

No. 775,319.

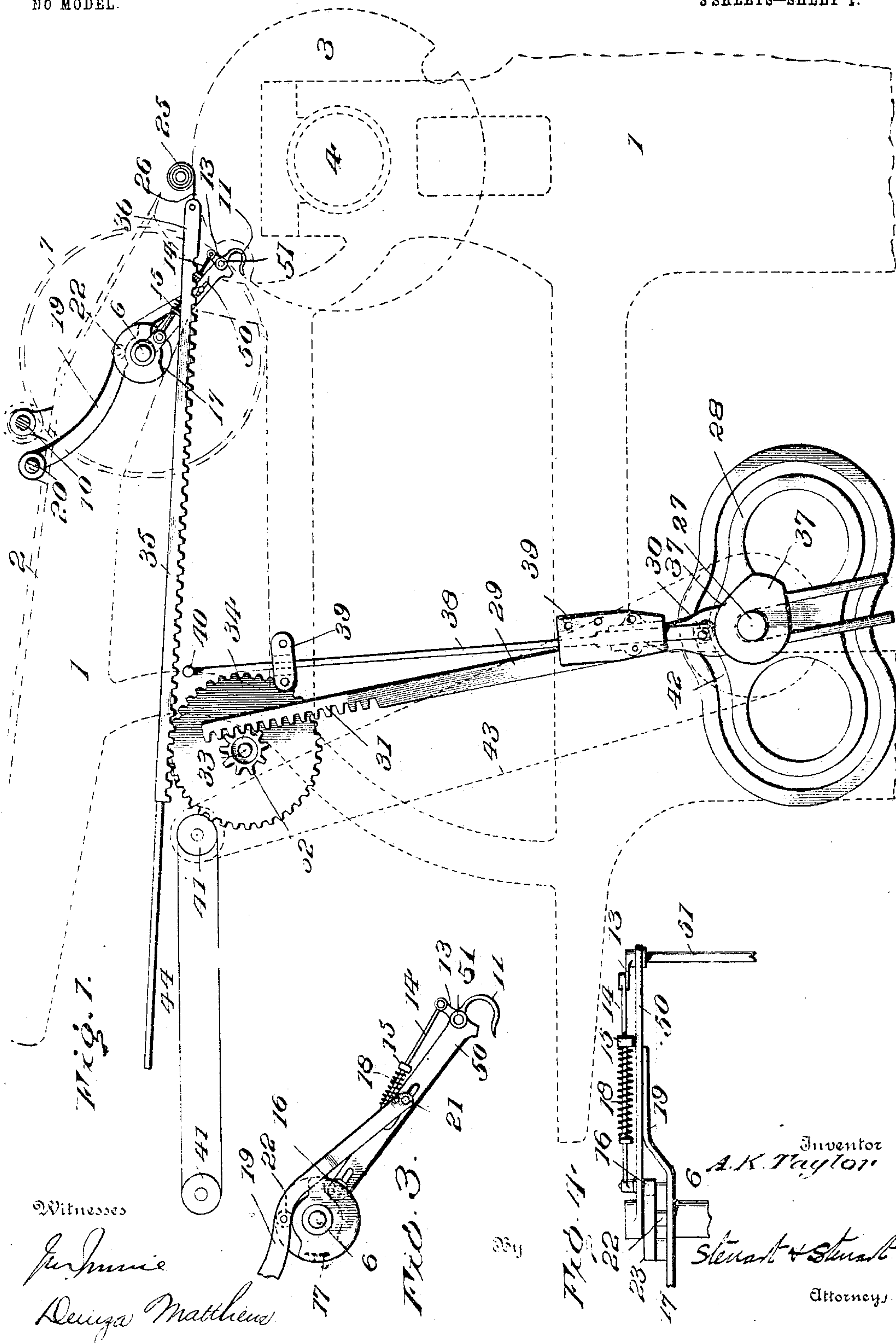
PATENTED NOV. 22, 1904.

A. K. TAYLOR.
SHEET DELIVERY.

APPLICATION FILED MAR. 1, 1904.

NO MODEL.

3 SHEETS—SHEET 1.

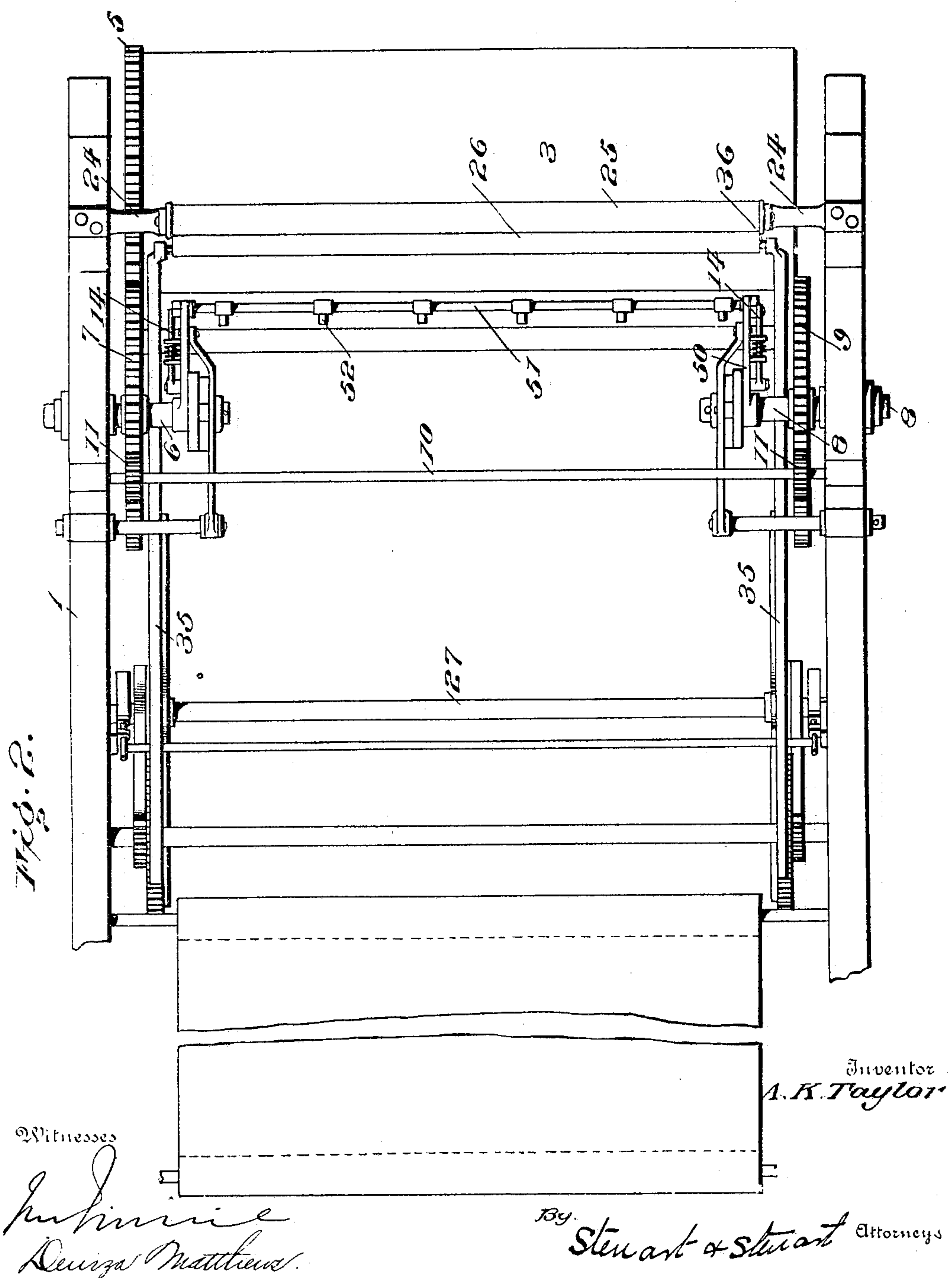


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3 SHEETS—SHEET 2.



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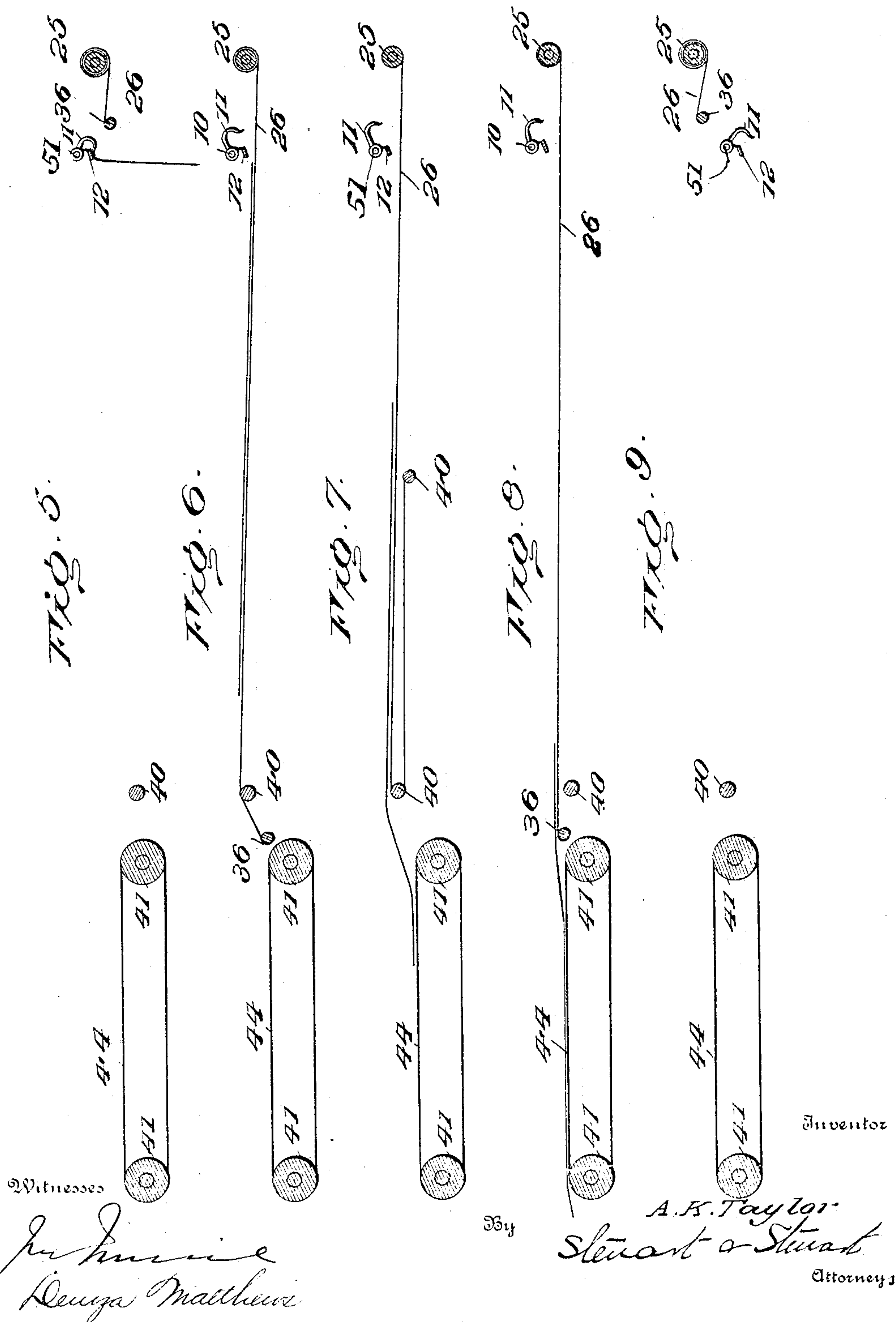
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3 SHEETS—SHEET 3.



UNITED STATES PATENT OFFICE.

ARTHUR K. TAYLOR, OF WALBROOK, MARYLAND.

SHEET-DELIVERY.

SPECIFICATION forming part of Letters Patent No. 775,319, dated November 22, 1904.

Application filed March 1, 1904. Serial No. 195,974. (No model.)

To all whom it may concern:

Be it known that I, ARTHUR K. TAYLOR, a citizen of the United States of America, and a resident of 2120 Chelsea Terrace, Walbrook, Maryland, have invented certain new and useful Improvements in Sheet-Deliveries, of which the following is a specification.

My invention relates to certain new and useful improvements in sheet-deliveries for use in connection with cylinder printing-presses.

The object of my invention is to produce a back delivery which will deliver the sheet printed side up.

In the ordinary form of back delivery the sheets are delivered with the freshly-printed side down, and consequently they are more liable to offset onto the sheet upon which they rest than would be the case if they were delivered printed side up.

In order to obviate the difficulty of delivering the sheets printed side down, the front delivery has been used. The objection to this form of delivery is, however, that a press has to be especially designed to use such a delivery, whereas with my form of device the delivery may be attached to an ordinary cylinder-press.

In the drawings accompanying this application I have shown my delivery attached to an ordinary form of stop-cylinder press. I desire to have it understood, however, that I am not to be limited to the use of my delivery with such a press, as it is adapted for general use and in the form shown may be used in connection with any form of cylinder-press desired.

Referring to the drawings, wherein the same part is designated by the same reference-numeral wherever it occurs, Figure 1 is side elevation of a press provided with my invention in its preferred form, the press being shown in dotted lines to more clearly show the features of my invention. Fig. 2 is a top plan view of Fig. 1. Fig. 3 is a side elevation of the grippers and the holding-cam therefor. Fig. 4 is a top plan view of Fig. 3. Figs. 5, 6, 7, 8, and 9 are diagrammatic views showing the operation of my delivery.

1 designates the frame of a stop-cylinder press, 2 the feed-board, and 3 the impres-

sion-cylinder. 4 designates the shaft on which the impression-cylinder is mounted, and 5 is the driving-gear carried by the shaft 4 at one end of the impression-cylinder. These parts, as shown, are all of the ordinary form of stop-cylinder press and will not be further described.

6 is a shaft mounted in bearings in the frame 1 and carries inside the frame the gear 7, meshing with the gear 5.

8 is a shaft similar to the shaft mounted on the other side of the frame from the shaft 6 and provided with the gear 9.

10 is a shaft mounted in bearings on the frame of the machine, and the shaft carries a pair of gears 11, which mesh with the gears 7 and 9, whereby the gear 9 is driven in unison with the gear 7.

Loosely mounted on the shafts 6 and 8 inside the gears 7 and 9 are the arms 50, and connecting the free ends of these arms is a rod 51, upon which the grippers 52 are mounted. Extending between the arms is a bar 12, which forms a stationary jaw of the gripper. At each end of the rod 51 there is an upwardly-projecting arm 13, to each of which arms 13 there is connected a rod 14, passing through lugs 15 15, located upon the sides of the bars 9 9. The inner end of each of the rods 14 14 carries a cam-roller 16, adapted to be operated by the cams 17 17 on the stub-shafts 6 6. 18 is a spring surrounding the rod 14 and pressing the cam-rollers 16 16 against the cams 23 23. By this construction it will be seen that when the high part of the cam 17 is under the roller 16 the grippers will be closed, and when the low part of the cam passes below the roller the grippers will be opened by means of the spring 18.

19 19 are arms, one end of each of which is pivoted to the frame at 20 and the other end of which is pivoted to each of the arms 9 at 21. Between its ends these arms carry a cam-roller 22, which is adapted to be operated by the cam 23, mounted upon each of the shafts 6. By this construction it will be seen that the cam 17 is adapted to raise and lower the grippers from the position indicated diagrammatically in Fig. 9 to the position shown in Fig. 5.

Mounted in suitable bearings 24 in the frame of the machine is a spring apron-roller 25, and secured to this apron-roller is an apron 26. The spring of the roller is arranged so that it will maintain a constant pull upon the apron. The apron-roller is mounted in front of and just above the position of the grippers when they are in their lower or sheet-taking position, as indicated in Fig. 1.

27 is a shaft, which receives motion from a suitable source of power, and mounted on each end of it is a cam 28, which preferably is of the form shown in Fig. 1.

29 29 are rods, which at their lower ends are divided to straddle the shaft 27 and guide the rods, and each of the rods is provided with a cam-roller 30, running in the groove of one of the cams 28, whereby the rods are reciprocated. Each rod carries at its upper end a rack 31, meshing with one of the pair of pinions 32, which are mounted on the ends of the shaft 33, and this shaft carries at each end, just within the pinions 32, two gears 34 34.

35 35 are two rack-bars, one on each side of the machine, engaging the gears 34 34. The front ends of these rack-bars are connected together by means of a bar 36, and to this rod the free end of the apron is connected.

Mounted on each end of the shaft 27, outside the cam 28, is a cam 37, which engages the lower ends of the rods 38, which are mounted in suitable lugs 39 on the frame of the machine. The free ends of the rods are connected together by the rod 40, extending across the machine from one rod 38 to the other.

41 41 are a pair of rollers driven from the shaft 27 by the pulley 42 thereon and the belt 43. Passing over these rollers is a receiving-web 44, which receives the sheets as they are delivered by the apron and carries them away in any desired manner.

While I have described my sheet-delivering device as an apron, it is to be understood that instead of an apron tapes may be used or any other suitable receiving device.

In the operation of my machine the gripper-carrying arms 50 are so timed as to be brought to their lowest position (shown in Fig. 1) shortly before the impression-cylinder stops, in which position the grippers of my device will be in the path of the grippers of the impression-cylinder and in position to receive the sheet from the latter, which normally release the sheet shortly before the cylinder comes to rest. During the latter part of the revolution of the cylinder the cams 17 17 first operate to close the grippers onto the sheet, and immediately thereafter the cams 23 23 operate to lift the gripper-carrying arms 50 by means of the arms 19 and raise the grippers, carrying the sheet to the position shown in Fig. 5, in which position the grippers are above the rod 36, to which the front end of the

apron is attached. The sheet now hangs in the position shown in Fig. 5. The cam 28 is so timed that it will now begin to move the bar 29 up, which through the rack 31, and gears 32 and 34 will reciprocate the bars 35, drawing the apron from the position shown in Fig. 5 to the position shown in Fig. 6. The bar 36, passing under the sheet, will raise the same and cause the sheet to lie on top of the apron. As soon as the rack-bars have completed their movement, drawing the bar 36 to the position shown in Fig. 6, the impression-cylinder will start on its next revolution, and this will operate to open the jaws of the gripper and let go the sheet. The cam 37 now operates to raise the rod 38 and through the rod the bar 40, so that the bar moves into the position shown in Fig. 6 and lifts up the back end of the curtain. The continued rotation of the cam 38 causes the bar 29 to move back, thus moving the rack-bars toward the impression-cylinder. Because the bar 40 has been moved above the bar 36 this will loop the apron over the bar 40 and further draw the apron off from the spring-roller 25, and thus advance the sheet until its forward end drops down upon the web 44 or any other similar receiving device. The movement of the apron when advanced to its limit should free itself of the sheet and deliver it onto the conveyer-web 44. The cams 28 now reciprocate the bars 39 in the opposite direction, causing the bars 35 to move backward, and thus move the bar 36 back to the position shown in Fig. 8. The cam 37 now allows the bar 40 to drop back to its normal position, and the cam 28 operates to move the bar 36 to its normal position, when the parts will come to the position shown in Fig. 9 and be ready to receive another sheet and will have completed their cycle of operations. As the sheet is raised by the lifting-arms the apron passes under the sheet and turns the printed side up, in which position it is maintained until it is deposited upon the receiving device.

While I have described what I believe to be the preferred form of my invention, I desire to have it understood that many changes and modifications may be made therein without departing from the scope of same.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a back delivery for printing-presses, the combination with a feed-board, a sheet-supporting cylinder and means to drive the same, of a gripper located back of the center of the sheet-supporting cylinder and under the feed-board, means to operate the gripper whereby it will take a sheet when released by the sheet-supporting cylinder and release it again at the proper time, of an apron located beneath the feed-board, and means to move the apron so that it will receive a sheet from the gripper printed side up and deliver the

sheet to a suitable receiving-surface without the printed side of the sheet being touched.

2. In a back delivery for printing-presses, the combination with a feed-board, a sheet-supporting cylinder and means to drive the same, of a gripper located back of the center of the sheet-supporting cylinder and under the feed-board, means to operate the gripper whereby it will take a sheet when released by the sheet-supporting cylinder and release it again at the proper time, of an apron located beneath the feed-board, means to operate the apron whereby it will pass under the gripper after it has taken the sheet and move away from the gripper until the sheet is laid on top of the apron, printed side up, whereby the sheet is delivered without contact with the printed surface thereof.

3. In a back delivery for printing-presses, the combination with a feed-board, a sheet-supporting cylinder and means to drive the same, of a gripper located back of the center of the sheet-supporting cylinder and under the feed-board, means to operate the gripper whereby it will take a sheet when released by the sheet-supporting cylinder and release it again at the proper time, of an apron located beneath the feed-board, means to operate the apron whereby it will pass under the gripper after it has taken the sheet and move away from the gripper until the sheet is laid on top of the apron, printed side up, and means for transferring the sheet from the apron to a suitable receiving device, whereby the delivery of the sheet is effected without contact with the printed side thereof.

4. In a back delivery for printing-presses, the combination with a sheet-supporting cylinder and means to drive the same, a gripper, means to operate the gripper whereby it will take a sheet when released by the sheet-supporting cylinder and release it again at a proper time, of an apron, means to move the apron under the grippers after they have taken the sheet and move the apron toward the back of the press until the sheet is laid on top of the apron printed side up, a supporting-bar over which the apron is adapted to pass when moved by its operating means with a change of angle in its line of movement whereby the sheet will be moved off the apron by the continued movement of the apron.

5. In a back delivery for cylinder-presses,

the combination with a gripper adapted to receive the sheet from the impression-cylinder, of means for raising the grippers from their sheet-taking position, a spring-roller mounted adjacent to the impression-cylinder, a sheet-receiving device secured to the spring-roller and adapted to be wound thereon, means for unwinding the receiving-surface from the roller and under the grippers, whereby the sheet will be received on the receiving-surface printed side up.

6. The combination with a cylinder-press, comprising a bed, an impression-cylinder and a feed-board, of a back delivery for the press consisting of a set of grippers located back of the center of the impression-cylinder and below the feed-board and adapted to take a sheet from the impression-cylinder, means to move the gripper from the impression-cylinder, a sheet-receiving surface under the feed-board mounted for movement under the grippers when they are moved away from the impression-cylinder, means for moving the sheet-receiving surface to cause the sheet to be laid thereon, printed side up and means for delivering the sheet from the sheet-receiving surface, printed side up, whereby the sheet is delivered without contact with the printed side thereof.

7. In a back delivery for cylinder-presses, the combination with a set of grippers adapted to take the sheet from the impression-cylinder, means for raising the grippers from their sheet-receiving position, a spring-roller mounted in front of the grippers and below the plane of the grippers when the latter are in their elevated position, an apron wound on the spring-roller, means for reciprocating the free end of the apron, whereby it will first be moved under the grippers, to cause the sheet to lie on the apron printed side up, a bar and means for reciprocating the bar to cause it to raise a portion of the apron after it has been reciprocated, means for reciprocating the free end of the apron in the opposite direction to cause the sheet to be delivered from the apron.

Signed by me at Baltimore, Maryland, this 9th day of January, 1904.

ARTHUR K. TAYLOR.

Witnesses:

JOHN W. HEWES,

MARK A. ELLIOTT.