T. C. DEXTER & R. E. JONES.

PAPER FEEDING MACHINE.

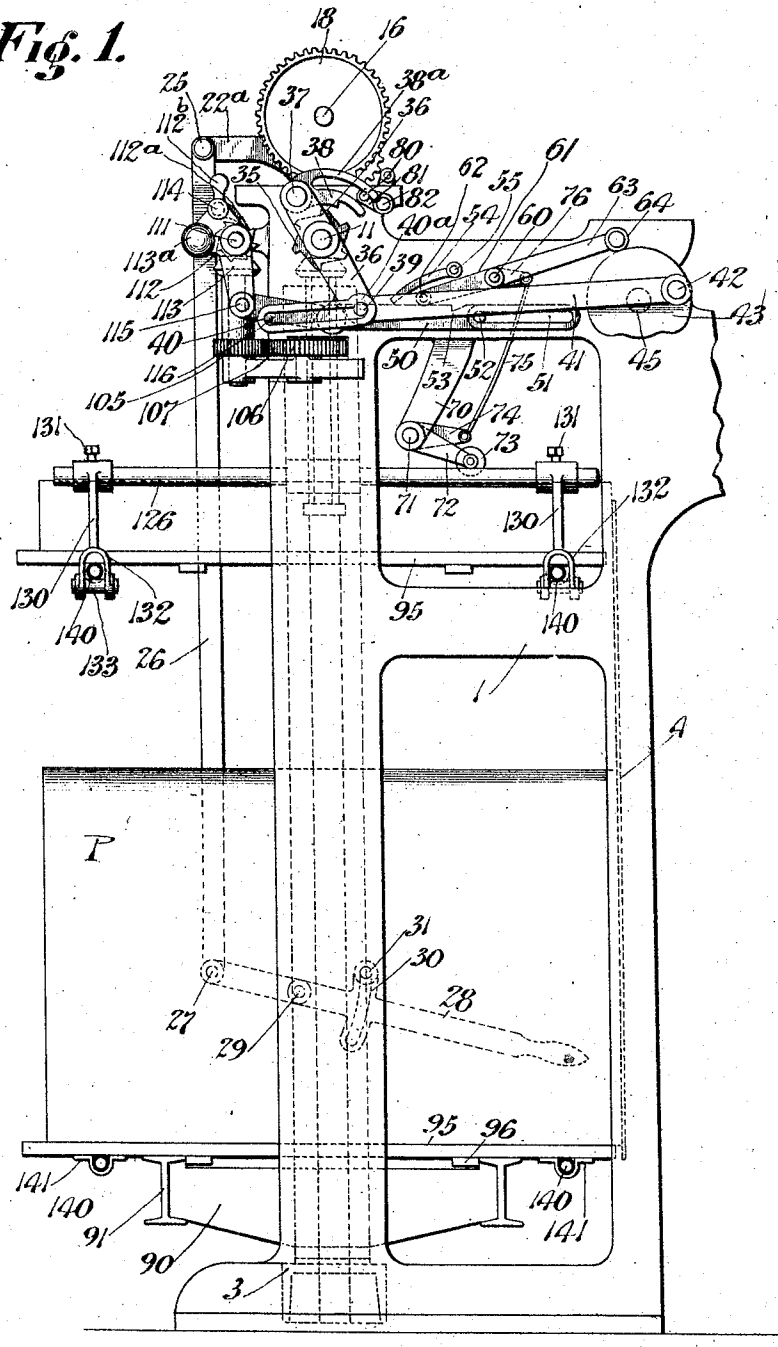
APPLICATION FILED OCT. 28, 1910.

1,022,776.

Patented Apr. 9, 1912.

4 SHEETS—SHEET 1.

Fig. 1.



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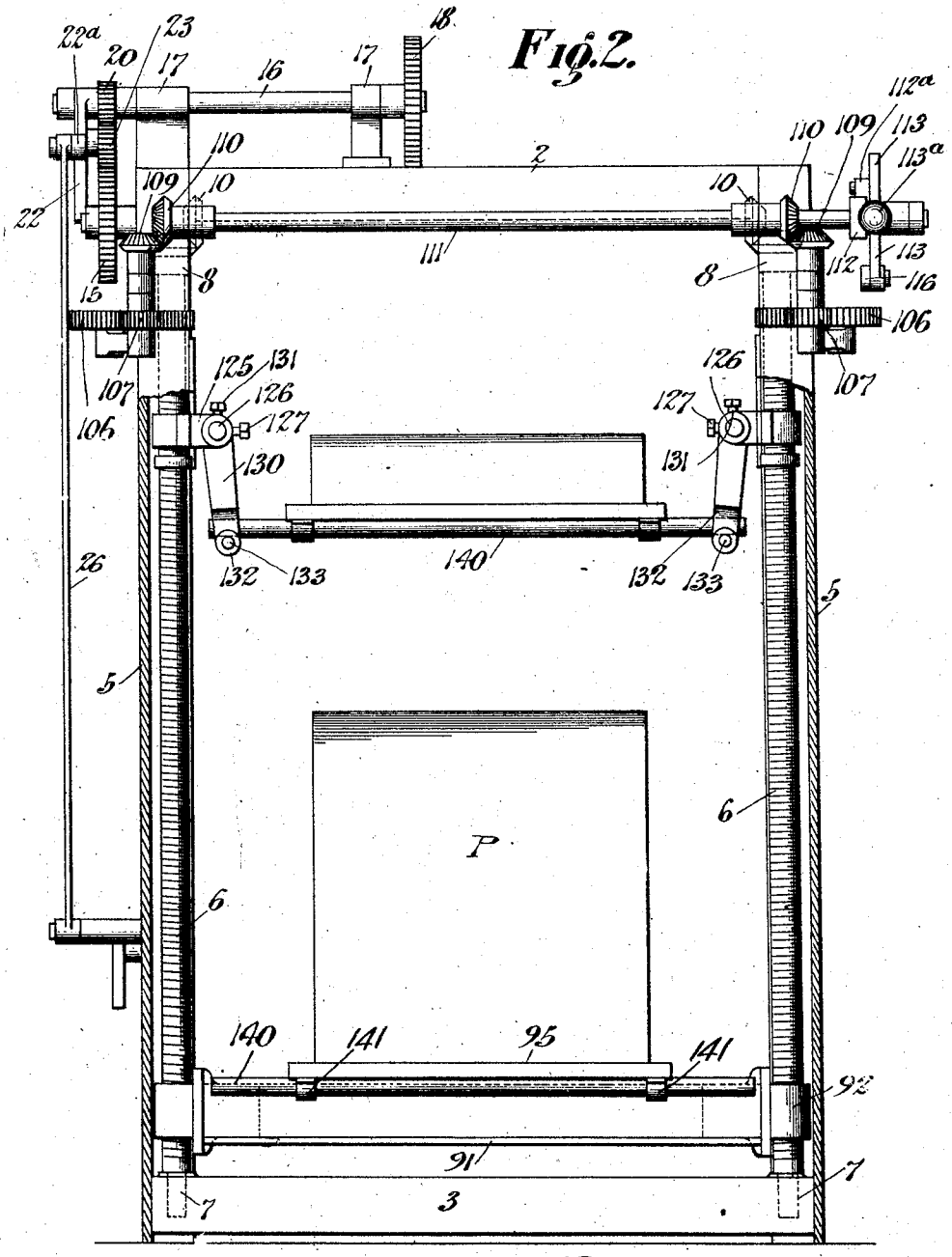
4 SHEETS—SHEET 2.

Fig. 2.



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4 SHEETS—SHEET 3.

Fig. 3.

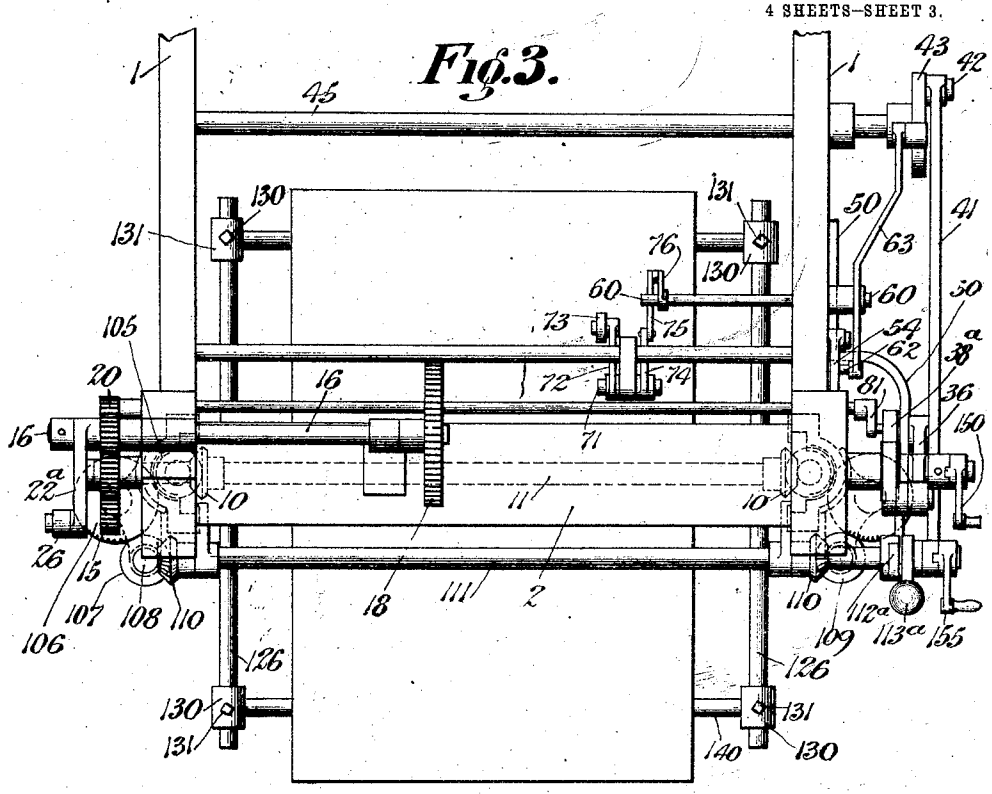
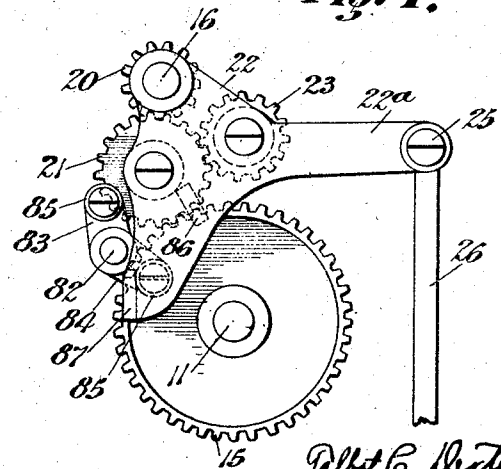


Fig. 4.



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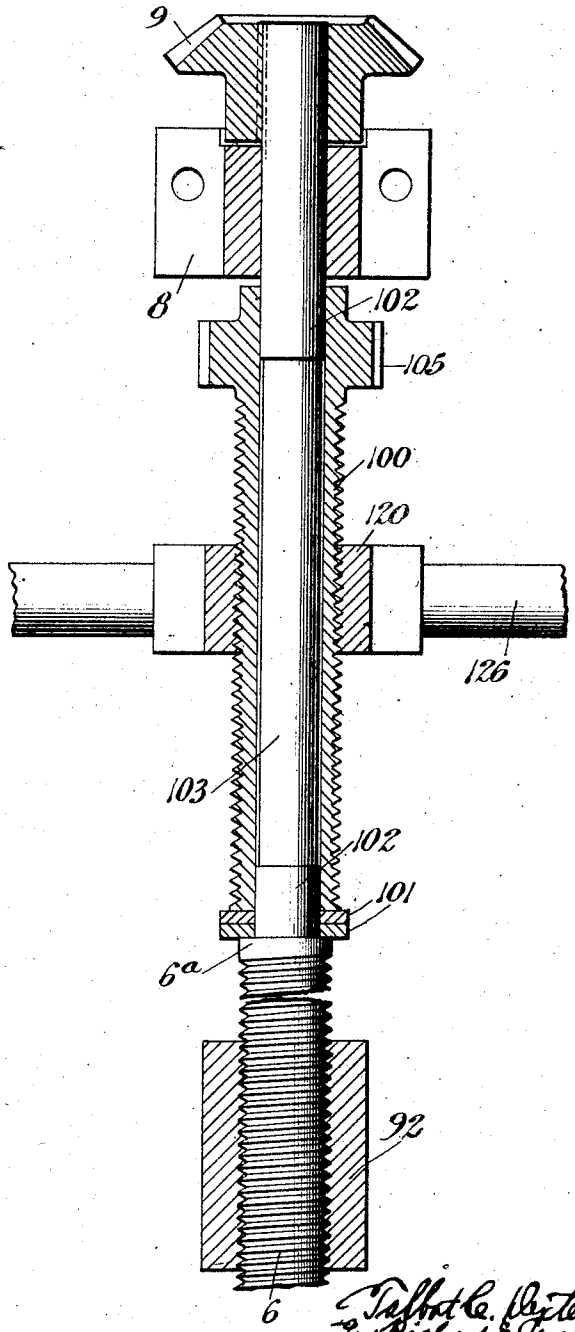
4 SHEETS—SHEET 4.

Fig. 5.



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UNITED STATES PATENT OFFICE.

TALBOT C. DEXTER AND RICHARD E. JONES, OF PEARL RIVER, NEW YORK, ASSIGNORS TO DEXTER FOLDER COMPANY, OF PEARL RIVER, NEW YORK, A CORPORATION OF NEW YORK.

PAPER-FEEDING MACHINE.

1,022,776. Specification of Letters Patent. Patented Apr. 9, 1912.

Application filed October 28, 1910. Serial No. 589,543.

To all whom it may concern:

Be it known that we, TALBOT C. DEXTER and RICHARD E. JONES, both citizens of the United States, and residents of Pearl River, county of Rockland, State of New York, have invented certain new and useful Improvements in Paper-Feeding Machines, of which the following is a specification.

The present invention relates to improvements in the type of pile feeding machines in which there are main and auxiliary pile elevating mechanisms arranged to act independently for supporting and elevating piles of sheets for the purpose of providing means for building up a pile upon one table or platform while the feeding machine is operating upon a pile supported by another table or platform. Several forms of this type of machine have been developed, in some of which there is an independent stationary support for a table or platform at the base of the machine upon which the sheets may be piled while the machine is operating, while in others the arrangement is such that the sheets are piled upon a table or platform resting upon the elevating frame of one of the elevating mechanisms, while the machine is operating upon the pile under the control of the other elevating mechanism.

The present improvements are applicable to either of these forms of this type of machine, although we have obtained the most satisfactory results and greater simplicity in applying our improvements to the form of machine in which the pile is loaded upon a table or platform supported by one elevating mechanism while the machine is operating upon a pile sustained by the other elevating mechanism.

In the development of our improved machine, we have so modified the old and well known construction of pile feeding machines that the machine may be operated either upon the old plan as a single table machine or upon the new plan as a double table machine. We retain in our improved machine, the main pile elevator of the old and well known construction comprising two vertically arranged elevating screws operated by automatically controlled mechanism, and a vertically traveling girder frame threaded upon said screws and arranged to support a sectional table or platform upon which the pile of sheets is arranged. This main elevating mechanism has been effectively modified to have combined with it an auxiliary pile elevating mechanism which is actuated by the same general operating mechanism controlled by suitable devices which enable the operator to operate the main and auxiliary elevating mechanisms independently of each other or simultaneously. The operation of both the main and auxiliary elevating mechanisms is under the automatic control of the pile governor whether the said mechanisms are operating independently or together.

In the specific embodiment of our invention disclosed in the present application, we have reduced the diameter of the upper ends of the main elevating screws and have freely journaled upon these reduced ends auxiliary feed screws in the form of threaded sleeves. The upper ends of these auxiliary feed screws or sleeves are suitably geared to an auxiliary pawl and ratchet driving mechanism, the oscillating pawl of which is actuated from the same mechanism which actuates the oscillating pawl of the main elevating screws. Independent auxiliary traveling yokes are suitably mounted in the machine frame above the traveling frame of the main elevating mechanism and these auxiliary yokes are threaded upon the auxiliary elevating screws or sleeves. Suitable hangers are carried by said yokes and means are provided for engaging said hangers with a pile supporting table or platform.

An automatic pile governor controls the operation of the elevating mechanisms to suit the variations in the height of the pile of sheets being operated upon. The oscillating pawl of the main elevating mechanism is arranged to be automatically thrown into and out of action by a manually operated reversing mechanism by which the main pile elevator may be run up or down by power. The actuating pawl for the auxiliary elevating mechanism is manually thrown into and out of action. With this arrangement, it will be understood that the machine can be operated under the old plan by using only the main pile elevating mechanism, or upon the new plan by using both elevating mechanisms. It will further be understood that in starting work with the feeding machine under the double table plan of feed, the initial pile is supported upon the main elevating plat-

form, the auxiliary elevating mechanism being thrown out of operation. The machine will operate under the automatic control of the pile governor until the main elevating platform has reached an elevation within the range of the auxiliary elevating mechanism. At this point in the operation, without arresting the feeding operation of the machine, the auxiliary pile elevating mechanism is placed in operation by engaging the hangers with the pile supporting platform and throwing the auxiliary oscillating pawl into engagement with its ratchet. The power mechanism is then thrown into gear with the main elevating mechanism and the main pile supporting platform is rapidly lowered to the bottom of the machine, the remainder of the initial pile being in the meantime automatically elevated by the auxiliary mechanism, while the feeding machine continues to operate. While the machine is feeding off the latter part of the initial pile, the operator builds up a new pile of sheets upon a second table or platform which is put in position on the main elevating frame at the base of the machine. When the entire pile is completely exhausted, the second pile is quickly elevated by power to the proper height for the operation of the feeding devices, the table or platform of the initial pile being at the same time removed from the hangers of the auxiliary elevating mechanism to make way for the second pile of sheets.

In order that our invention may be fully understood, we will first describe the same with reference to the accompanying drawings, and afterward point out the novelty more particularly in the annexed claims.

In said drawings Figure 1 is a side elevation of a paper feeding machine embodying our improvements. Fig. 2 is a vertical transverse sectional elevation of the same. Fig. 3 is a plan view of the same. Fig. 4 is a detail side elevation of the reversible gearing for the power operation of the main pile elevator, and Fig. 5 is an enlarged detail vertical sectional view of parts of the main and auxiliary elevating mechanisms.

Paper feeding machines of the type to which our present improvements apply are usually constructed with heavy frames such as illustrated in the accompanying drawings, in which the main frame consists of the upright side frames 1, the transverse top bar or girder 2, and the transverse bottom bar or girder 3. These main frame parts are properly secured together and braced by the usual tie bolts in the manner well understood in this art. The machine is provided at the front with a series of vertical bars or slats 4 indicated in dotted lines in Fig. 1 for the purpose of providing a vertical guide for the front edge of the pile of sheets.

Each of the side frames 1 is formed with a main channeled upright standard 5 in which are located the main and auxiliary elevating screws and in which travel the threaded boxes of the main and auxiliary elevating frames. The main elevating screws are shown at 6 journaled at their lower ends in suitable bearings 7 supported upon the bottom girder 3 and adjacent to their upper ends in bearings 8 suitably secured to the machine side frames. The extreme upper end of each main elevating screw 6 has keyed to it a bevel gear 9 meshing with a similar bevel gear 10 keyed to a transverse shaft 11 suitably journaled in the machine frame beneath the top girder frame or bar 2. This shaft 11 is driven in either direction by a motor for the rapid raising and lowering of the pile supporting platforms, or is driven in a pile elevating direction by a pawl and ratchet mechanism operated from the cam shaft of the feeding machine for gradually elevating a pile to suit the requirements of the feeding machine. These mechanisms for driving the shaft 11 will now be described.

The shaft 11 is extended at each side of the machine beyond the vertical planes of the elevating screws 6. One end of shaft 11 has keyed to it a large gear 15 driven by a reversible train of gear operating from a motor driven shaft. 16 is a motor driven shaft journaled in bearings 17 extending up from the top bar 2 and having at one end a gear 18 which is designed to mesh with and be driven by the driving pinion of a motor which is mounted upon the top beam 2 of the machine frame. This motor is not shown in the accompanying drawings. The opposite end of the shaft 16 has keyed to it a pinion 20 which meshes with and drives an intermediate gear 21 journaled upon a stud carried by a rocking controlling lever 22 which is journaled upon the extension of the motor driven shaft 16. The gear 21 meshes with and drives a smaller gear 23 also journaled upon a stud carried by the controlling lever 22. By shifting the lever 22 upon shaft 16 either the gear 21 or the gear 23 can be thrown into mesh with the large gear 15 upon shaft 11 so that the shaft 11 will be rotated in either direction depending upon which of the gears 21 and 23 is thrown into operation. The controlling lever 22 has an arm 22^a projecting from it to which is pivoted at 25 the upper end of a rod or link 26 pivoted at 27 to a hand lever 28 journaled upon one of the side frames of the machine at 29. This hand lever 28 is formed with a slotted curved segment 30 through the slot of which extends a hand screw 31 threaded into an opening in the machine frame. By loosening the screw 31 it will be observed that the lever 28 can be placed in either of its extreme positions, or in its intermediate position and that it can

be clamped in either of these three positions by means of the screw 31. In one of the extreme positions, the intermediate gear 21 will be in mesh with gear 15 for driving shaft 11 in one direction, while in the other extreme position, the intermediate gear 23 will be in mesh with the gear 15 for driving the shaft 11 in the opposite direction, and in the intermediate position of hand lever 28, both intermediate gears 21 and 23 will be held free from the gear 15 so that the shaft 11 is free to be rotated from the automatically controlled pawl and ratchet mechanism to gradually elevate the pile of sheets and maintain the top of the pile at the proper height for the action of the sheet feeding devices.

The opposite extension of the shaft 11 has keyed to it a small ratchet wheel 35. Journaled upon the end of shaft 11 adjacent to the ratchet wheel 35 is a rocking arm or lever 36 to the upper end of which is pivoted at 37 a pawl 38 which is adapted to engage the ratchet wheel 35 and rotate the shaft 11 in a step by step manner. The lower end of the rocking lever 36 carries a laterally projecting stud 39 which operates in the elongated slot 40 of a reciprocating pitman 41 pivoted upon the crank pin 42 of the disk cam 43 which is keyed to the main cam shaft 45 of the paper feeding machine.

The feeding devices of the machine are not shown, but in the Dexter type of paper feeding machine to which the present improvements are illustrated as applied, all of the operative parts of the machine are driven by this cam shaft 45.

It will be observed that the slot 40 in the pitman 41 is formed at its inner end with an upwardly presented off-set or recess 40^a in which the stud 39 engages at one end of the stroke of the pitman, for the purpose of returning the pawl carrying lever 36 and pawl 38 after a feeding stroke, unless its return movement is prevented by the pile governor which will now be explained.

Pivotally connected to the lower end of the pawl-carrying lever 36 is a horizontal link 50 formed with an elongated slot 51 into which projects a pin 52 extending from the machine frame for guiding the link 50 in its reciprocating movements. This link 50 is formed in its upper edge with a notch 53 which is adapted to be engaged by a gravity retaining pawl or dog 54 after a feeding stroke of the pawl 38. This pawl or dog 54 is freely pivoted upon a pin 55 projecting from the machine frame.

60 is a rock shaft suitably journaled in the machine frame and carrying a rock arm 61 formed with a laterally projecting stud 62 which is presented beneath the retaining pawl or dog 54. The rock shaft 60 also carries a rock arm 63 provided with anti-friction roller 64 which runs in peripheral contact with the cam 43, so that once in each revolution of the cam shaft 45, the rock shaft 60 will be moved for raising the retaining dog or pawl 54.

Journaled in the lower end of a depending bracket arm 70 is a short rock shaft 71 carrying rock arm 72 in the free end of which is journaled a pile gaging roller 73. This rock shaft 71 also carries an arm 74 which is connected by a rod 75 with the short arm 76 projecting from the rock shaft 61 for controlling the movements of said rock shaft 61 from the varying elevation of the top of the pile of sheets.

From this construction of pile governor, it will be observed that in the normal operation of the machine, the rearward motion of pitman 41 rocks lever 36 causing pawl 38 to rotate shaft 11 forwardly one step. At the completion of this feeding stroke, the low part of the controlling cam 43 is presented beneath the controlling arm 63 with the result that the pile gaging roller 73 will be dropped to the top of the pile of sheets being operated upon. If the elevation of the top of the pile is below normal, the gaging lever will drop low enough to permit rock arm 61 to elevate the retaining dog or pawl 54 out of the path of notch 53 so that the return movement of pitman 41 will return the lever 36 and pawl 38 for a new feeding stroke. If, however, at the moment of gaging the elevation of the pile of sheets, the elevation is normal, the gaging roller 73 will not drop low enough to cause the elevation of the retaining dog or pawl 54, and as the pitman 41 starts its return stroke, the pawl or dog 54 will engage the notch 53 and retain the lever 36 and pawl 38 in their inactive positions, the return movement of the pitman 41 disengaging the notch 40^a from stud 39 and allowing the stud 39 to ride in the extension slot 40. The lever 36 and pawl 38 are retained in their inactive positions until sufficient sheets are moved from the pile to lower the top below normal, each stroke of pitman 41 serving to automatically free the engagement of dog or pawl 54 from the notch of link 50 to permit the raising of the dog or pawl 54 from the path of the notch in the event of the top of the pile falling low enough to require another elevating stroke.

It will be observed particularly from Fig. 1 of the drawings, that the pawl 38 is formed with a curved controlling finger 38^a beneath which engages a stud 80 carried by rock arm 81 secured to the end of a controlling shaft 82 which extends from side to side of the machine and has upon its opposite end the oppositely arranged rocker arms 83 and 84, each of which is provided with an anti-friction roller 85. The rocking lever 22 carrying the motor driven reversing gears is provided with two inwardly

projecting lugs 86 and 87, the former of which is presented in the path of the anti-friction roller carried by rock arm 83, while the latter of which is presented in the path of and on the opposite side of the roller carried by the rock arm 84, so that when the gear carrying lever 22 is shifted into one extreme position to throw gear 21 into mesh with driven gear 15, the lug 87 will engage the anti-friction roller upon rock arm 84 for rocking shaft 82 and causing the stud 80 to engage the arm 38ª and raise the pawl 38 out of engagement with the ratchet wheel 35. When on the other hand, the gear-carrying lever 22 is shifted to its other extreme position for throwing gear 23 into mesh with driven gear 15, the lug 86 will engage the anti-friction roller of arm 83 for rocking shaft 82 in the same direction with the same result. It is necessary to maintain the pawl 38 out of engagement with the ratchet wheel 35 when the shaft 11 is driven by the motor for either rapidly raising or lowering the pile supporting platform. It will be observed with particular reference to Fig. 4 of the drawings that when the gear-carrying lever 22 is in its intermediate position, neither of the lugs 86 nor 87 will engage a rocker arm upon shaft 82, so that pawl 38 will naturally gravitate in engagement with the ratchet wheel 35 and this intermediate position of the gear-carrying lever 22 must be maintained while the pile elevating mechanism is being operated by the automatically controlled pawl and ratchet devices.

The pile support of the main elevating mechanism is shown in the form of a girder frame comprising the end girders 90 and the connected side girders 91 formed into a stout rectangular supporting frame. The end girders 90 have secured to them the nuts or boxes 92 which are threaded upon the main elevating screws 6 and arranged to travel in the vertical channels of the standards 5 in the usual manner. The sectional platform boards are shown at 95 with the positioning cleats 96 to enable the operator to quickly place the platform boards in position to receive a pile of sheets. P indicates a pile of sheets upon the platform.

The upper ends of the main elevating screws 6 are turned down to a reduced diameter as shown particularly in Fig. 5 of the drawings, to receive the screw sleeves of the auxiliary feeding mechanism. These auxiliary screw sleeves are indicated at 100. The sleeves 100 are of tubular form and rest at their lower ends upon anti-friction bearing washers 101 which are supported by the shoulders 6ª of the main elevating screws 6. To afford proper bearings for vertical alinement and at the same time reduce to a minimum the friction between the main elevating screws and the auxiliary screw sleeves, the screws 6 are reduced to a greater extent between the ends of the screw sleeves so as to provide vertical bearings 102 for the sleeves at their ends and the reduced section 103 between the bearings.

Each screw sleeve 100 has secured to its upper end a pinion 105 which meshes with a larger gear 106 driven by a pinion 107 secured to a short vertical shaft 108 carrying at its upper end a bevel gear 109 meshing with a bevel gear 110 keyed to a transverse shaft 111. The shaft 111 is geared in the same manner to both of the screw sleeves 100.

Keyed to an extended end of the shaft 111 is a ratchet wheel 112 and journaled upon the shaft 111 is a rocker arm 113 to which is pivoted at 114 a pawl 112ª having a weighted throw-out handle 112ᵇ. The rocker arm 113 may have a weighted portion as shown at 113ª to assist the return action of the pawl-carrying arm. The rocker arm 113 has pivotally connected to it at 115 a link 116 which is pivotally connected with the lower end of the pawl-carrying lever 36 above described, so that the movements of the lever 36 are transferred to the rocker arm 113.

Threaded upon the auxiliary screw sleeves 100 are the nuts or boxes 120 which are arranged to travel in the upper portions of the channels of standards 5. These nuts or boxes 120 have inwardly projecting heavy lugs 125 in which are adjustably mounted stout steel rods 126 held in the desired adjusted position by set screws 127 passing through the walls of the lugs 125 and engaging the rods 126. Each of the rods or bars 126 is provided with two depending hanger arms 130. These hanger arms 130 are adjustably mounted adjacent to the opposite ends of the rods or bars 126 and are secured in the desired adjusted positions by set screws such as shown at 131. Each hanger arm is formed at its lower end with a yoke or saddle 132 and a pin 133 extending between the arms of the yoke or saddle.

Heavy rods or bars 140 are secured beneath the platform boards 95 adjacent to the ends of the boards. Any suitable means may be provided for attaching these bars 140 to the platform boards, such for instance, as the metal loops or straps 141. The rods or bars may be attached to single large platform boards to certain sections of a sectional board.

It will be observed that the ends of the rods or bars 140 project laterally to points adjacent to the inner faces of the side frame of the machine in position to engage and be supported by the pins 133 in the yoked ends of hanger arms 130.

From the above description, it will be observed that the step by step feed of both the main and auxiliary pile elevating mecha-

nisms is under the automatic control of the pile governor, but that only the main pile elevating mechanism can be operated by the motor. This step by step feed of both mechanisms may be operated either simultaneously or independently, although in the normal operation of the machine, only one of the mechanisms will be in action at the same time. When the main elevating mechanism is in action, the pawl 112ª of the auxiliary mechanism is thrown out of engagement with its ratchet wheel, and when the auxiliary mechanism is in action, the main pawl 38 is thrown out of engagement with its ratchet wheel. When the main elevating mechanism is being operated by motor, the auxiliary mechanism may be in action.

In addition to the automatic operation of both elevating mechanisms, and the motor driven operation of the main elevating mechanism, it will of course be understood that both of these elevating mechanisms may be operated and adjusted by hand. In Fig. 3 we have illustrated a removable crank handle 150 upon the shaft 11 of the main elevating mechanism, and a removable crank handle 155 upon the shaft 111 of the auxiliary elevating mechanism. These crank handles operate in the usual way and by them the pile supports of both mechanisms may be raised or lowered to suit the varying requirements.

The operation of the machine may be described as follows: In starting a job upon the feeding machine equipped with our improvements, a pile of sheets is placed upon the supporting frame of the main elevating mechanism as in the ordinary feeding machine, and sheets are fed from the pile while the table is automatically elevated to suit the requirements of the machine, until the pile is nearly exhausted. When the pile is nearly exhausted, the main pile support will be near the upper end of its travel, and the platform boards will be within range of the hanger arms of the auxiliary elevating mechanism. At this point in the operation, while the feeding machine continues to operate, the hanger arms 130 are thrown over into engagement with the bars 140 secured beneath the platform, and the parts rigidly clamped in engaged position, it being understood that it is a simple matter to adjust the position of the hangers to any required elevation by the operation of the auxiliary elevating mechanism by hand. As soon as the pile is under the control of the auxiliary elevating mechanism, the operator throws the main elevating mechanism into gear with the motor and rapidly returns the pile support of the main elevating mechanism to its initial position at the base of the machine where a new set of platform boards is put in position and a new pile loaded thereon. The feeder will continue to operate from the remainder of the initial pile carried by the auxiliary elevating mechanism, until it is entirely exhausted, when the feeding machine is momentarily stopped to remove the platform boards of the exhausted pile and shift the hanger arms back out of the way and elevate the new pile either by hand operation or by the action of the motor to bring the top of the new pile at the proper elevation for the continuance of the operation of the feeding machine. The operation is then repeated as above described.

A valuable feature of our present improvements is the arrangement whereby the machine may be operated with one or both of the pile elevating mechanisms, so that if the operator prefers to run his machine upon the plan of the old form of feeders having a single pile elevating mechanism, he can do so. The addition of the auxiliary feeding mechanism does not alter the operation or usefulness of the main feeding mechanism of the machine, and even though equipped with the auxiliary feeding mechanism, a pile can be fed from start to finish upon the main feeding mechanism without using the auxiliary mechanism.

What we claim is:

1. In a paper feeding machine, the combination of a frame, the main and auxiliary pile elevating mechanisms, including coupled pawl and ratchet mechanisms, a pile governor controlling the operation of said coupled pawl and ratchet mechanisms, and means for independently throwing said pawl and ratchet mechanisms into and out of operation.

2. In a paper feeding machine, the combination of a frame, the main and auxiliary pile elevating mechanisms, automatically controlled means for operating said main and auxiliary mechanisms, independent means for throwing said elevating mechanisms into and out of operation, and an independent power driven mechanism for operating said main elevating mechanism.

3. In a paper feeding machine, the combination of a frame, the main and auxiliary pile elevating mechanisms, automatically controlled means for operating said main and auxiliary mechanisms, independent means for throwing said elevating mechanisms into and out of operation, an independent power driven mechanism for operating said main elevating mechanism, and manually controlled means for connecting said power driven mechanism with said main elevating mechanism.

4. In a paper feeding machine, the combination of a frame, the main and auxiliary pile elevating mechanisms, automatically controlled means for operating said main and auxiliary mechanisms, independent means for throwing said elevating mecha-

nisms into and out of operation, an independent power driven mechanism for operating said main elevating mechanism, and manually controlled reversing gears adapted to connect said power driven mechanism with said main elevating mechanism for rapidly operating it in either direction.

5. In a paper feeding machine, the combination of a frame, the main and auxiliary pile elevating mechanisms, automatically controlled means for operating said main and auxiliary mechanisms, independent means for throwing said elevating mechanisms into and out of operation, an independent power driven mechanism for operating said main elevating mechanism, manually controlled means for connecting said power driven mechanism with said main elevating mechanism, and means actuated by said manually controlled means for disconnecting said main elevating mechanism from said automatically controlled operating means.

6. In a paper feeding machine, the combination of a frame, the main and auxiliary pile elevating mechanisms, a pawl and ratchet mechanism for each of said elevating mechanisms, means connecting the operating pawls of said mechanisms for actuating them in unison, independent means for throwing said pawl and ratchet mechanisms into and out of action, and a pile governor controlling the operation of both of said pawl and ratchet mechanisms.

7. In a paper feeding machine, the combination of a frame, the main and auxiliary pile elevating mechanisms, a pawl and ratchet mechanism for each of said elevating mechanisms, an independent power driven mechanism for operating said main elevating mechanism, manually controlled reversing gears adapted to connect said power driven mechanism with said main elevating mechanism, means actuated by the control of said reversing gears for disengaging the pawl from the ratchet of the main elevating mechanism, and a pile governor controlling the operation of both of said pawl and ratchet mechanisms.

8. In a paper feeding machine, the combination of a frame, with the main and auxiliary pile elevating screws, mounted in axial alinement in said frame, and the main and auxiliary elevating frames operating upon said screws.

9. In a paper feeding machine, the combination of a frame, with the main elevating screws, the pile supporting frame threaded upon said main elevating screws, the auxiliary elevating screws arranged above and in axial alinement with said main elevating screws, an auxiliary pile elevating frame threaded upon said auxiliary elevating screws, and means for operating the main and auxiliary screws.

10. In a paper feeding machine, the combination of a frame, with the main elevating screws, the pile supporting frame threaded upon said main elevating screws, the auxiliary elevating screws arranged above and in axial alinement with said main elevating screws, an auxiliary pile elevating frame threaded upon said auxiliary elevating screws, adjustable means carried by said auxiliary frame for engaging a pile supporting table, and means for operating the main and auxiliary screws.

11. In a paper feeding machine, the combination of a frame, with the main elevating screws, the pile supporting frame threaded upon said main elevating screws, the auxiliary elevating screws arranged above and in axial alinement with said main elevating screws, an auxiliary pile elevating frame threaded upon said auxiliary elevating screws, adjustable hangers depending from said auxiliary frame, a pile supporting table having parts adapted to be engaged by said hangers, and means for operating the main and auxiliary screws.

12. In a paper feeding machine, the combination of a frame, with the main elevating screws journaled in said frame and having reduced upper ends, the main pile elevating frame or platform threaded upon said main elevating screws, the auxiliary screw sleeves journaled upon the reduced ends of the main elevating screws, an elevating frame threaded upon said auxiliary elevating screw sleeves, and means for operating said main elevating screws and auxiliary screw sleeves.

13. In a paper feeding machine, the combination of a frame, with the main elevating screws journaled in said frame, the main pile elevating frame or platform threaded upon said main elevating screws, the auxiliary elevating screws journaled upon and in alinement with the main elevating screws, an elevating frame threaded upon said auxiliary elevating screws, adjustable means carried by said auxiliary elevating frame for engaging a pile of sheets, and means for operating the main and auxiliary elevating screws.

14. In a paper feeding machine, the combination of a frame, with the main elevating screws journaled in said frame, the main pile elevating frame or platform threaded upon said main elevating screws, the auxiliary elevating screws journaled in said frame above the main elevating screws, an auxiliary elevating frame threaded upon said auxiliary elevating screws, bars mounted in said auxiliary frame, hangers depending from said bars, a pile supporting platform having rods projecting from it, means of engagement between said hangers and said rods, and means for operating the main and auxiliary elevating screws.

15. In a paper feeding machine, the com-

bination with a suitable frame, the main elevating screws journaled in said frame, a main pile elevating frame threaded upon said main screws, operating mechanism geared to the upper ends of said main elevating screws, auxiliary elevating screws journaled in said frame above said main elevating screws, an auxiliary pile elevating frame threaded upon said auxiliary screws, auxiliary operating mechanism geared to said auxiliary screws, a pile governor controlling the operating mechanisms of the main and auxiliary screws, and independent devices for throwing said operating mechanisms into and out of action.

16. In a paper feeding machine, the combination with a suitable frame, the main elevating screws journaled in said frame, a main pile elevating frame threaded upon said screws, operating mechanism geared to the upper ends of said main elevating screws, screw sleeves journaled upon the main elevating screws, an auxiliary pile elevating frame threaded upon said screw sleeve, auxiliary operating mechanism geared to said screw sleeves, bars mounted in said auxiliary frame, hangers depending from said bars, a pile supporting platform having rods projecting from it, and means of engagement between said hangers and said rods.

17. In a paper feeding machine, the combination of a frame, the main pile elevating mechanism mounted in said frame, an auxiliary elevating mechanism mounted in said frame and including a traveling frame, hanger arms depending from said traveling frame and formed with yoke-shaped lower ends, pins extending between the arms of the yokes, a pile supporting platform, and rods projecting from the pile supporting platform into said yokes and supported by said pins.

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