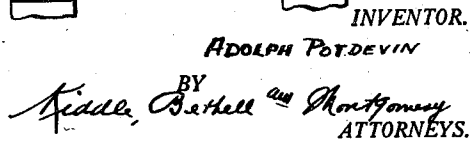


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PRINTING MACHINE

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8 Claims. (Cl. 101—248)

This invention relates to improvements in printing presses and is particularly directed to means for aligning the printing rollers to properly register the printed matter.

In machines of the character indicated, in printing sheets, bags or other separated articles it is essential that the printing be always impressed in the same position on the article, and in the past, due to slippage, it became necessary frequently to stop the machine while the articles were realigned.

It is an object of the present invention to provide a machine of the character indicated wherein the printing rollers can be adjusted transversely and peripherally to print articles in proper register.

Other objects of the present invention will be manifest from the following description and the accompanying drawing, in which drawing:

Fig. 1 is a plan view of an embodiment of my invention;

Fig. 2 is a view on the line 5—5 of Fig. 1;

Fig. 3 is a view on the line 6—6 of Fig. 1;

Fig. 4 is a section on the line 7—7 of Fig. 1; and

Fig. 5 is a plan view of the bearings for one of the printing rollers.

Referring to the drawing in detail, 2 designates a part of the frame of the machine and supporting the drive shaft 4 provided with a drive gear 6 at one end thereof geared to a suitable drive (not shown).

The shaft 4 carries an impression roller 8 which is fixed on the shaft, and parallel therewith is a shaft 10 carrying a printing roller 12 fixed thereon.

The shaft 10 is removably mounted in adjustable bearings 14 and 16 carried by the frame 2, to provide for lateral adjustment of the printing roller which will be described more in detail hereinafter.

Fixed to the shaft 10 and carrying the printing roller and hence fixed with respect to the printing roller is a gear 18, this gear meshing with a loose gear 20 mounted on shaft 4.

In the event of a lateral misalignment the printing roller 12 is adjusted longitudinally transversely of the machine. This is accomplished by means of the bearings 14 and 16 of the printing roller shaft 10. Each of these bearing members is in the form of a cylindrical tube, the member 14 being provided on its exterior with rack 40 and member 16 with a similar rack 42, in mesh with pinions 44 and 46, respectively. Upon rotation of the pinions 44 and 46 the cylin-

drical bearing members are moved laterally for coarse adjustment. The inner ends of the members 14 and 16 are provided with slots 15 and 17, respectively, removably to receive the ends of the printing roller shaft 10, whereby the shaft 10 can be removed when the bearings 14 and 16 are withdrawn sufficiently outward of the machine to be clear of the ends of this shaft.

The pinions 44 and 46 are carried on manually operable shafts 45 and 47, respectively, these shafts being provided with thumb nuts 49 and 51, respectively, for manual rotation of the same. Knurled nuts 53 and 55 are also provided for the shafts 45 and 47, respectively, whereby to lock the same in adjusted position.

Within the bearing 14 is provided a screw 48 for finer lateral adjustment of the printing roller 12. This screw is threaded in the outer end of the bearing 14. The inner extremity of the screw 48 is journaled in a block 50 adapted to engage the end of the shaft 10. The outer end of this screw is provided with a head 52 to facilitate rotation of the screw. A wing nut 54 is provided to lock the screw 48 in adjusted position.

The opposite bearing 16 encloses a coil spring 56 which abuts the end of the shaft 10 and the end wall of the bearing. It will be obvious that upon rotation of the screw 48 in a clockwise direction the shaft 10 carrying the printing roller 12 will be moved longitudinally transversely of the machine against the tension of the spring 56 and on rotation of the screw 48 in an anti-clockwise direction the spring will force the shaft 10 and roller 12 in the opposite direction.

The drive for the printing roller 12 is from the gear 6, through shaft 4, worm gear 87, pinned to the shaft by screw 88, worm 86, worm gear 84 and worm 82. The worm 86, worm gear 84 and worm 82 are carried on a bracket 90 secured to the face of the gear 20 which as above described is loose on the shaft. The gear 20 meshes with the gear 18 which is fast on the shaft 10 and hence fast to the printing roller.

As will be seen from Figs. 1, 2, and 3, a sector disc 70 provided with flanges 72 and 74 on its inner and outer edges respectively is adapted to cooperate with a friction roller 76. This disc 70 is mounted on a stub shaft 79 carrying a handle 78, whereby the disc may be rocked selectively to bring either of the flanges 72 or 74 into engagement with the friction roller 76, so that as the bracket 90 revolves the roller 76 will be rotated in either direction. This roller is fast on the shaft 77 carrying the worm 82. It will be obvious

that when the disc 70 is rocked to cause the flange 72 to engage the roller 76 the roller will be rotated in one direction, and when the disc is rocked to cause the flange 74 to engage the roller, the latter will be rotated in the opposite direction. Normally the roller 76 is out of engagement with the flanges of the disc 70. It will be obvious that if the disc 70 is moved as above described, the resulting rotation of the friction roller 76 will effect a momentary speeding up or slowing down of the gear 20, thereby effecting peripheral adjustment of the printing roller.

The disc 70 is provided with a lip 100 for receiving springs 101 and 102 which have their other ends anchored to the frame 2 of the machine. These springs are for holding the disc 70 in neutral position, that is, out of engagement with the friction roller 76.

It will be appreciated from the foregoing description of the present invention that I have provided a device wherein when any misalignment or non-registry of the printed matter is discovered the same, whether peripheral or lateral, can be readily rectified by simple adjustments while the machine is operating.

It is to be understood that various changes and modifications may be made in the structures herein illustrated and described without departing from the spirit and scope of my invention.

What I claim is:

1. A device of the class described comprising a pair of rollers, means for driving the same, the bearings for one of said rollers being mounted to move transversely of the device, and means for moving said bearings to adjust the roller carried thereby longitudinally while the rollers are rotating.

2. A device of the class described comprising a pair of driven rollers, bearings therefor, the bearings of one of said rollers being mounted for movement transversely of the device, and rack and pinion mechanism for moving said bearings to effect longitudinal adjustment of the roller carried thereby.

3. A device of the class described comprising a pair of driven rollers, hollow bearings for one of said rollers, adjusting means within said bearings for effecting longitudinal adjustment of the roller

carried thereby, said bearings being adjustable transversely of the machine, a rack carried by each of said bearings and a pinion cooperating with each of said racks to adjust said bearings.

4. A device of the class described comprising a pair of rollers, means for driving one of said rollers, cooperating gearing to drive the other of said rollers, and friction means for rotating one of said rollers through said gearing to alter the peripheral setting thereof with respect to the other roller.

5. A device of the class described comprising a printing couple, a drive therefor, a friction roller, means for selectively rotating said friction roller in either direction, said friction roller being so connected to said drive as to advance or retard one of the rollers of the printing couple to adjust the same peripherally with respect to the other roller of the couple.

6. A device of the class described comprising a printing couple, a gear drive therefor, a friction roller, a shaft therefor, a worm drive connected to said shaft and to said gear drive, a manually controlled member for selecting the direction of rotation of said friction roller to advance or retard said gear drive through said worm drive to adjust the peripheral setting of one of the rollers of the couple with respect to the other.

7. A device of the class described comprising a printing couple, a gear drive therefor, a friction roller, a shaft therefor, a worm drive connected to said shaft and to said gear drive, a flanged disc, means for oscillating said disc to bring the flanges thereof into engagement with said friction roller to select its direction of rotation whereby to alter the peripheral setting of one of the rollers of the couple independent of the other roller.

8. A device of the class described comprising an impression roller, a printing roller, a gear fixed to the printing roller, a drive from the impression roller to the printing roller including a loose gear in mesh with said first mentioned gear, and friction means for accelerating or retarding said loose gear thereby to adjust the first mentioned gear and vary the peripheral setting of the printing roller with respect to the impression roller.

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