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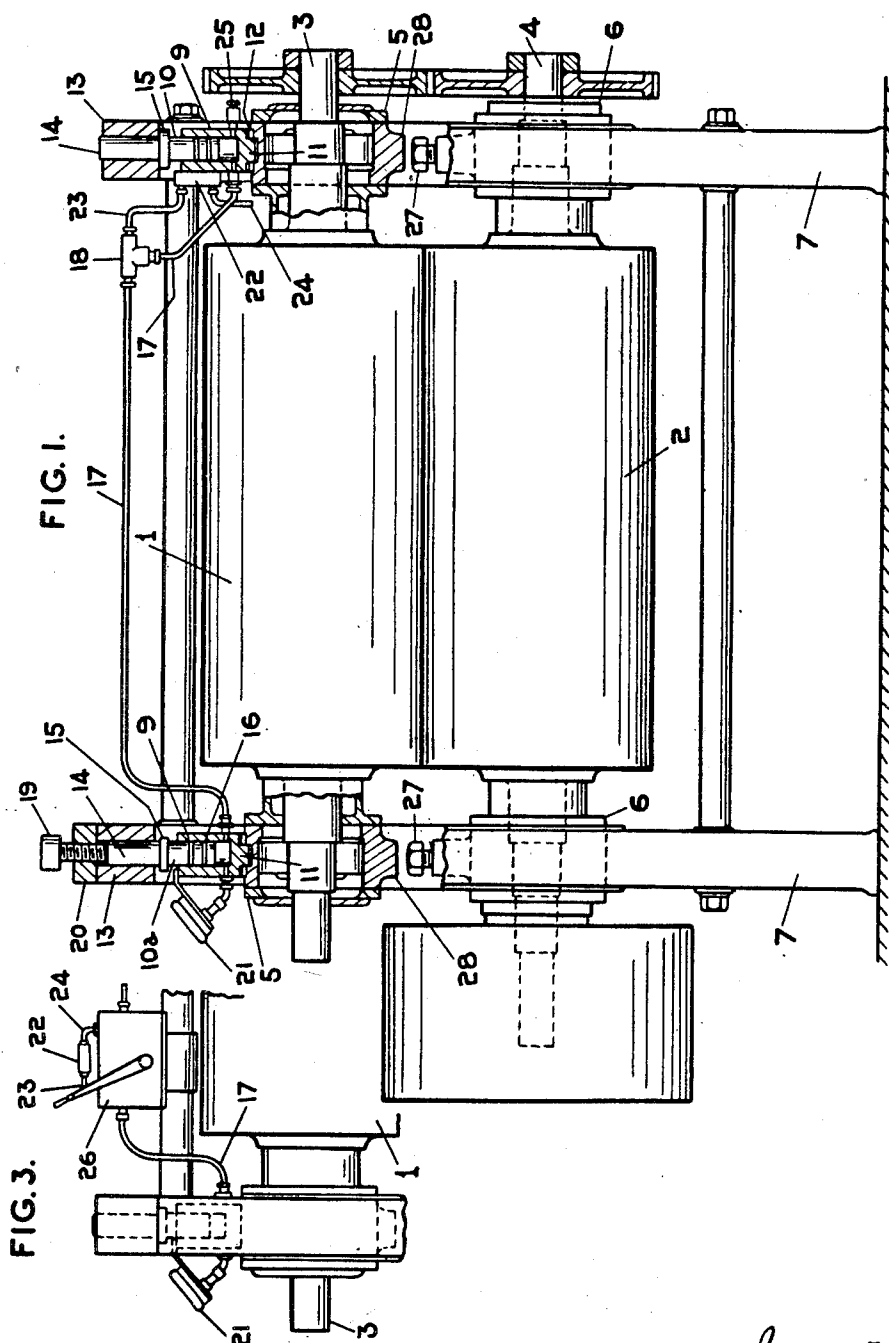
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2,479,759

APPARATUS FOR THE TREATMENT OF WEBS OR FLEECES

Filed June 3, 1946

2 Sheets-Sheet 1



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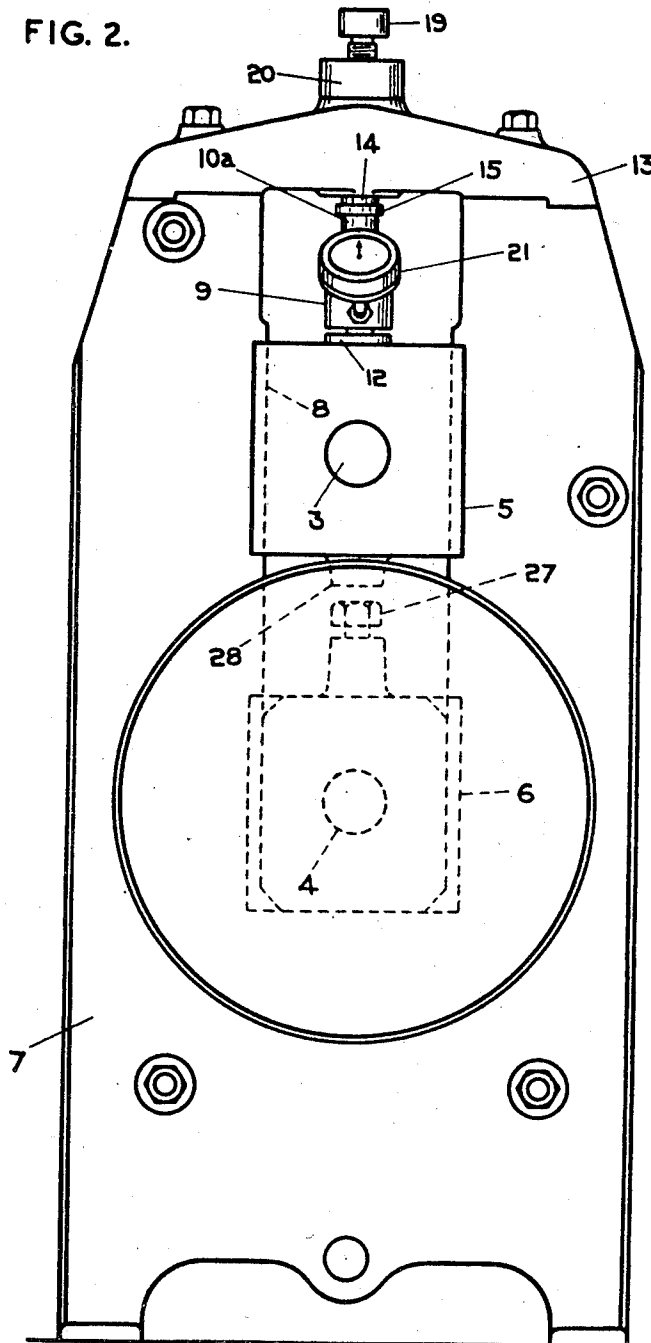
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APPARATUS FOR THE TREATMENT OF WEBS OR FLEECES

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2 Sheets-Sheet 2

FIG. 2.



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UNITED STATES PATENT OFFICE

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APPARATUS FOR THE TREATMENT OF
WEBS OR FLEECES

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This invention relates to apparatus comprising coactive rollers or cylinders (hereinafter termed "rollers") between which a web or fleece produced in a carding process is passed and pressure is applied through the rollers. The invention is especially applicable to the apparatus for crushing foreign substances or bodies from the webs by pressure rollers as disclosed in the specification of U. S. A. Patent No. 2,075,156.

Pressure is usually applied to the rollers by mechanical devices including resilient means and often the devices comprise screw threaded spindles (with a hand wheel control) arranged at each end of a roller and controlling the shaft bearings. The disadvantage of this arrangement is that apart from the fact that in the adjusting operations required for a roller the judgment of the operator may be faulty and unequal pressure result, in all cases the characteristics and mounting of the springs must be taken into consideration. It will be understood that it is almost impossible to provide two springs exactly alike so that even if equal mechanical compression is applied to the two springs the pressure applied to the ends of the rollers may not be exactly equal. In apparatus according to the aforesaid patent it is essential that equal pressure is provided.

The main object of this invention is to provide equal pressure on both ends of a roller.

Accordingly in apparatus of the above type a roller mounted to have movement relative to another roller or rollers has a fluid controlled piston device or its equivalent associated with each of its ends and fluid supply means for the application of pressure through the piston devices to the roller. A common source of fluid supply is employed for the pressure applying pistons of a roller.

A pressure gauge is incorporated in the pressure system for accurate control purposes. Moreover, the pressure may be built up by a manually or electrically operated device. Relief and release valve means may be incorporated in the fluid pressure system.

Referring now to the accompanying drawings in which embodiments of the invention are shown:

Fig. 1 is a part sectional elevation of crushing apparatus with improved roller pressure control means;

Fig. 2 is an end elevation;

Fig. 3 is a part elevation with modified control means.

In the particular embodiment of the invention shown, a pair of smooth faced rollers 1, 2 are arranged one above the other with their shafts 3, 4, carried by bearings 5, 6, mounted in end frames 7, 8

The upper bearings 5 are mounted in slides 8 so that the upper roller may have a controlled movement relative to the lower roller to make a light rolling contact with a web or have a desired crushing effect on foreign matter in the fibre web.

The movement of the upper roller is controlled by pressure applying devices mounted in the end frames and associated with the roller bearings 5. For example, each device comprises a cylinder 9 anchored to the slidable bearing with a piston 10, 10a mounted in the cylinder and anchored to the frame. The cylinder is shown with a boss 11 located in a recess in the bearing and an interposed ring washer 12 which allows sufficient flexibility in the anchorage to allow for the extremely slight self-aligning adjustment of the cylinder required relative to the roller bearing should a web be uneven. The pistons 10 and 10a are each mounted in the head bracket 13 of the end frame by means of their top portion 14 and a flange 15 normally restricts the upward movement of the piston. Sealing means, such as leather rings 16 or a spring ring, are provided between the piston and cylinder against the leakage of fluid. Fluid is admitted to each cylinder through a connecting feed pipe 17 connected to a union 18 or a supply container mounted on a top cross member of the end frames or other support. Fluid pressure is created in the cylinders and, as the pistons are held by the frames, the cylinders and consequently the bearings 5 are forced downward to apply pressure on the rollers. The fluid pressure may be developed by a hand operated (a tommy bar could be used) screw 19 being screwed down through the fixed nut 20 to apply pressure on the top 14 of the aligned piston 10a. A pressure indicator 21 is secured to a cylinder 9 or otherwise incorporated in the system to ensure exact pressure on, and control of, the roller 1. A relief valve 22 is preferably incorporated in the system to prevent overloading on the roller. As shown the valve is secured to the right hand cylinder 9 with a pipe 23 leading thereto from the union 18 and an outlet pipe 24 for excess oil to flow out should the applied pressure be greater than the pressure setting of the valve. Furthermore, a separate pressure release valve may be included so that the pressure on the roller can be released at will in an easy manner, although in this construction the screw 19 need only be eased back for the same purpose. With the above arrangement the system can be filled with oil through the left hand cylinder 9 before the piston 10a is mounted in position and can be forced through the system by such piston,

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say in stages. The head bracket 13 is then mounted and the screw 19 inserted and adjusted until the gauge records the required pressure. Oil could be introduced through the union 18 or other part such as the priming valve 25 provided on the right hand cylinder 9.

In a modified arrangement shown in Fig. 3, the pressure is built up by a hand operated (it could be operated electrically) combined pump and supply container 26 of any known form. The remainder of the system may be as aforesaid with the exception of the union 18 and screw 19 which would be dispensed with. Also the relief valve 22 is mounted on the pump (it could be within it) for excess oil to pass back into the supply container.

The above pressure control means could be used for other roller apparatus employing two or more rollers. Also the fluid may comprise other liquids than oil but is not necessarily limited to a liquid. When pressure in the system is released the upper roller 1 may be raised by the screws 27 carried by the lower bearings 6 being unscrewed up against the bosses 28 on the bearings 5.

The use of fluid pressure as described provides absolutely equal pressure on both shaft ends of a roller which pressure is infinitely variable at will in an easy manner and minute recordings of actual pressure are available by the pressure gauge.

What I claim is:

1. Apparatus for controlling the pressure between a pair of crushing rollers for textile webs, one of which rollers is journaled in adjustable bearings at each end of the roll, said apparatus comprising, a fluid operated device associated with each bearing, each said device including piston and cylinder elements one of which elements is stationary and the other movable with the bearing, a closed fluid system interconnecting said cylinder elements and screw means applying an adjustable pressure upon the fluid in said closed system thereby to effect a corresponding

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pressure adjustment at each of said fluid operated devices.

2. Apparatus for controlling the pressure between a pair of crushing rollers for textile webs, one of which rollers is journaled in adjustable bearings at each end of the roll, said apparatus comprising, a fluid operated device associated with each bearing, each said device including piston and cylinder elements one of which elements is stationary and the other movable with the bearing, a closed fluid system interconnecting said cylinder elements and means for adjusting the position of the stationary element of one of said devices to thereby apply and regulate the fluid pressure in said system.

3. A hydraulic control apparatus as defined in claim 2 wherein said adjusting means is constituted by a screw acting upon said stationary member.

4. A hydraulic control apparatus as defined in claim 2 wherein the piston elements of said fluid operated devices are stationary and said adjusting means for the same is constituted by a screw acting upon the piston end.

5. A hydraulic control apparatus as defined in claim 2 and which further includes a pressure relief valve connected into said fluid system.

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