Aug. 25, 1959 A. BÜTTNER 2,900,898

ARRANGEMENT FOR PRINTING WITH A NUMBERING FRAME IN A HIGH-SPEED CYLINDER PRESS

Filed Feb. 10, 1954 4 Sheets-Sheet 1

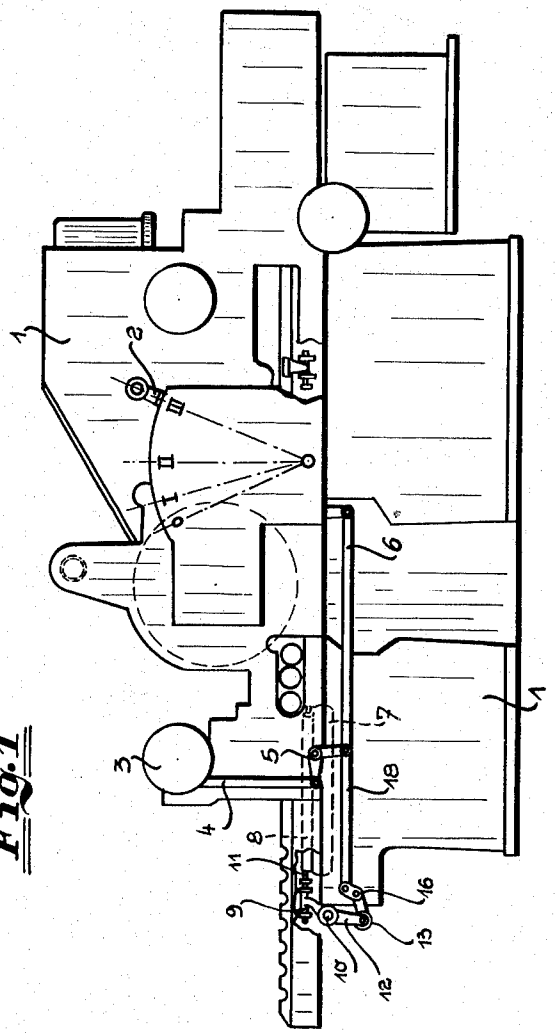


Fig. 1

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Fig. 2

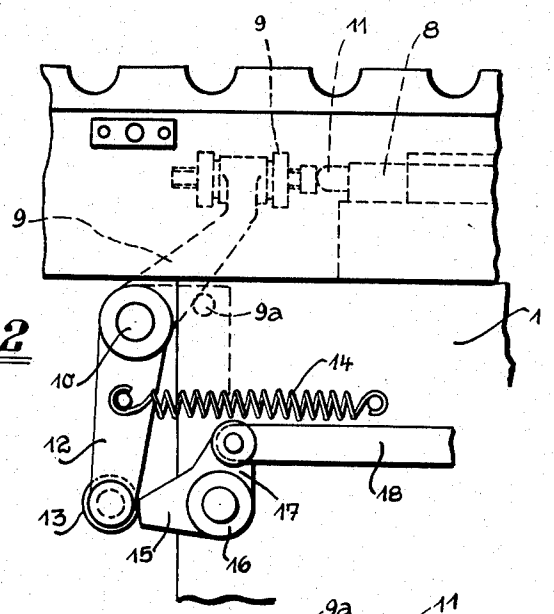
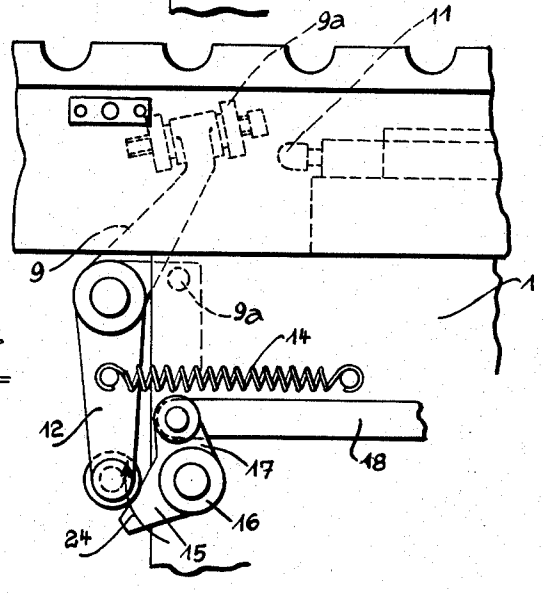


Fig. 3



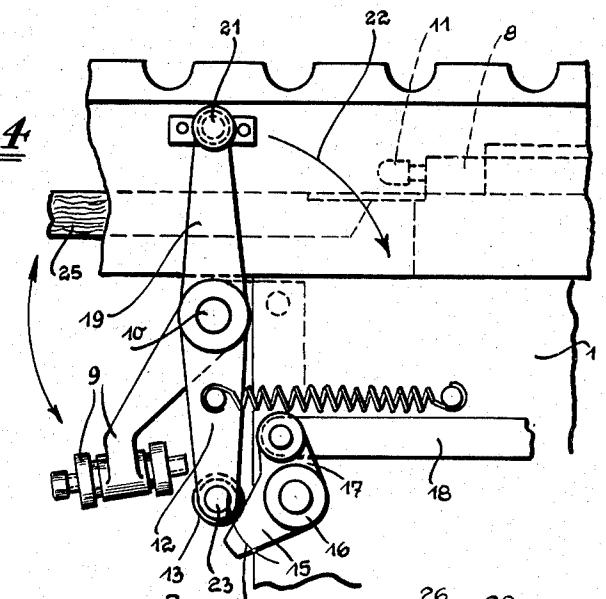
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Fig. 4



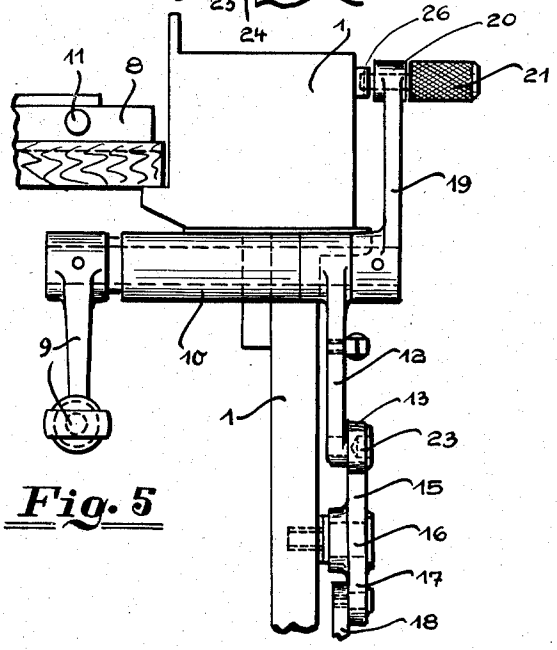


Fig. 5

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FIG. 6

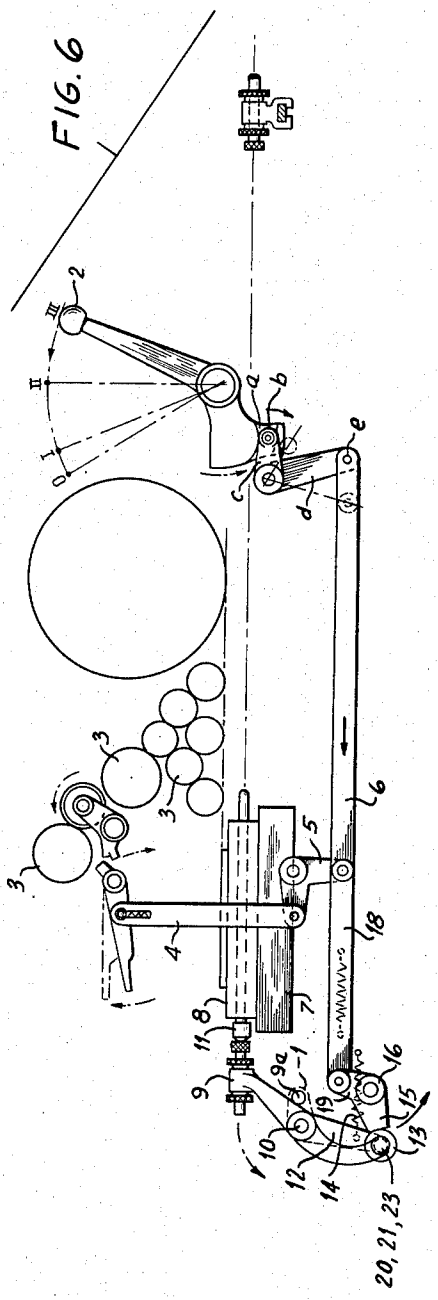
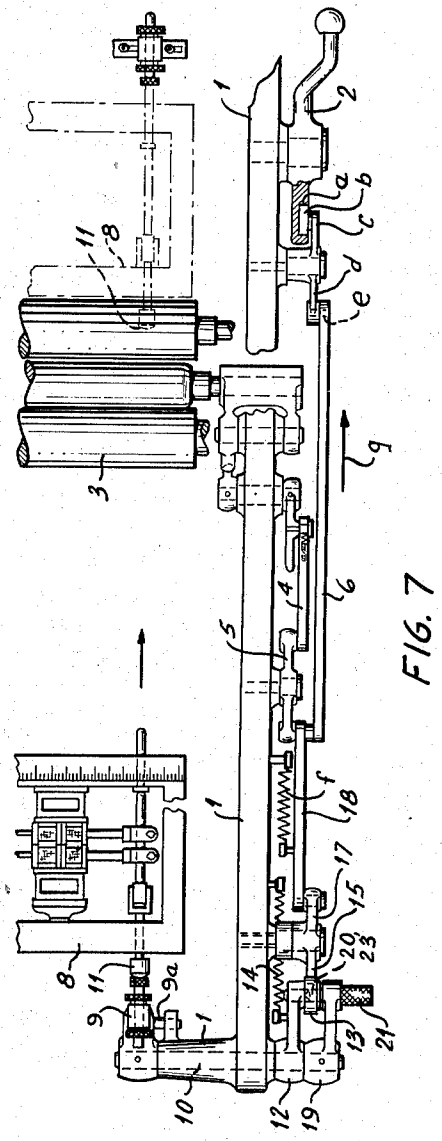


FIG. 7



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2,900,898

ARRANGEMENT FOR PRINTING WITH A NUMBERING FRAME IN A HIGH-SPEED CYLINDER PRESS

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Application February 10, 1954, Serial No. 409,411

Claims priority, application Germany February 13, 1953

1 Claim. (Cl. 101—76)

This invention relates to improvements in the control of the numbering mechanisms used in high-speed cylinder presses.

In known arrangements counting mechanisms enclosed in a numbering frame are jointly moved forward in any desired number after each printing operation. This joint advancing movement of the counting mechanisms is effected by a stop which is fixedly arranged on the machine frame. This results in a disadvantage which is that upon stoppage of the machine, the numbering mechanisms will, however, again be advanced without any further printing operation being effected; and therefore the numbering mechanisms must consequently be set back by hand before a further printing operation may take place. If the setting back of the numbering mechanisms is overlooked, this may have a particularly undesirable effect during continued printing, since it may render necessary a partial repetition of the printing.

This disadvantage of the prior art devices for printing with numbering frames in high-speed cylinder presses is obviated according to the invention by the fact that the stop device disposed in the path of movement of the numbering frame for effecting the advancement or displacement of the numbering mechanisms, are movably arranged on the machine frame and are coupled with the lever for starting and stopping the printing operations, so that the stop device can positively be moved out of the path of movement of the numbering frame or the type bed carrying the latter when printing is stopped. In this manner, an advance of the numbering mechanisms after the stopping of a printing operation, even when the machine continues to run idle and without effective printing, is prevented and a continuous advance of the numbering mechanisms, upon continuation of the printing operations, is assured without any manual action in the shift mechanism of the numbering mechanisms.

In one practical embodiment of the invention, the stop device for effecting the joint advance of the numbering mechanisms is pivotally arranged in the region of one end of the path of movement, or in the region of the reversal of movement, of the numbering frame, preferably on one end of a shaft which is mounted for rotation in the machine frame and which carries at the other end a pivoted lever adapted to co-operate directly or indirectly with a movable member connected to the control lever. Such a co-operation between the pivoted lever for pivoting the stop and the control lever of the high-speed press may, for example, be effected by an arrangement in which the pivoted lever is spring-loaded and carries at its end a roller which bears against a cam, elbow lever or the like, rotatably mounted on the machine frame and hingedly connected by a rod or bar to the control lever, the movement of the control lever being transmitted by the said cam or like element to the pivoted lever and thus to the pivot shaft and the stop for the advance of the numbering mechanisms.

The result achieved in this manner is that the shifting of the numbering mechanisms can take place only when

the control lever of the machine is adjusted to the "printing" position. When the machine is running without printing, the control stop for the movement of the counting mechanisms will be swung out of the range of the end of the path of movement of the numbering frame, so that no further advancement of the numbering mechanisms will take place.

For a better understanding of the invention, an embodiment thereof will now be described, by way of example, with reference to the accompanying drawings, in which:

Fig. 1 is a diagrammatic elevational view of a high-speed press according to the invention;

Fig. 2 is a detail showing on a larger scale, the numbering frame stop and associated members in an operative position;

Fig. 3 is a detail view similar to Fig. 2 but with the stop in an inoperative position;

Fig. 4 shows the stop arrangement in conjunction with a supplementary hand lever for rocking the stop downwardly;

Fig. 5 is an end view corresponding to Fig. 4 but with certain parts displaced for explanatory purposes;

Fig. 6 is a side elevational view of the lever arrangement used in the invention; and

Fig. 7 is a plan view of the lever arrangement shown in Fig. 6.

Referring now to the drawings therein as seen best in Fig. 1 is illustrated a high-speed cylinder press 1 conventionally equipped with a single lever control mechanism, the latter including a setting lever 2 adapted to be moved successively to positions I, II and III, from a position O, in which latter position the machine is switched off. A high-speed cylinder printing press of this type is well known and disclosed in U.S. Letters Patent No. 1,871,838 dated August 16, 1932. In position I, the machine is idling, i.e., without paper, and the feeding of the paper is switched on by advancing the lever 2 to the position II. By the forward movement of the setting lever 2 to position III, the printing operation is then started and simultaneously the supply of ink from a doctor roll is initiated, and also the removal of the sheets. In order to start the ink supply in this position of the lever 2, the inking mechanism shown at 3 is operatively coupled by a lever system 4, 5 and 6 to the setting lever 2. A reciprocating type bed 7 carries conventionally a numbering frame 8 carrying a numbering mechanism of any conventional type (such as shown in U.S. Patent No. 2,652,772), from which there projects a shift rod 11 adapted to serve for the advance of the numbering frame 8. A stop 9 on the machine frame may be associated with the shift rod 11, and the stop 9 is arranged to actuate the shift rod 11 upon travel of the reciprocating type bed into the front reversal position, thereby to advance by one unit the numbering frame 8 connected to the shift rod.

In order to prevent the numbering mechanisms being advanced by the stop 9 when the lever 2 is set in position I or II and the type bed 7 is thus already in motion although no printing is taking place, the stop 9 according to the invention is mounted so as to be capable of being swung out of the path of the type bed 7 with the numbering frame 8 and the shift rod 11. Consequently, the stop is so arranged that it is only brought into a position of registry with and for influencing the shift rod 11 when the setting lever 2 is shifted to position III.

For this purpose, the stop 9 is pivoted to a pivot shaft 10, oscillatably mounted in the machine frame, the shaft 10 having at one end a portion which projects from the machine frame and which carries, in a freely rotatable manner, a lever arm 12. The lever arm 12 is provided at its free end with a roller 13 which is urged against the arm 15 of an elbow lever or cam 16, by means of a

spring **14** acting on the arm **12**. The other arm **17** of the elbow lever **16** is coupled by a rod **18** to the control lever **5** for starting the inking mechanism and thence to setting lever **2** (see Figs. 6 and 7).

Adjacent the arm **12** there is rigidly connected to the shaft pivot **10** a lever **19** carrying at its free end a locking pin or index pin **20**. The locking pin **20** is adapted to be retracted by a handle **21** and is preferably loaded by a spring. The locking pin **20** is adapted to be engaged in a recess **23** formed in the arm **12**, or may alternatively be engaged in a depression **26** formed in the machine frame. Consequently, the lever **19** may be selectively locked to the machine frame **1** or, after being pivoted through about 90°, coupled to the arm **12**.

Thus, by engagement of the pin **20** in the recess **23** of the arm **12**, the latter can be coupled rigidly to the shaft **10**.

The setting lever **2** has a guide member *b* which slides in a guide-way *a* of a crank *c*, *d*. The lower arm *d* of the crank is operatively connected to a draw bar **6** which is pulled by means of spring *f* (Fig. 7) continuously in the direction of arrow *g* so that guide member *b* is always in contact with the upper contour wall of the guide-way *a*. This guide-way defines the movement of bar **6** and the levers operatively connected therewith.

It follows from the aforesaid that the swing lever **2** which sets into motion the printing press, will only in position III actuate abutment or stop member **9** for assuming the position of registry with shift rod **11** of the numbering mechanism and will remove said stop member or abutment **9** out of the path of said shift rod in any of the other positions of setting lever **2**. Stop member **9** is therefore journaled on the machine frame to perform rocking movements and is coupled via a plurality of levers **15**, **17**, **18** and **6** with swing lever **2**.

If, when the arms **12** and **19** are coupled together, the inking mechanism **3** is set in operation by moving the setting lever **2** into the printing position III, the arm **15** of the elbow lever **16** will be swung outwardly through the linkage **4**, **5**, **6** and will also carry with it, the roller **13**. Consequently, by the rocking movement of the arm **15** in the direction of the arrow **24** (Figure 4), the arm **12** with the arm **19** and thus also the shaft **10**, are rotated to such an extent through the roller **13** (Fig. 2) that the stop **9** is brought into an operative position in which it is in registry with and can influence the shift rod **11**. In this operative position, the stop **9** bears on a pin **9***a* (Figure 2), which limits the rocking movement of the stop and secures the latter in the operative position.

When in this coupled position of the parts **12** and **19** the setting lever **2** is brought back from the position III into the position II, the stop **9**, because of the opposite direction of rotation of the shaft pivot **10**, will be brought back to the inoperative position (Figure 4) under the influence of the loading of the arm **12** by the spring **14**, and in this inoperative position the stop is no longer in registry with and is unable to influence the shift rod **11** of the numbering mechanisms.

In the operative position, the stop **9** is located in the path of the forme-inserting plate **25**. In order to free this path, the stop pin **20** is disengaged from the recess **23** in the arm **12**, and the pin is locked in the depression **26** of the machine frame after the arm **19** which carries the pin has been swung through about 180°. In this manner, the stop **9** is swung downwardly and frees the path of the forme-insertion plate **25** (Fig. 4).

Before the machine is again set in operation, the lever **19** is then coupled to the arm **12** in the manner already described.

Various changes and modifications may be made without departing from the spirit and scope of the present invention and it is intended that such obvious changes and modifications be embraced by the annexed claim.

Having thus described the invention, what is claimed as new and desired to be secured by Letters Patent is:

An arrangement for numbering sheet material in a high-speed bed and cylinder printing press comprising, a machine frame, a reciprocating bed in said machine frame, an inking mechanism, a reciprocating numbering mechanism, link means for indexing said numbering mechanism in each cycle of operation, a numbering frame carrying said numbering mechanism mounted on said bed, a shift rod on said numbering frame reciprocating with said numbering mechanism, a pivot shaft oscillatably mounted in said machine frame, a stop pivoted to said pivot shaft and movable to a first position into engagement with said shift rod for actuating said numbering mechanism upon travel of said bed to a front reversal position and when said stop is oscillated about its pivot in one direction and manually movable to a second position out of registry with said shift rod when said pivot shaft is oscillated in a reverse direction out of the path of said bed, a lever arm carried by said pivot shaft having a free end provided with a roller, lever means connected to said inking mechanism for actuating said inking mechanism, spring means connected to said lever arm urging said roller into engagement with said lever means, a locking lever rigidly connected to said shaft, locking means for locking said locking lever to said lever arm to position said stop in engagement with said shift rod for actuating said numbering mechanism.

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