Feb. 6, 1934. R. HITCHCOCK 1,946,143

PAPER HANDLING MACHINE

Filed March 22, 1928 4 Sheets-Sheet 1

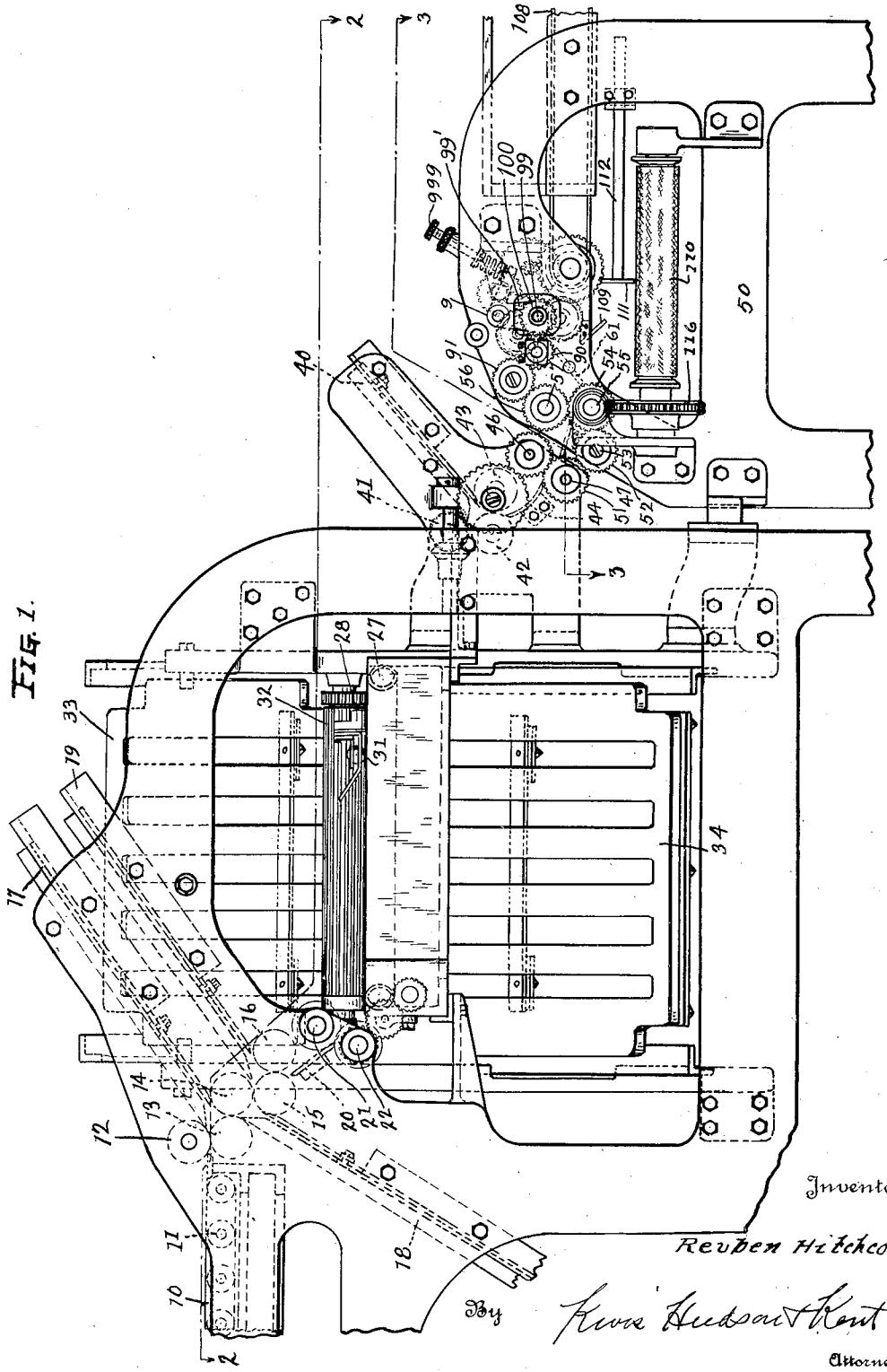


Fig. 1.

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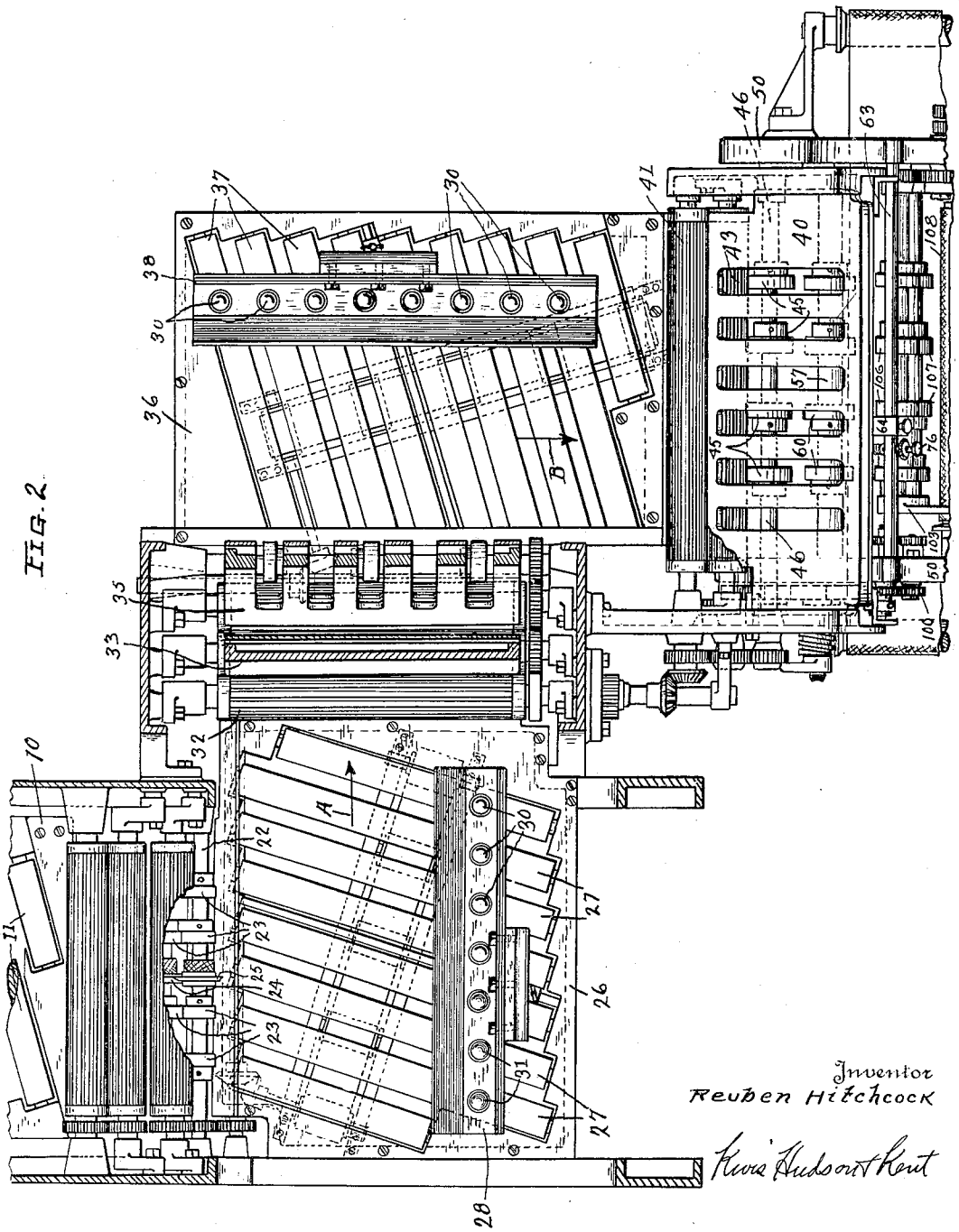
Attorneys

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PAPER HANDLING MACHINE

Filed March 22, 1928 4 Sheets-Sheet 2

FIG. 2.



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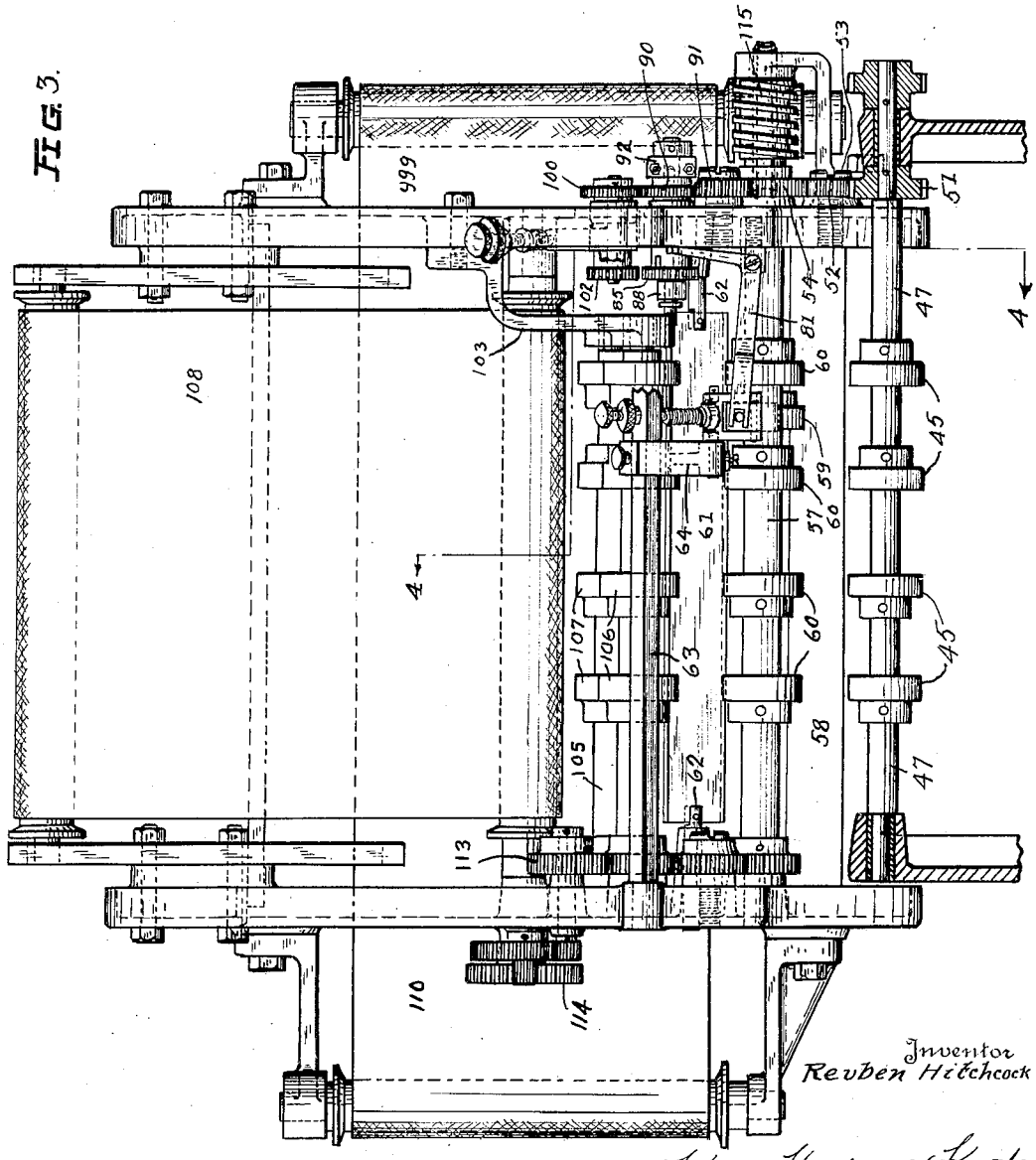
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PAPER HANDLING MACHINE

Filed March 22, 1928 4 Sheets-Sheet 3

FIG. 3.



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PAPER HANDLING MACHINE

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FIG. 4

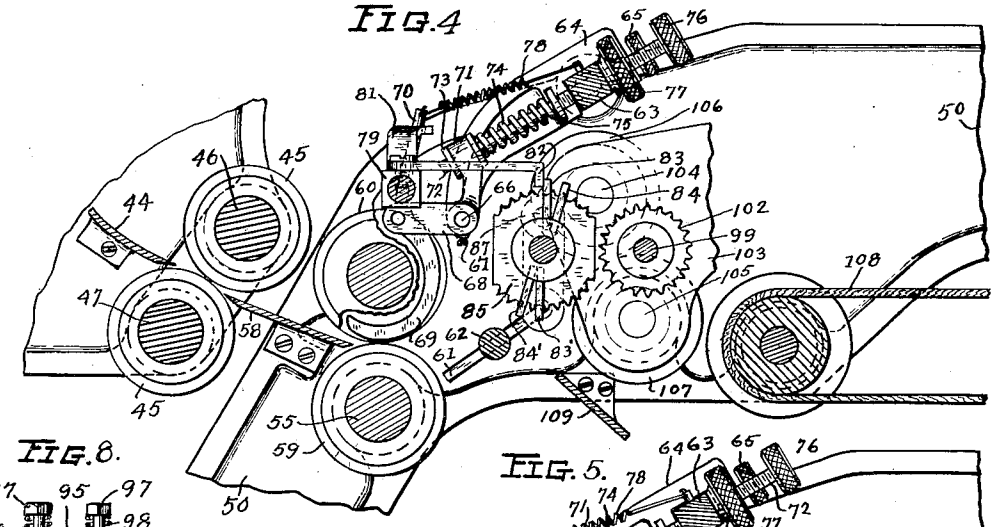


FIG. 8.

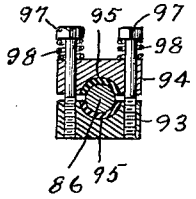


FIG. 5.

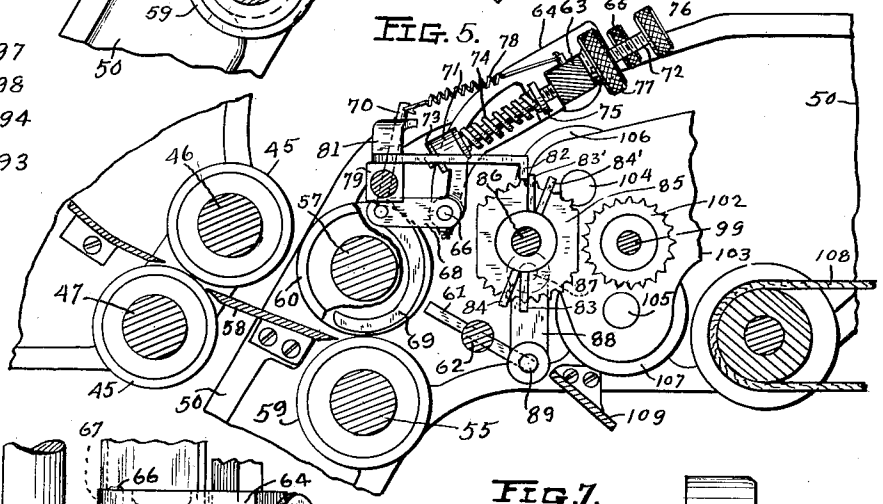


FIG. 6

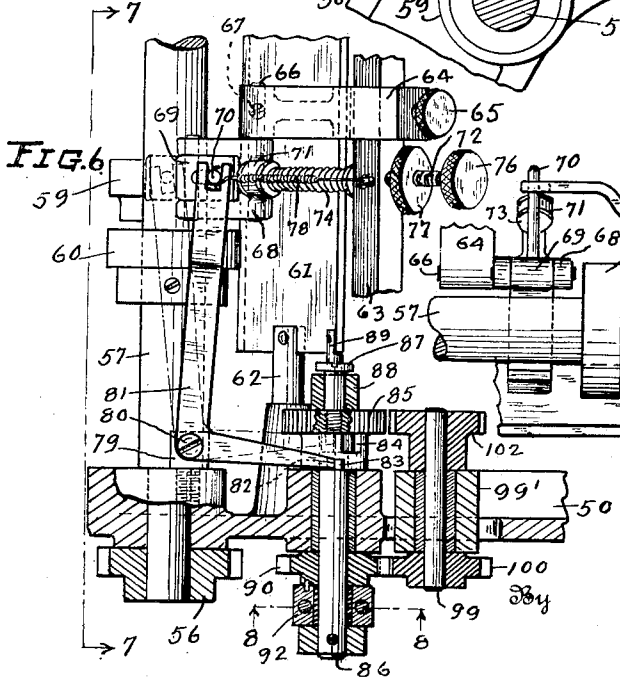
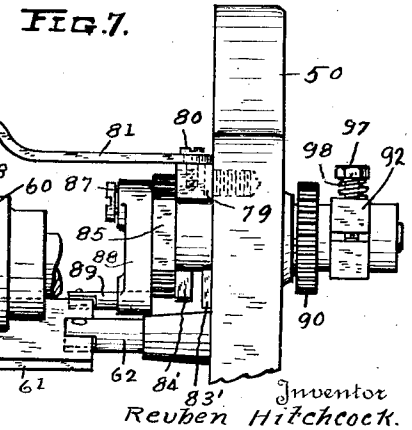


FIG. 7.



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Patented Feb. 6, 1934 1,946,143

UNITED STATES PATENT OFFICE

1,946,143

PAPER HANDLING MACHINE

Reuben Hitchcock, Bratenahl, Ohio, assignor to The Cleveland Folding Machine Company, Cleveland, Ohio, a corporation of Ohio

Application March 22, 1928. Serial No. 263,891

25 Claims. (Cl. 271—64)

This invention relates to paper handling machines, particularly machines in which a single sheet of paper is cut into two or more divisions or signatures, which will generally be folded in the machine, the corresponding divisions of each sheet being separately delivered and stacked. The application is a continuation in part of the copending application upon which my Patent 1,680,044 issued.

The invention finds utility, for instance, in the making of books inasmuch as it permits the printing of a plurality of signatures upon a single sheet, the cutting apart of the signatures, and the folding of the same and their delivery in separate stacks, all in substantially the same length of time as would be required for the printing and folding of single signatures.

The primary object of the invention, therefore, is a reduction in the number of operations required for the printing and folding of signatures, with the consequent saving of time and labor.

Another object is the provision of means for handling multiple signatures in a buckle type folding machine.

A further object is the provision of a sheet deflector which is caused to move from one position to another in such manner that each succeeding sheet will take a course different from that of the preceding one, whereby the corresponding signatures of all of the sheets may be stacked together and kept separate from the other signatures.

Another object is the provision of means adapted to be set in motion by the travel of the sheets themselves for shifting the said deflector.

Still another object is the provision of power means for effecting the shifting of the deflector, this power means being controlled or set in motion by the travel of the paper.

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

Fig. 1 is an elevational view of a portion of a buckle type paper folding machine embodying my invention;

Fig. 2 is a plan view of the same, certain parts being shown in horizontal section on the line 2—2 Fig. 1;

Fig. 3 is a larger scale plan view of the sorting and stacking portion of the machine, a few of the parts being shown in section, upon the line 3—3 Fig. 1;

Fig. 4 is a vertical sectional view taken substantially on the line 4—4 Fig. 3, on a still larger scale, showing the paper deflector in one of its operative positions;

Fig. 5 is a view similar to Fig. 4 showing the deflector in a different operative position;

Fig. 6 is a fragmental plan view showing the deflector control and actuating mechanism, some of the parts being broken away and others shown in section in order to more fully illustrate the invention;

Fig. 7 is an elevational view looking in the direction of the arrows 7—7 Fig. 6; and

Fig. 8 is a sectional detail view taken on the line 8—8 of Fig. 7.

In Figs. 1 and 2 of the drawings there is illustrated a folding machine of the well known buckle type which will be described somewhat briefly, as the present invention is not concerned with the detail construction of the folding machine proper. The first feed table of the machine is shown at 10, the table comprising driven rolls 11. At the delivery end of the table 10 there is located a fold section comprising rolls 12, 13, 14, 15 and 16 and fold plates 17, 18 and 19. As is well understood in the art, such a fold section is capable of imparting one, two or three parallel folds to the sheets passed therethrough, or, if desired, the sheets may be passed through the section without being folded at all. 20 is a guide plate which directs the sheet out of the fold section into a pair of feed rolls 21, 22, which preferably are equipped with pairs of rubber surfaced wheels 23 by means of which the paper sheets may be frictionally gripped. These feed rolls 21, 22 may carry circular cutters 24, 25 for dividing the sheets which pass between the rolls.

A second or cross-feed table 26 is so positioned as to receive from one side sheets delivered by the feed rolls 21, 22. This table 26 comprises rollers 27 driven in any suitable manner so as to cause the paper sheets deposited thereon to travel toward the right in Fig. 2, as indicated by arrow A.

A guide bar 28 is so mounted as to just clear the upper surfaces of the rollers 27 and to be adjustable transversely of the table. This bar stops the sheets in their transverse movement imparted by the feed rolls 21, 22, and guides them in their lengthwise movement upon table 26. When the rotary cutters 24, 25 are utilized, I employ in connection with the guide bar 28 means for spacing apart the two divisions of any sheet delivered onto the table.

One satisfactory way of accomplishing this purpose is to mount in a lateral extension of the

bar 28 freely rolling heavy balls 30 in such positions as to contact with the forward division of a divided sheet. These balls hold the paper against the rollers 27 and enable the latter to quickly impart forward motion to the paper. If desired, means may also be employed to retard the forward motion of the rear division of the sheet, such, for instance, as balls 31 having surfaces with high friction coefficients which consequently do not readily turn in their mountings. This sheet spacing means is more fully described in my Patent No. 1,680,044 dated August 7, 1928.

While the detail means illustrated for spacing the sheets forms no part of the present invention, the use of such means broadly in combination with other parts of the apparatus later to be described does constitute an important feature of the invention.

As the divisions or signatures leave the cross-feed table 26, they enter a second fold section comprising parts similar to the rolls and fold plates of the first mentioned fold section. One of the rolls of the second section is illustrated at 32 and the fold plates of the section are shown at 33, 34 and 35.

Sheets or signatures leaving the second fold section are delivered onto a third feed table 36 equipped with driven rollers 37 for causing the sheets to be deposited thereupon to move forward in the direction of arrow B. In connection with this table also there is employed a guide bar 38 which is adjustable transversely of the table and may carry a series of balls 30 identical with those used in the forward part of guide bar 28. In this connection it may be remarked that if, on account of the character of the work to be done, it should be desirable to slit the paper after it leaves the second fold section instead of the first, smooth, heavy balls 30 would be employed throughout the length of the guide bar 28 while in the guide bar 38 there would be mounted smooth, heavy balls 30 in the forward part and friction balls 31 in the rear part, that is to say, the spacing apart of the signatures is caused to take place upon that table which receives them directly after the slitting operation occurs.

At the delivery end of table 36 there is located a further or third fold section in which there may be but a single fold plate 40 and three rolls 41, 42 and 43, although a greater number of fold plates and rolls may be employed if desired. The paper leaving this last fold section is directed by a guide plate 44 into position to be acted upon by rubber surfaced feed rolls 45 mounted on shafts 46 and 47.

The sheet sorting and stacking mechanism which I am now about to describe is preferably mounted upon a separate frame 50 so that it may be moved away from the folding machine proper when not needed. Suitable means are provided for holding the two frames together in rigid relation whereby a gear 51 on the shaft 47 may be caused to mesh with a gear 52 on a stub shaft 53 mounted in the frame 50, by means of which driving force is imparted to the sorting and stacking mechanism. The idler gear 52 meshes with a gear 54 keyed to a shaft 55 journaled in the frame 50. The gear 54 in turn meshes with a gear 56 keyed to a shaft 57 also journaled in the frame 50. The frame 50 carries a fixed guide plate 58 which, when the two frames are in juxtaposed positions, is adapted to receive the paper delivered by the rolls 45 and to guide it into position to be acted upon by feed rolls on the shafts 55 and 57 respectively. The feed rolls 60 on shaft 57 are all rubber surfaced. Those on shaft 55 are rubber surfaced also, with the exception of that roll 59 which appears in Figs. 4 and 5, that roll being steel surfaced. 61 is a deflector provided at its ends with trunnions 62 pivotally mounted in the frame 50. The shifting of the deflector 61 from the position of Fig. 4 to that of Fig. 5 and back again serves to guide the sheets alternately into two different courses. The mechanism by which this is accomplished will now be described.

A bar 63 of rectangular cross-section is fixed in the frame 50. A bracket 64 is mounted upon the bar 63 and held in position by means of a set-screw 65. A pintle 66 is fixed in the bracket 64 by means of a set-screw 67 and projects laterally from the bracket to support for pivotal movement a bell crank 68. The horizontal arm of the bell crank 68 is bifurcated for the reception and pivotal mounting of a crescent-shaped shoe 69 from the upper end of which projects a pin 70. The roll 59 is made of steel so as to provide an unyielding backing for the paper sheets, which must swing the shoe 69.

The upright arm of the bell crank 68 is provided with an inclined head 71 which is perforated for the reception of a stem 72 that is slidable to a slight extent in the head 71 and has a collar 73 fixed thereon for limiting such sliding movement in one direction. Sliding movement in the opposite direction is limited resiliently by a coil spring 74 surrounding the stem 72 and bearing at one end against the head 71 and at the other against a collar 75 fixed upon the stem 72. The upper end of the stem 72 is threaded in the bar 63 and is provided with a knurled head 76 by means of which it may be turned, and with a knurled lock nut 77. By virtue of this arrangement the pivot point for the shoe 69 may be adjusted accurately and held positively against downward movement, but has the capability of yielding slightly whenever an unusually thick sheet of paper tends to raise the shoe 69.

In order to hold the shoe 69 in the normal position illustrated in Figs. 4 and 5 and to return it to this position after being swung upon its pivot by a sheet of paper passing through the rolls 59, 60, I connect the upper end of pin 70 with the fixed bar 63 by a tension spring 78.

In one wall of the frame 50 above the shaft 57 I mount a stud 79 having a square head. A pivot pin 80 is threadably mounted in the stud 79. On this pin 80 a bell crank lever 81 is pivotally mounted to swing horizontally through a small angle, as indicated by the full and dotted line positions shown in Fig. 6. The long arm of this lever has a bifurcated end which straddles the pin 70 by means of which motion is imparted to the lever whenever the shoe 69 swings upon its pivot. The short arm of the lever 81 has a downturned lip 82 which is adapted in the full line position of the lever to engage fingers 83 or 83′ and in the dotted line position is adapted to engage fingers 84 or 84′. The action of spring 78, above mentioned, is limited by the fact that the bell crank 81 can swing no further, in response to the pull of spring 78, than the full line position of Fig. 6.

These four fingers are rigidly mounted in the hub of a mutilated gear 85 which is keyed to a shaft 86 that is journaled in one side wall of the frame 50. A stud 87 is threaded into the gear 85 near the periphery thereof and constitutes a crank upon which is pivotally mounted one end of a link 88 the opposite end of which is pivotally

connected with a pin 89 that is attached to the deflector 61 near one corner thereof.

A gear 90 is loosely mounted upon shaft 86 outside the frame 50 and is continuously driven from gear 56 by means of an interposed idler 91. The gear 90, however, is pinned to a friction clutch 92 mounted upon the shaft 86. This clutch is shown in detail in Fig. 8. It consists of two blocks 93 and 94 provided with curved friction pieces shaped to fit the shaft 86, the two blocks being resiliently drawn together by studs 97 acting through coil springs 98, it being evident that the degree of friction exerted upon the shaft may be controlled by the adjustment of the studs 97.

Adjacent the shaft 86 there is also journaled a short shaft 99 carrying a gear 100 which meshes with and is driven by the gear 90. The gear 100 and the shaft 99 therefore rotate continuously. On the inner end of the shaft 99 there is keyed a gear 102 which is adapted to mesh with the teeth of gear 85 when the toothed portions of the latter are in a position to permit such intermeshing. The journal for the shaft 99 is carried in a movable mounting 99′ which extends through an opening in the frame 50, is supported from one arm of a bell crank lever 9 (Fig. 1), and may be adjusted by means of an adjusting screw 999.

Between one wall of the frame 50 and a bracket 103 secured to the opposite wall, I mount shafts 104 and 105 carrying feed rolls 106 and 107. These rolls are adapted to receive sheets directed upwardly by the deflector 61 when in the position of Fig. 4 and to deliver them onto a slowly moving stacker belt 108. When the deflector 61 is in the position of Fig. 5, on the other hand, the sheets are guided downwardly by the under side of deflector 61 and the under side of a fixed deflector plate 109 onto a slowly running stacker belt 110 moving in a direction at right angles to that of belt 108. Some means for stopping the movement of the sheets transversely of the belt 110 is provided, as, for instance, a stop bar 111 carried upon the end of a rod 112 which is adjustably supported in the frame.

The drive for the shafts 104, 105 comes from the shaft 57 through a train of gears 113 inside the machine frame at the left, as viewed in Fig. 3, while the drive for the belt 108 is taken from the train of gears 113 and acts through a set of reducing gears 114 outside the frame wall. The drive for the belt 110 comes through a worm 115 keyed to the shaft 55 outside the frame wall and meshing with a worm wheel 116 on one of the belt rollers.

Operation.—Assuming that the machine is set with the cutter knives 24, 25 at the first fold section and the balls 30, 31 positioned in the guide bars 28 and 38, as shown in Fig. 2, double size sheets, which may be printed sheets corresponding to two complete signatures, are caused to move through the first fold section and to be divided by the knives 24, 25 into two divisions or signatures which move simultaneously across the table 26, sliding under the balls 30 and 31 and engaging the guiding surface of the bar 28. The forward sheet is rapidly accelerated due to the effect of the balls 30 and moves off the table toward the right.

The forward movement of the second sheet or signature is delayed somewhat by the action of the balls 31, whereby the sheets are spaced apart, but as soon as the second sheet comes under the influence of balls 30, it too is accelerated rapidly and travels at the same speed as the first signature although spaced away from it sufficiently to give the sheet sorting means time to operate. These sheets pass through the machine in single file order, receiving such folds as the work calls for, until they are delivered one at a time and in spaced relation onto the guide plate 44 and fed through rolls 45 and over guide plate 58 into the feed rolls 59, 60 of the sorting mechanism.

Assume that the movable deflector or "flipper" 61 and associated parts are in the position of Fig. 4 when the first sheet passes between the rolls 59, 60. The forward edge or fold of the sheet will swing the lower end of shoe 69 to the right. The pin 70 attached to the shoe will consequently move to the left and throw the bell crank lever 81 into the dotted line position of Fig. 6. When this happens, the downturned lip 82 on the short arm of lever 81 disengages the finger 83 and permits the shaft 86 to be turned a short distance counterclockwise, that is, through gear 90 and friction clutch 92, until the lip 82 engages finger 84, when the shaft 86 is again stopped. The shoe 69 is held in its tilted position until the rear edge of the folded sheet leaves the rolls 59, 60. The forward edge of the sheet is by that time traveling over the deflector 61 and an instant later is grasped by the rolls 106, 107. As soon as the lower end of the shoe 69 is free of the folded sheet the spring 73 swings the shoe back into normal position. At the same time the pin 70 swings the bell crank 81 back into full line position (Fig. 6). Thereby the lip 82 disengages the finger 84 and the shaft 86 is again rotated counterclockwise through the intermediacy of the gear 90 and friction clutch 92. The rotation of the shaft 86 tends to continue through a little less than 180°, that is, until the finger 83′ comes into contact with the lip 82 on the lever 81.

However, I provide also additional means for insuring a positive mechanical drive after the movement is started by the friction clutch connection between gear 90 and shaft 86. This consists of the gears 100 and 102 and shaft 99. In the normal position of the parts, one of the flattened sides of the gear 85 is adjacent the teeth of gear 102. The movement of gear 85 through the slight angle represented by the angle between fingers 83 and 84 is not sufficient to cause the teeth of gear 85 to come into mesh with those of gear 102. However, when the lever 81 has swung back again to full line position and disengaged the finger 83, the clutch mechanism turns the gear 85 again counterclockwise and immediately one series of teeth in the gear 85 begins to mesh with the teeth of gear 102. The gear 102 has a continuous positive mechanical rotation and, consequently, it imparts a positive mechanical rotation to the gear 85 until the other flat side of that gear comes opposite the gear 102.

The rotation of gear 85 through substantially 180° causes the crank pin 87 to turn from its upper center position, illustrated in Figs. 4 and 7, to its lower center position illustrated in Fig. 5, thereby forcing the link 88 down and swinging the deflector 61 to the position shown in Fig. 5. This shifting of the deflector 61 occurs in the interval between the instant the rear edge of the first sheet leaves the rolls 59, 60 and the instant the forward edge of the second sheet begins to be engaged by these rolls. Consequently when the second sheet advances through the rolls the deflector 61 is in position to guide the sheet downwardly against the guide plate 109 and thence onto the lower belt 110.

The forward and rear edges of the second sheet act upon the shoe 69 in the same way as

did the corresponding edges of the first sheet, and the lip 82 of lever 81 is thus caused first to disengage finger 83' and then finger 84' after which there is a half turn imparted to shaft 86 through the mechanism above described, still in the counterclockwise direction. The crank 87, therefore, completes its revolution and the link 88 is again raised into the position of Fig. 4 whereby the deflector is returned to the position of that figure and the cycle of operations is ready to be repeated.

While in the present disclosure apparatus is shown for dividing sheets into two signatures only and the deflector is shown capable of assuming but two different operative positions, it is obvious that the cutting mechanism may be duplicated to divide the sheet into three or more divisions and that the deflector may be correspondingly caused to assume three or more operative positions in order to properly sort the signatures. Other variations from the disclosure herein are also possible without departing from the spirit of the invention, and I therefore desire to have it understood that the detailed disclosure is for the purpose merely of illustrating the invention and is not to be construed as a limitation upon the scope of the invention.

Having thus described my invention, I claim:

1. In a paper handling machine, a sheet feeding carrier adapted to provide single file untimed travel of sheets carried thereon, a sheet deflector at the delivery end of said carrier adapted to assume a plurality of different positions, whereby the sheets may be directed into a plurality of different courses, and means for moving said deflector from one position to another, said means being adapted to be set in motion by the travel of each sheet, and to maintain the deflector in set position until the next sheet passes.

2. In a paper handling machine, a sheet feeding carrier adapted to provide single file travel of sheets carried thereon, a sheet deflector at the delivery end of said carrier adapted to assume a plurality of different positions whereby the sheets may be directed into a plurality of different courses, and power driven means adapted to be set in operation by the travel of each sheet for moving said deflector from one position to another.

3. In a paper handling machine, a sheet feeding carrier adapted to provide single file travel of sheets carried thereon, and power driven means located beyond the delivery end of said carrier and adapted to be set in motion by the travel of the sheets beyond said carrier, for directing consecutive sheets into different courses in a regular, previously determined, order.

4. In a paper handling machine, a sheet feeding carrier adapted to provide single file travel of sheets carried thereon, means located beyond the delivery end of said carrier and controlled by the sheet movements beyond the carrier for directing consecutive sheets into different courses in a regular, previously determined, order, and a plurality of conveyors each adapted to receive the sheets moving in one of said courses.

5. In a paper handling machine, a sheet feeding carrier adapted to provide single file travel of sheets carried thereon, a sheet deflector at the delivery end of said carrier adapted to assume a plurality of different positions whereby the sheets may be directed into a plurality of different courses, means for moving said deflector from one position to another, said means being adapted to be set in motion by the travel of the sheets, and a plurality of conveyors each adapted to receive the sheets moving in one of said courses.

6. In a paper handling machine, a sheet feeding carrier, means for simultaneously delivering a plurality of sheets onto said carrier from one side thereof, means for spacing said sheets apart as they move in single file relation upon said carrier, and means located beyond the delivery end of said carrier for directing consecutive sheets into different courses.

7. In a paper handling machine, a sheet feeding carrier, means for simultaneously delivering a plurality of sheets onto said carrier from one side thereof, means for spacing said sheets apart as they move in single file relation upon said carrier, and power driven means located beyond the delivery end of said carrier for directing consecutive sheets into different courses.

8. In a paper handling machine, a sheet feeding carrier, means for simultaneously delivering a plurality of sheets onto said carrier from one side thereof, means for spacing said sheets apart as they move in single file relation upon said carrier, and means beyond the delivery end of said carrier for stacking the sheets in a plurality of equal piles, consecutive sheets being delivered to the different piles in regular order.

9. In a paper handling machine, a sheet feeding carrier, means for simultaneously delivering a plurality of sheets onto said carrier from one side thereof, means for spacing said sheets apart as they move in single file relation upon said carrier, and means located beyond the delivery end of said carrier and controlled by the sheet movements for directing consecutive sheets into different courses.

10. In a paper handling machine, a sheet feeding carrier, means for simultaneously delivering a plurality of sheets onto said carrier from one side thereof, means for spacing said sheets apart as they move in single file relation upon said carrier, and power driven means located beyond the delivery end of said carrier and adapted to be set in motion by the travel of the sheets for directing consecutive sheets into different courses.

11. In a paper handling machine, a sheet feeding carrier, means for simultaneously delivering a plurality of sheets onto said carrier from one side thereof, means for spacing said sheets apart as they move in single file relation upon said carrier, and means beyond the delivery end of said carrier and controlled by the sheet movements for stacking the sheets in a plurality of equal piles, consecutive sheets being delivered to different piles in regular order.

12. In a paper handling machine, a carrier, means for simultaneously delivering two juxtaposed sheets onto said carrier from one side thereof, whereby they travel upon said carrier in single file relation in a direction at right angles to their previous direction, means acting upon said sheets to space them apart in the direction of their travel through the machine, and means located beyond the delivery end of said carrier for directing consecutive sheets into different courses, whereby every other sheet moves in one course and alternate sheets move in a different course.

13. In a paper handling machine, a carrier, means for simultaneously delivering two juxtaposed sheets onto said carrier from one side thereof, whereby they travel upon said carrier in sin-

gle file relation in a diretcion at right angles to their previous direction, means acting upon said sheets to space them apart in the direction of their travel through the machine, and means located beyond the delivery end of said carrier and controlled by the movements of the sheets themselves for directing consecutive sheets into different courses, whereby every other sheet moves in one course and alternate sheets move in a different course.

14. In a paper handling machine, a sheet feeding carrier adapted to provide single file travel of sheets carried thereon, means located beyond the delivery end of said carrier for directing consecutive sheets into different courses, said means comprising a pivoted shoe adapted to be swung upon its pivot by the travel of a sheet, a movable sheet deflector, and power driven means adapted to be set in motion by the swinging of said shoe for moving said deflector to guide successive sheets into different courses.

15. In a paper handling machine, a sheet feeding carrier adapted to provide single file travel of sheets carried thereon, means located beyond the delivery end of said carrier for directing successive sheets into different courses, said means comprising a pivoted shoe adapted to be swung in a given direction by the travel of a sheet, a movable deflector, an operative connection between said shoe and deflector, and means for resetting said shoe after said sheet has passed out of contact therewith.

16. In a paper handling machine, means for directing successive sheets into a plurality of different courses comprising a pair of feed rolls through which the sheets pass, a movable deflector on the delivery side of said rolls to guide sheets delivered therefrom into said different courses, and means associated with said rolls and adapted to be acted upon by each sheet passing therethrough for moving said deflector from one position to another.

17. In a paper handling machine, means for directing successive sheets into a plurality of different courses, comprising a pair of feed rolls through which the sheets pass, a movable deflector on the delivery side of said rolls to guide sheets delivered therefrom into said different courses, control means associated with said rolls adapted to be acted upon by each sheet passing therethrough, and power means adapted to be set in motion by said control means for moving said deflector from one position to another.

18. In a paper handling machine, means for directing successive sheets into a plurality of different courses, comprising a pair of feed rolls through which the sheets pass, a movable deflector on the delivery side of said rolls to guide sheets delivered therefrom into said different courses, a pivoted shoe mounted adjacent said rolls and adapted to be swung by each sheet passing therethrough, and means set in motion by the swinging of said shoe for shifting said deflector from one position to another.

19. In a paper handling machine, means for directing successive sheets into different courses, comprising a movable deflector, stop mechanism adapted to be actuated by the travel of the sheets themselves, and power driven means for moving said deflector, said means comprising a friction clutch effective when the stop mechanism is released.

20. In a paper handling machine, a sheet feeding carrier adapted to provide single file travel of sheets carried thereon, and means located beyond the delivery end of said carrier controlled by the movement of each sheet for directing the next succeeding sheet into a different course.

21. In a paper handling machine, a sheet feeding carrier adapted to provide single file travel of sheets carried thereon, a sheet deflector at the delivery end of said carrier adapted to assume a plurality of different positions, whereby the sheets may be directed into a plurality of different courses, means for moving said deflector from one position to another, said means being adapted to be set in motion by the travel of each sheet for moving the deflector to direct the course of the next succeeding sheet.

22. In a paper handling machine, a sheet feeding carrier adapted to provide single file travel of sheets carried thereon, a sheet deflector at the delivery end of said carrier adapted to assume a plurality of different positions, whereby the sheets may be directed into a plurality of different courses, and power driven means for moving said deflector from one position to another, said means being released for action by the travel of each sheet for moving the deflector to direct the course of the next succeeding sheet.

23. In a paper handling machine, a sheet feeding carrier adapted to provide single file untimed travel of sheets carried thereon, and means located beyond the delivery end of said carrier and controlled by the sheet movements independently of differing sheet characteristics for directing consecutive sheets into different courses.

24. In a paper handling machine, a sheet feeding carrier adapted to provide single file travel of sheets carried thereon, and means located beyond the delivery end of said carrier and acting independently of differing sheet characteristics for directing consecutive sheets into different courses.

25. In a paper handling machine, a sheet feeding carrier adapted to provide single file travel of sheets carried thereon, a sheet deflector at the delivery end of said carrier adapted to assume a plurality of different positions, whereby the sheets may be directed into a plurality of different courses, and means acting independently of differing sheet characteristics for moving said deflector from one position to another.

REUBEN HITCHCOCK.