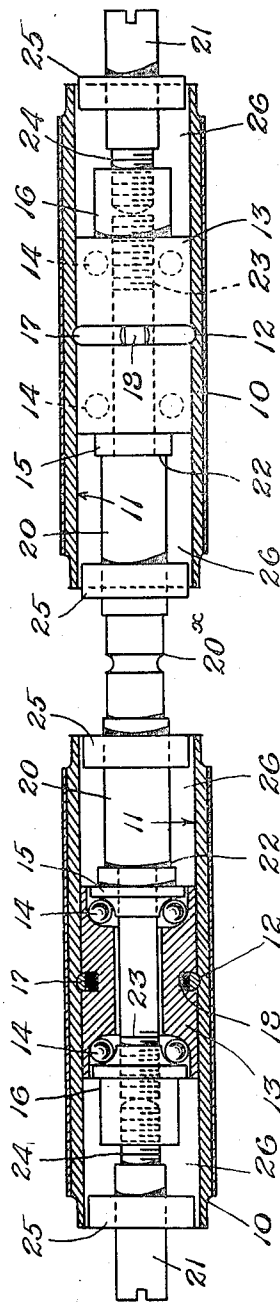


1,258,868.

F. M. BUXTON.
TOP ROLL.
APPLICATION FILED AUG. 11, 1915.

Patented Mar. 12, 1918.



Inventor
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UNITED STATES PATENT OFFICE.

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TOP ROLL.

1,258,868.

Specification of Letters Patent.

Patented Mar. 12, 1918.

Application filed August 11, 1915. Serial No. 45,034.

To all whom it may concern:

Be it known that I, FRED M. BUXTON, a citizen of the United States, and resident of Woonsocket, in the county of Providence and State of Rhode Island, have invented certain new and useful Improvements in Top Rolls, of which the following is a specification.

This invention relates to top rolls of textile machinery, and its object is to provide an improved construction including a bearing structure to sustain the rotatable shell of the roll, and dust-excluding collars arranged to occupy the ends of the shell to keep the latter and the bearing structure free from dust. The word "dust" is used in its comprehensive sense in this specification, to include lint and other particles which may float in the air. The invention contemplates a specific arrangement of the dust-excluding collars whereby dust is almost entirely prevented from entering the shell, and whereby dust chambers are provided within the shell between the collars and the bearing structure, to collect whatever dust, if any, may pass through the restricted annular space which is left between the ends of the shell and collars for clearance.

The bearing structure and dust-excluding collars are carried by a spindle, and are so formed and arranged as to be capable of being withdrawn intact from the shell without disturbance of their adjustment and relative arrangement. The advantage of such structure is that the shell may be quickly removed, whenever occasion requires, and another shell substituted therefor without excessive loss of time, for, as previously stated, the relation of the spindle, bearing structure and collars is not disturbed by removing the shell. The accompanying drawing shows a double top-roll designed for a roving frame, the bearing structure for one of the shells being shown in section and that for the other being shown in elevation.

The same reference characters indicate the same parts wherever they occur.

Two rotatable yarn-engaging shells are indicated at 10, 10. For the purposes of this invention the internal surfaces 11 of said shells are preferably cylindric throughout and formed without shoulders, excepting that each shell has an annular groove 12,

Each shell is supported by an anti-friction bearing structure, and since these bearing structures are identical a description of one will suffice for both. The bearing structure includes a sleeve 13, rollers 14 which in the present instance are spherical, and ball-engaging collars 15 and 16. The sleeve 13 does not fit tightly against the internal surface of the shell, but is enough smaller than said internal surface to enable the shell to be detached. End thrust of the shell relatively to the sleeve is sustained by a split ring 17 which is arranged in a groove 18 of the sleeve. The outside diameter of the split ring in its normal condition is slightly greater than the diameter of the internal surface 11 of the shell, the ring being capable of being sprung to permit attaching and detaching the shell. When the roll is assembled, the ring occupies the groove 12 in the shell, thus connecting the shell and the sleeve so that the end thrust of the shell is sustained by the rollers 14. In use, the sleeve 13 and ring 17 rotate with the shell.

The anti-friction bearings are arranged upon a spindle which, in the present instance, extends through both sections of the roll. The spindle as shown is made up of a plurality of parts, but the term "spindle" is used in its comprehensive sense, to include all the component parts of which it is made. In the present instance the spindle comprises a member 20 and two end members 21, 21. The reason for making the spindle in three parts is to accommodate the anti-friction bearing structures. The member 20 has shoulders at 22, 22 against which the members 15 of the bearing structure are seated. The end portions of the member 20 are provided with screw-threads 23, and the members 16 of the bearing structures are internally threaded to coact with the threads 23, this connection affording the necessary means of adjusting the members 16 relatively to their respective cooperative members 15. The members 21 of the spindle are provided with screw-threads 24 which coact with the internal threads of the members 16. The members 21 are thus adapted to be screwed against the end faces of the spindle member 20 to bind the collars 16 securely so as to maintain the desired adjustment of the bearing structures. The spindle members 21 are thus held by the members 16, and they project beyond the

outer ends of the shells a sufficient distance to coact with the usual slotted fixtures (not shown).

The ends of the shells 10 extend a considerable distance in both directions beyond the ends of their respective bearing structures. For the purpose of excluding dust from the shells and the bearing structures I provide collars 25, said collars being carried by the spindle and arranged in the ends of the shells. It is immaterial whether the collars 25 are integral parts of the spindle members or whether they are made separately and attached, excepting that, for economy, it is preferable to make the collars separately and to fit them tightly on the spindle members. On the drawing they are shown as last described. The peripheries of the collars 25 do not touch the shells 10, but they fit as closely as is consistent with the requirement for clearance. The fact that there is such clearance, however slight, leaves annular spaces between the collars and the shells through which fine particles of dust may pass, and such particles of dust might work into the anti-friction bearings if it were not for the fact that the bearings are a considerable distance removed from the collars. As it is, however, each shell has dust chambers 26 between the collars 25 and the ends of the bearing structures, and whatever dust may work into these chambers remains therein but does not work into the anti-friction bearing structure.

The collars 25 are placed so that their outer ends will be either flush with or beyond the ends of the shells. As shown, the collars in the left-hand shell are flush with the ends of the shell, while those in the right-hand shell project slightly beyond the ends of the shell. In practice there would not be any occasion for having the two different arrangements shown, and the only purpose in showing two arrangements is to support the explanation which follows. In practice, dust accumulates on the exposed portions of the spindle, and would lodge in the ends of the shells if the collars 25 were set in from the ends, and the attendants are required to pick off the accumulations while the machines are running. This practice often results in cutting the fingers of the attendants, because the shells 10 often have sharp edges, burs or other formations at their ends which cut the fingers if the shells are rotating when the fingers come in contact with them. The collars 25, when placed in either of the relative positions shown, serve as guards to prevent the dust from lodging in the shells, and to prevent the

cutting referred to, should the attendant pick dust from the exposed portion of the spindle. If the collars 25 were set so that the ends of the shells projected beyond them, the collars would not be effective as guards for the purposes explained.

In the form shown, the two sections of the roll are separated from each other a sufficient distance to leave the middle portion 20* of the spindle member 20 exposed for the reception of the usual saddle (not shown).

Aside from the provision of the dust chambers 26 and aside from the arrangement of the collars 25 which enables the latter to guard the fingers of the attendants, a feature to be noted is that the spindle, anti-friction bearing structure and dust-excluding collars of each roll section are capable of being withdrawn intact and without any disturbance of adjustment from the shell 10, so that the substitution of one shell for another does not require any rearrangement or readjustment of anything carried by the spindle.

I claim:

1. A top roll comprising a revoluble shell, a spindle extending therethrough, an anti-friction bearing structure arranged upon said spindle within said shell to sustain the latter, the ends of said shell extending beyond said bearing structure, and dust-excluding collars carried by said spindle and arranged in the ends of said shell to prevent dust from lodging in said ends.

2. A top roll comprising a revoluble shell, a spindle extending therethrough, an anti-friction bearing structure arranged on said spindle within said shell to sustain the latter, the ends of said shell extending beyond said bearing structure, and dust-excluding collars carried by said spindle and arranged in the ends of said shell to prevent dust from lodging in said ends, the smallest internal diameter of said shell being enough greater than the greatest external diameter of said collars and of said bearing structure to enable said spindle, bearing structure, and collars to be withdrawn intact from said shell.

3. A top roll comprising a revoluble yarn-engaging shell, a bearing structure arranged in said shell, the ends of said shell extending beyond said bearing structure, and dust-excluding members arranged in the ends of said shell to prevent dust from lodging in said ends.

In testimony whereof I have affixed my signature.

FRED M. BUXTON.