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SUPPORT FOR DRYING ROLLS

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Fig. 2

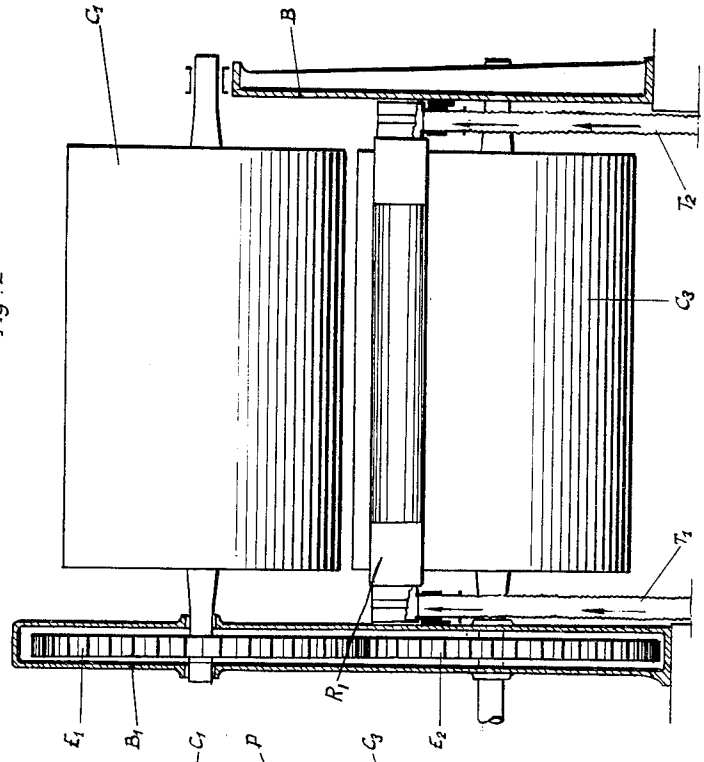

Fig. 1

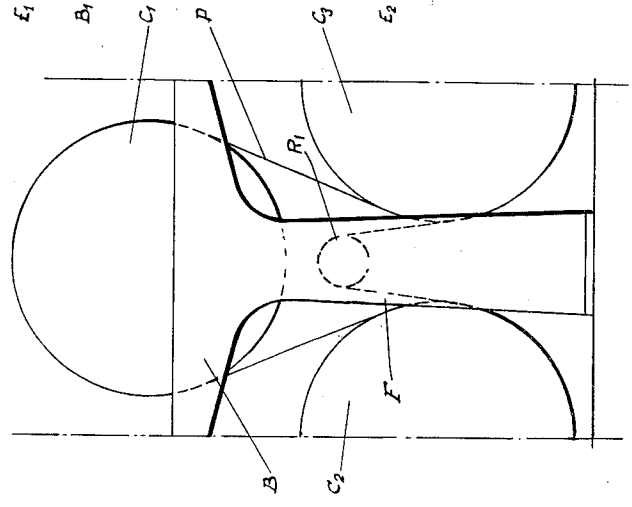

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Fig. 3

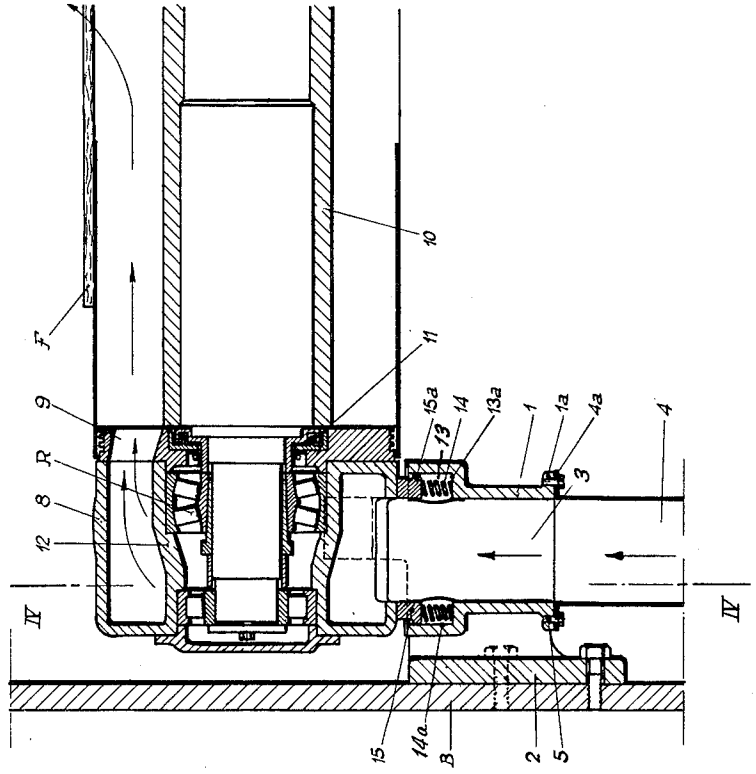

Fig. 4

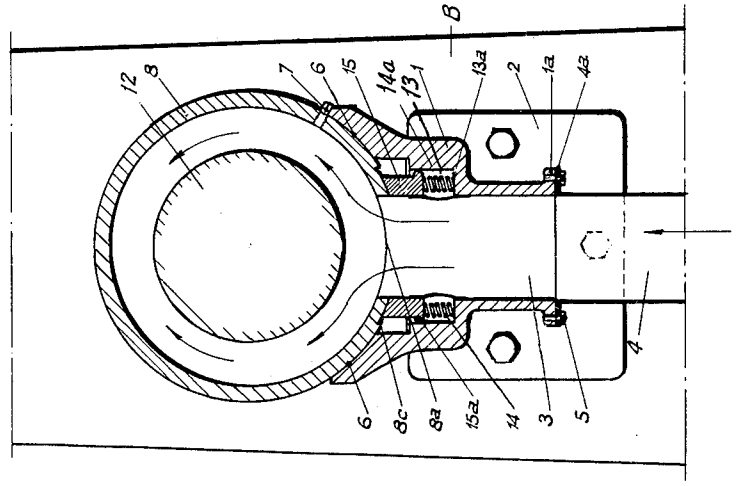

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Fig:5

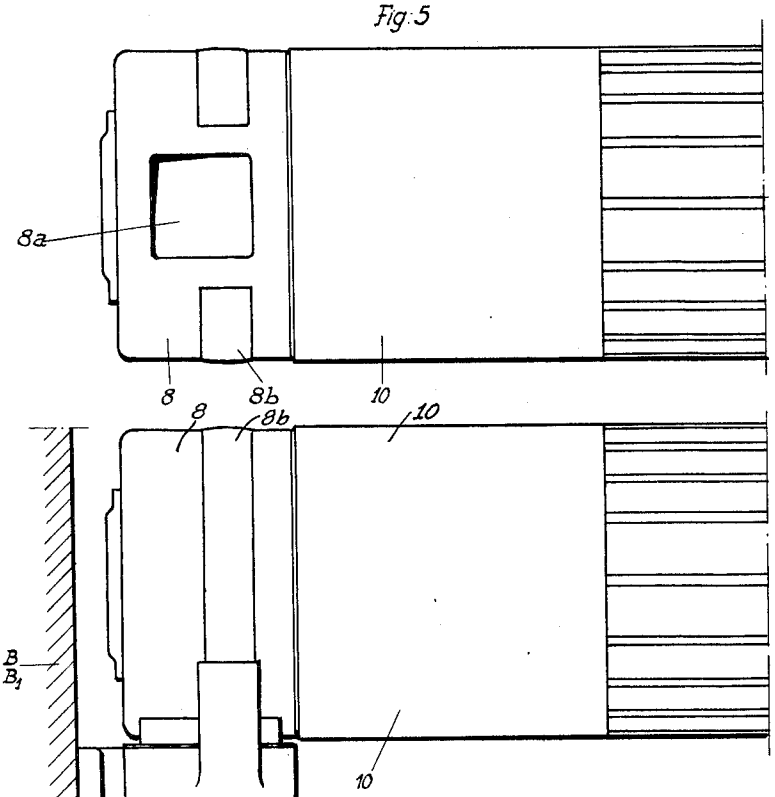

Fig:6

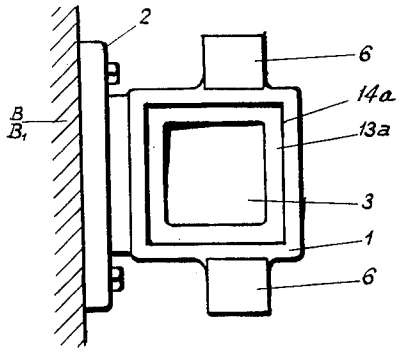

Fig:7

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3,212,198

SUPPORT FOR DRYING ROLLS

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Claims priority, application France, Mar. 28, 1962, 892,599
3 Claims. (Cl. 34—124)

This invention relates to an improved support for horizontally disposed rolls and, more particularly, for drying rolls used in paper web drying structures.

It is known that in drying sections of substantial width, the frames which support the rotary elements also serve as casings for the gears which control the rotation of the drying cylinders. The sheet of paper to be dried is conveyed over these cylinders by a felt band which is in turn dried as it passes over the drying rolls.

The drying roll under consideration is of the type which emits a drying fluid introduced into the roll from a fluid source (such as an air pump) through a distributor bearing in which the roll is adapted to journal. Thus, in addition to a mechanical support for the distributor bearing, means also have to be provided to secure a fluid-tight joint between the conduit extending from the fluid source on one hand and the distributor bearing on the other hand.

It is a desideratum that the drying rolls which, due to the relative arrangement of the frame and the drying cylinders are often not easily accessible, be readily placed into operating position and removed therefrom, especially for the purpose of changing the band of felt or for the replacement of a worn component such as, for example, a roller-bearing or joint.

It is therefore an object of this invention to provide an improved drying roll support which, cooperating with particularly formed parts of the distributor bearing, ensures a fluid-tight connection between a stationary fluid conduit and the distributor bearing of the drying roll.

It is a further object of this invention to provide an improved drying roll support that makes possible readily placing the drying roll into an operating position and removing it therefrom.

Still another object of the invention is to provide a drying roll support of improved structure having minimum dimensions along the axis of the roll so as to cause no hindrance to the movement of the sheet of paper or the movement of the felt band which serves to convey the said paper over the successive drying cylinders.

In accordance with the present invention, the support of the drying roll which is rotatably mounted in a distributor bearing having a barrel-shaped boss is characterized in that said support is composed of a sleeve which is rigidly fixed to a lateral base permitting the securing of said support to said frame, said sleeve comprising at the bottom end thereof securing means for permanently coupling said sleeve to the conduit which serves to supply the drying fluid, and at the top end thereof two backing faces employed conjointly with the barrel-shaped boss of said distributor, and further comprising a coaxial chamber against the bottom of which are applied elastic means designed to act upon a sealing gasket slidably mounted inside said chamber and thus maintain said sealing gasket in contact with said distributor bearing in which there is formed an orifice for the admission of drying fluid.

The present invention will be more readily understood with reference to the accompanying drawings which are given solely by way of example without implied limitation, and in which:

FIGS. 1 and 2 are diagrammatical elevational views

showing the arrangement of a felt-drying roll with respect to the paper-drying cylinders of a drying section.

FIG. 3 is an axial cross-section showing a distributor bearing on a roll support in accordance with the present invention.

FIG. 4 is a sectional view taken along lines IV—IV of FIG. 3.

FIG. 5 is a partial bottom view of a drying roll and its distributor bearing.

FIG. 6 is a view in elevation of the system of assembly which is illustrated in axial cross-section in FIG. 3.

And FIG. 7 is a plan view of the roll support in accordance with the invention.

FIGS. 1 and 2 show an arrangement in a modern drying section of a drying roll R1 in relation to the drying cylinders C1, C2, C3 over which passes the sheet of paper P to be dried. Sheet P is conveyed by the band of felt F. The drying of band F is effected by means of the drying fluid which is introduced into the roll through conduits T1 and T2. The cylinders C1 and C2 are driven by the gears E1, E2 which are housed in the casing formed by the frame B1.

A simple inspection of this arrangement reveals that the drying roll together with its supply system can no longer be fitted into position from the end.

The object of this invention is to provide a supporting and fluid supplying arrangement as illustrated in FIGS. 3 to 7 that permits a downward insertion or upward removal of the drying roll in a direction substantially normal to the longitudinal axis thereof.

The roll support comprises a vertically extending sleeve 1 of rectangular section having a passage or passageway 3. Integral with sleeve 1 is a laterally extending base 2 fixedly mounted on frame B, B1. The bottom end of sleeve 1 is permanently secured to the conduit 4 for the supply of drying fluid by clamping the flange 1*a* of sleeve 1 against the corresponding flange 4*a* of said conduit by means of screws 5.

There is formed in the upper portion of sleeve 1 a rectangular chamber 13, having side walls 14*a* and a bottom shoulder 13*a*. On shoulder 13*a* there are disposed spiral springs 14 which are intended to cause a sealing gasket 15, having an opening of the same dimensions as passage 3, and disposed about the upper periphery thereof, to be applied under pressure against the distributor bearing 8 in the manner which will be explained below. The sleeve 1 carries at the top portion thereof a cradle having two backing faces 6 adapted to cooperate with the barrel-shaped bosses 8*b* of the distributor bearing 8 of the drying roll 10, as shown in FIGS. 5 and 6. The distributor bearing 8 is coupled in a known manner to the hub of the roll 10 by means of a roller bearing R and with interposition of a distributor 9, the fluid-tightness of which is ensured by means of a labyrinth joint 11 fitted in the interior of said roll.

The bearing 8 has a rectangular aperture 8*a* of the same size and shape as passage 3 of sleeve 1. A recess 8*c* in the outer wall of the bearing ensures in combination with a stud 7 the coincidence of the lateral, downwardly directed aperture 8*a* with the orifice of sealing gasket 15 urged by springs 14, the sealing gasket is guided in its sliding movement along side walls 14*a* by means of a heel-shaped annular projection 15*a* having the same section as the chamber 13 in sleeve 1.

As the drying roll 10 is lowered into position, the barrel shaped boss 8*b* of the distributor bearing is received by the backing faces 6 of the cradle on the sleeve 1, and, at the same time, the sealing gasket 15 engages an area on the distributor bearing about the lateral opening 8*a*, thus ensuring a fluid-tight coupling between roll 10 and the pipe 4 for the supply of drying fluid.

It will be understood that instead of the unitary structure as shown and described, the roll support may comprise a greater number of sectional components without departing from the spirit of the invention.

What I claim is:

1. A support secured to a frame structure and adapted to carry a drying roll rotatably mounted in a distributor bearing having a lateral downwardly directed, fluid admitting aperture and further adapted to supply said roll with fluid from a conduit, comprising, a sleeve having a passageway therethrough, means for rigidly attaching said sleeve to said frame, means for coupling one end of said sleeve to said conduit, sealing means disposed about the periphery of said passageway in the other end of said sleeve, said sealing means adapted to be resiliently urged into contact with said distributor bearing around said lateral aperture thereof and a cradle attached to said sleeve and adapted to back said distributor bearing adjacent the aperture thereof.

2. A support secured to a frame structure and adapted to carry a drying roll rotatably mounted in a distributor bearing having a lateral downwardly directed, fluid admitting aperture and further adapted to supply said roll with fluid from a conduit, comprising, a sleeve having a passageway therethrough, a base rigidly attached to said sleeve and fixedly mounted to said frame for holding said sleeve in a substantially vertical position, means for coupling the bottom end of said sleeve to said conduit, an open chamber formed inside the upper portion of said sleeve about the periphery of said passageway of said chamber having side wall means and an adjoining bottom shoulder, a sealing gasket received in said chamber and adapted to slide along said side wall means, resilient means disposed in said chamber between said gasket and said shoulder and adapted to urge said gasket into contact with said bearing around said lateral aperture thereof

and a cradle attached to the top of said sleeve and having two backing faces adapted to engage said distributor bearing adjacent said gasket.

3. The combination comprising, a support secured to a frame structure and a drying roll rotatably mounted in a distributor bearing having a lateral downwardly directed, fluid admitting aperture, said support including a sleeve having a passageway therethrough, a base rigidly attached to said sleeve and fixedly mounted to said frame for holding said sleeve in a substantially vertical position, means for coupling the bottom end of said sleeve to a conduit connected to a fluid source, an open chamber formed inside the upper portion of said sleeve about the periphery of said passageway, said chamber having side wall means and an adjoining bottom shoulder, a sealing gasket received in said chamber and adapted to slide along said side wall means, resilient means disposed in said chamber between said gasket and said shoulder urging said gasket into contact with said bearing about said lateral aperture thereof, a cradle attached to the top of said sleeve and having two backing faces, said distributor bearing including a peripheral, barrel-shaped boss, said backing faces and said boss being in a contacting relationship adjacent said gasket.

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