L. FLICK.

TEXTILE PRINTING MACHINE.

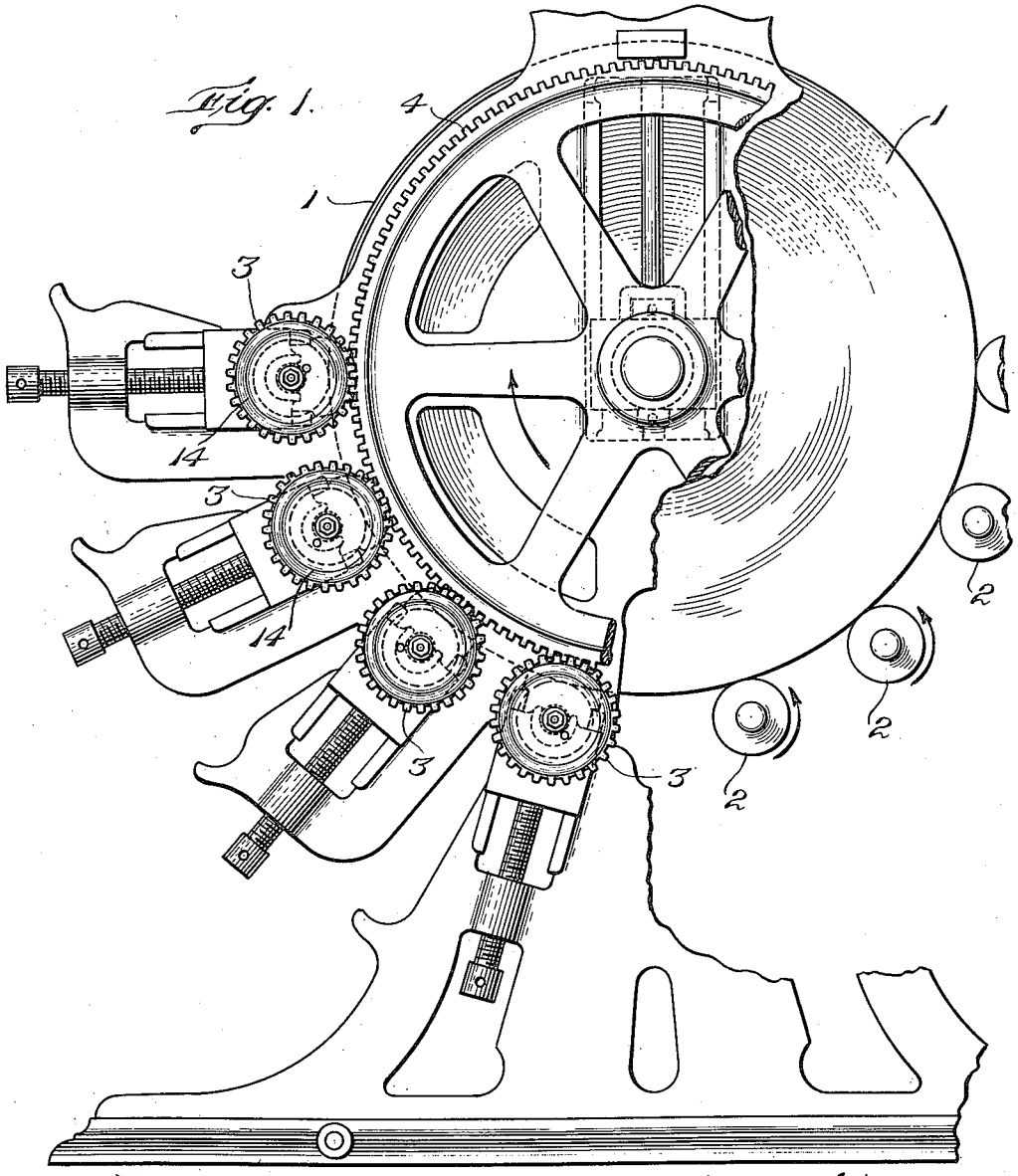
APPLICATION FILED JULY 31, 1918.

1,305,890.

Patented June 3, 1919.

2 SHEETS—SHEET 1.

Fig. 1.



Witness:
Oscar F. Hill

Inventor:
Lorenz Flick
by Chas. F. Randall
Atty

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2 SHEETS—SHEET 2.

Fig. 2.

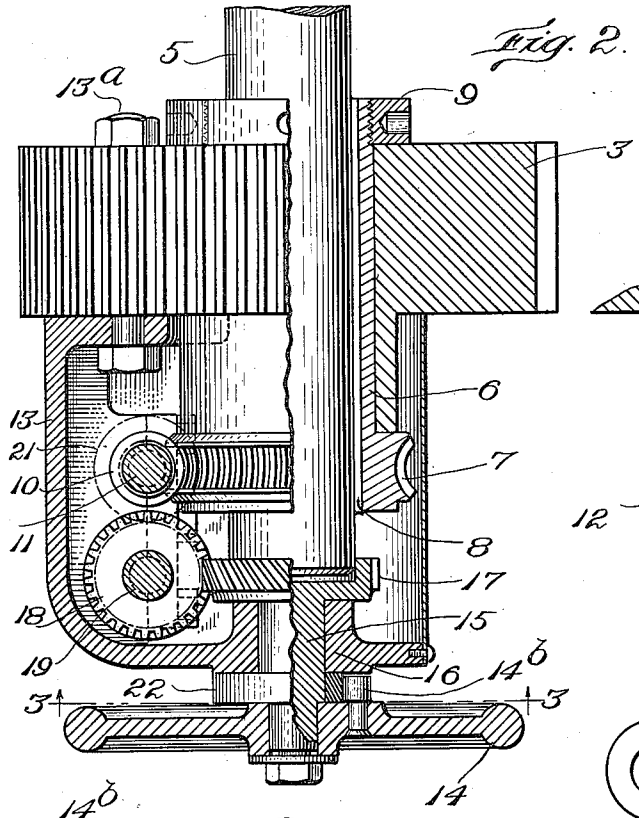
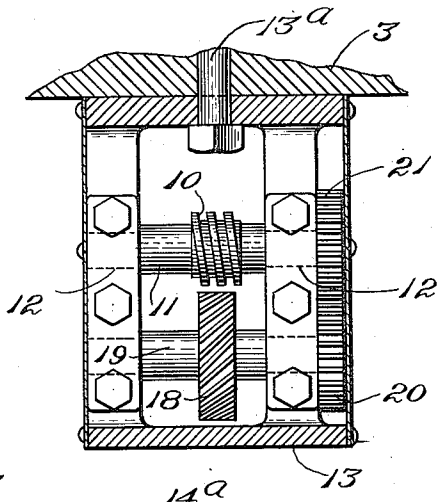
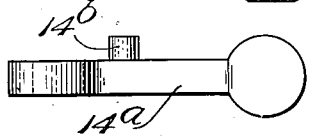


Fig. 4.





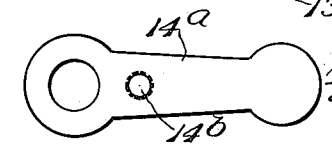
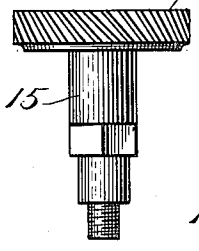


Fig. 7.

Fig. 3.

Fig. 8.



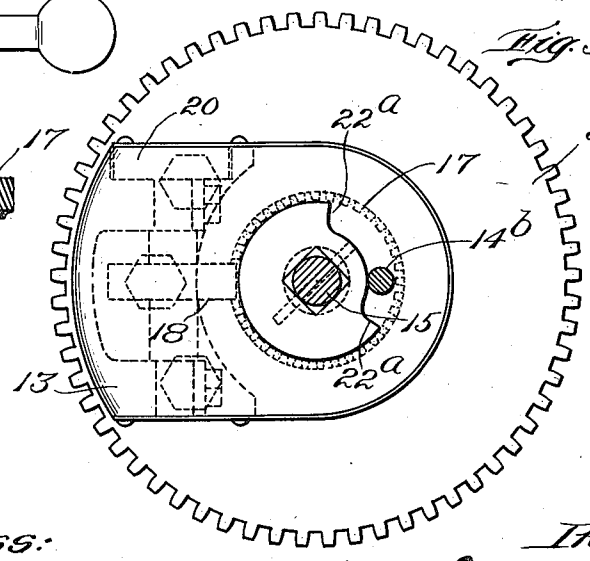


Fig. 6.

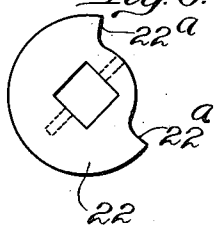


Fig. 5.

Witness:
Oscar F. Hill

Inventor:
Lorenz Flick
by Chas. F. Randall
Atty

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 PAWTUCKET, RHODE ISLAND.

TEXTILE-PRINTING MACHINE.

1,305,890. Specification of Letters Patent. Patented June 3, 1919.

Application filed July 31, 1918. Serial No. 247,613.

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 improvements in the 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 this adjustment is necessary in order to cause the impressions from all of the print-rolls of such machine to register properly with one another upon the cloth that is being printed. Great accuracy of registration is required in such case. The said adjustment is necessary for various reasons in the case of the rolls of other machines.

The general objects of the invention are to provide 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 adjustments.

In the drawings,—

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

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

Fig. 3 is a view looking at the parts of Fig. 2 from the outer end thereof, partly in section in the plane indicated by line 3, 3, in Fig. 2.

Fig. 4 is a partly sectional view of the gear-casing and associated parts.

Figs. 5 to 8 are views of details.

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 of such rolls which is 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 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 turning movement of the roll-mandrel with respect to the pinion. In the illustrated embodiment of the invention, 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, worm-gear, 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-gear 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 constitutes one element of angular-adjustment gear connecting the roll with the wheel 3. It is engaged by a worm 10, Figs. 2 and 4, upon a small shaft 11 that is mounted to turn in bearings at 12, 12, in connection with a box 13 that is attached, as by bolts 13^a, to the outer side of the spur-pinion 3.

The invention provides an operating handle for said adjustment gear, having a centralized relation with respect to the roll. This handle may be in the form of a small arm or lever, as at 14^a, Figs. 7 and 8, or in that of a wheel with continuous periphery, as at 14, in Figs. 1 and 2, which is preferred. In the illustrated embodiment of the invention the said handle or wheel is mounted loosely upon the outer end of a stud or stud-shaft 15, Figs. 2 and 5, which turns in a bearing 16 in the outer end of the box 13, the axis of the said stud being in line with the axis of the roll-mandrel. The said stud or stud-shaft 15 is combined operatively with the worm 10 by means of suitable connec-

tions, the latter in this instance including a spiral gear 17, fixed upon the inner end of the stud or stud-shaft and meshing with a second spiral gear, 18, upon a short shaft 19, the latter being mounted in bearings in the box 13 with its axis disposed parallel with that of worm-shaft 11. This shaft 19 carries a spur-pinion 20 meshing with a spur-pinion 21 fixed upon the worm-shaft 11. Normally, the entire assemblage comprising spur-pinion 3, angular-adjustment gear, print-roll, and handle 14, will rotate in unison. It will be apparent that turning movement or rotation of the stud or stud-shaft 15 and its spiral gear 17 relative to the roll will occasion rotation of the worm-shaft 11, and through the engagement of the worm 10 with the worm-gear 7 fixed upon the roll-mandrel will bring about an angular change in the relationship between the roll and its spur-pinion.

The adjustment handle 14 or 14^a is mounted upon the outer end of the stud or stud-shaft 15 with provision for a limited extent of movement of the said handle with reference to the said stud or stud-shaft. In the present instances, the handle carries a lateral projection 14^b, and upon the stud or stud-shaft 15 is mounted a disk 22, shown separately in Fig. 6, having a portion of its periphery cut away so as to form a peripheral notch with shoulders 22^a, 22^a, at the opposite ends thereof which are adapted to be engaged by the projection 14^b of the handle. This notch permits play of the said projection between the two shoulders, so that the handle may be moved loosely or idly a short distance in shifting the lateral projection between the two shoulders, but upon bringing up against one shoulder or the other the lateral projection will serve as a means of engaging the handle and disk positively together. Thus, by taking hold of the handle and bringing about engagement between the pin and one of the shoulders of the notched disk, the attendant or operative may produce a turning of the stud or stud-shaft 15 and its spiral-gear 17 whereby to effect the rotation of the worm 10 and thereby the desired angular adjustment between the print-roll and the spur-pinion 3. The loose engagement of the handle of the stud facilitates the making of delicate and accurate adjustment while the print-roll is rotating during the operation of the machine. It permits the attendant to produce the turning of the worm 10 by a readily controlled hammering action of the lateral projection 14^b against a shoulder of the notched disk. This hammering action may take effect in either direction, and with graduated delicacy, as may be required in producing the adjustment.

The said lateral projection is shown herein as a pin, but the form, character, and arrangement of the lateral projection or other portion of the handle which engages with the notched disk, and the precise relations of the handle and the notched disk or other means of interengagement between the handle and the adjustment gearing, may be varied to suit requirements or the views of the designer or builder of the mechanism.

In the illustrated construction the notched disk 22 is pinned to the stud or stud-shaft 15 so that by its contact with the outer end of the box 13 it takes care of the end-thrust in one direction due to interaction of the spiral gears. Thereby cramping or binding of the handle is obviated and free movability of the same is insured.

The location of the handle at a distance outward beyond the side of spur-pinion 3 enables the workman to take hold of the same and make the necessary adjustments while the machine is in action, without any liability to injury through having any part of his hand or arm caught between spur-pinion 3 and the large wheel 4.

What is claimed as the invention is—

1. The combination with a roll, a wheel, and angular-adjustment gear connecting said roll with the said wheel, of means for reversibly actuating said angular-adjustment gear to effect angular change of relationship between the roll and the wheel, comprising a handle providing for manual actuation thereof and lost-motion connections intermediate said handle and said gear.

2. The combination with a roll, a wheel, and a worm and worm-gear driving-connection between said roll and wheel, of a manually-actuated adjustment member mounted to turn around the same axis as said roll, and driving-connections between said member and said worm, including lost-motion connections, for actuating the latter from the former.

3. The combination with a roll, a wheel, and a worm and worm-gear driving-connection between said roll and wheel, of an adjustment member mounted to turn around the same axis as said roll, driving-connections between said member and said worm for actuating the latter from the former, and a reversibly-operable handle combined with said member with a limited extent of loose play for reversibly operating the latter with a hammering action.

4. The combination with a shaft or mandrel, its pinion, and means connecting them to turn in unison, of a reversibly-acting adjustment device adapted to be reciprocated manually and by a succession of strokes effect gradually the required relative angular adjustment of the shaft or mandrel and pinion with respect to each other in either direction.

5. The combination with a roll, a wheel, and a worm and worm-wheel driving con-

nection between said roll and wheel, of a driving train for said worm having a primary element co-axially arranged with respect to the roll, a collar in connection with said primary member having opposite shoulders, and an operating handle adapted by engagement with said shoulders, with play permitting a hammering action to reversibly actuate the worm to effect angular change of relationship between the roll and the wheel.

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

LORENZ FLICK.

Witnesses:
NATHAN B. DAY,
CHAS. F. RANDALL.