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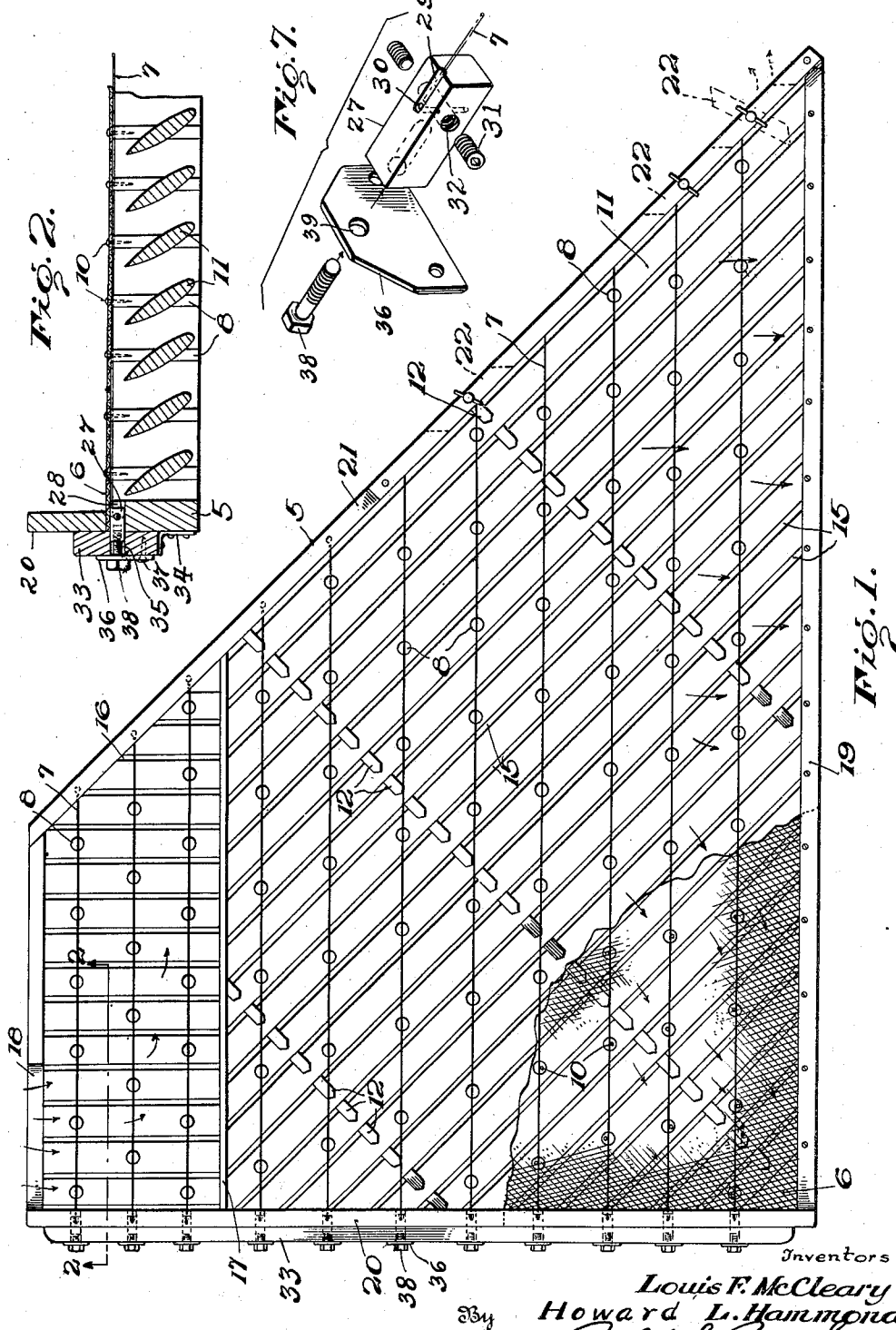
L. F. McCLEARY ET AL

2,163,734

SEPARATOR DECK

Filed March 17, 1937

2 Sheets-Sheet 1



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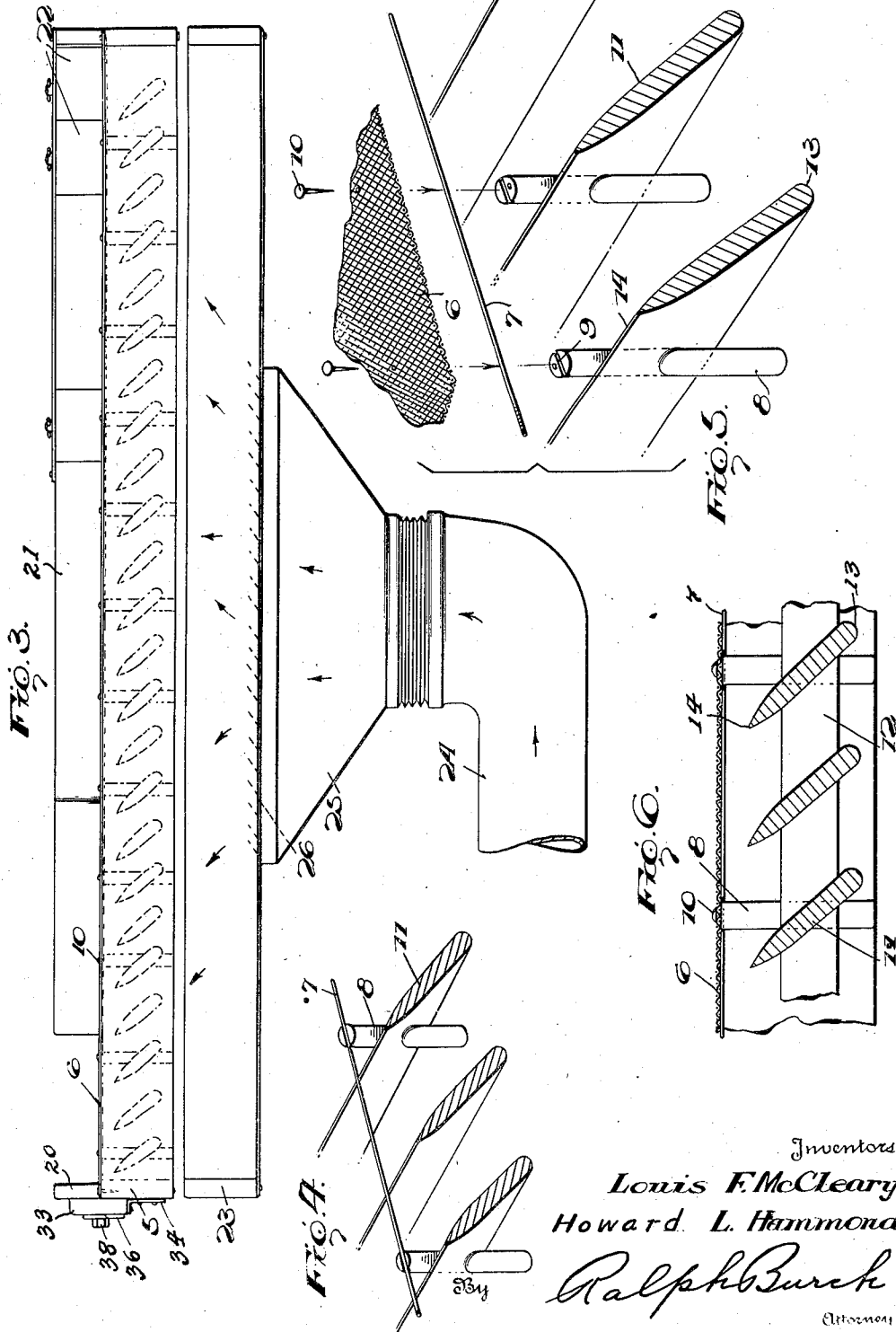
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UNITED STATES PATENT OFFICE

2,163,734

SEPARATOR DECK

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4 Claims. (Cl. 209—486)

This invention relates to an improved separator deck for grading machines, such as employed for grading grain and the like.

It is an object of the invention to provide a separator deck having air-flow directing vanes associated therewith for directing the air currents against the underside of the pervious deck covering, over which the stream of material to be divided moves, in a manner to cause a direct and uniform distribution of the air throughout the area of the deck and in an angular direction, whereby a better and faster separation of the material is accomplished.

A further object of the invention resides in providing supporting means for the deck covering which exposes the greater area of the underside of the covering to the action of the air currents, thus permitting a free and uninterrupted flow of air throughout practically the entire area of the deck.

Another object of the invention resides in providing a separator deck which is simple in construction, efficient in operation and inexpensive to manufacture.

Other objects and advantages of the invention will be apparent during the course of the following description.

In the accompanying drawings, forming a part of this specification and in which like numerals are employed to designate like parts throughout the same,

Fig. 1 is a top view of the separator deck, with part of the deck covering broken away,

Fig. 2 is a section taken on line 2—2 of Fig. 1,

Fig. 3 is a front elevation of the separator deck mounted on the grader,

Fig. 4 is a detail fragmentary perspective view of the air-flow directing vanes and supports for the deck covering,

Fig. 5 is a fragmentary perspective view showing the air-flow directing vanes and deck covering supports with the supporting wires and deck covering in separate relation, and,

Fig. 6 is a fragmentary sectional view of the air-flow directing vanes showing the spacing blocks.

Fig. 7 is a perspective view of the tightening means for the deck covering supporting wires, with parts in separate relation.

In the drawings, wherein for the purpose of illustration, a preferred embodiment of the invention is shown, the numeral 5 denotes the frame of the separator deck which has a covering of pervious cloth material 6, attached to the sides of the frame and supported throughout its area

by transversely extending wires 7 having one end fixedly connected to one side of the frame and their opposite end adjustably secured to the opposite side by a tightening device, shown in Fig. 7. The wires are supported, at spaced intervals, by upright pegs 8, provided with notches 9 in their upper ends to receive the wires and the deck cloth 6 is secured to the top of each peg by a tack 10, which penetrates the top of the peg to one side of the notch. Arranged beneath the deck covering and in spaced relation thereto are a series of spaced air-flow directing vanes 11 which are disposed at an angle to the plane of the deck covering, the vanes being supported in spaced relation by spacing blocks 12 disposed at suitable intervals throughout the length of the vanes. The vanes have their ends firmly secured to the sides of the deck frame and in cross section are substantially streamline in shape having a relatively blunt lower edge 13 and a tapered thin upper edge 14, which reduces the wind resistance of the vanes to a minimum. The pegs 8 extend through the vanes 11 and are firmly secured therein, the lower ends of the pegs terminating on a plane with the lower edge of the deck frame. The vanes 11 throughout the greater area of the deck are arranged diagonally of the frame or at an angle to the normal flow of the material, as at 15, for directing the air currents in a direction towards the left hand corner of the discharge end of the deck. At the upper or feed end of the deck the vanes 11 are disposed at right angles to the upper end, as at 16, for directing the air currents at this point in a direction transversely of the normal flow of the material. A partition 17 extends transversely of the frame which divides the vanes at the upper end of the frame from the vanes over the rest of the frame and serves to support the abutting ends of the vanes.

The material to be divided is fed to the separator deck by means of a suitable hopper connected to the feed end 18 of the deck and travels across the deck in the direction of the arrows until discharged over the edge 19. The sides of the frame are provided with upstanding guide rails 20 and 21, the rail 21, intermediate its length, and near the discharge end of the deck, being provided with adjustable gates 22 for diverting foreign matter, such as stones and the like from the path of the flowing material and off the side of the deck.

The separator deck is adapted for use with a conventional type of grader and is mounted on top of the table 23, as shown in Fig. 3. Air from a suitable air supply is conducted to the bottom

of the table by a conduit 24 having a discharge mouth 25 covered by a baffle plate 26 which distributes the air throughout the area beneath the separator deck. The air beneath the deck is directed by the air-flow directing vanes 11 through the pervious deck covering 6, to act on the material flowing over the top of the deck covering.

The free ends of the deck covering supporting wires 7, are each connected to a tightening device, more clearly shown in Fig. 7, which consists of an elongated block 27 adapted to be slidably disposed in a slot 28 formed in the upper edge of the side of the frame 5, beneath the guide rail 20, the inner end of the block being provided with a central longitudinal groove 29 in its top side to receive the end of the supporting wire which passes down through the vertical opening 30 at the inner end of the groove. The end of the wire is firmly secured in the opening 30 by set screws 31 threaded in openings 32 in opposite sides of the block, which openings intersect the opening 30, so that when the set screws are tightened the wire 7 is clamped between the ends of the screws. A supporting bar 33 is attached to the outer side of the frame 5 in overlapping relation to the joint between the guide rail 20 and the frame and is secured to the frame by an angle bracket 34. The bar 33 is provided with transverse openings 35 in alinement with the slots 28 adapted to slidably receive the inner ends of the blocks 27. A face plate 36 covers the outer end of each opening 35 being secured to the outside of the supporting bar 33 by screws 37 and a stud bolt 38 passes through an opening 39 in the plate 36 and is threaded into the inner end of the block 27, whereby the block is moved longitudinally upon turning of the stud bolt to tighten or loosen the supporting wire 7. This adjustment permits the supporting wires to be kept taut and prevents sagging of the deck covering.

In use, the material to be separated is deposited on the feed end of the deck and at this point the mass of material is relatively thick. The air-flow directing vanes 11 beneath the feed end of the deck are arranged to cause a direct flow of air in a direction transversely of the deck which effects a quick spreading out of the mass of material over the deck. As the material spreads over the deck, the diagonally arranged air-flow directing vanes directs the flow of air through the deck covering in an angular direction towards the discharge end of the deck, thereby causing a separation of the light material from the heavy material and at the same time quickens the movement of the material towards the discharge end. By supporting the

deck covering by the wires 7 and pegs 8 and spacing the upper edge of the vanes 11 from the deck covering, the greater area of the deck covering is exposed and directly acted upon by the air currents, thus providing a direct and uniform distribution of the air throughout the area of the deck over which the material flows. In practice it is found that the arrangement of the air-flow directing vanes and manner of supporting the deck covering produces a more perfect separation of the material and materially increases the speed of the flow of material over the deck.

It is to be understood that the form of our invention herein shown and described is to be taken as a preferred example of the same and that certain changes in the shape, size and arrangement of the parts may be made without departing from the spirit of the invention or the scope of the subjoined claims.

Having thus described our invention, we claim:

1. A separator deck comprising a frame, a pervious covering for the frame, air-flow directing vanes disposed beneath said covering, pegs extending through said vanes at spaced intervals, and wires extending beneath said covering and supported by said pegs.

2. A separator deck comprising a frame, wires extending across said frame, a pervious covering for said frame supported by said wires, air-flow directing vanes disposed beneath said covering, pegs extending through said vanes at spaced intervals supporting said wires and means attaching said covering to said pegs.

3. A separator deck comprising a frame, a pervious covering for said frame, air-flow directing vanes angularly disposed beneath said covering with their upper edges spaced from said covering, spacing blocks between said vanes, pegs extending through said vanes at spaced intervals and wires extending beneath said covering supported by said pegs.

4. A separator deck comprising a frame, an air chamber beneath said frame having an air pressure inlet, a pervious covering for said frame, angularly disposed air-flow directing vanes extending across said frame beneath said covering, said vanes being arranged in spaced parallel relation, wires extending across said frame at spaced intervals beneath said covering for supporting said covering in spaced relation to the upper edges of said vanes, and means carried by said vanes for supporting said wires at spaced intervals.

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