M. DUPUIS.

MACHINE FOR PRINTING FABRICS.

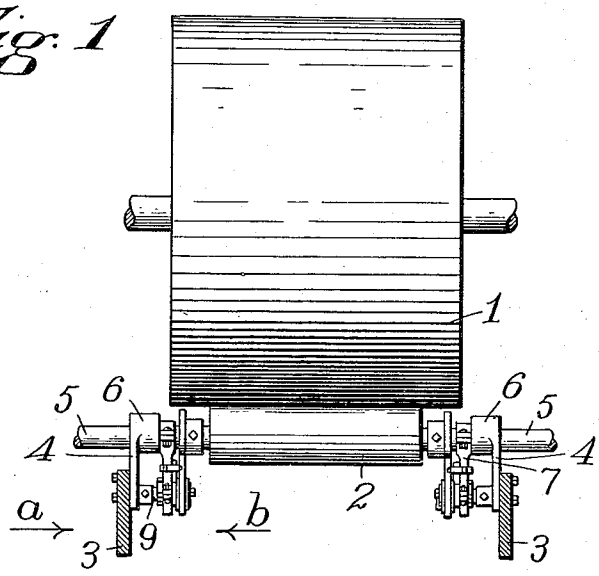
APPLICATION FILED OCT. 17, 1911.

1,153,045.

Patented Sept. 7, 1915.

2 SHEETS—SHEET 1.

Fig. 1



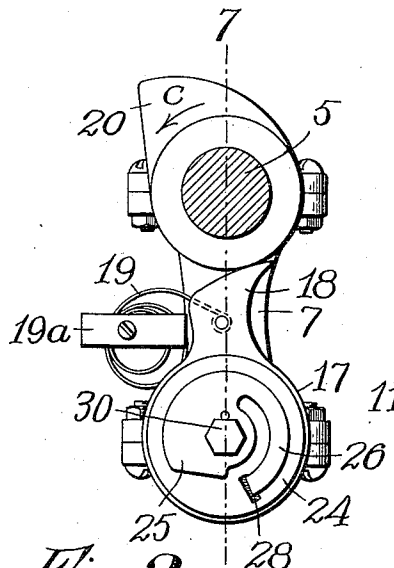


Fig. 2.

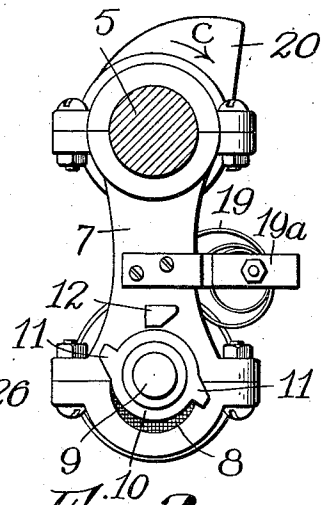


Fig. 3.

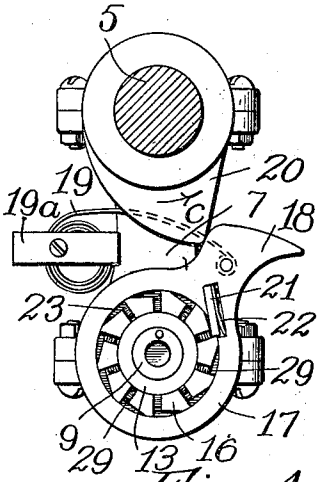


Fig. 4.

Witnesses.

R. D. Tolman.

Penelope Comberbach.

Inventor

Moses Dupuis.

By Rufus B. Fowler

Attorney

COLUMBIA PLANOGRAPH CO., WASHINGTON, D. C.

M. DUPUIS.

MACHINE FOR PRINTING FABRICS.

APPLICATION FILED OCT. 17, 1911.

1,153,045.

Patented Sept. 7, 1915.

2 SHEETS—SHEET 2.

Fig. 5.

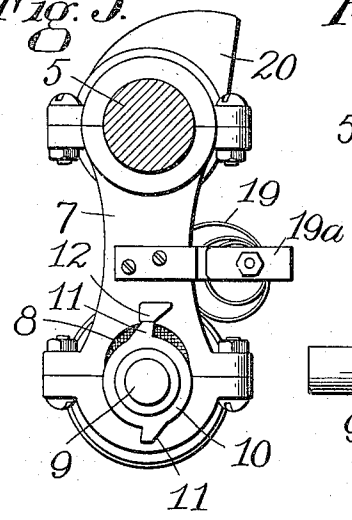


Fig. 6.

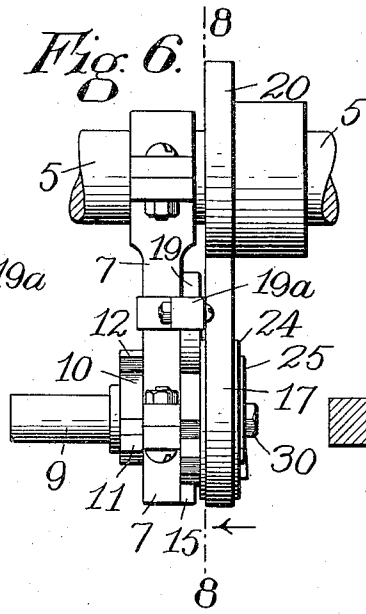


Fig. 7.

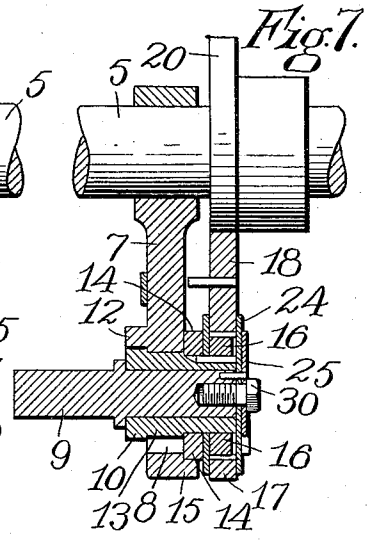


Fig. 8.

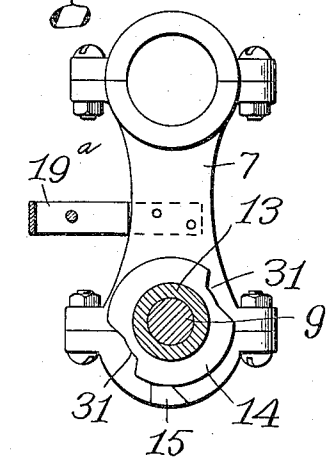


Fig. 9.

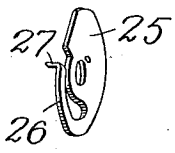
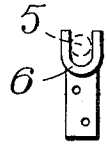


Fig. 10.



Witnesses
R. D. Tolman.
Penelope Comberbach.

Inventor
Moses Dupuis
By Rufus B. Fowler
Attorney

COLUMBIA PLANOGRAPH CO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

MOSES DUPUIS, OF WORCESTER, MASSACHUSETTS, ASSIGNOR TO ALLEN-HIGGINS WALL PAPER COMPANY, OF WORCESTER, MASSACHUSETTS, A CORPORATION OF MASSACHUSETTS.

MACHINE FOR PRINTING FABRICS.

1,153,045. Specification of Letters Patent. Patented Sept. 7, 1915.

Application filed October 17, 1911. Serial No. 655,158.

To all whom it may concern:

Be it known that I, MOSES DUPUIS, of the city and county of Worcester, in the Commonwealth of Massachusetts, have invented a new and useful Improvement in Machines for Printing Fabrics, of which the following is a specification, accompanied by drawings forming a part of the same.

My invention relates to that class of fabric printing machines in which the material to be printed is moved continuously in contact with the periphery of a revolving drum or cylinder. Impressions of different colors, or decorative designs, are imparted to the material by means of printing rollers spaced apart upon the lower side of the drum. These rollers are revolved continuously so as to act in succession upon the material to be printed, the rotating parts being connected by gearing so that the impressions are placed upon the material in proper order and registration. In machines of this class the several colors are supplied to the printing rollers by means which form no part of my present invention and are not herein described.

My present invention is particularly designed for use in machines for printing wall paper and one of its objects is the provision of means which will enable the paper to be printed in strips, each of a length for the highest room in which it is to be used, or part of them shorter than the others if desired, a pattern which is to appear upon the body portion of the strip and a separate pattern adapted to form the frieze at the top or upper end of the strip being repeated upon each successive strip printed.

By means of my invention the patterns may be repeated from the top to the bottom of the room as in the case of ordinary wall paper, or the patterns in the several sections may be varied as desired. This object I accomplish by means of an improved mechanism by which one or more of the printing rollers may be moved radially toward or away from the drum or main cylinder, so they will be carried into and out of operative printing position as hereinafter described, the novel features of my invention being pointed out in the annexed claims.

In the accompanying drawings I have shown only so much of a printing machine as will be necessary to illustrate the character of my present invention.

Figure 1 is a front view of the impression cylinder and one of the printing rollers, having connected therewith my improved mechanism for moving the printing roller into and out of contact with the periphery of the main cylinder. Figs. 2 to 6 inclusive represent detached views of one of the mechanisms for moving the printing roller into and out of its printing position. Fig. 2 shows a detached side view of the mechanism for moving the printing roller, viewed in the direction of the arrow *a*, Fig. 1. Fig. 3 is a side view, viewed in the direction of the arrow *b*, Fig. 1. Fig. 4 is a side view similar to that shown in Fig. 2, but with the actuating cam in a different position and having the front plate or cover of the ratchet chamber removed. Fig. 5 is a view similar to that shown in Fig. 3, but having the lifting cam in a different position. Fig. 6 is an edge view of the mechanism for moving the printing roller. Fig. 7 is a central sectional view of a portion of the mechanism on the plane of the broken line 7—7, Fig. 2. Fig. 8 is a view of a portion of the mechanism shown in sectional view on the plane of the broken line 8—8, Fig. 6. Fig. 9 is a detached view of the ratchet spring. Fig. 10 is a detached side view of one of the fork shaped bearings for the shaft of the printing roller.

Similar reference characters refer to similar parts in the different views.

Referring to Fig. 1, 1 denotes the main impression cylinder, and 2 one of the printing rollers, all being properly mounted in a framework, a portion of which is shown at 3, 3. Attached to the frame 3, 3 are brackets 4, 4 in which the shaft 5 of the printing roller is mounted, the ends of the brackets being provided with open or fork shaped bearings 6, 6, one of which is shown in Fig. 10, which allow the shaft 5 of the printing roller to be moved from the position shown in Fig. 1 radially away from the impression cylinder 1 so as to bring the printing roller 2 out of contact with the impression cylinder.

The material to be printed is wrapped around a portion of the continuously mov-

ing cylinder 1 in the manner usual in wall paper machines, beneath the cylinder and in the frame-work being mounted printed rollers 2, one of which is shown in Fig. 1. The desired color having been supplied to the printing rollers 2, the designs carried thereby are impressed upon the material as it passes between the rollers and the impression cylinder. By providing the printing rollers with a mechanism for moving them away from the impression cylinder, the design carried by any roller may be skipped upon the paper, leaving a space upon which other patterns may be impressed by carrying at the proper time other printing rollers into contact with the paper.

In order to move a printing roller into and out of operative position with relation to the impression cylinder, I have provided a mechanism adapted to act upon the shaft 5 of the printing roller at predetermined periods in the rotation of the roller, it being understood that the ordinary geared connection between the shaft of the printing roller and the shaft of the impression cylinder is always in engagement, the teeth of the engaging gears being of sufficient length to allow a slight movement of the printing roller in a direction radial to the impression cylinder.

My improved mechanism for moving the printing roller into and out of its operative position comprises a pair of supports 7, 7 for the printing roller, in the upper ends of which the shaft 5 of the printing roller 2 is journaled. The supports 7 and the actuating mechanism by which they are moved to carry the printing roller toward or away from the impression cylinder are duplicates, except that they are arranged for the right and left hand sides of the machine, and a description of one of these supports and its actuating mechanism will, therefore, suffice for both.

In Figs. 2 to 8 inclusive I have illustrated upon a larger scale and as removed from the machine the mechanism for moving the printing roller shown upon the left hand side of the machine in Fig. 1. The lower end of the support 7 is provided with an opening 8 which incloses a fixed stud 9 held by the frame 3, said opening being larger than the stud 9 to allow the support 7 to be moved longitudinally in order to carry the printing roller toward or away from the impression cylinder. Journaled upon the stud 9 is a cam 10 having, in the present instance, two projecting cam surfaces 11, 11 which contact, as the cam is rotated, with a lug 12 projecting from the side of the support 7 for the purpose of lifting the support 7 to carry the printing roller into contact with the impression cylinder, said cam 10 being then in the position shown in Fig. 5. The cam 10 is provided with an elongated hub 13 which extends through the opening 8 in the support 7, as shown in sectional view in Fig. 7. Keyed to the hub 13 is a second cam 14, shown in Fig. 8. The cam 14 is arranged to contact with a lug 15 projecting from the side of the support 7 in order to force the support 7 downward, when it is released by the cam 10, thereby insuring that the printing roller will be brought away from the impression cylinder at the proper moment. Keyed to the hub 13 is a ratchet wheel 16 which is inclosed by a ring 17 having on one side a projecting arm 18, which is held by a coiled spring 19 in the path of a revolving cam 20, the normal position of the arm 18 being represented in Fig. 2. The arm 18 carries a pawl 21, Fig. 4, yieldingly held by a spring 22 in engagement with the teeth of the ratchet wheel 16. The cam 20 is attached to the shaft 5 of the printing roller 2 and is revolved in the direction of the arrow *c*. Each revolution of the cam 20 in passing the arm 18 moves the pawl 21 sufficiently to impart a rotative movement to the ratchet wheel the distance of one of its teeth, thereby imparting an intermittent rotary motion to the two cams 10 and 14. The spring 19 is connected at one end with the arm 18 and at the opposite end to a bracket 19^a attached to the support 7.

The ring 17 incloses a circular chamber 23 which contains the ratchet wheel 16. This ratchet chamber is closed by a cover 24 and outside the cover 24 is a plate 25 having an elastic arm 26 with its free end bent at right angles, as shown at 27, Fig. 9, and, passing through an opening 28 in the cover 24. This free end engages one of the notches 29 in the ratchet wheel and serves as a retaining pawl to hold the ratchet wheel from reverse movement. The plate 25 and cover 24 are held in place by a bolt 30 entering a screw threaded hole in the end of the stud 9. The number of cam surfaces 11, 11 on the cam 10 may be varied in order to increase or diminish the number of times the printing roller is carried into operative position during the rotation of the cam 10. In the present instance the printing roller is carried into operative position twice during each revolution of the cam 10, and the cam 14 is provided with two recesses 31 to receive the lug 15 as the roller support 7 is lifted. If the cam surfaces of the cam 10 are increased in number, the cam 14 will also be provided with a corresponding number of recesses to allow the roller support 7 to be lifted. The ratchet 16 may be exchanged for other ratchets having a different number of ratchet teeth, and the cam 20 may be exchanged for other cams giving a greater or lesser throw to the actuating pawl 21. The mechanism is, therefore, capable of such variation as will enable the

relative periods of operativeness and inoperativeness of the printing roller to be changed to suit the nature of the work.

In the construction shown the operation of my improved mechanism is as follows:— During each revolution of the shaft 5 of the printing roller, the pawl and ratchet mechanism is made to impart an intermittent movement to the cams 10 and 14, each step being equal to one twelfth of a revolution, as the ratchet wheel in the present case is provided with twelve teeth. As the lifting cam 10 is provided with two diametrically opposite cam surfaces 11, 11, the roller supports 7 will be raised and dropped twice during each rotation of the cam 10, or once during six revolutions of the roller shaft 5. During five revolutions of the printing roller shaft 5, the printing roller will be held out of operative position, while during one revolution of the printing roller shaft 5, the roller will be held in operative position, or during the time the cam projection 11 is passing the lug 12. During every six revolutions of the printing roller 2, it will be inoperative during five revolutions and operative during one revolution. While the printing roller 2 is held in an inoperative position, one or more other printing rollers comprising part of the printing machine are assumed to be in operative positions.

I am aware that it is not new in machines of this class to employ mechanisms for carrying the printing rollers into and out of operative position and I do not claim such broadly. By my present improvement the actuating mechanism is rendered simple and inexpensive, reliable in its operation and is directly controlled by the rotative movement of the printing roller itself.

I claim,

1. In a machine of the class described, an impression cylinder, a printing roller journaled in supports capable of being moved toward and away from said impression cylinder, cams supported by the rigid framework of the machine for moving the roller supports toward said impression cylinder, and means driven by the printing roller shaft and including a pawl and ratchet connection for imparting rotary movement to said cams.

2. In a machine of the class described, an impression cylinder, a printing roller having a shaft journaled in supports capable of being moved toward and away from said impression cylinder, studs held in the rigid framework of the machine, cams held on said studs having surfaces adapted to move said roller supports toward said impression cylinder, pawl and ratchet mechanism for rotating said cams, and cams driven by the printing roller shaft for actuating said pawl and ratchet mechanisms.

3. In a machine of the class described, a framework, an impression cylinder, a printing roller mounted in slotted supports on the framework capable of being moved toward and away from said impression cylinder, studs held by the framework and passing through the slots in said roller supports, cams mounted on said studs and acting against said supports to move them toward the impression cylinder, and means including pawl and ratchet connections for actuating said cams.

4. In a machine of the class described, an impression cylinder, a printing cylinder journaled in supports capable of being moved toward and away from said impression cylinder, cams mounted on the framework of the machine adapted to act against said roller supports to move them toward said impression cylinder and to give a sudden release to said supports, and means for imparting an intermittent rotary motion to said cams.

5. In a machine of the class described, an impression cylinder, a printing roller having a shaft, a cam on a second shaft for moving said printing roller toward said impression cylinder and holding it in operative relation thereto, a pawl and ratchet mechanism for imparting an intermittent motion to said cam, and means carried by the shaft of said printing roller for actuating said ratchet mechanism.

6. In a machine of the class described, an impression cylinder, a printing roller having a shaft, a cam on a second shaft having projecting cam surfaces arranged to hold said printing roller in operative relation with said impression cylinder at predetermined periods in the cam, and means driven by the printing roller shaft and including a pawl and ratchet connection for imparting a rotative movement to said cam.

7. In a machine of the class described, an impression cylinder, a printing roller having a shaft, a support for said printing roller capable of being moved toward and away from said impression cylinder, a cam on a second shaft for moving said support toward said impression cylinder, a pawl and ratchet mechanism for imparting an intermittent motion to said cam, and a cam carried by the shaft of said printing roller for actuating said pawl and ratchet mechanism at predetermined periods in the rotation of said printing roller.

8. In a machine of the class described, an impression cylinder, a printing roller, a pair of cams supported by the rigid framework of the machine, one of said cams having cam surfaces for moving said printing roller toward said impression cylinder and the other of said cams having cam surfaces for moving said printing roller away from said impression cylinder, and means for im-

parting a simultaneous movement to said cams by the rotation of said printing roller.

9. In a machine of the class described, an impression cylinder, a printing roller, supports for said printing roller mounted on the framework of the machine and capable of moving toward and away from said impression cylinder, a cam mounted on the framework for moving said supports toward said impression cylinder, a cam mounted on the framework for moving said supports away from said impression cylinder, and means actuated by the rotation of said printing roller for rotating said cams.

10. In a machine of the class described, an impression cylinder, a printing roller having a shaft, a cam on a second shaft for changing the distance between the impression cylinder and the printing roller, a pawl and ratchet mechanism for driving said cam, and a cam driven by the printing roller shaft for driving the pawl and ratchet mechanism.

Dated this thirteenth day of October 1911.

MOSES DUPUIS.

Witnesses:

RUFUS B. FOWLER,

PENELOPE COMBERBACH.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."

Corrections in Letters Patent No. 1,153,045.

It is hereby certified that in Letters Patent No. 1,153,045, granted September 7, 1915, upon the application of Moses Dupuis, of Worcester, Massachusetts, for an improvement in "Machines for Printing Fabrics," errors appear in the printed specification requiring correction as follows: Page 2, line 3, for the word "printed" read *printing;* page 3, line 62, claim 2, for the word "mechanism" read *mechanisms;* same page, line 105, claim 6, before the word "cam" insert the words *movement of said;* and that the said Letters Patent should be read with these corrections therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 5th day of October, A. D., 1915.

[SEAL.]

R. F. WHITEHEAD,
Acting Commissioner of Patents.