

No. 867,295.

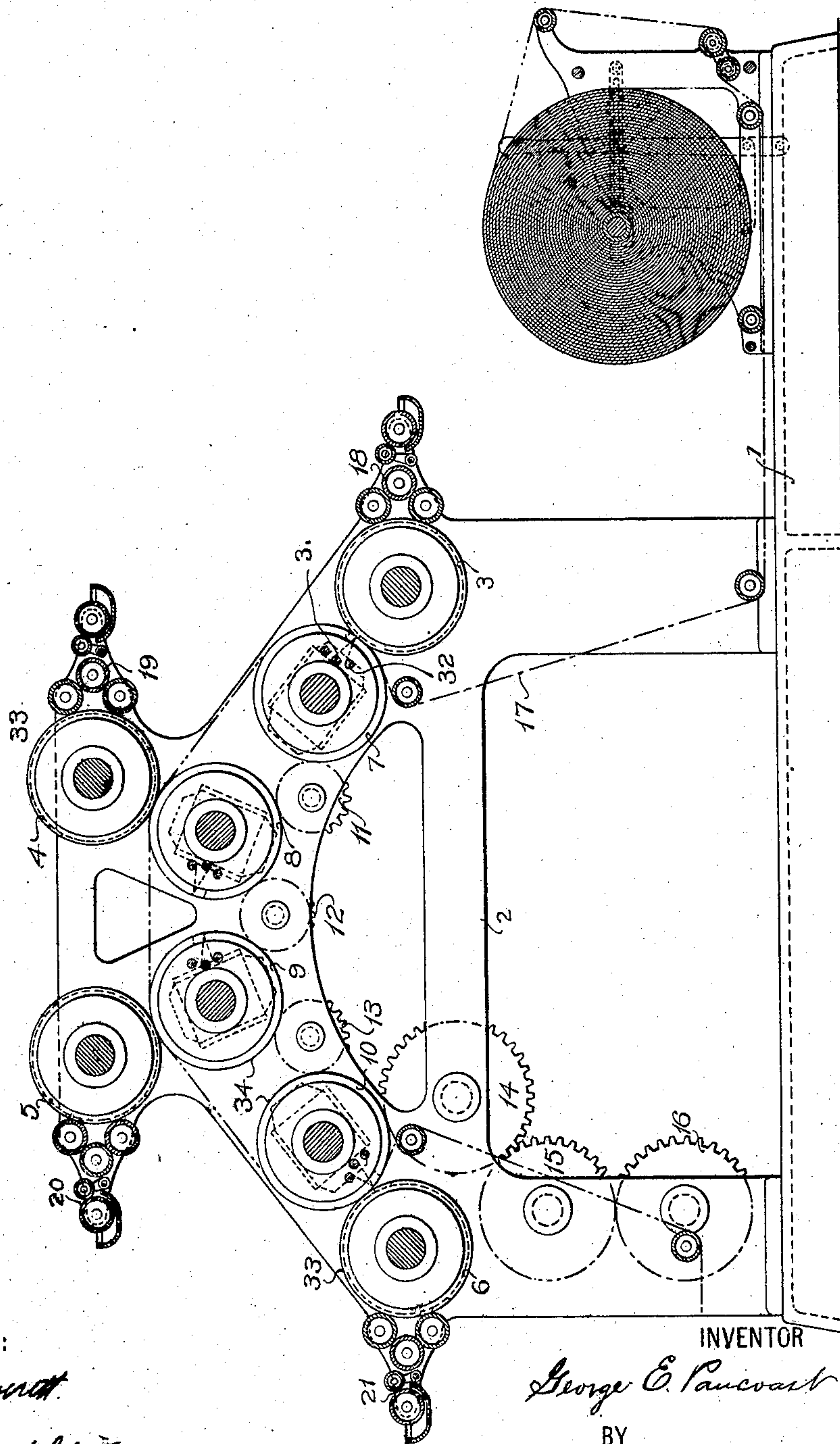
PATENTED OCT. 1, 1907.

G. E. PANCOAST.
PRINTING PRESS.

APPLICATION FILED MAY 27, 1901. RENEWED DEC. 3, 1904.

2 SHEETS—SHEET 1.

Fig. 1.



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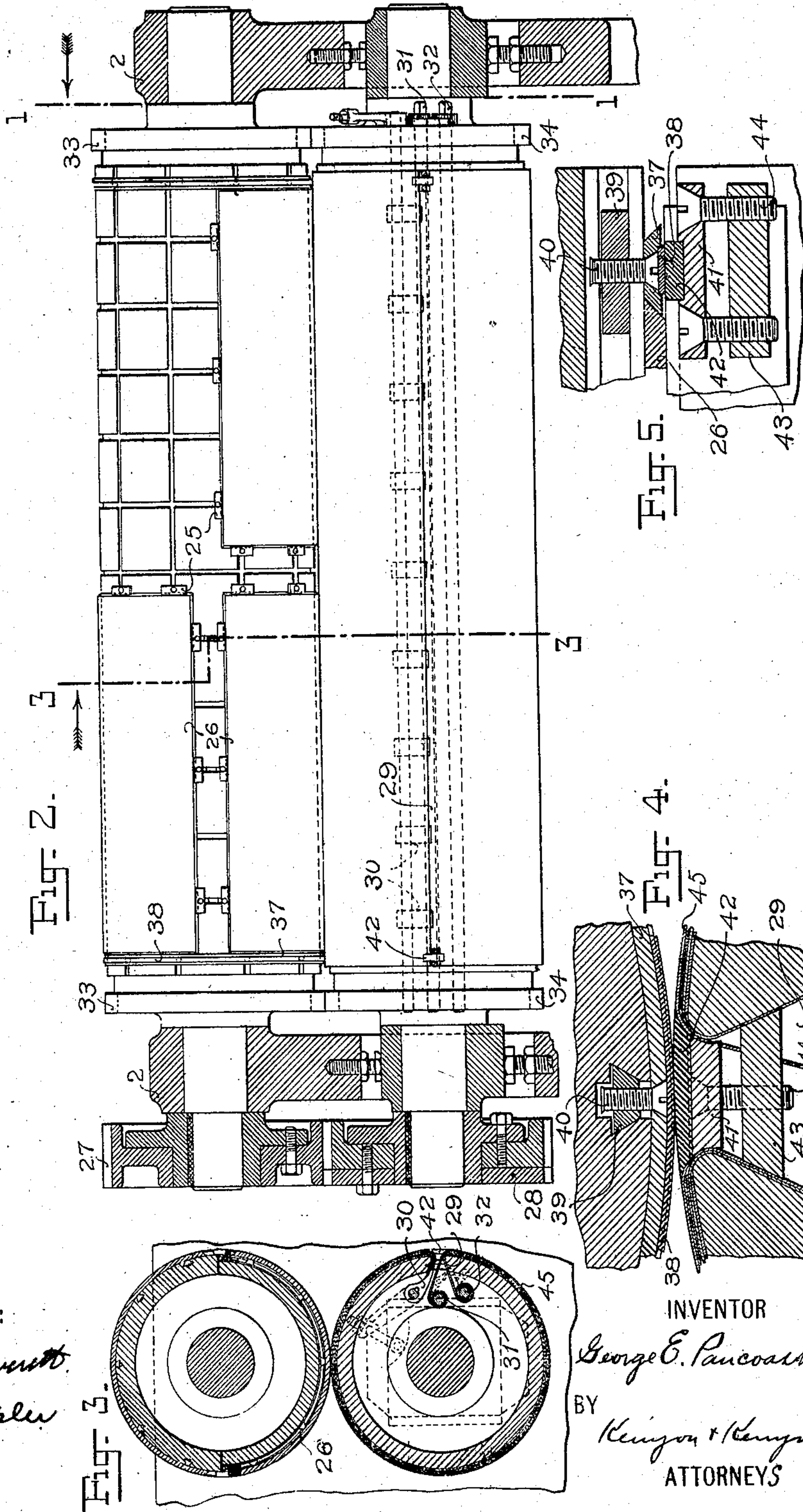
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2 SHEETS—SHEET 2.



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UNITED STATES PATENT OFFICE.

GEORGE E. PANCOAST, OF BROOKLYN, NEW YORK, ASSIGNOR TO AMERICAN LITHOGRAPHIC COMPANY, A CORPORATION OF NEW YORK.

PRINTING-PRESS.

No. 867,295.

Specification of Letters Patent.

Patented Oct. 1, 1907.

Application filed May 27, 1901, Serial No. 62,062. Renewed December 3, 1904. Serial No. 235,333.

To all whom it may concern:

Be it known that I, GEORGE E. PANCOAST, a citizen of the United States, and a resident of Brooklyn, in the county of Kings, State of New York, have invented certain new and useful Improvements in Printing-Presses, of which the following is a specification.

My invention relates to rotary printing presses and it is adapted more particularly to multicolor presses having relief printing surfaces and printing upon paper or similar material in web form.

My invention has for an object to provide in a web press having circumferentially discontinuous rotary printing and impression surfaces, a construction whereby the web may be continuously and uniformly advanced through the press and perfect register of the successive impressions attained.

Another object of my invention is to provide a construction whereby the press may be adjusted to manipulate webs of varying widths.

These and other objects of my invention will more clearly appear from the following description.

My invention consists in the novel parts, improvements and combinations herein shown and described.

The accompanying drawings, which are referred to herein and form a part hereof, illustrate one embodiment of my invention and serve in connection with the description herein to explain the principles thereof and the best mode in which I have contemplated applying those principles.

Of the drawings, Figure 1 is a diagrammatic sectional view of one form of printing press constructed in accordance with my invention, said figure being taken on the line 1, 1 of Fig. 2. Fig. 2 is an elevation, partly in section, illustrating on a larger scale one of the printing couples of the press shown in Fig. 1; Fig. 3 is a transverse section of the same taken on the line 3—3, Fig. 2; and Figs. 4 and 5 are sectional views on a still larger scale of certain details of construction.

Like reference numerals refer to like parts wherever they occur throughout the several views.

The invention as shown herein is applied to a multicolor printing press comprising a series of rotary printing members having circumferentially discontinuous printing surfaces and arranged to print on one side of the web, and a corresponding series of impression members having circumferentially discontinuous impression surfaces and arranged on the opposite side of the web. Obviously, however, the invention as to some of its features may be applied with advantage to types of presses other than that shown—presses having a different arrangement of the members or a different type of either or both of the printing and impression members—certain benefits of the invention being real-

ized if it be applied to any rotary press having a plurality of circumferentially discontinuous printing surfaces arranged to print on a single web.

Referring now to the drawings in detail, 1 indicates a suitable base and 2 indicates an upright frame in which are journaled a series of four printing cylinders indicated by the numerals 3, 4, 5 and 6. A corresponding series of impression surfaces, indicated by the numerals 7, 8, 9 and 10, are journaled in the frame in coöperative relation with the printing cylinders and preferably in the space formed below and between the printing cylinders, as shown. Each pair of printing and impression cylinders are geared together and the couples thus formed are driven in unison by a series of intermediate gears represented by the numerals 11, 12 and 13, the whole being driven from any suitable source of power by a train of gears 14, 15 and 16. The web of paper 17 is led in at one end of the press from a suitable web feeding mechanism through the sets of printing couples in succession, and is finally delivered at the other end of the press by a suitable delivery mechanism. The web feeding mechanism should be such as will present the web to the press uniformly and smoothly and the delivery mechanism is preferably such as will divide the web into sheets and deliver the same flat or in an unfolded condition. As these mechanisms form no part of the present invention they are not herein described. The printing members are each provided with a suitable inking mechanism, one form of which is indicated by the numerals 18, 19, 20 and 21,

In the construction shown, each of the printing members consists of a printing cylinder which is grooved on its surface and provided with suitable clamping devices 25, by means of which the printing forms 26 may be adjustably secured in place. Each of the impression members consists of a cylinder which, preferably and as shown, is substantially of the same diameter as the printing member, said cylinders being geared together to rotate in unison as by gears 27 and 28. The impression cylinder is provided at one point of its circumference with a narrow longitudinal slot 29, in which the ends of the blanket and tympan sheets forming the impression surface are secured. Any suitable means may be provided for securing the ends of the impression surface within the slot, those shown consisting of a clamp 30 for securing one end of the impression surface and a pair of rollers 31 and 32 for securing the other end of the same. The printing and impression cylinders are provided at their opposite ends with the usual circumferentially continuous bearer surfaces 33 and 34, which act to take up the spring of the parts and maintain the surfaces of the cylinders always at a uniform distance apart, so as to provide for

an even impression and prevent the blurring of the edges of the printing surfaces as they pass into or out of contact with the impression surface.

In accordance with my invention the printing and impression members of at least one of the printing couples is provided, in addition to the parts already described, with one or more circumferentially continuous web forwarding surfaces which make contact with the web being printed and continuously operate in such contact, thereby acting to continuously advance the web through the press and prevent any backward or sidewise slipping of the web when the blank spaces between the printing forms or the different parts of the printing surfaces carried by the printing forms come into position opposite the impression surface. Where only one of the series of printing couples is provided with a set of web-forwarding surfaces, those surfaces should be placed upon the last couple of the series in order that the web may be kept under tension and uniformly advanced through all the couples and register of the successive impressions thereby secured.

While under some circumstances, it may answer the purposes of my invention if only one of the printing couples of a series is equipped with the web forwarding surfaces, it is usually preferable to provide each couple of the series with one or more sets and to so arrange the corresponding sets on the couples in line with each other that they will come in contact with the same portion or portions of the web. Preferably, I provide a set of these web forwarding surfaces at each of the outer ends of the printing surfaces in such position that they engage the outer margins of the web of paper. Obviously, however, the web forwarding surfaces may be arranged at any other suitable point or points on the printing and impression members, wherever space may be provided between the printing surfaces, and if desired, one set only of the web forwarding surfaces may be used.

In accordance with the construction shown herein, each of the web forwarding surfaces for the printing members comprises a ring 37 which is preferably formed of a suitable inflexible material, as metal, and is constructed to accurately fit the outer surface of the printing cylinder. This ring is circumferentially continuous and is preferably provided with a separate contacting surface 38 of a suitable yielding material, as vulcanized rubber, or a similar composition. The ring is made adjustable longitudinally of the printing cylinder and, as shown, is secured in place thereon by means of one or more clamping devices adapted to engage the grooves in the printing cylinder. The clamping means shown, comprises a block 39 seated within the grooves in the cylinder and having a threaded opening which is engaged by a suitable screw 40, the enlarged head of which is seated in an opening in the ring.

In order that the web-forwarding surfaces may be brought close to the printing surface and may be placed in narrow margins between adjacent printing surfaces the rings 37 are undercut or otherwise so formed on one or both of their edges as to permit of their use as a means for securing the printing plates 26 in position.

The circumferentially continuous web forwarding surfaces on the impression member are formed partially by the impression surface and partially by suit-

able bridging pieces which are mounted in the gap of the impression cylinder with their outer surfaces flush with the impression surface. The bridging pieces are preferably adjustable longitudinally of the impression cylinder so that they can be placed in line with the web forwarding surfaces on the printing cylinder wherever they may be located. As shown in the drawings, each of these bridging pieces consists of a block 41 which is formed of suitable rigid material, and is preferably faced with a suitable yielding material 42, which is preferably of about the same thickness and of about the same degree of resiliency as the impression surface. The bridging piece may be adjustably held in place in the cylinder gap by any suitable clamping means. The form of the clamp shown consists of a block 43 which is located within the cylinder gap and is provided with a threaded opening which is engaged by a screw 44, the enlarged head of which is seated in the bridge piece 41. It will be evident that the position of the bridge piece longitudinally of the cylinder gap can be changed at will. Where the outer tympan sheet 45 is drawn through the gap in a diagonal direction, as shown, it may be broken away at the point where it is desired to secure the bridge piece.

It will be seen that the web forwarding surfaces will make pressure contact with the web and will continuously operate in such a manner as to continuously and uniformly advance the web through the machine irrespective of the feeding or advancing action of the printing and impression surfaces. By reason of this construction, the web is not permitted to slip or shift its position with relation to the printing and impression surfaces as it is apt to be in the ordinary forms of presses in which circumferentially discontinuous printing and impression surfaces are used. The position of the web at every part of its course through the press with relation to the printing surfaces is positively maintained and an exact register of the successive impressions upon the web is attained.

My invention in its broader aspects is not limited to the precise construction shown and described, nor to the precise construction by which it may be carried into effect, as many changes other than those herein suggested may be made therein without departing from the main principles of my invention or sacrificing its chief advantages.

What I claim as new and desire to secure by Letters Patent, is:

1. In a web printing press the combination with a series of impression surfaces from one to another of which the paper is successively transferred during printing, of a series of rotary printing members one of which is provided, irrespective of the printing surfaces, with one or more circumferentially continuous web forwarding surfaces which make pressure contact with the web being printed and continuously operate in such contact.

2. In a web printing press the combination with a series of impression surfaces from one to another of which the paper is successively transferred in printing, of a series of rotary printing members, the final one of which is provided, irrespective of the printing surfaces, with one or more circumferentially continuous web forwarding surfaces which make pressure contact with the web being printed and continuously operate in such contact.

3. In a web printing press, the combination with a series of impression surfaces from one to another of which the paper is successively transferred between impressions of a series of rotary printing members, each one of which is provided, irrespective of the printing surfaces, with

one or more circumferentially continuous web forwarding surfaces, which make pressure contact with the web being printed and continuously operate in such contact.

4. A web printing press comprising a series of rotary printing couples having circumferentially discontinuous printing and impression surfaces, one couple at least having one or more sets of circumferentially continuous web-forwarding surfaces which make pressure contact with the web being printed and continuously operate in such contact.

5. A web printing press comprising a series of rotary printing couples having circumferentially discontinuous printing and impression surfaces, the final couple of the series having one or more sets of circumferentially continuous web-forwarding surfaces which make pressure contact with the web being printed and continuously operate in such contact.

6. A web printing press comprising a series of rotary printing couples having circumferentially discontinuous printing and impression surfaces, each couple of the series having one or more sets of circumferentially continuous web-forwarding surfaces which make pressure contact with the web being printed and continuously operate in such contact.

7. In a web printing press the combination with a series of printing cylinders, of a corresponding series of impression cylinders each of which is provided with one or more circumferentially continuous web-forwarding surfaces, and means irrespective of the printing surfaces for cooperating with said web-forwarding surfaces whereby the web may be continuously and uniformly advanced through the press.

8. In a web printing press the combination with a series of printing cylinders, of a corresponding series of impression cylinders each of which is provided with one or more laterally adjustable circumferentially continuous web-forwarding surfaces, and means irrespective of the printing surfaces for cooperating with said web-forwarding surfaces whereby the web may be continuously and uniformly advanced through the press.

9. A web printing press comprising a series of rotary printing couples, one couple at least of the series having one or more sets of circumferentially continuous web-forwarding surfaces which are laterally adjustable with relation to the printing surface or surfaces and make continuous pressure contact with the web being printed.

10. A web printing press comprising a series of rotary printing couples, each couple of the series having one or more sets of circumferentially continuous web-forwarding surfaces which are laterally adjustable with relation to the printing surface or surfaces and make continuous pressure contact with the web being printed.

11. In a web printing press the combination with a series of impression surfaces from one to another of which the paper is transferred successively between impressions, of a series of rotary printing members one of which is provided with two circumferentially continuous web forwarding surfaces, the said web forwarding surfaces being located adjacent to the opposite ends of the printing surface and adapted to make continuous pressure contact with the outer margins of the web being printed, substantially as described.

12. A web printing press comprising a series of rotary printing couples having circumferentially discontinuous printing and impression surfaces, one couple at least having two sets of circumferentially continuous web-forwarding surfaces, said sets of web-forwarding surfaces being located adjacent to the opposite ends of the printing surfaces and adapted to make continuous pressure contact with the outer margins of the web being printed, substantially as described.

13. In a web printing press the combination with a series of printing cylinders, of a corresponding series of impression cylinders each of which is provided with two circumferentially continuous web-forwarding surfaces located adjacent to the opposite ends of the printing surfaces, and means for cooperating with said web-forwarding surfaces whereby the web may be continuously and uniformly advanced through the press, substantially as described.

14. In a web printing press a printing cylinder having one or more circumferentially continuous web-forwarding surfaces each consisting of a circumferentially continuous inflexible ring adjustably secured in place upon the cylinder, said ring being so formed on one edge as to adapt it as a means for securing one edge of the printing plates.

15. In a web printing press a printing cylinder having one or more circumferentially continuous web-forwarding surfaces each consisting of a circumferentially continuous inflexible ring having a yielding face and adjustably secured in place upon the cylinder said ring being undercut at one edge to form one member of a securing means for the printing plates, substantially as described.

16. In a web printing press an impression cylinder having a circumferentially discontinuous impression surface and one or more bridge pieces forming with the impression surface one or more circumferentially continuous web forwarding surfaces.

17. In a web printing press an impression cylinder having a circumferentially discontinuous impression surface and one or more laterally adjustable bridge pieces forming with the impression surface one or more laterally adjustable circumferentially continuous web-forwarding surfaces.

18. In a web printing press the combination with a printing cylinder having one or more circumferentially continuous web-forwarding surfaces each consisting of a ring adjustably secured in place upon the cylinder of an impression cylinder having a circumferentially discontinuous impression surface and one or more bridge pieces forming with the impression surface one or more circumferentially continuous web-forwarding surfaces adapted to cooperate with the web-forwarding surfaces of the printing cylinder, whereby the web may be advanced continuously and uniformly through the press, substantially as described.

In testimony whereof, I have signed my name to this specification, in the presence of two subscribing witnesses.

GEORGE E. PANCOAST.

Witnesses:

HENRY MITCHELL,
GEO. H. BARNES.