C. F. M. KROENERT & H. J. MEYER.

ADJUSTING DEVICE FOR PATTERN CYLINDERS OF PRINTING MACHINES.

APPLICATION FILED MAY 20, 1913.

1,083,543. Patented Jan. 6, 1914.

Fig. 1

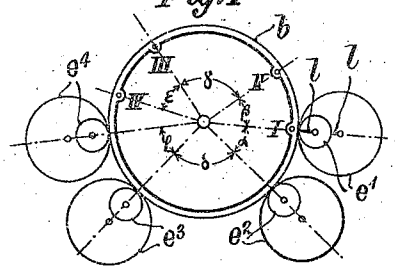


Fig. 2

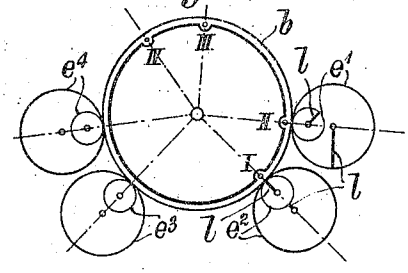


Fig. 3

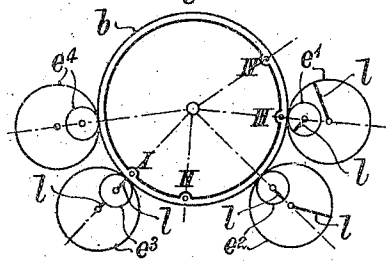


Fig. 4

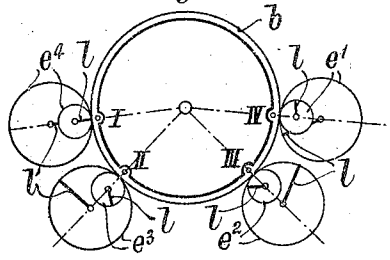
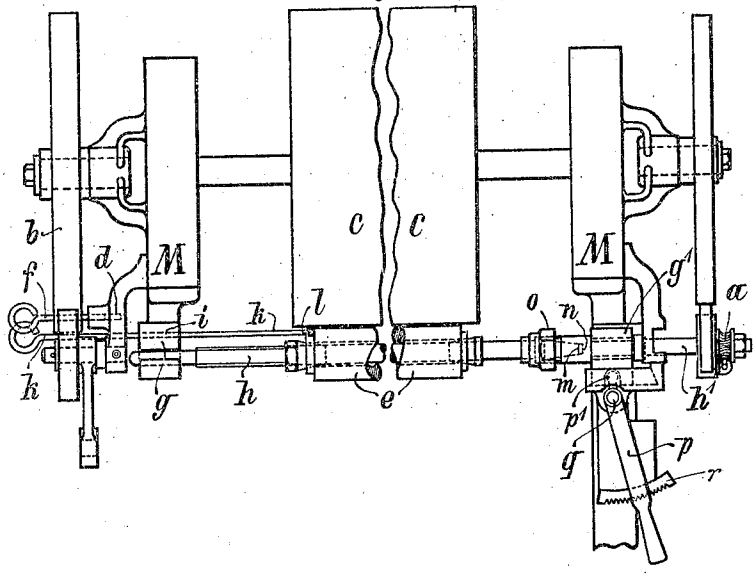


Fig. 5



Witnesses:
Katherine Koch
Daniel Holmgren

Inventors:
Christian Friedrich Max Kroenert &
Hans Jens Meyer
per Briesen & Gumpe attorneys

UNITED STATES PATENT OFFICE.

CHRISTIAN FRIEDRICH MAX KROENERT AND HANS JENS MEYER, OF ALTONA, GERMANY.

ADJUSTING DEVICE FOR PATTERN-CYLINDERS OF PRINTING-MACHINES.

1,083,543. Specification of Letters Patent. Patented Jan. 6, 1914.

Application filed May 20, 1913. Serial No. 768,722.

To all whom it may concern.

Be it known that we, CHRISTIAN FRIEDRICH MAX KROENERT and HANS JENS MEYER, both mechanical engineers, subjects of the German Emperor, and residents at No. 239 Schützenstrasse, Altona-on-the-Elbe, Germany, have invented new and useful Improvements in Adjusting Devices for Pattern-Cylinders of Printing-Machines, of which the following is a specification.

In rotary machines for printing upon paper and fabric in lengths, the relative adjustment of the printing or pattern cylinders could only be effected by means of the regulators arranged at the ends of the spindles of the pattern cylinders. This adjustment of the cylinders, particularly in multicolor printing machines, was very tedious and the adjustment for the correct printing of the patterns in such machines could only be effected by skilled printers.

According to the present invention the method of setting the pattern cylinders is such that the adjustment of the patterns becomes scarcely a matter for the printer and the working of multicolor printing machines presents no further difficulty, as the master-printer no longer needs to employ skilled men for this particular work. The usual regulator mechanism is no longer employed according to the present invention for adjusting the patterns, but only in the last stage for eliminating any irregularities due to faulty work by the die sinker.

The invention is illustrated in the accompanying drawings, wherein—

Figures 1–4 show diagrammatically the arrangement of a printing machine for instance with four pattern cylinders, while Fig. 5 shows a top plan view of part of such a machine.

The regulator mechanism is of a known type and is marked *a* in Fig. 5. The central disk *b* of the machine is made of exactly the same circumferential size as the impression cylinder *c*. The central disk *b* is formed with as many holes (I. II. III. IV) as there are color or pattern cylinders e^1, e^2, e^3, e^4. It is essential that the distance apart of these holes (I. II. III. IV) should correspond with the angular distances apart around the central axes of the pattern cylinders. Hence, the following pairs of angles must be equal: $\alpha=\beta$, $\delta=\varsigma$, $\varepsilon=\zeta$, as they obviously are in the example shown by reference to Fig. 4. In the drawings Figs. 1–4, pattern cylinders e^1, e^2, e^3, e^4, of two different sizes are indicated in each of the positions, in order to show that any size of pattern cylinder may be used provided that all the cylinders are of proper relative sizes so that the patterns will repeat correctly. On a convenient fixed part of the frame M a socket *d* is provided (Fig. 5) of the same size as the holes I. II. III. IV. A pin *f* can be inserted through each of the holes successively into the socket *d* in order to lock the central disk *b* in four positions which are indicated in Figs. 1, 2, 3 and 4.

One of the bearings *g* for the shaft *h* of each pattern cylinder (only one of which is shown in Fig. 5) is formed with a hole at *i* through which a rod *k* can pass. The end face of each of the pattern cylinders *e* is formed at a particular place corresponding with the zero line of the pattern, with a radially directed ridge or projection *l*. The central disk *b* is first brought with the hole I in front of the socket *d* and is locked in position by the pin *f*. The pattern cylinder e^1 is now turned so as to bring its ridge *l* against the rod *k*, and then the shaft *h* of the pattern cylinder is secured in this position. For this purpose the shaft *h* has a cone *m* at its end which rests in a conical recess *n* in the end of the shaft h^1 and is locked therein by a nut in the form of a cap *o*. In this way the first pattern cylinder e^1 is set up as shown in Fig. 1. The rod *k* is now withdrawn from the bearing *g* of the pattern cylinder e^1, and is inserted through the hole in the bearing of the next cylinder e^2. The pin *f* is withdrawn, and the central disk *b* is now turned so as to bring the hole II opposite the socket *g*, whereupon the pin *f* is inserted again. The second pattern cylinder e^2 is now turned to bring its ridge *l* against the stop-rod *k* and it also is then locked in this position by the clamp mechanism on its shaft. The position now corresponds with Fig. 2. In a similar manner the adjustment is effected for each successive pattern cylinder, as indicated respectively in Fig. 3 and Fig. 4. The ridges *l* finally occupy the positions indicated in Fig. 4, these positions being such that during the running of the machine the ridges *l* of the pattern cylinders e^1, e^2, e^3, e^4, (which are of the same diameter) come to lie uniformly, one after the other, in the

direction of the radius of the central disk passing through the hole I.

In case of any inaccuracy in the pattern cylinders, after they have all been adjusted in the described manner, an unskilled workman could easily detect the error and make a fresh adjustment to correct it with the help of the regulator *a*. In previous machines this was not the case, as it frequently occurred that the pattern cylinders had been inserted in a false position equivalent to half a turn error, and they were only brought into correct register after hours had been spent in adjustments.

In order to enable any inaccuracy in the setting of the pattern cylinders transversely to the machine to be corrected, one of the bearings of each pattern cylinder shaft h or h^1 is made adjustable by means of a hand lever p turning about a pin q and having a short projecting arm p^1 which engages in a recess in the bearing g^1; a rack quadrant r holds the lever p in any position.

Having thus described our invention, what we claim as new and desire to secure by Letters Patent is:—

1. In a rotary printing machine having an impression cylinder and a plurality of pattern cylinders with driving mechanism therefor, the combination with the impression cylinder and the pattern cylinders of a disk on the shaft of the impression cylinder, means for locking the said disk successively in angular positions corresponding with the angular positions of the respective pattern cylinders relatively to the impression cylinder, a stop device, and means for clamping each pattern cylinder in position on its driving shaft, in relation to the stop device when the disk is locked in the angular position corresponding with the respective pattern cylinder.

2. In a rotary printing machine having an impression cylinder and a plurality of pattern cylinders with driving mechanism therefor, the combination with the impression cylinder and the pattern cylinders, of a disk on the shaft of the impression cylinder, a plurality of holes in the disk at angular distances apart corresponding with the angular distances apart of the respective pattern cylinders, a pin adapted to engage in the holes and also in a single socket in the machine frame, a stop device, and means for clamping each pattern cylinder in position on its driving shaft in relation to the stop device when the disk is locked in the angular position corresponding with the respective pattern cylinder.

3. In a rotary printing machine having an impression cylinder and a plurality of pattern cylinders with driving mechanism therefor, the combination with the impression cylinder of the pattern cylinders, of a disk on the shaft of the impression cylinder, means for locking the said disk successively in angular positions corresponding with the angular positions of the respective pattern cylinders relative to the impression cylinder a removable stop member, projections on each pattern cylinder adapted to engage therewith when the zero line on the pattern cylinder is in the printing position, and means for clamping each pattern cylinder in position on its driving shaft in relation to the stop device when the disk is locked in the angular position corresponding with the respective pattern cylinder.

4. In a rotary printing machine having an impression cylinder and a plurality of pattern cylinders with driving mechanism therefor, the combination with the impression cylinder and the pattern cylinders, of a disk on the shaft of the impression cylinder, means for locking the said disk successively in angular positions corresponding with the angular positions of the respective pattern cylinders relative to the impression cylinder, a stop device adapted to stop the rotation of each pattern cylinder in the position wherein its zero line is in place for printing, and a coupling between each pattern cylinder and its driving mechanism whereby the pattern cylinder can be clamped in any desired relation to its driving mechanism.

5. In a rotary printing machine having an impression cylinder and a plurality of pattern cylinders with driving mechanism therefor, the combination with the impression cylinder and the pattern cylinders of a disk on the shaft of the impression cylinder, means for locking the said disk successively in angular positions corresponding with the angular positions of the respective pattern cylinders relatively to the impression cylinder, means for clamping each pattern cylinder on its driving shaft with the zero line of the pattern in position for printing when the disk is locked in the angular position corresponding with the respective pattern cylinder, and means of lateral adjustment of the pattern cylinders relative to the impression cylinder.

6. In a rotary printing machine having an impression cylinder and a plurality of pattern cylinders with driving mechanism therefor, the combination with the impression cylinder and the pattern cylinders of means for locking the impression cylinder in the respective positions with a particular transverse line thereon opposite to each of the respective pattern cylinders, and means for setting and locking each pattern cylinder on its driving shaft with a corresponding transverse line in the pattern of each opposite the line on the impression cylinder.

7. In a rotary printing machine having an impression cylinder and a plurality of pattern cylinders with driving mechanism

therefor, the combination with the impression cylinder and the pattern cylinders of means for locking the impression cylinder in the respective positions with a particular transverse line thereon opposite to each of the respective pattern cylinders, means for setting and locking each pattern cylinder on its driving shaft with a corresponding transverse line in the pattern of each opposite the line on the impression cylinder, a sliding bearing supporting one end of each pattern cylinder, and levers adapted to move said bearings laterally, whereby lateral adjustments of the pattern cylinders are effected.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

CHRISTIAN FRIEDRICH MAX KROENERT.
HANS JENS MEYER.

Witnesses:
F. JULIUS POTHS,
ERNEST H. L. MUMMENHOFF.