaced parallel bell crank levers, means on said base for fulcruming said bell crank levers on an axis transverse with respect to said stacker frame and between said base and said stacker frame, an arm of each bell crank lever being pivoted to said stacker frame and extending generally from said fulcrum toward said receiving end, and the other arm of each bell crank lever being connected to said operating means for applying force about said fulcrum, the axes of said fulcrums and of the pivoting of said arms of said bell crank levers being so spaced from each other and from the axis of the pivot of said receiving end that all said axes are substantially on the same general horizontal plane when the stacker frame is in horizontal position, said operating means including a transverse shaft journalled on said base beneath the axis of said bell crank fulcrum and offset horizontally from said fulcrum toward the receiving end of the stacker frame, a drive element extended generally radially from the shaft adjacent to each bell crank, coacting generally horizontally spaced heads on each drive element and the adjacent other arm of the crank lever; an arcuate periphery on each head, a flexible pull line anchored at its opposite ends tangentially on each pair of coacting arcuate peripheries so as to apply tangential pulling force and motion to said heads at uniform peripheral speed respectively, and a driven element extended generally radially from said shaft, a head on said driven element having an arcuate periphery, a powered puller device, and a flexible line tangentially anchored to the head of said driven element and connected to said puller device to exert a lineal tangential pull on said head of said driven element to turn all said heads and said bell crank levers at constant speed for elevating said stacker frame about its pivot, said powered puller device including a cylinder pivoted on said base, a plunger working in said cylinder, a plunger rod extended from said plunger, said flexible line from said driven element being connected to said plunger, and means to introduce a pressure medium into said cylinder to move said plunger away from said driven element thereby to pull said flexible line of said driven element for turning said transverse shaft.

13. In a sheet stacker of the character described, in combination, a base, a stacker frame having a receiving end and a stacking end and including a plurality of conveyors longitudinal on said frame to carry sheets along said frame from said receiving end of said stacking end so as to deposit such sheets in stacks, support means on said base for pivotally supporting the receiving end of said frame, the pivot axis of said frame being along said receiving end and transverse to said frame, said support means being swivelable about an axis beneath and generally parallel with said pivot axis and said receiving end so as to permit said frame to shift its position longitudinally during its movement about said pivot axis; lifting elements fulcrumed on said base and pivotally connected to said frame for shifting said frame upwardly about said pivot axis and longitudinally toward the stacking end while the frame is raised so as to compensate oppositely for the horizontal component of the arc of movement of the frame about said pivot axis and maintain such upward movement of said stacker end on a generally perpendicular plane, operating means to impart generally constant and uniform lifting force to said lifting elements, and control devices actuated by the positioning of said frame to render said operating means operative from the lowermost position to the top position of said stacking frame and render said operating means ineffective at said top position so as to permit the frame to turn to its lowermost position, said lifting elements comprising spaced parallel bell crank levers, means on said base for fulcruming said bell crank levers on an axis transverse with respect to said stacker frame and between said base and said stacker frame, an arm of each bell crank lever being pivoted to said stacker frame and extending generally from said fulcrum toward said receiving end, and the other arm of each bell crank lever being connected to said operating means for applying force about said fulcrum, the axes of said fulcrums and of the pivoting of said arms of said bell crank levers being so spaced from each other and from the axis of the pivot of said receiving end that all said axes are substantially on the same general horizontal plane when the stacker frame is in horizontal position, said operating means including a transverse shaft

journalled on said base beneath the axis of said bell crank fulcrum and offset horizontally from said fulcrum toward the receiving end of the stacker frame, a drive element extended generally radially from the shaft adjacent to each bell crank, coacting generally horizontally spaced heads on each drive element and the adjacent other arm of the crank lever, an arcuate periphery on each head, a flexible pull line anchored at its opposite ends tangentially on each pair of coacting arcuate peripheries so as to apply tangential pulling force and motion to said heads at uniform peripheral speed respectively, and a driven element extended generally radially from said shaft, a head on said driven element having an arcuate periphery, a powered puller device, and a flexible line tangentially anchored to the head of said driven element and connected to said puller device to exert a lineal tangential pull on said head of said driven element to turn all said heads and said bell crank levers at constant speed for elevating said stacker frame about its pivot, said powered puller device including a cylinder pivoted on said base, a plunger working in said cylinder, a plunger rod extended from said plunger, said flexible line from said driven element being connected to said plunger, and means to introduce a pressure medium into said cylinder to move said plunger away from said driven element thereby to pull said flexible line of said driven element for turning said transverse shaft, said control devices including valves to control the flow of said pressure medium to said cylinder, electro-magnetic devices to control said valves, cam actuated switches in the circuit of said electromagnetic devices, and cams on said shaft to actuate said switches in the respective extreme positions of said stacker frame so as to open said valves at the lowermost stacker position to convey the pressure medium into said cylinder for elevating said stacker frame from its lowermost to its highest position and to by-pass said pressure medium from said cylinder to permit the return of said stacker frame to its lowermost position.

14. In a sheet stacker of the character described, in combination, a base, a stacker frame having a receiving end and a stacking end and including a plurality of conveyors longitudinal on said frame to carry sheets along said frame from said receiving end of said stacking end so as to deposit such sheets in stacks, support means on said base for pivotally supporting the receiving end of said frame, the pivot axis of said frame being along said receiving end and transverse to said frame, said support means being swivelable about an axis beneath and generally parallel with said pivot axis and said receiving end so as to permit said frame to shift its position longitudinally during its movement about said pivot axis; lifting elements fulcrumed on said base and pivotally connected to said frame for shifting said frame upwardly about said pivot axis and longitudinally toward the stacking end while the frame is raised so as to compensate oppositely for the horizontal component of the arc of movement of the frame about said pivot axis and maintain such upward movement of said stacker end on a generally perpendicular plane, operating means to impart generally constant and uniform lifting force to said lifting elements, and control devices actuated by the positioning of said frame to render said operating means operative from the lowermost position to the top position of said stacking frame and render said operating means ineffective at said top position so as to permit the frame to turn to its lowermost position, said lifting elements comprising spaced parallel bell crank levers, means on said base for fulcruming said bell crank levers on an axis transverse with respect to said stacker frame and between said base and said stacker frame, an arm of each bell crank lever being pivoted to said stacker frame and extending generally from said fulcrum toward said receiving end, and the other arm of each bell crank lever being connected to said operating means for applying force about said fulcrum, the axes of said fulcrums and of the pivoting of said arms of said bell crank levers being so spaced from each other and from the axis of the pivot of said receiving end that all said axes are substantially on the same general horizontal plane when the stacker frame is in horizontal position, said operating means including a transverse shaft journalled on said base beneath the axis of said bell crank fulcrum and offset horizontally from said fulcrum toward the receiving end of the stacker frame, a drive element extended generally radially from the shaft adjacent to each bell crank, coacting generally horizontally spaced heads on each drive element and the adjacent other arm of the crank lever, an arcuate periphery on each head, a flexible pull line anchored at its opposite ends tangentially on each pair of coacting arcuate peripheries so as to apply tangential pulling force and motion to said heads at uniform peripheral speed respectively, and a driven element extended generally radially from said shaft, a head on said driven element having an arcuate periphery, a powered puller device, and a flexible line tangentially anchored to the head of said driven element and connected to said puller device to exert a lineal tangential pull on said head of said driven element to turn all said heads and said bell crank levers at constant speed for elevating said stacker frame about its pivot, said powered puller device including a cylinder pivoted on said base, a plunger working in said cylinder, a plunger rod extended from said plunger, said flexible line from said driven element being connected to said plunger, and means to introduce a pressure medium into said cylinder to move said plunger away from said driven element thereby to pull said flexible line of said driven element for turning said transverse shaft, said control devices including valves to control the flow of said pressure medium to said cylinder, electro-magnetic devices to control said valves, cam actuated switches in the circuit of said electromagnetic devices, and cams on said shaft to actuate said switches in the respective extreme positions of said stacker frame so as to open said valves at the lowermost stacker position to convey the pressure medium into said cylinder for elevating said stacker frame from its lowermost to its highest position and to by-pass said pressure medium from said cylinder to permit the return of said stacker frame to its lowermost position, and electromagnetic devices actuated by the cams at the highest position of said stacker frame to hold said valves in by-passing position until said stacker frame returned to said lowermost position.

15. In a sheet stacker of the character described, in combination, a base, a stacker frame having a receiving end and a stacking end and including a plurality of conveyors longitudinal on said frame to carry sheets along said frame from said receiving end to said stacking end so as to deposit such sheets in stacks, support means on said base for pivotally supporting the receiving end of said frame, the pivot axis of said frame being along said receiving end and transverse to said frame, said support means being swivelable about an axis beneath and generally parallel with said pivot axis and said receiving end so as to permit said frame to shift its position longitudinally during its movement about said pivot axis; lifting elements fulcrumed on said base and pivotally connected to said frame for shifting said frame upwardly about said pivot axis and longitudinally toward the stacking end while the frame is raised so as to compensate oppositely for the horizontal component of the arc of movement of the frame about said pivot axis and maintain said upward movement of said stacker end on a generally perpendicular plane, operating means to impart generally constant and uniform lifting force to said lifting elements, and control devices actuated by the positioning of said frame to render said operating means operative from the lowermost position to the top position of said stacking frame and render said operating means ineffective at said top position so as to permit the frame to turn to its lowermost position, and sheet obstructing devices near the

stacker end of said stacker frame normally below the level of said conveyors, electrically actuated means to raise said obstructing devices above the level of said conveyors to retard the travel of sheets on said conveyors, a cam actuated switch for said electrically actuated means, said control device including a cam to operate said switch to actuate said means for keeping said obstructing devices in raised position during the return of said stacker from its uppermost elevated position to its lowest position.

16. In a sheet stacker of the character described, in combination, a base, a stacker frame having a receiving end and a stacking end and including a plurality of conveyors longitudinal on said frame to carry sheets along said frame from said receiving end of said stacking end so as to deposit such sheets in stacks, support means on said base of pivotally supporting the receiving end of said frame, the pivot axis of said frame being along said receiving end and transverse to said frame, said support means being swivelable about an axis beneath and generally parallel with said pivot axis and said receiving end so as to permit said frame to shift its position longitudinally during its movement about said pivot axis; lifting elements fulcrumed on said base and pivotally connected to said frame for shifting said frame upwardly about said pivot axis and longitudinally toward the stacking end while the frame is raised so as to compensate oppositely for the horizontal component of the arc of movement of the frame about said pivot axis and maintain such upward movement of said stacker end on a generally perpendicular plane, operating means to impart generally constant and uniform lifting force to said lifting elements, and control devices actuated by the positioning of said frame to render said operating means operative from the lowermost position to the top position of said stacking frame and render said operating means ineffective at said top position so as to permit the frame to turn to its lowermost position, said lifting elements comprising spaced parallel bell crank levers, means on said base for fulcruming said bell crank levers on an axis transverse with respect to said stacker frame and between said base and said stacker frame, an arm of each bell crank lever being pivoted to said stacker frame and extending generally from said fulcrum toward said receiving end, and the other arm of each bell crank lever being connected to said operating means for applying force about said fulcrum, the axes of said fulcrums and of the pivoting of said arms of said bell crank levers being so spaced from each other and from the axis of the pivot of said receiving end, that all said axes are substantially on the same general horizontal plane when the stacker frame is in horizontal position, said operating means including a transverse shaft journalled on said base beneath the axis of said bell crank fulcrum and offset horizontally from said fulcrum toward the receiving end of the stacker frame, a drive element extended generally radially from the shaft adjacent to each bell crank, coacting generally horizontally spaced heads on each drive element and the adjacent other arm of the crank lever; an arcuate periphery on each head, a flexible pull line anchored at its opposite ends tangentially on each pair of coacting arcuate peripheries so as to apply tangential pulling force and motion to said heads at uniform peripheral speed respectively, and a driven element extended generally radially from said shaft, a head on said driven element having an arcuate periphery, a powered puller device, and a flexible line tangentially anchored to the head of said driven element and connected to said puller device to exert a lineal tangential pull on said head of said driven element to turn all said heads and said bell crank levers at constant speed for elevating said stacker frame about its pivot, said powered puller device including a cylinder pivoted on said base, a plunger working in said cylinder, a plunger rod extended from said plunger, said flexible line from said driven element being connected to said plunger, and means to introduce a pressure medium into said cylinder to move said plunger away from said driven element thereby to pull said flexible line of said driven element for turning said transverse shaft, a sheet obstructing element adjacent each conveyor yieldably held out of the way of said sheets, electromagnetic actuator device to raise said sheet obstructing elements into sheet retarding position above the level of said conveyors; said control devices including valves to control the flow of pressure medium to said cylinder, electromagnetic devices to control said valves, cam actuated switches in the circuit of said electromagnetic devices, and cams on said shaft to actuate the respective electromagnetic devices in the respective extreme positions of said stacker frame so as to raise said obstructing element and by-pass said pressure medium from the highermost elevated position of said stacker to its lowermost position, and to close said by-pass and release said obstructing element in said lowermost position of the stacker.

17. In a sheet stacker of the character described, in combination, a base, a stacker frame having a receiving end and a stacking end and including a plurality of conveyors longitudinal on said frame to carry sheets along said frame from said receiving end to said stacking end so as to deposit such sheets in stacks, support means on said base for pivotally supporting the receiving end of said frame, the pivot axis of said frame being along said receiving end and transverse to said frame, said support means being swivelable about an axis beneath and generally parallel with said pivot axis and said receiving end so as to permit said frame to shift its position longitudinally during its movement about said pivot axis; lifting elements fulcrumed on said base and pivotally connected to said frame for shifting said frame upwardly about said pivot axis and longitudinally toward the stacking end while the frame is raised so as to compensate oppositely for the horizontal component of the arc of movement of the frame about said pivot axis and maintain said upward movement of said stacker end on a generally perpendicular plane, operating means to impart generally constant and uniform lifting force to said lifting elements, and control devices actuated by the positioning of said frame to render said operating means operative from the lowermost position to the top position of said stacking frame and render said operating means ineffective at said top position so as to permit the frame to turn to its lowermost position, and a layboy frame pivotally supported on said support means in registry with said receiving end so as to shift longitudinally together with said stacker frame, and a pressure operated pivoted cylinder and piston connection between said base and said layboy frame for lifting said layboy frame into an out of the way position and lowering said layboy frame into an operative registering position with said receiving end at will, said layboy frame having longitudinal conveyors thereon to carry sheets to said receiving end of said stacker frame, a conveyor drive shaft transverse at said receiving end for driving the conveyors on said stacker frame and on said layboy, said support means including a pair of spaced parallel arms, the lower ends of said arms being pivoted on said base and forming said pivot axis of said support means and the upper ends of said arms being pivoted to said conveyor drive shaft, the receiving end of said stacker frame and said layboy frame being journalled on said conveyor drive shaft, said conveyors on said layboy being driven by said conveyor drive shaft and power means to constantly rotate said drive shaft.

18. In a sheet stacker of the character described, in combination, a base, a stacker frame having a receiving end and a stacking end and including a plurality of conveyors longitudinal on said frame to carry sheets along said frame from said receiving end of said stacking end so as to deposit such sheets in stacks, support means on said base for pivotally supporting the receiving end of said frame, the pivot axis of said frame be-

ing along said receiving end and transverse to said frame, said support means being swivelable about an axis beneath and generally parallel with said pivot axis and said receiving end so as to permit said frame to shift its position longitudinally during its movement about said pivot axis; lifting elements fulcrumed on said base and pivotally connected to said frame for shifting said frame upwardly about said pivot axis and longitudinally toward the stacking end while the frame is raised so as to compensate oppositely for the horizontal component of the arc of movement of the frame about said pivot axis and maintain said upward movement of said stacker end on a generally perpendicular plane, operating means to impart generally constant and uniform lifting force to said lifting elements, and control devices actuated by the positioning of said frame to render said operating means operative from the lowermost position to the top position of said stacking frame and render said operating means ineffective at said top position so as to permit the frame to turn to its lowermost position, said lifting elements comprising spaced parallel bell crank levers, means on said base for fulcruming said bell crank levers on an axis transverse with respect to said stacker frame and between said base and said stacker frame, an arm of each bell crank lever being pivoted to said stacker frame and extending generally from said fulcrum toward said receiving end, and the other arm of each bell crank lever being connected to said operating means for applying force about said fulcrum, the axes of said fulcrums and of the pivoting of said arms of said bell crank levers being so spaced from each other and from the axis of the pivot of said receiving end that all said axes are substantially on the same general horizontal plane when the stacker frame is in horizontal position, said operating means including a transverse shaft journalled on said base beneath the axis of said bell crank fulcrum and offset from said fulcrum toward the receiving end of said stacker frame, a sector shaped arm on said shaft adjacent each bell crank lever, the adjacent other arm of each bell crank lever being also generally sector shaped, the arcuate peripheries of adjacent sector shaped arms being offset generally in the same plane, a flexible pull line being anchored on each pair of adjacent sector peripheries to exert a generally straight lineal pull on said peripheries generally on the line of a tangent common to said adjacent sector peripheries, a third sector shaped arm on said shaft, a powered puller device, and a flexible line extended from said puller device and anchored to the periphery of said third sector shaped arm generally tangentially and horizontally with respect to the periphery of said sector.

19. In a sheet stacker of the character described, in combination, a base, a stacker frame having a receiving end and a stacking end and including a plurality of conveyors longitudinal on said frame to carry sheets along said frame from said receiving end of said stacking end so as to deposit such sheets in stacks, support means on said base for pivotally supporting the receiving end of said frame, the pivot axis of said frame being along said receiving end and transverse to said frame, said support means being swivelable about an axis beneath and generally parallel with said pivot axis and said receiving end so as to permit said frame to shift its position longitudinally during its movement about said pivot axis; lifting elements fulcrumed on said base and pivotally connected to said frame for shifting said frame upwardly about said pivot axis and longitudinally toward the stacking end while the frame is raised so as to compensate oppositely for the horizontal component of the arc of movement of the frame about said pivot axis and maintain said upward movement of said stacker end on a generally perpendicular plane, operating means to impart generally constant and uniform lifting force to said lifting elements, and control devices actuated by the positioning of said frame to render said operating means operative from the lowermost position to the top position of said stacking frame and render said operating means ineffective at said top position so as to permit the frame to turn to its lowermost position, said lifting elements comprising spaced parallel bell crank levers, means on said base for fulcruming said bell crank levers on an axis transverse with respect to said stacker frame and between said base and said stacker frame, an arm of each bell crank lever being pivoted to said stacker frame and extending generally from said fulcrum toward said receiving end, and the other arm of each bell crank lever being connected to said operating means for applying force about said fulcrum, the axes of said fulcrums and of the pivoting of said arms of said bell crank levers being so spaced from each other and from the axis of the pivot of said receiving end that all said axes are substantially on the same general horizontal plane when the stacker frame is in horizontal position, said operating means including a transverse shaft journalled on said base beneath the axis of said bell crank fulcrum and offset from said fulcrum toward the receiving end of said stacker frame, a sector shaped arm on said shaft adjacent each bell crank lever, the adjacent other arm of each bell crank lever being also generally sector shaped, the arcuate peripheries of adjacent sector shaped arms being offset generally in the same plane, a flexible pull line being anchored on each pair of adjacent sector peripheries to exert a generally straight lineal pull on said peripheries generally on the line of a tangent common to said adjacent sector peripheries, a third sector shaped arm on said shaft, a powered puller device, and a flexible line extended from said puller device and anchored to the periphery of said third sector shaped arm generally tangentially and horizontally with respect to the periphery of said sector, sprocket teeth on the periphery of each of said sector shaped arms, and said flexible lines consisting of sprocket chains engaging the respective teeth.

20. In a sheet stacker of the character described, in combination, a base, a stacker frame having a receiving end and a stacking end, conveyor means longitudinal on said frame to carry sheets along said frame from said receiving end to said stacking end so as to deposit such sheets on a stack at said stacking end, swiveling supports extended from said base to the receiving end of said stacker frame, a conveyor drive shaft of said conveyor means being journalled on the top of said swivelling supports so as to form the fulcrum for the raising and lowering of said stacker frame about the axis of said shaft, lifting levers fulcrumed on said base beneath said stacker frame, each lifting lever being extended toward said receiving end and being pivoted to said stacker frame between said shaft and the fulcrum of said lifting levers so that the turning of said levers shall move the same stacker frame about the axis of said shaft pivotally and also longitudinally toward the stacking end while the frame is raised so as to compensate oppositely for the horizontal component of the arc of movement of the frame about said shaft axis and maintain the upward movement of said stacker end on a generally perpendicular plane, operating means on said base connected to said levers for turning said lifting levers about their respective fulcrums by a generally constant and uniform lifting force, and control devices actuated by said frame to render said operating means operative from the lowermost position to the top position of said stacking frame and render said operative means ineffective at said top position so as to permit the frame to return to its lowermost position.

21. In a sheet stacker of the character described, in combination, a base, a stacker frame having a receiving end and a stacking end, conveyor means longitudinal on said frame to carry sheets along said frame from said receiving end to said stacking end so as to deposit such sheets on a stack at said stacking end, swiveling supports extended from said base to the receiving end of said stacker frame, a conveyor drive shaft of said conveyor

means being journalled on the top of said swiveling supports so as to form the fulcrum for the raising and lowering of said stacker frame about the axis of said shaft, lifting levers fulcrumed on said base beneath said stacker frame, each lifting lever being extended toward said receiving end and being pivoted to said stacker frame between said shaft and the fulcrum of said lifting levers so that the turning of said levers shall move the said stacker frame about the axis of said shaft pivotally and also longitudinally toward the stacking end while the frame is raised so as to compensate oppositely for the horizontal component of the arc of movement of the frame about said shaft axis and maintain the upward movement of said stacker end on a generally perpendicular plane, an arm extended from the fulcrum of each lever, an arcuate engagement member on each arm, a base shaft on the base transverse to said base and beneath said frame, a generally segmental crank arm on said base shaft, a flexible line connecting said segmental arm with said arcuate engagement member for transmitting movement from one to another, and means to apply a constant turning to the base shaft and to said segmental arms for raising said stacker frame.

22. In a sheet stacker of the character described, in combination, a base, a stacker frame having a receiving end and a stacking end, conveyor means longitudinal on said frame to carry sheets along said frame from said receiving end to said stacking end so as to deposit such sheets on a stack at said stacking end, swiveling supports extended from said base to the receiving end of said stacker frame, a conveyor drive shaft of said conveyor means being journaled on the top of said swiveling supports so as to form the fulcrum for the raising and lowering of said stacker frame about the axis of said shaft, lifting levers fulcrumed on said base beneath said stacker frame, each lifting lever being extended toward said receiving end and being pivoted to said stacker frame between said shaft and the fulcrum of said lifting levers so that the turning of said levers shall move the said stacker frame about the axis of said shaft pivotally and also longitudinally toward the stacking end while the frame is raised so as to compensate oppositely for the horizontal component of the arc of movement of the frame about said shaft axis and maintain the upward movement of said stacker end on a generally perpendicular plane, an arm extended from the fulcrum of each lever, an arcuate engagement member on each arm, a base shaft on the base transverse to said base and beneath said frame, a generally segmental crank arm on said base shaft, a flexible line connecting said segmental arm with said arcuate engagement member for transmitting movement from one to another, and means to apply a constant turning to the base shaft and to said segmental arms for raising said stacker frame, and a layboy, a conveyor on the layboy being driven by said conveyor shaft and being supported on said conveyor shaft in alignment with the receiving end of said stacker frame, and means to selectively adjust the angular position of said layboy about said conveyor shaft.

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