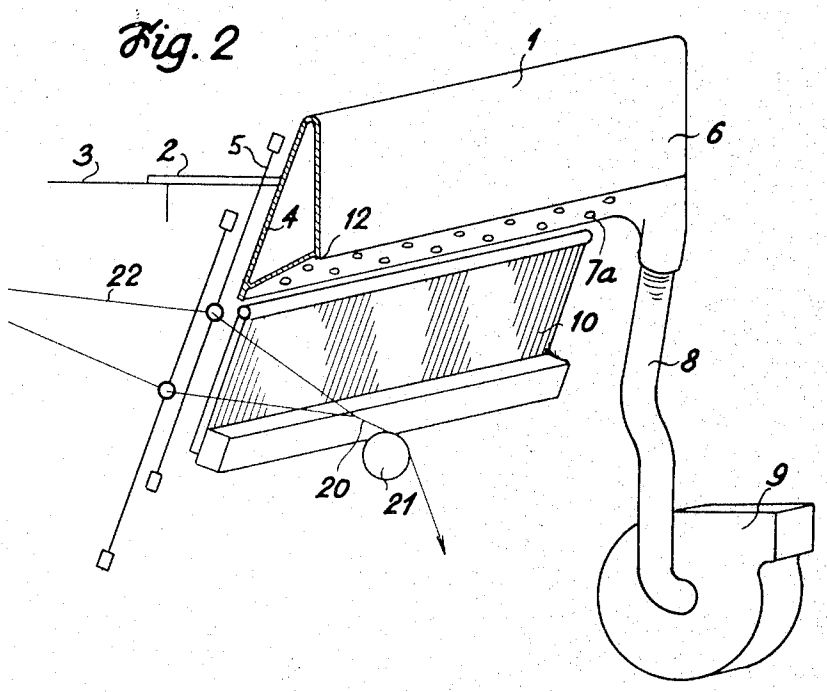
June 24, 1969 M. ŘÍHA ET AL 3,451,435

DUST REMOVING ARRANGEMENT FOR LOOMS

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Fig. 2



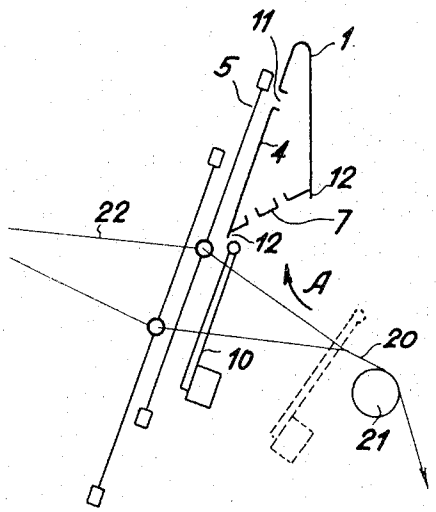


Fig. 1

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DUST REMOVING ARRANGEMENT FOR LOOMS

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ABSTRACT OF THE DISCLOSURE

An elongated suction nozzle is positioned across the warp directly above the reed and adjacent the heddles of a loom so that air currents containing dust are fanned by the oscillating reed into the inlet of the suction nozzle.

Background of the invention

The operation of a loom produces dust, particularly in the region where the reed oscillates and is bounded in the rear by the shed forming heddles. In this region, the heddle eyes and the reed slide with considerable friction on the warp threads and produce dust.

Particularly if cotton yarns or cellulose fibers are woven, so much dust is developed that the conditions become unsantiary and the health of the operators of the loom is endangered. Furthermore, the dust accummulates on the warp, the heddles, and on the helds of the warp stop motion, increasing the danger of warp thread breakage.

It is known to provide casings enveloping parts of the loom if highly dust producing material is woven, such as asbestos. Since the loom is partly covered, the observation of the weaving operations by the attendant is impaired. It is known to provide such casings covering the loom with manifolds leading to exhaust devices. It is known to provide suction casings on the breast beam, above the heddles, and in the space below the warp. Suction casings above the heddles or at the breast beam have no effect in the area where the greatest amount of dust is produced by the oscillating reed. Moreover, a suction casing placed above the heddles limits access to the heddles and warp stop motions. Suction casings disposed below the warp have very little effect since they remove only heavier impurities dropping from the warp, while light floating dust entrained in the aircurrents produced by the reed remains in the air and is not sucked off.

Summary of the invention

It is one object of the invention to overcome the disadvantages of known suction devices for looms.

Another object of the invention is to provide a suction device particularly effective in the region of the loom where the greatest amount of dust is developed.

Another object of the invention is to use the air currents produced by the reed to carry the dust into a suction nozzle.

With these objects in view, the present invention is applied to a loom of any usual construction having, for example, heddles and an oscillatory reed.

One embodiment of the invention provides suction nozzle means disposed across the warp and located above the reed in such a position that air currents created by the oscillatory reed are directly fanned into the suction nozzle means together with dust entrained therein and are sucked into the suction nozzle.

In the preferred embodiment of the invention, the suction nozzle has the shape of a trough with front and rear walls extending at an angle to each other and being joined on top, while forming an inlet opening at the bottom. The suction nozzle body forms a beam extending across the entire width of the warp, and located directly over the reed when the same is in the rearward position in the region of the heddles. The rear wall of the suction nozzle body extends parallel to the heddles and covers the same so that air currents produced by the oscillating reed cannot flow into the region of the heddles and deposit dust on the same, but enter the suction inlet of the nozzle body which is suitably slanted in forward and upward direction to receive the air currents during the movement of the reed between the rearward position and the forward position.

Due to the fact that the air currents and the dust therein are directed into the inlet opening of the suction nozzle the suction effect produced by suitable exhaust means connected to the nozzle is considerably increased. It is advantageous to use a grid closing the inlet opening of the suction nozzle and to make the front wall of the suction nozzle shorter than the rear wall of the suction nozzle. The rear wall which is adjacent the heddles can be perforated so that a suction effect is also exerted on the heddles, and dust is removed from this region of the same. At least one side wall of the suction nozzle is connected by a suction hose to an exhaust device, or to a duct of a larger exhaust system by which negative pressure is created.

The novel features which are considered as characteristic for the invention are set forth in particular in the appended claims. The invention itself, however, both as to its construction and its method of operation, together with additional objects and advantages thereof, will be best understood from the following description of specific embodiments when read in connection with the accompanying drawings.

Brief description of the drawing

FIG. 1 is a schematic side view illustrating an embodiment of the invention; and

FIG. 2 is a fragmentary schematic perspective view of the embodiment of FIG. 1, partly in vertical section.

Description of the preferred embodiment

A suction nozzle body **1** which has substantially the shape of a prism with three sides, has front and rear walls **6** and **4** extending at an acute angle to each other and having upper ends joined in a horizontal apex line. Triangular side walls close the ends of the nozzle, and at least one end is connected with a suction hose **8** leading to a rotary exhaust device of known construction. The lower edges **12** of front and rear walls **6** and **4** and of the triangular side walls, form an inlet opening which is preferably closed by a grid **7** shown to be a plate with perforations **7a**. The suction nozzle body **1** extends across the entire warp and is supported on schematically illustrated brackets **2** projecting from a frame **3** of the loom. The rear wall **4** extends parallel to the plane of the upper parts of the heddles **5**, and downward into the proximity of the upper edge of an oscillatory reed **10** which is movable between the rearward position adjacent the lower parts of the heddles **5**, as shown in solid lines in FIG. 1, and the forward position shown in broken lines in which a weft thread is beaten into the fabric **20** which is guided over a beam **21**.

The heddles **5** move parallel to the rear wall **4** to form warp sheds **22** into which the weft is inserted. The front wall **6** is shorter than the rear wall **4** so that the area of the reed and heddle eyes can be observed by the attendant. The grid **7** is thus placed in a forwardly and upwardly

inclined position in the inlet of the suction nozzle **1** which facilitates the entry of air currents produced by the oscillating reed **10** and fanned by the upper end of the same into the suction nozzle **1** through inlet openings **7***a*. The grid **7** is preferably located slightly above the lower edges **12** of walls **6** and **4**. The suction nozzle body **1** covers the heddles so that the dust containing air currents produced by the reed cannot reach the heddles, and moreover, openings **11** are provided in rear wall **4** to suck air and dust from the heddles.

When reed **10** oscillates between the rear position shown in solid lines and the front position shown in broken lines, an air current containing dust is produced which is influenced by the reciproctaing heddles **5** to move in the direction of the arrow A into the inlet openings **7***a* of the bottom grid **7** of the suction nozzle body **1**, together with the dust entrained therein, thus increasing and improving the suction draft produced by the nozzle. The combined fanning effect produced by the oscillating reed, and suction effect produced by the nozzle **1** assures the removal of almost all the dust created by the reed and heddle eyes, while dust is removed from the upper parts of the heddles **5** by the suction exerted through inlet openings **11** in rear wall **4**. The rotary exhaust device **9** may be driven by an electric motor, not shown.

It will be understood that each of the elements described above, or two or more together, may also find a useful application in other types of looms differing from the types described above.

While the invention has been illustrated and described as embodied in an exhaust nozzle extending across the warp directly over the reed and adjacent the heddles, it is not intended to be limited to the details shown since various modifications and structural changes may be made without departing in any way from the spirit of the present invention.

What is claimed as new and desired to be protected by Letters Patent is set forth in the appended claims.

1. In a loom including means for guiding warp threads to form a warp having a predetermined width, and an oscillatory reed movable between a forward position and a rearward position and having an upper end moving along a path during oscillation of said reed, in combination, exhaust means for creating negative pressure, and including suction nozzle means having an inlet disposed across said warp and being located directly above said path so that air currents are upward fanned from said upper end of said reed directly into said inlet during oscillatory movement of said reed and sucked into said suction nozzle means together with dust entrained therein.

2. A loom as claimed in claim **1** wherein said means for guiding warp threads include heddles having a lower part located rearward of said reed in said rearward position adjacent to the same, and having an upper part located rearward of said suction nozzle means adjacent to the same so that the rearward part of said inlet is located directly over said reed in and near said rearward position.

3. A loom as claimed in claim **1**, wherein said suction nozzle means comprises an elongated nozzle body whose length corresponds to the width of the loom, said body being closed on top, and open at the bottom to form said inlet for the entry of air and dust.

4. A loom as claimed in claim **3** wherein said nozzle body has front and rear walls having joined upper ends located on top of said nozzle body, said walls having lower edges bounding an opening forming said inlet of said nozzle body.

5. A loom as claimed in claim **4** wherein said nozzle body comprises a grid located in said opening and forming the bottom wall of said nozzle body.

6. A loom as claimed in claim **5** wherein said front wall is shorter than said rear ball; and wherein said grid is slanted forwardly and upwardly to receive said air currents.

7. A loom as claimed in claim **4** wherein said means for guiding said warp threads comprise heddles located in a plane transverse to said warp and rearward of said reed; wherein said rear wall is located adjacent said heddles and extends parallel to the same into the proximity of said reed so that said rear wall deflects said air current containing dust from said heddles and into said opening of said nozzle body; and wherein said front wall is shorter than said rear wall.

8. A loom as claimed in claim **7** wherein said rear wall of said nozzle body has openings for sucking air and dust from said heddles.

9. A loom as claimed in claim **1** wherein said means for guiding said warp threads comprise heddles extending transversely to said warp rearward of said reed; wherein said nozzle means is an elongated nozzle body having a front wall and a rear wall extending at an acute angle to each other and having upper ends joined in an apex line located on top of said nozzle body, and side walls at the ends of said front and rear walls, said front wall being shorter than said rear wall, and said rear wall extending adjacent said heddles, the lower edges of said front, rear, and side walls bounding said inlet of said nozzle body located in a forwardly and upwardly slanted plane over said reed in and near said rearward position for receiving said air currents.

10. A loom as claimed in claim **9** wherein said nozzle body comprises a forwardly and upwardly slanted grid located in said air inlet; and wherein said exhaust means include a suction hose connected to said nozzle means and located laterally of said heddles and reed on one side of said loom.

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