P. V. ROLIER.

PAPER FEEDER.

APPLICATION FILED OCT. 14, 1912.

1,130,109. Patented Mar. 2, 1915.

Fig. 2

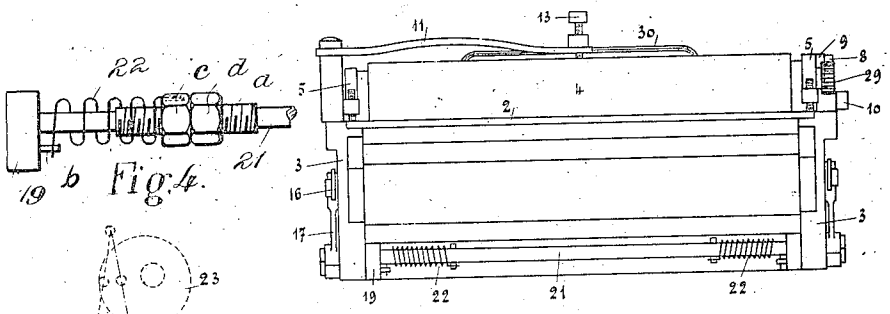


Fig. 4.

Fig. 1

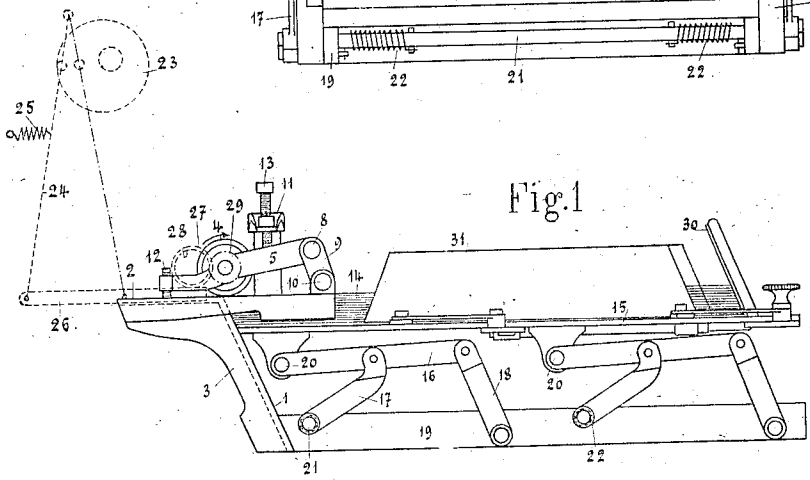
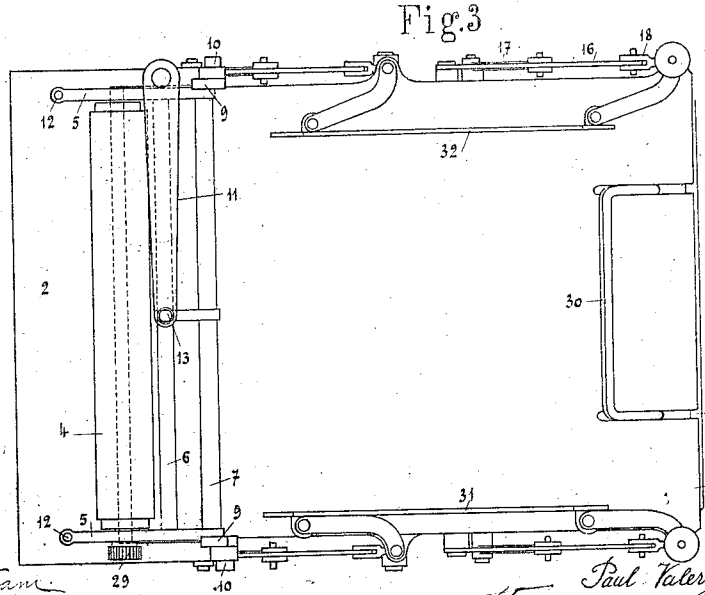


Fig. 3



Witnesses:

P. A. Putnam

L. C. Barkley.

Inventor

Paul Valery Rolier

per Thurston & Ellenwood

Attorneys

UNITED STATES PATENT OFFICE.

PAUL VALERY ROLIER, OF PARIS, FRANCE.

PAPER-FEEDER.

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To all whom it may concern:

Be it known that I, PAUL VALERY ROLIER, a citizen of the French Republic, residing at Paris, France, have invented a new and useful Paper-Feeder, of which the following is a specification.

The present invention has for its object a device for distributing paper for printing machines, rotary duplicating machines, and all other machines in which it is desired to feed sheets of paper one by one from a pile.

The invention comprises essentially the combination of a drawing roller, an inclined plane whose top edge is a short distance above and a little behind the roller, and suitable means for raising the pile of sheets of paper step by step and maintaining them with their front edges in contact with the inclined plane, in such a way that the top sheet leans against the lower part of the roller and is drawn by the latter over the top of the inclined plane. The space between the top of the inclined plane and the roller is adjusted so that only a single sheet passes at one time.

An embodiment of a distributing device according to this invention is represented by way of example in the annexed drawing, in which—

Figure 1 is an end elevation. Fig. 2 is a front elevation. Fig. 3 a plan of the apparatus, and Fig. 4 is a fragment of a detail.

An inclined plane 1 carries a small horizontal table 2 on its upper end. These parts are fixed to a bracket 3, the shape of which can be varied, but which is preferably made in such a way as to be movably fixed to the machine which the apparatus is to supply. Above the top edge of the plane 1 a drawing roller is placed. The pivots of this roller are carried by a frame consisting of two arms 5 joined by cross members 6 and 7. This frame can rock at 8 on two oscillating supports 9, whose position on the bracket may be regulated by means of a fixing screw 10 in such a way that the roller can be positioned more or less behind the edge of the inclined plane. A spring 11 bears upon the middle of the frame in order to keep the roller down to a level which can be delicately adjusted by means of regulating screws 12 arranged at the end of the arms 5. This adjustment is such that only a single sheet of paper can pass between the roller and the edge of the plane 1. The pressure of the spring 11 can also be regulated by means of a screw 13.

The pile of sheets 14 to be supplied is placed upon the movable table 15, which is guided in such a way as to remain horizontal and to move parallel to the inclined plane 1. In the embodiment illustrated this guiding is effected by means of four jointed frameworks, each comprising a lever 16, two links 17 and 18 and a fixed base 19. The links of the side members of these frames are determined in such a manner that the ends 20 of the lever 16, that is, the points at which they are joined to the table 15, describe within the limits of the path which it is useful to give them, substantially a straight line path and parallel to the inclined plane. The links 17 are connected two by two by the transverse spindles 21 on which the springs 22 operate. These springs have the effect of raising the table 15, together with anything it carries. These springs 22 are preferably arranged on both sides of the device, and are provided with regulating means, shown in Fig. 4, in such a way that the pressures acting upon the table to raise it are of exactly the necessary value and are quite symmetrical. As can be seen in Fig. 4, the spindle is provided with a screw thread *a* along part of its length. The spring 22 is attached to a projection *b* upon the frame 19 and to the nut *c* which is adjustable along the screw thread *a*. After adjustment the nut *c* is locked by the nut *d*.

In order to maintain the sheets of paper in contact with the inclined plane 1 a layer-on 30 inclined parallel to the plane 1 is mounted upon a sliding board upon the table. This board carries besides the side layers-on 31, 32, serving to maintain the position of the pile of paper in the transverse direction.

The roller 4 is caused to turn in the direction of the arrow (Fig. 1) by any means whatever. As the drawing has diagrammatically shown, the roller is rotated by a special mechanism comprising an eccentric 23 with lever 24 operated by this eccentric and by a return spring 25, a rack 26 moved by this lever, ratchet wheel 27 meshing with this rack, and a wheel 28 engaging with a wheel 29 integral with the roller. The ratchet is introduced to change the alternat-

ing rotating movement of the wheel 27 into an intermittent rotating movement of the wheel 28 in a single direction. The amplitude of the path of the rack may be adjusted, for example by shifting the contact pin of the lever 24 along the latter, so that the sheets of paper can be fed a greater or less distance. This mechanism is suitable for example in the case of a rotary duplicating machine, the eccentric 23 turning in one with the drum of this apparatus.

The mode of operation of the feeding device is as follows: The top sheet of the pile whose front edge is in contact with the roller 4 is drawn first over the edge of the plane 1, while the lower sheets are retained by the latter. This drawing is sufficient to lead the front edge of the sheet in front of the table 2 to a device which separates the disengaged sheet from below the roller 4; for example, in a rotary duplicating machine the sheet is taken between the printing drum and the pressing roller in known manner, when the first sheet is thus disengaged the pile of paper is slowly raised and the front edge of the following sheet brought in its turn into contact with the roller 4, and so on. Perfection of the operation depends upon the exact parallelism of the roller and the upper edge of the inclined plane, and on the symmetry of the pressure on both sides of the apparatus. Both these are easy to regulate, the first by means of the screws 10 and 12 and the other by means of the regulating screw of the spring 22. It enables also the pressure of the spring 11 on the roller to be conveniently regulated by means of the screw 13.

Instead of the system of guiding the table 15 described above, slides or other suitable guiding devices may be employed. Further, the construction of the frame carrying the roller, the shape of the brackets, etc., may be varied without avoiding this invention.

What I claim is:—

1. An apparatus for feeding sheets from a pile consisting in the combination of a fixed incline plane, a roller adapted to feed sheets when rotated from the pile over the edge of said plane, a table for supporting the pile of sheets in contact with said plane, a fixed base, a forward pair of links pivoted to said base on each side thereof, a rearward pair of links pivoted to said base on each side thereof, a member connecting the free ends of each forward pair of links and extending forwardly, a member connecting the free ends of each rearward pair of links and extended forwardly, lugs on the under surface of said table for pivoting the forward ends of said members thereto and spring means operative upon each quadrilateral formed by said links, tending to turn the links to press the supporting table upward.

2. In a device for feeding sheets from a pile, the combination of a fixed inclined plane, a roller adapted to feed sheets from the pile over the upper edge of said plane, a table for supporting the pile of sheets in contact with said plane, a fixed base, a forward pair of links pivoted to said base on each side thereof, a rearward pair of links pivoted to said base on each side thereof, a member connecting the free ends of each forward pair of links and extended forwardly, a member connecting the free ends of each rearward pair of links and extended forwardly, lugs on the under surface of said table for pivoting the forward ends of said members thereto and spring means in connection with said links tending to turn the links to press the table upward.

3. In a device for feeding sheets from a pile, the combination of a fixed inclined plane, a roller adapted to feed sheets from the pile over the upper edge of said plane, a table for supporting the pile of sheets in contact with said plane, a fixed base, a forward pair of links pivoted to said base on each side thereof, a rearward pair of links pivoted to said base on each side thereof, a member connecting the free ends of each forward pair of links and extended forwardly, a member connecting the free ends of each rearward pair of links and extended forwardly, lugs on the under surface of said table for pivoting the forward ends of said members thereto, spring means in connection with said links tending to turn the links upward, and means for adjusting the pressure of said last named means.

4. Means for feeding sheets of paper comprising in combination a fixed inclined plane, a roller adapted to feed sheets when rotated from the pile over the edge of said plane, a table for supporting the pile of sheets in contact with said plane, a fixed base, a forward pair of links pivoted to said base on each side thereof, a rearward pair of links pivoted to said base on each side thereof, a member connecting the free ends of each forward pair of links and extending forwardly, a member connecting the free ends of each rearward pair of links and extended forwardly, lugs on the under surface of said table for pivoting the forward ends of said members thereto, spring means operative upon each quadrilateral formed by said links, tending to turn the links to press the supporting table upward, and means for adjusting the tension of each of said spring means separately.

5. Means for feeding sheets comprising in combination a feed table, a pair of arms pivoted to an extension of said table, a spindle pivoted in and connecting said arms, a feed

roller fixed to said spindle, a cross bar connecting said arms, a leaf spring operating upon the middle of said cross bar, tending to press the free ends of said arms into contact with said table, means for adjusting the distance of said free ends from said table, and means for adjusting the pressure of said leaf spring.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

PAUL VALERY ROLIER.

Witnesses:
JNO. BAKER,
H. C. COXE.