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METHOD AND APPARATUS FOR PREVENTING SLIPPING IN PRINTING

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Fig. 1.

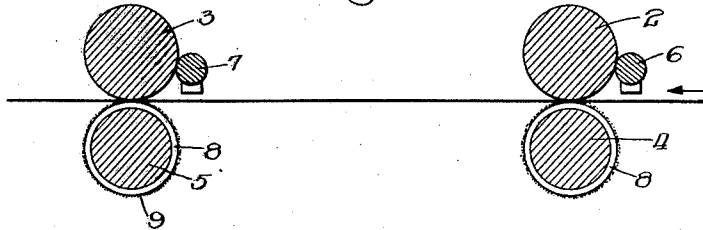


Fig. 2.

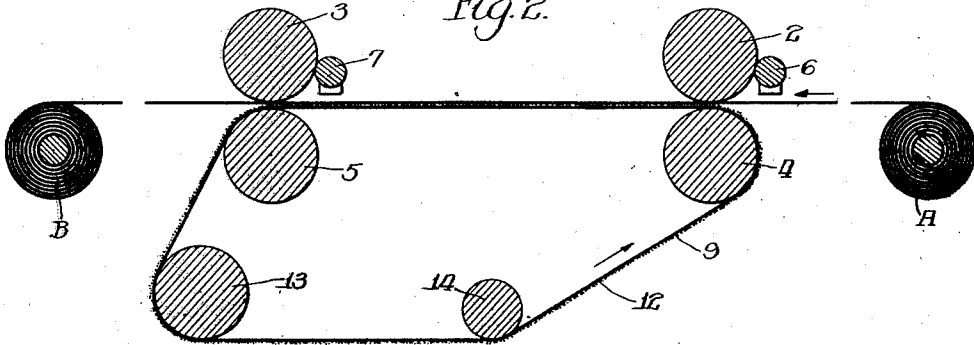
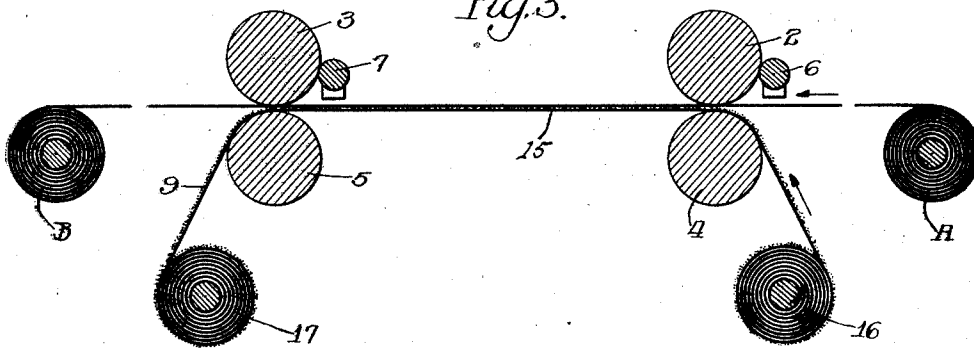


Fig. 3.



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# UNITED STATES PATENT OFFICE

2,139,164

## METHOD AND APPARATUS FOR PREVENTING SLIPPING IN PRINTING

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14 Claims. (Cl. 101—181)

This invention relates to a method and apparatus for printing whereby one or both sides of a blank sheet or web, such as paper, may be printed on one or both sides by one or more printing devices without any slipping of the sheet or web relative to the printing device or devices.

The invention consists of the novel methods, combinations and arrangements hereinafter described or claimed for carrying out the above stated object and such other objects as will hereinafter appear.

For a better understanding of the invention reference may be made to the accompanying drawing, in which

Fig. 1 is a view in central vertical sectional elevation of that part of a printing apparatus embodying my invention;

Fig. 2 is a similar view of another modification; and

Fig. 3 is a similar view of still another modification.

The present invention is an improvement upon that shown and described in U. S. Patent No. 1,731,467 issued to me on October 15, 1929 and which is referred to herein as a part of the present disclosure.

This invention is primarily designed for use in connection with a series of printing devices which are disposed to print different parts on one or both sides of a blank sheet which is fed through the printing press, and is particularly adapted where a series of printing devices are arranged in synchronism in order to provide registration of the respective printing device with the proper part of the sheet which is to receive the printed matter. The various printing devices in the series may print in the same or different colors, and on one or both sides of the blank.

For example, my patent above referred to shows two printing devices, one of which is arranged to print on one side of the blank sheet, and the other of which is arranged to print on the reverse side thereof. In the present invention, these printing devices may also be arranged to print on both sides of the blank, or they may be arranged to print different parts of the blank sheet but on the same side. In either of the modifications suggested, different colored inks may be used with each printing device.

It is also within the scope of the present invention to provide as many printing devices as may be desired for printing different parts on one or both sides of the blank sheet, and to use

the same or different colored inks on the various printing devices.

Coordination of the different printing devices in the series is essential in order for them to be synchronized for proper registration with the respective parts of the blank sheet to be printed. Accordingly, it is important to prevent any slipping of the blank sheet relative to the printing devices or it will not properly register therewith. Tendency of the blank to slip is, of course, increased if the printing presses are run at a high speed.

It is the aim of the present invention to prevent any slipping of the blank relative to the printing devices, and the object is accomplished by associating with the impression or tympan rolls or any one of the printing devices, a means which contacts with the blank and secures same against any relative movement. A suitable means is typified by a facing over the tympan or impression rolls having at predetermined areas or over the entire surface, abrasive granules or other suitable granular materials which engage the face of the blank to positively secure same in place against relative movement.

While the invention is particularly designed for use in connection with a series of printing devices printing a continuous blank or web, it is, of course, equally adapted for use in connection with single or individual sheets which are to be printed, and it is desired to feed them through the press without danger of slipping.

Referring specifically to the drawing, numeral 2 designates a print roll having an impression roll 4 associated therewith, said print roll being inked by any suitable inking roll, such as 6. A second printing device is typified by printing roll 3 and associated impression roll 5, said printing roll being inked by a suitable inking roll 7. Each of the impression rolls are faced with a sheet 8 in which granular surfacing material 9 may be partially imbedded and exposed to contact directly with the web, leaving the granules partially projecting to contact with the sheet to be printed.

Other modifications for carrying out the invention are illustrated in Figs. 2 and 3. In the illustration in Fig. 2 the surfacing sheet is in the form of an endless belt 12, having granular material 9 partially imbedded in one face. This endless belt is circumvolved over impression rolls 4 and 5 and also idle rolls 13 and 14. In Fig. 3 the surfacing sheet 15 is fed from a supply roll 16 over impression rolls 4 and 5, with the granular surfacing material 9 contacting with the web to

be printed and is then rewound into roll 17, from which it may be unwound and reused.

Obviously the present invention is not restricted to the details of construction herein described and illustrated in my prior patent, but various changes may be made without departing from the spirit of the invention.

I claim:

1. In a printing apparatus comprising a series of printing devices for printing different parts of a web, and granular surfaced means associated with the first and last printing devices of the series having the granular surfacing contacting with the web to be printed, whereby same is prevented from slipping relatively to the printing devices.

2. In a printing apparatus comprising a series of printing devices for printing different parts of a web, and a rough surfaced sheet associated with the first and last printing devices of the series having the rough surface contacting with the web to be printed, whereby same is prevented from slipping relatively to the printing devices.

3. In a printing apparatus comprising a series of printing and tympan rolls arranged in synchronism to print selected parts of a web, and a granular surfaced sheet associated with the first and last tympan rolls of the series having the granular surface contacting with the web whereby same is prevented from slipping relatively to the printing rolls.

4. In a printing apparatus comprising a series of printing and tympan rolls arranged to print selected parts of a web, and a granular surfaced printing blanket associated with the first and last tympan rolls of the series for supporting the web, the granular surfaced face of the blanket being in contact with the web to prevent slipping of the web relatively to the rolls.

5. In a printing apparatus comprising a series of printing and tympan rolls arranged to print selected parts of a web, and a rough surfaced printing blanket associated with the first and last tympan rolls of the series for supporting the web, the rough surfaced face of the blanket being in contact with the web to prevent slipping of the web relatively to the rolls.

6. A method of maintaining web registration with the spaced printing cylinders of a multi-color press, the step of engaging the web at a plurality of spaced points across the width thereof to secure the web in place against relative movement.

7. A method of maintaining web registration with the spaced printing cylinders of a multi-color press, which consists in feeding the web over a guiding surface, and engaging the web at said surface over small spaced areas of the web to secure positively the web in place against relative movement.

8. A method of maintaining web registration

with the spaced printing cylinders of a multi-color press, which consists in feeding the web over and in contact with a rotating cylindrical surface, and engaging the web at said surface over small areas of the web spaced apart across the width thereof, to secure positively the web in place against relative movement.

9. The method of maintaining web registration with the spaced printing cylinders of a multi-color press, which consists in feeding the web through the press in a non-variable path at a desired speed and under constant predetermined tension, and subjecting a minor linear extent of the web at spaced points in the press to the influence of means to secure positively the web in place against relative movement.

10. A method of maintaining web registration with the spaced printing cylinders of a multi-color press, which consists in feeding the web over a non-variable path through the press and positively engaging and releasing the web across the width thereof at a plurality of spaced points in the length of the web, and over a comparatively small linear extent thereof, in the movement of the web past said spaced points to secure the web in place against relative movement.

11. In a multi-color web press having spaced printing couples, means associated with each printing couple positively engaging the web across the width thereof, in the movement of said web through a non-variable path to secure the web against relative movement through the press and maintain accurate registration of the web with the printing cylinders of the respective couples.

12. A method of maintaining web registration with the spaced printing cylinders of a multiple press comprising feeding the web through the press, and positively engaging and releasing the web across the width thereof at a plurality of spaced points in the length of the web, and over a comparatively small linear extent thereof, in the movement of the web over said cylinders, to thereby positively secure the web in place against relative movement.

13. A method of maintaining web registration with the spaced cylinders of a multiple press comprising feeding the web through the press, and securing and releasing the web across the width thereof at a plurality of spaced points in the length of the web to thereby positively secure the web in place against relative movement.

14. In a multiple press having spaced printing couples for printing different parts of a web adapted to be fed therethrough, a means for engaging and releasing the web across the width of one of the printing couples and means for engaging and releasing the web across the width of the other printing couple, thereby positively securing the web against relative movement.

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