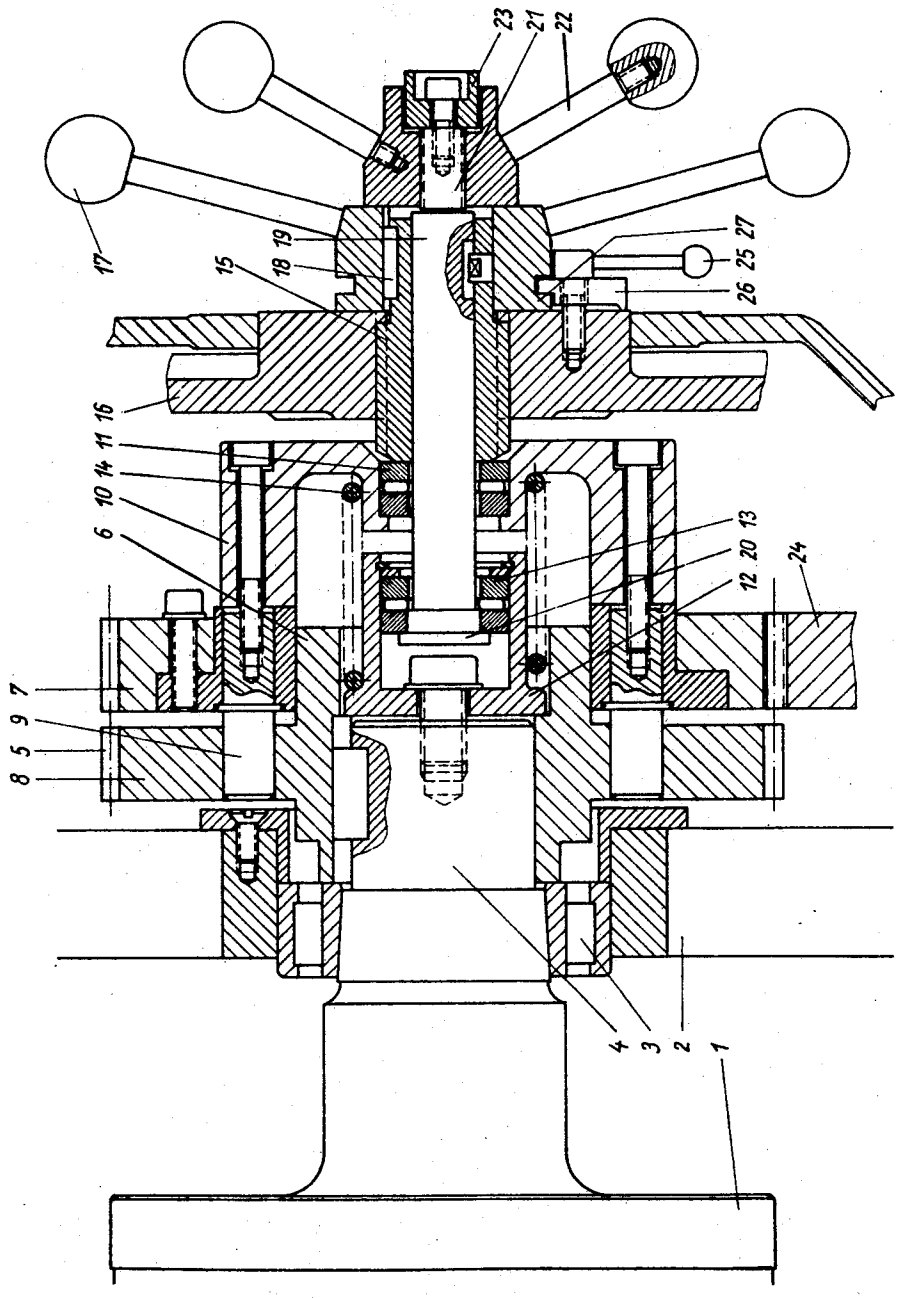
April 14, 1970 A. GERMANN 3,505,953

MECHANISM FOR ADJUSTING THE LATERAL AND PERIPHERAL REGISTER OF A ROTARY PRINTING PRESS

Filed Dec. 5, 1967



United States Patent Office 3,505,953
Patented Apr. 14, 1970

3,505,953

MECHANISM FOR ADJUSTING THE LATERAL AND PERIPHERAL REGISTER OF A ROTARY PRINTING PRESS

Albrecht Germann, Wurzburg, Germany, assignor to Schnellpressenfabrik Koenig & Bauer Aktiengesellschaft, Wurzburg, Germany

Filed Dec. 5, 1967, Ser. No. 688,062
Claims priority, application Germany, Dec. 10, 1966, Sch 39,949
Int. Cl. B41f 13/14
U.S. Cl. 101—248 2 Claims

ABSTRACT OF THE DISCLOSURE

A very simple mechanism for adjusting the lateral and peripheral register of a rotary printing press in which the adjusting means including two handwheels for operating said adjusting means are mounted coaxially to each other and to the plate cylinder.

The present invention relates to a mechanism for adjusting the lateral register as well as the peripheral register of a rotary printing press in which two threaded bushings for effecting the adjustments extend coaxially to the plate cylinder within a side wall or cover of the machine housing.

More particularly, the invention relates to an improvement in a mechanism of the type as mentioned above and as disclosed, for example, in the German Patent No. 1,032,755, in which the two adjusting movements are carried out by means of two handwheels which are located at one side of the axis of the plate cylinder and are rotatable side-by-side about parallel axes. This known mechanism requires a very large number of individual components and is therefore very complicated and expensive.

One of the disadvantages of this known mechanism consists in the use of large threaded bushings within which self-aligning roller bearings are mounted. Such a structure results especially in an inadequate guiding of the threaded bushing for effecting the peripheral adjustment of the plate cylinder and may result in a freezing of the latter due to the tangential force which is produced by a pinion drive for effecting the adjustment.

Furthermore, for preventing any unintentional adjustments of the lateral and peripheral register, this known mechanism employs radially slotted nuts which have to be loosened and tightened in the axial direction before and after each adjustment. The axial movement of these nuts which is necessary for tightening the same after each adjustment of the plate cylinder in the lateral and peripheral directions has once been accurately made is bound to vary this adjustment again to some extent and may thus require repeated adjustments or result in defective work.

It is an object of the present invention to provide a mechanism for adjusting the lateral and peripheral register of a rotary printing press which overcomes the disadvantages of similar adjusting mechanisms as previously devised and is of a very simple and inexpensive construction and permits the adjustments to be carried out very easily and accurately and without danger that once these adjustments have been made they might again be varied by unintentional movements or by the operations of locking the adjusting means.

One of the features of the invention for attaining this object consists in mounting the two handwheels for carrying out the lateral and peripheral adjustments so that their axes extend coaxially to each other and to the axis

of the plate cylinder. Other important features of the invention consist in the form of a nut which acts upon the plate cylinder through a connecting rod and a thrust bearing, in transmitting the rotary movements of the handwheel for effecting the peripheral adjustment to the helical gear which meshes with the driving gear by means of a hollow screw or threaded bushing and another thrust bearing, and in providing a compression spring which acts upon both thrust bearings so as to prevent any play between the movements of the nut and the hollow screw. In order to prevent any unintentional rotation of the two handwheels after the adjustments have once been accurately made, the invention further provides simple means for clamping these wheels in fixed positions without, however, thereby affecting the setting of the adjusting means.

The combination of these features of the present invention results in an adjusting mechanism which consists of very few individual components, permits very accurate adjustments of the lateral and peripheral register to be carried out, permits these adjustments to be carried out very easily, and insures that these adjustments once made will remain unchanged as long as desired.

The features and advantages of the present invention will become more clearly apparent from the following detailed description thereof which is to be read with reference to the accompanying drawing which shows a longitudinal section of the adjusting mechanism.

As illustrated in this drawing, the plate cylinder **1** is rotatably mounted in the machine frame **2** by means of roller or plain bearings **3**. Its stub shaft **4** carries a gear **5** which serves for driving the ink rollers and has a hub **6** on which a helical spur gear **7** is slidable in the axial direction. For preventing gear **7** from turning relative to gear **5**, it carries guide rods **9** which are slidable in bores in the body **8** of gear **5**. The other side of gear **7** carries a flange **10** which is secured thereto by bolts and supports a thrust bearing **11**. Stub shaft **4** of cylinder **1** further carries a bushing **12** which is rigidly secured thereto and carries a thrust bearing **13**. Flange **10** and bushing **12** are acted upon by the opposite ends of a coil compression spring **14** which at all times tends to move this flange and bushing away from each other.

Thrust bearing **11** engages upon the externally threaded bushing **15** which is connected by a spline **18** to a handwheel or handle bars **17** so as to be nonrotatable relative thereto but slidable in the axial direction thereof and it may be turned by the latter and is screwed into the housing **16** which is rigidly secured to the machine frame **2**. Bushing **15** surrounds and guides a rod **19** to which it is connected by a spline so that rod **19** is likewise nonrotatable but slidable in the axial direction relative to bushing **15**. On its inner end, rod **19** has a flange **20** which engages upon the thrust bearing **13**, while on its threaded outer end **21** the hub of another handwheel or handle bars **22** is screwed. In its outer end, this hub contains an indicating member **23** which is screwed tightly upon the outer end of rod **19** and has a graduation on which the extent of the axial adjustment of cylinder **1** and thus the lateral register may be indicated by a marking on the outer end of the hub of handwheel **22**.

When the handwheel **17** is turned in one or the other direction, bushing **15** will be screwed into or out of the housing **16** whereby the thrust bearing **11** of flange **10** and the helical gear **7** will be shifted in the axial direction. Although handwheel **22** will thereby likewise be turned, this will not result in any change in the adjustment of the lateral register. The helical gear **7** is in mesh with the driving gear **24**. Since the helical gear **7** is nonrotatably connected by the parts **8** and **9** to cylinder **1** but slidable in the axial direction thereof, an axial displacement of the helical gear **7** caused by a rotation of

handwheel **17** results in a corresponding angular displacement of cylinder **1** in the peripheral direction thereof relative to the driving gear **24**.

When the handwheel **22** is turned, rod **19** is shifted in its axial direction by means of and along the screw thread **21**. This movement is transmitted by the thrust bearing **13** and bushing **12** to the plate cylinder **1** and thus permits the lateral register of this cylinder to be adjusted. The compression spring **14** serves as the means for connecting the rod **19** to the thrust bearing **13** and for maintaining the parts **11**, **15**, **16**, **17**, and **19** in engagement with each other in accordance with its resilient strength so that no play will occur between these parts and the adjustment of the lateral and peripheral register after it has once been correctly made will remain unchanged. For preventing any unintentional rotation of handwheel **17** subsequent to its adjustment, it may be locked in a fixed position relative to the housing **16** by a clamping plate **26** which may be pressed tightly against the flange **27** of handwheel **17** when a lever **25** is tightened. This locking operation will, however, not affect the peripheral adjustment of the register since, due to the action of the compression spring **14**, handwheel **17** is at all times in engagement with the adjacent wall of housing **16** so that there is never any clearance between them. For preventing any rotation of handwheel **22**, this wheel may be locked by similar means, not shown, to the handwheel **17** without causing any variation of the adjustment of the lateral or peripheral register by such a locking operation.

The angular positions of adjustment of the handwheel **17** may be indicated by and read on graduations and a fixed marking on the housing **16** and on handwheel **17** similar to the graduations and the marking on handwheel **22** and the indicating member **23** as previously described.

Having thus fully disclosed my invention, what I claim is:

1. A mechanism for adjusting the lateral and peripheral register of a rotary printing press comprising a plate cylinder, driving means for rotating said cylinder about its axis, first adjusting means coaxial with said plate cylinder for shifting said cylinder in its axial direction for adjusting said lateral register, second adjusting means likewise coaxial with said cylinder for turning said cylinder about its axis relative to said driving means for adjusting said peripheral register, manually actuated control means coaxial with each other and connected to said first and second adjusting means, respectively, for moving said adjusting means independently of each other, a stationary frame having an inner and an outer wall portion spaced from and parallel to each other, said plate cylinder having a stub shaft secured to one end thereof, bearing means for mounting said stub shaft in said outer wall portion so as to be rotatable and slidable in its axial direction relative to said frame, said second adjusting means comprising a socketlike member between said wall portions and nonrotatably mounted on but slidable in its

axial direction relative to said stub shaft, a first helical gear secured to said socketlike member and being coaxial to said stub shaft, said driving means comprising a second helical gear in mesh with said first gear for driving the same, said first helical gear being slidable along and thereby also being turned relative to said second helical gear when said socketlike member is shifted in its axial direction whereby said cylinder is turned relative to said driving means for adjusting said peripheral register, a tubular externally threaded bushing screwed through said outer wall portion and projecting from both sides thereof so as to be slidable in its axial direction when being turned, a first thrust bearing connecting the inner end of said bushing to said socketlike member for transmitting the motion of said bushing through said socketlike member to said stub shaft for turning the same due to the sliding engagement between said helical gears, said control means comprising a first handle and a second handle each having a hub, said first handle hub being nonrotatably connected to the outer end of said bushing but slidable in the axial direction thereof, said first adjusting means comprising a connecting rod extending through said first thrust bearing and said bushing and guided by the latter and axially slidable but nonrotatable relative to said bushing and having a threaded outer end projecting from said bushing, said second handle hub forming a nut screwed on said threaded end and engaging upon the outer end surface of said first handle hub, a second thrust bearing connecting the inner end of said rod to said stub shaft for shifting said cylinder in its axial direction, and a compression spring between the end of said stub shaft and said socketlike member for preventing any play between the associated screw threads connecting said bushing with said outer wall portion and said nut on said second handle with said outer surface of said first handle hub and for maintaining said first handle hub at all times in engagement with said outer wall portion and said nut with said outer surface of said first handle hub.

2. A mechanism as defined in claim **1**, further comprising means for locking each of said handles in a fixed position to prevent any unintentional movements thereof.

References Cited

UNITED STATES PATENTS

2,425,914	8/1947	Blackley et al.	101—248
2,677,971	5/1954	Greenwood	101—248 X
2,775,935	1/1957	Reinartz et al.	101—248
2,948,216	8/1960	Thompson	101—248

ROBERT E. PULFREY, Primary Examiner

J. R. FISHER, Assistant Examiner

U.S. Cl. X.R.

74—395; 308—59