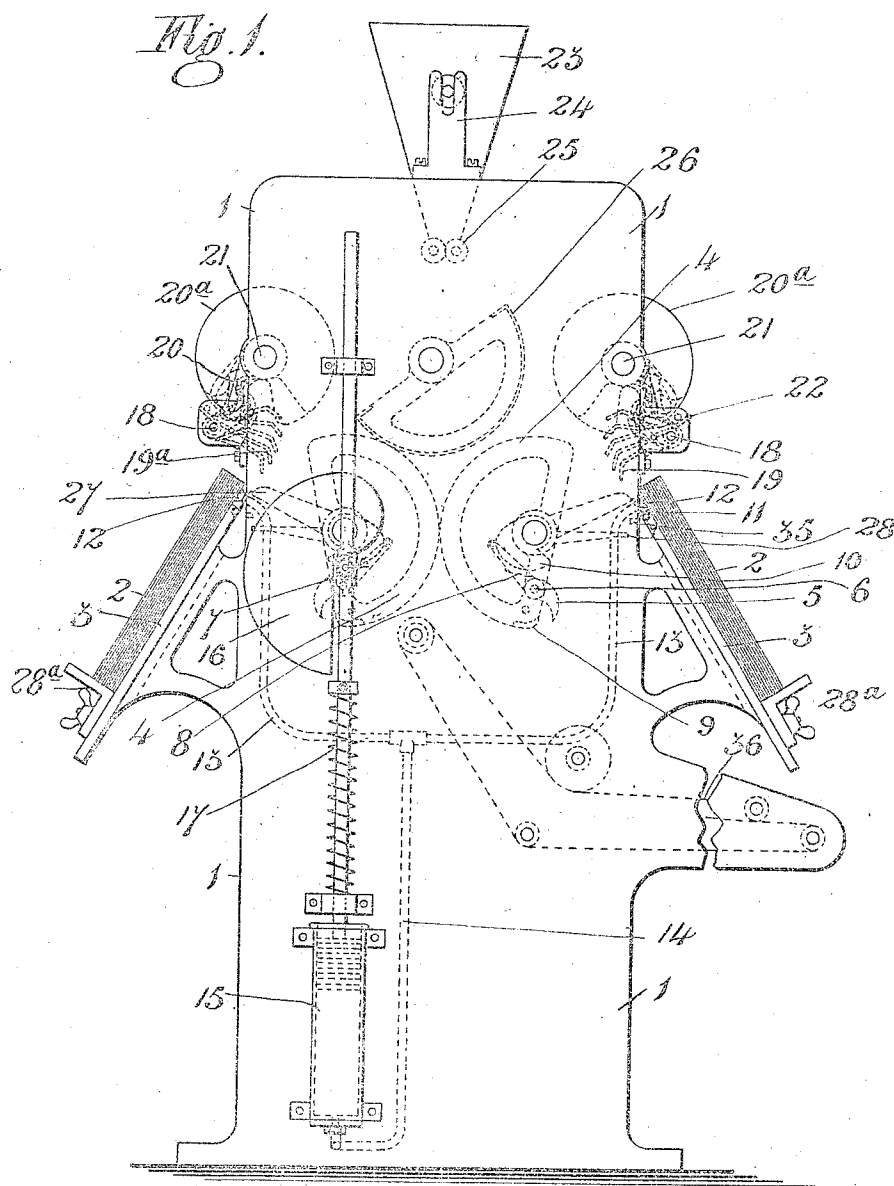


W. FRICKER.
MACHINERY FOR SEPARATING, FEEDING, AND CEMENTING SHEETS OF PAPER TOGETHER.
APPLICATION FILED JAN. 26, 1909.

941,868.

Patented Nov. 30, 1909.

4 SHEETS—SHEET 1.



Witnesses:

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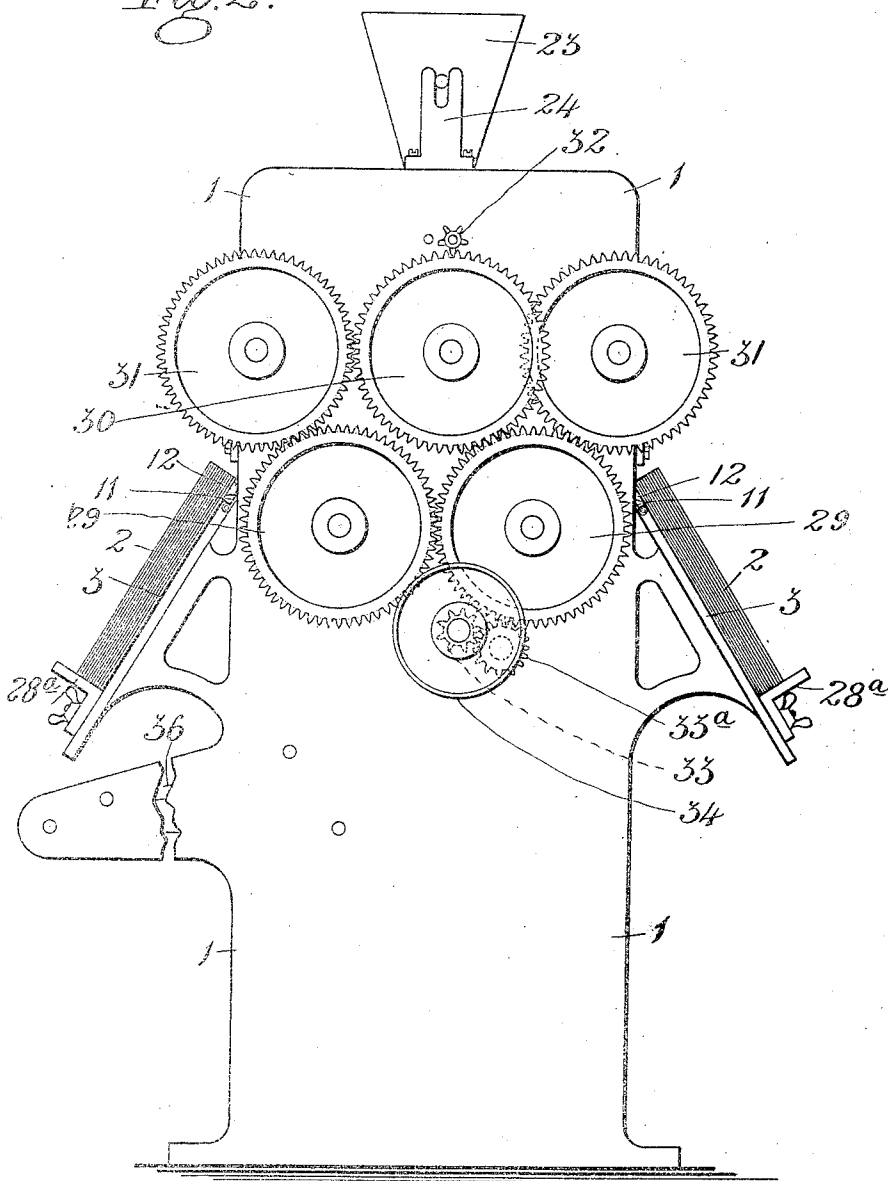
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Fig. 2.



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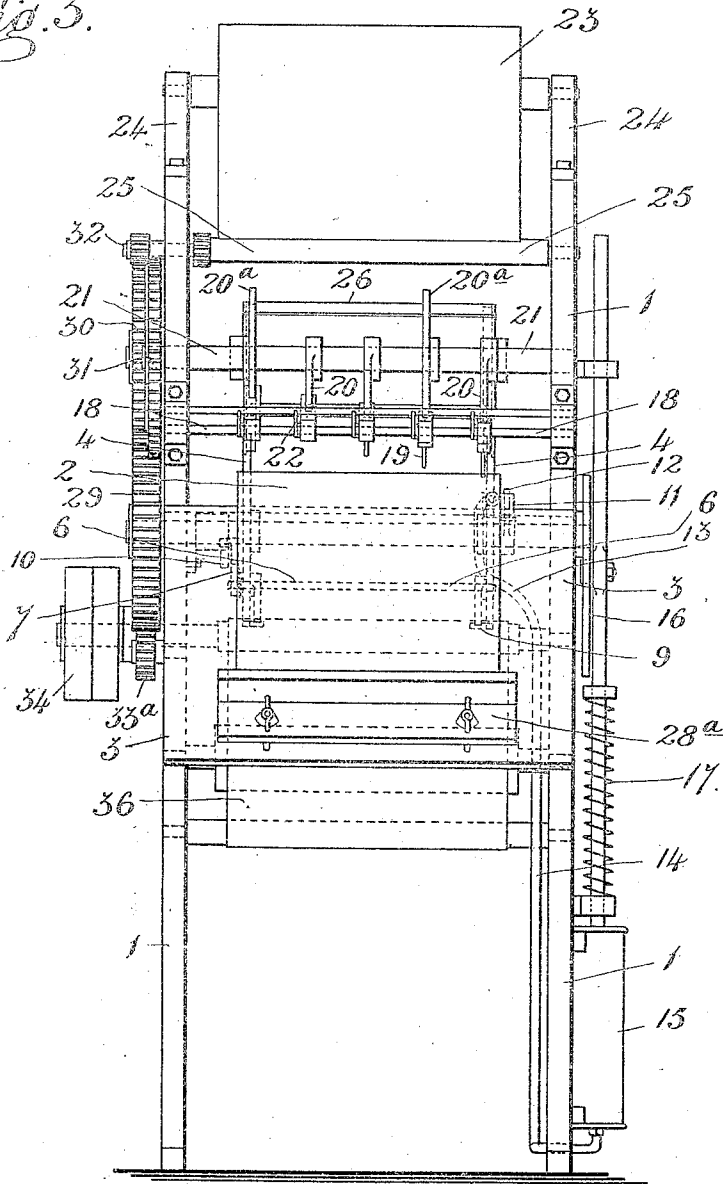
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4 SHEETS—SHEET 3.

Fig. 3.



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4 SHEETS—SHEET 4.

Fig. 4.

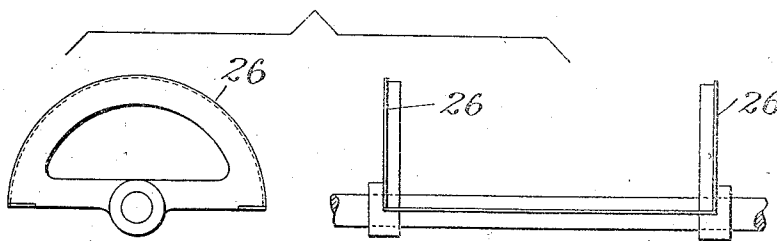


Fig. 5.

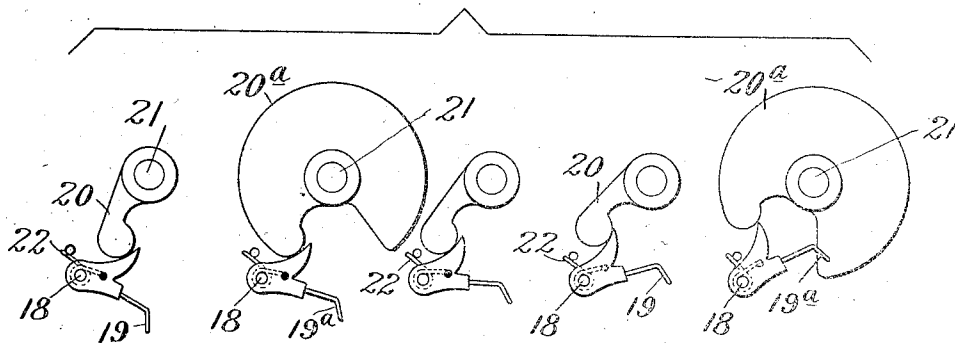
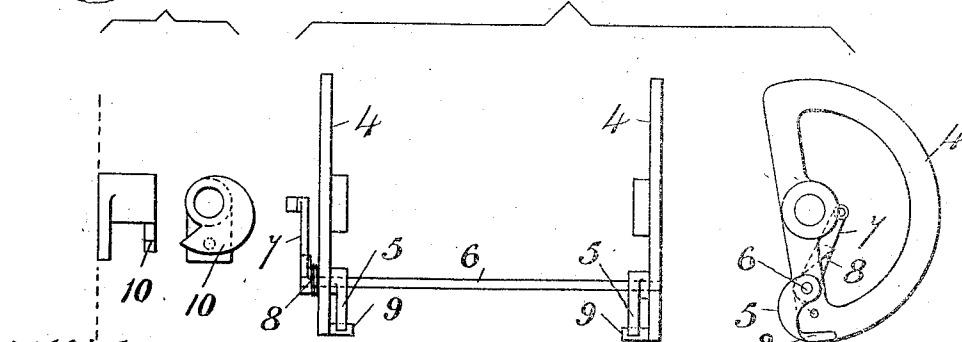


Fig. 6.

Fig. 7.



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UNITED STATES PATENT OFFICE.

WALTER FRICKER, OF SOUTH WOODFORD, ENGLAND.

MACHINERY FOR SEPARATING, FEEDING, AND CEMENTING SHEETS OF PAPER TOGETHER.

941,868.

Specification of Letters Patent. Patented Nov. 30, 1909.

Application filed January 26, 1909. Serial No. 474,347.

To all whom it may concern:

Be it known that I, WALTER FRICKER, a subject of the King of Great Britain, residing at South Woodford, England, have invented certain new and useful Improvements in Machinery for Separating, Feeding, and Cementing Sheets of Paper Together, of which the following is a specification.

My invention relates to improvements in machinery for separating, feeding and cementing together, two cut sheets of paper from separate piles.

My invention will be clearly understood from the following description aided by the annexed drawings in which—

Figure 1 is one end elevation of the machine embodying my improvements. Fig. 2 is an opposite end elevation of the same. Fig. 3 is a side view. Fig. 4 shows end and side views of the pasting segment. Fig. 5 shows end views of the stopping and separating fingers all being arranged on the same shaft, together with their respective operating cams, these also being arranged on one shaft. Fig. 6 shows side and end views of the cam for operating the grippers. Fig. 7 shows side and end views of one of the gripper segments, showing the grippers in position.

1. is the frame which carries the various appliances.

In this machine two piles of sheets, 2, 2, one of each kind to be stuck together are laid on inclined supports 3, 3, at opposite angles, one on each side of the machine within range of two sets of revolving segments 4, 4, carrying grippers 5, 5. Each gripper 5 is attached to an axle 6 journaled in each segment 4 and each axle also carries an arm 7 and is controlled by a spring 8, 8, to normally keep the corresponding gripper 5 in contact with the lug 9 on the adjacent segment 4. The arms 7, 7 have action against cams 10, 10, projecting from the frame 1. during the revolution of the segments to open the grippers 5, 5, and close them at the proper time.

Adjacent to one corner of each pile of sheets is positioned a hinged member 11 carrying a flexible edged sucker 12 the two suckers being connected by flexible pipes 13, 13, to a pipe 14, leading to an exhaust pump 15, the piston of which is operated

from a cam 16, fixed on the axle of one of the segments carrying the grippers and returnable by a spring 17, surrounding the piston rod or otherwise at the proper time to effect a sucking or vacuum action through the pipes 14 and 13 and the suckers 12 as hereafter described.

One corner of each bottom sheet is pulled down by the flexible edged sucker which has an oscillatory radial motion and both suckers have the air exhausted by the same pump, so that in the event of there being no sheet on one or the other of the supports, a vacuum is prevented by the ingress of air, and the opposite pile of sheets is unaffected by the contact of the adjacent sucker therewith. In other words, one sheet cannot be fed without the other. Each sucker 12, by pulling the sheets from the corner peels the top edge of the bottom sheet from the others and allows the air to enter between such sheet and the remainder of the pile, and obviates the possibility of two sheets being drawn down together which is likely to be the case when the whole width of the sheet is pulled down at once. The flexible edged spout or nozzle allows for any irregularity in the paper and thus prevents the suction or vacuum being broken.

Above the top edge of each pile of sheets are arranged on a shaft 18 sets of separating and stopping fingers 19, 19^a, operated as hereinafter described by means of wipers 20 and cams 20^a carried by a shaft 21, the several fingers being held normally in raised or inoperative position by springs 22.

Situate at the upper part of the frame 1. is a paste box 23 supported by standards 24, and the base of this paste box is open and rests upon two rollers 25, 25, both rollers being revolved to insure the adhesive being supplied to a segment 26, which comes in contact with one sheet of paper while passing through the machine, so as to apply the adhesive thereto.

On the axle of each gripper segment 4 is positioned an arm 27 which has action against the adjacent hinged member 11, to raise its sucker 12 into contact with the bottom sheet of the adjacent pile and on each of said axles is also fixed a knife 28, which acts upon the edge of the bottom sheet and cuts the same slightly, so that should by any chance two sheets be drawn down by either

sucker the knife will liberate them from each other and the top sheet will fly back and not be drawn away with the bottom sheet.

28^a, 28^a, are adjusting plates positioned on the supports 3, 3, to suit the depth of paper in the piles.

The axles of the gripper segments, pasting segments, cams for actuating the separating and stopping fingers, and one of the paste rollers, carry toothed wheels 29, 29, 30, 31, 31, and 32, one of the wheels 29 meshing with a pinion 33 which meshes in turn with an idler 33^a so that all are rotated by a pulley 34 from any prime mover as will be understood from Fig. 2.

Referring to Fig. 1. the suckers 12, 12, are shown in contact with one corner of the bottom sheets of the two piles and the fingers are in their raised position, the pump having been operated to create the vacuum necessary to grip or draw said corners into air tight contact with the suckers.

The arms 27 are just releasing the hinged members 11, 11, and when such release takes place the suckers and the hinged members fall on to stops 35, 35, provided upon the frame 1. The knives 28, 28, now, just nick the edge of the sheets to free a top sheet, if by any chance two are brought down together.

The first finger of each set 19, (that is to say, the finger nearest the corresponding sucker), now enters between the peeled over corner of the bottom sheet of the adjacent pile and the remainder of the pile, and effects a slight additional separation of said corner, the next finger 19 then entering in the same manner, and so on, consecutively, to the end of the series. The successive operation of this set of fingers thus serves to separate the entire upper edge of the bottom sheet from the remainder of the pile, as will be apparent.

Intermediate the above described operation of the first and second fingers 19, the first finger 19^a is depressed by its cam so as to engage the upper edge of the pile, the remaining fingers of said set being successively operated in a similar manner, the effect of such operation being to hold the pile in place upon its support, and to prevent the same from being moved upwardly when the sheet is withdrawn. The fingers 19 are released by their wipers shortly after being operated, whereupon they return to their normal or raised position under the action of their springs. The cam operated fingers 19^a, however, remain in engagement with the pile for a much longer period of time. Thus, it will be seen that the first set of fingers will, on being operated successively, complete the separation of the upper edge of the bottom sheet of the pile from the remainder of that pile, as above stated, (the initial separation being effected by the

sucker), while the second set serves to sustain the remainder of the pile, the same operations taking place at both sides of the machine. The segments 4 have now reached the position that the grippers have passed the pulled down edges of the sheets and the arms 7, 7, are just leaving the larger parts of the cams 10, 10, when the grippers will be suddenly closed by their springs 8, 8, upon the segments and grip the sheets of paper. The segments 4, 4, continue their rotation of drawing the sheets from the pile, and one of the segments brings its sheets of paper into contact with the segment 26 carrying the adhesive, such segment 26 being shaped to suit the position in which the adhesive is required and having obtained its adhesive from one of the two rollers which are fitted to the open bottom of the paste box. The opposite sheets now advance toward each other, held by their respective grippers until they meet, and until they are removed from their piles. The grippers now open by their cams and the remainder of the segments roll the sheets in contact with each other and pass them through on to an endless belt or band 36 into the collector or machine.

Just as the sheets are freed from their piles the stopping fingers are released by their cams and returned to their normal positions by their springs.

Just after the grippers have taken hold of the sheets of paper the cam 16 has arrived at a position that the piston of the pump commences its return journey, and this breaks the vacuum and frees the sheets from the suckers and the onward travel of the device brings the arms 27, 27, up against the hinged members 11, 11, and lifts the suckers against the new bottom sheet of the pile, and while the arms 27, 27, are in contact with the members 11, 11, the cam 16 has released the piston of the pump 15 and its spring has returned the piston and effected the suction or vacuum in the pipes 13, 13, and held the sheets to the suckers.

If single sheets only are required to be fed, the sucker on the one side not having sheets can be plugged or stopped.

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

1. In a machine of the class described, the combination of a pair of oppositely-located supports, each adapted to receive a pile of sheets; synchronously-operated mechanisms located between said supports and adjacent the same, for withdrawing a sheet from each pile and for feeding said sheets simultaneously toward and into contact with each other; and means for applying an adhesive to one of said sheets during its feed movement.

2. In a machine of the class described, the combination of a pair of oppositely-located supports, each adapted to receive a pile of

sheets; a rotatable member located adjacent each support and provided with a gripper; means for rotating said members in unison to withdraw a sheet from both piles simultaneously, and for feeding said sheets toward and between said members in contact with each other; and means for applying an adhesive to one of said sheets during its feed movement.

3. In a machine of the class described, the combination of a pair of oppositely-located supports, each adapted to receive a pile of sheets; a suction member located adjacent each support and adapted to engage one of the sheets thereon; means for creating a suction in said members simultaneously; and mechanism located adjacent each support for simultaneously withdrawing from the piles the sheets engaged by said members, and for feeding said sheets toward each other.

4. In a machine of the class described, the combination of a pair of oppositely-located supports, each adapted to receive a pile of sheets; a suction member located adjacent each support and adapted to engage one of the sheets thereon; means for creating a suction in said members simultaneously; mechanism located adjacent each support for simultaneously withdrawing the sheets engaged by said members, and for feeding said sheets toward and into contact with each other; and means for applying an adhesive to one of said sheets.

5. In a machine of the class described, the combination of a pair of oppositely-located supports, each adapted to receive a pile of sheets; a suction member located adjacent each support and adapted to engage one of the sheets thereon; means for creating a suction in said members simultaneously; and a pair of synchronously-rotating members located adjacent said supports for withdrawing from the piles the sheets engaged by said members, and for feeding said sheets toward each other.

6. In a machine of the class described, the combination of a support adapted to receive a pile of sheets; a movable suction member located adjacent thereto and adapted to engage a sheet; a rotatable member provided with means for moving the suction member into operative position; means for creating

a suction in the suction member when the latter is in such position; and means carried by said rotatable member for withdrawing the sheet engaged by said suction member.

7. In a machine of the class described, the combination of a support adapted to receive a pile of sheets; means for notching one sheet; means for subsequently separating said sheet from the remaining sheets and for peeling over one edge thereof; and additional means for sustaining said remaining sheets during the separating and peeling action.

8. In a machine of the class described, the combination of a support adapted to receive a pile of sheets; a rotatably mounted knife for notching one sheet; a series of fingers for separating said sheet from the remaining sheets and for peeling the edge of said sheet; and an additional series of fingers for sustaining said remaining sheets during the separating and peeling action.

9. In a machine of the class described, the combination of a support adapted to receive a pile of sheets; a series of fingers; means for moving said fingers successively into position to separate one sheet from the remaining sheets; an additional series of fingers; and additional means for moving the last-mentioned fingers successively into position to sustain said remaining sheets during said separating action.

10. In a machine of the class described, the combination of a pair of oppositely-located supports, each adapted to receive a pile of sheets; a movable suction member located adjacent each support and adapted to engage one of the sheets thereon; a rotatable feed member located adjacent each support and provided with means for moving the adjacent suction member into operative position; means for creating suction in said suction members simultaneously; and means carried by each feed member for withdrawing the sheet engaged by the adjacent suction member.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

WALTER FRICKER.

Witnesses:

WM. O. BROWN,
FREDK. HUTCHINGS.