No. 723,736. PATENTED MAR. 24, 1903.

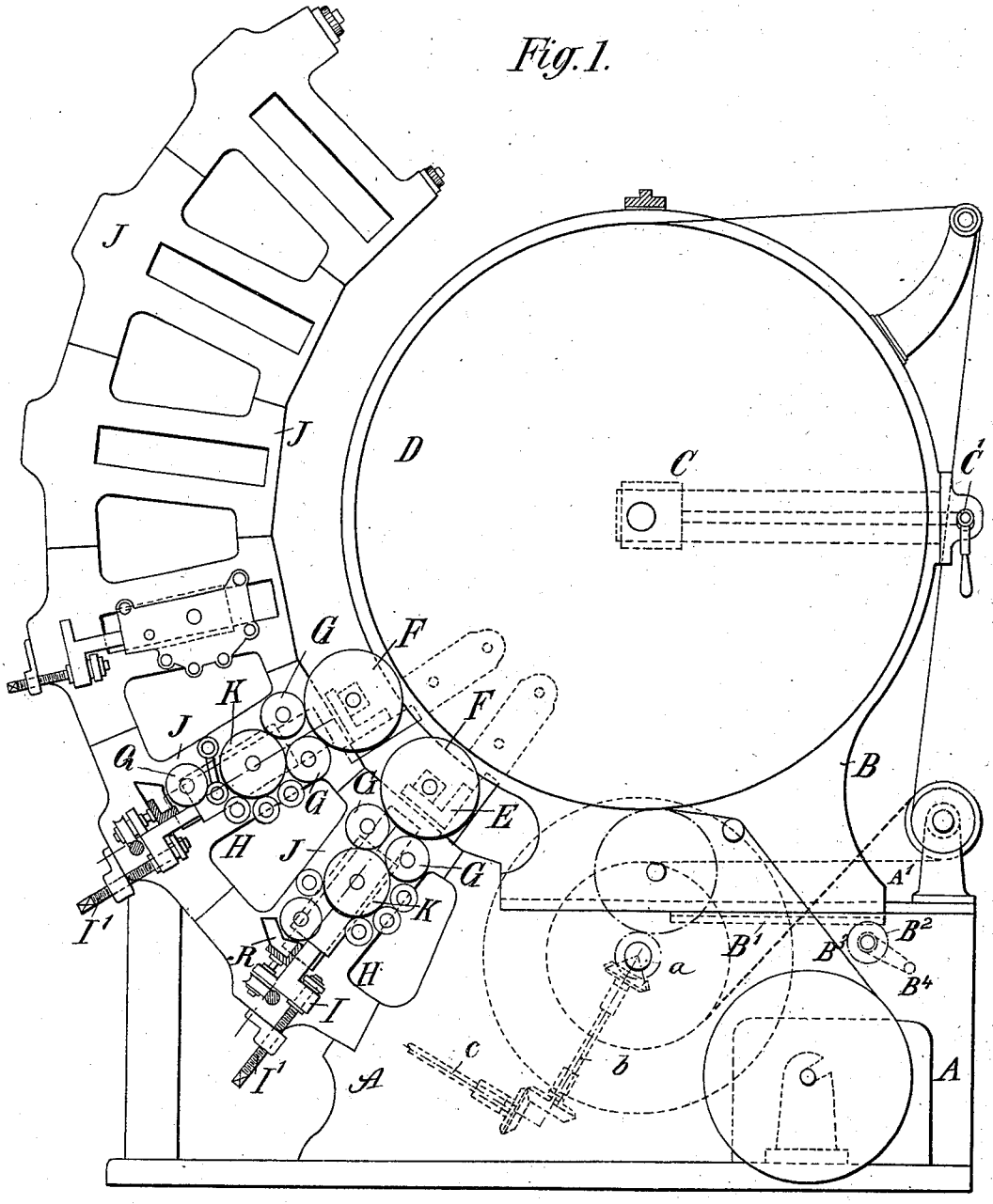
G. SCHNEIDER.

COLOR PRINTING MACHINE.

APPLICATION FILED AUG. 22, 1902.

NO MODEL. 3 SHEETS—SHEET 1.

Fig. 1.



WITNESSES:

W. M. Avery

Walton Harrison.

INVENTOR

George Schneider

BY

Munn & Co

ATTORNEYS.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

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Fig. 3.

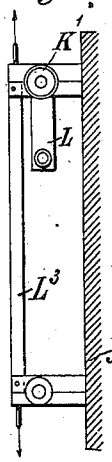


Fig. 2.

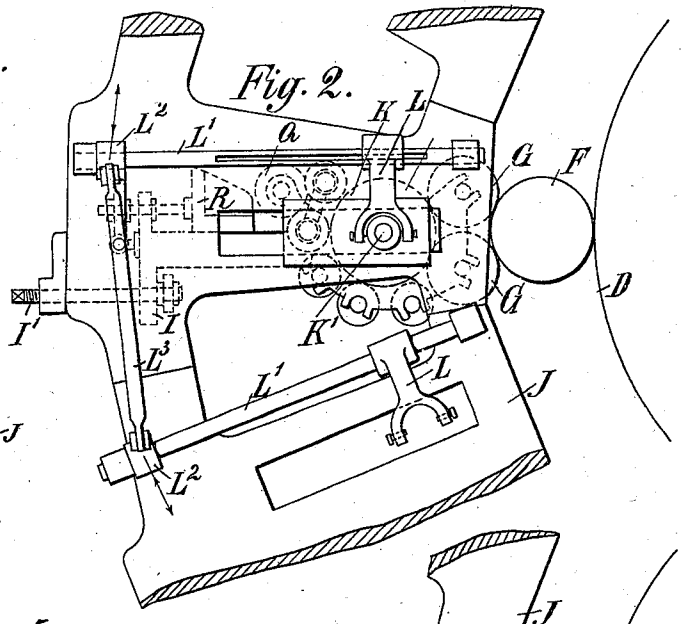


Fig. 5.

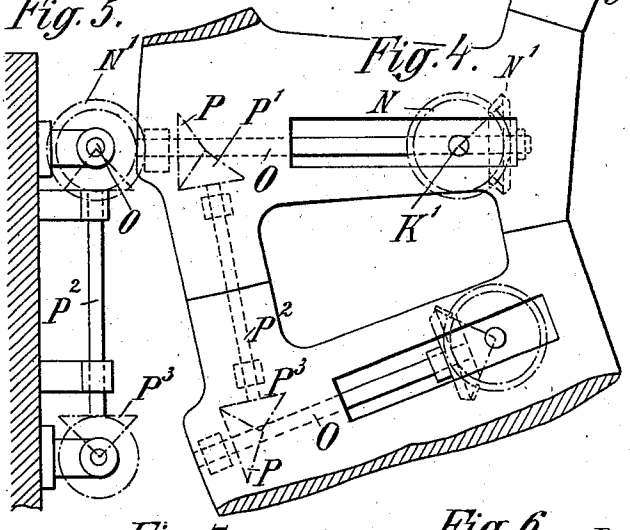


Fig. 4.

Fig. 7.

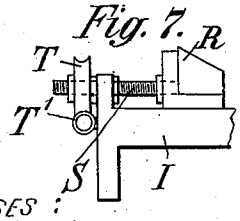
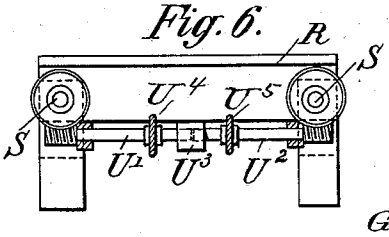


Fig. 6.



WITNESSES:

W. M. Avery

Walton Harrison

INVENTOR

George Schneider

BY

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APPLICATION FILED AUG. 22, 1902.

NO MODEL. 3 SHEETS—SHEET 3.

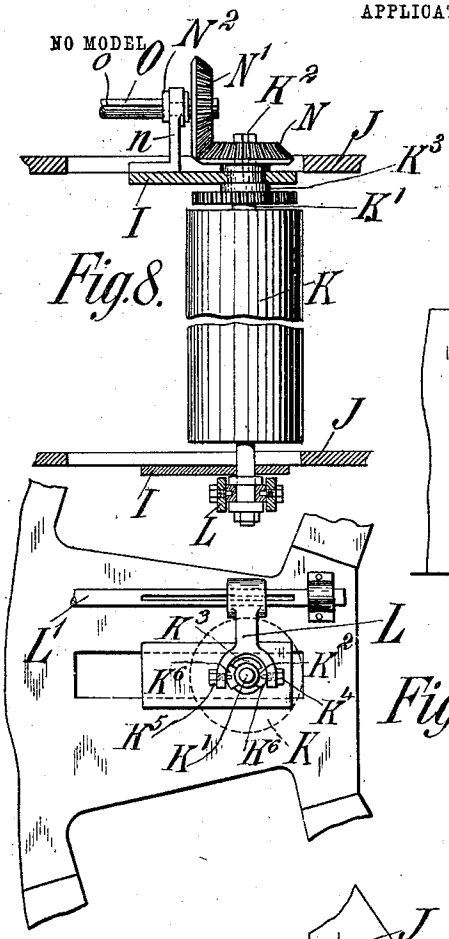


Fig. 8.

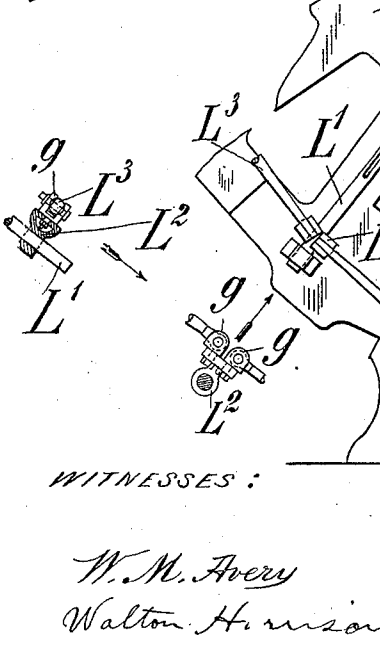


Fig. 9.

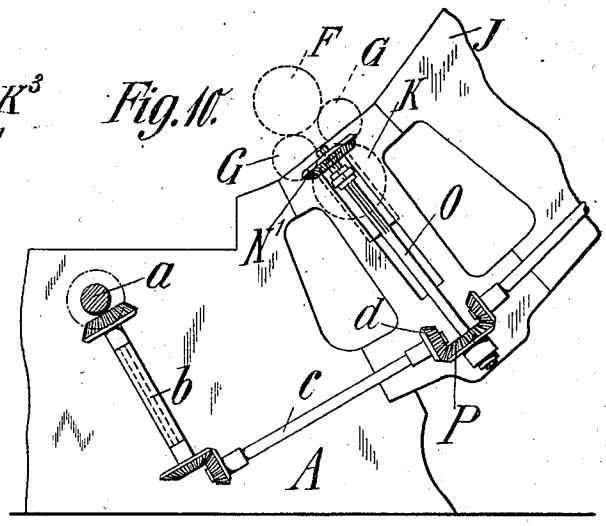


Fig. 10.

Fig. 11.

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ATTORNEYS.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

GEORGE SCHNEIDER, OF BERLIN, GERMANY, ASSIGNOR TO THE FIRM OF CARL SCHOENING EISENGIESSEREI & WERKZEUGMASCHINENFABRIK AKTIENGESELLSCHAFT, OF BERLIN, GERMANY.

COLOR-PRINTING MACHINE.

SPECIFICATION forming part of Letters Patent No. 723,736, dated March 24, 1903.

Application filed August 22, 1902. Serial No. 120,717. (No model.)

To all whom it may concern:

Be it known that I, GEORGE SCHNEIDER, a subject of the Emperor of Germany, and a resident of Berlin, Germany, have invented a new and Improved Color-Printing Machine, of which the following is a full, clear, and exact description.

The object of the invention is to provide a new and improved color-printing machine for printing oil-cloth, wall-paper, and like fabrics, arranged to permit convenient and quick insertion or removal of the printing or pattern rollers, minute adjustment of the printing-rollers and the color-supplies, and to give access to the color-supplies for cleaning, repairing, or other purposes, thus facilitating all work necessary before, during, and after the printing operation.

The invention consists of novel features and parts and combinations of the same, as will be more fully described hereinafter and then pointed out in the claims.

A practical embodiment of the invention is represented in the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the views.

Figure 1 is a side elevation of my improved color-printing machine, certain parts being removed for the sake of clearness. Fig. 2 is a side elevation of the means for imparting an axial motion to the color-distributing roller. Fig. 3 is an end view of the same. Fig. 4 is a side elevation of the means for imparting rotary motion to the color-distributing roller. Fig. 5 is an end view of part of the same. Fig. 6 is an end view of the means for adjusting the scraper for removing the surplus ink from the ink-supply roller, and Fig. 7 is a side elevation of the same. Fig. 8 is a fragmentary plan view showing certain details in section and illustrating the gearing of the rollers K. Fig. 9 is a view somewhat similar to Fig. 2 and shows the mechanism for imparting axial motion to the color-distributing rollers. Fig. 10 is a rear elevation of a portion of the bed 8 and the gearing mounted thereon, and Fig. 11 is an elevation viewed from the opposite direction and showing a mechanism for actuating the several links L^3.

The bed A of the color-printing machine is provided with longitudinally-extending guideways A′, on which is mounted to slide a frame B, carrying in its side arms bearings C for an impression-cylinder D, the said frame B also carrying bearings E, in which are journaled printing or pattern rollers F for printing the desired design on the fabric passed between the impression-cylinder and the said printing-rollers. The printing or pattern rollers F are in engagement with color-delivering rollers G, preferably arranged in pairs and forming parts of color-supplies H, of which there is one for each printing-roller F, each color-supply being held on a slide I, mounted to slide on a frame J, fixed to the bed A, each slide being adjustable by a screw-rod I′, as plainly indicated in Fig. 1.

The frame B, carrying the impression-cylinder D and the printing-rollers F, is movable on the guideways A′, and for this purpose the frame B is provided with a rack B′, in mesh with gear-wheels B^2, secured on a shaft B^3, extending transversely and journaled in suitable bearings carried by the bed A. A crank-arm B^4 on the shaft B^3 enables the operator to conveniently turn the shaft B^3 to cause the gear-wheels B^2 to shift the rack B′, and with it the frame B, to the left or to the right, so as to move the impression-cylinder D and the printing-rollers F bodily toward and from the color-supplies—that is, their delivery-rollers G—to give convenient access to the printing-rollers whenever it is desired to remove and replace the same by others or whenever it is desired to change from one piece of work to another.

The impression-cylinder D has a minute adjustment relative to the printing-rollers F, and for this purpose the usual eccentric adjustment C′ is provided, connected with the bearings C, as plainly indicated in Fig. 1, to shift the bearings C on the frame B. Each of the color-supplies H is provided with an ink-distributing roller K, mounted to turn and to slide transversely in bearings on the slide I, the said distributing-roller being in

contact with the delivery-rollers G, which supply the color to the printing-rollers F.

By having the ink-distributing rollers and the impression-cylinder adjustable toward and from the printing-rollers provision is made for employing different-sized printing-rollers and the interchanging of the said rollers permitted at any time and without in any way interfering with the other parts of the machine.

Now in order to impart an axial movement to the distributing-roller K the shaft K′ thereof is engaged at one end by a fork L, mounted to swing with and to slide longitudinally on a rock-shaft L′, journaled in suitable bearings on the frame J, the shaft extending longitudinally in the direction of the movement of the corresponding slide I. On one end of the shaft L′ is secured an arm L^2, connected by a link L^3 with the arm L^2 of the next adjacent rock-shaft L′ of the adjacent color-supply H, and one of the said rock-shafts L′ receives a rocking motion from the main shaft of the machine, so that all the rock-shafts L′ of the several color-supplies H are rocked in unison to impart a transverse rocking movement by the forks L to the several distributing-rollers K.

By inspecting Fig. 8 it may be seen how the links L^3 are moved in unison. The shaft K′ (shown perhaps to better advantage in Fig. 8) carries a key K^2, movable with the shaft through the hub K^3 of the bevel-wheel N, the shaft K′ being prevented from axial movements by the rear frame of the slide I. A pinion on said hub arranged on the inner side of the frame serves to rotate the auxiliary rollers arranged around the roller K. (See Fig. 2.) The fork L, therefore, produces the axial movements of the roller K.

For preventing the gear N from unmeshing from the gear N′ the hub N^2 is provided with an annular groove engaged by a bracket *n*, secured to the rear end of the slide I.

The gear N′ is free to move relatively to a key *o* upon the shaft O when the wheel N is moved radially. From Figs. 8 and 9 it may be seen that by means of the screws K^4 K^5 the cheek-pieces K^6 are loosely held in the annular groove K^7 of the shaft K′, so that the motion of the fork can be transmitted.

Referring to Fig. 10, it may be seen that by means of the driving-shaft *a* and bevel-wheels shown a shaft *b* is rotated. The rotation of the shaft *b* drives the shaft *c*. The bevel-wheel *d* of the shaft *c* meshes with the bevel-wheel P of the shaft O.

Referring to Fig. 11, it may be observed that the shaft *a* rotates a shaft *e*, having a crank on its lower end connected with a pitman *f*, this pitman being connected with a part *g*, pivoted to the arm L^2 of one of the shafts L′. The several links L^3 for moving the other shafts L′ are also connected with the pivoted parts *g*″.

In order to impart rotary motion to the several distributing-rollers K of the color-supplies H from the main driving-shaft of the machine, I provide the following device, special reference being had to Figs. 1, 4, and 5: On each shaft K′ is secured a bevel gear-wheel N, in mesh with a similar bevel gear-wheel N′, mounted on a shaft O, journaled in suitable bearings, of which one is secured on the slide I and the other on the frame J, and on each shaft O is secured a bevel gear-wheel P, in mesh with a bevel gear-wheel P′, secured on a shaft P^2, journaled in suitable bearings on the frame J and carrying a second bevel gear-wheel P^3, in mesh with the bevel gear-wheel P, secured on the shaft O of the next adjacent color-supply H, so that when one of the shafts O or P^2 is rotated from the main driving-shaft of the machine it is evident that all the shafts O of the several color-supplies are rotated in unison to rotate the distributing-roller K.

By operating the several sets or groups of ink-distributing rollers one from the other and the first set or group from an independent drive-shaft the sets or groups can be readily connected or disconnected to permit of using a greater or less number, as desired, and the rollers of the several sets or groups kept revolving when the impression-cylinder alone or with the printing-rollers has been moved outward away from the ink-distributing rollers for repairs or otherwise, thereby permitting the ink to be kept at the proper consistency and to be evenly applied to the printing-rollers before the paper is brought into contact with the same.

By withdrawing the impression-cylinder from the printing-rollers and leaving the printing-rollers still in contact with the inking-rollers and keeping all in motion except the impression-cylinder the operator can see not only how the inking-rollers grind and distribute the ink, but also with what consistency the ink is delivering to the whole surfaces of the printing-rollers and can regulate this to the exact requirement before bringing the impression-roller and paper in contact with the printing-rollers.

The color-supply roller Q of each color-supply H is engaged on its peripheral face by a scraper or knife R for removing the surplus color, and this scraper R is mounted to slide longitudinally on the slide I and is provided with screw-rods S, on which screw worm-wheels T, in mesh with worms T′, secured on the sections U′ and U^2 of a shaft U, having the sections U′ and U^2, supported by a bearing U^3, which permits of turning the sections U′ and U^2 either in unison or one independent of the other, so as to adjust the scraper or knife R relative to the color-supply roller Q to insure a proper scraping of the said roller. Each section U′ U^2 carries a small hand-wheel U^4 U^5 for adjusting its scraper independently of the other.

By the arrangement described the operator on turning the shaft U′ or U^2 causes a parallel movement of the scraper or knife R

toward or from the color-supply roller Q to insure a minute adjustment of the scraper R relative to the peripheral face of the color-supply roller Q. By turning the shaft-sections U' U² independently either end of the scraper may be moved toward or from the roller Q to insure a proper initial setting of the scraper relative to the roller.

It is understood that the color-supplies H are arranged on one side of the impression-cylinder only to allow bodily movement of the impression-cylinder and the printing-rollers toward or from the said color-supplies H on moving the frame B inward or outward by the operator actuating the rack-and-pinion movement. Thus when the frame B is moved outward sufficient space is left between the color-supplies H and the printing-rollers to allow convenient exchange of printing-rollers and to permit making repairs, &c. When the frame is moved inward, the printing-rollers are brought in proper contact with the color-delivery rollers G. By having the color-supply slides or frames I adjustable on the frame J a final minute adjustment also can be had between the color-delivery rollers G and the printing-rollers.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. A color-printing machine, comprising a fixed frame, a frame movable relatively to the fixed frame, printing-rollers mounted in the movable frame, an impression-cylinder also mounted in the movable frame and adjustable toward and from the printing-rollers, a plurality of color-supplies mounted in the fixed frame and each having a vibrating ink-distributing roller, rock-shafts having forked arms connected with the shafts of the vibrating distributing-rollers for imparting axial movement to said rollers, means for connecting the several rock-shafts with each other, gearing between the vibrating distributing-rollers for rotating them, and means for operating the vibrating distributing-roller of the first set.

2. A color-printing machine, comprising a fixed frame, a frame movable relatively to the fixed frame, printing-rollers mounted in the movable frame, an impression-cylinder adjustably mounted in the movable frame, adjustable supports carried by the fixed frame, sets of color-supplies mounted in the said adjustable supports and each having a vibrating ink-distributing roller, rock-shafts having forked arms connected with the shafts of the vibrating ink-distributing rollers for imparting axial movement to said rollers, connections between the several rock-shafts, gearing between the several sets of vibrating distributing-rollers for rotating them, means for rotating the first set of distributing-rollers, and means for operating the rock-shaft of the first set of said rollers.

3. A color-printing machine, comprising a fixed frame, a sliding frame movable toward and from the fixed frame, printing-rollers mounted in the sliding frame, an impression-cylinder also mounted in the sliding frame and adjustable toward and from the printing-rollers, sets of color-supplies mounted in the fixed frame and each having a vibrating distributing-roller, rock-shafts, connections between the rock-shafts and the shafts of the vibrating distributing-rollers for imparting axial movement to said rollers, connections between the several rock-shafts for operating one from the other, gearing between the vibrating distributing-rollers of the several sets of rollers to rotate them, means for rotating the first set of rollers, and means for operating the rock-shaft of the said first set of rollers.

4. A color-printing machine, comprising a fixed frame, a sliding frame movable toward and from the fixed frame, an impression-cylinder also mounted in the movable frame and adjustable toward and from the printing-rollers, sets of color-supplies mounted in the fixed frame and each having a vibrating distributing-roller, rock-shafts provided with arms, connections between the rock-shafts and the shafts of the vibrating distributing-rollers for imparting axial movement to said rollers from the rock-shafts, links connected to the arms of the rock-shafts, gearing between the several vibrating distributing-rollers, a drive-shaft independent of the impression-cylinder and printing-rollers, means for operating the rock-shaft of the first set of distributing-rollers from the drive-shaft, and means for operating the distributing-roller of the said first set from said drive-shaft.

5. A color-printing machine, having a plurality of color-supplies, each having a vibrating ink-distributing roller, rock-shafts each having a forked arm connected with the shafts of the vibrating distributing-rollers for imparting axial movement to the said rollers, means for connecting the several rock-shafts with each other, gearings for the vibrating distributing-rollers, and means for connecting the several gearings with each other.

6. A color-printing machine, having a plurality of color-supplies, each having a vibrating distributing-roller, rock-shafts each having a forked arm connected with the shafts of the distributing-rollers for imparting axial movement to the said rollers, means for connecting the several rock-shafts with each other, gearings for the distributing-rollers, means for connecting the several gearings with each other, and mechanism for connecting one of the gearings with the main shaft.

7. In a color-printing machine, the combination with a frame, and a slide mounted thereon, of color-supply rollers mounted in said slide, one roller being axially movable, a rock-shaft mounted on the frame, a fork mounted to swing with and to slide on the rock-shaft, said fork engaging the shaft of the axially-movable roller, and means for operating said rock-shaft.

8. A color-printing machine having a mov-

able knife for the color-supply roller, screw-rods carried by the said knife, worm-wheels on the said screw-rods, worms in mesh with the worm-wheels, and a sectional shaft for rotating the worms in unison or independent one of the other, as set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

GEORGE SCHNEIDER.

Witnesses:
JOHANNES HEIN,
HENRY HASPER.