Sept. 21, 1937. L. BELLAMY 2,093,654

MECHANISM FOR FEEDING AND DUSTING SHEETS OF MATERIALS

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Fig. 2.

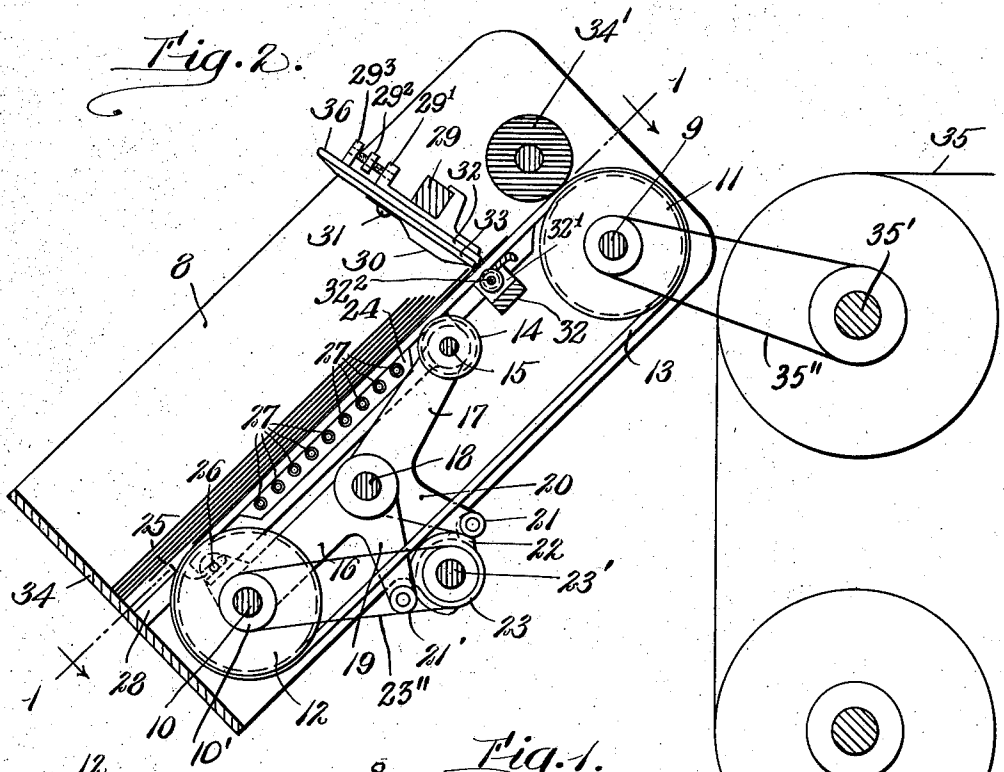
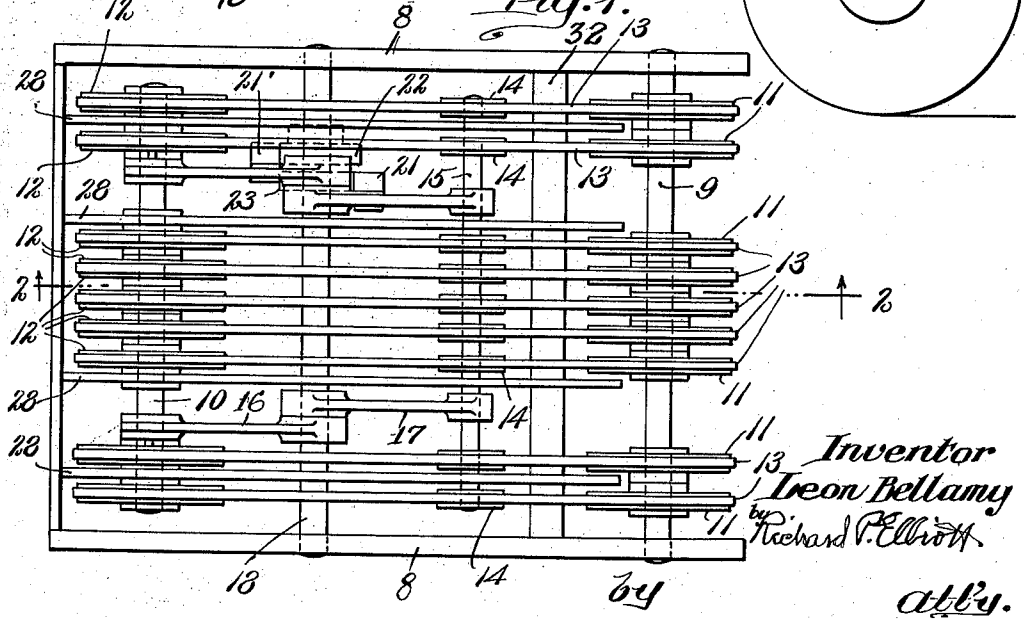


Fig. 1.



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MECHANISM FOR FEEDING AND DUSTING SHEETS OF MATERIALS

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5 Claims. (Cl. 271—35)

My invention relates to feeding and dusting mechanism whereby sheets of materials are fed from the bottom of a stack of sheets to conveyors and passed under a dusting device.

The objects of my invention are as follows:

To provide a feeding device whereby sheets of material may be stacked on an inclined support so the lower end partition will sustain a major portion of the weight of the stack, thus reducing the friction between the lower sheet and the one above it so it may be easily fed out from under the stack; to so construct the feeding elements that they will only contact with the sheet being fed; to provide a device for holding back all but the bottom sheet during the feeding movement and lastly to provide means to regulate the speed of the feeding movement to coordinate it with the operations of the dusting mechanism.

A further object of my invention is to provide a feeding device to be used with a machine to coat and dust the surface of sheets of material with powdered materials of different kinds.

The mechanism shown herein is particularly adapted to the feeding and coating of matrix papers, it may however be used to coat other sheet materials with equal facility.

In the drawing accompanying and forming a part of these specifications. Fig. 1 is a top plan view of my improved feeding device with parts omitted for clearness. Fig. 2 is a sectional side elevation of a portion of the feeding mechanism taken on line 2—2 Fig. 1.

In the drawing illustrating my invention, 8 represents the body part of the feeding mechanism and 9 is a shaft having a bearing in the body part 8. The shaft 9, is driven from any suitable source of power, it has the pulleys 11—11 mounted upon it. The shaft 10 has the pulleys 12—12 mounted upon it. V-shaped belts 13—13 are mounted upon the pulleys 11—11 and 12—12 and driven thereby.

If desirable, the feed belts 13—13 may be supported between the pulleys 11—11 and 12—12. For this purpose I provide bars 24—24 one end of each of which is pivoted on the shaft 15, their other ends being provided with slots 25 which engage pins 26. The bars 24 have rolls 27—27 pivoted to their sides upon which the belts 13—13 have a bearing, thus maintaining the belts in forcible contact with the under side of the bottom sheet of materials.

Sheets of material are stacked upon the supports 28—28 their rear edges resting against the inclined wall 34. The purpose of inclining the supports 28—28 and the wall 34, is to cause the wall 34, to sustain a portion of the weight of a stack of sheets and thereby reduce the friction between the bottom sheet and the one above it as the bottom sheet is fed out.

29 is a bar attached at its ends to the side plates 8 of the feeding mechanism, and has secured to it the bracket 29', a right and left-hand threaded screw. 29'' is threaded in the top of the bracket 29' and in a lug 29''' secured to the stop plate 36. The purpose of this construction is to enable the operator to raise or lower the stop 36, to open a gap between its lower edge and the top of the belts 13 slightly greater than the thickness of the sheets to be fed through under it, and so that the stop 36 will hold back all but the under sheet during the feeding operation. The angular portion 30, which is in the form of a spring secured by the screw 31, serves to hold back the upper sheets and to position the forward or upper edge of the sheets, one edge in advance of the other from the upper to the lowermost sheet, so that as the advancing edge of the sheets are presented to the stop 36 the edge of the lowermost sheet is slightly in advance of the next one imposed upon it.

The feeding mechanism is so constructed that the feed belts 13—13 will contact only with the sheet being fed out from under the stack. This result is obtained by mounting the shaft 10, in the ends of oscillating brackets 16—16, which are pivoted upon the shaft 18. The belts 13—13 also run over and are supported by the pulleys 14—14 which are loosely mounted on the shaft 15. The shaft 15, is secured in the ends of the brackets 17—17 which are pivoted to oscillate on the shaft 18.

Referring to Fig. 1, it will be seen that the brackets 16—16 and 17—17 are positioned on the shaft 18, so that the belt supporting pulleys 14—14 may be located, under belts 13—13 between the pulleys 11—11 and 12—12 as shown.

The feeding belts 13—13 are brought into contact with the lowermost sheet of material and moved out of contact therewith by means of the cams 22—22 and 23—23 secured to the shaft 23' which is mounted in bearings in the frame 8. The shaft 23' is rotated from the shaft 9, by suitable belts and pulleys. As the cams 22—22 and 23—23 are rotated they contact with rolls 21—21 and 21'—21', thereby oscillating the arms 16—16 and 17—17 to move the pulleys 12—12 and 14—14 causing the feed belts 13—13 to contact with the under sheet of material and feed it between the feed belts and the roll 34, to deposit it upon the conveyor belts 35.

The cycle of operation of the feeding belts 13—13 are as follows: The cams 22—22 and 23—23 rotate to a position where their high portions contact with the rolls 21—21 and 21'—21' thereby oscillating the arms 16—16 and 17—17 and moving the feed belts 13—13 into a position parallel to and in contact with the under surface of the lower sheet, the lower sheet is thereby lifted off the bars 28 fed forward under the stop 36, when the rear end of the sheet reaches a point where the feed belts 13—13 would contact with the under side of the second sheet the action of the rotating cams 23, allow the arms 16—16 and 19—19 to oscillate on the shaft 18 carrying with them the pulleys 12—12 and the rear end of the feed belts 13—13 thus throwing the feed belts out of possible contact with the under side of the second sheet. When the forward end of the lower sheet is gripped between the feed roll 34', and the belts as they pass over the pulleys 11—11 the pulleys 14—14 move downward through the oscillation of the arms 17—17 and 20—20, due to the rotating cams 22.

The purpose in having the pulleys 14—14 hold that portion of the belts 13—13 situate between the said pulleys 14—14 and the feed roll 34, in feeding contact with the sheet being fed out, is to cause said feed belts 13—13 to assist the feed roll 34' to pull the lower sheet from under the stack of sheets, and until the friction between its upper surface and the second sheet is reduced sufficiently to permit the feed roll to complete the feeding movement without marring the sheet being fed.

When the lower sheets pass out from under the stop 36, the next sheet is in position so the feed belts 13—13 will contact the full length of the sheet when the rotation of the cams 22 and 23 move them upward.

Each sheet as fed out of the feeding mechanism drops upon the wide feed belt 35, and is conveyed into the dusting mechanism.

The operation of my improved feeding mechanism is as follows:

A large number of sheets of material is first stacked upon the supports 28—28 their rear ends resting against the partition 34. Upon rotation of the shaft 9, the feed belts 13—13 feed the sheets from the bottom under the stop 36, successively between the belts and the feed roll 34', by which they are fed out to fall upon the conveyor belt 35 and conveyed under the dusting device.

I wish it understood that my invention is not confined to the exact form or construction shown herein.

Having described my invention what I claim is:

1. In a mechanism for feeding sheet materials, a plurality of inclined supporting bars adapted to support a stack of sheets, a plurality of flexible feeding belts arranged to continuously contact with the lowermost sheet during its feeding movement, a feeding roll cooperating with said flexible feeding belts to feed a sheet, means for successively moving the rear and mid portions of the flexible feeding belts below the upper surface of the supporting bars so they will not contact with the sheet imposed on the one being fed during its feeding movement.

2. In a mechanism for feeding sheet materials, an inclined receptacle for holding a stack of sheets, a plurality of inclined supporting bars adapted to support a stack of sheets, a plurality of flexible feeding belts arranged to move up and down laterally and to lift the stack of sheets and continuously contact with the lowermost sheet during its feeding movement, a feeding roll cooperating with said flexible feeding belts to feed a sheet, means for successively moving the rear and mid portions of the flexible belts so they will not contact with the sheet imposed on the one being fed during the feeding movement.

3. In a machine for feeding sheet materials, having means to support a stack of sheets and adapted to relieve the bottom sheet of a portion of the weight of the stack, feeding belts adapted to feed the sheets from the bottom of the stack, means to lower the rear portion of the feeding belts and the mid portion successively during the feeding operation to prevent the feeding belts from contacting with the under surface of the second sheet during the feeding movement and a feed roll co-acting with the feed belts.

4. In a machine for feeding sheet materials, an inclined holder for a stack of sheets, having a plurality of inclined supports and a rear wall positioned at right angle thereto, a plurality of feed belts, means to move the mid and rear portions upwardly to lift the sheets off the inclined supports and feed the lower sheet from under the stack, means to lower the rear and mid portions of the feed belts successively during their feeding movement.

5. In a mechanism for feeding sheet materials, a stack holder comprising a plurality of inclined supporting bars and a rear wall adapted to support a portion of the weight of a stack of sheets, a stop for holding back all but the lower sheet, a plurality of feed belts, means to move the feed belts upwardly to lift the stack of sheets off the supporting bars, said means being adapted to lower the rear and mid portions of the feed belts successively below the upper surface of the supporting bars, means adapted to drive the feed belts and to serve as a feed roll and a second feed roll cooperating therewith.

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