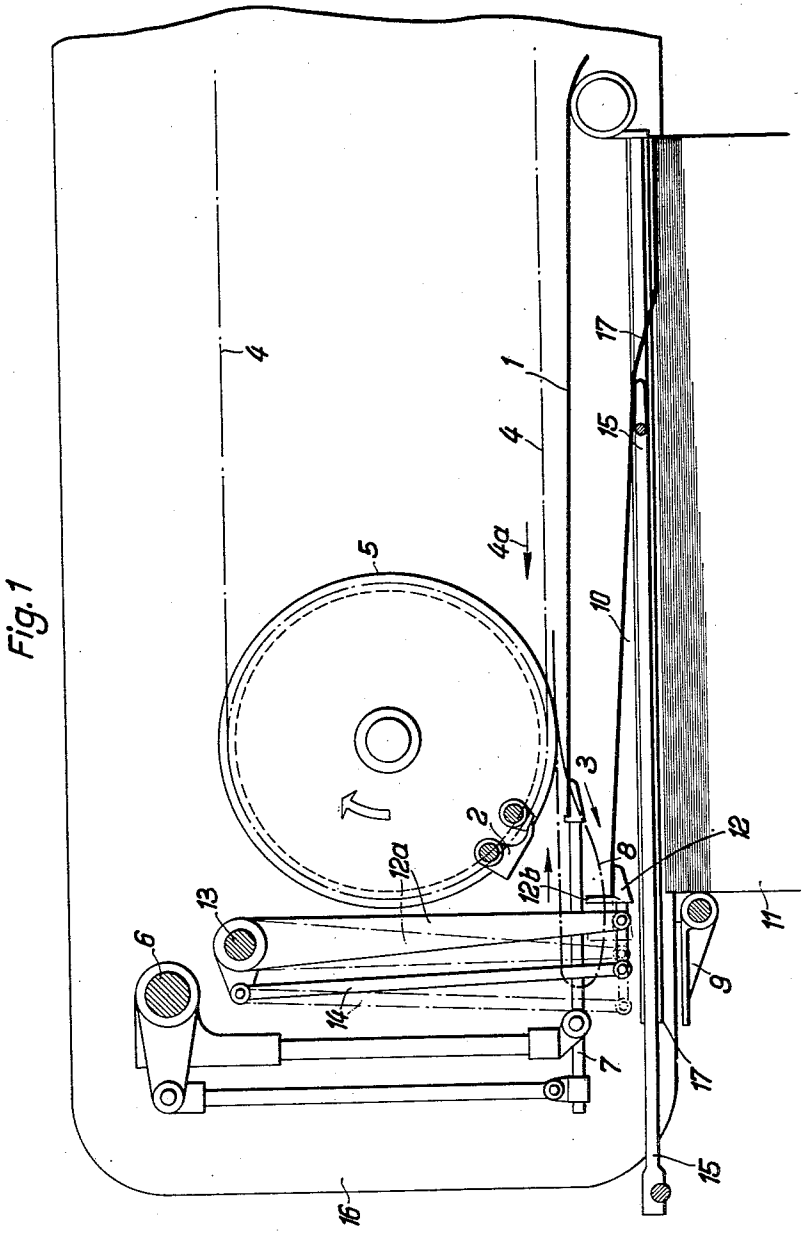
May 27, 1958 K. BLÄTTNER ET AL 2,836,418

STACKING DEVICE FOR PRINTING MACHINES

Filed May 10, 1954 7 Sheets-Sheet 1

Fig. 1



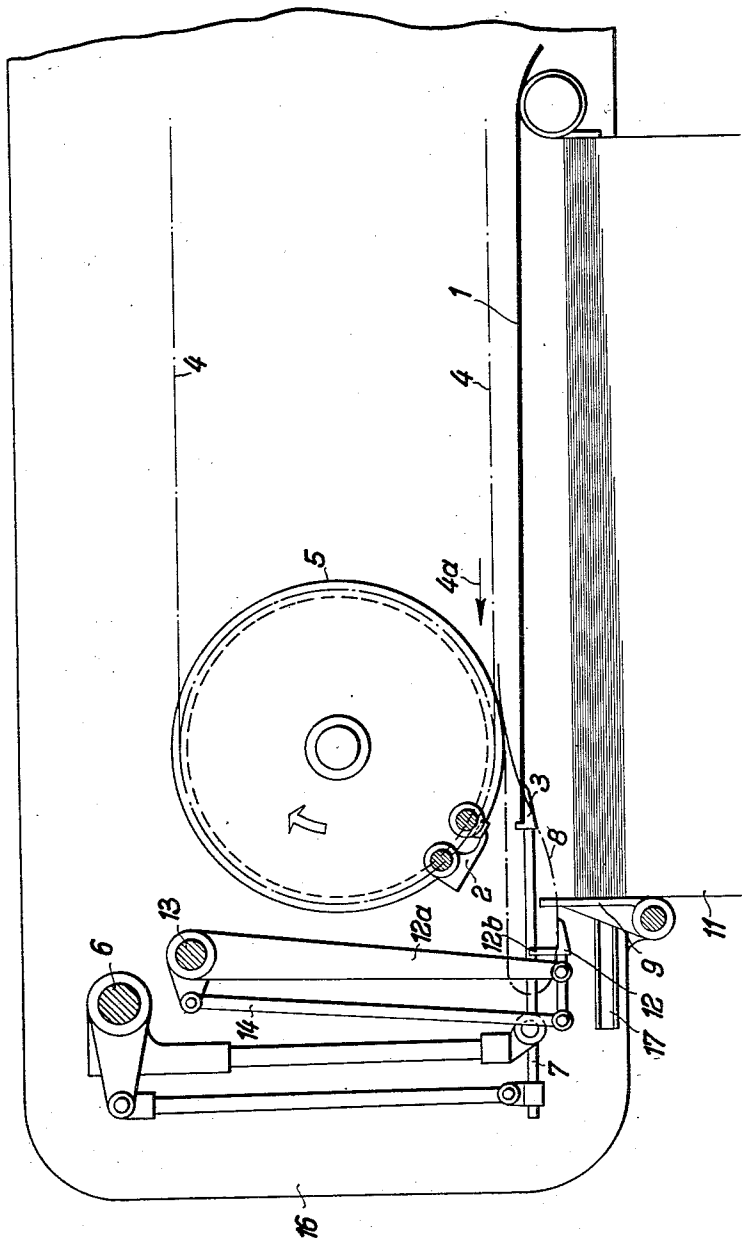
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STACKING DEVICE FOR PRINTING MACHINES

Filed May 10, 1954 7 Sheets-Sheet 2

Fig. 2



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STACKING DEVICE FOR PRINTING MACHINES

Filed May 10, 1954 7 Sheets-Sheet 3

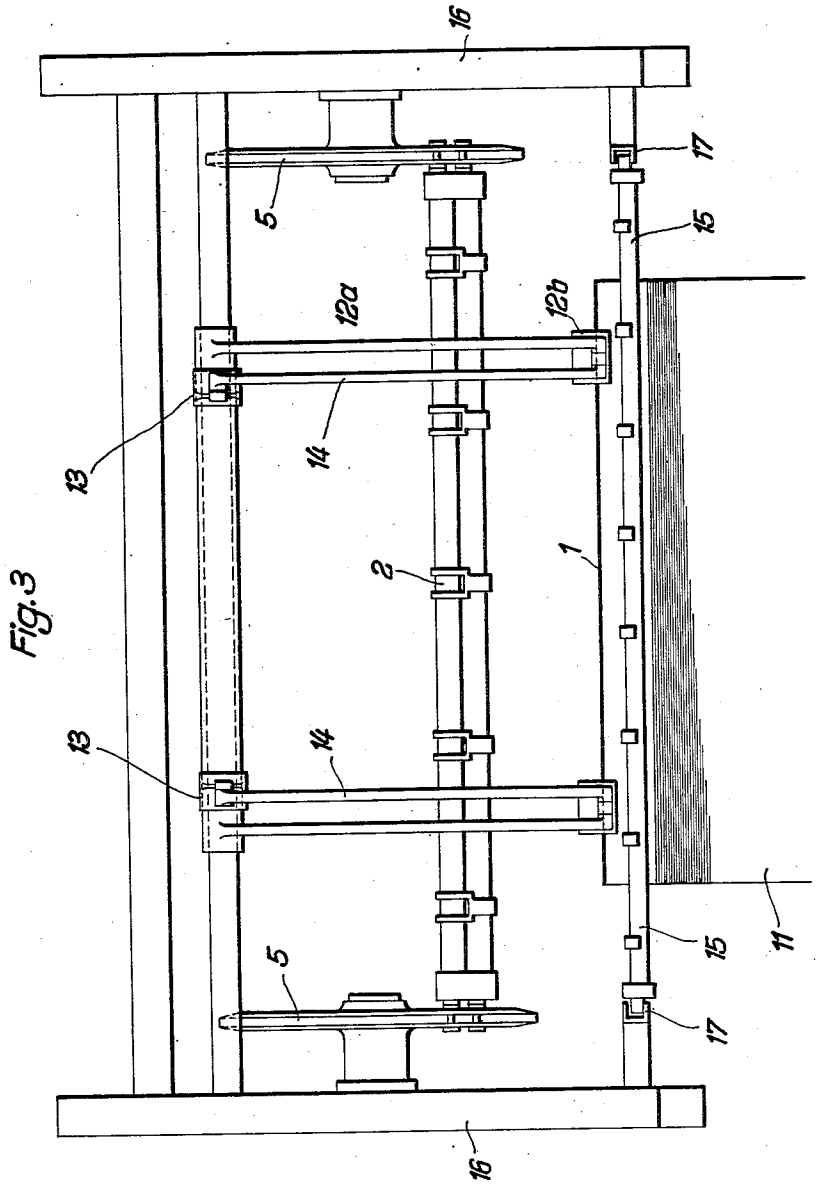


Fig. 3

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STACKING DEVICE FOR PRINTING MACHINES

Filed May 10, 1954 7 Sheets-Sheet 4

Fig. 4

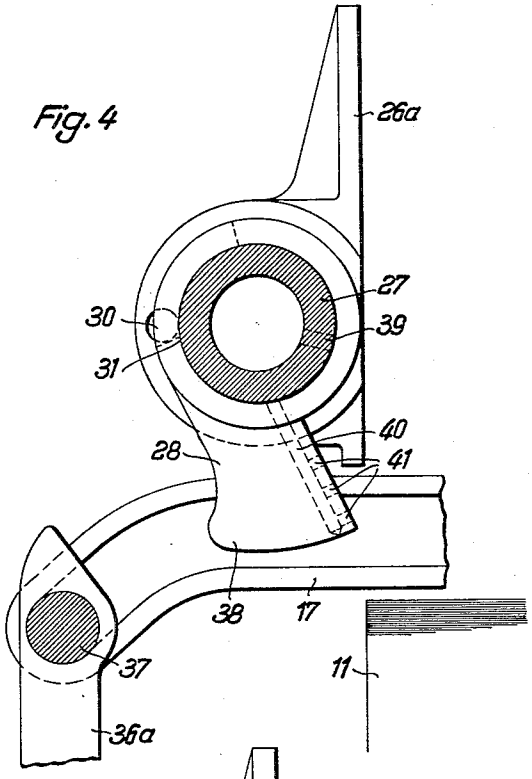
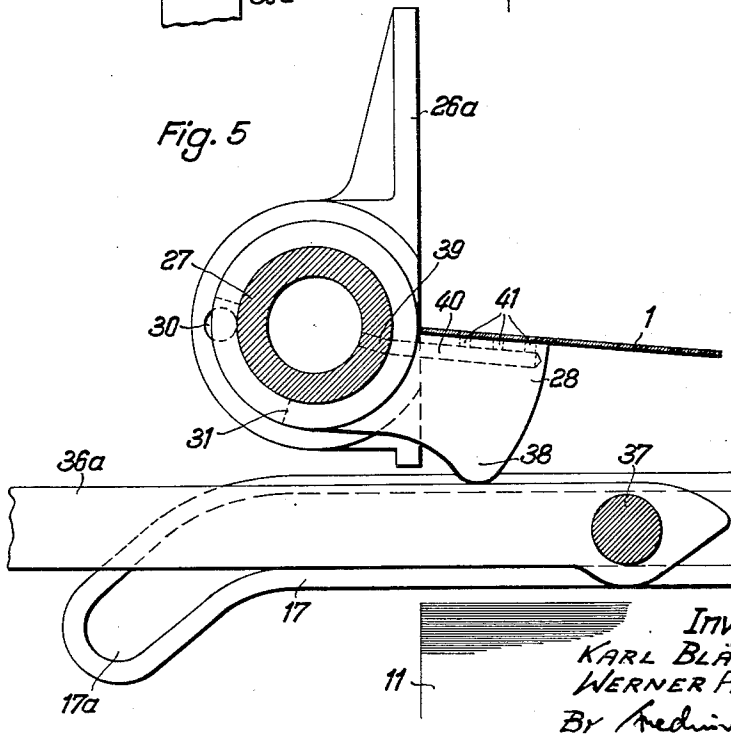


Fig. 5



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STACKING DEVICE FOR PRINTING MACHINES

Filed May 10, 1954 7 Sheets-Sheet 5

Fig. 6

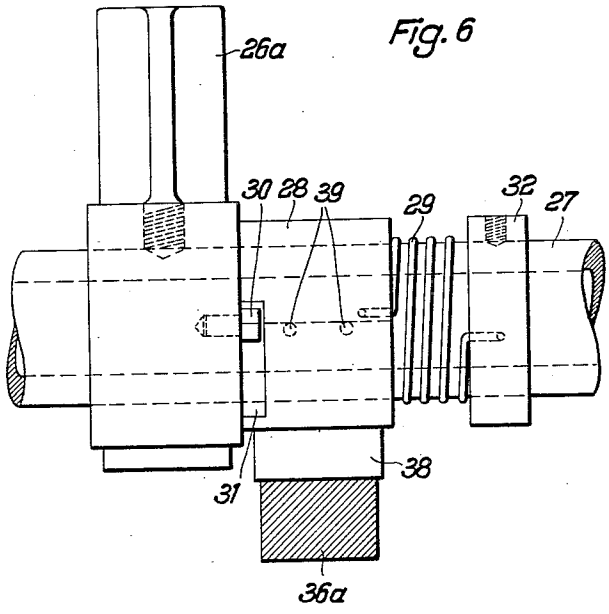
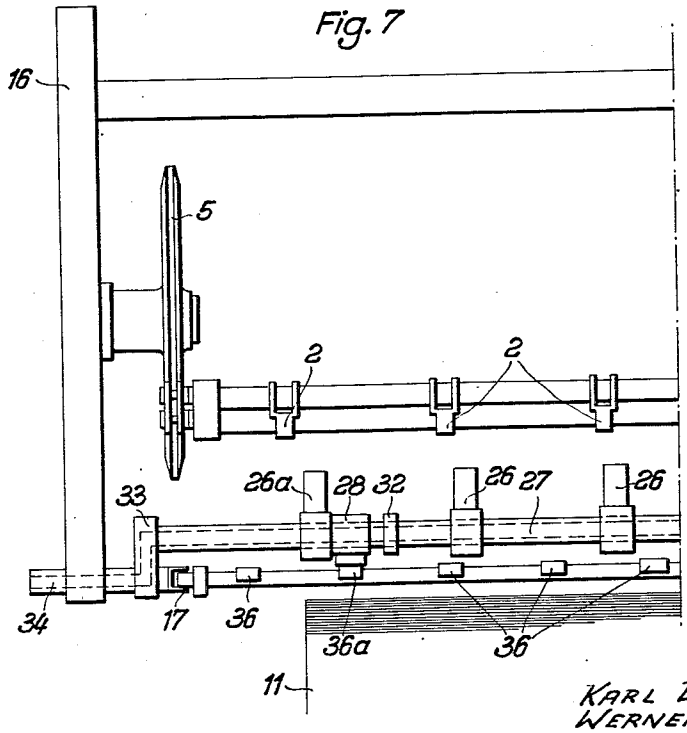


Fig. 7



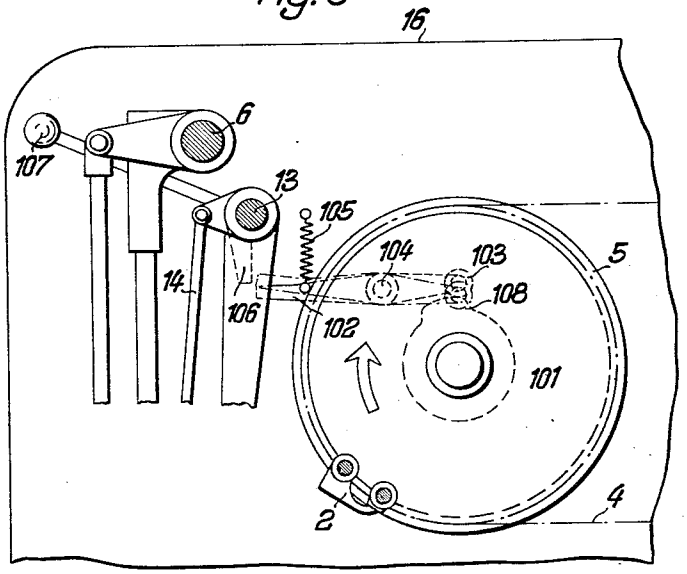
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STACKING DEVICE FOR PRINTING MACHINES

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Fig. 8



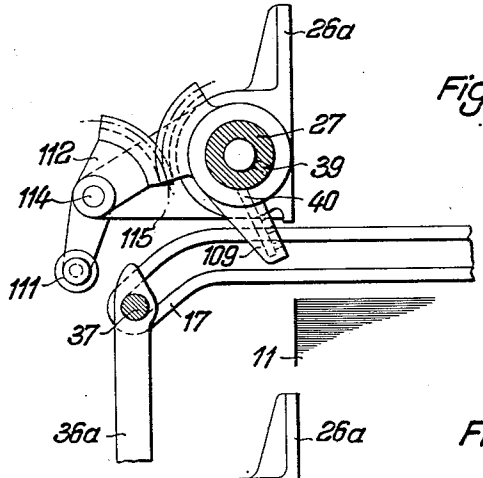


Fig. 10

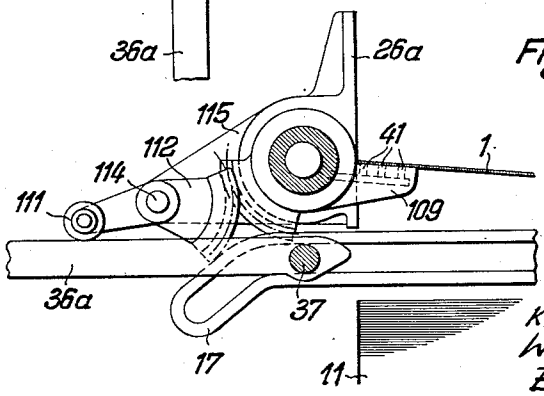


Fig. 11

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STACKING DEVICE FOR PRINTING MACHINES

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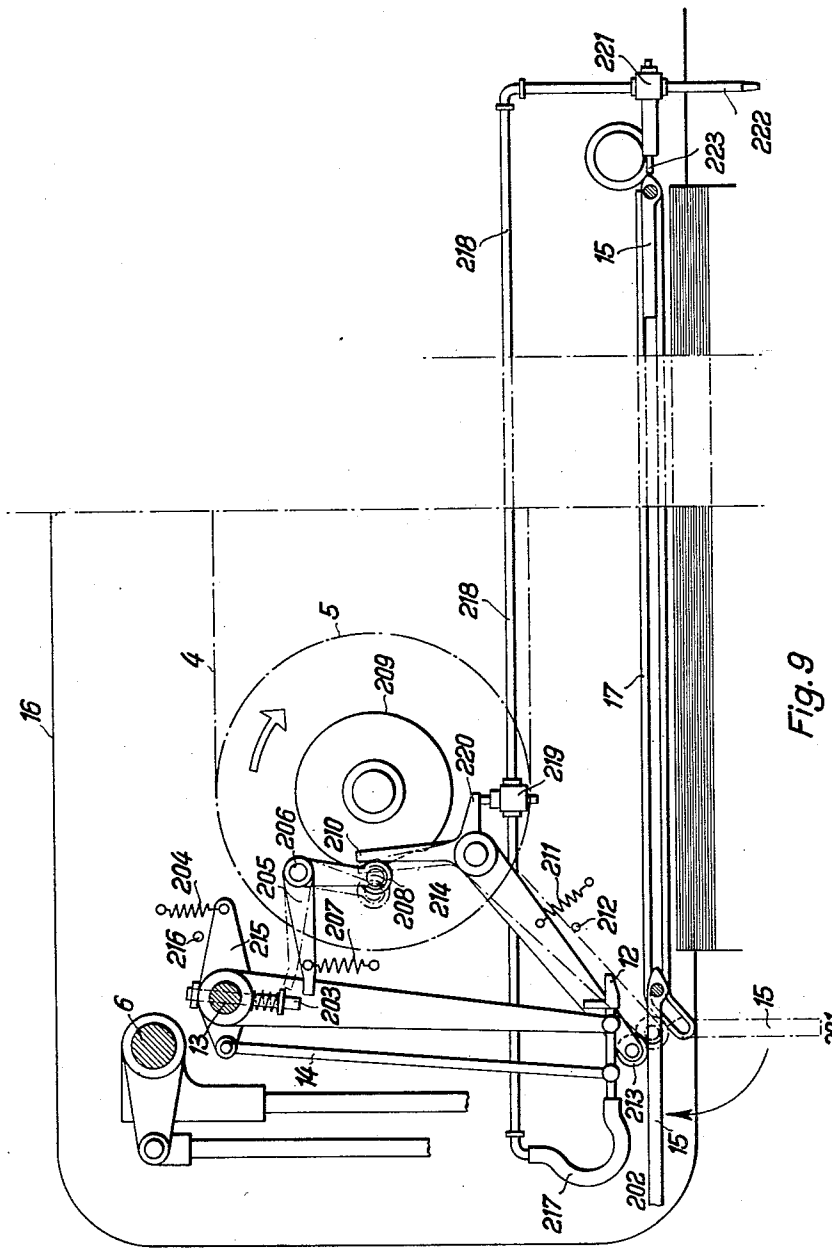


Fig. 9

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United States Patent Office 2,836,418 Patented May 27, 1958

2,836,418

STACKING DEVICE FOR PRINTING MACHINES

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Application May 10, 1954, Serial No. 428,629

Claims priority, application Germany May 22, 1953

18 Claims. (Cl. 271—68)

This invention relates to the stacking devices of sheet printing machines in which means are provided, which enable the removal of a stack of sheets from the machine during work without thereby disturbing the continual operation of the stacking device.

In the conventional form of stacking devices in printing machines it is usual, when the stack of sheets has reached a certain height, to introduce means over the stack during the continued run of the machine, upon which means the sheets further delivered by the machine are temporarily deposited, while the finished stack is removed and a new stack table placed in its stead. The temporary depositing means are then withdrawn so that the sheets which have meanwhile collected thereon fall onto the empty table, so that the delivery and the stacking of the oncoming sheets may continue without interruption.

It is usual, in printing machines, to provide such temporary supporting means in the form of grates, or auxiliary tables or table tops made of thin plates, but for the purpose of this specification and for the sake of greater simplicity these temporary means will hereinafter be generally referred to as grates. It is thus to be understood, that the term "grate" as used hereinafter also includes other auxiliary means, such as the aforementioned tables, table tops, comb-like structures and the like which may be used for the same purpose as the device in accordance with the invention.

For the preliminary deposition of the sheets during the interval in which the stacking tables are being exchanged, the grates or comb-like structures which have been used consisted of long thin slats joined at one or both ends by cross strips, and it is common practice in printing machines, to provide appropriate guides near the top of the stack into which the said grates can be slid.

The introduction of these temporary sheet supports is extremely difficult, and this difficulty increases directly with the speed and size of the machine, and inversely with the quality of the paper. It is difficult to make use of the auxiliary supports in large type high speed presses and with large soft or spongy sheets of paper. However, it is necessary that the insertion of the temporary supporting means should proceed very quickly, namely in the interval between the delivery of two consecutive sheets of paper. It also requires a considerable amount of ingenuity and celerity in high speed presses always to pick the correct moment for the insertion of the aforesaid auxiliary means. Besides, the sheets do not, as a rule, settle down on the stack as quickly as might be desired, and it often happens that they are being caught by the auxiliary supporting means. The sheets then become crumpled and the machine has to be stopped for the disturbance to be removed.

The invention, therefore, in one of its particular aspects, has for its main object the elimination of the aforesaid drawbacks, and the provision of means which will enable the insertion of the temporary sheet supporting means with utmost reliability at the ease of the operator and without the risk of crushing or even displacing any of the sheets in the stack.

It is also an object of the invention so to insert the auxiliary depositing means that the sheets will rest thereon perfectly flat, so that the delivery and stacking of the sheets may be continued as before.

Another object of the invention, therefore, is the provision along the edge of the auxiliary supporting device at which the incoming sheets are introduced, of means for temporarily holding the sheets, which will enable the said devices to be inserted without any undue haste and without the risk of the sheets getting damaged. Said temporary holding or gripping means may be of the mechanic, pneumatic, electric, or any other type.

A further object of the invention is the provision of means to hold the subsequently delivered sheets so as to present a wedge-shaped space into which the auxiliary grate can be easily inserted. The holding or gripping means may be so arranged that they will hold only the first sheet which is being delivered to it, while all further sheets loosely settle thereon, or so that every sheet will be held in place by itself as by means of independent grippers or the like. It has been found suitable, in any case, to maintain the gripping means at one end or side of the stack at a certain height above the said stack, whereby the aforesaid wedge-shaped gap will be formed, into which the auxiliary grate can be inserted very easily.

A still further object of the invention is the provision of front stops for the sheet, on the stacking device which can be moved out of the way of the auxiliary gripping means, in order to facilitate or even enable the movement of the said grippers and the introduction of the auxiliary sheet supporting means.

A particularly useful and reliable embodiment of the invention can be incorporated into a type of stacking device, in which the leading edge of the sheets, on having been released by the grippers of the delivery device, is seized by additional grippers, or suction nozzles for example, which positively forward the sheets at reduced speed against stops and thereby deposit them onto the stack. When a device in accordance with the invention is used in conjunction with a stacking device of the said type, the advantage is obtained that the leading sheet edge is guided in an exactly predetermined path and that, therefore, the grippers can be arranged to seize the edges of the sheets, the front edges in the present case, reliably at always the same place. It is evident, that each of the sheets may also be seized at any other edge instead of its front edge. Another modification, inter alia, may be that in which several grates or tables are inserted either simultaneously or successively from either the front or any other edge of the sheets.

Yet another object of the invention is the safeguarding of the sheet edges against damage. For this purpose means may be provided which will permit the operation of the gripper or grippers only at such times in which a sheet to be stacked is approaching. This can be made possible by the introduction, into the stacking device, of locking means adapted to operate in dependence of the delivery of the sheets.

A comparatively simple embodiment of the invention in a stacking device of the aforesaid type, preferably comprises an auxiliary gripper system similar to the one which above has been designated as "additional." Both these systems may be composed, for instance, of suction devices, successively arranged on long depending levers and having auxiliary stops for the alignment of the sheet edges. While normally the additional gripper system receives the sheets from the delivery grippers, this sec-

ond or auxiliary gripper system will be supplied with sheets from the additional grippers only shortly before the insertion of the grate until the latter has been pushed into the wedge-shaped space, whereupon the auxiliary grippers or suction devices will be returned.

It is also possible, in accordance with another object of the invention, to operate the auxiliary grippers by the means which are used for the temporary support of the sheets, i. e. by the grates, table tops, or the like, in which way a considerable simplification in the manipulation of the stacking device can be obtained. In a preferred embodiment of this object of the invention the insertion of the grates over the stack of sheets may be caused to control the auxiliary means for the clamping or holding the sheet edges. The operator will then be able to direct his full attention to the proper handling of the grate as the sheets are seized automatically in the correct way and, therefore, require no attention.

In an extended application of this object of the invention the insertion of the grates, if guides for them are provided, can be further simplified by forming the said guides with a loop or the like, into which the front cross bars of the grates may be suspended when not in use and so that, when they are tipped up into their horizontal sliding-in position, the means for gripping the sheet edge will be brought into operation. As an alternative, the control of the auxiliary gripping means may be carried out by the beginning of the sliding-in movement of the said grates into their guides.

It is also possible, in accordance with the invention, to render the auxiliary stacking device still more automatic in operation by the application of means which will cause the automatic regulation of the auxiliary grippers during the insertion of the grate to become effective only at such moments at which the next oncoming sheet approaches the gripper or grippers.

In the latter case it is also possible to provide a locking device, which will allow the complete introduction of the grate from its position outside the stack into its position over the stack to take place only after a sheet has been seized by the auxiliary gripper and held or clamped fast thereon.

The action of rendering the auxiliary gripping means inoperative by the release of the sheets which have collected on the grate or auxiliary stacking table is also effected by the grate itself. This may be effected when the grate, during its insertion, has approximately reached its end-position, or after the exchange of the main stacking tables, when the auxiliary grate or table is being withdrawn.

The accompanying drawings illustrate several embodiments of the invention by way of example. In these drawings:

Fig. 1 illustrates a comparatively simple construction of the auxiliary stacking device in accordance with the invention in side elevation with the temporary grate or stacking table being partly introduced and with the auxiliary gripping means in their operative position.

Fig. 2 is a view similar to Fig. 1 with the auxiliary gripping means in their position of rest.

Fig. 3 represents a front elevation of Fig. 2.

Fig. 4 illustrates in cross section a modified embodiment of the invention in which the auxiliary grippers are operated by the sheet-edge holding means in their position of rest.

Fig. 5 shows the same modification in a view similar to Fig. 4 in its position of operation.

Fig. 6 is a front elevation of Fig. 5.

Fig. 7 is a front elevation of the left hand side of a stacking device as shown in Figs. 4 to 6.

Fig. 8 represents a portion of Fig. 2 showing a simple form of machine-actuated locking device.

Fig. 9 is a more elaborate kind of machine-controlled

locking device in a stacking device of the type shown in Figs. 2 and 8.

Fig. 10 illustrates a modification of the device shown in Figs. 4 and 5 on a smaller scale with the grate in its position of rest.

Fig. 11 is a view similar to Fig. 10 with the grate in the position in which it is ready for being inserted.

As illustrated in Figs. 1 and 2, the sheets **1** coming from the printing machine (not shown) are forwarded by the delivery grippers **2** as far as to the additional grippers which, in this example, are constituted by the suction nozzle **3**. The delivery grippers **2** are fastened between two chains **4** which travel at either side of the machine in the direction of the arrow **4***a* over sprockets **5**, of which those in cooperation with the stacking device can be seen in the drawings.

The additional gripper **3** which receives the sheets from the delivery grippers **2** is actuated from the rocking shaft **6** over a depending link and lever system by the control rod **7** in a curved path which, in Figs. 1 and 2, is indicated by the dot and dash line **8**. When the suction nozzle **3** meets with the delivery gripper **2** it takes the sheet from the latter and carries it in the direction of the front stop **9** (Fig. 2), where it is released by the suction nozzle **3** so that it falls onto the stack **11**.

When the stack **11** has attained a height which would necessitate its removal, auxiliary grippers which, in the present case, are represented by suction nozzles **12** suspended on arms **12***a* and having a stop ledge **12***b*, are moved by a link and lever system **14** from the rocking shaft **13** into the position shown in Fig. 1. In this position the sheet is received by the nozzle **12** from the nozzle **3** and held along its front edge in contact with the stop ledge **12***b* by suction. For the better reception of the sheets from the nozzle **3** it is advisable to lift the nozzle **12** by a corresponding movement of the link **14** and to lower it again as soon as the sheet has been taken over, so that the suction nozzle **3**, during its movement along its curved path **8**, will not be able to damage the sheet. All further sheets which the grippers **2**, **3**, and **12** continue to deliver will now be deposited upon the first sheet just mentioned. In this way a wedge-shaped gap is formed between these sheets and the pile **11** in the stacking device, into which the auxiliary table, the grate **15** in the present case, can be slid at the ease of the operator along the guides **17** which are provided at both sides of the machine frame **16** and after the front stops **9** have been turned down as shown in Fig. 1. Owing to this wedge-shaped space there is no danger of the sheet getting obstructed or crushed when the grate is introduced, since it is immovably held along its front edge by the suction nozzle **12**.

After the grate **15** has been completely inserted over the pile or stack **11**, the suction nozzle **12** releases the sheet and is immediately rocked back, by rotating the shaft **13**, into its position of rest as shown in Fig. 2 and, for the sake of better showing, in broken lines also in Fig. 1. The sheet **1** which has been held by the nozzle **12**, as well as all further sheets, are now deposited by the nozzle **3** onto the grate so as to lie perfectly flat thereon, and the stack **11** can be removed and a new stack table introduced in the conventional manner.

The modification of the auxiliary stacking device which is illustrated in Figs. 4 to 7 is also intended for cooperation with the chain conveyer for printing machines such as **2**, **4**, **5** in the foregoing example. In the modification now to be described the front edges of the sheets are aligned by the front stops **26** and **26***a*, which are arranged in fixed position on the tube **27**.

The outermost of the front stops are designated **26***a* (Fig. 7), and next to these front stops on either side of the machine is provided an auxiliary gripper in the shape of a suction nozzle **28** turnably mounted on the tube **27** and held in its position of rest by a torsion spring **29** as

illustrated in Fig. 6. Fixed in the hub of each of the front stops 26*a* is a stop pin 30 which extends into an excavation in the suction device 28 so as to rest against the end wall 31 of the said excavation when the device is at rest. The torsional force of the spring 29 can be adjusted by means of a collar 32. The mounting tube 27 is supported at both its ends in arms 33 which, in turn, are secured to the side wall 16 of the stacking device. One of these arms is preferably hollow, so that the interior of the tube 27 may be connected to a suction conduit through the said arm 33 by means of a pipe socket 34.

Guides 17 are provided below the front stops 26, 26*a* into which a grate 36, 36*a* can be pushed as a temporary support for the sheets when the stack tables are being exchanged. The said grate similar to the aforementioned grate 15, is of substantially known kind, consisting of slats or flat bars 36, 36*a* connected by cross bars fore and aft. Of these cross bars the foremost bar 37 serves, apart from supporting the sheets together with the longitudinal bars or slats, also for suspending the grate in a position ready for use in the loop 17*a* which is formed at the forward end of the guide 17 as shown in Fig. 5.

This embodiment of the auxiliary stacking device in accordance with the invention operates as follows: When the stack 11 has reached the height which necessitates its removal, it is lowered into the position shown in Figs. 4 and 5. Grate 36, 36*a*, which has previously been suspended with its cross bar 37 in the loop 17*a* of the guide 17, is now tipped up into its horizontal position and pushed in over the stack 11. The grate bar 36*a* hereby encounters the cam-shaped part 38 of the suction device 28 and turns the same against the action of spring 29 into its operative position shown in Fig. 5. The suction device with its cam-shaped portion 38 will then rest on the bar 36*a* as long as the grate remains in its inserted position. By the turning-up movement of the suction member 28 the bores 39 in the tube 27 register with the vacuum passage 40 of the nozzle 28 so as to cause a vacuum in the perforations 41. These perforations are in communication with the passages 40, and the sheet 1 which has just been released by the delivery grippers 2 to be deposited on the stack 11 will now be attracted by the nozzle 28 and held by the vacuum in the perforations 41 so as to maintain its position also during the insertion of the grate.

When, after the exchange of the stacks, the grate is being extracted, the spring 29 returns the suction nozzle 28 into its position of rest as shown in Fig. 4. Hereby the connection with the vacuum tube is interrupted and the sheets are free to drop onto the stack 11, or the new stack table respectively, which has meanwhile been brought into position.

Fig. 8 again illustrates the embodiment of the invention as shown in Figs. 1 to 3 but in connection with means by which the auxiliary grippers, or suction nozzles respectively, can be swung into position over the stack of sheets only under control of the printing machine. Fixed to the sprocket 5, in the enlarged embodiment represented in Fig. 8, is a cam disk 101 which at every rotation of the printing machine rocks the locking lever 102 in anticlockwise direction about its bearing pin 104. A spring 105 serves to draw the locking lever 102 with its follower 103 into contact with the cam 101. Fast on the rocking shaft 13 of the suction nozzle 12 is an abutment 106 which permits the suction nozzle to be swung over the stack 11 by means of the hand lever 107 that is also secured to the rocking shaft 13 only when the locking lever 102 is in the release position shown in Fig. 8, in which the free end of the locking lever is lowered to underneath the abutment 106 by the rise 108 on the cam 101. This prevents the auxiliary nozzle from being extended at an improper time which would interfere with other parts of the machine.

Whereas in the foregoing example the swinging of the auxiliary gripper, or the suction nozzle respectively, depends on the movement of the arms 12*a* by a hand lever, Fig. 9 illustrates a further enlargement according to which the swinging-in of the auxiliary suction nozzle 12 is controlled by the machine to take place at always the correct moment after the grate 15 has been tipped up from its position of rest 201 into its position of preparedness 202. For this purpose the driving means 13 are provided with an abutment pin 203 which, when the gripper 12 is in its position of rest, bears against the locking lever 205 under the action of a spring 204. This locking lever 205 has two arms at approximately right angles to each other and is pivoted on a pin 206 in the standard 16 of the stacking device. Its depending arm is provided with a roller 208 and a spring 207 is used to keep this roller in contact with a control cam 209, which is fixed to the sprocket wheel 5 and makes one complete revolution at each printing operation of the machine. When the suction nozzle is not in use, roller 208 is drawn by the three-armed control lever 210 into the position shown in broken lines, in which the suction nozzle is held in its inoperative position by the horizontal lever arm 205 as shown in Fig. 9. In this position the three-armed control lever is drawn by the spring 211 into contact with a stop 212.

If now the grate 15 is lifted from its position of rest 201 into its position of working preparedness 202, its pertaining grate bar lifts the roller 213 of the control lever 210 and moves the same into the position which is shown in full lines. When now the drop or recess 214 in the cam 209 assumes the position shown in the drawing, roller 208 will be able to enter into this recess. By this means the locking lever 205 releases the abutment pin 203 and the suction nozzle 12 will be swung by the spring 204 into its operative position, which however, is limited by the lever arm 215 coming into contact with the stop 216.

The suction nozzle 12 is supplied with the required vacuum over the conduit 218 in which a stop valve 219 is arranged, which is opened by the arm 220 of the control lever 210 on the roller 213 being lifted.

Another stop valve 221 is provided in the conduit 218 which closes the conduit when the grate 15 has been fully inserted by pressing the spindle 223 of the valve inwardly. In this way the connection of the nozzle 12 with the vacuum pump, which is joined up to the pipe 222, becomes interrupted.

As shown in Figs. 10 and 11 the suction device 109 may be actuated when the grate 36, 36*a* is tipped up from the depending position of Fig. 10 into the horizontal position shown in Fig. 11 and pushed slightly inward. In this position the pertaining grate bar lifts the roller 111 of the toothed segment 112 and thereby imparts to it a turning movement in clockwise direction. At the same time the suction device 109 is swung from its inoperative into its operative position over the stack 11 in order thereby to attract the sheet 1 which is being delivered by the printing machine. The toothed segment 112 is pivoted on the bolt 114 which is fixed to the arm 115 of the front stop 26*a* of the stacking device.

What we claim is:

1. A sheet stacking apparatus for sheet printing machines, means for exchanging the stack support during the continued operation of the machine in combination with front stops, an auxiliary sheet support for insertion over the stack on the said stack support and with means for guiding said auxiliary sheet support over the stack, a hollow suction tube, a gripper turnable on said tube, suction nozzles on said gripper, means in connection with said auxiliary sheet support for moving said gripper into a sheet receiving and holding position, and means for supplying a vacuum into said hollow tube.

2. A sheet stacking apparatus for sheet printing machines, means for exchanging the stack support in combination with front stops, an auxiliary sheet support for

insertion over the stack on said stack support and with means for guiding said auxiliary sheet support over the stack so as to receive and support the sheets while the auxiliary support is inserted, a hollow suction tube, a gripper turnable on said tube and depending into the path of said sheet support when the latter is moved over the stack, means in connection with said auxiliary sheet support for pivoting said gripper upwardly into a sheet receiving position, suction nozzles on said gripper, passages between said nozzles and the interior of said suction tube normally out of communication but moved into register by the upward pivoting of said sheet support, and a guide for moving said sheet support over the stack thereby to contact with and temporarily pivot said gripper into a position for receiving and holding sheets which are delivered during the time in which an exchange of the stack support takes place in the stacking device.

3. A sheet stacking apparatus for sheet printing machines, means for exchanging the stack support, comprising, in combination with front stops, an auxiliary sheet support for insertion over the stack on said stack support, and means for guiding said auxiliary sheet support over the stack so as to receive and support the sheets while the said auxiliary support is inserted, a hollow suction tube, a gripper turnable on said tube, suction nozzles on said gripper, said gripper depending into the path of said auxiliary sheet support to contact therewith so as to be moved by the said sheet support into a sheet receiving and holding position, and suction passages to establish communication between the said suction nozzles and said hollow tube when the said gripper has been moved into its sheet receiving position.

4. A sheet stacking apparatus for sheet printing machines, means for exchanging the stack support, comprising, in combination with front stops, an auxiliary sheet support for insertion over the stack on said stack support, and means for guiding said auxiliary sheet support over the stack so as to receive and support the sheets while the said auxiliary support is inserted, a hollow suction tube, a bore in the wall of said tube, a gripper turnable on said tube, suction nozzles along the inner edge of said gripper, a suction passage in said gripper in connection with said suction nozzles, a bore in said tube wall normally out of communication with said passage, a cam portion on said gripper suspending into the path of said sheet support, a guide for the said auxiliary sheet support over the stack of sheets, and means on said guide to suspend said auxiliary sheet support out of operation and so as to be raised into contact with said cam portion of said gripper to pivot same and to afford communication between the said passage in the gripper and the bore in the wall of said tube.

5. A sheet stacking apparatus for sheet printing machines having a main stack support and means for the exchange of the said main stack support, an auxiliary sheet support for insertion over the stack on said stack support, means for temporarily moving said sheet support over the stack so as to receive and support the sheets while the said auxiliary support is inserted, front stops above the forward end of said stacking device, a hollow tube to carry said front stops with their sheet stopping surfaces in a vertical position facing the oncoming sheets, a depending gripper turnably suspended from said hollow tube, suction passages in said gripper extending to the outside thereof, the wall of said hollow tube having a normally closed bore, means for turning said auxiliary gripper into its operating position with its suction passages to register with the bore in said tube wall, a cam portion on said gripper extending into the path of said auxiliary sheet support thereby to contact with said cam portion and to move said gripper into a sheet receiving position with its suction passages communicating with said bore in the tube wall and to hold the leading edge of said sheets while said auxiliary sheet support is being moved along said guide.

6. A sheet stacking apparatus for sheet printing machines, in combination with means for exchanging the stack support during the operation of the machine and the stacking device, an auxiliary sheet support for insertion over the stack on said stack support, a guide for guiding said auxiliary sheet support over the stack so as to receive and support the sheets while the said auxiliary support is inserted, an auxiliary gripper movable for gripping sheets which are delivered from the printing machine during the exchange of the stack support, suction means on said gripper for holding said sheets along their leading edges, a loop at the end of said guide, means at the leading end of said auxiliary sheet support for suspending said sheet support in said loop, and means on said auxiliary gripper responsive to the tipping-up and sliding-in movement of said sheet support for gripping a sheet and holding it along its leading edge while said auxiliary sheet support is being moved over the said stack.

7. A sheet stacking apparatus for sheet printing machines, in combination with means for exchanging the stack support, an auxiliary sheet support for insertion over the stack on said stack support, a guide for guiding said auxiliary sheet support over the stack so as to receive and support the sheets while the said auxiliary support is inserted, a loop at the front of said guide for suspending said auxiliary sheet support therein, a hollow shaft horizontally disposed above said stack and guide having a perforation in its wall, a front stop in fixed position on said hollow shaft, an auxiliary gripper turnable on said hollow shaft, suction means on said gripper for seizing a sheet and holding it along its leading edge and against said front stops, gear teeth on said auxiliary gripper, a pivoted gear in engagement with said gear teeth on said auxiliary gripper, and means on said pivoted gear for contacting with said auxiliary sheet support when the latter is being turned up in its loop to turn said auxiliary gripper into its operative position.

8. A sheet stacking apparatus for sheet printing machines as set forth in claim 3, in which the means which respond to the insertion of the auxiliary sheet support for putting said gripping means into operation also respond to the removal of the said auxiliary sheet support for placing said gripping means out of operation.

9. A sheet stacking apparatus for sheet printing machines having a main stack support, a gripper arranged adjacent to said support, a conveyor for delivering individual sheets to said gripper, said gripper having means for depositing said sheets upon said main stack support, selectively actuated means for temporarily suspending one end of delivered sheets above said stack and an auxiliary sheet support supported for reciprocating movement to a position between said selectively actuated means and said stack, said auxiliary sheet support when in said position being operative to receive said suspended sheets from said selectively actuated means and said gripper.

10. A sheet stacking apparatus as set forth in claim 9, wherein said selectively actuating means comprises a suction apparatus for receiving the leading edges of sheets from said conveyor means, said main stack support having spaced guides for directing the movement of said auxiliary sheet support to said position.

11. A sheet stacking apparatus as set forth in claim 9, wherein said conveyor comprises a continuous chain for delivering individual printed sheets from said printing machine to said gripper, said selectively actuated means for suspending one end of said delivered sheets above said stack forming a wedge-shaped opening in said stack of sheets for receiving said auxiliary sheet support during movement to said position.

12. A sheet stacking apparatus as set forth in claim 9, wherein said selectively actuated means is operative to support a plurality of printed sheets from said gripper and has retraction means for disengaging said sheets upon movement of said auxiliary sheet support to said position

for releasing said suspended sheets for flat face engagement with said auxiliary sheet support.

13. A sheet stacking apparatus as set forth in claim 9, further comprising control means for effecting timed reciprocating movement of said gripper, said selectively actuated means including suction means for temporarily holding the leading edge of at least one sheet received from said gripper during movement of said auxiliary sheet support to said position, and means for effecting reciprocating movement of said selectively actuated means at least once during movement of said auxiliary sheet support into and out of said position.

14. A sheet stacking apparatus for sheet printing machines having a main stack table and auxiliary means for continuing the stacking operation during the exchange of the main stack table including an auxiliary stacking table for temporary insertion over the stack, chain grippers for delivering the printed sheet from the printing machine to the stacking device, an additional gripper comprising a suction nozzle for receiving the sheets from said chain grippers, means for effecting timed reciprocating movement of said additional gripper, a grate serving as said auxiliary stacking table, a guide on either side of the stack at the same height thereof for receiving said grate during the exchange of the main stack table, rotatable from stops rotatably carried by said machine and adapted to be turned down during sliding movement of said grate into said guides, an auxiliary gripper for receiving grates from said additional gripper, suction means on said auxiliary gripper for temporarily holding the leading edge of the sheets received, a front stop on said auxiliary gripper, and means for reciprocating said auxiliary gripper into and out of its sheet receiving position.

15. A sheet stacking apparatus for sheet printing machines having a stack table and auxiliary means for continuing the stacking operation during the exchange of the main stack table including an auxiliary sheet table, chain grippers for delivering the printed sheets to the stacking device, an additional gripper for receiving the sheets from said chain grippers and depositing them upon the stack, an auxiliary gripper effective during the exchange of the main stack table for taking over at least one sheet from said additional gripper and depositing it upon said stack so as to leave a wedge shaped space above said stack, suction means on said auxiliary gripper for holding the sheet along its leading edge during the insertion of said auxiliary table into said wedge shaped space, means for reciprocating said additional gripper, separate means for reciprocating said auxiliary gripper, and a locking device associated with said auxiliary gripper comprising a manually controlled lever, said manually controlled lever being operated in the sequence of the sheet delivery whereby movement of said auxiliary gripper is permitted in response to the approach of the sheet to be stacked.

16. A sheet stacking apparatus for said printing machines having a stack table and auxiliary means for continuing stacking operation during the exchange of the main stack table including an auxiliary sheet table, chain grippers for delivering the printed sheets to the stacking device, an additional gripper for receiving the sheets from said chain grippers and depositing them upon the stack, an auxiliary gripper effective during the exchange of the main stack table for receiving at least one sheet from said additional gripper and depositing it upon said stack so as to leave a wedge-shaped space above said stack, suction means on said auxiliary gripper for holding said sheet along its leading edge during the insertion of said auxiliary sheet table into said wedge-shaped space, means for reciprocating said additional gripper, separate means for reciprocating said auxiliary gripper, a locking device comprising an adjustable stop on said auxiliary gripper, cam means operating in the sequence of the sheet delivery, a stop lever operated by said cam means in cooperation with said adjustable stop, and a release lever responsive to the insertion of said auxiliary sheet table and to return said stop lever to the control of said cam means in response to the removal of said auxiliary sheet table.

17. A sheet stacking apparatus as set forth in claim 16, wherein said release lever includes means for activating said auxiliary gripper in response to insertion of said auxiliary sheet table.

18. A sheet stacking apparatus as set forth in claim 16, further comprising a suction conduit, a stop valve in said suction conduit, and a closing spindle in said stop valve, said closing spindle being positioned in the line of inward movement of said auxiliary table so as to be closed in response to the insertion of said auxiliary sheet table.

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