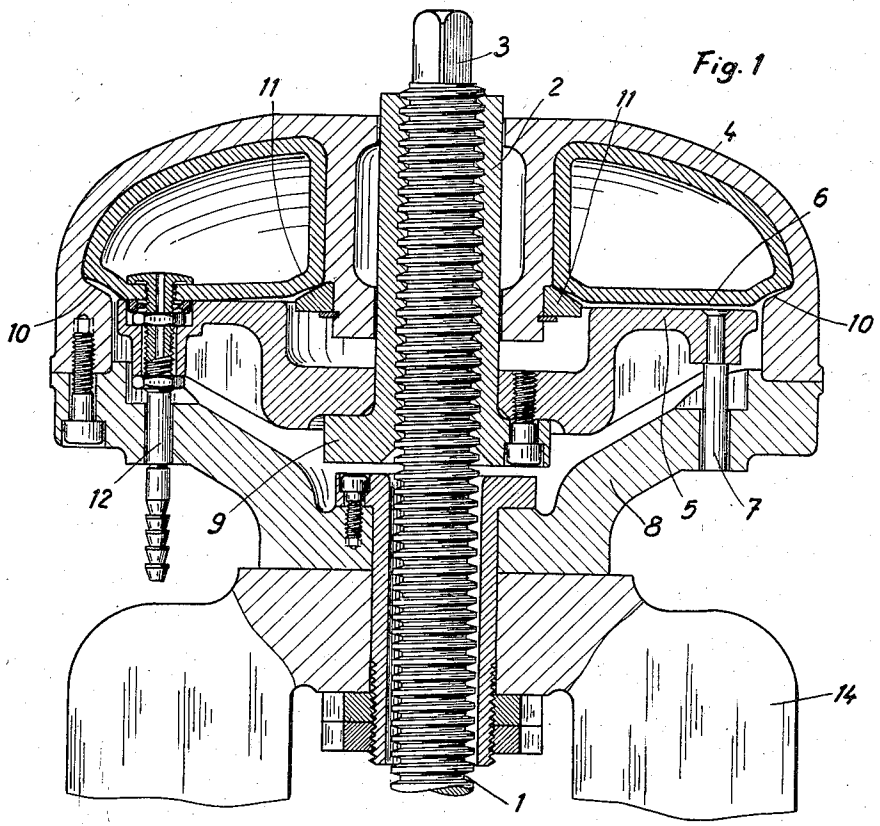
Jan. 27, 1959 P. URBAN 2,870,706

PRESSURE MEANS FOR ROTARY PRINTING MACHINES

Filed July 14, 1955

Fig. 1



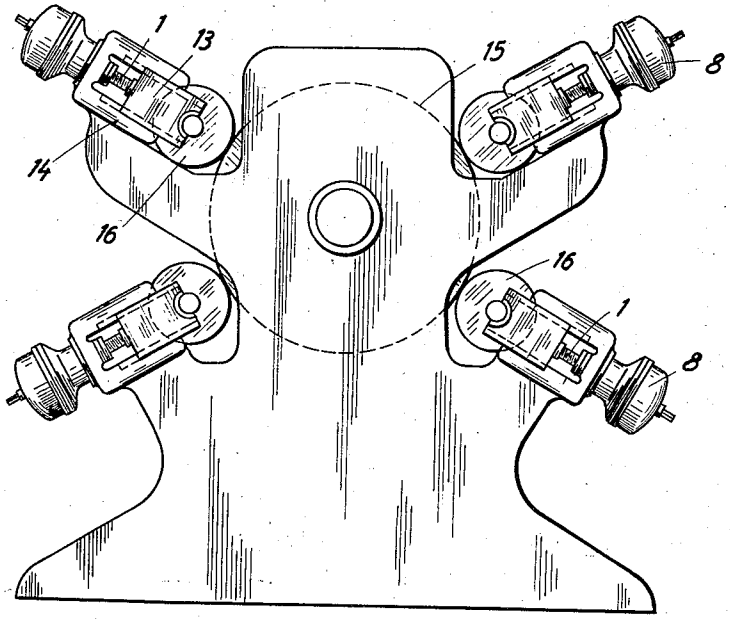


Fig. 2

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United States Patent Office 2,870,706 Patented Jan. 27, 1959

2,870,706

PRESSURE MEANS FOR ROTARY PRINTING MACHINES

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Application July 14, 1955, Serial No. 522,148

Claims priority, application Germany July 19, 1954

5 Claims. (Cl. 101—247)

The invention relates to a device for pressing printing rollers against the impression cylinder in machines for printing on fabric webs and the like. It is especially applicable to those machines which are provided with two or more printing rollers arranged around an impression cylinder and mounted on slides which can be moved radially towards the impression cylinder. The printing rollers are pressed by means of the slide pieces against the impression cylinder by the use of compressed air. In this way a resilient contact pressure is obtained.

Such devices usually comprise a piston in a cylinder, which is subjected to the pressure of compressed air. The piston, however, affords no assurance of permanent air-tightness and leaks result in losses of compressed air and also impair the application of a pressure of uniform value at all points.

It is an object of the present invention, therefore to provide a pneumatic pressure chamber, for exerting the contact pressure, in the form of an inflatable container which presses a slide piece carrying a printing roller. Preferably one container in the form of a hollow rubber ring is provided for the slide piece of each printing roller. Each container is mounted in a housing having a movable bottom in the form of a piston within the housing, against which the inflatable container bears and which transmits the air pressure to the roller. In this way, it is made possible to apply pressure to each roller without additional linkage parts, through a container which is closed all round and which thus ensures absolute air-tightness and is also elastic. The inflatable container resembles a tube for a pneumatic tyre and it makes packings between it and the housing superfluous. Furthermore, the annular shape of the inflatable container allows the slide connecting rod to pass through its centre through the housing to the outside, so that it can be manipulated as usual.

The inflatable body is expediently secured in position in the housing on the side of the movable bottom by a constriction of the cross-section of the housing. This affords the advantage that, when inflated, the container is wedged in position and cannot undergo any displacements in the housing which might possibly have a wearing action.

According to the invention, the surface area of the movable bottom is substantially equal to the surface area of the part of the inflatable container which bears against it when the container is inflated. In this way, unsupported areas of the container which could result in premature destruction due to swelling out under the air pressure are avoided.

The constriction of the housing by which the container is wedged in position may be tapered down towards the movable bottom so that when the inflatable container exerts a pressure, the constriction does not exert on the operative surface of the container any edge pressure which would cause premature wear and destruction.

It is preferable to provide the movable bottom with a guide pin passing through the housing on the side remote from the inflatable body. The guide pin prevents the

bottom rotating and thus prevents wear of the container which may be caused by such rotary movement, and also indicates by the length of the pin projecting from the housing the degree of displacement of the bottom caused by the pressure of the container.

The movable bottom is fixed to a threaded bush on a spindle fixed to the slide piece. The bush is displaceable in the housing, so that the pneumatic pressure is transmitted directly to a flange on the spindle. This makes the provision of special levers or the like for transmitting the pressure unnecessary.

The threaded bush can be fixed to the plate so that relative rotation is prevented. Owing to such a connection, any special, rotation-preventing slide guide for the bush in the housing becomes unnecessary, since the guide pin of the plate also simultaneously secures the threaded bush against rotation.

The drawing illustrates an embodiment of the invention.

Fig. 1 shows a pressure chamber sectioned in the axial direction;

Fig. 2 shows diagrammatically an example of the arrangement of the printing rollers around an impression cylinder.

According to Fig. 2, printing rollers **16** are mounted on a frame **14** around an impression cylinder **15** and are movable on slide pieces **13**, which can be displaced towards the impression cylinder by means of spindles **1**.

As shown in Fig. 1, the spindle **1** is screwed into a threaded bush **2**, and can be adjusted by a key or spanner acting on the square portion **3**, to bring the printing roller towards the impression cylinder via the slide piece **13**. The pressing of the printing rollers against the impression cylinder is effected by means of compressed air.

For the purpose of exerting the pneumatic pressure, an inflatable container **4** made of rubber or a similar elastic material is provided in the housing **8** in concentric relationship with the spindle **1**. In the housing **8** there is arranged a piston **5** of plate like form against which the surface **6** of the inflatable body bears when the pressure is applied.

The piston **5** is equipped with a guide pin **7**. The latter passes through the housing **8** on the side remote from the inflatable container **4**.

The plate **5** is supported on the flange **9** of the threaded bush **2** and is connected to the latter by means of screws (not shown).

Shoulders **10** and **11** secure the inflatable container **4** in its position in the housing. The shoulders are chamfered towards the plate on the side facing the inflatable container. The diameter of the plate is substantially equal to the diameter of the surface of the inflatable body which becomes operative when it is inflated.

A nipple or connection **12** which passes movably through the housing **8** and can be secured to the plate by means of a suitable screw connection is provided for supplying the compressed air.

I claim:

1. In a machine for printing on webs, comprising an impression cylinder and at least one printing roller mounted to be displaced radially towards said impression cylinder, means for pressing said printing roller against said impression cylinder, said means comprising a housing, a movable bottom in said housing, a spindle fixed to said movable bottom and extending through said movable bottom and said housing, means connecting said spindle to said roller and an elastic annular inflatable container surrounding said spindle in said housing, said container being arranged to bear against said movable bottom and said housing, whereby, when said container is inflated, said movable bottom and said roller are pressed towards said impression cylinder.

2. A machine as claimed in claim 1 wherein said

spindle is fixed to said movable bottom by means of a screw threaded bush, whereby the position of said spindle and said roller may be adjusted radially relative to said impression cylinder.

3. In a machine for printing on webs, comprising an impression cylinder and at least one printing roller mounted to be displaced radially towards said impression cylinder, means for pressing said printing roller against said impression cylinder, said means comprising a housing a movable bottom in said housing, a spindle fixed to said movable bottom and extending through said movable bottom and said housing, means connecting said spindle to said roller, an elastic annular inflatable container surrounding said spindle in said housing and an annular shoulder in said housing adjacent the edge of said movable bottom, said container being arranged to bear against said movable bottom and said housing and being retained

in said housing by said shoulder, whereby, when said container is inflated, said movable bottom, said spindle and said roller are pressed towards said impression cylinder.

4. A machine as claimed in claim 3 wherein said annular shoulder is chamfered towards said movable bottom.

5. In a machine as claimed in claim 3, a guide pin fixed to said movable bottom parallel to said spindle and passing through said housing on the side of said movable bottom away from said inflatable container.

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