

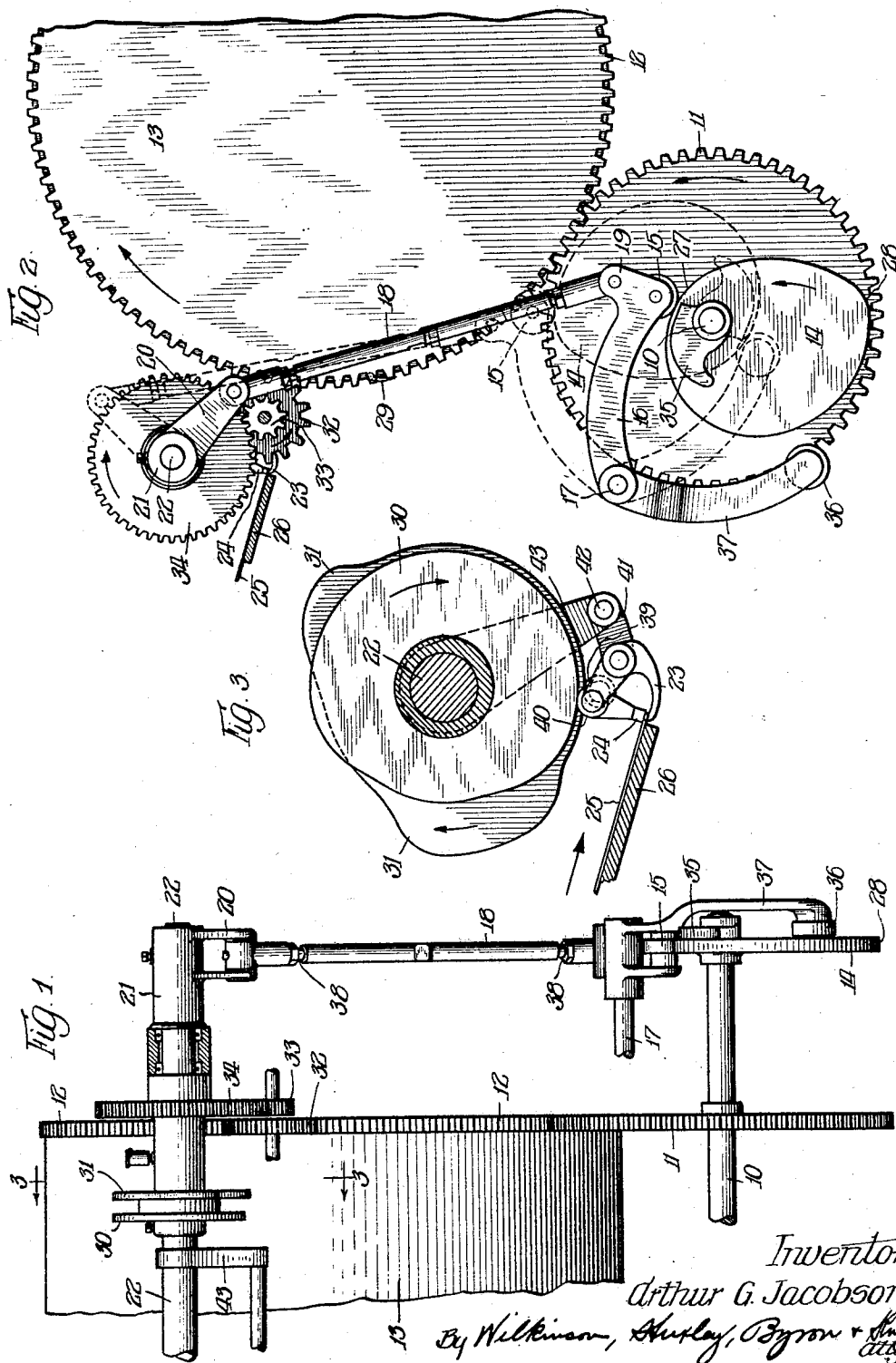
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TRANSFER GRIPPER OPERATING MECHANISM

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TRANSFER-GRIPPER-OPERATING MECHANISM

Application filed December 7, 1928. Serial No. 324,476.

This invention relates to operating mechanism for sheet feeding devices such as are used in printing press or other sheet handling machinery.

5 The invention is particularly adapted for use in connection with that type of sheet feeding apparatus known in the art as transfer or stop gripper mechanism whereby sheets are conveyed from sheet supporting means to sheet handling means such for example as an impression cylinder of a printing press.

10 In printing presses, it is highly important that accurate register of the sheets fed to the printing couple be maintained.

15 In order to maintain such register, it is therefore necessary to hold the sheets under positive control during the feeding operation so that no slippage can occur.

20 In connection with sheet transfer mechanism of the kind to which this invention relates, and in order to avoid any slippage of a sheet during its transfer movement from the sheet supporting, i. e. sheet registering means, to a printing member or the like, it is essential that the carrier of the transfer mechanism be at rest when it engages a sheet prior to its removal from the sheet supporting means, and that such carrier reach the surface speed of the printing member or the like at the time a sheet is being transferred thereto.

25 Therefore one of the principal objects of my invention consists in the provision of operating mechanism which assures proper function of the transfer mechanism by imparting to the sheet carrier an accelerated motion from the time it has engaged a sheet at the sheet supporting means to the moment when it transfers the sheet to the grippers of a printing member or the like.

30 A further object of my invention is to provide positive operating mechanism which is simple in construction and reliable in its operation.

35 Other objects and novel features of my improved operating mechanism will be apparent from the following description and appended claims.

40 In order to exemplify my invention, I

have illustrated one preferred form in the accompanying drawings, in which:

Figure 1 is a side elevation of the operating mechanism showing it as applied to a printing press;

Figure 2 is a front elevation of the operating mechanism seen from the right of Figure 1; and

Figure 3 is a section taken through line 3—3, showing the gripper operating cams.

According to the preferred form of my invention, I transmit motion to the cam shaft 10 through the intermediary of a gear 11 which meshes with the cylinder gear 12 mounted at one end of the impression cylinder 13. The shaft 10 carries an operating cam 14 which engages a cam roller 15 arranged at the free end of an operating arm 16 which latter is pivotally mounted on a shaft 17 or on the frame of the press.

Any desirable means, such as a compression spring or the like may be employed to urge the roller 15 against the cam 14. The reciprocating motion imparted to the operating arm 16 by the cam 14 is transmitted to the transfer gripper mechanism by means of a connecting rod 18, the lower end of which is pivoted in an extension 19 of the arm 16 while the upper end of the rod 18 is connected to a yoke 20 formed on the hub 21 which is rigidly mounted on the rock shaft 22 which latter supports the bracket whereon the grippers and associated parts of the transfer gripper mechanism are mounted.

55 The position of the transfer grippers 23 and cooperating gripper pads 24 as shown in Figs. 2 and 3 is that at which the grippers are at rest and engage the leading edge of the sheet 25 placed on the feed board 26, in other words, the roller 15 rides over the low portion 27 of the cam 14, and consequently no motion is transmitted by the rod 18 to the transfer grippers. As the cam 14 continues to rotate in an anti-clockwise direction as viewed in Figure 2, the roller 15 will ride towards the high portion 28 of cam 14 and the transfer motion of the transfer grippers will be accelerated accordingly, until the high portion 28 of the cam 14 is

reached by the roller 15, as indicated in broken lines on Figure 2, and at which time the transfer grippers 23 will have assumed cylinder speed and the sheet carried by said grippers will be presented to the cylinder grippers 29 for the purpose of transferring it thereto. The transfer grippers 23, however, after the sheet has been transferred to the cylinder grippers, will continue to move in an anti-clockwise direction until they have reached the end of their feeding stroke, when they will commence their return movement towards their position shown in Figure 2, at which time the roller 15 will again ride over the low portion 27 of the cam 14.

The operation of the cams 30 and 31, which are mounted concentric with respect to the rock-shaft 22 and which actuate the grippers 23 and pads 24, is described in a co-pending application, Serial No. 324,409, filed December 7, 1928, by J. R. Blaine. Preferably said cams are driven at a constant speed by the cylinder gear 12 through the intermediary of pinions 32, 33 and gear 34, in a direction opposite to the direction of rotation of the cam 14, and in opposite direction to the path of the sheets fed to the press.

It will be readily understood that any shock or vibration set up by the cooperation of cam 14 with the roller 15 during the transferring of a sheet from the transfer grippers 23 to the cylinder grippers 29 may be absorbed in any suitable manner such as for instance by means of coil springs or the like. With this purpose in view, I preferably provide an additional cam 35 which co-operates with a cam roller 36 mounted on an extension 37 of the operating arm 16. This preferred form of arrangement assures in a simple manner a positive operation of the arm 16 and the cooperating parts whereby motion is transmitted to the transfer grippers 23.

In order to provide for a convenient and accurate timing of the transfer grippers 23 relative to their operating cams 30 and 31, the connecting rod 18 is made adjustable in any suitable manner, such as for instance by means of right and left hand turn buckle thread connections formed intermediate its ends and indicated at 38 in Figure 1.

As will be seen from Fig. 3, the transfer grippers 23, and their cooperating gripper pads 24 which are carried by a bracket 41 pivoted at 42 to an arm 43 on the rock-shaft 22, are provided with cam rollers 39 and 40 respectively. The roller 39 rides over cam 31 whereby the grippers 23 are opened and closed, while the roller 40 cooperates with cam 30 to move the grippers and the pads 24 in and out of their operative plane for the purpose described in said co-pending application.

While I have chosen to illustrate and describe one preferred design of my transfer

gripper operating mechanism, I wish it to be understood that various modifications could be readily incorporated without departing from the spirit of my invention and therefore I intend to cover any such modified forms of construction that will come within the scope and essence of the appended claims.

I claim:

1. In a printing press, the combination of a printing member, a sheet support, sheet feeding mechanism to transfer a sheet from said support direct to said printing member and comprising a sheet transfer member having sheet engaging elements, operating means to transmit reciprocating motion to said sheet transfer member, and means to actuate said sheet engaging elements, said transfer member, its operating means and the means whereby said sheet engaging elements are actuated, moving at the same ratio of speed with respect to said printing member.

2. In sheet feeding mechanism, the combination of a sheet transfer member having sheet engaging elements, means for transmitting reciprocating motion to said transfer member, means to actuate said sheet engaging elements, and means to vary the relative position of said transfer member and the means for transmitting reciprocating motion thereto for the purpose of timing the operation of said sheet engaging elements.

3. In sheet feeding mechanism, the combination of a continually rotating element for transmitting accelerating motion to a sheet transfer member having a sheet engaging gripper and cooperating pad, continually driven cams for operating said gripper and rotating in opposite direction to said continually rotating element, and means to withdraw said gripper and pad from their operative plane.

4. In sheet feeding mechanism, the combination of a continually rotating element for transmitting accelerating motion to a sheet transfer member having a sheet engaging gripper and cooperating gripper pad, continually driven cams mounted concentrically with said transfer member for operating said gripper and rotating in opposite direction to said continually rotating element, and means to withdraw said gripper and pad from their operative plane.

Signed at Chicago, Illinois, this 30th day of November, 1928.

ARTHUR G. JACOBSON.