

F. VAN BENTHUYSEN.
 AUTOMATIC PAPER FEEDING OR DELIVERING DEVICE.
 APPLICATION FILED APR. 15, 1910.

1,053,250.

Patented Feb. 18, 1913.

5 SHEETS-SHEET 1.

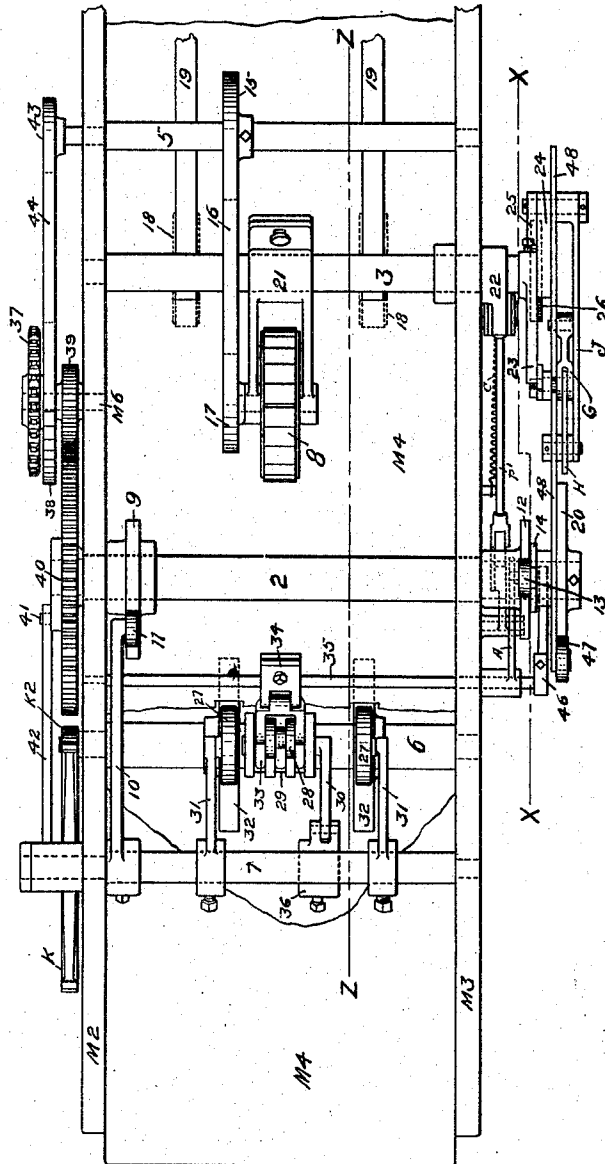


Fig. 1.

WITNESSES:

Beriah Carle
 Lottie Prior.

INVENTOR

Frank Van Benthuyzen,

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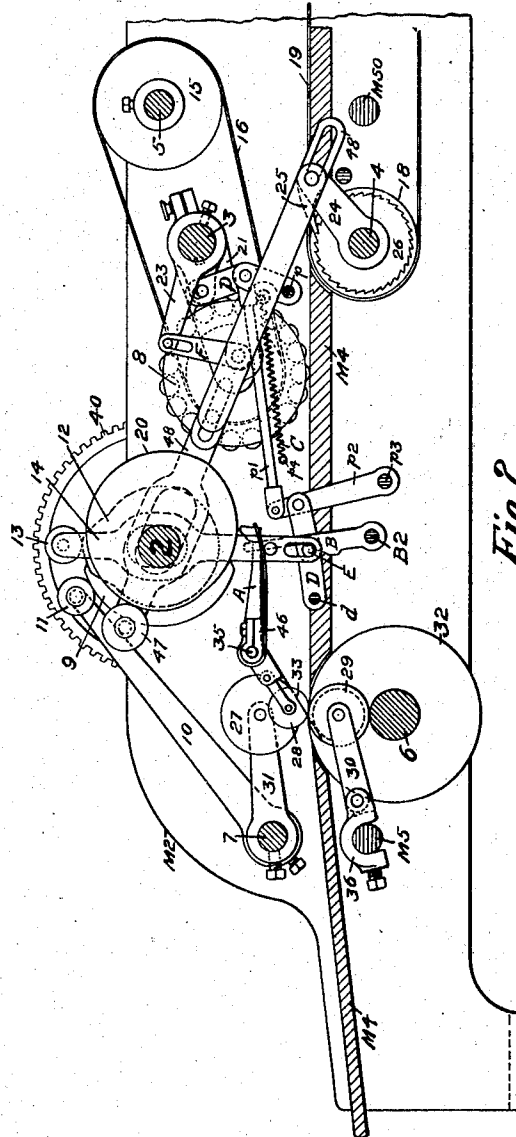


Fig. 2.

WITNESSES:

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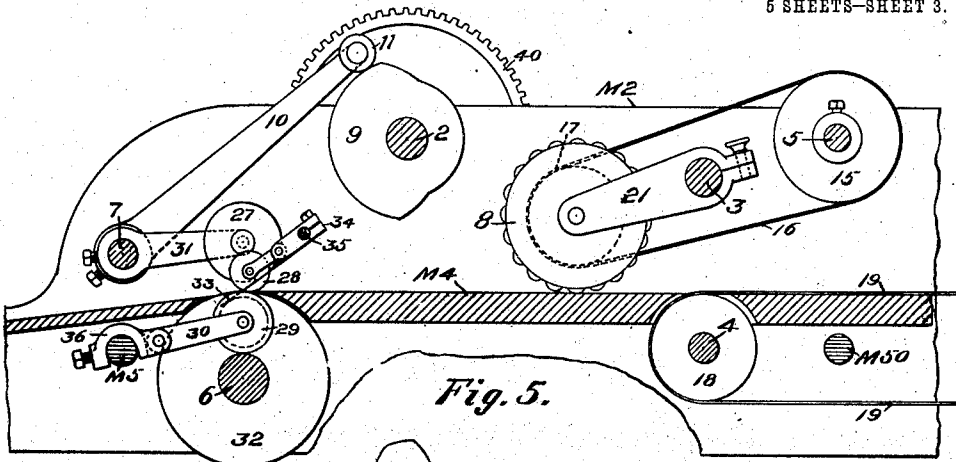


Fig. 5.

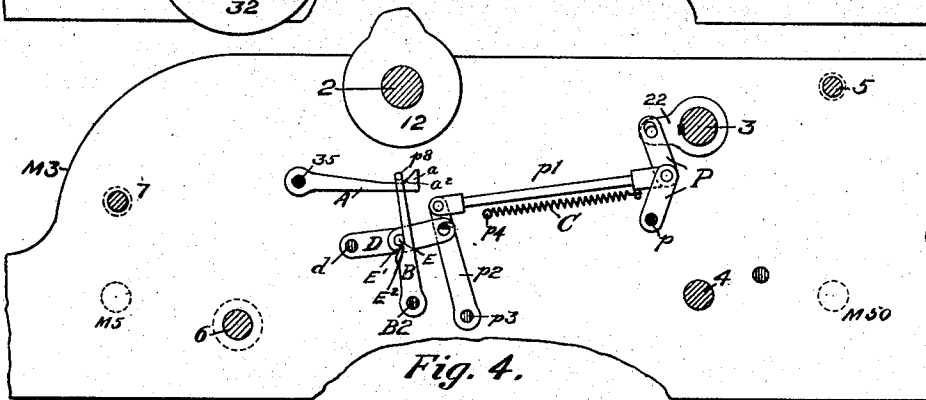


Fig. 4.

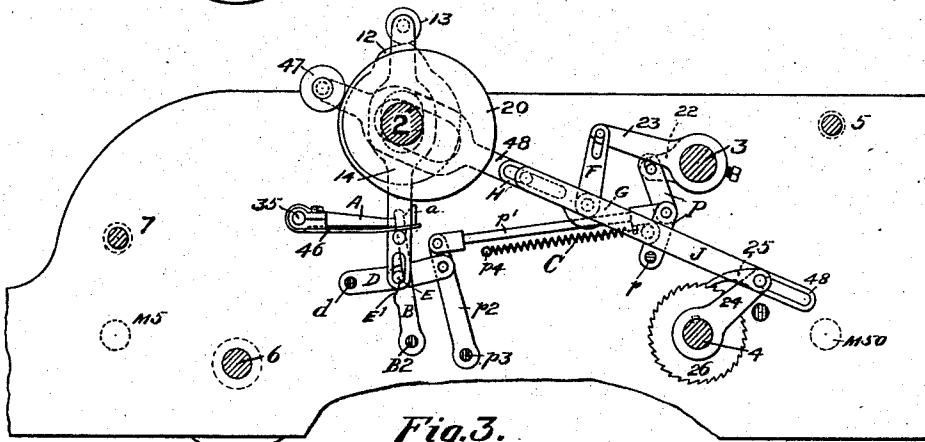


Fig. 3.

WITNESSES:

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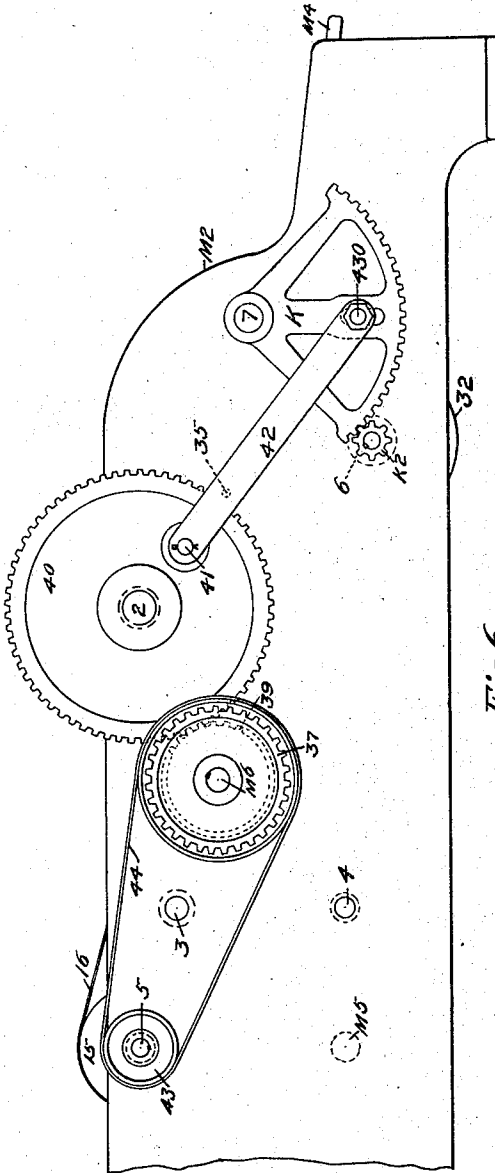


Fig. 6.

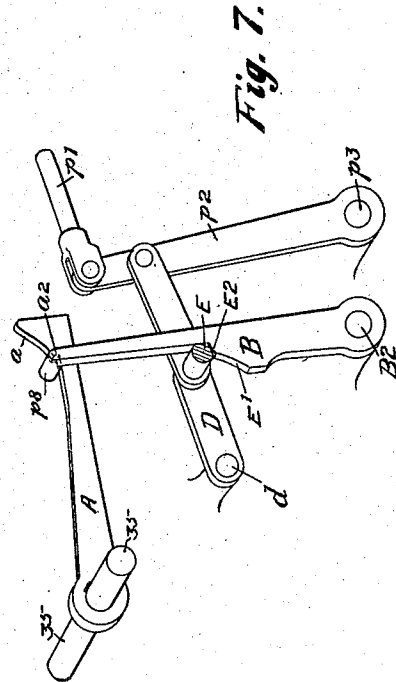


Fig. 7.

WITNESSES:

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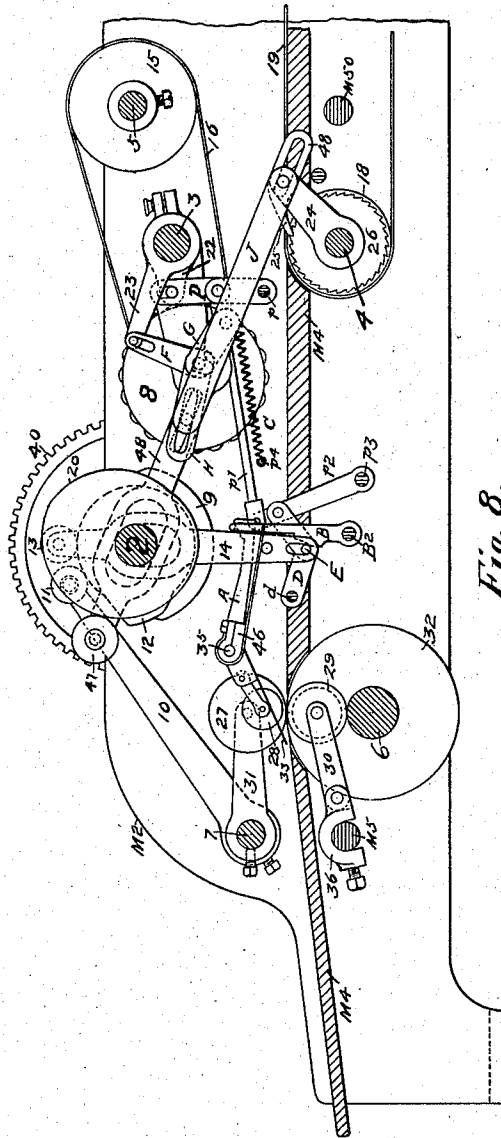


Fig. 8.

WITNESSES:

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UNITED STATES PATENT OFFICE.

FRANK VAN BENTHUYSEN, OF ALBANY, NEW YORK.

AUTOMATIC PAPER FEEDING OR DELIVERING DEVICE.

1,053,250.

Specification of Letters Patent.

Patented Feb. 18, 1913.

Application filed April 15, 1910. Serial No. 555,599.

To all whom it may concern:

Be it known that I, FRANK VAN BENTHUYSEN, a citizen of the United States, residing at 8 Elk street, Albany, in the county of Albany and State of New York, have invented certain new and useful Improvements in Automatic Paper Feeding or Delivering Devices, of which the following is a specification.

10 My invention relates to new and useful improvements in automatic paper feeding or delivering devices, and the object of my invention is to provide a feeding device with a governing apparatus which will be actuated by the forward edge of the sheet which is being fed, and which will operate on tissue or other thin papers. I accomplish this object by means of the mechanism illustrated in the accompanying drawings, in which:

20 Figure 1 is a top plan view with parts broken away. Fig. 2 a side side elevation with one side of the frame omitted and parts broken away. Fig. 3 a side elevation with parts broken away. Fig. 4 a section along the line X—X on Fig. 1. Fig. 5 a section along the line Z—Z on Fig. 1. Fig. 6 an elevation, with parts broken away, of the side of the machine opposite to that shown in Figs. 2 and 3. Fig. 7 an enlarged perspective view of detents and toggle. Fig. 8 shows the relative positions of the toggles, cranks, etc., after the trip or governing device has acted.

Similar letters refer to similar parts throughout the several views.

My machine as constructed consists of a table, M¹, (inclined at the delivery end) supported between the side frames M² and M³, said sides being joined together by suitable tie rods.

Above the table I locate the shafts 2, 3, 5, 7 and 35. Below the table I place the shafts 4 and 6 and the tie rods M⁴ and M⁵⁰. All of the above mentioned shafts are supported in suitable bearings in the frames of the machine.

On the side of the frame, M², I mount the stud, M⁶ upon which the driving sprocket wheel, 37, pulley 38, and pinion 39, rotate, pulley, 38, and pinion, 39, being fastened to and rotating with the driving sprocket wheel, 37.

Upon the comber shaft, 3, is adjustably mounted the fork arm, 21, which carries the comber wheel, 8, and its pulley, 17. The comber wheel pulley, 17, is driven by means of the belt, 16, from the pulley, 15, on the shaft, 5. Upon one end of the shaft, 5, is fastened the pulley, 43, connected by means of the belt, 44, to the pulley, 38, attached to and driven by the sprocket wheel, 37. Sprocket wheels and chains may be substituted for pulleys and belts.

The cam shaft, 2, has mounted thereon the cams, 9, 12 and 20, and is driven by means of the gear wheel, 40, mounted on one end thereof, said gear wheel, 40, meshing with the pinion, 39, which is fastened to and is driven by the driving sprocket wheel, 37.

Placed eccentrically on the gear wheel, 40, is a stud or pin, 41, joined by a link, 42, to the stud or pin, 43^o on the segment, K. The segment, K, is loosely mounted upon one end of the shaft, 7, and meshes with the small pinion, K², on the end of the shaft, 6. Upon the shaft, 6, are fixed the feed wheels, 32, 32, the faces of which project slightly above the face of the table, M¹. The feed rollers 32, 32, are moved first in one direction and then in the reverse direction by the operation of the segment, K, Fig. 6, and this is so timed that on the reverse movement of the feed rollers, the pinch roller is raised out of contact with the guide roller, 29.

Adjustably mounted on the shaft, 7, are the arms, 10, 31, 31. The arm, 10, carrying at its end the roller, 11, which engages with the cam, 9, on the cam shaft, 2, provides for the raising and lowering of the drop rollers, 27. The arms 31, 31 carry at their ends the drop rollers, 27, 27, which are adapted to engage with the feed rollers, 32, 32 on the shaft 6.

Upon the rock shaft, 35, I mount the fork arm, 34, to which is hinged the trip fork, 33, and pinch roller, 28. The pinch roller, 28, is in contact with the guide roller, 29, carried at the end of the hinged arm, 30, clamped to the tie rod M⁵, as shown in Figs. 2 and 5.

The roller, 29, is driven by contact with the shaft, 6, upon which it rests, and is provided with grooves into which the prongs of the trip fork, 33, drop.

On the rock shaft, 35, outside of the frame, M^3 , is mounted the primary detent bar, A, and at the end of said shaft the spring block and spring, 46, said spring being in engagement with a suitable pin or other bearing on the outside of the cam fork, 14, and adapted to resist the upward motion of said cam fork, 14, (See Fig. 3.) The function of the spring is as follows:—The end of the spring resting upon the free end of the pin on the outside of cam fork, 14, when the cam fork raises the toggle, D, will compress the spring, 46, and when the toggle pin has reached a sufficient elevation so that the detent, B, can advance, the spring, 46, actuates the rock shaft, 35, and the detent, A, in turn by means of the inclined surface, α , advances the detent, B, which engages with the toggle pin, E.

On the shaft, 4, are mounted the pulleys, 18, 18, their faces projecting slightly above the surface of the table, M^4 . These pulleys carry the conveyer belts, 19, 19. The back rollers and shaft on which the conveyer belts run are not shown in the drawings.

On the shaft, 3, just outside of the frame, M^3 , is fastened the crank arm, 22, crank arm, 22, being connected to one end of the toggle, P, said toggle being fulcrumed at its other end on the stud, p , on the side of the frame (Fig. 8). To the center pin of the toggle, P, is joined one end of the tension spring, C, the other end of said spring being anchored by means of the stud, p^4 , to the frame, M^3 . The toggle, P, is joined by means of the rod, p' , to the lever, p^2 , fulcrumed on the stud, p^3 , in the frame, M^3 . To the lever, p^2 , is joined one end of the toggle, D, the other end of said toggle being fulcrumed on the stud, d , in the frame, M^3 .

The secondary detent, B, is fulcrumed on the stud, B^2 , in the frame, M^3 .

The pin, E, of the toggle, D, engages in a slotted opening with the cam fork, 14, said cam fork carrying the roller, 13, engaging with the cam, 12, on the cam shaft, 2.

On the outer end of the shaft, 2, is mounted the cam, 20, said cam engaging with the roller, 47, on the cam fork, 48, said cam fork being connected through the toggle, G, H, and link, J, to lever, 24. Lever, 24, is fulcrumed on the end of shaft, 4, and carries at or near its end the pawl, 25, adapted to engage with the ratchet wheel, 26, mounted on shaft, 4. The toggle, G, H, is connected by the link, F, to the end of the crank, 23, crank, 23, being fastened to the end of shaft, 3.

In Figs. 1 to 7 of the drawings, the parts of the machine are shown as they are when the comber wheel, 8, is down in engagement with the pack, and the tripping device is closed. Referring to said figures, with special reference to Fig. 2, the machine is shown as it is just before the forward edge

of the sheet which is being advanced by the action of the comber wheel, 8, comes into engagement with the pinch roller, 28, and guide roller, 29.

The operation of the feeding device and governor is as follows:—The comber wheel, 8, will advance the top sheet of the pack until the forward edge of said sheet is engaged by the pinch roller, 28, and guide roller, 29, which will force the sheet under the trip fork, 33, raising it and causing the shaft, 35, to rock and depress the primary detent bar, A, enough to release the projection, p^8 , on the secondary detent bar, B, from the stop, α^2 , on the primary detent bar, A. The secondary detent bar being released, the tension spring, C, causes the toggle, D, to close and the pin, E, in said toggle to descend against the cam surface, E' , on the secondary detent bar, B, and force the said bar, B, backward. (Figs. 3, 4 and 7.) As the secondary detent bar, B, is forced backward the projection, p^8 , on said bar will engage with the cam surface α , on the primary detent bar, A, and force said bar, A, downward, thus raising the pinch roller, 28, and trip fork, 33, to their highest positions. (Figs. 3, 4 and 7.) As the spring, C, closes the toggle, D, it also opens the toggle, P, which by raising the end of the crank arm, 22, on the shaft, 3, raises the comber wheel, 8, out of engagement with the pack. (Fig. 8.) After the trip has acted and the comber wheel has been raised, the drop roller, 27, will drop upon the sheet at the same time that the feed wheels, 32, driven by the segment, K, through the pinion, K^2 , will begin to advance and the sheet will be carried out of the feed. (Figs. 2 and 5.) As the sheet leaves the feed, the cam, 12, will act through the roller, 13, and cam fork, 14, and by opening the toggle, D, the secondary detent, B, will by spring, 46, be forced to return to the first position, and the trip fork, 33, will be depressed and enter the grooves in the guide roller, 29. The opening of the toggle, D, will cause the toggle, P, to close and the comber wheel will drop upon and advance the next sheet of the pack. (Fig. 2.) The cam, 20, and its connections are for the purpose of advancing the pack and the said cam, 20, may be moved backward or forward on the cam shaft, 2, to regulate the separation of the sheets. After the comber wheel has advanced the sheet for a given time, the cam, 20, will cause the whole pack to advance; but when the comber has been raised from the pack, the crank arm, 23, will, through the link, F, lift the toggle, G, H, out of a straight line, (see Fig. 8), and the advancement of the pack will cease until the next revolution of the machine. By advancing the cam, 20, the advancement of the pack will begin, relatively to comber wheel, quicker, and cause the top sheet to

reach the tripping device at an earlier period. Consequently the comber wheel would be released from action on the pack earlier, and will therefore not separate the sheets to the same extent as it would if in contact with the pack for a longer time.

What I claim as my invention and desire to secure by Letters Patent, is:

1. In a machine for feeding and delivering paper, the combination of feed rollers; a shaft upon which they are mounted; drop rollers; a shaft on which said drop rollers are mounted; a cam-operated means for rotating said last mentioned shaft, whereby said drop rollers are removed from or brought in contact with said feed rollers; a pinch roller; a guide roller provided with a grooved periphery; said guide roller driven by contact with the shaft carrying the feed rollers; said pinch roller operating by contacting with said guide roller; means for moving a pack of paper longitudinally of the machine; a comber wheel suitably mounted; a tripping device, comprising a rocking shaft; a trip fork connected therewith, whereby said rocking shaft may be operated; toggle levers; means whereby the movement of the rocking shaft will cause said toggle levers to be operated; and means for lifting said comber wheel by the operation of said toggle levers, all substantially as described.

2. In a machine for feeding and delivering paper, conveyer belts for carrying the paper in bulk; pulleys operating said conveyer belts; a comber wheel; a shaft upon which said comber wheel is mounted; a means for rocking said shaft so as to lift the comber wheel from contact with the paper; a shaft mounted in said machine; a means connected therewith for operating said pulleys; means for breaking connection between said shaft and the means for operating said pulleys; a spring attached to said machine at one end, the other end connected with said means for rocking the comber wheel shaft; a trip fork; a rocking shaft upon which said trip fork is mounted; a detent mounted on said rocking shaft; a means for locking said detent and also preventing the action of said spring; said detent and said spring being released by the action of the paper against and slightly raising the trip fork, the action of said spring causing said trip fork to be raised to its highest extent and said comber wheel to be lifted; a guide roller provided with a grooved periphery into which the prongs of said trip fork drop; feed rollers; a shaft upon which said feed rollers are mounted; a means for mounting said guide roller so that it may be driven by contact with the shaft carrying the feed rollers; and a pinch roller mounted to operate in contact with said guide roller, substantially as described.

3. In a machine for feeding and delivering paper, a feed roller; a guide roller; a trip fork; a comber wheel; a shaft carrying said comber wheel; a conveyer; a means for operating said conveyer; a rocking shaft to which said trip fork is attached; a pinch roller mounted in connection with said rocking shaft; a detent bar carried by said rocking shaft; a secondary detent bar; a toggle in operative connection with said secondary detent bar; a toggle for raising said comber wheel; a means for connecting and operating said toggles, whereby the closing of the first mentioned toggle, which will be effected by the raising of the trip fork, will simultaneously open the second toggle, which will raise the comber wheel; with a means for simultaneously lowering said comber wheel and raising said first mentioned detent bar.

4. A machine for feeding and distributing sheets of thin paper, comprising a conveyer for carrying the paper on the machine; pulleys operating said conveyer; a shaft; means connected therewith for imparting motion to said conveyer pulleys; a comber wheel adapted to rest upon the paper supplied by said conveyer; means for raising said comber wheel and breaking connection between the said conveyer pulleys and their means for operating the same simultaneously; a trip fork; a rocking shaft upon which said trip fork is mounted; a guide roller provided with a grooved periphery into which the prongs of the said trip fork drop; feed rollers; a shaft upon which said feed rollers are mounted; means for mounting said guide roller so that it may be driven by contact with the shaft carrying the feed rollers; a pinch roller mounted to operate in contact with said guide roller; drop rollers; and a shaft on which said drop rollers are mounted, all substantially as described.

5. In a machine for feeding and delivering sheets of thin paper, a feed roller; a drop roller operated in connection therewith; a pinch roller operated in connection with a guide roller; a shaft upon which said feed roller is mounted; a guide roller having a grooved periphery resting upon and operated by said shaft; a trip fork having its prongs adapted to rest in the said grooved periphery of said guide roller; a rocking shaft to which said trip fork is secured; a spring attached to said rocking shaft; a fork provided with a bearing for one end of said spring; a detent bar mounted on said rocking shaft; a catch adapted to engage said detent bar and provided with a shoulder with which a pin in a toggle may engage and hold the toggle against the action of a spring; a lever fulcrumed to the side of the machine connected with said toggle operated by said pin; a toggle having one arm secured to the machine and the other arm secured to the last mentioned

lever; a rod connecting said lever to a
comber wheel-raising toggle; a comber
wheel-raising toggle; a comber wheel; a
shaft upon which it is mounted; a means on
5 said shaft for connecting said comber wheel-
raising toggle therewith; a conveyer for
carrying the paper on the machine; pulleys
operating said conveyer; a shaft for operat-

ing said pulleys, all substantially as de-
scribed.

10

In testimony whereof I have affixed my
signature in presence of two witnesses.

FRANK VAN BENTHUYSEN.

Witnesses:

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FREDERICK W. CAMERON.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents,
Washington, D. C."