

(No Model.)

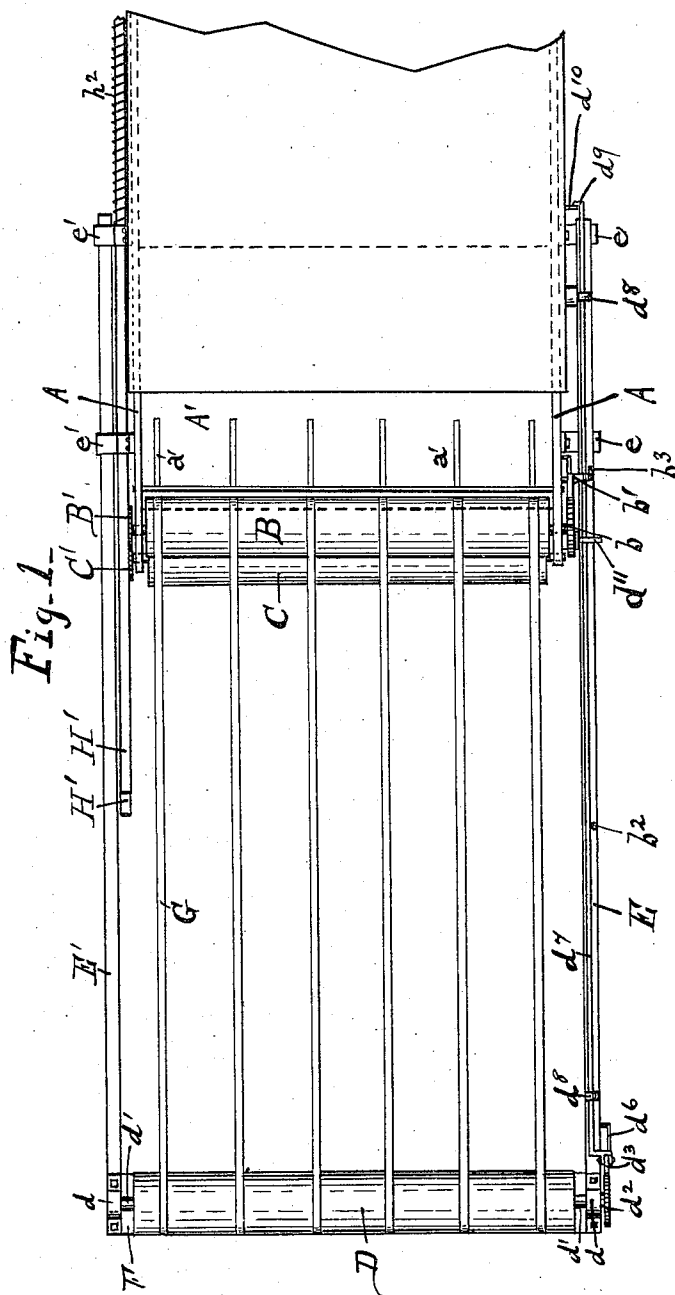
3 Sheets—Sheet 1.

R. W. JAMIESON.

SHEET DELIVERY MECHANISM FOR PRINTING PRESSES.

No. 575,643.

Patented Jan. 19, 1897.



WITNESSES:

C. H. Mansell.
A. R. Schlen.

INVENTOR

Robert W. Jamieson

BY

Howard L. Osgood
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(No Model.)

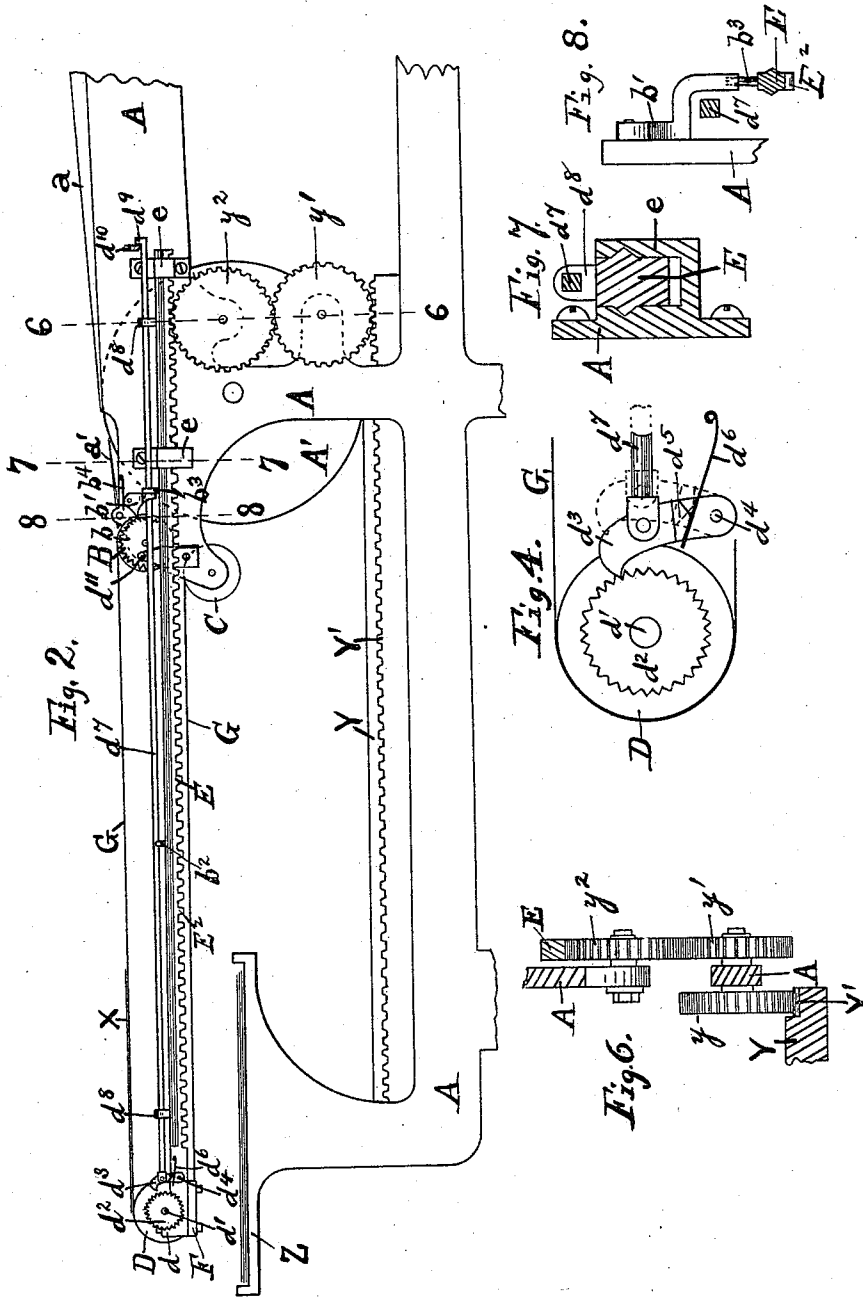
3 Sheets—Sheet 2

R. W. JAMIESON.

SHEET DELIVERY MECHANISM FOR PRINTING PRESSES.

No. 575,643.

Patented Jan. 19, 1897.



WITNESSES:

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3 Sheets—Sheet 3.

SHEET DELIVERY MECHANISM FOR PRINTING PRESSES.

Patented Jan. 19, 1897.



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UNITED STATES PATENT OFFICE.

ROBERT W. JAMIESON, OF ROCHESTER, NEW YORK.

SHEET-DELIVERY MECHANISM FOR PRINTING-PRESSES.

SPECIFICATION forming part of Letters Patent No. 575,643, dated January 19, 1897.

Application filed September 30, 1896. Serial No. 607,510. (No model.)

To all whom it may concern:

Be it known that I, ROBERT W. JAMIESON, a citizen of the United States, and a resident of the city of Rochester, county of Monroe, and State of New York, have invented certain new and useful Improvements in Sheet-Delivery Mechanisms for Printing-Presses, of which the following is a specification, reference being had to the accompanying drawings, in which—

Figure 1 is a top plan view of a device embodying my invention. Fig. 2 is a side elevation of such a device. Fig. 3 is another side elevation thereof. Fig. 4 is an enlarged side elevation of the end of the traveling carriage in Fig. 2. Fig. 5 is an end elevation of the traveling carriage. Figs. 6, 7, and 8 are enlarged cross-sections on the lines 6 6, 7 7, and 8 8 of Fig. 2. Fig. 9 is a cross-section on the line 9 9 of Fig. 3. Figs. 10, 11, and 12 are diagrams showing the operation of the machine.

The object of my invention is to produce an accurate and easily-managed sheet-delivery apparatus of the dropper type; and my invention consists in the combinations herein-after described and claimed.

In the drawings, A is the frame of the machine.

a is the feed-table.

A' is the impression-cylinder.

a' are the usual stripper-fingers for stripping the sheet from the impression-cylinder.

B, C, and D are three rollers having axes parallel to the axis of the impression-cylinder. Two of these rollers, B and C, are set in fixed bearings adjacent to the periphery of the impression-cylinder A'. The third roller, D, is set in bearings on a traveling carriage to move to and from the other rollers. A delivery-table Z is provided, as usual.

On each side of the frame A is a rod E E', which runs in guides e e e' e', attached to the frame of the machine, so that the rods E E' may slide in and out with reference to the impression-cylinder and the rollers B and C and move parallel to each other. The ends of these two rods E E' are fastened together by a cross-bar F, (shown most clearly in Fig. 5,) whereby they move together. On the ends of these rods are bearings d d for the axle d' of the roller D. On one end of said axle is

a ratchet-wheel d². (See Figs. 2, 4, and 5.) A pawl d³, pivoted to the bar E, as at d⁴, engages the teeth of the ratchet-wheel d² to hold the ratchet-wheel and the roller D against rotation when the pawl is in engagement. On one side of the pawl is a lug d⁵, having two flat-sided faces which are so adjusted that a spring d⁶, fastened to the bar E, holds the pawl in either of two positions, one of engagement with the ratchet-wheel d² and the other of complete disengagement therefrom. To the pawl d³ is attached a rod d⁷, which slides in guides d⁸ upon the bar E, so that the rod d⁷ moves with the bar E. The end of the rod d⁷ has a lug d⁹ on it, which, just before the roller D reaches its position most remote from the impression-cylinder A', strikes a stationary stop d¹⁰ and holds the rod stationary while the carriage moves forward, thus disengaging the pawl d³ from the ratchet-wheel d². The pawl is moved into engagement with the ratchet-wheel by striking against a stationary stop or pin d¹¹ on the frame of the machine.

A series of discontinuous tapes G are fastened at one end to the roller B and at the other end to the roller C, passing over the roller D. These tapes constitute a traveler for supporting and carrying the sheets of paper from the impression-cylinder to the delivery-table. The roller B is set close to the periphery of the impression-cylinder A, and the stripper-fingers a are so arranged as to guide the sheets X from the impression-cylinder to rest upon the tapes G. The tapes wind and unwind on the rollers B and C, and the movement of the roller D to and from the other two rollers serves to extend the tapes so as to carry the sheet which is thereon to the delivery-table Z. The roller B is provided with a ratchet-wheel b, fixed on the axis of the roller, and upon a fixed pivot on the frame A of the machine is the dog b', which engages with the teeth of the ratchet-wheel b. This dog is actuated by two pins b² b³ upon the sliding bar E, which at proper times move the pawl so as to engage and disengage the same and the ratchet-wheel b. A spring b⁴, attached to the frame A adjacent to the pawl, presses upon two flat surfaces of said pawl, so as to hold it in the position of engagement or that of disengagement with the ratchet-wheel

b. On the same side of the machine with the side bar E' are two rack-rods H H', formed to slide in the guides e e' parallel to said rod E'. On the ends of these rack-rods are collars h h', to which are fastened coiled springs h² h³, which pass around the rods and press against the guide-bracket e' nearest to the end of the rods, so that as the rods are extended by movement to the right in Fig. 3 the springs h² h³ will be compressed. Upon the axles of the rollers B and C are spur-wheels B' C', (shown in Fig. 3,) which spur-wheels mesh with the racks on the rack-bars H H'.

Let us now suppose that the parts are in the position shown in Fig. 12, the rods E E' being retracted to their limit, the rack-bars H H' being also retracted to their limits, the dog b' having been moved by the pin b² out of engagement with the ratchet-wheel b and thus leaving the roller B free to revolve, the tapes G being equally wound upon the rollers B and C, and the roller D being in its greatest proximity to the other two rollers. A sheet X is delivered from the impression-cylinder over the upper surface of the tapes G on the roller B. The roller D has been locked from rotation by the abutment of the pawl d³ with the stop d¹¹ and the engagement of the pawl with the ratchet-wheel d² and now moves away from the impression-cylinder A', the rod E being driven by mechanism hereinafter described. As the roller D moves away from the other rollers the tapes G are unwound equally from each roller B and C, and said tapes being therefore without rotation with reference to the locked roller D will move with said roller and carry the sheet X upon them, in the positions shown in Figs. 2 and 10, until the traveling carriage and traveler have reached the extreme position shown in the figures just mentioned. This outward movement of the traveling carriage revolves the rollers B and C, as stated, and through the spur-wheels B' and C' and rack-bars H and H' compresses the springs h² h³. When the extreme outward position is reached, the stop d¹⁰ strikes the lug d⁹ on the rod d⁷, thereby disengaging the pawl d³ from the ratchet-wheel d² and releasing the roller D. As soon as the extreme outward position is reached the pin b³ strikes the pawl b' and moves it into engagement with the ratchet-wheel b and locks the roller B against rotation. At this time the whole traveling carriage begins its return movement and the tapes begin to wind upon the roller C, rolling over the roller D. As the roller D begins to return toward the impression-cylinder A' the spring h³ begins to move the rack-bar h' backward to rotate the spur-wheel C', and thereby the roller C, so as to wind the tape G upon the roller C.

While the roller D is returning and during the period while the roller C is revolving in the direction of the arrow shown in Fig. 11 the roller B is restrained from rotation and the roller D revolves in the direction of the

arrow shown in the same figure, and thereby the sheet X is fed off the tapes and upon the delivery-table Z. The springs h² h³ of the rack-bars H H' are so adjusted by means of their collars h h' that they are equal in tension when equal portions of the tapes are wound on the rollers B and C. Hence as the roller D returns toward the impression-cylinder the retraction of the rack-bar H' winds the tapes on the roller C until the parts reach substantially the positions shown in dotted lines in Fig. 12, when the sheet will have been fully delivered to the delivery-table and about one-half of the total length of the tapes will have been wound upon the roller C. At this point the pin b² strikes the tail of the pawl b', disengaging it from the ratchet-wheel b, and releases the roller B, whereupon the spring h², being now in greater tension than the spring h³, comes into action, and through the rack-bar H and spur-wheel B' turns the roller B in the direction indicated by the arrow in Fig. 12 and winds the tapes upon it, while this operation winds a portion of the tapes off the roller C, rotating said last-mentioned roller in a direction opposite to the direction of rotation of the roller B until the springs h² h³ have equalized their tension and the tapes are equally wound on the rollers B and C. The roller D continues its return toward the impression-cylinder, while the ends of the traveler or tapes continue to be independently retracted by the springs h² h³ and wind upon the rollers B and C, thus equalizing the retraction of the ends and securing the winding of an equal amount of the tapes upon the rollers B and C. When the parts reach the position shown in full lines in Fig. 12, they are ready for another operation.

It is obvious that various means of reciprocating the traveling carriage, consisting of the said bars E E' and cross-bars F, with the roller D, may be employed. One means of operating them is shown in Figs. 2 and 6. The printing-bed Y reciprocates, as usual and by the usual means, under the impression-cylinder A. A rack Y' is fixed to said bed Y and meshes with a gear-wheel y, journaled in the frame A of the machine. On the same shaft with the gear-wheel y is another equal wheel y', one being inside the frame and the other outside the frame in the form of device shown. The wheel y' meshes with an equal wheel y², which meshes with a rack E² on the side bar E. As the bed Y reciprocates, the traveling carriage reciprocates in the same direction and at the same time with it. This mechanism may of course be duplicated on the other side of the machine, if desired.

What I claim is—

1. In a sheet-delivery apparatus, the combination of an impression-cylinder, a delivery-table, and a delivery mechanism comprising a discontinuous traveler, two rollers having fixed bearings and to which the ends of said traveler are attached, mechanism for winding said traveler on said two rollers, and a mov-

able roller engaging said traveler and adapted to extend the same from said impression-cylinder and to unwind said traveler from said two rollers.

2. In a sheet-delivery apparatus, the combination of an impression-cylinder, a delivery-table, and a delivery mechanism comprising a discontinuous traveler, two rollers having fixed bearings to which the ends of said traveler are attached, mechanism for winding said traveler on said two rollers, and means for unwinding said traveler from said two rollers and at the same time extending the same from the impression-cylinder to the delivery-table.

3. In a sheet-delivery apparatus, the combination of an impression-cylinder, a delivery-table, and a delivery mechanism comprising a discontinuous traveler, two rollers having fixed bearings and to which the ends of said traveler are attached, mechanism for winding said traveler on said two rollers, mechanism for locking one of said rollers against rotation, means for unwinding said traveler from said two rollers and extending the same to the delivery-table from the impression-cylinder without movement with reference to the means for so extending the same.

4. In a sheet-delivery apparatus, the combination of an impression-cylinder, a delivery-table and a delivery mechanism, comprising a discontinuous traveler, two rollers having fixed bearings to which the ends of said traveler are attached, a traveling carriage having a roller thereon engaging said traveler and adapted to extend the same to and from said two rollers, means for intermittently holding one of said two rollers with fixed bearings against rotation, and means for holding the roller upon said traveling carriage against rotation.

5. In a sheet-delivery apparatus, the combination of an impression-cylinder, a delivery-table and a delivery mechanism comprising a discontinuous traveler, two rollers having fixed bearings to which the ends of said traveler are attached, a traveling carriage having a roller thereon engaging said traveler and adapted to extend the same to and from the impression-cylinder, means for intermittently holding one of said two rollers with fixed bearings, means for intermittently holding the roller on said carriage against rotation, and means for revolving said two rollers with fixed bearings to wind said traveler thereon.

6. In a sheet-delivery apparatus, the combination of an impression-cylinder, a delivery-table, a discontinuous traveler, two rollers adjacent to said impression-cylinder having fixed bearings and to which the ends of said traveler are attached, mechanism for winding said traveler on said two rollers, and a traveling carriage having a roller thereon engaging said traveler and adapted to extend the same to and from the impression-cylinder by winding the said traveler off said rollers with fixed bearings.

7. In a sheet-delivery apparatus, the combination of an impression-cylinder, a delivery-table, a discontinuous traveler, two rollers adjacent to the impression-cylinder having fixed bearings and to which the ends of said traveler are attached, spur-wheels on the axes of said rollers, rack-bars engaging said spur-wheels, springs for actuating said rack-bars to rotate said spur-wheels to wind said traveler upon said rollers, a traveling carriage having a roller thereon engaging said traveler adapted to extend the same from the impression-cylinder and to unwind said traveler from said two rollers, means for holding the roller upon said traveling carriage against rotation while the same is moving from the impression-cylinder, and means for holding the upper one of said two rollers having fixed bearings against rotation during a part of the return of said movable roller and while the sheet is being delivered from said traveler upon the delivery-table.

8. In a sheet-delivery apparatus, the combination of an impression-cylinder, a delivery-table, a discontinuous traveler, a movable roller engaging said traveler intermediate its ends and adapted to extend the same from the impression-cylinder to the delivery-table, and means adjacent to the impression-cylinder for alternately retracting the two ends of said traveler and for permitting the traveler to be extended by said movable roller.

9. In a sheet-delivery apparatus, the combination of an impression-cylinder, a delivery-table, a discontinuous traveler, a movable roller engaging said traveler intermediate its ends and adapted to extend the same from the impression-cylinder to the delivery-table, means adjacent to the impression-cylinder for alternately retracting the two ends of said traveler and for permitting the traveler to be extended by said movable roller, and means for holding said movable roller against rotation while the same is moving toward the delivery-table.

10. In a sheet-delivery apparatus, the combination of an impression-cylinder, a delivery-table, a discontinuous traveler, a movable roller engaging said traveler intermediate its ends and adapted to extend the same from the impression-cylinder to the delivery-table, means adjacent to the impression-cylinder for alternately retracting the two ends of said traveler and for permitting the traveler to be extended by said movable roller, means for holding said movable roller against rotation while the same is moving toward the delivery-table, and mechanism for holding said traveler stationary at the points where the sheet is resting thereon while said movable roller is moving toward the impression-cylinder.

11. In a sheet-delivery apparatus, the combination of an impression-cylinder, a delivery-table and a delivery mechanism comprising a discontinuous traveler, two rollers having fixed bearings and to which the ends of said traveler are attached, one of said rollers being

set in a higher plane than the other, a movable roller over which said traveler runs from one of said two rollers to the other, means for moving said movable roller to and from the two rollers having fixed bearings, mechanism for holding the movable roller against rotation while the roller is moving from the impression-cylinder, means for releasing said roller to permit it to rotate during its return toward the impression-cylinder, mechanism for holding the upper of said two rollers against rotation while the movable roller is making the first portion of its return movement toward the impression-cylinder and then for releasing the same, and means for rotating said two rollers having fixed bearings to wind said traveler thereon.

12. In a sheet-delivery apparatus, the combination of an impression-cylinder, a delivery-table, and a delivery mechanism comprising a discontinuous traveler, two rollers B and C having fixed bearings and to which the ends of said traveler are attached, a movable roller D over which said traveler runs, means for moving said movable roller to and from the rollers B C, a ratchet-wheel d^2 and dog d^3 for holding the roller D against rotation, means for throwing said dog into engagement with the ratchet-wheel when the roller D begins to move from the impression-cylinder, means for disengaging said dog from said ratchet-wheel when said roller D reaches its extreme position of extension, a ratchet-wheel b and a dog b' for holding and releasing the roller B, and means for holding said dog b' in engagement with said ratchet-wheel b while the roller D is making the first portion of its return movement toward the impression-cylinder, means for disengaging said dog b' from said ratchet-wheel b during the latter part of the movement of said roller D toward the impression-cylinder, a spur-wheel upon the axes of each of said rollers having fixed bearings and a spring-actuated rack for engaging each spur-wheel.

13. In a sheet-delivery apparatus, the combination of an impression-cylinder, a delivery-table, and a delivery mechanism comprising a discontinuous traveler, two rollers B and C having fixed bearings and to which the ends of said traveler are attached, a movable roller D over which said traveler runs, means for moving said movable roller to and from the rollers B C, a ratchet-wheel d^2 and dog d^3 for holding the roller D against rotation, means for holding said dog in engagement with the ratchet-wheel while the roller D is moving from the impression-cylinder, means for disengaging said dog from said ratchet-wheel when said roller D reaches its extreme position of extension, a ratchet-wheel b and a dog b' for holding and releasing the roller B, and means for holding said dog b' in engagement with said ratchet-wheel b while the roller D is making the first portion of its return movement toward the impression-cylinder, means for disengaging said dog b' from

said ratchet-wheel b during the latter part of the movement of said roller D toward the impression-cylinder, and means for rotating said rollers B and C to wind said traveler thereon.

14. In a sheet-delivery apparatus, the combination of an impression-cylinder, a delivery-table, and a delivery mechanism comprising a discontinuous traveler, two rollers B and C having fixed bearings and to which the ends of said traveler are attached, a movable roller D over which said traveler runs, means for moving said movable roller to and from the rollers B C, a ratchet-wheel d^2 and dog d^3 for holding the roller D against rotation, means for holding said dog in engagement with the ratchet-wheel while the roller D is moving from the impression-cylinder, means for disengaging said dog from said ratchet-wheel when said roller D reaches its extreme position of extension, a ratchet-wheel b and a dog b' for holding and releasing the roller B, and means for holding said dog b' in engagement with said ratchet-wheel b while the roller D is making the first portion of its return movement toward the impression-cylinder, means for disengaging said dog b' from said ratchet-wheel b during the latter part of the movement of said roller D toward the impression-cylinder, spur-wheels B' and C' upon the axis of said rollers B and C, rack-bars H and H' engaging said spur-wheels and springs h^2 h^3 compressed by the unwinding of the traveler from said rollers B and C and winding said traveler upon said rollers by expansion of said springs.

15. In a sheet-delivery apparatus, the combination of an impression-cylinder, a delivery-table and a delivery mechanism comprising a discontinuous traveler, two rollers having fixed bearings and to which the ends of the traveler are attached, a movable roller engaging said traveler between its ends and adapted to reciprocate to and from the impression-cylinder and to unwind said traveler from said two rollers, means for winding said traveler upon said two rollers, a reciprocating type-bed, and means connecting said type-bed and said movable roller for reciprocating the same.

16. In a sheet-delivery apparatus, the combination of an impression-cylinder, a delivery-table and a delivery mechanism comprising a discontinuous traveler, two rollers having fixed bearings and to which the ends of the traveler are attached, a movable roller engaging said traveler between its ends and adapted to reciprocate to and from the impression-cylinder and to unwind said traveler from said two rollers, means for winding said traveler upon said two rollers, a rack attached to said movable roller for reciprocating the same, a reciprocating type-bed, a rack on said type-bed and gearing between said two racks.

17. In a sheet-delivery apparatus, the combination of an impression-cylinder, a delivery-table, a discontinuous traveler, means for independently retracting each end of the trav-

eler and reciprocating means acting upon said traveler between its ends for extending the traveler from the impression-cylinder to the delivery-table.

5 18. In a sheet-delivery apparatus, the combination of an impression-cylinder, a delivery-table, a discontinuous traveler, means for independently retracting each end of the traveler, and positively-actuated reciprocating
10 means acting upon said traveler between its ends for extending the traveler from the impression-cylinder to the delivery-table.

15 19. In a sheet-delivery apparatus, the combination of an impression-cylinder, a delivery-table, a discontinuous traveler, means for independently retracting each end of the traveler, and reciprocating means acting upon said traveler between its ends for extending the traveler from the impression-cylinder to the
20 delivery-table, a reciprocating type-bed, and means connecting said type-bed and said reciprocating means for operating the same.

25 20. In a sheet-delivery apparatus, the combination of an impression-cylinder, a delivery-table, a discontinuous traveler, a tension device for independently retracting each end of the traveler, and reciprocating means acting upon said traveler between its ends for extending the traveler from the impression-cylinder to the delivery-table.
30

21. In a sheet-delivery apparatus, the combination of an impression-cylinder, a delivery-table, a discontinuous traveler, a stationary tension device for retracting each end of the

traveler, and reciprocating means acting upon 35 said traveler between its ends for extending the traveler from the impression-cylinder to the delivery-table.

22. In a sheet-delivery apparatus, the combination of an impression-cylinder, a delivery- 40 table, a discontinuous traveler, means for independently retracting each end of the traveler, reciprocating means acting upon said traveler between its ends for extending the traveler from the impression-cylinder to the 45 delivery-table and devices cooperating with one of said retracting means whereby the same is alternately restrained from and brought into action.

23. In a sheet-delivery apparatus, the com- 50 bination of an impression-cylinder, a delivery-table, a discontinuous traveler, means for independently retracting each end of the traveler, reciprocating means acting upon said traveler between its ends for extending the 55 traveler from the impression-cylinder to the delivery-table, and devices for restraining one of said retracting means from operation during movement of said reciprocating means to the delivery-table and until the sheet is de- 60 livered from said traveler and then bringing said retracting means into operation whereby the retraction of the two ends of the traveler is equalized.

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