July 2, 1957 L. COAKLEY 2,797,610

INDICATOR FOR PRINTING PRESS

Filed Feb. 21, 1955

FIG. 1.

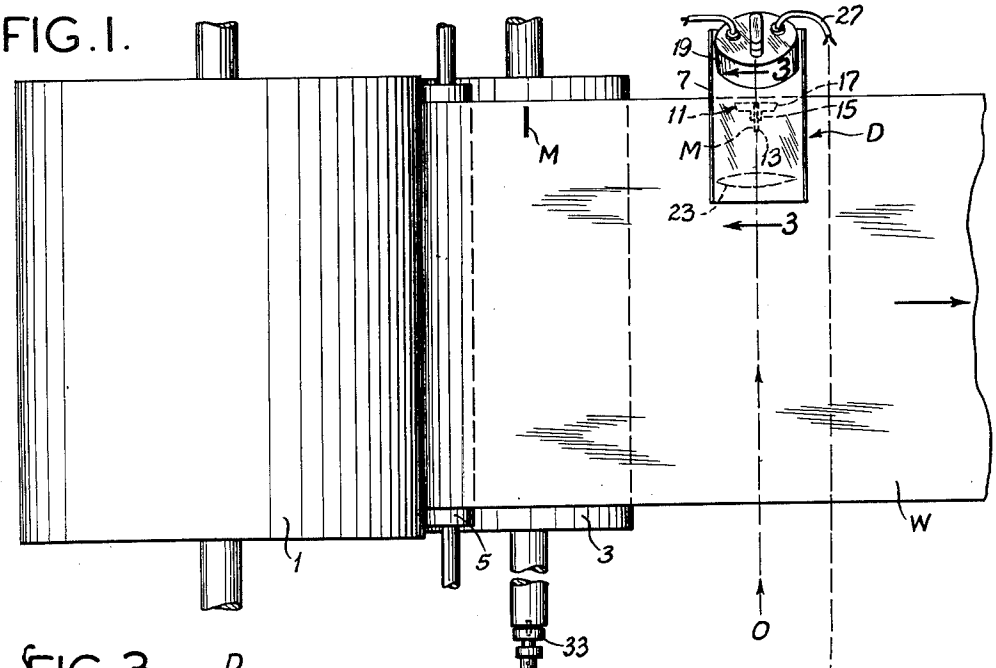


FIG. 3.

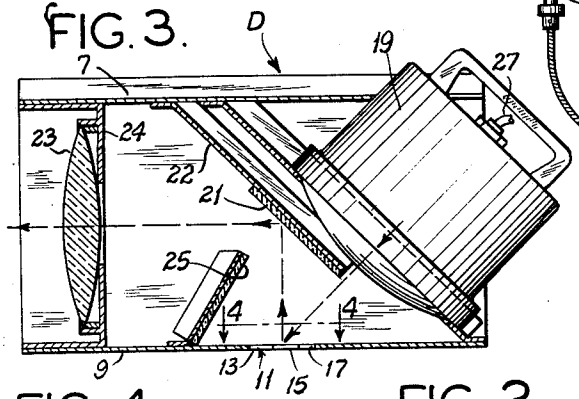


FIG. 4.

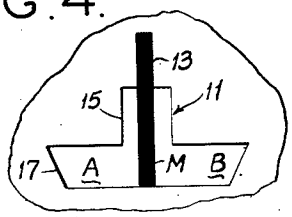


FIG. 5.

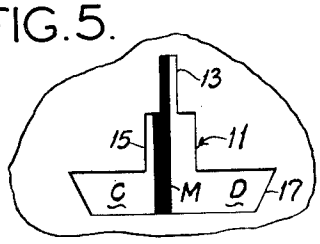
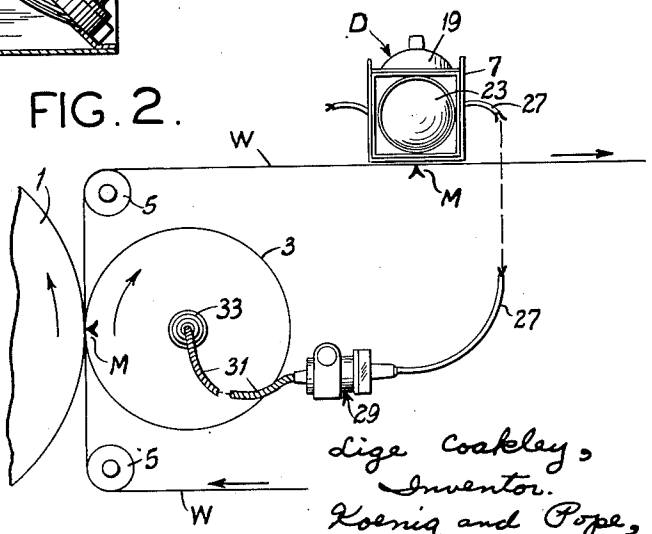


FIG. 2.



Lige Coakley, Inventor.
Koenig and Pope, Attorneys.

United States Patent Office

2,797,610

Patented July 2, 1957

2,797,610

INDICATOR FOR PRINTING PRESS

Lige Coakley, Pepperell, Mass., assignor to Bemis Bro. Bag Company, St. Louis, Mo., a corporation of Missouri

Application February 21, 1955, Serial No. 489,461

4 Claims. (Cl. 88—14)

This invention relates to indicators for printing presses, and more particularly to an impression spacing indicator for an offset press.

Among the several objects of the invention may be noted the provision of means for visually indicating while the press is in operation the accuracy of the longitudinal spacing of impressions made on a continuously travelling web of paper in a printing press, and particularly an offset press; the provision of means of this class which not only indicates any error in impression spacing, but also indicates the direction and magnitude of the error; and the provision of means of this class which is economical to install and operate and which is convenient and reliable in operation. Other objects and features will be in part apparent and in part pointed out hereinafter.

The invention accordingly comprises the constructions hereinafter described, the scope of the invention being indicated in the following claims.

In the accompanying drawings, in which one of various possible embodiments of the invention is illustrated,

Fig. 1 is a semidiagrammatic plan view of an offset press equipped with means of this invention;

Fig. 2 is a view in elevation of Fig. 1, parts being broken away;

Fig. 3 is an enlarged vertical section taken on line 3—3 of Fig. 1;

Fig. 4 is an enlarged horizontal section taken on line 4—4 of Fig. 3, illustrating the indication given by the means of this invention when the spacing of the impressions is proper; and,

Fig. 5 is a view similar to Fig. 4 illustrating the indication given when the impression spacing is inaccurate.

Corresponding reference characters indicate corresponding parts throughout the several views of the drawings.

Referring to the drawings, there is indicated at 1 a conventional blanket cylinder of a conventional offset press and at 3 a conventional impression cylinder of the press, for printing impressions (not shown) at intervals on a continuous web of paper W. For example, the web W may be a paper web from which blanks are later to be segmented for the manufacture of bags. In such case the impression printed thereon will, for example, be a brand. The web is guided between the blanket cylinder and the impression cylinder by guide rolls indicated at 5. It will be understood that in the operation of an offset press there is a drive (not shown) for the web W; also that an ink impression is made on a blanket on the blanket cylinder, and the impression is transferred to the web W as it passes between the blanket cylinder and the impression cylinder. During the operation of the press, the spacing of the impressions on the web may become inaccurate, for one reason or another, as is known. This invention provides means enabling a pressman readily and frequently to determine whether any error has developed in the spacing of the impressions printed on the web without stopping or slowing down the press, and, if there is any error, to determine the direction

and the magnitude of the error so that without undue delay he may make suitable correction in the operation of the press.

Each impression printed on the web includes a reference mark M printed in black ink, for example. As shown in Figs. 1, 4 and 5, each reference mark M is constituted by a narrow rectangle located adjacent one edge of the web and extending laterally of the web. Fig. 2 indicates the location of the reference marks by arrowheads which are also designated M. If there is any error in the spacing of the impressions, this error will also occur in the spacing of the reference marks.

A scanning device D is provided above that marginal part of the web W which bears the reference marks M. The device D is located forward of the cylinders 1 and 3 in the direction of web travel. It comprises a box 7 having a bottom 9 just above the web and provided with a scanning opening generally designated 11. As shown best in Figs. 4 and 5, the opening 11 is of general T-shape, having a relatively narrow stem portion 13 extending lengthwise of the box and laterally with respect to the web, a wider stem portion 15 continuing from the narrow portion, and at the end of portion 15 a crosshead portion 17 extending transversely of the box and longitudinally with respect to the web. The width of the narrow portion 13 corresponds at most to the width of the reference marks M. The total length of the opening 11 laterally of the web corresponds at most to the length of the reference marks M.

The box 7 is located with the scanning opening 11 aligned in respect to the path of travel of the reference marks. A stroboscopic lamp 19 is provided at the outer end of the box in angled position to direct flashes of light downward through the scanning opening 11 onto the web W. A mirror 21 is provided in the box for reflecting an image of the opening 11 including the portion of the web under it, along with any mark M that may be in position under the opening. The image is projected toward the other end of the box 7 and to the eye of an observer station at a location on the side of the press opposite the box, such as indicated at O in Fig. 1. A magnifying lens 23 is provided in a support 24 within the box. A second mirror 25 is mounted on the bottom of the box in front of the scanning opening 11 so as by reflection to intensify the effect of the flash of the stroboscopic lamp on the opening and also to shield the observer's eye from direct flash from the bottom of the lamp. The eye is also shielded from direct flash from the top of the lamp by a support 22 for the mirror 21.

The stroboscopic lamp 19 is connected in a circuit indicated at 27 including a conventional contactor 29 adapted to close the circuit 27 once each revolution of the impression cylinder 3. The contactor is a commercially available item, such as, for example, a Type 1535-B contactor sold by General Radio Company of Cambridge, Massachusetts. The contactor is driven from the impression cylinder through a flexible shaft 31 coupled to the end of the impression cylinder by means of a magnetic coupler 33.

In the case of offset printing, the scanning device D is located to scan the first mark M forward of the impression being printed. The timing of the contactor is such that the flashes of the stroboscopic lamp are phased to occur at the times of arrival (as shown in Fig. 4) of the successive reference marks M symmetrically in the part 13 of the slit 11, assuming correct spacing of the impressions (including the marks M) on the web. The result will be an image repeatedly presented to the eye, as shown in Fig. 4, wherein two symmetrically positioned L-shaped bright portions A and B are apparent to the eye. The speed of the press is such that a pressman, viewing the mirror 21 through lens 23, sees a succession of

individual images. If for any reason the spacing deviates from the predetermined correct amount, there will be a phase shift between the time of a flash and the arrival of a reference mark at **13**. If the shift is in the nature of a phase lag for arrival, the resulting image will be as indicated in Fig. 5, wherein unsymmetrical L-shaped images C and D occur, the one in the direction of the phase lag being single-stepped and smaller than the other. Obviously, if the same degree of phase shift were of a leading nature for the time of arrival of M at **13**, then the shapes of the right-hand and left-hand images C and D in Fig. 5 would be reversed. The steps provided at **15** facilitate the making of proper correction in the operation of the press machinery which controls the movements of the various parts and the web W. They may also be indicative of the acceptable tolerance of error. Thus when either image C or D in Fig. 5 loses altogether its L-shaped characteristics, this fact may be employed as a signal that the maximum tolerance of error has been reached.

In view of the above, it will be seen that the several objects of the invention are achieved and other advantageous results attained.

As various changes could be made in the above constructions without departing from the scope of the invention, it is intended that all matter contained in the above description or shown in the accompanying drawings shall be interpreted as illustrative and not in a limiting sense.

I claim:

1. A scanning device particularly for use in a printing press for printing impressions at spaced intervals on a continuous web, each impression including a reference mark, for indicating the accuracy of the spacing of the impressions while the press is in operation, comprising a box having a scanning opening in its bottom and adapted

to be positioned on the press with the opening positioned in registry with the path of travel of the reference marks, a stroboscopic lamp at one end of the box angled to direct a flash of light through the scanning opening, a mirror in the box angled to reflect light from the opening in the direction toward the other end of the box, said mirror being carried by a support in position extending down from the top of the box in front of the lamp for cutting off direct flash from the top of the lamp, a magnifying lens at said other end of the box, and a second mirror mounted on the bottom of the box on the side of the opening toward the lens and angled in the direction toward the opening for intensifying the effect of the flash on the opening and to cut off direct flash from the bottom of the lamp.

2. A scanning device as set forth in claim 1 wherein said scanning opening has portions which are of different dimensions in the direction transversely of the box.

3. A scanning device as set forth in claim 1 wherein said scanning opening is of T-shape with its stem portion extending lengthwise of the box and its crosshead portion extending transversely of the box.

4. A scanning device as set forth in claim 1 wherein said scanning opening is of T-shape having a first stem portion and a second and wider stem portion continuing from the first and a crosshead portion at the end of the second stem portion, the stem portions extending lengthwise and the crosshead portion extending transversely of the box.

References Cited in the file of this patent

UNITED STATES PATENTS

1,804,453	Basseches	May 12, 1931
2,138,096	Hamlin	Nov. 29, 1938
2,220,736	Stackbarger et al.	Nov. 5, 1940
2,524,926	Peery	Oct. 10, 1950