J. STEWART.

CARDING MACHINE.

APPLICATION FILED JUNE 21, 1907.

901,045.

Patented Oct. 13, 1908.

2 SHEETS—SHEET 1.

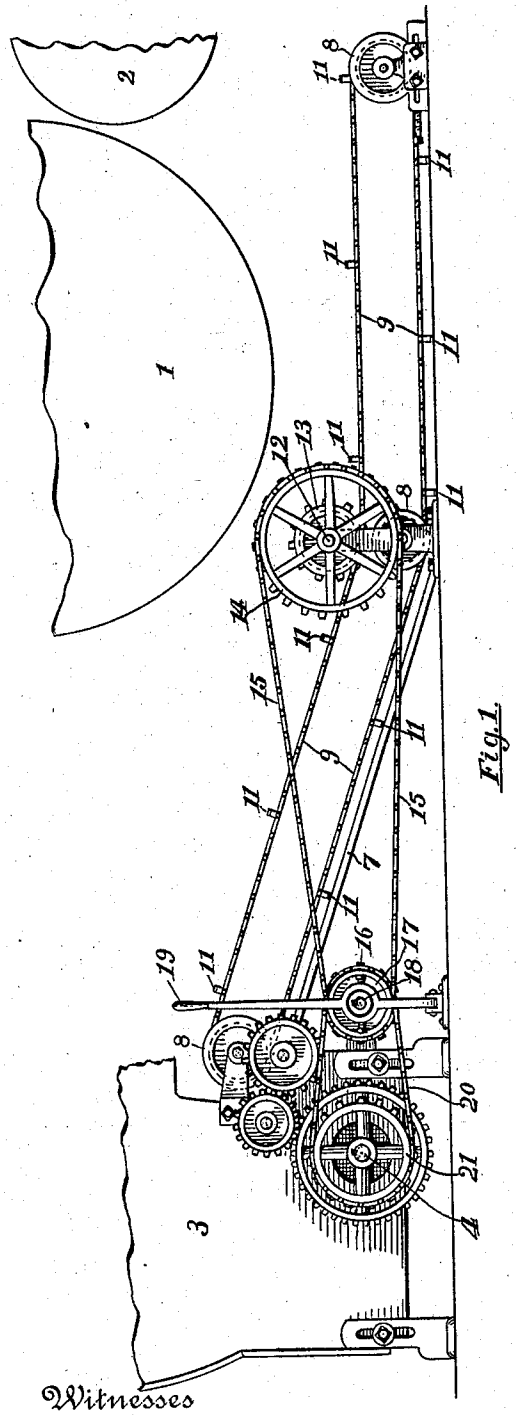


Fig. 1.

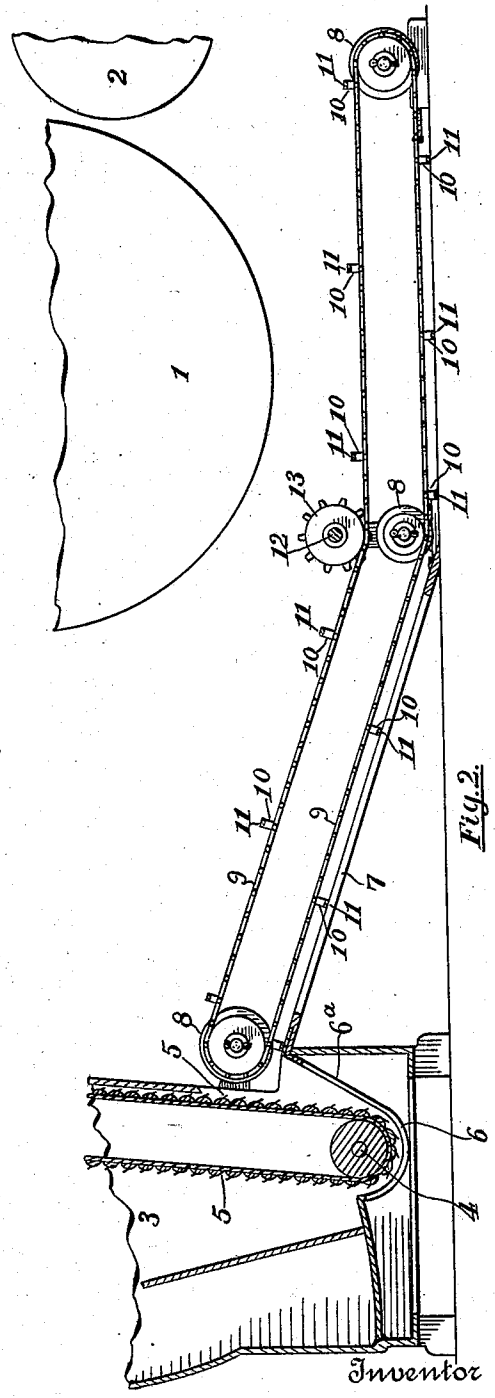


Fig. 2.

Witnesses

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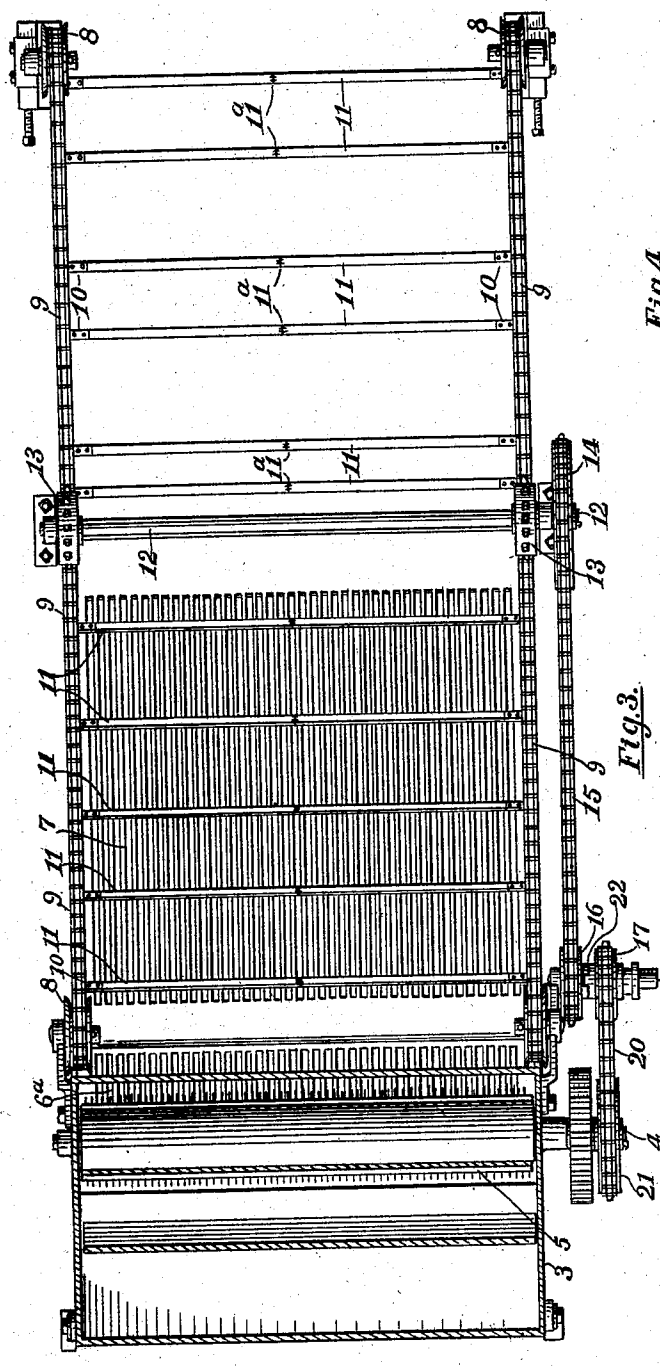


Fig.3.

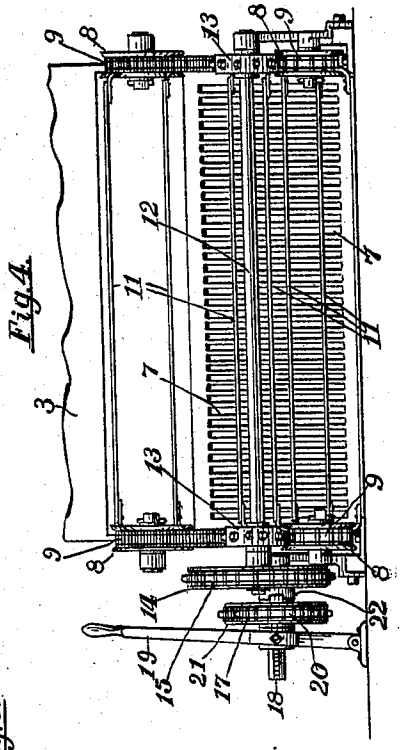


Fig.4.

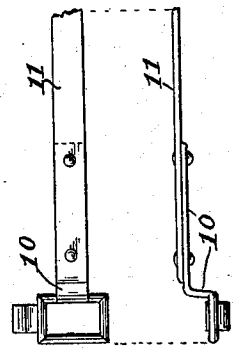


Fig.5.

Fig.6.

Witnesses

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UNITED STATES PATENT OFFICE.

JAMES STEWART, OF GRAND RAPIDS, MICHIGAN.

CARDING-MACHINE.

No. 901,045. Specification of Letters Patent. Patented Oct. 13, 1908.

Application filed June 21, 1907. Serial No. 380,083.

To all whom it may concern:

Be it known that I, JAMES STEWART, a citizen of the United States of America, residing at Grand Rapids, in the county of Kent and State of Michigan, have invented certain new and useful Improvements in Carding-Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to improvements in carding machines, and its object is to provide improved means whereby that part of the material that escapes from the carding cylinder and rolls, which may be suitable for use, is returned to the stock and uniformly mixed therewith, to be again carried into the carding mechanism. In machines of this class, as heretofore constructed, there is a great tendency to clog the machine, or to permit the escape of material at or near the place where the same is discharged by the conveyer into the feeder. I am able to wholly overcome these difficulties by the construction herein shown and claimed.

My invention consists essentially of a conveyer arranged beneath the carding cylinder and extending to the receptacle for the crude material, which receptacle is preferably the receiving chamber of an automatic feeder of any convenient form; this conveyer also being adapted to carry the said useful material, together with the impurities, over a continuous surface extending from beneath the carding machine to the bottom of the feeder and provided with a screen whereby the useful material is all discharged into the chamber containing the stock of material to be fed to the carding machine and incorporated therewith, the device prevented from clogging and the impurities escape through the screen, the conveyer being wholly above the said continuous surface as will more fully appear by reference to the accompanying drawings, in which:

Figure 1. is a side elevation of a device embodying my invention; Fig. 2. a longitudinal vertical section of the same; Fig. 3. a plan view of the same; Fig. 4. an end elevation of the same; and Figs. 5 and 6 enlarged details of one of the links of the sprocket chains forming a part of the conveyer.

Like numbers refer to like parts in all of the figures.

1 represents the main cylinder of a carding machine; 2 the doffer, and 3 an automatic feeder of any convenient style; 4 the driving shaft of the feeder; 5 the apron of the feeder which apron carries the stock upward and discharges the same to mechanism (not shown) for conveying the stock to the carding mechanism; 6 a screen beneath the apron. These devices being common in the art, are not shown complete, it being merely sufficient to locate the same and show the relation of my mechanism thereto.

In the embodiment of my invention herein shown, 7 represents an inclined screen formed of parallel bars and having its lower end at the floor and its upper end terminating at an opening in the feeder case located above an upward and inclined extension 6^a of the screen 6. The floor, the screen and the incline form a continuous surface traversed by the lower part of the conveyer.

8 represents any convenient number of grooved or flanged rollers separately journaled on any convenient supports and properly located to engage sprocket chains 9 extending parallel to each other and at opposite sides of the screen 7 and thence horizontally near the floor and beneath the cylinder 1. These chains are arranged with their lower portions close to the floor and screen 7 and parallel therewith and moving toward the feeder and with their upper portions at a distance above the same and moving away from the feeder, whereby as the material is discharged over the angle where the screen 7 and extension join the chains move upward and away from the said angle thus preventing any clogging or loss of material. Said chains are moved simultaneously by means of sprocket wheels 13 on a driving shaft 12 and engaging the upper or return portions of the sprocket chains 9. This shaft is driven by any convenient means, preferably by a sprocket wheel 14 fixed on one end of the same and engaged by a chain

15 extending to and engaging another sprocket wheel 16 journaled on a stud 18 on which stud is also journaled another sprocket wheel 17 detachably connected to the wheel 16 by a clutch 22, the latter wheel being slidable on the stud 18 to engage and disengage the clutch, as occasion may require.

The wheel 17 is driven by a chain 20, which connects said wheel with a sprocket wheel 21 mounted on any convenient rotating shaft, preferably on the shaft 4, which drives the apron of the feeder whereby whenever the apron 5 stops as in certain kinds of feeding machines, the conveyer will also stop and thus prevent feeding the recovered material into the bottom of the feeder, while the apron is stationary.

To convey the material from beneath the cylinder 1 over the screen 7 and discharge the same upon the inclined portion 6^a of the screen 6, I provide drag members 11 preferably consisting of leather straps although flexible or rigid bars might be successfully used. I prefer the straps because they will follow any unevenness in the floor beneath the cylinder or in the screen 7. These straps are attached to opposing links in the chains 9 by means of flat arms 10 extending from the respective links of the chain, these arms being offset vertically from the respective links to extend over the flanges of the rollers 8, and thence extended horizontally, to which horizontal portions the straps 11 are secured.

To guard against breaking the chains, in the event that the straps should catch upon any obstruction or a chain should run off the sprocket wheels 13, or from any cause be stopped in its movement, said straps are severed, preferably near the middle as at 11^a, and the severed ends secured to each other by means of a lacing adapted to break under any unusual strain thereon, and less than the breaking strain upon the chains. In operation, the conveyer is put in motion by engaging the clutch 22 by means of the lever 19. The impurities and stock escaping below the cylinder 1, will fall upon the floor and be engaged by the straps or drags 11 and carried up over the screen 7 through which the impurities will escape leaving the recovered useful material to be discharged upon the extension 6^a of the screen 6, upon which extension said material slides downward against the apron and is carried thereby over the screen 6, thus being further screened and separated from the impurities which pass downward through the said screen. There being no opening between the screen and the extension 6^a, none of the material escapes, and as it is discharged by the drag members, the latter are carried upward by the chains and thus the machine cannot clog at this point. The apron carries this recovered material up into the mass of stock in the receiving chamber of the feeder 3, with which stock it is mingled uniformly by the action of the apron and carried back again into the carding mechanism.

What I claim is:

1. In combination with a carding machine having cards and a feeder, means for returning the material escaping from the cards to the feeder comprising a continuous surface extending beneath the cards and to the feeder, a conveyer traversing the said surface toward the feeder and thence upward, and thence in an opposite direction at a distance above the said surface and means for operating the conveyer.

2. In combination with a carding machine having cards and a feeder, a continuous surface extending from beneath the cards to the feeder and having therein a screen formed of parallel bars, and a conveyer comprising transversely arranged drags traversing said surface and thence moving upward and thence in an opposite direction at a distance above said surface, and means for operating said drags.

3. In combination with a carding machine having cards and a feeder provided with an apron and a case inclosing the apron and provided with an opening in its side adjacent to the cards, a continuous surface extending from said opening to beneath the cards, drags traversing said surface, sprocket chains attached to the respective ends of said drags and arranged with their lower portions parallel with said surface and close thereto and with their upper portions at a distance therefrom, and means for simultaneously moving the lower parts of said chains toward the feeder.

4. In combination with a carding machine, a feeder having an apron and a case having an opening opposite the apron, a screen formed of parallel bars with one end joined to the case at said opening, sprocket chains traversing the respective edges of the screen toward the feeder at their lower portions and extended beneath the carding machine, and drags attached to the chains and traversing close to the screen in one direction and at a distance above the screen in the opposite direction.

5. In combination with a carding machine and a feeder, an inclined screen communicating with the feeder, chains traversing the respective edges of the screen and extending beneath the carding machine, flanged rollers engaging the chains, offset arms on the chains, straps attached to said arms and traversing the screen, and means for simultaneously moving the chains.

6. In combination with a carding machine and a feeder, a conveyer comprising a pair of

chains, flanged rollers engaging the chains and separately journaled, sprocket wheels engaging the respective chains, a shaft on which said wheels are mounted, means for rotating said shaft, offset arms on said chains, straps attached to said arms and connecting the chains, said straps each being transversely divided, and a lacing connecting the divided ends of the straps and adapted to break to avoid breaking the chains.

In testimony whereof I affix my signature in presence of two witnesses.

JAMES STEWART.

Witnesses:

PALMER A. JONES,

LUTHER V. MOULTON.