Oct. 12, 1954 A. J. EVERS 2,691,328

ADJUSTABLE ROLL MOUNTING FOR BAGMAKING MACHINES

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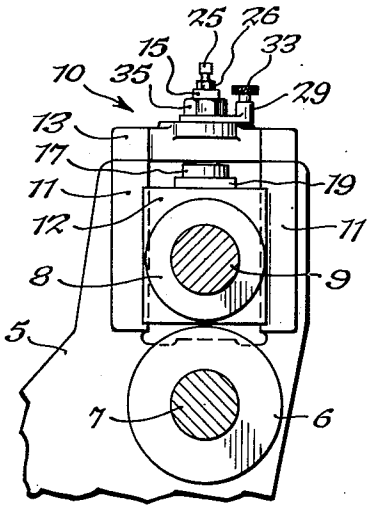


Fig. 1.

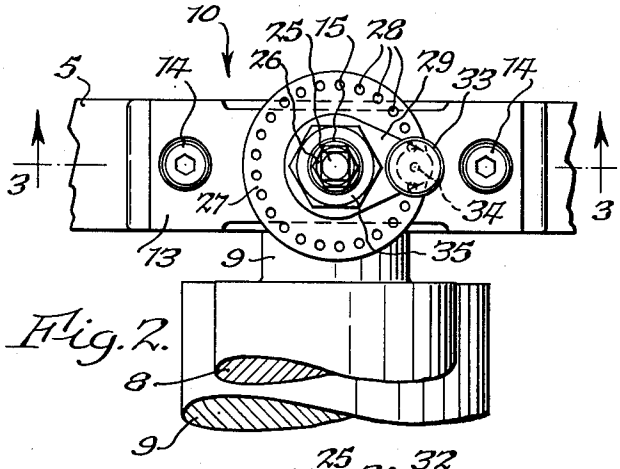


Fig. 2.

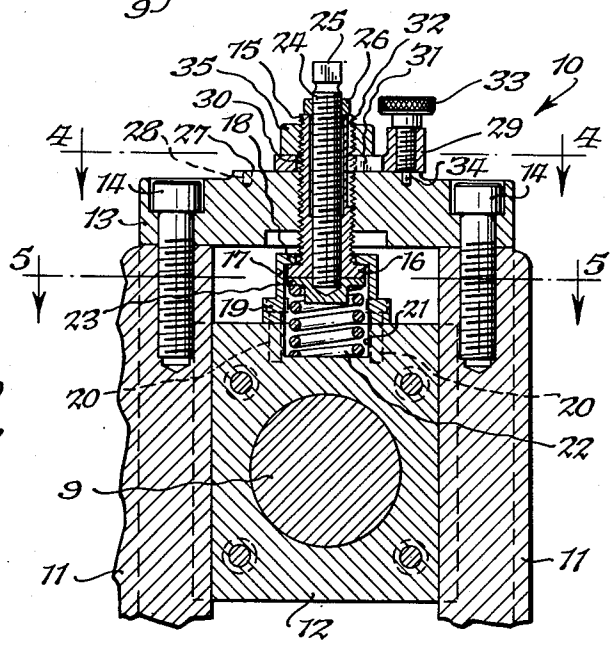


Fig. 3.

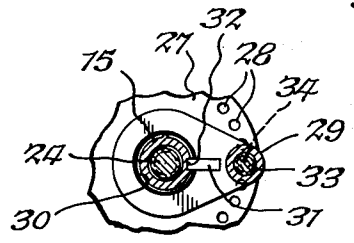


Fig. 4.

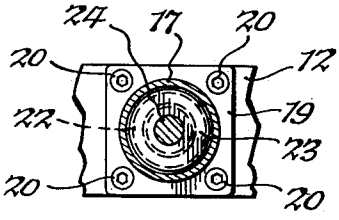


Fig. 5.

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ADJUSTABLE ROLL MOUNTING FOR BAGMAKING MACHINES

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3 Claims. (Cl. 93—8)

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This invention relates to new and useful improvements in roll mountings for bagmaking machines and particularly seeks to provide a novel adjustable roll mounting by which a roll may be precisely adjusted with respect to the cooperating surface it opposes and in which is also provided adjustable spring loading means for the roll.

Heretofore in paper bag making machinery whenever there has been provided a pair of cooperatively disposed rolls such as draw rolls, slitters, pinch rolls or forwarding rolls the upper roll has generally been merely spring loaded towards pressure contact with the cooperating lower roll. Consequently, it has been impossible to adjust the relative axial alignment between the two rolls without at the same time increasing or decreasing the effective pressure of the loading springs. Furthermore, with the older forms of spring loaded roll mountings no precise variation could be achieved in the actual spacing or alignment of one roll with respect to the other.

This invention, however, provides means by which it is possible to precisely adjust the axial alignment and/or spacing of one roll with respect to the other without changing the degree of spring loading, and conversely, this invention also provides means for varying the effective loading pressure of the springs without changing in the slightest the axial alignment or spacing between the rolls even if there is no actual nip contact therebetween.

An object of this invention, therefore, is to provide novel roll mounting means for paper bag making machines by which the relative position of one roll with respect to the other may be accurately regulated, by which the spring loading of one roll with respect to the other may be varied without affecting alignment or spacing between the rolls and by which the spring loaded roll may be so adjusted that it remains out of contact with the surface of the opposing roll.

Another object of this invention is to provide a device of the character stated in which the downward movement of the spring loaded roll towards contact with its cooperating roll is determined by the roll mounting means itself.

Another object of this invention is to provide a device of the character stated in which the relative position of the adjustable roll may be micrometrically varied in order to provide for highly precise adjustment of its alignment with respect to the cooperating roll.

A further object of this invention is to provide a device of the character stated in which the

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effective pressure of the loading spring may be precisely and variably adjusted without affecting the axial alignment or spacing of its associated roll with respect to the cooperating roll.

A further object of this invention is to provide a device of the character stated which is simple in design, rugged in construction and economical to manufacture.

With these and other objects in view, the nature of which will be more apparent, the invention will be more fully understood by reference to the drawings, the accompanying detailed description, and the appended claims.

In the drawings,

Fig. 1 is a fragmentary longitudinal section through a roll station of a bagmaking machine incorporating roll mounting means constructed in accordance with this invention;

Fig. 2 is an enlarged top plan view thereof;

Fig. 3 is a longitudinal section taken along line 3—3 of Fig. 2;

Fig. 4 is a fragmentary horizontal section taken along line 4—4 of Fig. 3; and

Fig. 5 is a fragmentary horizontal section taken along line 5—5 of Fig. 3.

Referring to the drawings in detail, the invention as illustrated may be embodied in a bagmaking machine including a main frame 5, a lower roll 6 having a stub end shaft 7 journaled in a suitable fixed bearing in the frame 5, and an upper roll 8 having a stub end shaft 9 journaled in an adjustable mounting bearing assembly generally indicated at 10 constructed in accordance with this invention. It will be noted that for the purposes of illustration only one end of each of the rolls and associated frame portion and mounting means has been shown since it is duplicated on the other side of the machine with respect to the other ends of the rolls.

The mounting assembly 10 includes a pair of spaced parallel guides 11, 11 forming a slideway in which is mounted a bearing block 12 for vertical sliding movement. The bearing block 12 rotatably carries the associated stub shaft 9 of the upper roll 8. A cap piece 13 is removably secured across the tops of the guides 11 as by cap screws 14. The center of the cap piece 13 is bored and threaded to threadably receive a vertically disposed adjusting screw 15 provided at its lower end with a flange 16. A collar 17 is freely fitted over the lower end of the adjusting screw 15 and is provided on its upper end with an inwardly directed annular flange 18 overlying the flange 16 of the adjusting screw 15. The collar 17 is also provided with a lower flange 19 through

which securing bolts 20 may be passed to fasten the collar to the upper face of the slidable bearing block 12.

The upper face of the bearing block 12 is provided with a bore 21 aligned with the collar 17 and of the same diameter as the internal diameter of the collar. A compression spring 22 has its lower end seated within the bore 21 of the bearing block and its upper end seated against a flanged washer 23 carried within the collar 17 and having its upper face in contact with the lower face of the adjusting screw flange 16.

Thus with the adjusting screw 15 being threadably engaged in the cap piece 13 which is attached to the guides of the main frame the action of the compression spring 22 will tend to force the slidable bearing block 12 downwardly. Since the collar 17 is rigidly affixed to the bearing block 12 its upper flange 16 will become engaged with the lower flange 16 of the adjusting screw and thus limit the amount of downward movement of the slidable bearing block 12 which can take place.

The effective pressure of the spring 22 may be varied by suitably adjusting the position of the flanged washer 23 within the chamber defined by the collar 17 and the bore 21. To this end the adjusting screw 15 is internally bored and threaded to receive a spring pressure-adjusting screw 24 having a nutted head 25 for the application of an adjusting wrench. A suitable lock nut 26 is provided on the upper end of the spring adjusting screw 24 and is adapted to seat against the upper end of the main adjusting screw 15. With the parts shown in the position illustrated in Fig. 3 the flanged washer 23 is at its maximum limit of upward movement, i. e., the spring pressure is at the minimum. To increase the spring pressure the lock nut 26 is backed off and the spring adjusting screw 24 is threadably advanced with respect to the main adjusting screw 15 in order to move the flanged washer 23 downwardly and thus increase the effective loading of the spring 22.

This type of roll mounting also provides for precisely accurate adjustment of the axis of the upper roll 8 with respect to that of the lower roll 6. To this end the upper end of the main adjusting screw 15 projects considerably above the upper face of the cap piece 13 which is provided with a flattened surface indicated at 27 having a plurality of indexing recesses 28 formed therein and arranged in a circle having its center at the axis of the adjusting screw 15. An indexing or adjusting lever 29 provided with a central aperture 30 is fitted over the upper projecting end of the main adjusting screw 15 and is operably connected thereto as by a key 31 slidably engaged in a cooperating keyway 32 formed in the outer face of the adjusting screw 15. The outer end of the lever 29 is provided with a headed locking or set screw 33 having a depending stud 34 adapted to be received within the indexing recesses 28.

Rotary movement of the adjusting lever 29 in either direction will cause corresponding rotation of the threaded main adjusting screw 15 within the cap piece 13 to cause it either to be raised or lowered, depending upon the direction of rotation. Relative axial movement between the adjusting screw 15 and the lever 29, of course, can readily take place because of the sliding engagement of the key 31 within the keyway 32. Once the desired position of the adjusting screw 15 relative to the cap 13 has been established it can be secured in such position as by a lock nut 35. In order to provide for precise adjustment of the position of the adjusting screw 15 with respect to the cap piece 13 it would be preferable to have the pitch of the external threads on the screw 15 be such as to provide approximately .002" of movement per index step of the adjusting lever 29. Of course, finer or coarser adjustments may be planned for by suitably increasing or decreasing the number of threads per inch on the adjusting screw and cap piece when the device is being made up.

It will be understood from the foregoing that vertical movement of the adjusting screw 15 will effect corresponding movement to the associated end 9 of the upper roll 8 and thus provide axial adjustment of that end of the roll with respect to the corresponding end of the lower roll 6. With this type of mounting means it is entirely feasible as in connection with bag machine draw rolls, for instance, to have them so aligned that there will be a slight space between the upper and lower of such rolls when no bag tube is being run through the machine. In this manner extremely precise adjustments in the alignment of the upper and lower rolls may be effected regardless of the degree of spring loading on the upper roll. By the same token, if the spacing between the rolls is to be maintained constant but the spring loading of the top roll is to be increased or decreased that may be readily effected through proper adjustment of the spring adjusting screw 24 as hereinbefore mentioned.

It is, of course, to be understood that various details of arrangements and proportions of parts may be modified within the scope of the appended claims.

I claim:

1. Roll mounting means for a bagmaking machine comprising a frame element provided with a vertical slideway, a bearing block mounted for slidable movement in said slideway, a cap piece mounted over said slideway, a vertically adjustable depending member threadably engaged with said cap piece and provided at its lower end with an abutment flange, a flanged collar freely mounted on the lower end of said depending member and provided on its upper end with a flange engageable with the flange of said depending member and connected at its lower end with said bearing block, a compression spring interposed between said bearing block and the abutment flange of said depending member for resiliently biasing said bearing block away from said abutment flange whereby to move the flange of said collar downwardly toward engagement with said abutment flange as its maximum limit of downward movement, and means for adjustably varying the effective pressure of said compression spring.

2. Roll mounting means for a bagmaking machine comprising a frame element provided with a vertical slideway, a bearing block mounted for slidable movement in said slideway, a cap piece mounted over said slideway, a vertically disposed flanged base supporting screw threadably engaged in said cap piece with its flanged end depending therebelow and its other end projecting thereabove, means for rotating said supporting screw in either direction to adjustably vary the vertical position of the flanged base thereof, means for locking said supporting screw after its relative vertical position has been set, a col-

lar freely mounted on the lower end of said supporting screw and provided on its upper end with an inturned flange disposed in overlapping relation with respect to the flange of said supporting screw, the lower end of said collar being affixed to said bearing block, means interposed between said bearing block and the flanged base of said supporting screw for resiliently biasing said bearing block downwardly away from said flanged base, the overlapping flanges of said supporting screw and said collar serving to establish the maximum limit of any such downward movement, and means for adjustably varying the effective pressure of said resilient biasing means.

3. In a bagmaking machine wherein is provided a main frame, a lower roll mounted in fixed bearings on said frame and a spring-loaded upper roll mounted in vertically adjustable bearings on said frame; the combination of mounting means for each end of said upper roll comprising a vertically disposed slideway formed in said frame, a bearing block rotatably supporting one end of said upper roll and slidably carried within said slideway, a cap piece mounted over said slideway, a vertically adjustable depending member carried by said cap piece for supporting and adjusting the vertical position of said bearing

block, means secured to said bearing block and axially movable with respect to said depending member for connecting said depending member to said bearing block, means on said depending member for limiting downward movement of said connecting means with respect thereto, spring means for biasing said bearing block and connecting means downwardly against the movement-limiting means of said depending member, and adjustable means for varying the biasing effect of said spring means.

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