

Dec. 22, 1936.

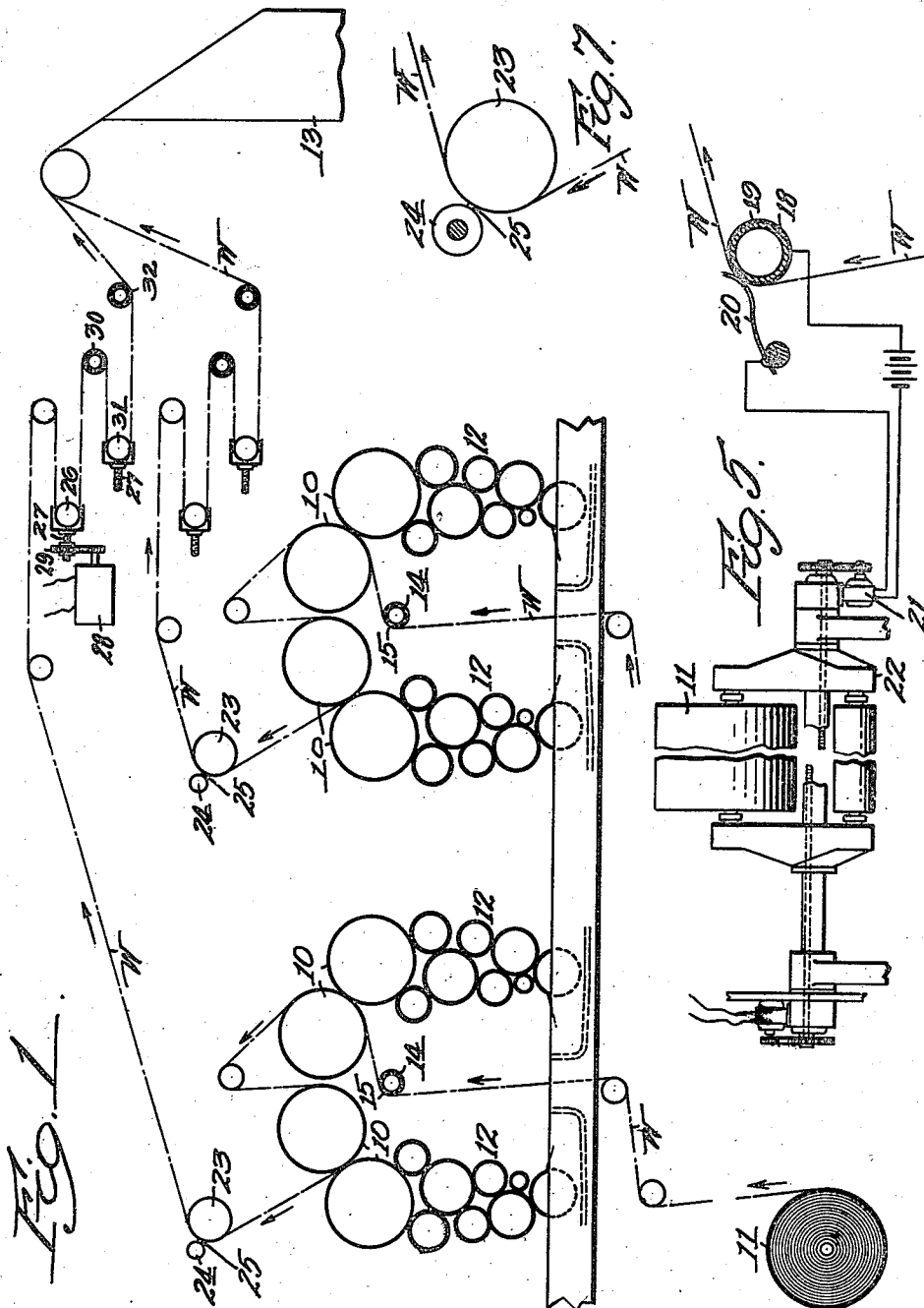
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2,065,000

WEB REGISTERING DEVICE

Filed Feb. 28, 1931

2 Sheets-Sheet 1



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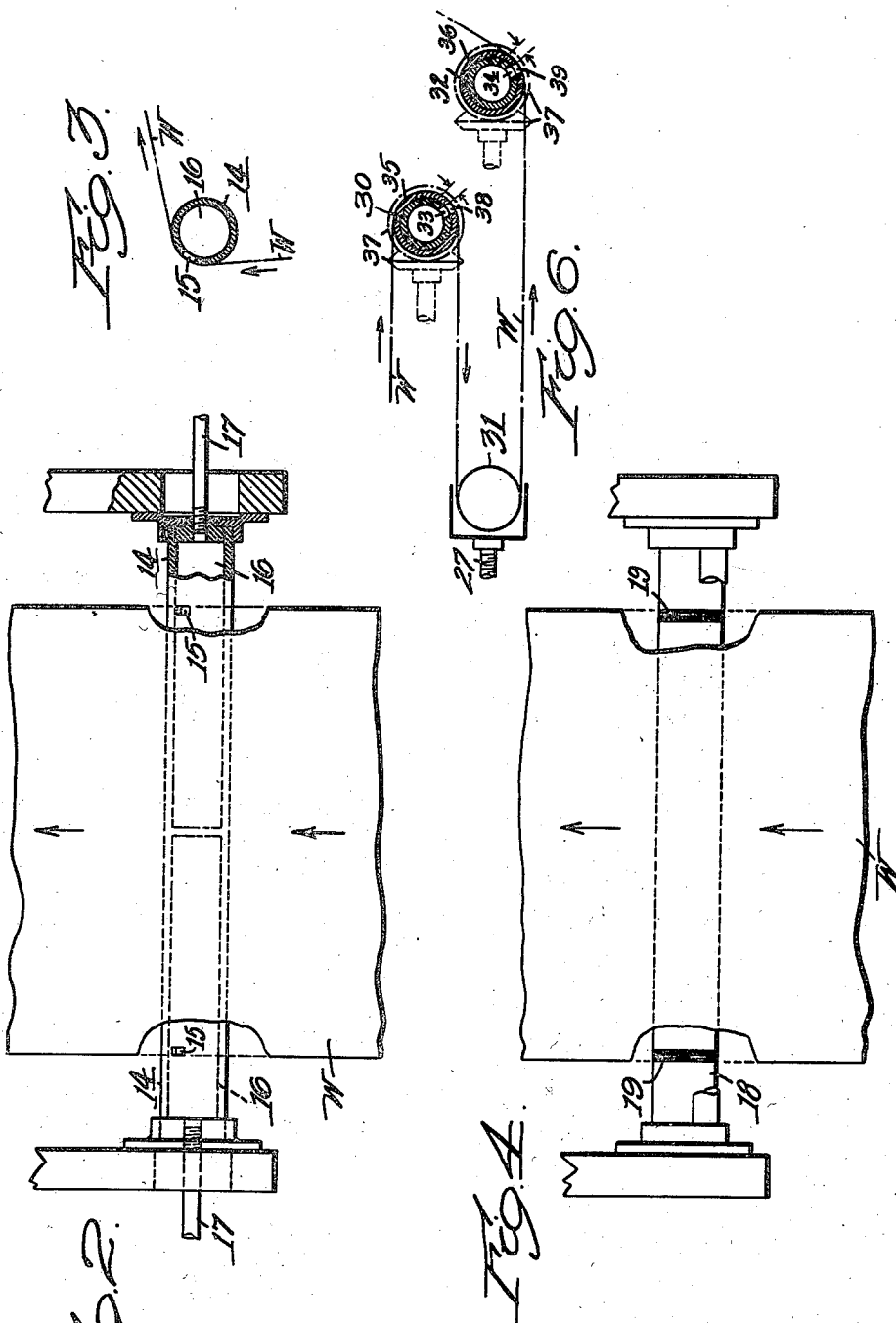
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WEB REGISTERING DEVICE

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2 Sheets-Sheet 2



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UNITED STATES PATENT OFFICE

2,065,000

WEB REGISTERING DEVICE

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Application February 28, 1931, Serial No. 519,176

3 Claims. (Cl. 271-2.6)

This invention relates to the end register of the printed sheets in a printing press and it is particularly adapted for newspaper printing.

The principal objects of the invention are to provide means for end registering the web so that each page will be printed exactly in the center of its sheet and a plurality of webs can be end registered alike so as to bring them to the folder in registration, and to provide automatic means for controlling the same.

Other objects and advantages of the invention will appear hereinafter.

Reference is to be had to the accompanying drawings, in which

Fig. 1 is an end view of two decks of a printing press, shown diagrammatically and having certain parts in section to illustrate features of this invention;

Fig. 2 is a plan, partly in section, of an embodiment of this invention in which the operation is pneumatic for side register;

Fig. 3 is a transverse sectional view of the stationary pipe or cylinder shown in Fig. 2;

Fig. 4 is a view similar to Fig. 2 showing an electric side register;

Fig. 5 is a transverse sectional view of the same and showing the reel and the wiring for accomplishing the desired result;

Fig. 6 is a sectional view of the end registering device, and

Fig. 7 is an end view, partly in section, of a perforating couple used in connection with the end registering mechanism.

When a number of sheets are to be printed it is important that these sheets be registered endways so that in the completed product the printed matter is always placed in the same position, each page thus producing a pleasing appearance. It is a very easy matter for a sheet to get out of register endways, especially when there is a long lead from the printing couple to the folding machine. In this case a slight variation in tension changes the tautness of the web and the amount which it is stretched. This disturbs the end register.

According to this invention automatic means is provided for controlling the sheet so that the finished product will always be in register endways so that two or more webs can be run into the folder in perfect end register with each other. This is done automatically without any action on the part of the operator.

The invention is shown as applied to a well known type of printing press comprising the printing couples 10, web roll 11, inking mecha-

nism 12 and folding machine 13. The web is led from the web roll 11 over the usual guide rolls and over a stationary pipe 14 which, in the form shown in Figs. 1, 2 and 3 is provided with perforations 15 just at the edges of the web W. This pipe is provided with two chambers 16 separated entirely from each other and each one communicating with one of the perforations 15. Each of the chambers is provided with a pipe 17 through which air is exhausted from it. These two perforations are so located that they are both covered by the web W when it is in register. Whenever it gets out of side register one or the other of these openings 15 is exposed. Means is provided, not shown herein, whereby the admission of air to one of the chambers 16 will shift the web roll in the proper direction to bring the web roll into register. This is done automatically without any attention on the part of the operator.

In the form shown in Figs 4 and 5 this means is electrical. In this case a stationary pipe 18 is provided in place of the pipe 14 and it has on top a pair of metal contacts 19 near the ends which are covered by the web W normally as in the other case. There is a contact 20 on each side, which normally is held out of contact with the contacts 19 by the edges of the web, but if the paper moves to one side or the other, one of these pairs of contacts will be completed.

The circuit indicated in Fig. 5 will then be made to a motor 21 which is connected with the web roll reel 22 by proper gearing, or screw, connected with its shaft so as to move the reel to the right or left in accordance with which contact 19 is completed. It will move it only so far as to bring the web over into position to insulate both pairs of contacts and the motor will stop. Of course, in this case there can be a motor on each side as indicated. Also there can be a system of wiring which will operate one motor either in one direction or the other, according to the line which was connected up by the contacts 19 and 20. In either case side register is secured and maintained at all times by very little operation of the motor or motors.

For the purpose of securing end register a perforating couple, consisting of a pair of cylinders 23 and 24, is provided, one of them having a perforating punch 25 at the edge of the web where it will provide perforations along the edge of the web at stated distances apart.

The web passes over a compensating roll 26 which is adjustable by means of a screw 27 and a motor 28 having a gear on its shaft operating a gear 29 which is screw-threaded to move the

screw 27 in one direction or the other according to the direction of rotation of this motor. The web then passes over a stationary pipe 30, movable compensating roll 31, and another stationary pipe 32. Both of these pipes are provided with slots 33 and 34 respectively and on each pipe operates a registering roll 35 and 36 operated by gearing 37 from the press and rotating in proportion to the speed of the press. These registering rolls are placed close to the former 13 of the folding mechanism and each is provided with a perforation 38 and 39 respectively. The perforations are so placed that when the paper is led around the compensating roll 31 and is in perfect register in the folder, the rear perforation in the paper is just behind the perforation 38 and the front perforation of the paper is just in front of the perforation 39. Any shifting of the web forward would cause the rear perforation of the paper to coincide with the perforation 38 at the time that perforation registers with the slot in the stationary pipe 30. This admits air into the exhausted chamber of the pipe 30 which, by suitable means, not shown, will operate the motor 28 and adjust the compensator roll 26 and move it to the left. This moves the rear perforation of the paper to the rear to close the perforation in the roll 35 and compensates for any tendency of the paper to run ahead. In a similar way any tendency of the web to slip back causes the front paper perforation to register with the perforation in the registering roll 36 at the time that the perforation thereof coincides with the slot in the pipe 32. This exhaustion of the chamber of this pipe in the registering roll is used in the same way to operate the motor 28 in the opposite direction. This corrects any tendency of the web to slip back. A set of registering means at the same time is shown in the other deck and therefore the two webs come into the folder in perfect end registration.

It will be seen therefore that all the webs are registered perfectly sideways and that they are all registered also endways so that they all come into the folder alike. The printed matter is in the center of each sheet and the webs are folded together in proper registration with each other. All this is performed automatically and without any attention on the part of the operator and the motors or other devices for moving the web

roll or the web itself have to be operated only a little at each time.

Although I have illustrated and described only two forms of the invention I am aware of the fact that other modifications may be made therein by any person skilled in the art without departing from the scope of the invention as expressed in the claims. Therefore I do not wish to be limited in this respect but what I do claim is:—

1. In an end registering device, the combination of a forward and a rear hollow registering roll spaced apart, each having a perforation, the interior of said rolls being adapted to be exhausted, for carrying a web having perforations at intervals just far enough apart so that when the web is in proper register a forward perforation is located beyond the perforation in the forward roll and rearward perforation in the web is located just back of the perforation in the rearward roll, means for adjusting the length of the web between said rolls, and means whereby the web will be shifted forward or back if either of said perforations in the web comes into registration with a perforation in one of the rolls.

2. The combination with a printing machine and a folding mechanism, of an end registering device located between the printing machine and the folding mechanism, two stationary hollow members, each connected with air exhausting means, and each having a slot through its wall, and a hollow registering roll rotatably mounted on each member and each having a perforation, the two perforations being at a distance apart just short of the length of a sheet to be printed on a web having perforations and adapted to register with said perforations in the rolls, when the web gets out of end register.

3. In a web fed printing press, the combination with a web roll, of a hollow stationary pipe having a perforation, a roll rotatably mounted on said pipe and constituting a roll for receiving the web and having a perforation, said pipe being under reduced air pressure, whereby, when the web turns the roll to a position in which the two perforations register, air will be permitted to enter the pipe through the two perforations, if they are not sealed outside the pipe.

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