

E. ALBERT.
 APPARATUS FOR REGULATING THE COLOR FEEDING IN INKING APPARATUS.
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984,991.

Patented Feb. 21, 1911.

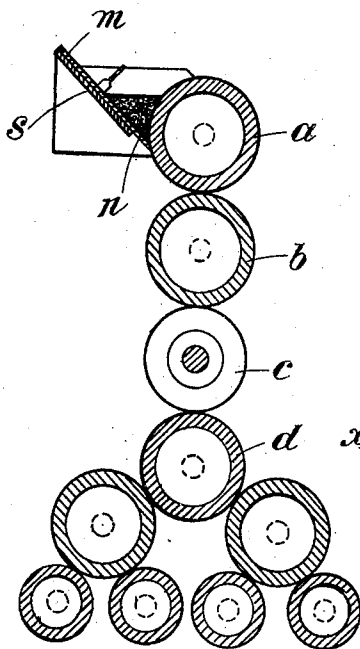


Fig. 1.

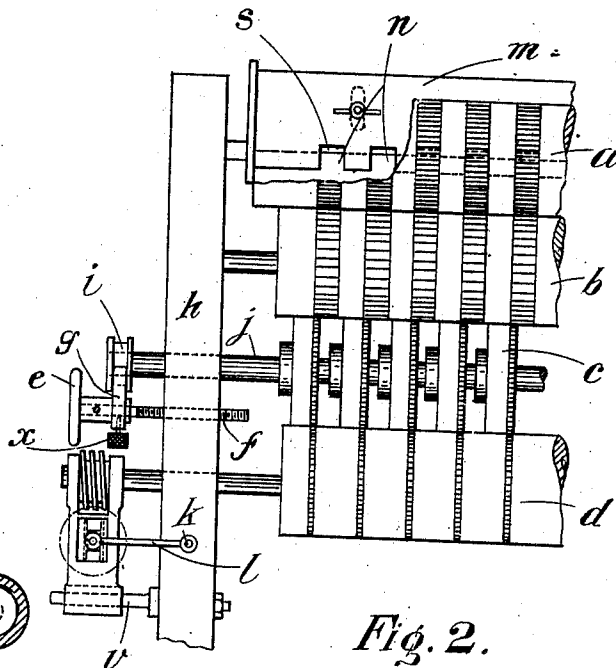


Fig. 2.

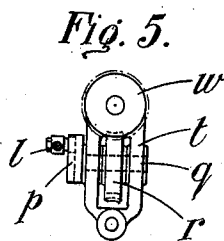


Fig. 5.

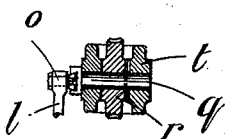


Fig. 6.

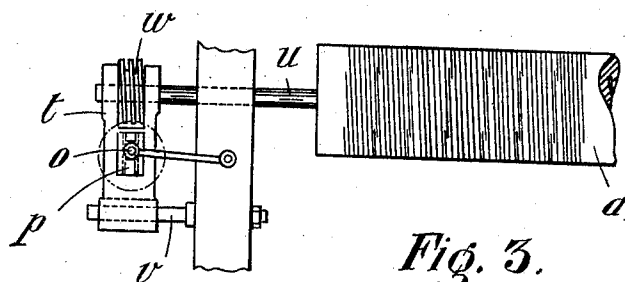


Fig. 3.

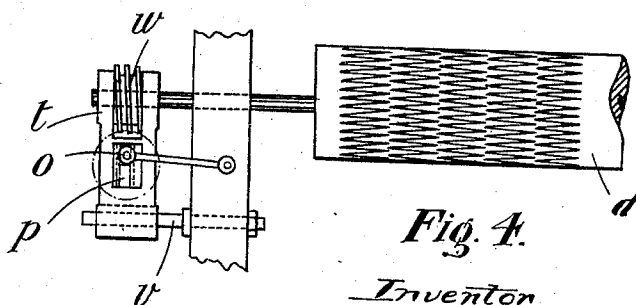


Fig. 4.

Witnesses.

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APPARATUS FOR REGULATING THE COLOR-FEEDING IN INKING APPARATUS.

984,991.

Specification of Letters Patent.

Patented Feb. 21, 1911.

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To all whom it may concern:

Be it known that I, EUGEN ALBERT, a subject of the Emperor of Germany, residing at Munich, in the Kingdom of Bavaria, Germany, have invented certain new and useful Improvements in Apparatus for Regulating the Color-Feeding in Inking Apparatus, of which the following is a specification.

This invention relates to improvements in the inking apparatus of printing machines in which the ink is fed on to the rollers from a feed roller revolving in proximity to the ink trough; and the objects of my improvement are, first, to obtain an even and regular distribution of the ink to the inking rollers; and, second to obtain this even distribution in a short space of time. I attain these objects by the mechanism illustrated in the accompanying drawing, in which:—

Figure 1, is a section of a set of distributing rollers; Fig. 2, is a front elevation of Fig. 1 with parts omitted for the sake of clearness; Fig. 3, shows the effect of reciprocating the receiving roller slowly; Fig. 4, shows the effect of reciprocating the receiving roller rapidly; Fig. 5, is a detail view showing the reciprocating mechanism in end elevation; and Fig. 6, is a sectional view of Fig. 5.

The complete inking apparatus in the best class of printing machine consists of three parts, the roller inking apparatus, the table inking apparatus, and the form inking apparatus, and its function is not to grind the ink but to distribute it in any required quantity as evenly as possible on the surface of the form rollers. The difficulties of even distribution reside in the fact that it is almost impossible to press the ink knife, which is of considerable length, so as to give an exactly equal layer of color along its whole length, and these differences are the greater the thinner the layer of ink transferred, that is, the nearer the knife to the feed roller.

In order that the rollers do not receive too much ink the feeding roller at present is allowed to transfer only narrow longitudinal strips on to the next roller of the inking apparatus but the narrower and consequently thicker this strip is, the more difficult is it to distribute.

The invention consists in transferring the color to the feeding roller in lines, strips, or areas, having a definite space between them which is not coated with color and in causing the transfer of the ink from the

feeding roller to the distributing rollers to be made from the colored portions in such a way that the amount of color taken may be varied.

The simplest way of carrying out the invention would be to provide a feed roller having its surface made of longitudinal ridges and recesses something like the periphery of an elongated spur wheel, and to place this in contact with the ductor roller so that only the ridges are inked, a second roller also formed with ridges and recesses can then be placed in contact with the first ridged roller and may be adjustable angularly so that either the whole of the ridges are in contact during rotation together, or only a portion of them, or even a ridge opposite a recess in which case no ink would be transferred at all. In either case however in which the ridges are in contact exactly the amount of ink required to be transferred can be taken up and will be already partially distributed around the periphery before coming into contact with the distributing rollers. It will be seen that displaced points on the two roller surfaces would have a similar effect. The preferred means however by which this invention may be carried into effect consists in forming the strips in circular lines on the periphery of the ductor roller and in displacing a second ridged roller longitudinally thereto so that any desired portion of the strip may be transferred.

Since it would be difficult to make a composition roller with the required broken surfaces, it may be arranged that the metal feed roll shall transfer the color to a composition roller with a continuous surface and that a second metal roller with grooved surfaces shall take the color from the intermediate roller. The drawings show a simple arrangement of the rollers according to this last form of the invention.

A knife *m* provided with recesses *n* and with a movable cover-plate *s* limiting the size of the recesses is used which is pressed against the ductor roll *a* so that the color is only allowed to pass at the recesses and so that the composition feed roller *b* lying next to the ductor *a* receives strips or zones of color on its periphery with spaces dividing them (see Fig. 2 roller *b*). A steel roller *c* (transfer roller), which for the purpose of local color regulating is provided with separately movable elevations corresponding to

the recesses of the knife *m* and to the clear spaces on the composition feed roller *b*, is supported so that it can also be moved as a whole in an axial direction to overlap the color strips so as to regulate the color taken off from the composition feed roller *b*. In Fig. 2 the overlapping movement is such that only a fraction (about one-third) of the color is taken off by the transfer roller *c*. A further composition roller *d*, which I call the receiving roller reciprocating in axial direction in contact with the transfer roller *c* receives the distribution of the color given off from the roller *c* in a direction which is more vertical or horizontal according to the relation of its reciprocating speed to its revolution speed.

The proportion of color taken off the roller *b* by the transfer roller *c* is varied by the adjusting hand wheel *e*; this rotates the screw *f* threaded in a fixed part of the frame work and draws the fork *g* mounted thereon to or from the frame *h*; the fork *g* embraces a flanged disk *i* firmly attached to the roller spindle *j* and consequently the spindle is moved longitudinally. Its position having been adjusted the screw *f* is locked by the thumb screw *x*.

The means for reciprocating the roller *d* at the same time that it revolves is shown in further detail in Figs. 5 and 6; to a fixed point *k* on the frame *h* a connecting rod *l* is hinged, its other end being connected to a crank pin *o* secured in a slot in the crank *p*. The crank *p* is attached to the spindle *q* as also is the worm wheel *r* the whole being carried by the movable frame *t* so that the wheel *r* meshes with the worm *w* firmly secured to the spindle *u* of the roller *d*. The frame *t* incloses the worm *w* and is guided also by the stud *v* upon which it slides freely. It will be seen therefore that with the crank pin *o* concentric with the spindle *q* as in Fig. 2 no reciprocating movement of the roller *d* takes place; with a small difference of center a slow spiral distribution of ink takes place as shown in Fig. 3; while with a lengthened throw as in Fig. 4 a rapid oscillation takes place. It must be understood that the revolution of the rollers is accomplished by the ordinary driving gear of the machine. The further distribution after leaving the receiving roller *d* is effected by the ordinary distribution rollers arranged thereafter in the ordinary way. By this means a most efficient and rapid distribution of the ink in a printing machine is achieved with the further advantage that the quantity of ink distributed may be readily varied in amount.

What I claim as my invention and desire to secure by Letters Patent is:—

1. In inking apparatus for printing machines the combination with a ductor roller of an ink knife having a series of inking

recesses in its edge separated by projections in contact with the ductor roller, a feed roller, a divided transfer roller, means for moving same longitudinally in regard to the feed roller, a receiving roller, distributing rollers, inking rollers and means for reciprocating the receiving roller longitudinally in relation to, and while in contact with, the divided transfer roller and the distributing rollers respectively, all substantially as set forth.

2. In inking apparatus for printing machines the combination with a ductor roller with an ink knife having a series of inking recesses in its edge separated by projections in contact with the ductor roller, a plate on the back of the said ink knife and adjustable means for securing same thereto, a feed roller, a divided transfer roller, means for moving same longitudinally in regard to the feed roller, a receiving roller, distributing rollers, inking rollers and means for reciprocating the receiving roller longitudinally in relation to, and while in contact with, the divided transfer roller and the distributing rollers respectively, all substantially as set forth.

3. In inking apparatus for printing machines, the combination of an ink knife having a series of inking recesses in its edge separated by projections in contact with the ductor roller, a ductor roller, a composition roller in rolling contact with same, a receiving roller, a dividing transfer roller intermediate of the composition and the receiving rollers, means for adjusting the relative longitudinal position of the transfer roller, means for reciprocating the receiving roller, inking or form rollers, and distributing rollers intermediate of the latter, and the receiving rollers, substantially as and for the purpose set forth.

4. In inking apparatus for printing machines, the combination with a ductor roller of an ink knife having a series of inking recesses in its edge separated by projections in contact with the ductor roller, a feed roller, a divided transfer roller, means for moving same longitudinally consisting of a flanged pulley on the spindle, a fork positioned between the flanges, a support for the fork threaded into a stationary part of the frame, and screw for locking the threaded support, a receiving roller, distributing rollers, inking rollers and means for reciprocating the receiving roller longitudinally in relation to, and while in contact with, the divided transfer roller and the distributing rollers respectively, all substantially as set forth.

5. In inking apparatus for printing machines, the combination with a ductor roller of an ink knife having a series of inking recesses in its edge separated by projections in contact with the ductor roller, a feed

roller, a divided transfer roller, means for moving same longitudinally in regard to the feed roller, a receiving roller, distributing rollers, inking rollers, means for reciprocating the receiving roller consisting of a worm on its spindle, a bracket having ears on each side of the worm, a projecting support on which the bracket is slidable in and out, a worm wheel within the bracket, a crank secured to the worm wheel and a connecting rod, connecting the crank pin and a fixed pin on the stationary frame.

6. In mechanism for reciprocating rotating rollers, the combination with the roller of a worm on its spindle, a bracket having ears on one side of the worm, a projecting support on which the bracket is slidable, a worm wheel within the bracket, said worm wheel having a groove, a crank pin adjustably secured in and to said groove, and a connecting rod connecting the crank pin with a fixed pin on the spindle roller.

7. In inking apparatus for printing machines, the combination with a ductor roller

of an ink knife having a series of inking recesses in its edge separated by projections in contact with the ductor roller, a plate secured thereto by bolts and nuts working in slots therein, a feed roller, a composition roller in rolling contact therewith, a transfer roller having its surface formed of ridges corresponding in width to the recesses in the ink knife, means for adjusting the position of the transfer roller longitudinally, a receiving roller in rolling contact with the transfer roller, means for imparting reciprocation to the said receiving roller, means for varying the amount of such reciprocation, and means for imparting exact rotary motion from one roller to another of the train, all substantially as and for the purpose set forth herein.

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

EUGEN ALBERT.

Witnesses:

ABRAHAM SCHLESINGER,
LOUIS MUELLER.