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J. HOLDEN

REVOLVING TOP FLAT CARDING MACHINE

Filed August 3, 1925 2 Sheets-Sheet 1

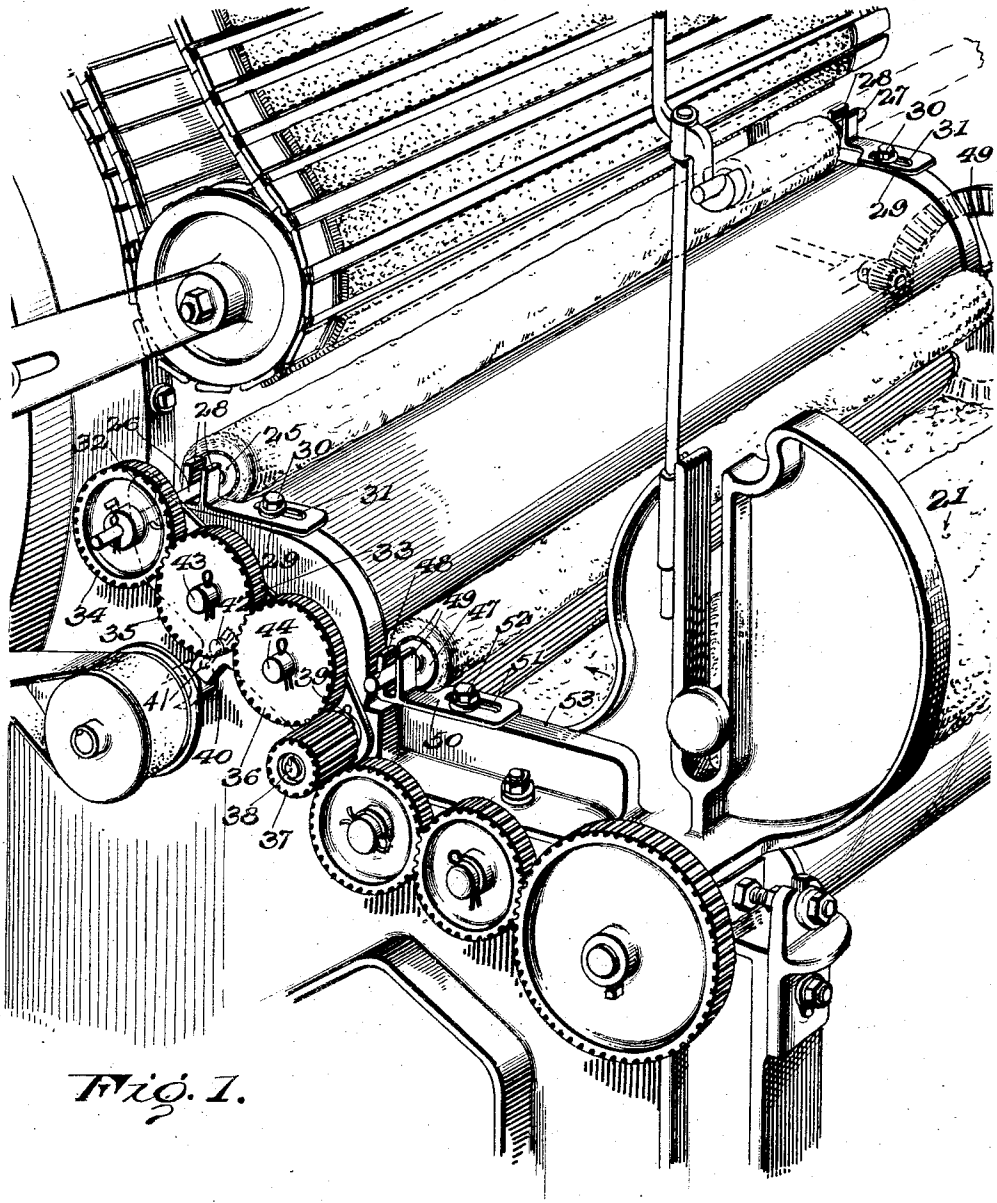


Fig. 1.

WITNESSES

W. A. Williams.

Harry E. Seidel

INVENTOR

Joseph Holden.

BY Munn & Co

ATTORNEYS

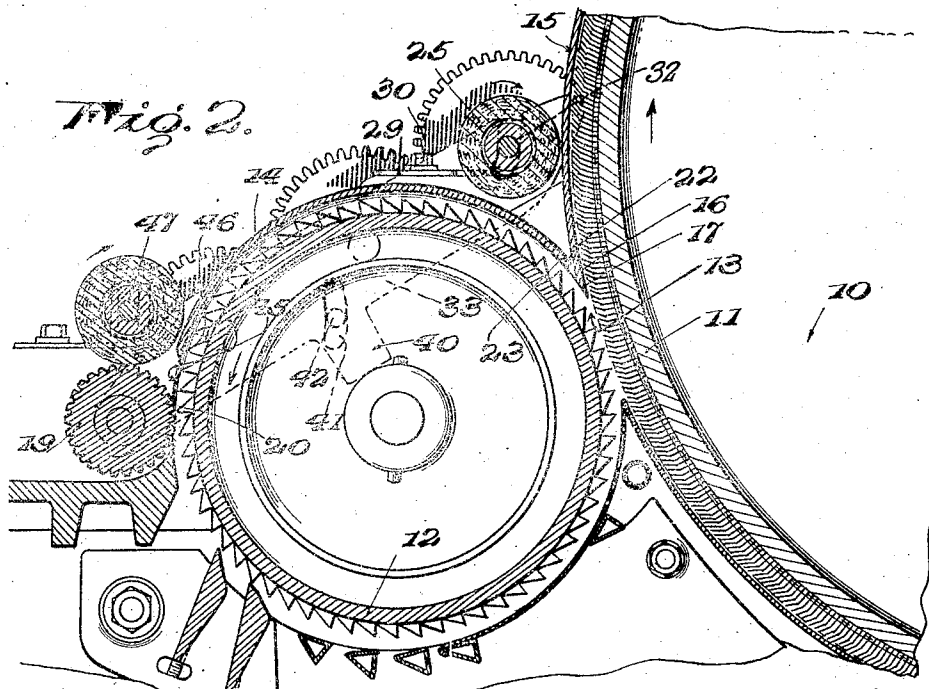
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Fig. 2.



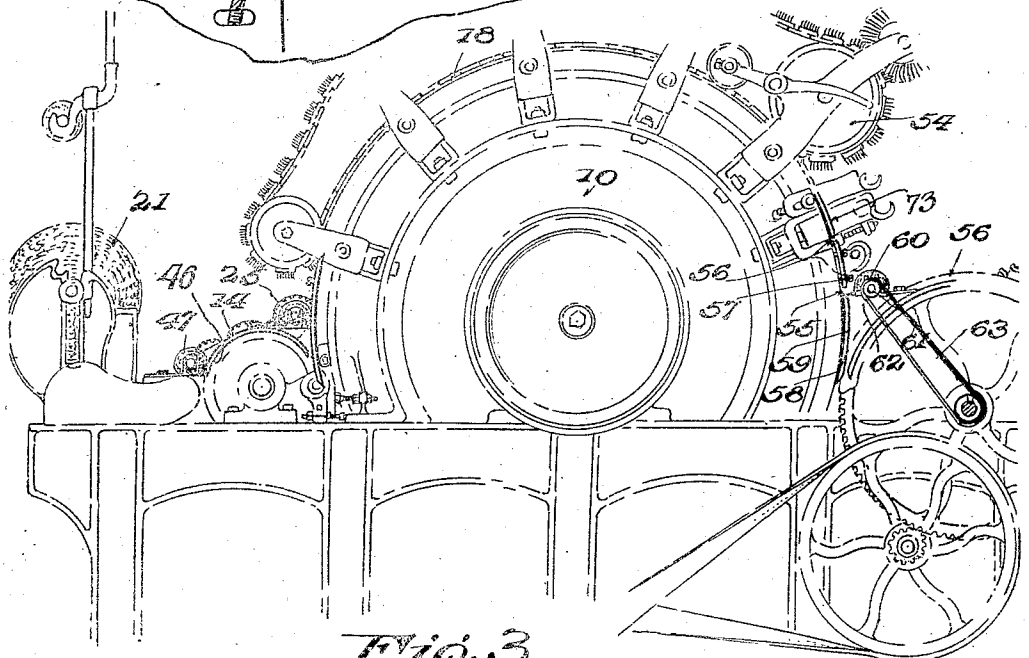


Fig. 3.

WITNESSES

W. A. Williams.

Harry E. Siebel

INVENTOR

Joseph Holden.

BY Munn & Co.

ATTORNEYS

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UNITED STATES PATENT OFFICE.

JOSEPH HOLDEN, OF JACKSONVILLE, ALABAMA, ASSIGNOR OF FORTY-FIVE PER CENT TO WILLIAM I. GREENLEAF, OF JACKSONVILLE, ALABAMA.

REVOLVING-TOP FLAT CARDING MACHINE.

Application filed August 3, 1925. Serial No. 47,959.

This invention relates to revolving top flat carding machines. In the usual construction of a flat carding machine, a sliver of cotton is impressed forwardly at the feeding end of the machine by a feed roll, from which the cotton is taken by a cylinder designated as a licker-in, revolving in the opposite direction to the feed roll, while a carding cylinder picks up the sliver at the point on the licker-in which is substantially diametrically opposite the feed roll. The sliver of cotton is carded on the cylinder and carried between revolving flats where it is treated at the end of the flats by a stripper, the sliver then being removed by a doffer in the usual manner. The licker-in and feed roll co-operate to remove foreign particles through the co-operation of a roller having comparatively small dimensions.

It is an object of the present invention to provide slots in the housing or cover plate of a flat carding machine upon opposite sides of the licker-in, to permit motes and short lint to be removed by knives, adjacent the slots and by means of an air blast which forces the motes and short lint from the sliver through said slots as the sliver is carried along by the carding cylinder adjacent the licker-in and at points where the licker-in is in close contact with the said feed roll, adjustably mounted rollers being disposed adjacent the slots and suitably covered for picking up the short lint and the foreign matter discharged through the slots.

Another object of the invention is the provision of a slot formed at the V-shaped juncture of the licker-in cover and the back knife plate, the edge of the cover at this point being cut away to provide an elongated transverse slot and a pair of knives having a shearing action over the sliver on the carding cylinder and the film of lint carried by the licker-in, a draft of air which has been produced by the revolving cylinder being driven through the slot to cause the loose ends of the short lint to be carried through the slot which have been removed by the knives at the opposite edges of the said slot.

A further object of the invention is the provision of slots, knives and rollers for removing short lint and foreign matter from the carding engine at points along the carding engine adjacent the feed roll, and also at points adjacent the doffer, so that a particularly clean sliver is provided at the discharge end of the carding engine which will be equivalent in quality to that produced by the ordinary double carding process.

This invention will be best understood from a consideration of the following detailed description, in view of the accompanying drawing forming a part of the specification; nevertheless it is to be understood that the invention is not confined to the disclosure, being susceptible of such changes and modifications which shall define no material departure from the salient features of the invention as expressed in the appended claims.

In the drawings:—

Figure 1 is a view in perspective of the feeding end of a flat carding machine, showing my invention applied thereto,

Figure 2 is a longitudinal vertical section of a flat carding machine showing my invention in operative position,

Figure 3 is a side view in elevation of a carding machine constructed according to the principles of my invention.

Referring to the drawings, in the usual flat carding engine, a carding cylinder 10 forming the carding device proper has a plurality of teeth 11 on its surface which are adapted to be drawn through the sliver for laying the lint in straight lines and for removing motes. The sliver is fed to the teeth 11 of the cylinder 10 by a licker-in 12, at a point where the licker-in and cylinder are in operative relationship with each other. The cover 14 for the licker-in and the curved front knife plate are normally in close contact above the licker-in 12 and cylinder 10 providing a V-shaped formation as shown at 16. A knife 17 on the lower edge of a stripping plate 15 removes motes and short lint from the sliver which is carried around the cylinder 10. Revolving flats 18 are employed for the usual purpose. The usual feed roll 19 normally supplies the sliver to the licker-in at a point indicated by the numeral 20, the sliver being drawn from a roll of sliver 21.

In the present device an edge of the cover 14 at the V-shaped connection 16 is removed

to provide a restricted slot 22 and an additional knife 23 on this edge of the cover. The co-operating knives 17 and 23 are adapted to remove motes and short lint from the sliver which are forced through the restricted slot 22 into engagement with a revolving roller 25 which has a linen cover to provide sufficient frictional engagement with the lint coming from the slot 22 to collect and roll the lint upon the face of the roller. It will be appreciated that the carding cylinder 10 creates sufficient air draft to force the lint and motes through the opening 22 during the operation of the engine.

The roller 25 is provided with projecting spindles 26 and 27 which are received within U-shaped bearings 28. Each bearing is formed by providing upstanding ears at one end of a plate 29. The plates are secured by means of bolts 30 to the frame of the engine. Each of the plates 29 is provided with a slot 31 whereby the U-shaped journal 28 may be adjusted as desired. The spindle 26 is extended and is adapted to be received within a slot 32 formed at one end of a bearing plate 33. A gear 34 is rigidly connected with the spindle 26 and meshes with a gear 35. This gear in turn meshes with a gear 36. The gear 36 is driven by a gear 37 mounted on a shaft 38 which normally forms a driving element of the carding engine. The bearing 33 is provided with a perforation 39 adapted to be received by the shaft 38 and intermediate its ends and at its lower edge an extension 40 is provided having a slot 41 extending from said extension and through a portion of the body of the plate 33. A set screw 42 passes through the slot and is supported by the engine frame so that the plate may be adjusted in predetermined positions when desired, by oscillating said plate on its pivotal point with the shaft 38. Gears 35 and 36 are carried respectively, by stub shafts 43 and 44 mounted on the bearing plate 33.

The cover plate 14 of the licker-in is cut away to provide a restricted transverse slot 45 and a knife edge 46. This knife edge and consequently the slot are adapted to remove what motes and short lint have not been removed by the knife edges 17 and 23 defining the slot 22. The lint is collected on a roller 47 located above the slot 45 and is provided with spindles 48 mounted in U-shaped bearings 49. The bearings 49 are substantially a pair of spaced ears connected to a base plate 50. The base plate in this case is likewise provided with a slot 51 adapted to receive a bolt 52 carried by the engine frame 53. By means of the slot 51 and likewise the bearings 49, the roller 47 is adjustable towards and away from the slot 45. The lint passing through the slot 45 is collected on the surface of the roller 47 which is likewise covered with linen in order to provide sufficient frictional surface to collect the lint. As the diameter of the roll which is being constantly covered by the lint, increases, the U-shaped bearings 49 permit the spindles 48 and the roller 47 to be elevated. Said roller is revolved by friction and is adapted, when covered with lint, to be associated with the slot 45 as is the roller 25 with respect to its slot 22, to act as a choke to prevent too great a volume of lint being forced through the slot and thereby waste the long strands of lint which are ordinarily carded to produce a refined sliver. The fact that the roller 47 is movable in the slotted bearing 49 permits the roller to drop when free of lint adjacent the slot 45 and aid in preventing the discharge of lint from the slot and thus act as a choke.

At the back end of the engine and below the pulley 54, which is associated with an end of the revolving flats 18, I provide a pair of slots 55 and 56 at opposite sides of a door 57, the door being below a plate 73. A knife edge 58 is provided at the lower end of the back knife plate 59, which is adapted to further remove short lint and motes from the sliver. The slot 56 is provided to permit lint and motes to be discharged which is collected upon a roller 60 which is likewise covered with linen to provide sufficient frictional surface for the collection of the lint as it is discharged through the restricted slot 55. The rollers are provided with a spindle 61 mounted in U-shaped brackets 62, which are similar in construction to the brackets 29 and 50 at the rear end of the engine. The slot 56 prevents a vacuum which would tend to draw the lint inwardly from the sliver.

Gear 34 being in mesh with the gear 35 is driven by said gear and since the diameter of the roller 25 is increased as it takes up and lint, the U-shaped bearings 28 permit the spindles 26 and 27 to rise in the bearings, and also in the slot 32 in the plate 33, while maintaining the gear 34 in mesh with the gear 35. It will be appreciated that while U-shaped bearings permit movement of rollers to accommodate the increased diameter of said rollers, due to the addition of lint, that it will be necessary to construct these bearings in such a manner that the rollers may be sufficiently elevated where it is intended that the lint be permitted to accumulate to increase the size of the rollers considerably so that the gears on the ends of the shafts will be maintained in mesh with the respective driving gear.

The rollers 25, 47 and 60 are closely associated with their respective transverse slots in order to choke the slots and prevent too great a quantity of air being forced through the same by the air draft produced by the revolving carding cylinder 10.

Slots other than those shown may be pro-

vided in the licker-in cover and at points along the carding cylinder to permit the escape of lint and motes.

What I claim is:—

1. A flat carding engine having a carding cylinder, a licker-in and a feed roller, said engine having a slot where the licker-in is operatively associated with the carding cylinder a knife at an edge of the slot to aid in removing motes, and a transverse slot where the feed roller is operatively associated with the licker-in to provide a discharge for motes and short lint.

2. A flat carding engine having a carding cylinder, a licker-in and a feed roller, said engine having a transverse slot where the licker-in is operatively associated with the carding cylinder and a transverse slot where the feed roller is operatively associated with the licker-in to provide a discharge for motes and short lint, and knives at the edges of said slots to aid in the removal of the lint and motes.

3. A flat carding engine having a carding cylinder and a back knife plate and a licker-in, a cover for the licker-in, said cover having an edge spaced from the knife plate to provide a transverse slot where the licker-in is operatively associated with the carding cylinder to provide a discharge for motes and short lint.

4. A flat carding engine having a carding cylinder and a licker-in, a cover for said licker-in, said cover being provided with a transverse slot where the licker-in is operatively associated with the carding drum to provide a discharge for motes and short lint, and a knife at each longitudinal edge of said slot.

5. A flat carding engine having a carding cylinder, a licker-in, and a curved cover for the licker-in, a curved back knife plate co-operating with the cover to provide a depressed V-shaped formation between the upper portion of the carding cylinder and licker-in, the lower edge of the cover at the V-shaped portion being cut away to provide a slot for the discharge of motes and short lint.

6. A flat carding engine having a carding cylinder, a licker-in, and a curved cover for the licker-in, a curved back knife plate co-operating with the cover to provide a depressed V-shaped formation between the upper portion of the carding cylinder and licker-in, the lower edge of the cover at the V-shaped portion being cut away to provide a slot for the discharge of motes and short lint, and a positively driven roller above the slot for collecting the lint issuing from said slot.

7. A flat carding engine having a carding cylinder, a licker-in, and a curved cover for the licker-in, a curved back knife plate co-operating with the cover to provide a depressed V-shaped formation between the upper portion of the carding cylinder and licker-in, the lower edge of the cover at the V-shaped portion being cut away to provide a slot for the discharge of motes and short lint, and knives located along the longitudinal edges of said slot.

8. A flat carding engine having a carding cylinder, a licker-in and a feed roller, a cover for the licker-in, said cover providing a transverse slot where the licker-in is operatively associated with the carding cylinder, and a transverse slot where the feed roller is operatively associated with the licker-in to form a discharge for motes and short lint, and rollers mounted for rotation above each slot for collecting lint discharge from the slots.

9. A flat carding engine having a carding cylinder, a licker-in, and a curved cover for the licker-in, a curved back knife plate co-operating with the cover to provide a depressed V-shaped formation between the upper portion of the carding cylinder and a licker-in, the lower edge of the cover at the V-shaped portion being cut away to provide a slot for the discharge of motes and short lint, a positively driven roller above the slot for collecting the lint issuing from said slot, and means for driving the feed roller and means operatively connecting the driving means with the lint collecting roller.

10. A flat carding engine having a carding cylinder, a licker-in and a feed roller, said engine having a transverse slot where the licker-in is operatively associated with the carding cylinder and a transverse slot where the feed roller is operatively associated with the licker-in to provide a discharge for motes and short lint, the back end of the engine being provided with a door and slots at opposite edges of the door.

11. A carding machine having a carding cylinder, a licker-in and a feed roller, said engine having a transverse slot where the licker-in is operatively associated with the carding cylinder and a transverse slot where the feed roller is operatively associated with the licker-in, a back knife plate, a door at one side of the knife plate, a second plate on the other side of the door, said plates being spaced from the door to provide transverse slots for a final discharge of lints and motes from the sliver.

12. A flat carding engine having a carding cylinder, a licker-in and a feed roller, said engine having a transverse slot where the licker-in is operatively associated with the carding cylinder and a transverse slot where the feed roller is operatively associated with the licker-in to provide a discharge for motes and short lint, and rollers mounted for rotation above each slot for collecting lint discharged from the slot, and means for permitting shifting of the roller

as the diameter of the roller increases by the accumulation of lint.

13. A flat carding engine having a carding cylinder, a licker-in and a feed roller, said engine having a transverse slot where the licker-in is operatively associated with the carding cylinder, and a transverse slot where the feed roller is operatively associated with the licker-in to provide a discharge for motes and short lint, the carding cylinder providing an air draft which is forced through the slots, rollers disposed adjacent the slot for choking the air draft through the slots.

14. A flat carding engine having a carding cylinder, a licker-in and a feed roller, said engine having a transverse slot where the licker-in is operatively associated with the carding cylinder, a transverse slot where the feed roller is operatively associated with the licker-in to provide a discharge for motes and short lint, the carding cylinder providing an air draft which is forced through the slots, rollers disposed adjacent the slots for choking the air draft through the slots, said rollers having spindles, U-shaped bearings to receive said spindles and permitting movement of the spindles outwardly from the cover as the diameter of the said rollers are increased by the accumulation of lint issuing from the slots.

15. A flat carding engine having a carding cylinder, a licker-in and feed roller, said engine having a transverse slot where the licker-in is operatively associated with the carding cylinder, and a transverse slot where the feed roller is operatively associated with the licker-in to provide a discharge for motes and short lint, the carding cylinder providing an air draft which is forced through the slots, rollers disposed adjacent the slots for choking the air draft through the slots, said rollers having spindles, U-shaped bearings to receive said spindles and permitting movement of the spindles outwardly from the cover as the diameter of said rollers are increased by the accumulation of lint issuing from the slots, means for adjusting the bearings towards or away from said slots.

16. A flat carding engine having a carding cylinder, a licker-in, and a curved cover for the licker-in a curved back knife plate co-operating with the cover to provide a depressed V-shaped formation between the upper portion of the carding cylinder and licker-in, the lower edge of the cover at the V-shaped portion being cut away to provide a slot for the discharge of motes and short lint, the carding cylinder providing an air draft which is forced through said slots, and means adjacent said slot for collecting lint and for choking the draft.

JOSEPH HOLDEN.