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MECHANISM FOR A TEXTILE MACHINE

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Fig.1.

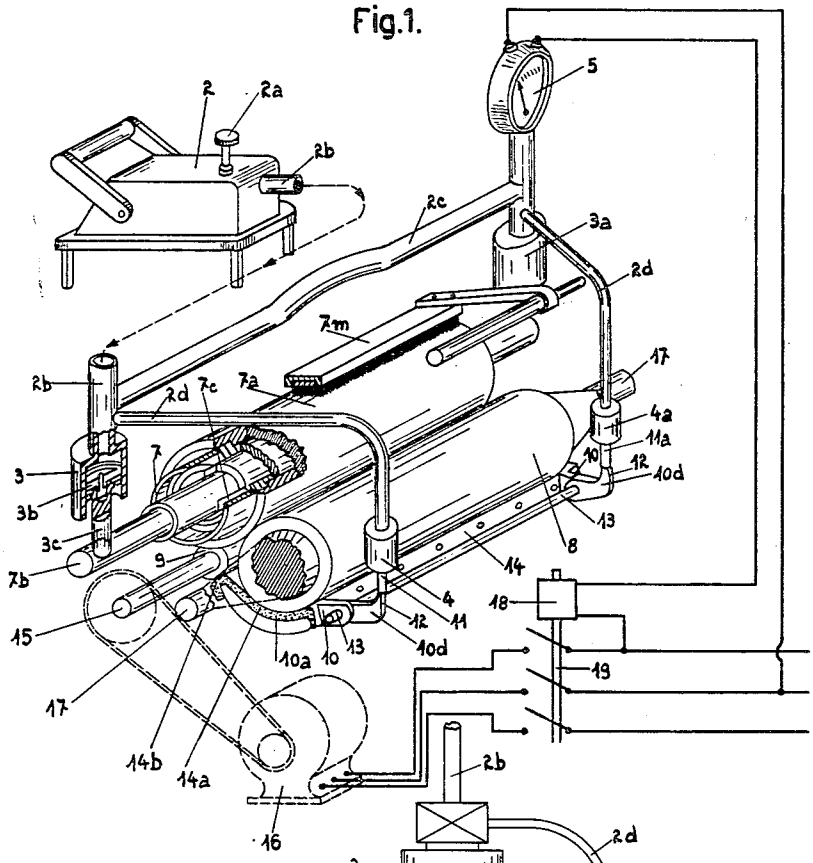
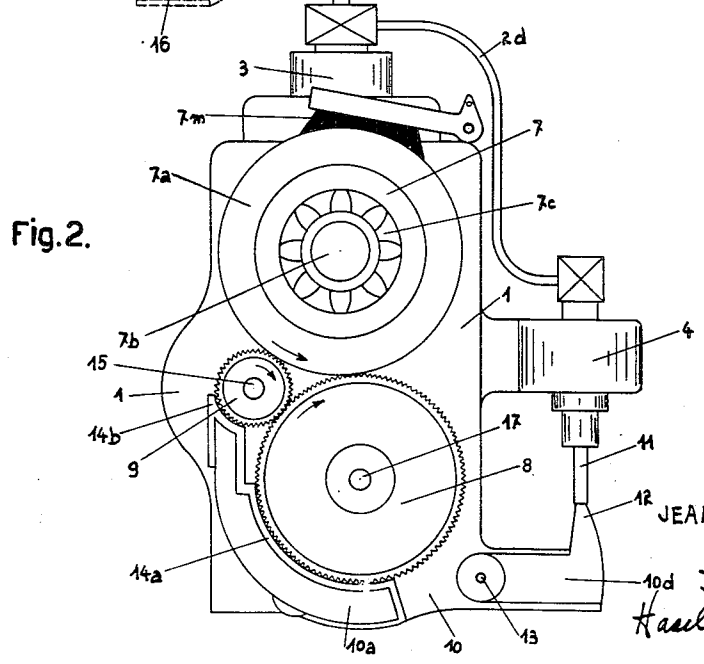


Fig.2.



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MECHANISM FOR A TEXTILE MACHINE

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1 Claim. (Cl. 19—165)

The present invention relates more especially to textile machines used in combing or spinning and which serve to make parallel, to felt, and to mix the fibres, these machines being known in the trade as gill boxes or intersectors. In the said machines, the material, in the form of ribbon, is fed across a field of needles which are displaced, with a rectilinear movement, in the direction of the rollers, at a predetermined speed. The peripheral speed of the rollers being greater than the linear speed of the field of needles, there results a drawing action upon the material being treated.

For example, six 20-gram ribbons passed across the field of needles and fed to the rollers leave as a single ribbon of the same thickness but six times greater in length; in such a case there is said to be a drawing of six.

Taking into account that the fibres to be treated are sometimes mixed or felted between themselves, it will be understood that the power which must be supplied to the rollers, in such a way as to suppress all slipping, must be considerable.

Hydraulic pressure allows of the suppression of the leather sleeves which are usually placed over the drawing rollers. The judicious provision of pressure meters or manometers permits control at all times of the pressure existing at different points on the rollers. In the event of the fibres winding round any roller of the machine, this winding round leads to an increase in pressure in the different conduits of the hydraulic arrangement and this pressure is continually transmitted to a hydraulic pressure meter set to function at a maximum pressure. When the latter is reached the pressure meter functions and automatically cuts the electric current supplied to the motor controlling the machine or actuating an arrangement which controls the gearing with which the machine is connected. This results in the avoidence of all damage to the different parts of the textile machine.

When it is necessary to remove the pressure upon the roller or rollers in a machine in accordance with the invention, it is sufficient to actuate a valve to return the fluid towards the reservoir, in order to restore to zero the pressure existing in the various hydraulic conduits.

In the accompanying drawings:

Figure 1 is a diagrammatic perspective view of a mechanism constructed in accordance with the present invention.

Figure 2 is a partly-diagrammatic elevation of one form of industrial embodiment of the mechanism shown in Figure 1.

The mechanism constructed according to the invention comprises a frame 1 (Figure 2), and a hydraulic pump 2 with a valve 2*a* for returning fluid to the supply reservoir in order to return the pressure to zero. This pressure is transmitted by a feed conduit 2*b* to a conduit 2*c* and is registered by means of a pressure meter or manometer 5 branched, for example, from the pressure conduit 2*c* and including, in its interior, an electric contact adjustably displaceable by changes in pressure in such a way that if the pressure rises an electric circuit is established and causes the functioning of a relay 18 controlling the opening of the switch 19 for the current feeding the motor 16. The hydraulic pressure in the conduit 2*c* is distributed, on the one hand, to cylinders 3, 3*a* containing pistons 3*b* the extremities of the piston-rods 3*c* of which press on the extremities of a shaft 7*b* fixed against rotation but able to be displaced in a vertical direction in the frame of the machine. This shaft 7*b* carries ball or roller bearings 7*c* upon which turns the pressure roller 7 the peripheral portion 7*a* of which is formed by a sleeve or casing of, for example, hardened rubber, ebonite or plastic material, so that the pressure exerted upon the shaft 7*b* of the roller 7 is always constant. The pressure is also distributed, on the other hand, through conduits 2*d* to cylinders 4, 4*a*, containing pistons the extremities of the rods 11, 11*a*, of which engage the extremities 12 of arms 10*d* of levers 10 pivoted upon a shaft 13 on the frame 1 (see Figures 1 and 2). The arms 10*a* of the levers 10 are bridged by a plate 14 having concave portions 14*a*, 14*b*, of cylindrical form provided with light brushes, the first concave portion 14*a* lightly engaging the counter-pressure roller 8, and the second concave portion 14*b* lightly engaging the draft roller 9, with the object of freeing, and thus cleaning, the rollers of fine particles of material. The driving shaft 15 moved by the motor 16 turns in plummer-blocks or mountings on the frame 1, see Figure 2, and carries the draft roller 9 for frictionally driving the presure roller 7—7*a*, in a rotary direction. The shaft 17 of the counter-pressure roller 8 in contact with the pressure roller 7—7*a*, also turns in plummer-blocks or mountings on the frame 1. The rollers 8, 9, are normally provided with straight or inclined flutings which lightly press into the hardened material 7*a* provided on the pressure roller 7 and ensure the rotary movement of the said roller without slipping, as the result of the pressure exerted upon it. It will be readily understood that the fibres passing between these different rollers are crushed and drawn according to the further use to which they are to be put.

If the fibres, or the treated material, become wound round one or other of the rollers this is immediately checked by the increase in the pressure at the pressure meter 5. Any winding around the roller 7*a* will have the effect of augmenting the diameter of the latter and will push the roller upwards, drawing in its upward movement the shaft 7*b* which pushes in its turn against the rods 3*c* of the hydraulic pistons 3*b*; thus the pressure is augmented in the hydraulic conduits 2*b*, 2*c*, 2*d*, and when the pressure reaches the predetermined maximum for which the pressure meter 5 is set, the latter, by the above-mentioned closing of electric contacts, automatically causes the tripping of the switch 19, so as to stop the motor 16 which controls the mechanism. In the case of the winding of the fibres around one of the other rollers 8, 9, the increase of the diameter pushes outwards one or other of the aforesaid parts 14*a*, 14*b* in contact with the respective rollers 8, 9, and consequently pushes outwards the supporting plate 14, see Figure 1, and the arms 10*a* of the levers 10 which are pivoted on 13, obliging the arms 10*d* to push upwards the extremities 12 of the rods 11 of the pistons of the cylinders 4, 4*a* and augmenting the pressure in the hydraulic conduits 2*b*, 2*c*, 2*d*, up to the pressure meter 5, and if the regulating pressure is exceeded the electric contacts of the pressure meter 5 close, causing, as above, the functioning of the switch 19.

I claim:

A gill-box mechanism comprising a conduit for supplying fluid under pressure, a pump feeding the fluid

into the conduit, pressure cylinders communicating with the conduit and having pistons reciprocable therein, rods connected to the pistons, a shaft interconnecting the rods and movable therewith, anti-friction bearings mounted on the shaft, a pressure roller journalled in the bearings, branch-ducts connected to the conduit, auxiliary cylinders communicating with the branch-ducts and having control pistons reciprocable therein, control rods connected to the control pistons, pivoted rocker arms operatively contacting the distal ends of the control rods, a draft roller cooperating with the pressure roller, a counter-pressure roller cooperating with the pressure and draft rollers, drive means for the draft roller, a plate mounted on the rocker arms and having curved portions contacting the surfaces of the draft and counter-pressure rollers remote from the pressure roller, and pressure-sensitive control means to cut off the supply of power

to the drive means responsive to increase of pressure in the conduit upon displacement of the plate from contact with the draft and counter-pressure rollers by the passage of an excessive amount of treated material therebetween therewith displacing the control rods in a direction to increase pressure in the branch-ducts and conduit.

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