United States Patent

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[54] **MECHANISM FOR RELEASE OF PAPER SHEETS FOR STACKING PURPOSE**
4 Claims, 4 Drawing Figs.

[52] **U.S. Cl.** **271/79**
[51] **Int. Cl.** **B65h 29/28**
[50] **Field of Search** 271/79, 68, 85; 198/180

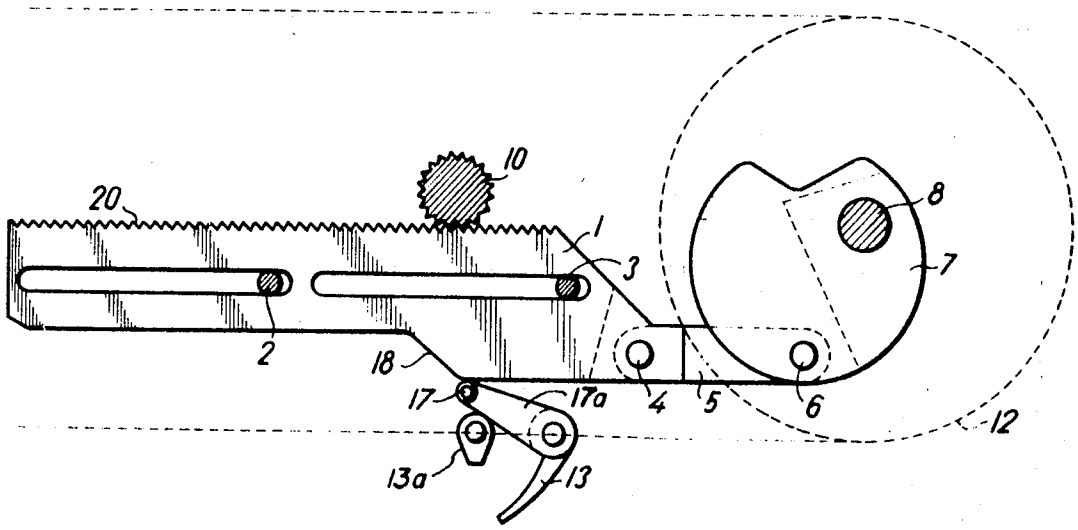
[56] **References Cited**

UNITED STATES PATENTS

1,244,536	10/1917	Peters et al.	271/79
1,879,095	9/1932	Claybourn	271/79
2,625,394	1/1953	Brown	271/79

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ABSTRACT: Feed mechanism for stacking printed paper sheets. The sheets are carried from the press between pivotal grippers on an endless conveyor entrained over at least one pulley. A movable slide having a cam surface is provided adjacent to the conveyor to engage the grippers and open the same at a precise point over the stack. Means are provided to reciprocate the slide so as to adjust the position of opening. The slide is provided with an arcuate member at its forward end and a connecting link. The arcuate member is provided with a segmented recess to receive the connecting link. The cam surface is thereby directly continued by the link and the arcuate member which is received in the recess when the cam is shortened.



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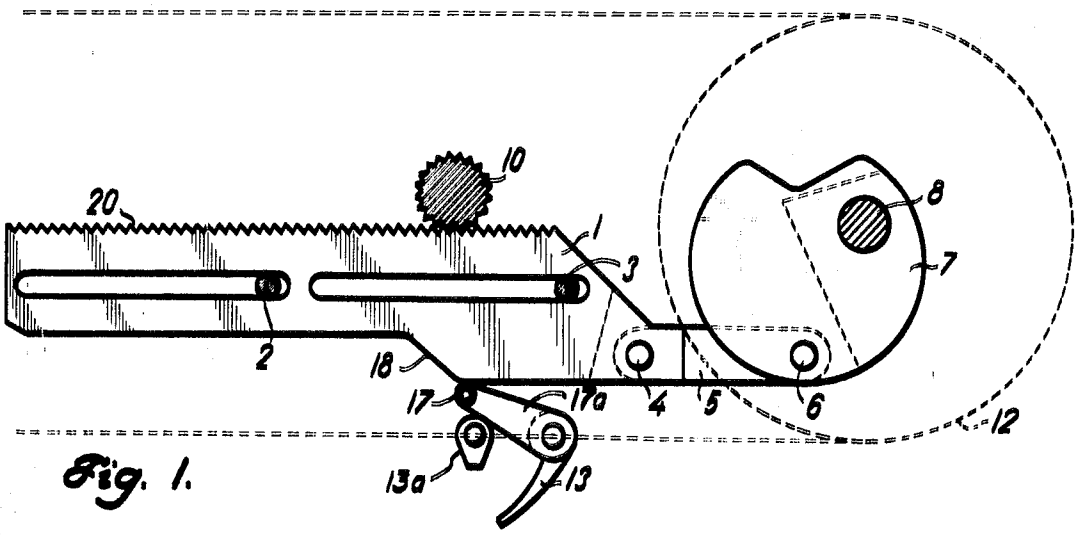


Fig. 1.

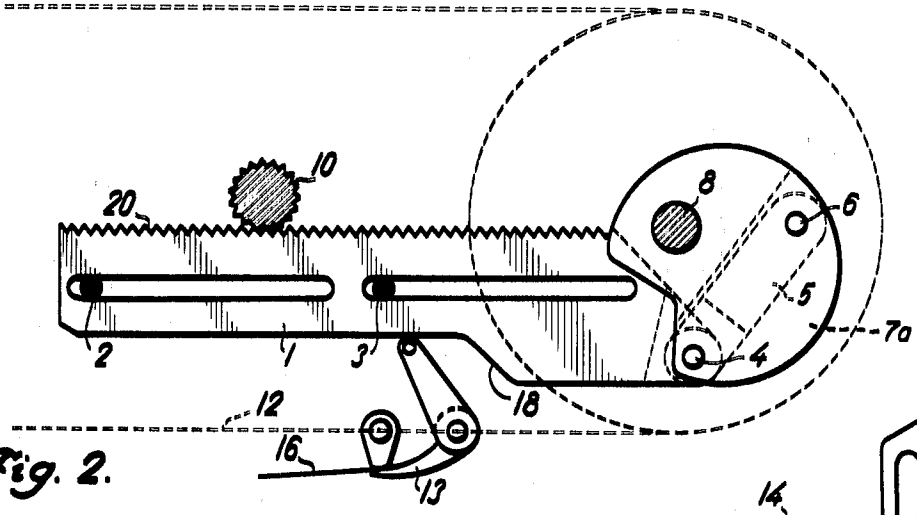


Fig. 2.

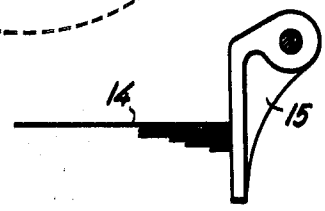


Fig. 4.

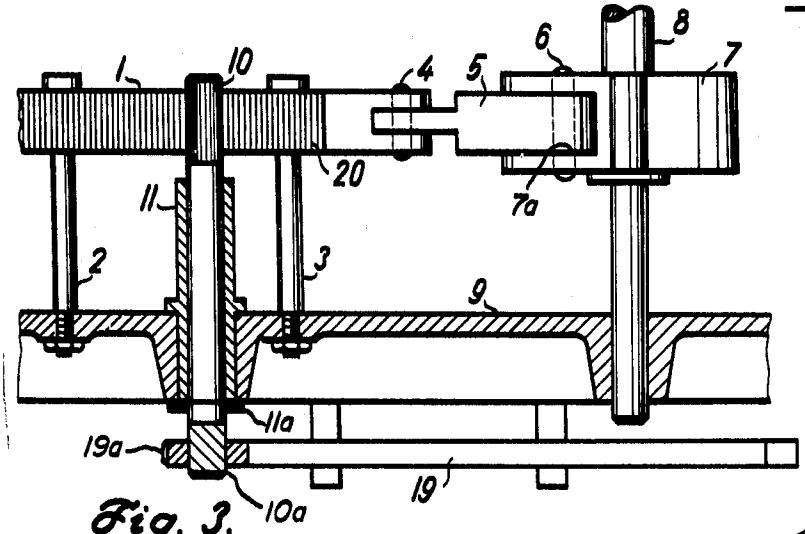


Fig. 3.

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MECHANISM FOR RELEASE OF PAPER SHEETS FOR STACKING PURPOSE

The present invention relates to paper feed mechanisms and particularly to mechanisms for releasing printed paper sheets onto stacking devices of printing machines.

In the course stacking of printed paper the sheets are removed from the printing rollers by means of gripping mechanisms and transferred above a stacking table. The grippers of the gripping mechanism are opened, so that the transferred sheet is released and deposited on the stacking table. The opening of the grippers and the releasing of the paper sheets is controlled by a release mechanism which has to be adjusted for different speeds and for different paper weight, in order to prevent damage to the paper edges when it strikes against the elements of the stacking device or against stop means.

One of the known devices for the release of paper sheets consists of two mutually engaging and cooperating cam elements, one of which is fixed, the other of which is slidable. By inserting or pulling out the slidable element (i.e. varying it with respect to the fixed element), an earlier or later release of the paper sheets is achieved.

This mechanism has the drawback, that it requires an individual support of both cam elements and a very rugged design. Thus it becomes complicated and rather costly to manufacture.

Another known mechanism for the release of paper sheets comprises two mutually interconnected cam elements supported by bolts. The cam can be relatively adjusted to achieve an earlier or later release of paper sheets. This, however, has the drawback, that by turning the cam elements around bolts, not only the length, but also their height is changed. In addition by adjustment of the cam elements the opening of the grippers is changed, making the possibility of a correct deposition of the paper sheets very complicated.

It is an object of this invention to provide a feed mechanism, which would allow an adjustment within wide limits of the position in which the paper sheets are released.

It is another object of this invention to provide a feed mechanism for the intended purpose, where the height of the element causing opening of the grippers would remain fixed, so that the opening of the grippers would remain fixed, so that the opening of the grippers near the stacking device would remain the same within the whole length, within which the paper sheets can be released.

It is a further object of this invention to provide a mechanism for the release of paper sheets, which would operate satisfactorily at high printing speeds.

It is still another object of this invention to create a mechanism which is simple, reliable and of low cost for manufacture.

An additional object of this invention it to provide a feed mechanism for use in both low and high-speed machines and particularly of a mechanism by which the paper sheet is released close to a stop, or at a fixed distance from such stop high printing speeds, so that it could be used in the first instance for printing machines using airbrakes and in the second instance for printing machines without brakes.

The mechanism in accordance with this invention comprises a slide having a release cam for engagement with gripper means, the release cam is guided in a direction parallel with the direction of supply of the paper sheets and is linked by means of a connecting bridge with an eccentric arcuate member having a segment provided with a recess for sheltering said connecting bridge and a part of the slide. The apparatus includes means for adjusting the desired position of the slide.

Full details of the present invention are found in he following disclosure and in the accompanying drawings:

FIG. 1 is an elevation of view of the mechanism in extended position,

FIG. 2 is a view similar to that of FIG. 1, where the mechanism is shortened,

FIG. 3 is a plan view of the mechanism as shown in FIG. 1, and

FIG. 4 shows a detail of stacking of paper sheets.

As seen in the figure the mechanism comprises a release slide 1 supported in sliding fashion by bolts or pins 2 and 3 fixed to the frame 9 or other member of the machine. The release cam 1 is linked by means of the pivot pin 4 with a connecting link bridge 5 which itself is pivoted by means of the bolt 6 to an eccentric cam 7. The arcuate member 7 is provided with a segmented slot or recess 7*a* between its flat faces into which the link 5 is movable (FIG. 2) and is rotatably supported, eccentric of its center, on a shaft 8, also fixed on the frame 9 of the machine. A rack 20 is provided on the upper part of the release slide 1 meshing with an elongated pinion 10 supported by a sleeve 11 (see FIG. 3) fixed in the machine frame 9. The rearmost end 10*a* of pinion 10 is formed with a screw in cooperating engagement with a worm 19*a* formed on the extremity of a regulating rod 19, having thumbscrew of wrench end, rotatably supported on the external side of the machine frame 9. The fixed position of the drive of the pinion 10 is maintained by the interaction of worm and screw in adjusted position. The pinion may be provided with friction washers 11*a* to make it self-locking. A cam surface 18 is arranged at the lower part of the slide 1 and engagement with a roller 17, supported at the end of a lever 17*a*, fixed on the shaft of the pivotal gripper member 13 of the stacking device 12, represented by an endless chain, entrained over a pulley and which, as is conventional, pivotally supports a number of cooperating gripper members 13 and 13*a*.

The described arrangement operates as follows:

Paper sheets 16 are supplied by the stacking device 12, the pulleys of which may be mounted on shaft 8. The sheets are clamped between the grippers and 13*a* and are dropped and stacked into a stack 14 whereby they strike the end stop 15. When the roller 17 carried by the pivoting shaft, of the gripper member 13 reaches the cam surface 18 of the slide 1, the gripper members 13 opens and the paper sheet 16 drops on the stack 14. The adjustment of the exact place where the paper sheet 16 is released is accomplished by turning the regulating rod 19 which causes rotation of the pinion 10 shifting the slide 1 together with the connecting linking bridge 5. Thus the eccentric segment 7 is rotated. A large extent of adjustment can be made as the entire connecting bridge 5 and a part of the slide 1 can enter a recess formed in the eccentric segment 7. The difference between both extreme positions of the release surface 18 is therefore determined by the extent, i.e. how far the connecting bridge 5 and a part of the release cam 1 can be sheltered in the eccentric segment 7. The opening of the grippers 13 and 13*a* remains constant for any adjustment being relative only to the position of the release surface 18. The connecting bridge 5 linking the release cam 1 with the eccentric segment 7 prevents any interference of the extremity of the slide 1 with the operation of the grippers 13 and 13*a* by extending its length up to the eccentric segment 7 in all its positions. The flat edge between the cam surface 18 is extended by the edges of the bridging link 5 and the eccentric segment 7 to form a continuous cam edge so that the grippers remain open after release of a sheet preventing any interference with the released paper or premature closing also prevents any possible repeated undesired gripping of an already released paper sheet by a premature closing of the grippers 13. The present disclosure is illustrative only and its principles may be embodied in many forms and have many variations.

What is claimed is:

1. A feed mechanism for stacking printed paper sheets in a printing press comprising an endless supply conveyor entrained over at lease one pulley at its forward end and carrying a plurality of gripper assemblies, each of which has at least one pivotable member adapted to releasably secure a sheet; a movable slide mounted to reciprocate between a forward and rear position in a direction parallel to the direction of said supply conveyor, said slide having a cam surface adapted to engage said pivotable gripper member to selectively close and open the same; means for reciprocating said slide; an arcuate member located at the forward end of said conveyor, said ar-

cuate member being eccentrically mounted for rotation about an axis offset from its center; a connecting link pivotally secured to the forward end of said slide and adjacent the periphery of said arcuate member, said link having a surface forming a continuation of said cam surface with the surface of said arcuate member; a segment of said arcuate member being formed with a recess adapted to receive said link on movement thereof; whereby on reciprocation of said slide said link is adapted to enter into a recede from said recess to thereby adjust the length of said cam surface while maintaining said surface continuous about said arcuate member.

2. The mechanism according to claim 1 wherein an edge of said slide is formed with a rack, and the means for reciprocating said slide comprise a shaft having a pinion engaging said rack and means for rotating said pinion.

3. The mechanism according to claim 1, wherein said arcuate member is eccentrically mounted about the shaft of said pulley.

4. The mechanism according to claim 1, wherein said slide comprises a flat member having the cam surface on one edge and the rack on its other edge, said cam surface being shaped to open said gripper members adjacent the forward end and to maintain them open on passage over the arcuate member.