

July 12, 1932.

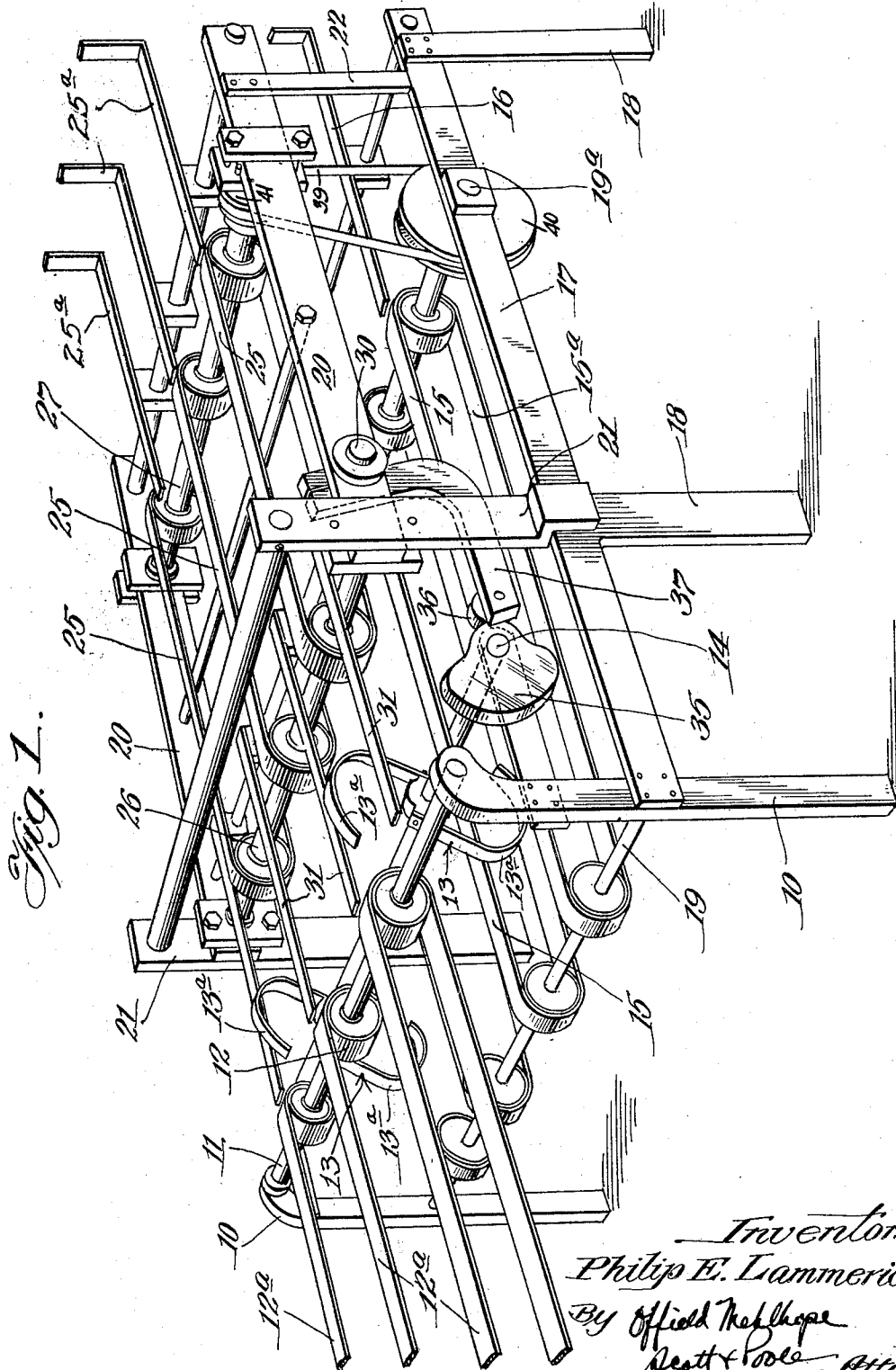
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1,866,812

FOLDER SEPARATOR

Filed June 5, 1931

2 Sheets-Sheet 1



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2 Sheets-Sheet 2

Fig. 2.

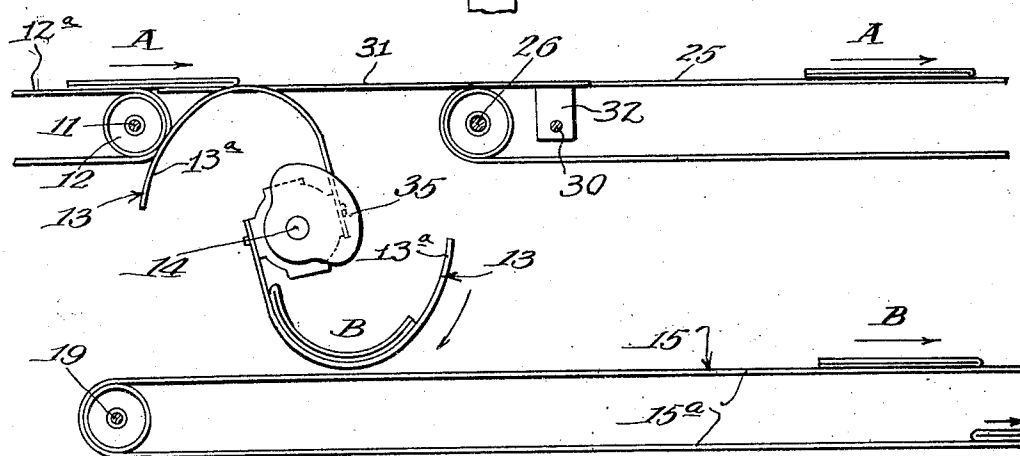
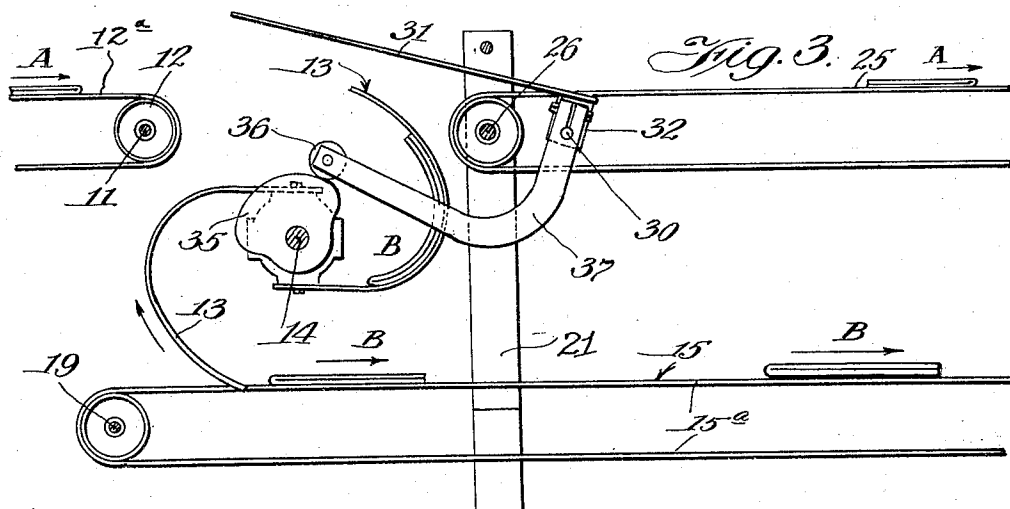
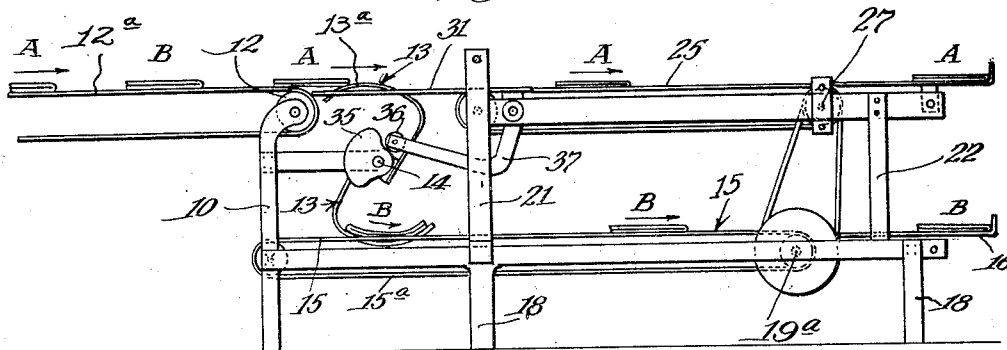


Fig. 4.

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FOLDER-SEPARATOR

Application filed June 5, 1931. Serial No. 542,212.

This invention relates to improvements in folder separators for printing presses and more particularly to automatic separator attachments designed to be applied to single delivery presses of standard construction, whereby such presses can be used for producing two or more sets of printed sheets or folders, which sets, when delivered from the press, may be automatically separated in their respective groups.

More specifically, my invention consists of providing an improved attachment for standard printing presses having a single delivery mechanism including a single set of rotary wings or fan bucket devices normally designed to deliver sheets of uniform printed matter in a consecutive order upon a delivery table.

In carrying out my invention I provide an attachment capable of being readily applied to or detached from the standard delivery mechanism without disturbing its normal operation, except to provide, when required, an additional delivery table and means operated in timed relation with the wing delivery or fan bucket device so as to divert each alternate printed or folded sheet as it comes from the press, and deliver such alternate sheets on said additional table.

Further objects and advantages of my invention will hereinafter be pointed out.

The invention may best be understood by reference to the accompanying drawings, in which

Figure 1 is a view in perspective of a folder delivery mechanism to which my improved form of separating attachment has been applied.

Figure 2 is a side view of the device shown in Figure 1 and indicating the separator in operation with the gate in position to separate the next folder that is discharged from the press.

Figure 3 is an enlarged side view showing the gate in position to permit the folder to be discharged in the normal manner through the fan bucket to the regular delivery table at a level below said bucket; and

Figure 4 is an enlarged view showing the gate in closed position, as in Figure 2.

Referring now to details of the invention illustrated in the drawings, the parts of a standard single delivery printing press comprise a pair of uprights 10, 10 forming support for a transverse shaft 11 carrying a plurality of tape rollers 12, 12 of tape conveyors 12^a, 12^a driven in any suitable manner to deliver printed matter, such as folders, to fan buckets 13, 13 on shaft 14. Such fan buckets are usually provided with a plurality of blades 13^a, 13^a, but when used with my attachment I find it advisable to remove each alternate blade. Thus in the form shown each of the fan buckets has two blades instead of four, as would be employed when the machine is used with its standard single delivery mechanism.

In such a standard single delivery machine, the blades of the fan buckets extend slightly above the upper level of the conveyor tapes 12^a, 12^a, and the folders are moved one by one into the separate buckets of said fan, and are dropped by gravity therefrom on a delivery table 15, herein consisting of a plurality of horizontally disposed conveyor tapes 15^a, 15^a, and rigid end bars 16, 16 for finally collecting the folders.

The delivery table 15 is suitably supported, as by side bars 17, 17 and uprights 18, 18. The tapes 15^a, 15^a are carried on shafts 19 and 19^a, driven in any suitable manner, (not shown).

As will be understood by those skilled in the art, many printing presses of the general class herein described are adapted to print two or more different sets of prints so that said prints when put through the folding mechanism, would normally be discharged on the lower delivery table 15 in their order of printing.

Referring now to my improved form of attachment whereby each alternate folder may be separated into two groups, I provide an auxiliary delivery table disposed above and parallel with the main delivery table 15. In the form shown, said auxiliary table comprises a pair of side frame members 20, 20 mounted on legs 21, 21, herein being extensions of the uprights 18 adjacent the press delivery mechanism, and on other legs 22, 22

supported on the outer or delivery end of the standard delivery table 15. A series of conveyor tapes 25, 25 are mounted on shafts 26 and 27 extending between the side bars 20, 20, the upper flights of said tapes being disposed in substantial horizontal alignment with the upper flights of the folder discharge conveyor tapes 12^a, 12^a, and beyond the fan buckets 13.

A rocker shaft 30 is mounted at opposite ends on the side bars 20, 20 just beyond the tape shaft 26. Said rocker shaft is provided with a plurality of guides 31, 31 suitably secured thereto as by upstanding blocks 32, 32 so that said guides 31, 31 may be disposed in substantially horizontal alignment with the top of tapes 25, 25 and with their outer ends projecting into close proximity to the rollers 12, 12 about which the tapes 12^a, 12^a of the folder discharge mechanism are trained.

The rocker shaft 30 is connected with a portion of the delivery mechanism so as to raise and lower the guides 31 in timed relation therewith, in the form shown this connection being provided by means of a cam 35 detachably mounted on one end of the fan bucket shaft 14 so as to be engaged by a roller 36 on arm 37 rigidly connected with one end of the rocker shaft 30.

In the form shown, the auxiliary delivery table tapes 25, 25 are driven through suitable means, herein consisting of a belt 39 trained over pulley 40 detachably connected to the outer conveyor shaft 19^a of the lower conveyor 15^a, and a smaller pulley 41 on the adjacent conveyor shaft 27 of the auxiliary delivery table. In the form shown, the upper pulley 41 is preferably smaller than the lower pulley so as to drive the upper conveyor at approximately twice the speed of the lower conveyor. In this manner rapid removal of the folders from the guides 31 is assured.

Referring now to diagrams in Figures 2 and 3, it will be understood that two sets of printed folders A and B may be delivered in alternating order from the folding mechanism (not shown) onto the upper tapes 12^a, 12^a of the printing press, these two sets of printed folders being indicated in their order of discharge at A—B—A. With a standard form of delivery mechanism these folders would all be delivered one after the other through the fan buckets 13 to the lower delivery table 15. With my improved attachment arranged as shown, however, the guides 31, 31 form a gate which is automatically closed to intercept each folder A at the end of the tapes 12^a, 12^a, and cause it to continue its horizontal movement to the tapes 25, 25 on the upper delivery table. The arrangement is such, however, that when each alternate folder B reaches the end of the tapes 12^a, 12^a the guides 31, 31 of the gate are raised by operation of the cam 35 and said

folders B are moved into the fan buckets 13 and are deposited upon the lower tapes 15, 15 in the usual manner.

It will be seen that the horizontal movement of the folders A along the bars 31 is first assisted by engagement with the upper surfaces of the fan bucket blades 13^a which are eccentrically mounted so that the following bucket blade is brought up beneath each folder when it is first moved upon said guides. The guides themselves are rocked upwardly so as to further move said folders along toward the conveyor tapes 25.

From the above description it will now be understood that my improved attachment is a simple and efficient device capable of being readily applied to a standard single delivery mechanism with minimum time and labor, and without disturbing the operation of the same so that it can be again removed and the machine quickly restored to single delivery operation when desired. The auxiliary conveyor frame rocking arm and guides 31 associated therewith are applied or removed as a unit, and the only additional adjustments required for converting from a single to a double delivery are the removal of the necessary number of fan bucket blades, and the attachment of the belt for driving the auxiliary conveyor, it being understood, of course, that the guide operating cam 35 and the belt pulley 40 can be left upon the standard machine when the separating attachment is not in use.

Although I have illustrated and described one particular embodiment of my invention, it will be understood that I do not wish to be limited to the exact construction shown and described, but that various changes and modifications may be made without departing from the spirit and scope of my invention.

I claim:

1. An attachment for folder delivery devices including a fan bucket and a horizontal delivery table below said fan bucket, said attachment consisting of an auxiliary delivery table detachably connectible above said first named table, and a gate having an operating arm adapted to be connected with said fan bucket to intercept alternate folders before they reach said fan bucket.

2. An attachment for folder delivery devices including a fan bucket and a horizontal delivery table including a moving conveyor below said fan bucket, said attachment consisting of an auxiliary delivery table detachably connectible above said first named table, and including a moving conveyor adapted to be operatively connected with said first named conveyor, and a gate having an operating arm adapted to be connected with said fan bucket to intercept alternate folders before they reach said fan bucket.

3. An attachment for folder delivery devices including a generally horizontal dis-

charge conveyor, a fan bucket, and a horizontal delivery table below said fan bucket, said attachment consisting of an auxiliary delivery table disposed above said first named table in substantial horizontal alignment with said discharge conveyor, and a gate operably connected with said fan bucket to intercept alternate folders before they reach said fan bucket.

4. An attachment for folder delivery devices including a generally horizontal discharge conveyor, a fan bucket having its blades extending above the level of said discharge conveyor, and a horizontal delivery table below said fan bucket, said attachment consisting of an auxiliary delivery table detachably connectible above said first named table and beyond said fan bucket, said auxiliary table having guide means pivotally mounted thereon and arranged in one position to extend beyond said fan bucket below the path of movement of its fan blades and with its forward end adjacent said discharge conveyor to receive folders directly from the latter, and in another position to be raised above said fan bucket blades and said discharge conveyor, and means for operating said guide means in timed relation with said fan bucket.

5. An attachment for folder delivery devices including a discharge conveyor, a fan bucket at the end of said discharge conveyor, and a horizontal delivery table below said fan bucket including a delivery conveyor, said attachment consisting of an auxiliary delivery table detachably connectible above said first named table and beyond said fan bucket, said auxiliary table having a delivery conveyor thereon having detachable driving connections with the delivery conveyor on said first mentioned delivery table, and guide means pivotally mounted on said auxiliary delivery table arranged in one position to extend beyond said fan bucket and with its forward end adjacent said discharge conveyor to receive folders directly from the latter, and in another position to be raised above said fan bucket and said discharge conveyor, and means for operating said guide means in timed relation with said fan bucket.

6. An attachment for folder delivery devices including a fan bucket and shaft and a generally horizontal delivery table below said fan bucket, said attachment consisting of an auxiliary delivery table detachably connectible above said first named table, guide means pivotally connected to said table, a cam detachably connectible to said fan bucket shaft, and an operating arm rigid with said guide means adapted to engage said cam means and operable thereby so as to move said guide means into and out of position to intercept alternate folders before they reach said fan bucket.

7. An attachment for folder delivery de-

vices including a generally horizontal discharge conveyor, a fan bucket and shaft and a generally horizontal delivery table below said fan bucket, said attachment consisting of an auxiliary delivery table detachably connectible above said first named table in substantial alignment with said conveyor, guide means pivotally connected to said table, a cam detachably connectible to said fan bucket shaft, and an operating arm rigid with said guide means adapted to engage said cam means and operable thereby so as to move said guide means into and out of position to intercept alternate folders before they reach said fan bucket.

8. An attachment for folder delivery devices including a generally horizontal discharge conveyor, a fan bucket and shaft beyond said discharge conveyor and a generally horizontal delivery table below said fan bucket and including a delivery conveyor, said attachment consisting of an auxiliary delivery table detachably connectible above said first named table and in substantial alignment with said discharge conveyor, said auxiliary delivery table also including a delivery conveyor, guide means on said auxiliary delivery table detachably connectible to said fan bucket shaft and operated in timed relation with the latter to divert alternate folders from said fan bucket to said auxiliary delivery conveyor, and means detachably connectible to the first named delivery conveyor for driving said auxiliary delivery conveyor.

9. An attachment for folder delivery devices including a generally horizontal discharge conveyor, a fan bucket and shaft beyond said discharge conveyor and a generally horizontal delivery table below said fan bucket and including a delivery conveyor, said attachment consisting of an auxiliary delivery table detachably connectible above said first named table and in substantial alignment with said discharge conveyor, said auxiliary delivery table also including a delivery conveyor, guide means on said auxiliary delivery table detachably connectible to said fan bucket shaft and operated in timed relation with the latter to divert alternate folders from said fan bucket to said auxiliary delivery conveyor, and means detachably connectible to the first named delivery conveyor for driving the auxiliary delivery conveyor, including a belt and pulley device giving a greater speed of movement to said auxiliary delivery conveyor.

10. In a folder separator, a generally horizontal discharge conveyor, a fan bucket, a delivery table disposed adjacent said fan bucket and in substantial alignment with said discharge conveyor, guide means pivotally mounted adjacent said delivery table and extending toward said discharge conveyor, means for operating said pivoted guide in timed relation so as to intercept certain of

said folders before they reach said fan bucket, but to be raised so as to permit other folders to be deposited in said fan bucket, and a second delivery table disposed below said first named table adapted to receive the folders deposited thereon by said fan bucket.

11. In a folder separator, a generally horizontal discharge conveyor, a fan bucket, a delivery table disposed adjacent said fan bucket and in substantial alignment with said discharge conveyor, guide means pivotally mounted adjacent said delivery table and extending toward said discharge conveyor, means for operating said pivoted guide in timed relation so as to intercept certain of said folders before they reach said fan bucket, but to be raised so as to permit other folders to be deposited in said fan bucket, and a second delivery table disposed below said first named table adapted to receive the folders deposited thereon by said fan bucket, said fan bucket having its blades arranged to extend above the level of said guides when the latter are in intercepting position, so as to assist in the forward movement of the folders along said guides.

Signed at Chicago, Illinois, this 29th day of May, 1931.

PHILIP E. LAMMERICH.

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