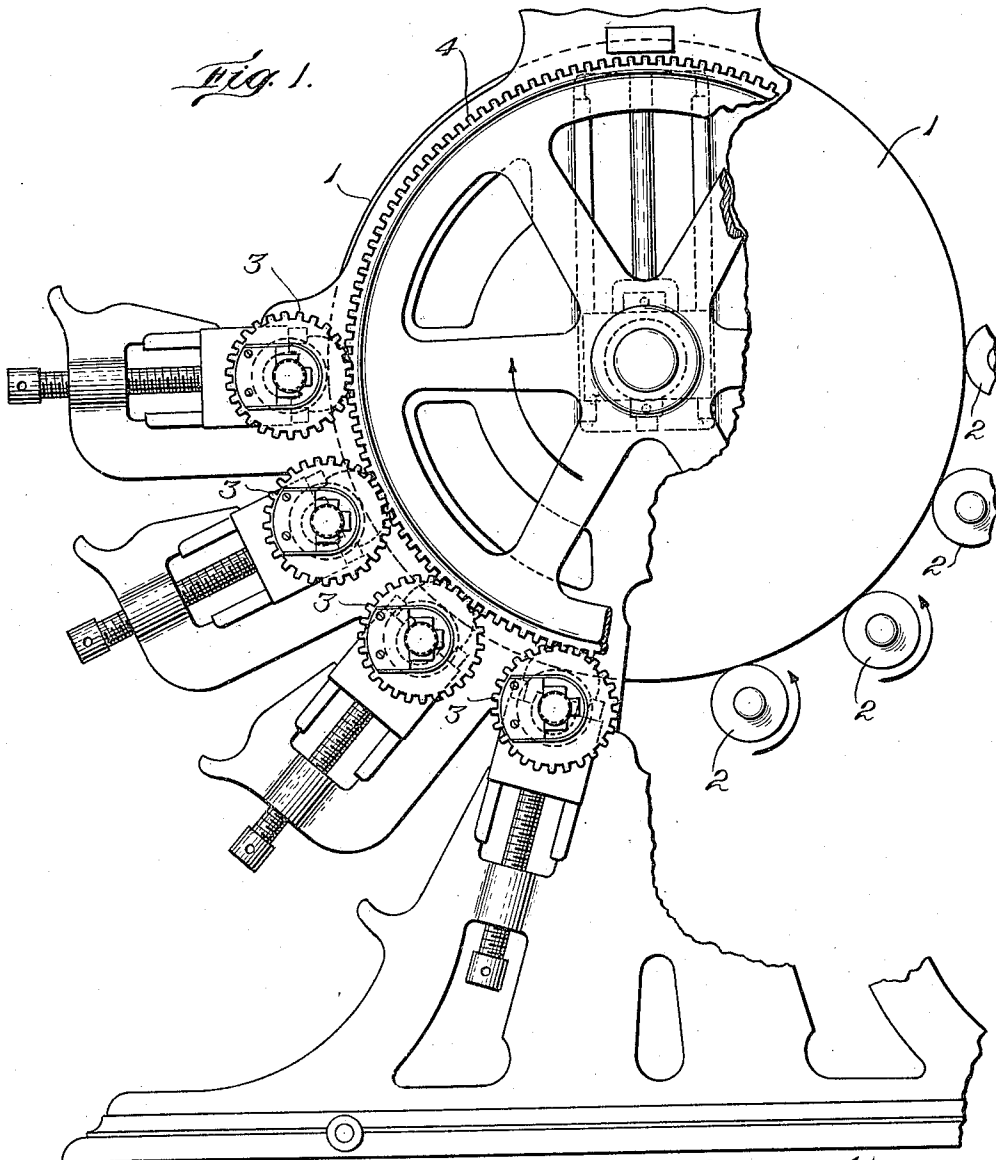


L. FLICK.
TEXTILE PRINTING MACHINE.
APPLICATION FILED AUG. 1, 1918.

Patented June 3, 1919.
2 SHEETS—SHEET 1.

1,305,891.



Witness:
Cesar F. Hill

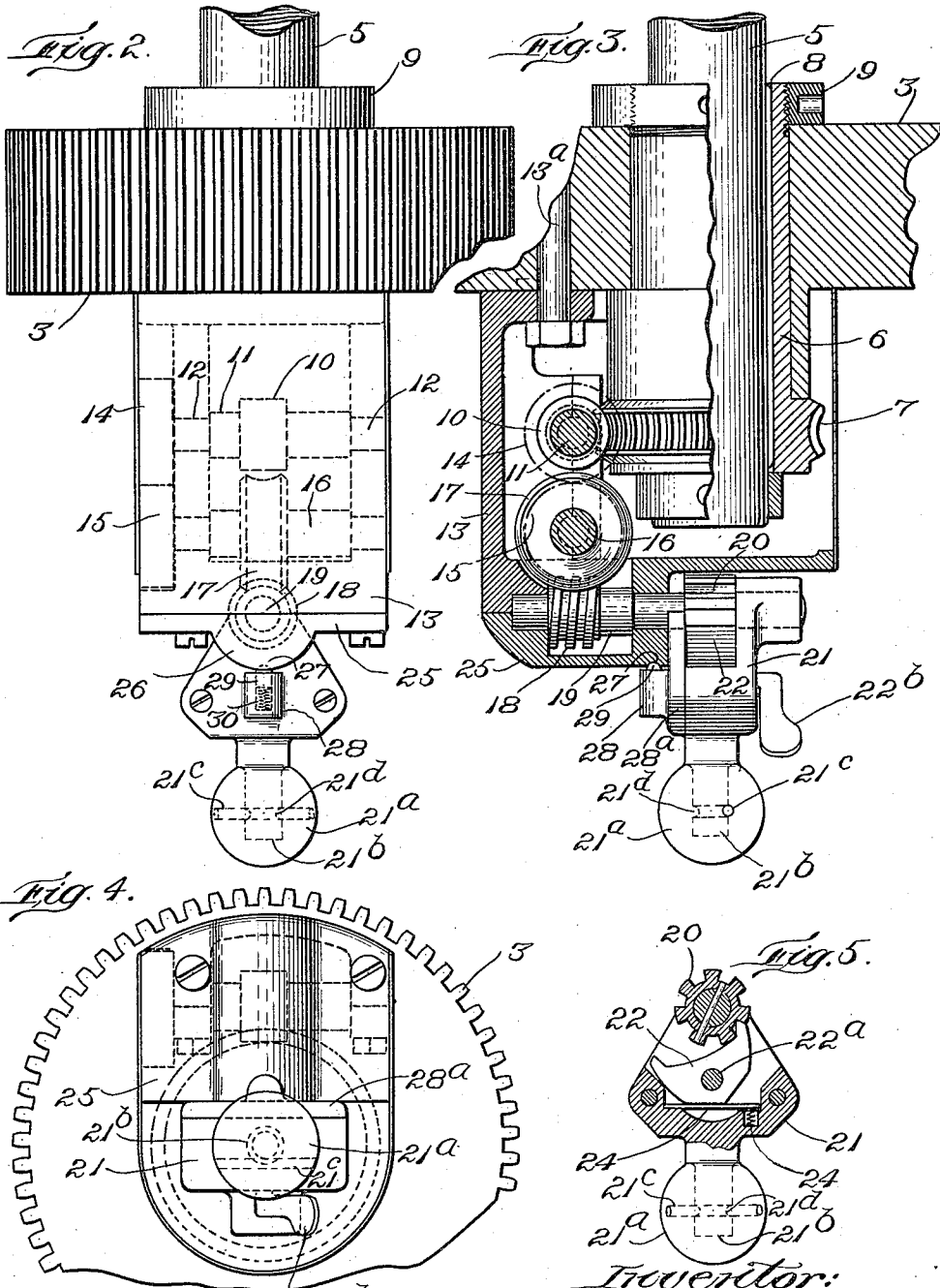
Inventor:
Lorenz Flick
by Char. F. Randall
Atty

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Witness:
Oscar F. Hill

Inventor:
Lorenz Flick
by Chas. F. Randall
att'y.

UNITED STATES PATENT OFFICE.

LORENZ FLICK, OF SAYLESVILLE, RHODE ISLAND, ASSIGNOR, BY MESNE ASSIGNMENTS,
TO FRANK A. SAYLES, CHARLES O. READ, AND KENNETH F. WOOD, ALL OF PAW-
TUCKET, RHODE ISLAND.

TEXTILE-PRINTING MACHINE.

1,305,891.

Specification of Letters Patent.

Patented June 3, 1919.

Application filed August 1, 1918. Serial No. 247,743.

To all whom it may concern:

Be it known that I, LORENZ FLICK, a citizen of the United States, residing at Saylesville, in the county of Providence, State of Rhode Island, have invented a certain new and useful Improvement in Textile-Printing Machines, of which the following is a specification, reference being had therein to the accompanying drawings.

The invention comprises improved means of effecting angular change of relationship between rotating rolls, more especially the print-rolls of textile printing machines, and the toothed wheels through which they are driven. In the case of a textile printing machine adjustments of this character are necessary in order that the impressions from all of the print-rolls of such machine may be caused to register properly with one another upon the cloth that is being printed. Great accuracy of registration is required in such case. Similar adjustments are necessary for various reasons in the case of the rolls of other machines.

The general objects of the invention are to provide better and more convenient means for effecting the desired adjustments than the means at present employed in practice; further, to provide improved means for enabling the said adjustments to be made with accuracy while the machine is working and with the print-rolls revolving, and with complete safety for the person who makes the adjustment.

In conformity with my invention I combine with the angular-adjustment gear intermediate a roll and its wheel an adjustment-handle for said gear that is worked manually in a plane at an angle with the planes of rotation of the roll and wheel. One feature of the invention consists in an adjustment-handle having its normal position substantially in line with the axis of the roll and wheel and worked as just stated. The invention includes reversible transmission devices between the handle and the angular-adjustment gear.

In the drawings,—

Figure 1 is a view showing portions of a textile printing machine having my invention applied thereto.

Fig. 2 is a plan view of the parts which are more immediately involved in the invention.

Fig. 3 is a view showing the parts of Fig. 2, partly in cross-section, with the operating handle changed in position.

Fig. 4 is an end view of the parts that are shown in Fig. 2, with a portion of the spur-pinion broken away.

Fig. 5 is a sectional view showing the operating handle, its reversible dog, and the ratchet-wheel with which the said dog coacts.

Having reference to the drawings,—

In Fig. 1 the bowl or impression cylinder of a textile printing machine of one of the types in general use is shown at 1, and 2, 2, etc., are engraved print-rolls of the series arranged to apply colors to the cloth passing around the said bowl or impression cylinder, between the latter and the print-rolls. The spur-pinions of the print-rolls are shown at 3, 3, etc., and 4 is the large gear rotating in unison with the bowl or cylinder 1, engaging with the spur-pinions 3, 3, and through such engagement transmitting movement of rotation to the print-rolls.

To provide for the desired angular change of relationship between a print-roll 2 and its spur-pinion 3, the spur-pinion is mounted in conjunction with the mandrel 5 of the roll in a manner providing for angular adjustment of the roll-mandrel with respect to the pinion. In the illustrated construction, the pinion is fitted upon the exterior of a sleeve 6 that is mounted upon the outer portion of mandrel 5, the said sleeve being formed with or having applied thereto a worm-gear 7. The said sleeve and mandrel are caused to turn in unison with each other by means of a feather or spline 8, Fig. 2. The hub of the pinion is confined between one side of the worm-wheel and a collar 9 that is screwed upon the threaded inner end of sleeve 6, whereby the pinion is kept from movement longitudinally of mandrel 5.

The said worm-gear 7 constitutes one element of a convenient form of angular-adjustment gear for connecting the mandrel

with the wheel 3. It is engaged by a worm 10, Figs. 2 and 3, upon a small shaft 11 that is mounted to turn in bearings at 12, 12, Fig. 2, in connection with a box 13 that is attached, as by bolts 13^a, to the outer side of the spur-pinion 3. The said worm constitutes a second element of the said angular-adjustment gear. The interengagement of the worm and worm-gear causes the mandrel to turn in unison with wheel 3.

The shaft 11 has combined therewith a motion-transmitting train through which motion is transmitted to rotate the worm 10 for the purpose of effecting the required angular adjustment of the mandrel relative to the wheel 3. The drawings show a train of convenient construction and arrangement, of which toothed wheels 14, 15, form a part. Wheel 14 is fixed upon the shaft 11, and wheel 15 is fixed upon a shaft 16 that is disposed parallel with shaft 11 and like the latter is mounted in bearings that are provided in connection with the box 13. This second shaft is provided with a worm-wheel 17 that is engaged by a worm 18 upon a shaft 19 which is mounted in bearings in connection with box 13.

Shaft 19 occupies a position extending diametrically with relation to mandrel 5, just beyond the outer end of the mandrel. For the purpose of enabling this diametrical shaft 19 to be actuated by the workman, a ratchet-wheel 20 is fixed thereon, in this instance in a position in line with the axis of the mandrel 5, and a handle 21 is loosely mounted upon the said shaft, preferably in line with the mandrel, with capacity to swing diametrically, the said handle being furnished with a dog 22, Fig. 5, for engagement with the ratchet-wheel 20. The construction and arrangement are such that when handle 21 is swung around shaft 19 by the workman, the forward push of the dog 22 against a tooth of ratchet-wheel 20 will operate to turn the shaft 19 so as to transmit movement through the intermediate gearing to the worm 10 and rotate the latter to occasion an angular change in the relationship between the mandrel and the wheel 3.

In order that the relative angular shift between the mandrel and the wheel may be effected in either direction at the will of the workman, the actuating means is made reversible in its action. A convenient reversibly-acting pawl and ratchet mechanism of well-known construction is shown in the drawings. Thus, the teeth of ratchet-wheel 20 are shown as double-faced, see more particularly Fig. 5, so as to enable such wheel to be engaged and pushed around in either direction, and the dog 22 is shown as of reversible or double-acting construction, with opposite engaging portions and pivoted, as at 22^a, to the handle 21 so as to enable it

to be adjusted upon its pivot so as to place either of the said engaging portions, as may be required, in engagement with the ratchet-wheel. A presser-plate 23, Fig. 5, actuated by means of an expanding spring 24, bears against one flatted face or the other of an intermediately located triangular projection of the back of the dog, and operates with the effect of holding yieldingly in engagement with the teeth of the ratchet-wheel whichever engaging portion of the dog is in position to act. Reversal of the direction in which the ratchet-wheel 20 is rotated is provided for by means of a thumb-piece 22^b on the extended pivot 22^a of dog 22. By pressure applied by the workman to the said thumb-piece the dog may be changed in position when necessary, in order to provide for actuation of ratchet-wheel 20 in either direction as may be desired in order to effectuate the desired adjustment-shift of the mandrel and print-roll with relation to the wheel 3.

To provide for keeping the handle normally extended in a line with the mandrel, the cap 25 of the bearings for diametrical shaft 19 is formed with a rounded projection 26, the surface of which is concentric with the said bearings for the diametrical shaft 19, this projection having an intermediately-located depression 27, Figs. 2 and 3. A boss 28 on the side-plate 28^a of handle 21 is formed with a chamber containing a plunger 29 and backing-up spring 30. Said spring-pressed plunger enters the said depression when the handle occupies its intermediate position, and acts to hold the handle extended in line with the mandrel, but when force is applied to the handle to swing it in either direction the plunger rides out of the depression and along the rounded surface of the projection 26 so that it does not interfere with the free manipulation of the handle in effecting the required adjustment. Preferably the knob-like portion 21^a of the handle is a loose piece, bored out to fit upon a spindle-shaped portion 21^b (shown in dotted lines) of the handle, so that when the workman takes hold of the said knob-like portion the spindle-shaped portion may turn within the same, thereby relieving the workman's hand from the effects of friction such as would result from contact with a hand-hold turning in unison with the other parts. The said knob-like hand-hold 21^a is held from displacement from the spindle-shaped portion 21^b of the handle by means of a pin 21^c driven through said hand-hold and occupying an annular groove 21^d extending around said portion 21^b.

The devices herein described enable any desired angular change in the relationship between the mandrel and the wheel 3 to be made conveniently, and with accuracy, as well as with entire safety to the workman,

with the machine in operation. Thereby, in the case of a textile printing machine the work of securing proper register of the impressions of the various print-rolls is facilitated and made safe in its performance. 5 The required adjustment may be effected by the workman by taking hold of the handhold 21^a and moving his hand so as to swing the handle, with the dog 22 adjusted to produce turning movement of the worm 10 in the proper direction. Or, if the dog be set to actuate the ratchet-wheel in the right direction, and the hand-hold be grasped by the workman, it simply will be necessary to 15 maintain a yielding pressure in a given general direction. This pressure will cause the handle to assume an eccentric position, and as the then eccentrically disposed portion of the handle comes around in every rotation of 20 the parts the maintenance of the pressure will cause the handle to swing diametrically across, producing thereby the effect of vibrating the handle.

What is claimed as the invention is,—

- 25 1. The combination with a roll, a wheel, and angular-adjustment gear intermediate the two, including a worm-wheel concentric with the axis of the roll, and a worm engaging such worm-wheel, of an adjustment-handle for said gear that is worked manually in a plane at an angle with the planes of rotation of the roll and wheel, and reversible motion-transmitting connections between said handle and said worm.
- 35 2. The combination with a roll, a wheel, and angular adjustment gear intermediate the two, of an adjustment-handle for said gear having its normal position substantially in line with the axis of the roll and 40 wheel and worked manually in a plane at an

angle with the planes of rotation of the roll and wheel.

3. The combination with a roll, a wheel, an angular-adjustment gear intermediate the two, of an adjustment-handle, and reversible intermittent clutch transmission devices between the handle and the angular-adjustment gear. 45

4. The combination with a roll, a wheel, and angular-adjustment gear intermediate the two, of an adjustment-handle, and transmission devices comprising reversible pawl and ratchet mechanism. 50

5. The combination with a roll, a wheel, and angular-adjustment gear intermediate the two, of transmission-gear including a shaft extending transversely with respect to the roll, an adjustment-handle having its normal position substantially in line with the axis of the roll, and pawl and ratchet 60 mechanism actuated by said handle for reversibly actuating said transversely-extending shaft to actuate said angular-adjustment gear.

6. The combination with a roll, a wheel, and angular-adjustment gear intermediate the two, of transmission-gear including a shaft extending transversely with respect to the roll, an adjustment-handle having its normal position substantially in line with the axis of the roll, a reversible pawl-device connected with said handle, and a double-faced ratchet connected with said shaft. 70

In testimony whereof I affix my signature in presence of two witnesses.

LORENZ FLICK.

Witnesses:

CHAS. F. RANDALL,
ELLEN O. SPRING.