INK DOUBLE-ROLLING CONTROL
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This invention has reference to printing presses and, more particularly, to such types that include means whereby ink double-rolling of the form is effected, and it has for its primary object the provision of a novel attachment whereby such double-rolling may be automatically controlled incident to positive alternating-interruption and actuation of the air-separator and suction-feed mechanism.

More specifically, although not essentially, my invention aims to provide an attachment for automatically controlling the feeder arm-shaft of vertical printing presses associated with the air separator-suction valve means effective to transfer single sheets to be printed from the pile table to the printing cylinder.

Another object is to provide a novel means for the purpose specified which is adapted for easy operative connection to, or disconnection from, any convenient operating-shaft of the press to which it may be applied.

A further object is the provision of means of the typified character which is the essence of simplicity in construction, economical to manufacture, and capable of ready attachment to all conventional forms of generally known printing presses.

With the stated objects in view and others, as later on apparent, my invention consists of certain novel and useful features in the attachment-construction and combinations of its parts as hereinafter described and claimed; while a practical embodiment thereof is illustrated by the accompanying drawings.

In said drawings:
Fig. 1 is a broken perspective view of the upper frontal portion of a vertical printing press with my novel control attachment associated therewith.

Fig. 2 is a broken longitudinal section of the feeder arm shaft and my novel control therefor, drawn to a larger scale for the sake of clearness.

Fig. 3 is a fragmentary detail view through the separator-mechanism, taken as indicated by the arrows 3—3, on Fig. 1.

Fig. 4 is a side view of the control mechanism as actuated from one of the printing press oscillatory shafts.

Fig. 5 is a fragmentary view taken as indicated by the section-indicating line 5—5 on Fig. 4.

Fig. 6 is an end elevation of the attachment.

Fig. 7 is a sectional plan view taken on the plane indicated by the arrows 7—7 in Fig. 2; and Fig. 8 is a surface development of a cam device hereinafter fully explained.

Referring more in detail to the drawings, and particularly to Fig. 1, which depicts, somewhat diagrammatically, a portion of a vertical "Miehle" press, for example only; the numeral 1 designates the press side frames, 2 the type bed, 3 the impression cylinder, 4 the pile table, 5 a feeder arm, 6 a portion of the separator-frame, 7 another of the feeder-table arms, 8 one of the ink rollers, and 9 the feeder-arm shaft comprehensively; with the control or actuation of the latter my invention is more particularly concerned.

This feeder-arm shaft 9, as best appreciated from Fig. 2, is tubular and fitted internally with a feeder control-rod 10 having a valve 11 proximate one end to control air-separation and suction by way of a conduit or passage 12, lengthwise to the feeder arm 7, to the separator frame suckers 13 from a suitable hose 14, connecting with a conventional vacuum system, not shown; while a stop 15 is provided for limiting reciprocation of the valve 11 by coaction with a removable abutment element 16, in accordance with known practice. This feeder-arm shaft 9 is also provided at its outer end with a knob or grasp 17, ordinarily manipulated by hand; to intermittently actuate the suckers 13; while the numeral 18 designates the known feeder-arm locking means or latch; all of the foregoing constituting no part of the instant improvements but being briefly referred to, in order to give a better understanding as to the location and purpose of my invention.

In accordance with my invention, I attach to the side frame 1, by securing means 19, or to any other adjacent portion of the press, proximate the feeder arm control-rod knob or manipulator-grasp 17, a hanger bracket 20 having an enlargement 21 affording rigid bearing-support for a stub shaft 22, conveniently secured against axial and rotative movement as by a lock-screw 23.

On the shaft 22 is freely mounted a drum or grooved-cam 24, the inner end of which is formed with a series of equally-spaced notches or "pits" 25, with which sequentially co-act a spring-influenced stop or ball catch 26 mounted in the bracket enlargement 21 aforesaid. In the present instance the cam 24 is provided with four equally-spaced circumferentially-arranged "pits" 25 in direct alignment with the "rises" and "falls", or high and low points, 27, 28 respectively, of the groove in said cam; see Fig. 8.

Rigidly secured, as by set screws 29, to the outer end of the cam 24 is a ratchet 30, with which operatively-engages a pawl or dog 31, pivotally mounted at 32 to one arm of a bell-crank 32;
held in place axially of the stub shaft 23 by securing means 34. Pivotally coupled by an angular-head 35 to the other arm of the bell-crank 33 is a longitudinally-adjustable connecting-rod 36 to the remote end whereof is releasably-connected by a head-piece 37 to an actuator arm 38, releasably clamped to the free end of the delivery-shaft 39—for example only—of the printing press. From Figs. 1, 4 and 5, it will be noted that the actuator arm 38 is secured to the delivery-shaft 39 by means of rod or bolt 40 passed through the axial center of a boss 41 on said arm and screw threaded at 42 into the end of the delivery shaft. It will also be observed that the rod or bolt 40, beyond its head 43 is provided with an extension 44 and diametrical hole 45; while the actuator arm 38 is positively and operatively-connected to the delivery-shaft end by pins 46 engaging holes 47 in the boss 41 aforesaid.

20 Referring again to the releasable-connection, it will be seen the same consists of a stud 48 secured in the outer end of the actuator-arm 38, on which the head-piece 37 of the adjustable connecting-rod 36 is freely fulcrumed and held in place by a split pin 49. Now, it will be readily understood that, when desirable, the split-pin 49 may be withdrawn and the head-piece 37 slipped onto the bolt extension 44 with the split pin replaced through the diametrical hole 45, whereby upon the ratchet 30 and connecting rod 36 will be rendered inoperative, for a purpose later on again referred to.

Slidably mounted in a non-circular orifice 50 in the bracket enlargement 21, in parallelism with the stub-shaft 22, is a correspondingly-sectioned reciprocable, but non-rotative, bar 51, having a laterally-divided freely-rotatable roller 52 engaging in the groove of the drum cam 24. This bar 51 is formed with a round-section extension 53 on which is loosely-pivoted a fork-member 54 shaped at its outer part to snugly engage the feeder-control rod grasp 17; said member being restrained in such position by means of an appropriate ball catch 55 carried in an abutment collar 56, clamped in place by a set screw 57. When catch 55, it will be remarked, co-acts with one of two, or more, angularly-spaced notches or “pits” 58, 59, in the fork member hub 59; and it will be readily apparent that when said member is rotatively-moved from the operative position shown; or, to disengage the ball-catch 55 from the pit 58 so that it engages in the pit 59, the fork member 54 will be released from co-action with the control rod knob or grasp 17, whereby the latter may be manually manipulated in the known way. 60 is an adjustable union coupling interposed in the connecting-rod 36 whereby the length of the latter may be varied to regulate the throw of the bell-crank 33; as well as to adapt the attachment to differently dimensioned presses.

From the foregoing it is thought the operation of my ink-double-rolling intermediate each transfer of a sheet from the pile table by the suckers 13, in a manner well known to those acquainted with the art to which this invention appertains. Detachment of the part of the ratchet 37, 48 and transfer of the former to the extension 44 for reattachment thereon by the split pin 49, results in idling of the ratchet means 30 etc.; while movement of the fork member 54 as hereinafore set forth, entirely frees the feeder control mechanism from manual operation.

From the above description it will be apparent that I have produced a device embodying all the features of advantage pointed out as desirable, and while I have described and claimed a preferred form of said invention; it is to be understood that I reserve the right to make all changes properly falling within the spirit and scope of the following claims.

Having thus described my invention, what I claim is:

1. The combination with the suction feeder mechanism and an oscillatory shaft of printing presses of a control-attachment comprising automatically-activated cam and ratchet mechanism to reciprocate the feeder air valve, and means operatively-coordinating the cam and ratchet means to aid from the air valve rod, and means operatively-coordinating the cam and ratchet mechanism to the delivery shaft aforesaid, with capacity for idling relative thereto when desired, and a rockable coupler whereby the feeder air 155 valve is connected to or disconnected from the control-attachment.

2. The combination with the suction feeder mechanism and delivery shaft of vertical printing presses of a control attachment comprising automatically-activated cam and ratchet mechanism to reciprocate the feeder air valve rod, an angularly-movable coupler for connecting said mechanism to said from the air valve rod, and means operatively-coordinating the cam and ratchet mechanism to the delivery shaft aforesaid, with capacity for idling relative thereto when desired.

3. An attachment for printing presses of the type described comprising a bearing element for a stub-shaft and a slidable non-rotative member, a grooved cam freely mounted on the stub-shaft with ratchet means at one end, a lateral roller carried by the non-rotative member and engaging in the cam groove, a coupler element pivotally mounted on an extension of the non-rotative member, means whereby said pivotal coupler may be arrested in different angular positions relative to the axis of the non-rotative member, and pawling means co-acting with the ratchet aforesaid whereby the attachment may be operatively connected to a source of oscillatory motion.

4. An attachment for printing presses of the type described comprising a bearing element for a stub-shaft and a slidable non-rotative member, a grooved cam freely mounted on the stub-shaft with ratchet means at one end, a lateral roller carried by the non-rotative member and engaging in the cam groove, a coupler element pivotally mounted on an extension of the non-rotative member, means whereby said pivotal coupler may be arrested in different angular positions relative to the axis of the non-rotative member, and pawling means co-acting with the ratchet aforesaid and including an adjustment capable of varying the throw thereof, and means whereby said pawling means is operatively connectible to a source of oscillatory motion with capacity for idling when desired.
5. An attachment for printing presses of the type described comprising a bearing for a stub-shaft and a paralleling non-rotative reciprocative-bar, a grooved cam freely mounted on the stub-shaft with a ratchet at one end thereof, a lateral roller on the reciprocative-bar engaging in the cam groove, a fork-coupler pivoted on an extension of said bar with associated catch means whereby it may be arrested in different angular positions, a freely-mounted bell-crank secured on the free end of the stub-shaft having a pawl on one arm co-acting with the cam-ratchet, and means connected to the other arm of the bell-crank whereby the attachment may be operatively coordinated to a source of oscillatory motion.

6. An attachment for printing presses of the type described comprising a bearing for a stub-shaft and a paralleling non-rotative reciprocative-bar, a grooved cam freely mounted on the stub-shaft with a ratchet at one end thereof, a lateral roller on the reciprocative-bar engaging in the cam groove, said cam groove including regular undulations whereby the bar aforesaid is reciprocated alternately in reverse directions, a fork-coupler pivoted on an extension of said bar with associated catch means whereby it may be arrested in different angular positions, a freely-mounted bell-crank secured on the free end of the stub-shaft having a pawl on one arm co-acting with the cam-ratchet, a longitudinally-adjustable connecting rod pivotally connected to the other arm of the bell-crank, and an actuator arm at the free end of the connecting-rod whereby the latter may be operatively coupled to a source of oscillatory motion with capacity for idling when desired.

8. In a printing press of the kind including a feeder mechanism and an oscillatory shaft, a stub-shaft borne by said press, a cam mounted on said stub-shaft, means connecting said oscillatory shaft and cam to rotate the latter, and a reciprocatory bar operatively connected to said cam and engageable with an air valve of said feeder mechanism to control the suction of said mechanism.

9. In a printing press of the kind including a feeder mechanism and an oscillatory shaft, a stub-shaft borne by said press, a cam mounted on said stub-shaft, means connecting said oscillatory shaft and cam to rotate the latter, a reciprocatory bar operatively connected to said cam, and a coupler carried by said bar and operably engageable with an air valve of said feeder mechanism to control the suction of said mechanism.

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