May 24, 1938. H. O. HESS 2,118,200

GRID FOR CARDING MACHINES

Filed Aug. 22, 1936

Fig. 1

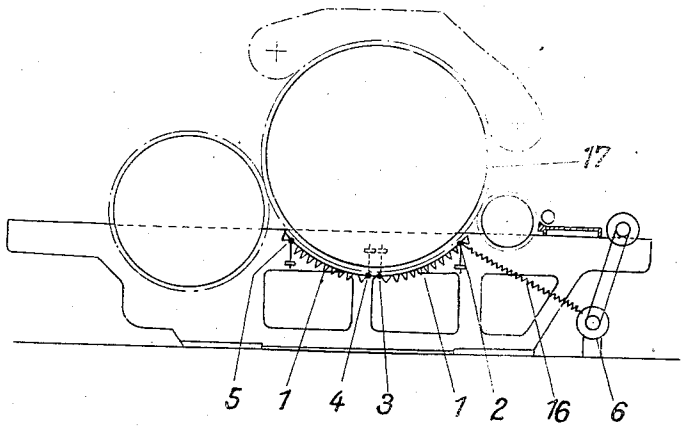
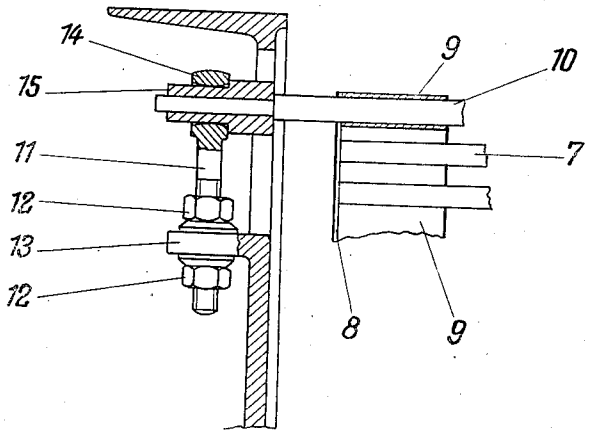


Fig. 2



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GRID FOR CARDING MACHINES

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3 Claims. (Cl. 19—98)

The invention relates to a grid for carding machines which, in addition to the elimination of short fibres and impurities, also prevents the filling up of the hook field of the drum by fibres.

During the working of the carding machine, a portion of the fibres becomes fixed in the cards of the drum and there forms a felted coating above the bends of the hooks in a comparatively short time, whilst underneath there takes place a deposit partly of dust and partly of husks.

As soon as this collection of fibres exceeds a certain amount, it operates prejudicially on the elasticity of the hooks and furthermore prevents the combing out of short fibres and impurities which then pass over the collector and into the fleece to appear in the finished yarn as undesirable foreign bodies. In order to prevent this, the drum or alternatively the cards have hitherto been cleared out at certain intervals by a brush, i. e. the fibre coating has been removed, the dust and waste portions however having frequently been left behind. The clearing in any case causes an interruption of working. In addition the card band becomes lighter afterwards and counts more finely and it takes some considerable time before the correct working condition is again reestablished. The cards must first be lined up to a certain part by taking up fibres until the band has the prescribed weight per unit of length. These differences in the card bands are frequently transferred as fluctuations in the finished yarn unless equalization is sought by careful grouping of the card cans which is difficult to supervise. In order to obviate these drawbacks, it has previously been proposed to provide the drum with a special fitting of steel teeth stamped continuously out of a band, or with hooks in which the band remains stuck in the support or in the stuff carrier. Few fibres remain suspended in these fittings. But the carding thereby suffers in consequence of the reduced or completely absent elasticity of the hooks. According to another suggestion, a reciprocating nozzle continuously aspirates from the drum. In this case, whilst the hook field does remain clean, comparatively large numbers of good fibres are drawn away which can only be recovered from the waste with difficulty. It has, furthermore, been sought to withdraw the pressed in fibres by the attractive force of separately mounted plates charged electrostatically, on the circumference of the drum. This, however, necessitates the use of a supplementary device whereby the expense of the carding machine is increased. Furthermore, the room for the mounting is very limited and thus the dimensions of these are very small. A preferred position is between the covers and the collector. Here, however, the hook fitting in front of the collector carries the whole fibre coating which is to pass on to the collector. The attractive force on the lower fibres is thus for the most part lost and the apparatus cannot operate correctly. If the plate is fitted in the grid, then a part of the previously existing possibility of eliminating short fibres and impurities is lost. The raised fibres and with them the impurities whilst then lying on the surface of the hook field, can no longer emerge since fresh fibres flow directly thereon from the taker-in, and force the old ones again into the fitting or garniture.

According to the invention, all these drawbacks are obviated by a grid which is provided at its supporting point in the frame with bushes of electrically non-conducting material which make the grid non-conducting with respect to the other part of the carder and the ground, but permits the grid to take an electrostatic charge. Furthermore, the grid can obtain a supplementary electrostatic charge from a separate source of energy. Thus, with quite moderate means and in an economical manner, the static electricity formed during the carding is collected in an already existing part of the carder and the attractive force created is used to lift the fibres on the surface of the hook field. In this, short fibres, impurities and particles of dust lose their connection with the hook field and pass through the grid, so that in a simple and durable manner the felting up of the hook field is controlled. All the good fibres pass into the fleece, the carder continuously eliminates the impurities and thus a fleece of continuously uniform purity is produced. Furthermore, there are no fluctuations in the count of the card bands, since the carder runs continuously under the same working conditions.

An embodiment of the carder grid according to the invention is shown by way of example in the accompanying drawing, in which

Fig. 1 is an elevation of the carder with the grid in section, and

Fig. 2 is a side view of a supporting point of the grid, also in section.

The two-part grid 1 is supported on the carder frame at points 2, 3, 4, and 5, and comprises bars 7, side parts 8 and bar carriers 9, which latter are rolled in at the ends in which the carrier rods 10, passing through from one side of the frame to the other, are inserted. Each supporting point has a screw spindle 11 with two nuts 12 which fit on two sides of a lug 13 of the

frame. The opposite ends of the screw spindle 11 form bearings 14 with a curved bore upon which are carried bushes 15 of electrically non-conducting material. Into these bushes 15 enter the ends of the supporting rods 10. In order to increase the electrostatic charge of the grid, a source of energy 6 can be provided, for example, a frictional electricity machine. The grid 1 may also be supported by separate non-conducting supports free from the frame under the drum on the ground.

During the working of the carder, static electricity is formed in consequence of the continuous mutual movement of the hook fields on the drum and the covers, as also by the separation of the individual fibre bunches, when the separate fibres rub against each other. The effect thereof is frequently observable by the partial standing out of the fibre ends from the hook field. These out-standing fibre ends then sweep over the grid and give up their charge. The grid can be adjusted by the screws 12 into the best position with respect to the hook field 17 of the drum. The static electricity can no longer escape from the grid 1 and rises to a certain potential. At this moment, it exerts an attractive force on all the fibres drawn past and caught in the hook field and draws these to the surface. The short fibres and impurities thereby lose cohesion and under the action of centrifugal force fly through the grid into the waste. The long fibres thus again come within the range of the hook field on the covers and then to the collector and into the fleece. If the static charge of the grid itself due to the carder is not sufficient, which may occur with certain hardened hooks or owing to the influence of the atmospheric conditions in the spinning mill, the potential is artificially raised by the source of energy 6 in order again to attain the desired effect.

I claim:

1. In a carding machine, a frame, a grid including supporting rods, means supporting said grid in said frame, said supporting means including electrically non-conducting bushes supporting said rods whereby the grid is rendered electrically non-conductive with respect to the other parts of the machine and the ground, and may, itself, take an electrostatic charge.

2. In a carding machine, a frame, a grid including supporting rods, means supporting said grid in said frame, said supporting means including electrically non-conducting bushes supporting said rods whereby the grid is rendered electrically non-conductive with respect to the other parts of the machine and the ground, and a separate source of energy for impressing a supplementary electrostatic charge on said grid.

3. In a carding machine, a frame including opposed side pieces provided with slots, a grid including transverse supporting rods extending through the slots in the frame, means for adjustably supporting said grid in said frame, said supporting means including electrically non-conducting bushes supporting the ends of the rods and slidably arranged in the slots whereby the grid is rendered electrically non-conductive with respect to the other parts of the machine and the ground, and may, itself take an electrostatic charge, and bearings vertically adjustable on the outer surface of the sides of the frame for supporting the bushes.

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