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SHEET FEEDING MECHANISM

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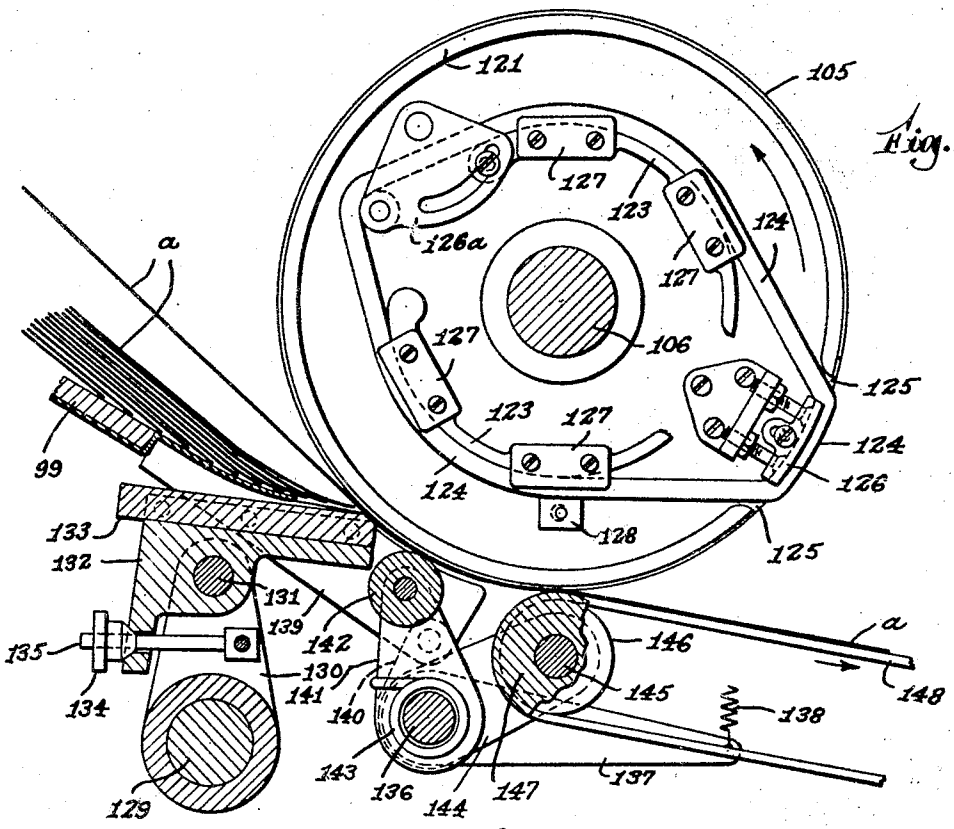


Fig. 1.

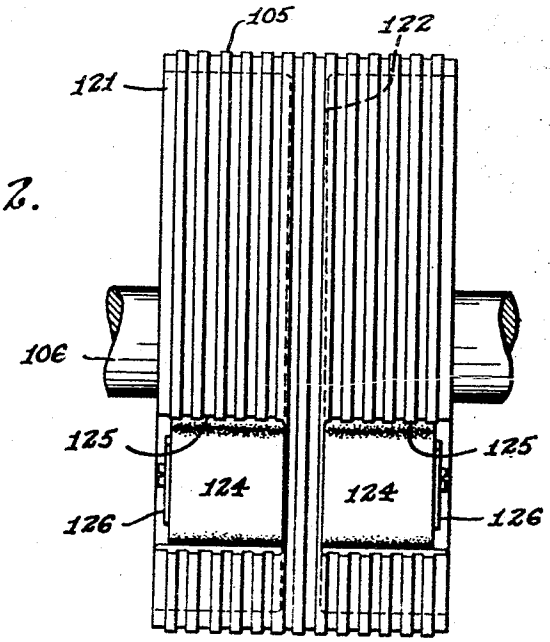


Fig. 2.

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SHEET-FEEDING MECHANISM

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8 Claims. (Cl. 271—37)

This invention relates to mechanism for feeding sheets or blanks singly, from a pile, to other mechanism which operate on such sheets or blanks, such as cutting and creasing them or printing them, or converting them into boxes, and the invention has particular reference to mechanism having a rotary wheel or drum provided with a limited frictional area at its periphery, of a type commonly known as a combing wheel. A complete blank or sheet treating machine having such a combing wheel is illustrated and described in my application Serial No. 599,165, filed March 16, 1932, of which the present application is a division.

So far as I am aware, combing wheels of the type referred to have always, heretofore, been provided with fixed peripheral friction members which are subject to such wear during continued use of the machines, that they have to be removed and other sections of friction material substituted therefor at objectionably frequent intervals.

The object of the present invention is to provide an improved blank or sheet feeding mechanism including a combing wheel presenting at its periphery an easily renewable section of friction material.

With said object in view, and others hereinafter explained, the invention consists in the construction and combination of parts, substantially as hereinafter described and claimed.

Of the accompanying drawing:—

Figure 1 represents a vertical section of one of my improved combing wheels, and other parts which cooperate therewith.

Figure 2 is an elevation of the combing wheel, looking from the right of Figure 1.

Blanks or sheets of material *a* are fed singly and successively from an inclined table a portion of which is illustrated at 99, by the combing wheel 105 carried by a shaft 106, and are delivered onto suitable belts hereinafter described.

The combing wheel comprises a drum 121 integral with a disk 122 having a hub portion mounted on the shaft 106. The drum is hollow except for its disk portion 122. Inside the drum arcuate ribs 123 project from opposite faces of the disk portion, said ribs supporting two endless belts 124 of rubber or equivalent frictional material. Two openings 125 are provided in the ribbed periphery of the drum, and internal adjustable plates 126 are supported by the disk portion of the drum with their faces projecting into said openings and so bearing against the inner surfaces of the belts as to maintain limited areas of the belts projecting slightly beyond the adjacent periphery of the drum, whereby said limited projecting portions of the belts will act as a timed feeder for the blanks or sheets *a*.

Opposite the openings in the drum are suitable tensioning devices 126ª to take up slack in the belts, there being one of each of the tensioning devices mounted on each side face of the disk portion 122. Guiding cleats 127 are also carried by the disk portion and engage the outer edges of the belts to hold their inner edges against the central disk portion 122. To prevent each belt from slipping, a suitable clamping device 128 is mounted opposite one or more of the guiding cleats 127.

Whenever during the operation of a machine having the combing wheel structure described, it is found that the exposed portion of the belt or belts is worn to such extent as to fail to properly perform its function, the worn belt, or both of them if both are worn, can easily be slid over the supporting members to retire the worn section into the drum and bring an unworn section to exposed position.

While I have illustrated the combing wheel as provided with two peripheral openings and two belts, it is to be understood that I do not limit myself to such duplicate structure. Obviously, the same provision of a singe belt which is shiftable to bring fresh portions to position to effect timed feeding when needed, will serve the purpose described.

To guide the blanks or sheets *a* from the table 99 to the combing wheel, the following mechanism is provided:—

A suitably mounted shaft 129 carries a forked member 130 having a pin 131 on which is mounted a bracket 132 having a throat piece 133 on its top and just under flat strips leading down from the table. By means of a nut 134 on the threaded stud 135 which connects the bracket 132 and member 130, the throat piece 133 can be adjusted to vary the space between the piece 133 and the combing wheel to suit the thickness of the blanks or sheets that are being operated upon.

At a point farther under the combing wheel is a shaft 136 having fixed to it arms 137 which are normally urged upwardly by springs 138. Thin spaced guiding blades 139 of which only one is illustrated, are supported by arms 140 projecting from and secured to the shaft 136. Also mounted on the shaft 136 are arms 141 supporting a roll 142 which is yieldingly held against the combing wheel by a torsion spring 143. Fixed to the shaft 136 are arms 144 supporting

a shaft 145 carrying pulleys 146 for the conveyor belt or belts presently described, and also having a roll 147 under and bearing against the combing wheel. Said roll 147 is illustrated as partially broken away in order to more clearly illustrate one of the pulleys 146. As the springs 138 act, through the arms 137, to urge the arms 144 of the shaft 136 upwardly, the roll 147 is maintained yieldingly against the combing wheel. The shaft 145 is rotated or driven by the shaft 109, through a suitable train of gearing not necessary to illustrate herein.

Usually the shaft 145 carries a plurality of pulleys 146, and mounted on each pulley is a belt 148 onto which the blanks or sheets are successively fed by the combing wheel, to be carried by said belts to the operative members of the machine which is to cut or crease or print or fold the said blanks or sheets.

The blanks are so mounted that they are supported by the member 133, and the combing wheel is sufficiently above said support to effect feeding of the blanks singly and successively from the top of the pile without causing any disturbance of the other blanks in the pile, thereby avoiding any displacement of any but the uppermost blank.

Having now described my invention, I claim:—

1. A sheet feeding mechanism comprising a support for a pile of blanks and a combing wheel for removing sheets singly and successively from the pile, said combing wheel being mounted above said support and having a peripherally adjustable friction member, said friction member projecting but slightly from the periphery of the wheel to effect combing of single blanks without disturbing the pile.

2. A sheet feeding mechanism comprising a support for a pile of blanks and a combing wheel for removing sheets singly and successively from the pile, said combing wheel being mounted above said support and presenting a friction member at its periphery, said member being mounted to enable it to be shifted in the direction of rotation of the wheel and projecting but slightly from the periphery of the wheel to effect combing of single blanks without disturbing the pile.

3. A sheet feeding mechanism including a combing wheel having an opening in its periphery and containing a friction belt a portion of which is exposed at said opening, and means for adjusting said belt to vary the degree of such exposure.

4. A sheet feeding mechanism including a combing wheel having a peripheral opening and containing a belt of friction material a portion of which is exposed at said opening, and a guide plate in the wheel adjacent to said opening, said plate being adjustable relatively to the opening.

5. A sheet feeding mechanism comprising a support for a pile of blanks and a combing wheel mounted above said support, said combing wheel having an opening in its periphery and containing a belt having an even friction surface, a portion of which is exposed at said opening.

6. A sheet feeding mechanism comprising a support for a pile of blanks and a combing wheel mounted above said support, said combing wheel consisting of a hollow drum provided with peripheral openings, belts enclosed in said drum, said belts having even friction surfaces, and guides for deflecting portions of the belts to exposed positions in said opening.

7. A sheet feeding mechanism comprising a support for a pile of blanks and a combing wheel mounted above said support, said combing wheel having a disk portion with chambers at opposite sides thereof, the periphery of the wheel having openings, belt guides supported by said disk portion, and friction belts mounted on said guides with portions of the belts exposed at said openings, the surfaces of said belts being even.

8. A sheet feeding mechanism comprising a support for a pile of blanks and a combing wheel mounted above said support, said combing wheel consisting of a hollow drum containing internal guides and having a peripheral opening, and a belt mounted on said guides with a portion of it exposed at said opening, said belt having an even friction surface and being movable over said guides to avoid unequal wear of different portions of the belt.

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