

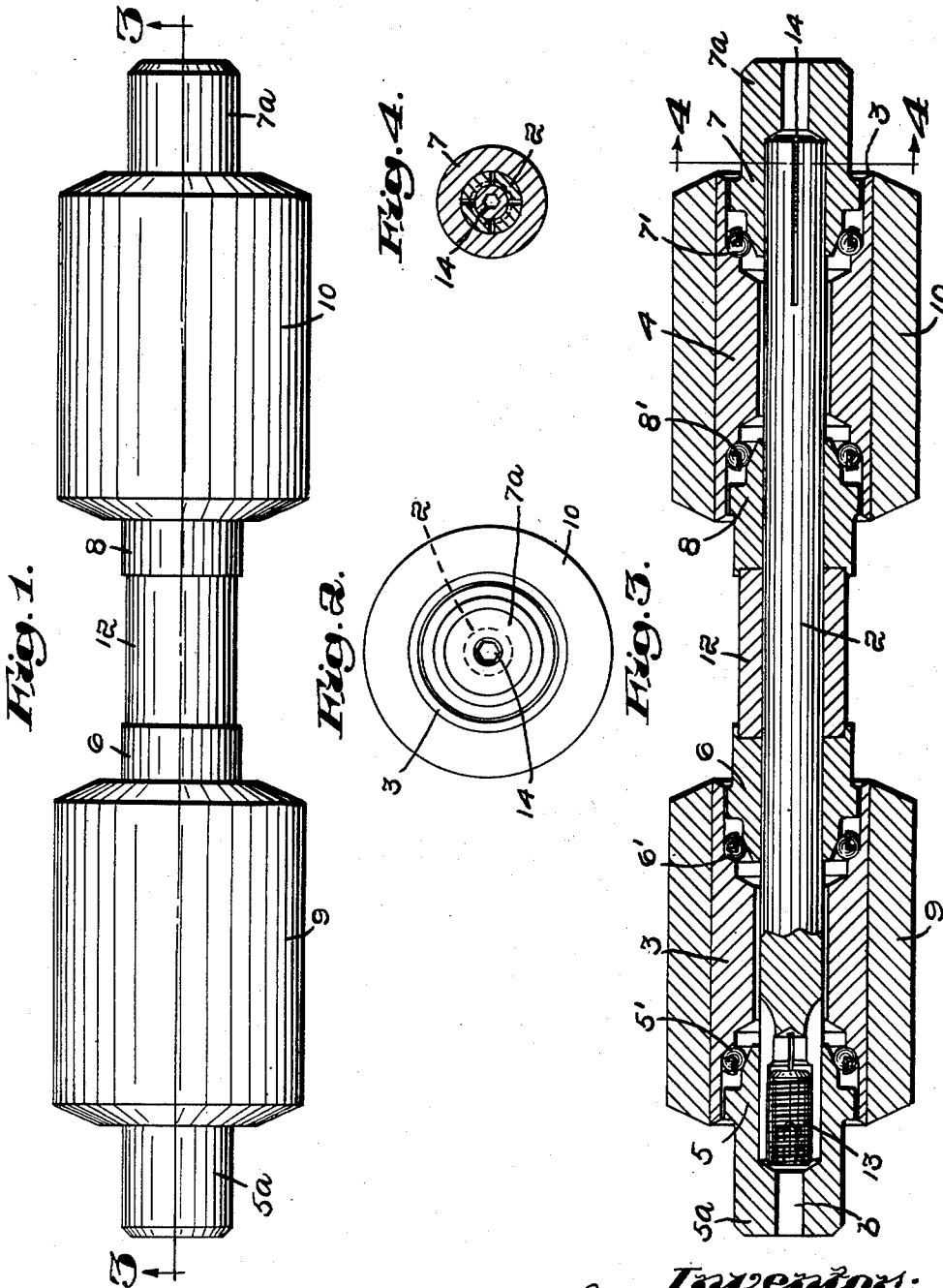
Oct. 10, 1950

L. M. COTCHETT

2,525,592

TOP ROLL FOR TEXTILE DRAFTING MECHANISMS

Filed July 2, 1947



Inventor:
Louis M. Cotchett,
by *J. M. Cuddy,*
Attorney.

UNITED STATES PATENT OFFICE

2,525,592

TOP ROLL FOR TEXTILE DRAFTING
MECHANISMS

Louis M. Cotchett, Hingham, Mass.

Application July 2, 1947, Serial No. 758,548

1 Claim. (Cl. 19—142).

1

This invention relates to the top rolls for drawing mechanisms of the general type used in spinning and roving frames. More particularly it relates to top rolls of the so-called "shell type."

In rolls of this character the sleeves, bosses or shells which carry the roll covers that run in contact with the rovings, slivers, or other fibrous stranded elements, are mounted to revolve freely on shafts which normally remain stationary, and the saddles or other weighting elements through which the pressure of the weighting mechanism is applied act on the shafts independently of the sleeves or shells so that their rotation is not impeded by the drag of the weighting mechanism. This is an important advantage of the shell type of roll over the ordinary rolls which are subjected directly to the drag of the weighting mechanism.

In earlier copending applications I have disclosed a unique form of shell type top roll and a method of making it which is a substantial improvement over the prior art constructions of this character. In that roll the shells are mounted on antifriction bearings and the arrangement is such that as wear occurs it is automatically taken up by a spring interposed between the two sets of bearings which support the two shells of an individual unit. This arrangement necessarily applies a slight pressure continuously to the antifriction bearings, and while this is not objectionable for most purposes, there are situations in which it would be preferable to eliminate this pressure. The present invention aims to devise a drawing roll construction in which this object will be accomplished in a thoroughly practical manner, while at the same time making provision for accurate adjustment of the bearings while the parts remain in their assembled relationship.

The nature of the invention will be readily understood from the following description when read in connection with the accompanying drawings, and the novel features will be particularly pointed out in the appended claim.

In the drawings,

Fig. 1 is a plan view of a shell roll unit embodying the present invention;

Fig. 2 is an end view of said unit;

Fig. 3 is a longitudinal, sectional view on the line 3—3, Fig. 1; and

Fig. 4 is a transverse, sectional view on the line 4—4, Fig. 3.

Referring first to Figs. 1 and 3, the roll structure there shown comprises a shaft 2 which forms the main supporting element of the roll unit. Encircling it are two sleeves 3 and 4, each supported on a set of ball bearings individual to itself.

2

That for the sleeve 3 includes oppositely tapered outer and inner cones 5 and 6, respectively, cooperating with races formed on the end portions of the sleeve itself to support sets of balls 5' and 6'. Preferably ball retainers of a known form cooperate with the respective sets of balls and the adjacent cones to seal the lubricant in them against any substantial danger of escape from either end of the sleeve.

The set of bearings cooperating with the other sleeve 4 includes outer and inner cones 7 and 8, respectively, cooperating with races formed on the sleeve 4 to support sets of balls 7' and 8' which are like those for the sleeve 3. They include ball and grease retainers. Each sleeve also carries a cover, that for the sleeve 3 being shown at 9 and that for the sleeve 4 at 10. The covering material may be of leather, felt, cork, synthetic rubber, or any other suitable material.

Mounted loosely on the shaft 2 between the inner cones 6 and 8 for the two sleeves is a collar 12 which preferably is telescoped with said cones, this sleeve acting as a bearing member for the saddle, weight hook, or other device through which the necessary loading pressure is applied to the unit.

Because all of the cones and the sleeve 12 are freely adjustable longitudinally of the shaft 2, some means must be provided for holding the various elements of the assembly in their proper positions on the shaft, and provision also must be made for adjusting the bearings to give just the clearance necessary to produce the best running conditions and then locking the parts in their adjusted positions. According to this invention both objects are accomplished by drilling a hole axially in each end of the shaft, splitting the opposite ends of the shaft 2 diametrically in to four times or sections, as best shown in Figs. 3 and 4, and internally threading these drilled and split sections to receive externally threaded and somewhat tapered plugs. Thus by threading these plugs into the opposite ends of the shaft, these end portions may be expanded or wedged into firm locking relationship to the respective outer cones 5 and 7. In Fig. 3 the screw-threaded wedging plug cooperating with the cone 5 is shown at 13 and that for the cone 7 is illustrated at 14 in Figs. 2, 3 and 4. If the holes in the opposite radially slotted ends of the shaft 2 are threaded with a normally tapered tap of the usual commercial form, it will produce a hole having a taper of sufficient degree for the purposes of this invention. When a plug like that shown at 13 is threaded into such a hole, it expands the slotted

3

end section of the shaft and makes it bind tightly against the inner surface of the cone 5.

Preferably the cone is made with a cap-like extension 5a so that it houses or encloses the slotted end portion of the shaft, thus forming a combined cone and cap structure. It is provided with a bore b, Fig. 3, for the entrance of a tool, such as a screw-driver, to operate the plug 13. Preferably this plug is provided with a hexagonal socket to receive an Allen wrench. The same construction is provided at the opposite end of the shaft, the cap being shown at 7a.

In assembling the parts one of the end cones, such as that shown at 7, may be locked in a stationary position on the shaft by threading in the plug 14. Then the other cone 5 is adjusted by hand until just the right degree of freedom is allowed for all four sets of balls to provide good running conditions without any excessive lost motion. When this condition has been achieved, then the plug 13 is screwed into the shaft, the latter being held stationary, where the plug expands the fingers of the left-hand end of the shaft into rigid locking engagement with the cone 5. While it obviously is not absolutely necessary that both ends of the shaft 2 shall be alike, since other means could be provided for securing one of the cones to the shaft in a fixed position, or at least so that it could not move axially away from the other cone, it is considered preferable to make both ends alike. Similarly, the outer cones need not necessarily be made integral with their cap sections, although the construction shown is regarded as preferable.

This roll structure has the advantages of that disclosed in my earlier applications of being capable of economical production in screw machines. After the assembly is completed the opposite ends of the sleeves or cones may be burred over at their junction so as to provide a self-contained and permanently sealed unit. Also, the roll covers may be buffed after assembly in the manner described in my earlier applications and with the aid of the machinery there disclosed, or in any other suitable equipment. It is contemplated that before the roll assembly is completed sufficient lubricant will be introduced into the bearings at last throughout the life of the roll. If, while in service, the bearings become loose, they can be adjusted, as above described, but when a roll becomes badly worn it should be

4

replaced with a complete new unit. Because the hole b in each cap is made very small, that is, smaller than the screw itself, access to the end of this locking screw by anything except a small screw-driver or Allen wrench, or some other kind of a tool that could operate the screw, is substantially prevented, thus practically eliminating the danger of tampering. Also, it reduces the liability of lint entering the hole where it might find its way into the bearings.

While I have herein shown and described a preferred embodiment of my invention, it will be evident that the invention may be embodied in other forms without departing from the spirit or scope thereof.

Having thus described my invention, what I desire to claim as new is:

A top roll for drawing mechanisms comprising a shaft, two sleeves encircling said shaft and spaced axially apart, two sets of antifriction bearings, one for each sleeve, supporting said sleeves in coaxial relationship to each other on said shaft, each set of said bearings including two oppositely tapered cones and the outermost of said cones being slidable on the opposite end portions of said shaft, said end portions of the shaft being expansible, screw-threaded means operable from the ends of said roll to expand either end of said shaft into locking engagement with its respective cone, and a third sleeve encircling said shaft between the aforesaid sleeves and spacing the latter apart, said third sleeve being constructed for the contact therewith of the saddle by which the top roll is weighted.

LOUIS M. COTCHETT.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
628,522	Campbell	July 11, 1899
840,010	Ragsdale	Jan. 1, 1907
1,258,868	Buxton	Mar. 12, 1918
1,692,460	Mattison	Nov. 20, 1928

FOREIGN PATENTS

Number	Country	Date
294,667	Great Britain	July 28, 1928