Nov. 6, 1951 E. D. LAWRENCE 2,573,852

JOGGER ATTACHMENT FOR PRINTING PRESSES

Filed Aug. 7, 1948 2 SHEETS—SHEET 1

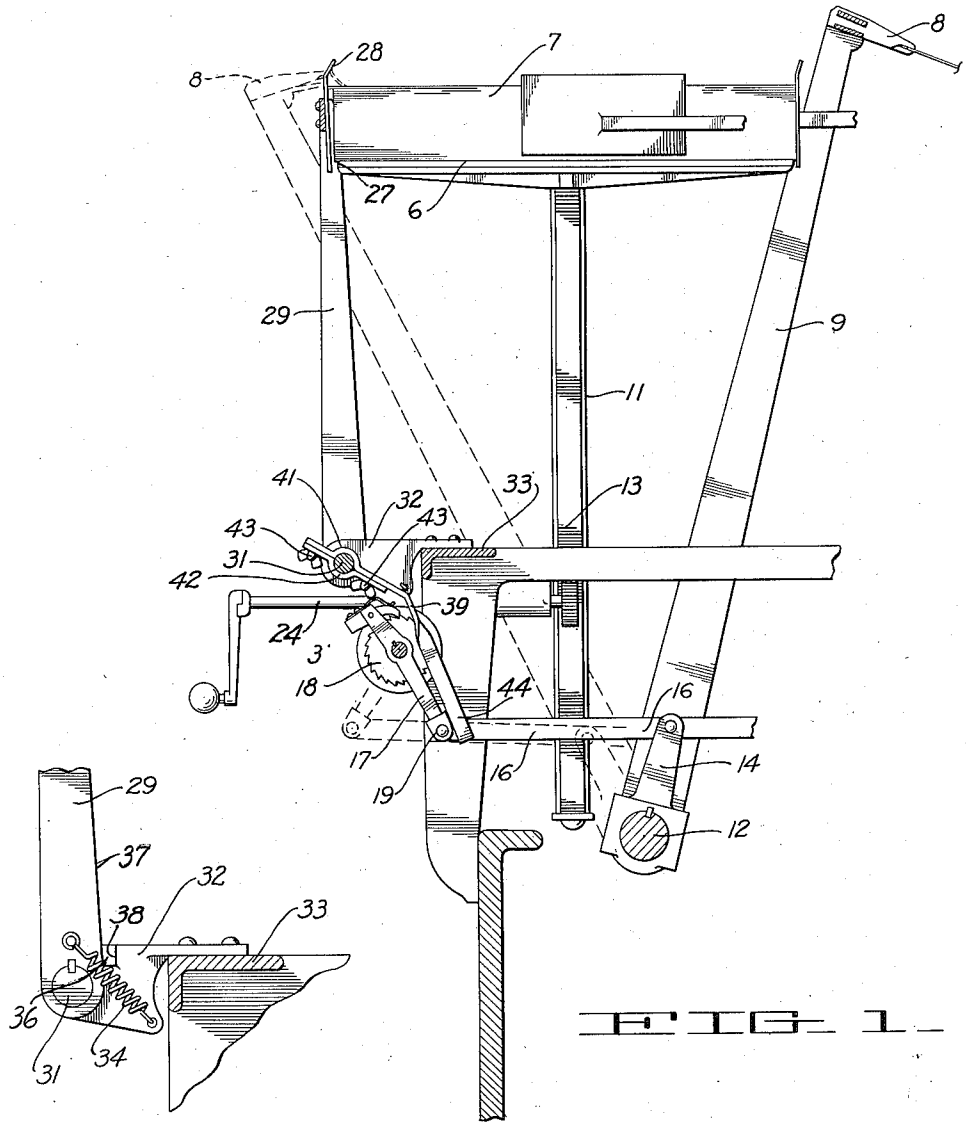


FIG. 1.

FIG. 3.

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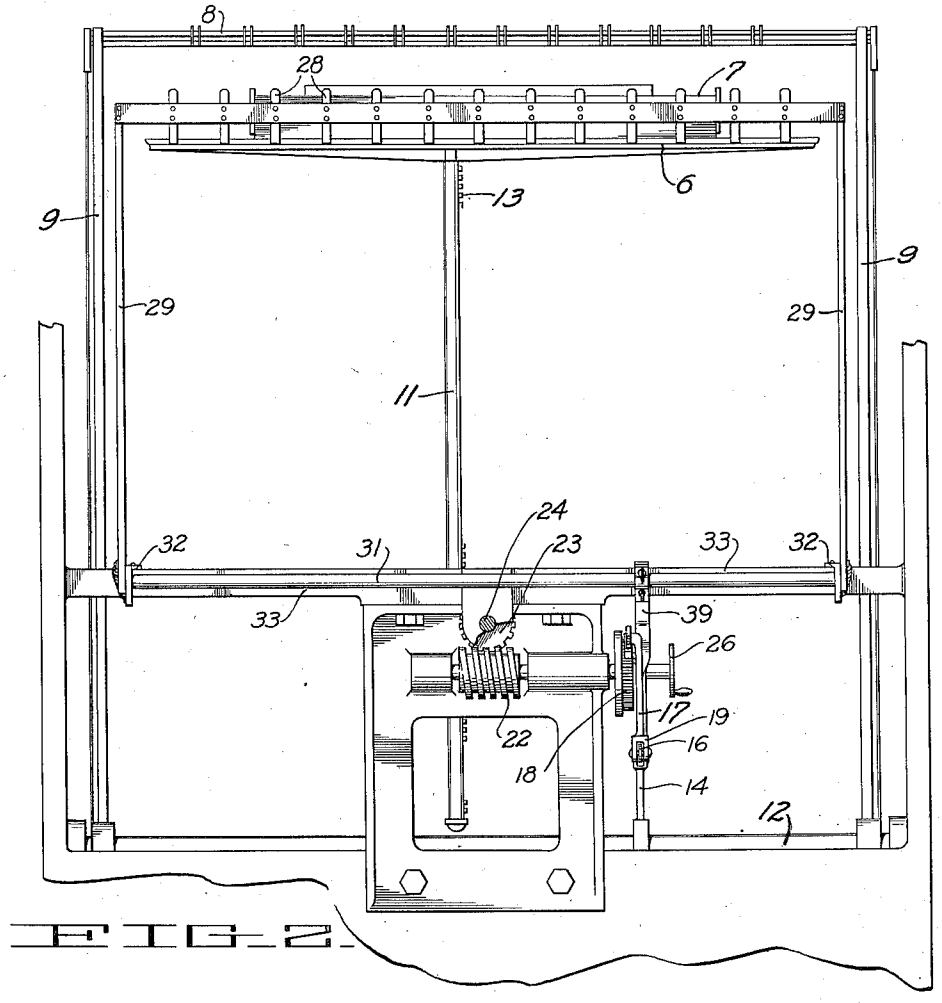


FIG. 2.

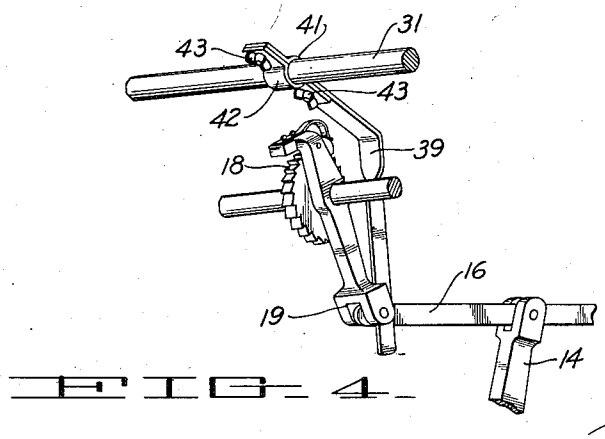


FIG. 4.

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JOGGER ATTACHMENT FOR PRINTING PRESSES

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5 Claims. (Cl. 271—89)

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The invention relates to printing presses and more particularly to the delivery apparatus thereof for transporting printed sheets onto the delivery table in a vertically stacked pile.

An object of the present invention is to provide a jogger attachment for printing presses which will cooperate with and activate the delivery sheet stop fingers of the printing press in such a manner as to assure an improved vertical stacking of the printed sheets on the delivery table of the press, thereby effecting a significant saving of time and labor on the press, as well as in the bindery.

Another object of the invention is to provide a jogger device of the character above which will afford an improved stacking of all types of printed sheets including tissue, manifold, Bible stocks, bonds, book papers and cardboards.

Still another object of the invention is to provide a jogger attachment of the character described which is composed of a single unit adapted for ready and inexpensive manufacture and which may be simply and readily applied to existing printing presses.

The invention possesses other objects and features of advantage, some of which, with the foregoing, will be set forth in the following description of the preferred form of the invention which is illustrated in the drawings accompanying and forming part of the specification. It is to be understood, however, that variations in the showing made by the said drawings and description may be adopted within the scope of the invention as set forth in the claims.

Referring to said drawings:

Figure 1 is a cross-sectional view of a part of a printing press showing some of the delivery apparatus thereof and the jogger attachment of the present invention, in side elevation.

Figure 2 is an end elevation of the apparatus and jogger attachment shown in Figure 1.

Figure 3 is a cross-sectional view on a somewhat enlarged scale showing a part of the delivery apparatus in side elevation.

Figure 4 is a perspective view showing the jogger attachment in its operative position with respect to other parts of the printing press.

The jogger attachment of the present invention is adapted for use with printing presses of the Meihle vertical type having a delivery table 6 onto which printed sheets 7 are transported and piled by a delivery apparatus including delivery grippers 8 mounted on arms 9 to reciprocate to and from the press cylinder for picking up the printed sheets thereat and carrying them in a

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generally horizontal, swinging movement onto the delivery table 6. The table is mounted on an elevator shaft 11 for vertical displacement and means is customarily provided for lowering the table automatically as the sheets 7 are piled thereon. A part of this table-lowering mechanism is illustrated in the drawings and includes a series of drive elements connected between the drive shaft 12 for the delivery arms 9 and a rack 13 on the elevator shaft 11, so as to lower the table in timed relation to the reciprocation of the delivery mechanism. Drive motion is taken from the shaft 12 by means of a crank 14 and transmitted through a link 16 to an arm 17 of a pawl and ratchet drive 18, the connection between the link 16 and arm 17 being effected by a bifurcated bracket 19. The driven shaft of the pawl and rachet mechanism 18 has secured thereon a worm gear 22 enmeshed with a worm pinion 23 on a drive shaft 24. The latter extends to the rack 13 and is provided thereat with rack pinion not shown enmeshed with the rack teeth. From the foregoing it will be understood that the reciprocation of the crank 14 on the drive shaft 12 will be transmitted through the connected drive structure and translated into a rotary movement at the pinion engaged with rack 13, so as to effect a lowering of the elevator shaft upon reciprocation of the drive mechanism. A hand wheel 26 is sometimes provided on the pawl and rachet mechanism for setting the rate of lowering of the table according to the thickness of the paper being printed.

Also, in presses of the type to which the present invention may be applied, there is customarily provided at the rear side 27 of the delivery table a plurality of stop fingers 28 mounted at the upper extremity of a supporting arm 29, secured at its lower end to a pivot shaft 31. The shaft 31, as illustrated in Figures 1 and 3, is journalled in bearing brackets 32 secured to the frame 33 of the press, and the arm 29 is keyed, as illustrated in Figure 3, directly to the shaft 31 for joint rotation. A spring 34, connected between the arm 29 and the bracket 32, normally holds the arm 29 in a substantially vertical position with the fingers 28 at the rear side 27 of the table 6. By reason of the pivoted support of the arm 29, the arm and stop fingers 28 may be swung away and downwardly from the table for removal of a stack of printed sheets therefrom.

In the delivery apparatus of printing presses of the general type above described, the printed sheets are moved onto the delivery table and released thereat with a considerable rate of speed.

The sheets, as will be understood, after release from the delivery grippers, move generally horizontally across the delivery table until the leading edge of the sheet is engaged by the stop fingers 28, when the forward movement of the sheet is stopped. Due to the speed with which the sheets customarily move in delivery onto the table, there is a tendency for the sheets to rebound from the stop fingers and accordingly a somewhat irregular vertical stacking of the sheets takes place. In accordance with the present invention and as a principal feature thereof, means is provided for moving the stop fingers 28 a short distance from the rear side 27 of the table at the time of delivery of a sheet so as to permit the delivered sheet to slightly overrun the stack, and then the stop fingers are moved back toward the rear edge of the delivery table to the stack, thereby insuring a positive vertical alignment of the leading edges of the sheets and a precise vertical stacking of the sheets. The setting of the stop fingers 28 slightly away from the rear side 27 of the delivery table is here effected by the inter-positioning of a resilient compressible pad or bumper 36, such as rubber or the like, between one side 37 of the arm 29 and a shoulder 38 provided on the bracket 32. Movement of the arm 29 and the stop fingers 28 in timed relation to the delivery arms 9, as above described, is here effected by a lever arm 39 secured to the rocker shaft 31 and extending into the path of movement of the bracket 19 so as to be engaged and displaced thereby upon reciprocation of the delivery mechanism. Attachment of the lever arm 39 to the shaft 31 is here conveniently effected by forming an arcuately curved portion 41 adjacent one end of the arm which may be fitted upon the periphery of shaft 31 and clamped thereon by a complementary curved cap 42 secured to the lever by bolts and wing nuts 43. The intermediate portion of the lever is bent so as to clear the rachet shaft 21 and to position the free end 44 of the lever into juxtaposition with respect to the bracket 19 for engagement and displacement thereby on each forward movement of the delivery mechanism. In this manner, the stop arm 29 and stop fingers 28 are kicked or displaced slightly away from the rear edge of the delivery table on each movement of the delivery apparatus to pick up a printed sheet. The displacement of the free end 24 of the lever by bracket 19 is effected in a sharp or abrupt manner adjacent the forward stroke of the delivery apparatus and the clockwise displacement of the stop arm 29, caused thereby, is resisted by the resilient action of spring 34 which, promptly upon disengagement of the lever end 44 by bracket 19, swings the arm 29 in a clockwise direction against the bumper 36. Since the latter is compressible, there is an over-travel of the arm 29 to an instantaneous end position which defines the rear side of the stack. In other words, at the time of delivery of a sheet onto the delivery table, the stop fingers 28 are spaced slightly from the rear edge of the table, thereby permitting the delivered sheet to slightly overrun the stack, as illustrated in Figure 1. In the next cycle of movement of the delivery apparatus, advancing the grippers to the printing cylinder to receive the next sheet, and before the next sheet is delivered to the table, the jogging lever 39 is actuated as above described so as to swing the arm 29 against the bumper 36 and thereby cause the fingers 28 to move inwardly to their instantaneous innermost position, and in so doing move the last delivered and overrun sheet to the edge of the stack as defined by

the innermost position of the delivery fingers. In this manner the preliminary position of the delivered sheet on the table is of little importance and will vary with the speed of the operation of the press and the character of the sheet being run. The point is that each sheet is permitted to overrun the stack, the amount of overrun not being important, and then is precisely moved back by the stop fingers in the jogging operation above described to a pre-determined vertical alignment with respect to all of the other sheets in the stack.

I claim:

1. In a printing press having a delivery table and reciprocating delivery mechanism for depositing printed sheets onto said table, a jogger comprising pivoted stop means normally positioned at a side of said table to engage the leading edge of a sheet delivered thereon to provide a vertical stacking of such sheets, a lever formed for securing at one end to said pivoted stop means and fashioned to locate its opposite end in the path of movement of a part of said reciprocating mechanism for engagement and displacement thereby for oscillating said stop means to and from said table side in timed relation to the reciprocation of said delivery mechanism.

2. In a printing press having a delivery table and a reciprocating delivery mechanism for transporting sheets in a general horizontal direction onto said table, a jogger including a stop at a side of said table to engage the leading edge of a sheet delivered thereon to provide for vertical stacking of said sheets, said stop being provided at the upper end of an arm secured at its lower end to a shaft journalled for swinging of said arm and stop to and from said table side, a lever, clamp means at one end of said lever formed for attachment to said shaft, said lever being formed to locate the opposite end thereof in the path of movement of a reciprocating part of said mechanism to be engaged and displaced thereby for oscillating said stop.

3. In a printing press having a delivery table mounted for vertical movement and a reciprocating delivery mechanism for transporting sheets in a general horizontal direction onto said table and operatively connected to said table for lowering thereof as sheets are piled thereon, a stop at a side of said table positioned for engagement with the leading edge of a sheet deposited thereon for vertical stacking of said sheets on said table, an arm connected to said stop and extending generally downward therefrom, a pivot shaft journalled for rotation and secured to said arm for swinging of said arm and stop away from said table side, a spring connected to said arm for resiliently supporting said stop against said table side, and a lever arm secured to said shaft and having one end positioned in the path of movement of a part of the said reciprocating mechanism for engagement and displacement thereby for oscillating said arm and stop to and from said table side in timed relation to the reciprocation of said delivery mechanism.

4. In a printing press having a delivery table mounted for vertical movement and a reciprocating delivery mechanism for transporting sheets in a general horizontal direction onto said table and operatively connected to said table for lowering thereof as sheets are piled thereon, a stop at a side of said table positioned for engagement with the leading edge of a sheet deposited thereon for vertical stacking of said sheets on said table, an arm connected to said stop and extending

generally downward therefrom, a pivot shaft journalled for rotation and secured to said arm for swinging of said arm and stop away from said table side, a spring connected to said arm for resiliently supporting said stop against said table side, a resilient compressible bumper mounted adjacent said shaft for engagement with said arm in the position thereof against said table side, and a lever arm secured to said shaft for joint movement and extending therefrom into the path of movement of a part of said reciprocating mechanism for engagement and displacement thereby for oscillating said arm and stop to and from said table side.

5. In a printing press having a delivery table mounted for vertical movement, gripper means and a carrier arm therefor, a shaft journalled for rotation and secured to said arm for reciprocation of said gripper means for transporting sheets in a generally horizontal direction onto said table, a crank secured to said shaft and a rachet mechanism operatively connected to said table for lowering thereof and including a rachet arm connected to said crank for lowering of said table upon reciprocation of said gripper means; a jogger attachment comprising a second shaft journalled for rotation, a third arm secured to said second shaft and extending upwardly therefrom, stop means provided at the top of said third arm positionable against a side of

the said table for engagement with the leading edge of a sheet deposited thereon for vertical stacking of sheets, a spring connected to said third arm and normally holding it in position of said stop means against said table side, a resilient compressible bumper mounted adjacent said second shaft and compressed against said third arm in the last-mentioned position thereof, and a lever arm provided with clamp means adjacent one end thereof for securing to said second shaft for joint movement and extending therefrom into engagement with said rachet arm for displacement thereby.

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