

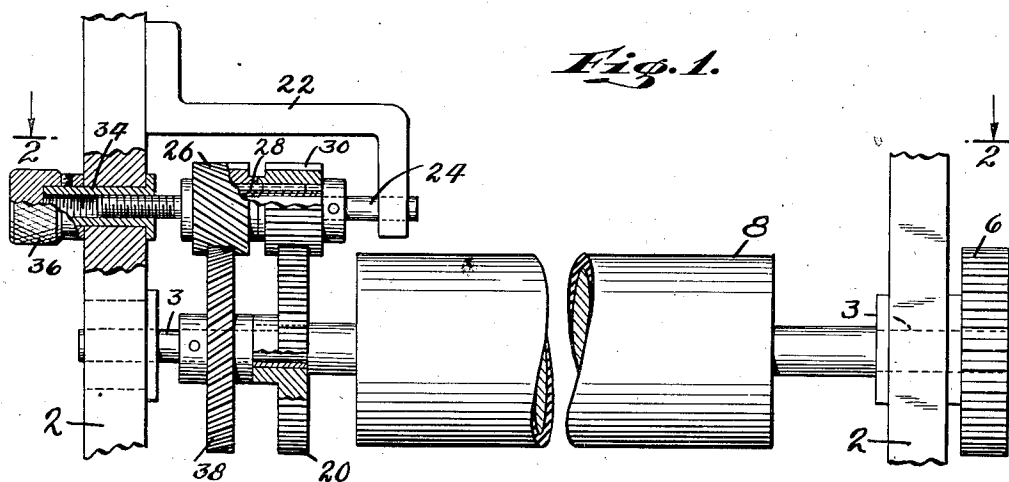
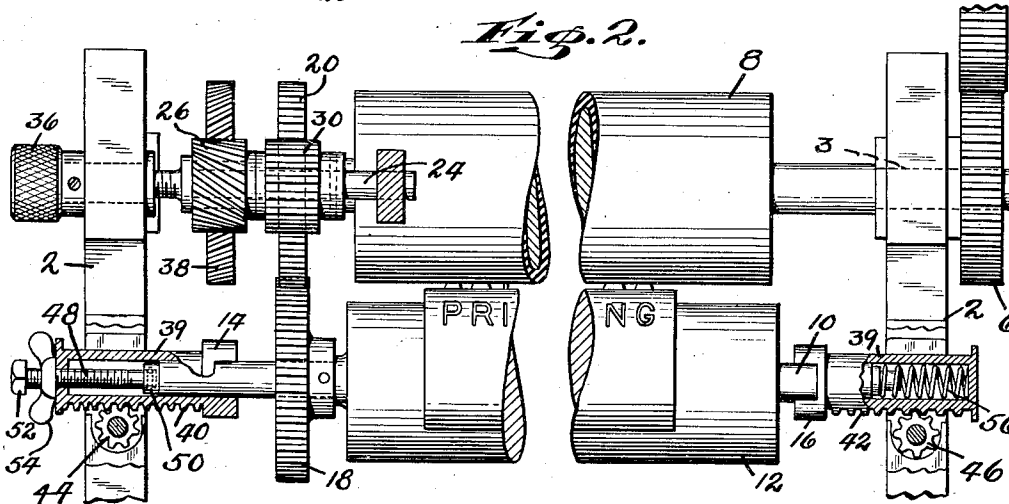
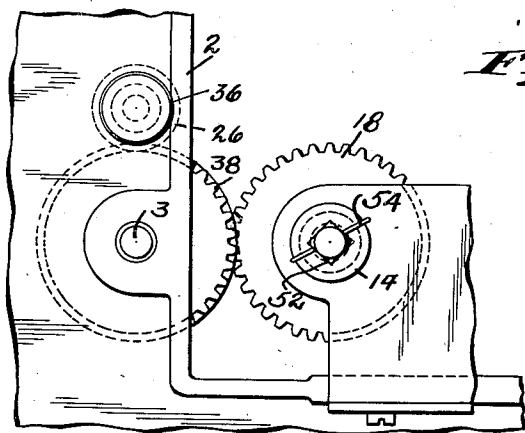
Oct. 28, 1941.

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2,260,402

PRINTING MACHINE

Original Filed Aug. 20, 1936



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2,260,402

PRINTING MACHINE

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Original application August 20, 1936, Serial No.
96,913. Divided and this application January
28, 1939, Serial No. 253,398

6 Claims. (Cl. 101—248)

This invention relates to improvements in printing presses and is particularly directed to means for adjusting the printing rollers.

The application is a division of my copending application Serial No. 96,913, filed August 20, 1936 Patented October 3, 1939, No. 2,174,728.

In machines of the character indicated, in printing sheets, bags or other articles it is essential that the printing be impressed accurately on the article and with prior machines it becomes necessary, due to slippage of the material, to stop the machine while adjustments are made.

It is one of the objects of the present invention to provide a machine wherein the printing rollers can be adjusted transversely of the machine and peripherally of the rollers so as to print articles in proper register.

Other objects of the present invention will be manifest from the following description and the accompanying drawing.

Fig. 1 shows in vertical elevation and in part section a printing roller and the adjusting mechanism therefor;

Fig. 2 is a view on the line 2—2 of Fig. 1; and Fig. 3 is an end view.

Referring to the drawing in detail: 2 designates the side frame of the machine supporting a drive shaft 3 secured to which is a drive gear 6 which is connected to any suitable drive (not shown).

Mounted on the drive shaft 3 is an impression roller 8. Parallel to the impression roller 8 is a shaft 10 which carries a printing roller 12. This shaft 10 is mounted in adjustable bearings whereby the printing roller may be adjusted longitudinally, as will be brought out in more detail hereinafter.

Affixed to the shaft 10 of the printing roller is a gear 18 in constant mesh with a gear 20 loosely mounted on the shaft 3.

One side frame 2 of the machine, as seen in Fig. 1, is provided with a bracket 22 supporting one end of a non-rotating stub shaft 24, this stub shaft being equipped with a helical pinion 26. The pinion 26 is provided with a hub 28 on which is keyed a pinion 30. The pinions 26 and 30 which are fixed together are adapted to be moved transversely with the shaft 24. The end of the shaft 24 where it projects through the side frame 2 is screw-threaded and mounted in a rotatable threaded sleeve 34. This sleeve is equipped with a knurled head 36 so that the sleeve may be rotated in the side frame 2 to move the helical pinion 26 and the straight-faced pinion 30 toward and away from the side frame.

The pinion 26 meshes with a helical gear 38

which is fixed to the drive shaft 3. The gear 20, it is to be remembered, is loose on the shaft 3.

The drive for the printing roller 12, it will be seen from the foregoing, is through the drive gear 6, shaft 3, gear 38 which is fixed on the shaft 3, helical pinion 26, straight-faced pinion 30, gear 20 which, as above mentioned, is loose on the shaft 3, and the gear 18 which is fast on the shaft 10 of the printing roller.

To adjust the printing roller 12 peripherally while the machine is in operation, it is merely necessary to rotate the sleeve 34 through the medium of the knurled head 36 thereby causing endwise movement of the stub shaft 24 and a like movement of the helical pinion 26 and straight-faced pinion 30. This movement may be right or left, as the case may be, as viewed in Fig. 1. This movement of the helical pinion 26 across the face of the gear 38 will, as will be evident, effect a slight rotation of the helical pinion and inasmuch as the pinions 26 and 30 are fast to each other the same rotation will be given to the straight-faced pinion 30, loose gear 20 and gear 18 which is fast on the shaft 10 of the printing roller, thereby to effect a speeding up or slowing down, as the case may be, of the printing roller. This adjustment, it will be appreciated, can be accomplished while the machine is running when the operator can see the effect of the same. In other words, should the operator notice that there is a misalignment of the printed matter lengthwise of the sheet being printed he merely rotates the knurled head 36 of the sleeve 34 in the right direction until the same is corrected.

In the event of a lateral misalignment of the printed matter on the sheet, the printing roller 12 is adjusted longitudinally, instead of circumferentially, transversely of the machine. This is accomplished by means of the bearings 14 and 16 for the printing roller shaft 10. Each of these bearing members is in the form of a tube 39, one of which is provided on its exterior with a rack 40 and the other with a rack 42, the rack 40 meshing with a pinion 44 and the rack 42 meshing with a pinion 46. These pinions may be rotated by any suitable means and upon rotation of either of them the shaft 10 will be moved lengthwise, imparting similar movement to the printing roller 12 to adjust the printing roller transversely of the sheet being printed, as will be understood.

The bearings 14 and 16 are slotted, as shown at 15 and 17, respectively, to receive the ends of the printing roller shaft 10 whereby the shaft 10 can be removed when the tubular members 39 are

withdrawn sufficiently outwardly of the machine for the bearing members 14 and 16 to clear the ends of the shaft.

Within the tubular member 39, which is a part of the bearing 14, is provided a screw 48 for finer adjustment of the printing roller 12 laterally of the sheet being printed. This screw is threaded in the outer end of the member 39, the inner end of the screw being journaled in a block 50 within the member 39, this block engaging the end of the shaft 10. The outer end of the screw 48 is provided with a head 52 to facilitate rotation of the screw while a wing-nut 54 is provided to lock the screw in adjusted position. The tubular member 39 which carries the bearing member 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 one direction the shaft 10 carrying the printing roller will be moved longitudinally transversely of the machine against the tension of the spring 56 and upon rotation of the screw 48 in the opposite direction the spring will force the shaft 10 and hence the printing roller 12 in the opposite direction.

It will be seen from all of the foregoing that I have provided for adjustment of the printing roller longitudinally and for adjustment of the printing roller circumferentially, both adjustments being effected without the necessity of stopping the machine.

It will 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 in combination a pair of cooperating rollers providing a printing couple, a drive therefor, including a drive shaft common to both rollers, the drive for one of said rollers including a helical gear carried by said drive shaft and a cooperating helical pinion movable relatively thereto to effect peripheral adjustment of said roller with respect to the other roller of the pair.

2. A device of the class described comprising a pair of rollers providing a printing couple, a drive therefor including a drive shaft common to both rollers, said drive including a helical gear carried by said drive shaft and a cooperating pinion movable relatively thereto to advance or retard one of said rollers relatively to the other peripherally.

3. A device of the class described comprising a pair of rollers providing a printing couple, a drive therefor including a drive shaft common to both rollers, said drive including a helical gear fast on said drive shaft, a cooperating pinion movable relatively thereto to advance or retard one of said rollers peripherally relatively to the other, and manually operable means for effecting said movement of the pinion relative to said helical gear while the rollers are rotating.

4. A device of the class described comprising a pair of rollers providing a printing couple, a drive for the printing roller of the couple including a helical gear and a helical pinion meshing therewith, a straight-faced pinion fixed to said helical pinion, a gear meshing with said straight-faced pinion, said gear meshing with a gear on the shaft of said printing roller, and means for moving said helical pinion across the face of its cooperating helical gear while both pinion and gear are rotating, thereby to effect a variation in the speed of the roller while the same is rotating.

5. A device of the class described comprising an impression roller and a printing roller, a drive therefor including a drive shaft common to both rollers, said drive including a helical gear and a cooperating pinion movable relatively thereto to advance or retard one of said rollers to adjust the peripheral relative setting of the rollers, manually operable means for effecting said movement of the pinion relative to said gear while the rollers are rotating, and means for moving one of said rollers longitudinally relatively to the other while the rollers are rotating, whereby longitudinal and peripheral adjustment of one of said rollers is effected.

6. A device of the class described comprising in combination an impression roller and a cooperating printing roller, a drive shaft common to both rollers, a pair of gears carried by said drive shaft, one of said gears being a helical gear fast on the shaft, the other a straight-faced gear loose on the shaft, a shaft for carrying the printing roller, a straight-faced gear affixed thereto and meshing with said first mentioned straight-faced gear, a helical pinion meshing with said helical gear, a straight-faced pinion fast therewith and meshing with said loose gear, and means for effecting movement of said helical pinion across the face of said helical gear while said rollers are being driven to accelerate or retard said printing roller relatively to the impression roller.

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