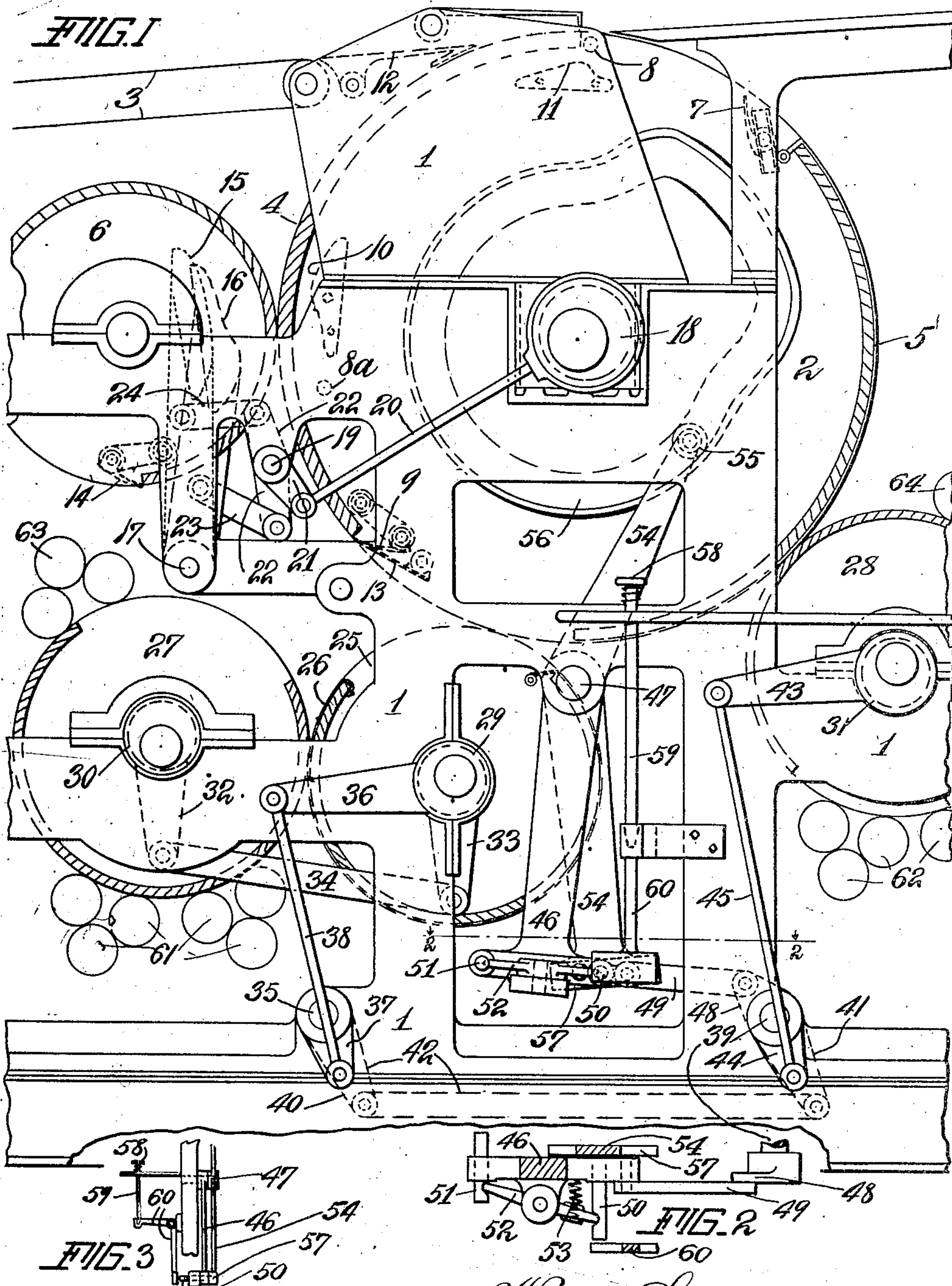


W. SCOTT, DEC'D.
I. & D. J. SCOTT, EXECUTORS.
PRINTING MACHINE.
APPLICATION FILED MAY 25, 1906.

Patented Mar. 15, 1910.

952,218.



Witnesses
Frank Koenigsberg
Herrn Richter

Walter Scott Inventor
By his Attorney
A. V. Becken

UNITED STATES PATENT OFFICE.

WALTER SCOTT, OF PLAINFIELD, NEW JERSEY; ISABELLA SCOTT AND DAVID JOHN SCOTT EXECUTORS OF SAID WALTER SCOTT, DECEASED.

PRINTING-MACHINE.

952,218.

Specification of Letters Patent.

Patented Mar. 15, 1910.

Application filed May 25, 1906. Serial No. 318,615.

To all whom it may concern:

Be it known that I, WALTER SCOTT, a citizen of the United States of America, and a resident of Plainfield, Union county, New Jersey, have invented certain new and useful Improvements in Printing-Machines, of which the following is a specification.

The present invention relates generally to printing machines, and has more particularly, though not exclusively, reference to planographic printing machines.

The chief object of this invention is the production of suitable tripping mechanism in connection with a planographic printing machine in which the printing mechanism consists of an impression cylinder, a form carrying cylinder, and a printing cylinder adapted to receive a transfer in ink from the form carrying cylinder and print it on the sheet carried by the impression cylinder, and in which the impression cylinder makes only one revolution to each impression.

Other objects will appear as the specification proceeds.

Accordingly the invention consists in the hereinafter described features of construction, combination of parts and arrangement of elements.

In the accompanying drawings, which form a part of this specification, the invention is embodied in a concrete and preferred form, but changes of construction may of course be made and parts omitted without departing from the spirit of the invention.

In the said drawings: Figure 1 is a side elevation, partly in section, of a machine, embodying the invention. Fig. 2 is a sectional view on the line 2—2 of Fig. 1. Fig. 3 is a detail view of the actuating device.

Similar characters of reference indicate corresponding parts in the different views.

1 indicates a framework of any suitable construction for properly mounting the parts comprising the machine.

2 denotes an impression cylinder which, in this instance makes one revolution to each impression. Preferably it is desired to deliver the sheet in front of the impression cylinder with the printed side up to any suitable delivery as the well known drop delivery. As here shown, the tapes 3 indicate the front delivery mechanism. The impression cylinder as here shown is provided with an impression surface 4 and a trans-

fer surface 5, and suitable means as the transfer cylinder 6 are provided for transferring the sheet from one surface to another. The sheet may be fed to either the impression or transfer surface as desired, but in the construction here followed the sheet is fed to the transfer surface and transferred to the impression surface, which latter delivers it to the delivery mechanism. In this instance, therefore, the transfer cylinder is located in front of the impression cylinder and underneath the delivery mechanism. The transfer surface is provided with the tumbler grippers 7 adapted to be closed by the pin 8 at the feeding point so as to properly seize the sheet, and to be opened by the pin 8^a adjacent to the transfer cylinder so as to release the sheet. The impression surface is provided with the spring seated grippers 9 adapted to be opened by the cam 10 to seize the sheet when it is delivered from the transfer cylinder, and again to be opened by the cam 11 when the sheet is to be delivered to the guides 12 adjacent to the tapes 3. The said impression surface is further provided with the usual stripper fingers 13 which place the leading edge of the sheet on the said guides 12. The transfer cylinder is provided with the grippers 14 which are opened twice to each impression alternately by the cams 15 and 16. These cams are pivoted at 17 and are alternately brought into the plane of the grippers by means of the eccentric 18 connected to the rockshaft 19 by means of the rod 20 and arm 21, and by means of the lever 22 which is connected by means of the links 23 and 24 to the said cams.

As many form members as are required and as will be admitted by the capacity of the machine, may be used. Preferably the form member will be of the character employing an intermediate printing cylinder 25 covered with a rubber blanket 26 adapted to receive a transfer in ink from the form carrying cylinder 27 and adapted to print the same on the sheet carried by the impression surface. In the present instance there is shown in addition to the form member of this character, a form carrying cylinder 28 adapted to coact directly with the impression cylinder.

Preferably, and as shown in the present instance, the cylinders 25, 27 and 28 make two revolutions to each impression, so that

they are inked twice to each impression. Preferably it is desired to avoid the necessity of moving the cylinders 25 and 28 out of contact with the impression cylinder during alternate revolutions so as to prevent the ink from being transferred to the transfer surface of the impression cylinder, and the said transfer surface is therefore located below the pitch circumference of the impression cylinder as shown. Suitable tripping means are however employed in connection with these form cylinders, in the present instance, of the following construction: The cylinders 25, 27 and 28 are mounted in eccentric bushings 29, 30 and 31. The eccentricity of the bushing 30 is greater than that of the bushing 29 for reasons which will appear later. The arm 32 of the bushing 30 is connected to the arm 33 of the bushing 29 by means of the link 34. The bushing 29 in turn is connected to the rock-shaft 35 by means of the arms 36 and 37 and link 38. 39 denotes a second rockshaft connected to the rockshaft 35 by means of the arms 40 and 41 and link 42, and also connected to the bushing 31 by means of the arms 43 and 44 and rod 45. 46 indicates a lever pivoted on the stud 47 and connected to the rockshaft 39 by means of the arm 48 and link 49. At its lower end, this lever 46 carries two sliding pins 50 and 51 interlocked with each other by means of the centrally pivoted lever 52. By means of the spring 53, the pin 50 normally protrudes from its seat. Mounted independently on the stud 47 is the lever 54, one end of which is provided with the roller 55 engaging with the cam 56 making one revolution to each impression, and the other end of which is provided with the shoe 57 adapted to engage whichever of the two pins 50 and 51 is in its path. As previously stated, the pin 50 normally protrudes, and the shoe 57 engaging therewith the parts, if tripped, will be moved into the position shown in Fig. 1, that is in their untripped position. The parts will then remain in this position, while the lever 54 moves idly back and forth. If now however, the pin 51 is caused to protrude, the lever 54 will move the parts into their tripped position by reason of the shoe 57 engaging with the said pin 51. It will therefore be seen that the tripping means are normally inoperative. Various means may of course be used for rendering the tripping means effective. In the present instance, however, an actuating device is illustrated which is under the control of the operator. This actuating device is of the following form. Connected to the foot treadle 58 is a rod 59 engaging with one end of the bell crank 60. The other end of the said bell crank engages with the pin 51 so that when the foot treadle is depressed the said pin 51 is caused to protrude.

It will be understood that when the cylinders 25 and 27 are used, the cylinder 27 must be moved a greater distance than the cylinder 25 for the reason that in order to separate the said cylinders 25 and 27 as well as the cylinders 25 and 2, the said cylinder 27 must move a distance equal to the distance moved by the cylinder 25 in order to separate the latter from the cylinder 2, plus a sufficient distance to effect the separation of 25 and 27. It is for this reason that the eccentricity of the bushing 30 is more pronounced than the eccentricity of the bushing 29 so that when the parts are tripped, the cylinder 27 will move faster than the cylinder 25, during the same period of time, and hence, it will move a greater distance. Furthermore, when the cylinders 25 and 27 are untripped, it is obvious that the parts must be so arranged that the said cylinders are brought into contact before the leading end of the impression surface of the impression cylinder reaches the point of contact between the printing and impression cylinders; as the leading end of the transfer in ink must reach the said point of contact substantially at the same time the leading end of the impression surface reaches the said point of contact.

In connection with the cylinders 27 and 28 are provided the usual ink rolls 61 and 62 and the water rolls 63 and 64.

What is claimed is:

1. In a planographic printing machine, the combination with an impression cylinder, of a form carrying cylinder, and a printing cylinder interposed between the two, and means operated from a common source for tripping the printing cylinder away from the impression cylinder and the form carrying cylinder away from the printing cylinder.

2. In a planographic printing machine, the combination with an impression cylinder, of a form carrying cylinder, and a printing cylinder interposed between the two, means for tripping the printing cylinder away from the impression cylinder and the form carrying cylinder away from the printing cylinder, normally inoperative, and an actuating device for rendering the tripping means operative.

3. In a planographic printing machine, the combination with an impression cylinder making one revolution to each impression, a form carrying cylinder making a plurality of revolutions to each impression, and a printing cylinder also making a plurality of revolutions to each impression and interposed between the form carrying and impression cylinders, and means for tripping the printing cylinder away from the impression cylinder and the form carrying cylinder away from the printing cylinder.

4. In a planographic printing machine,

the combination with an impression cylinder making one revolution to each impression, a form carrying cylinder making a plurality of revolutions to each impression, and a printing cylinder also making a plurality of revolutions to each impression and interposed between the form carrying and impression cylinders, means for tripping the printing cylinder away from the impression cylinder and the form carrying cylinder away from the printing cylinder, normally inoperative, and an actuating device for rendering the said tripping means operative.

5. In a planographic printing machine, the combination with an impression cylinder making one revolution to each impression, an impression surface on the said impression cylinder, a transfer surface also on the said impression cylinder, means for transferring the sheet from one surface to another, a form carrying cylinder making a plurality of revolutions to each impression, and a printing cylinder interposed between the impression and form carrying cylinders and also making a plurality of revolutions to each impression adapted to receive a transfer in ink from the form carrying cylinder twice to each impression and to print the said transfer in ink on the sheet carried by the impression surface, and means for tripping the printing cylinder with relation to the impression cylinder and the form carrying cylinder with relation to the printing cylinder.

6. In a planographic printing machine, the combination with an impression cylinder making one revolution to each impression, an impression surface on the said impression cylinder, a transfer surface also on the said impression cylinder, means for transferring the sheet from one surface to another, a form carrying cylinder making a plurality of revolutions to each impression, and a printing cylinder interposed between the impression and form carrying cylinders and also making a plurality of revolutions to each impression adapted to receive a transfer in ink from the form carrying cylinder twice to each impression and to print the said transfer in ink on the sheet carried by the impression surface, means for tripping the printing cylinder with relation to the impression cylinder and the form carrying cylinder with relation to the printing cylinder, normally inoperative, and an actuating device for rendering the said tripping means operative.

7. In a planographic printing machine, the combination with an impression cylinder making one revolution to each impression, an impression surface on the said impression cylinder, a transfer surface on the said impression cylinder below the level of the pitch circumference of the said impression cylinder, means for transferring the

sheet from one surface to the other, a form carrying cylinder making a plurality of revolutions to each impression, and a printing cylinder interposed between the impression and form carrying cylinders and also making a plurality of revolutions to each impression adapted to receive a transfer in ink from the form carrying cylinder twice to each impression and to print the said transfer in ink on the sheet carried by the impression surface, and means for tripping the printing cylinder with relation to the impression surface, and the form carrying cylinder with relation to the printing cylinder.

8. In a planographic printing machine, the combination with an impression cylinder making one revolution to each impression, an impression surface on the said impression cylinder, a transfer surface on the said impression cylinder below the level of the pitch circumference of the said impression cylinder, means for transferring the sheet from one surface to the other, a form carrying cylinder making a plurality of revolutions to each impression and a printing cylinder interposed between the impression and form carrying cylinders, and also making a plurality of revolutions to each impression adapted to receive a transfer in ink from the form carrying cylinder twice to each impression and to print the said transfer in ink on the sheet carried by the impression surface, means for tripping the printing cylinder with relation to the impression surface, and the form carrying cylinder with relation to the printing cylinder, normally inoperative, and an actuating device for rendering the tripping means operative.

9. In a planographic printing machine, the combination with an impression cylinder, a form carrying cylinder, and a printing cylinder interposed between the two, of means for tripping the printing cylinder with relation to the impression cylinder, and the form carrying cylinder with relation to the printing cylinder, arranged and constructed so that the form carrying cylinder moves a greater distance than the printing cylinder.

10. In a planographic printing machine, the combination with an impression cylinder, a form carrying cylinder, and a printing cylinder interposed between the two, of means for tripping the printing cylinder with relation to the impression cylinder and the form carrying cylinder with relation to the printing cylinder arranged and constructed so that the form carrying cylinder moves a greater distance and faster than the printing cylinder.

11. In a planographic printing machine, the combination with an impression cylinder, a form carrying cylinder, and a printing cylinder interposed between the two, of

means for tripping the printing cylinder with relation to the impression cylinder and the form carrying cylinder with relation to the printing cylinder arranged and constructed so that the form carrying cylinder moves a greater distance and faster than the printing cylinder, normally inoperative, and an actuating device for rendering the tripping means operative.

12. In a planographic printing machine, the combination with an impression cylinder making one revolution to each impression, a form carrying cylinder making a plurality of revolutions to each impression, and a printing cylinder interposed between the two also making a plurality of revolutions to each impression, of means for tripping the printing cylinder with relation to the impression cylinder and the form carrying cylinder with relation to the printing cylinder arranged and constructed so that the form carrying cylinder moves a greater distance and faster than the printing cylinder.

13. In a planographic printing machine, the combination with an impression cylinder making one revolution to each impression, a form carrying cylinder making a plurality of revolutions to each impression, and a printing cylinder interposed between the two also making a plurality of revolutions to each impression, of means for tripping the printing cylinder with relation to the impression cylinder and the form carrying cylinder with relation to the printing cylinder arranged and constructed so that the form carrying cylinder moves a greater distance and faster than the printing cylinder, normally inoperative, and an actuating device for rendering the tripping means operative.

14. In a planographic printing machine, the combination with an impression cylinder having an impression surface, a form carrying cylinder, and a printing cylinder interposed between the two, of means for tripping and untripping the printing cylinder with relation to the impression cylinder and the form carrying cylinder with relation to the printing cylinder arranged and constructed so that the form carrying and printing cylinders are brought into contact with each other before the leading end of the impression surface reaches the point of contact between the printing and impression cylinders.

15. In a planographic printing machine, the combination with an impression cylinder having an impression surface, a form carrying cylinder, and a printing cylinder interposed between the two, of means for tripping and untripping the printing cylinder with relation to the impression cylinder and the form carrying cylinder with relation to the printing cylinder arranged and constructed so that the form carrying and print-

ing cylinders are brought into contact with each other before the leading end of the impression surface reaches the point of contact between the printing and impression cylinders, normally inoperative, and an actuating device for rendering the said tripping means operative.

16. In a planographic printing machine, the combination with an impression cylinder making one revolution to each impression and provided with an impression surface, a form carrying cylinder making a plurality of revolutions to each impression, a printing cylinder interposed between the impression and form carrying cylinders making also a plurality of revolutions to each impression and adapted to receive a transfer in ink from the form carrying cylinder twice to each impression and to print the said transfer in ink on the sheet carried by the impression surface, of means for tripping and untripping the printing cylinder with relation to the impression cylinder and the form carrying cylinder with relation to the printing cylinder arranged and constructed so that the form carrying and printing cylinders are brought into contact with each other before the leading end of the impression surface reaches the point of contact between the printing and impression cylinders.

17. In a planographic printing machine, the combination with an impression cylinder making one revolution to each impression and provided with an impression surface, a form carrying cylinder making a plurality of revolutions to each impression, a printing cylinder interposed between the impression and form carrying cylinders making also a plurality of revolutions to each impression and adapted to receive a transfer in ink from the form carrying cylinder twice to each impression, and to print the said transfer in ink on the sheet carried by the impression surface, of means for tripping and untripping the printing cylinder with relation to the impression cylinder and the form carrying cylinder with relation to the printing cylinder arranged and constructed so that the form carrying and printing cylinders are brought into contact with each other before the leading end of the impression surface reaches the point of contact between the printing and impression cylinders, normally inoperative, and an actuating device for rendering the said tripping means operative.

18. In a printing machine, the combination with an impression cylinder, of a form carrying cylinder, a printing cylinder interposed between the two, means for moving the printing cylinder away from the impression cylinder, and means for moving the form carrying cylinder away from the printing cylinder to allow of the printing cylinder being moved away from the im-

pression cylinder, the said tripping means receiving motion from a common source.

19. In a printing machine, the combination with an impression cylinder and a form cylinder, of a printing cylinder interposed between the form and impression cylinders, and means comprising eccentric bearings and operating means therefor for shifting the printing cylinder in one direction away from the impression cylinder, and for shifting the form cylinder in another direction away from the printing cylinder.

20. In a printing machine, the combination with an impression cylinder and a form cylinder, of a printing cylinder interposed between the form and impression cylinders, and means comprising eccentric bearings and operating means therefor for shifting the printing cylinder in one direction away from the impression cylinder, and for shifting the form cylinder in another direction away from the printing cylinder, the form cylinder having a greater movement than the printing cylinder.

21. In a planographic printing machine, the combination with an impression cylinder, of a form carrying cylinder and a printing cylinder interposed between the two, of means for tripping the printing cylinder with relation to the impression cylinder, and the form carrying cylinder with relation to the printing cylinder, arranged and constructed so that the form carrying cylinder will move faster than the printing cylinder.

22. In a printing machine, the combination with an impression cylinder and a form cylinder, of a printing cylinder interposed between the form and impression cylinders, eccentric journal bearings for the form and

printing cylinders, and means for operating said journal bearings to trip the form cylinder away from the printing cylinder, and the printing cylinder away from the impression cylinder.

23. In a printing machine, the combination with an impression cylinder and a form cylinder, of a printing cylinder interposed between the form and impression cylinders, eccentric journal bearings for the form cylinder and printing cylinder, and means for operating said journal bearings to trip the form cylinder in one direction away from the printing cylinder, and to trip the printing cylinder in a different direction away from the impression cylinder.

24. In a printing machine, the combination with an impression cylinder and a form cylinder, of a printing cylinder interposed between the form and impression cylinders, eccentric bearings for the form and printing cylinders, and means for actuating said eccentric bearings to trip the form and printing cylinders at different rates of speed.

25. In a printing machine, the combination with an impression cylinder, and a form cylinder, of a printing cylinder interposed between the form and impression cylinders, eccentric bearings for the form and printing cylinders, and means operated from a common source of power for tripping the form cylinder away from the printing cylinder, and the printing cylinder away from the impression cylinder.

Signed at New York city this 14 day of May 1906.

WALTER SCOTT.

Witnesses:

AXEL V. BEEKEN,
IVAN E. A. KONIGSBERG.