

Jan. 4, 1938.

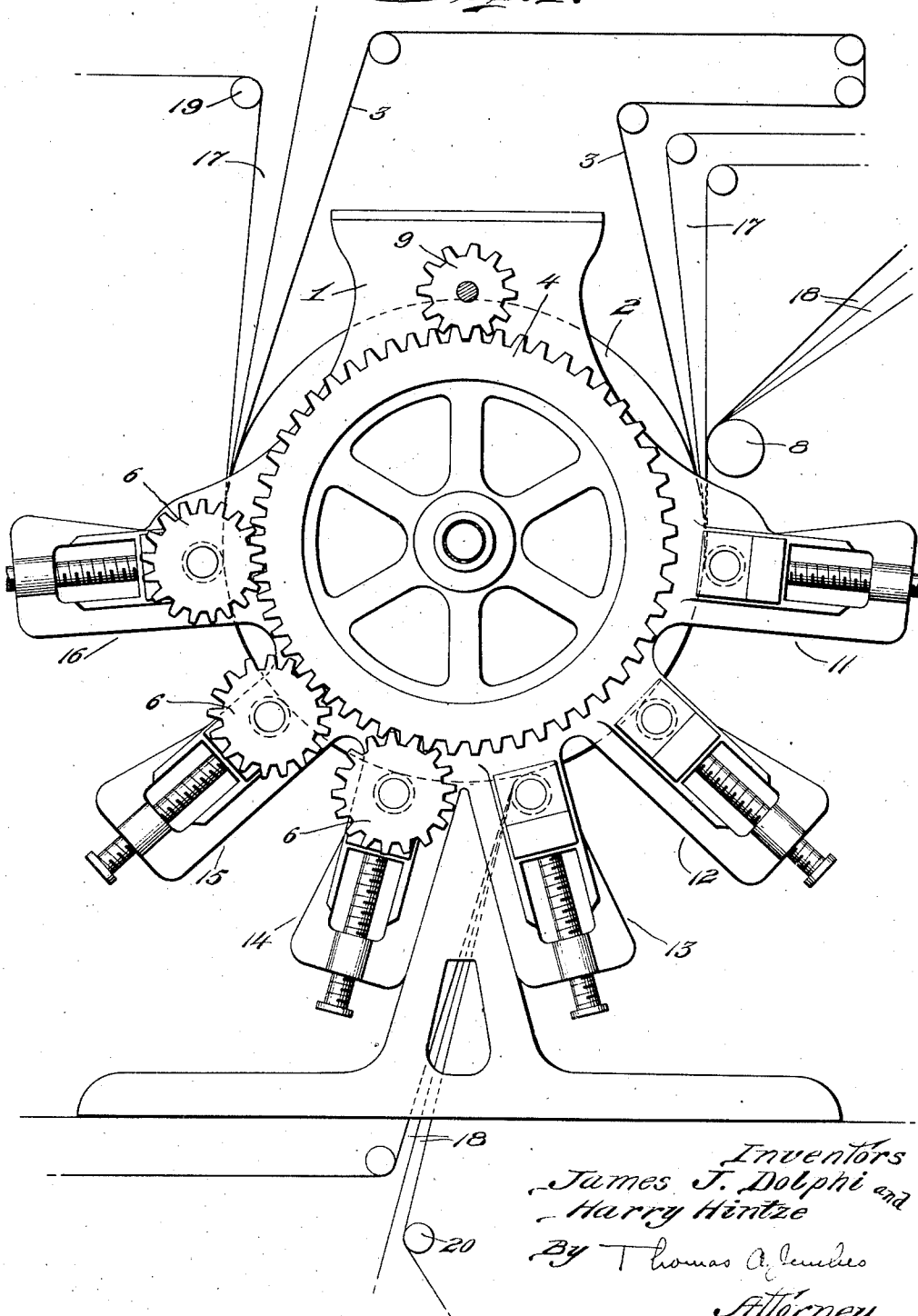
J. J. DOLPHI ET AL

2,104,417

TEXTILE PRINTING MACHINE

Original Filed Oct. 9, 1933 2 Sheets-Sheet 1

Fig. 1.



Jan. 4, 1938.

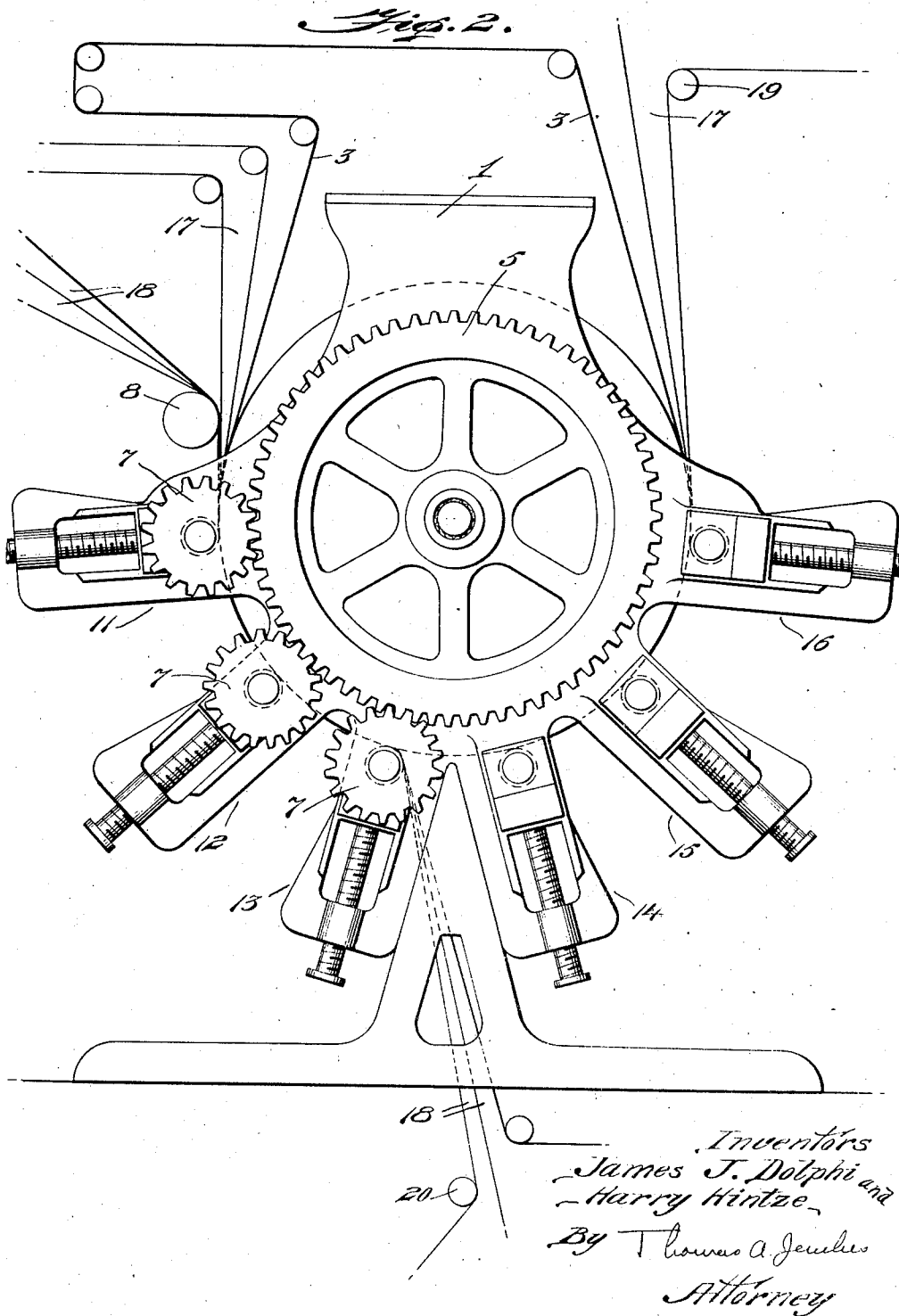
J. J. DOLPHI ET AL

2,104,417

TEXTILE PRINTING MACHINE

Original Filed Oct. 9, 1933

2 Sheets-Sheet 2



UNITED STATES PATENT OFFICE

2,104,417

TEXTILE PRINTING MACHINE

James J. Dolphi, Cranston, and Harry Hintze,
West Warwick, R. I.Application October 9, 1933, Serial No. 692,808
Renewed November 7, 1936

6 Claims. (Cl. 101—178)

This invention relates to improvements in textile printing machines of the type embodying an impression cylinder to which rotary motion is imparted by frictional contact with a series of printing rollers.

The principal object of the invention is to provide an improved machine of this character in which means are provided to print simultaneously at least one pattern on each of two or more separate fabrics or similar materials.

On conventionally constructed machines for the printing of textile fabrics, it is possible to print, depending upon the capacity of the machine, from one to sixteen color-combinations or patterns on one fabric, but on one fabric only, while by this invention, a plurality of separate fabrics may be printed simultaneously with one or more separate patterns or color combinations for each fabric.

Other objects and advantages of the invention will appear as the description proceeds.

The drawings accompanying this specification are of a machine embodying the features of the present invention and in which Fig. 1 is a side elevation of a printing machine with our invention attached taken from the driving side and Fig. 2 is a side elevation of a printing machine with our invention attached taken from the opposite side thereof.

Referring to the drawings, we designate the frame of the textile printing machine in which is mounted on its horizontal shaft, the freely rotating pressure cylinder 2 of comparatively large diameter, in contact with the surface of which the usual blanket 3 if employed travels during its passage around a portion of the surface of the cylinder. The driving gear 9 imparts motion to the driven crown wheel or spur gear 4 which is mounted for rotation on a stud shaft secured in the frame of the machine. The idle spur gear 5 is mounted, on roller bearings or similar devices to insure easy rotation, in the same manner and relative position as spur gear 4, but preferably on the opposite side of the machine. Spur gear 5 may be of the same size and may have the same number of teeth as spur gear 4. By 11, 12, 13, 14, 15 and 16 are designated the nips on both sides of the machine holding or containing: the head stocks or center boxes, the nip pressure screws, the adjusting and back-out screws for the mandrel boxes, the color pan hangers, the doctor steps and boxes, and finally, the bearings, holding the mandrels which serve as temporary axles for the printing rollers when the latter are placed in the printing machine. Each roller

works thus in combined spring and lever adjustable bearings which allow of its being moved whilst the machine is in motion. The fitting gears, which may be of the same type and size, are here classified according to the side of the machine on which they are used. The fitting gears 6 are set in the usual manner on the gear side of the machine on mandrels with bearings of the conventional type. The fitting gears 7 are set on the opposite side of the machine on mandrels running in roller bearings or similar devices, to insure easy rotation. The drag roller 8 serves to feed or guide the fabrics and greys into the machine and onto the cylinder.

As is the usual practice in the operation of machines of this type, motion is imparted to the printing rollers on their mandrels by means of fitting gears 6, said fitting gears being adapted to be meshed for perfect adjustment or "fit" with spur gear 4, motion being imparted to the latter by a driving pinion from any suitable source of power. The mandrels with printing rollers and fitting gears 7 and their bearings are adapted to be meshed for adjustment or "fit" with idle spur gear 5. Said fitting gears 7 and the cylinder 2, neither of which are directly coupled to the drive of the machine, are rotated by the friction caused by said cylinder's pressure upon the revolving printing rollers set on mandrels carrying the fitting gears 6.

It is believed that the operation of the machine will be understood from the foregoing description taken in connection with the drawings, but for purposes of illustration, the process of printing on our machine simultaneously, for instance, two separate fabrics with a two-color or two-roller combination on each, is cited below:

The nips holding the mandrels of the printing rollers are numbered in this illustration from 11 to 16, 11 being in rear, 16 being in front of the machine, and both approximately on the same level as the shaft of the cylinder. The space between 11 and 16 is taken up by nips 12, 13, 14 and 15 around the lower portion of the cylinder, where they are placed about equidistant from each other.

For the printing of two fabrics with a two-color combination on each, two printing rollers and a gum roller on mandrels provided with suitable fitting gears as shown at 6 are set in nips 14, 15 and (gum roller) 16 on the gear or machine side in the conventional manner and are meshed for "fit" with spur gear 4. Thereafter, two printing rollers and a gum roller on mandrels with suitable fitting gears as shown at 7 are set

on the opposite side of the machine in nips 11, 12 and (gum roller) 13 and are meshed for "fit" with the idle spur gear 5. After color pans and doctors, etc. have been inserted, the machine is ready to receive the fabrics to be printed.

There is fed into the machine so prepared, over the drag roller 8 in the usual manner, a fabric or goods and a back grey, these two being hereafter referred to as layer 17, passing along with the blanket 3 on the surface of the lower portion of the cylinder 2 until it comes to printing roller in nip 14 and subsequently 15, and after passing gum roller 16, said layer 17 leaves the machine in the well-known manner. A second layer, hereafter called layer 18, consisting of a waterproofed grey, an ordinary back grey as used in layer 17 and a second fabric, is fed into the machine simultaneously with layer 17 over the drag roller 8.

Layer 18 is carried along with the blanket 3 and with layer 17, on a portion of the surface of the cylinder until it comes to nips 11 and subsequently 12 with their printing rollers provided with the fitting gears 7, and after passing gum roller at 13, it leaves the surface of the cylinder and travels downward.

When the driving gear 9 is set in motion, it turns the spur gear 4, thereby causing the printing rollers provided with fitting gears 6 in nips 14, 15 and 16 to rotate in synchronism, said printing rollers imparting frictional motion to cylinder 2, and the latter causes the printing rollers provided with the fitting gears 7 in nips 11, 12 and 13 to revolve in synchronism. An imprint is made on the fabric of layer 17 by the printing rollers in nips 14 and 15, and on the fabric of layer 18 by the printing rollers in nips 11 and 12.

The printed fabric and the back grey of layer 17 are taken care of in the usual, well-known manner, the printed fabric being separated from the back grey and blanket and guided away from said cylinder for further treatment by the guide roller 19.

The disposition of layer 18 presents a novel feature of our improved printing machine.

As indicated above, layer 18 leaves the cylinder after having passed gum roller at 13 and travels downward. Under the floor of the machine, suitable dry-cans and drying chambers are installed and through an opening in the floor, the fabric, waterproofed grey and ordinary back-grey of layer 18 are led, are suitably separated and the fabric layer is suitably guided by suitable means such as the guide roller 20 onto them.

A waterproofed grey is used in layer 18, in order to prevent the color printed on the fabric of said layer from penetrating to the fabric of layer 17.

It will be readily understood by persons versed in the art that this improved printing machine offers a greatly enlarged capacity compared with that of the old, conventionally constructed machine. Whereas the example of a six-color machine has been cited, larger and smaller machines constructed under this invention lend themselves to the simultaneous printing of a plurality of fabrics or similar materials. By installing, for instance, an additional idle spur gear on the opposite or driving side of the machine and by using longer mandrels than are conventionally used today, it is possible to set additional fitting gears, thus allowing an additional multi-color or multi-roller pattern or combination to be printed.

Another factor to be taken into consideration

is the fact that the machines of this invention do not have to be erected in the customary manner with relation to the floor.

It is further understood that the machine may be provided with as many mandrels with printing rollers and suitable fitting gears as the capacity of the machine allows, and that other details of construction may be modified or changed without departing from the spirit and scope of this invention as set forth in the appended claims. A set of rolls may consist of the combination of a suitable gum printing roll if employed with one or more printing rolls depending on whether single or multi-colored patterns are desired to be printed.

Having thus described our invention, we claim:

1. In a textile printing machine for simultaneously printing two separate webs of fabric, an impression cylinder, a plurality of plate cylinders spaced circumferentially about the impression cylinder and in frictional contact therewith, said plate cylinders comprising two sets of cylinders, means for causing the cylinders of each set to rotate in synchronism, the cylinders of one set being driven by their frictional engagement with the impression cylinder, means for directing two superimposed webs to be printed between the impression cylinder and said set of frictionally driven plate cylinders, whereby one of the webs is printed, means for guiding the printed web away from the impression cylinder while the unprinted web is directed between the impression cylinder and the second set of plate cylinders, means for driving said second set of plate cylinders in synchronism with each other, said impression cylinder being driven by its frictional engagement with said second set of plate cylinders, and means for guiding said second web away from the impression cylinder.

2. In a textile printing machine for simultaneously printing two separate webs of fabric, an impression cylinder, a plurality of plate cylinders spaced circumferentially about the impression cylinder and in frictional contact therewith, said plate cylinders comprising two sets of cylinders, means for causing the cylinders of each set to rotate in synchronism, the cylinders of one set being driven by their frictional engagement with the impression cylinder, means for directing two superimposed webs to be printed between the impression cylinder and one of said sets of plate cylinders, whereby one of the webs is printed, means for guiding the printed web away from the impression cylinder while the unprinted web is directed between the impression cylinder and the second set of plate cylinders, means for driving one of said sets of plate cylinders in synchronism with each other, said impression cylinder being driven by its frictional engagement with said driven set of plate cylinders, and means for guiding said second web away from the impression cylinder.

3. In a textile printing machine for simultaneously printing two separate webs of fabric, rotary means comprising rotary impression cylinder means, a set of rotary printing roll means arranged around one portion of said printing machine in frictional contact with said impression cylinder means and a second set of rotary printing roll means arranged around a different portion of the machine in frictional contact with said impression cylinder means; means to synchronize the speed of all rotary printing roll means of each set, means to impart a rotary motion to one of said rotary means and thereby

frictionally drive all the other rotary means, means to guide one layer of fabric between the impression cylinder means and one set of rotary printing roll means only in printing relation thereto and means to guide a separate layer of fabric between the impression cylinder means and the other set of rotary printing roll means only in printing relation thereto.

4. In a textile printing machine for simultaneously printing two separate webs of fabric, rotary means comprising rotary impression cylinder means, a set of rotary printing roll means arranged around one portion of said printing machine in frictional contact with said impression cylinder means and a second set of rotary printing roll means arranged around a different portion of the machine in frictional contact with said impression cylinder means; means to synchronize the speed of all rotary printing roll means of each set, means to impart a rotary motion to one of said rotary means and thereby frictionally drive all the other rotary means, means to guide one layer of fabric and one printing blanket between the impression cylinder means and one set of rotary printing roll means only in printing relation thereto and means to guide a separate layer of fabric and a separate blanket between the impression cylinder means and the other set of rotary printing roll means only in printing relation thereto.

5. In a textile printing machine for simultaneously printing two separate webs of fabric, an impression cylinder, a plurality of plate cylinders spaced circumferentially about the impression cylinder and in frictional contact therewith, said plate cylinders comprising two sets of cyl-

inders, means for causing the cylinders of each set to rotate in synchronism, means for directing two superimposed webs to be printed between the impression cylinder and one of said sets of plate cylinders, whereby one of the webs is printed, means for guiding the printed web away from the impression cylinder while the unprinted web is directed between the impression cylinder and the second set of plate cylinders, means to rotate one of said cylinders to additionally cause rotary movement of said other cylinders, and means for guiding said second web away from the impression cylinder.

6. In a textile printing machine for simultaneously printing a plurality of separate webs, an impression cylinder, a set of printing cylinders spaced along the outside of the periphery of one portion of said impression cylinder in frictional contact therewith, means to guide a web into a position between the impression cylinder and said set of printing cylinders, and to guide said web away therefrom, a second set of printing cylinders spaced along the outside of the periphery of another portion of the impression cylinder in frictional contact with said impression cylinder, means to guide a supplemental web into a position between the impression cylinder and said second contacting set of printing cylinders and to guide said supplemental web away therefrom, means to rotate one of said cylinders to additionally cause rotary movement of said other cylinders, and means to synchronize the speed of all printing cylinders of each set.

JAMES J. DOLPHI.
HARRY HINTZE.