

June 7, 1927.

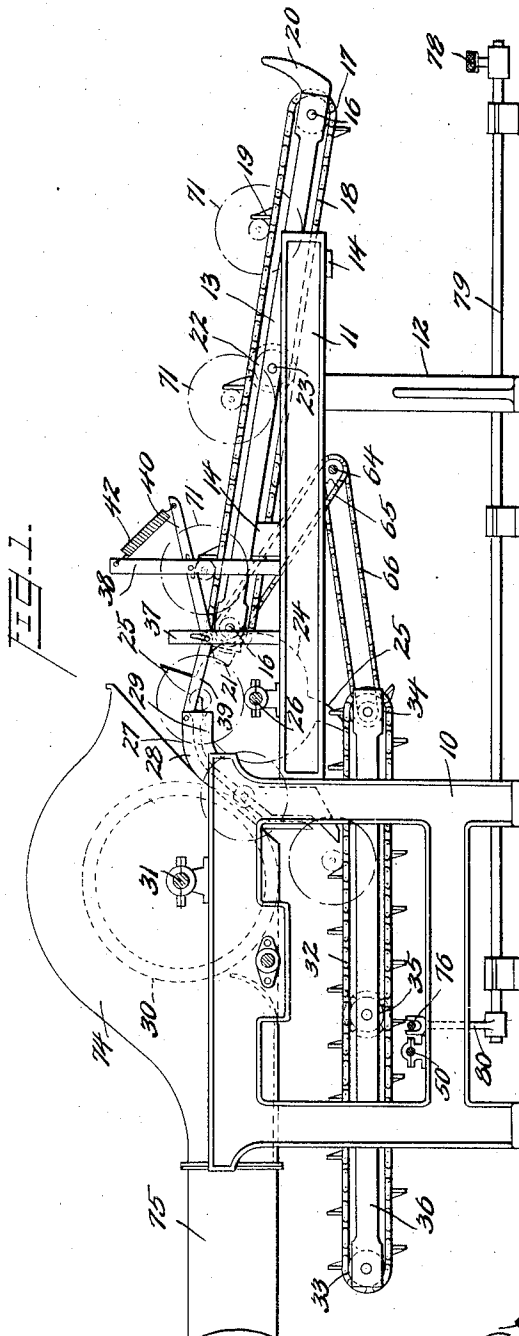
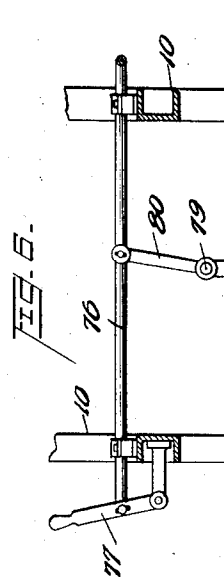
G. CROSSLAND

1,631,920

JACK SPOOL STRIPPING MACHINE

Filed Feb. 20, 1925

3 Sheets-Sheet 1



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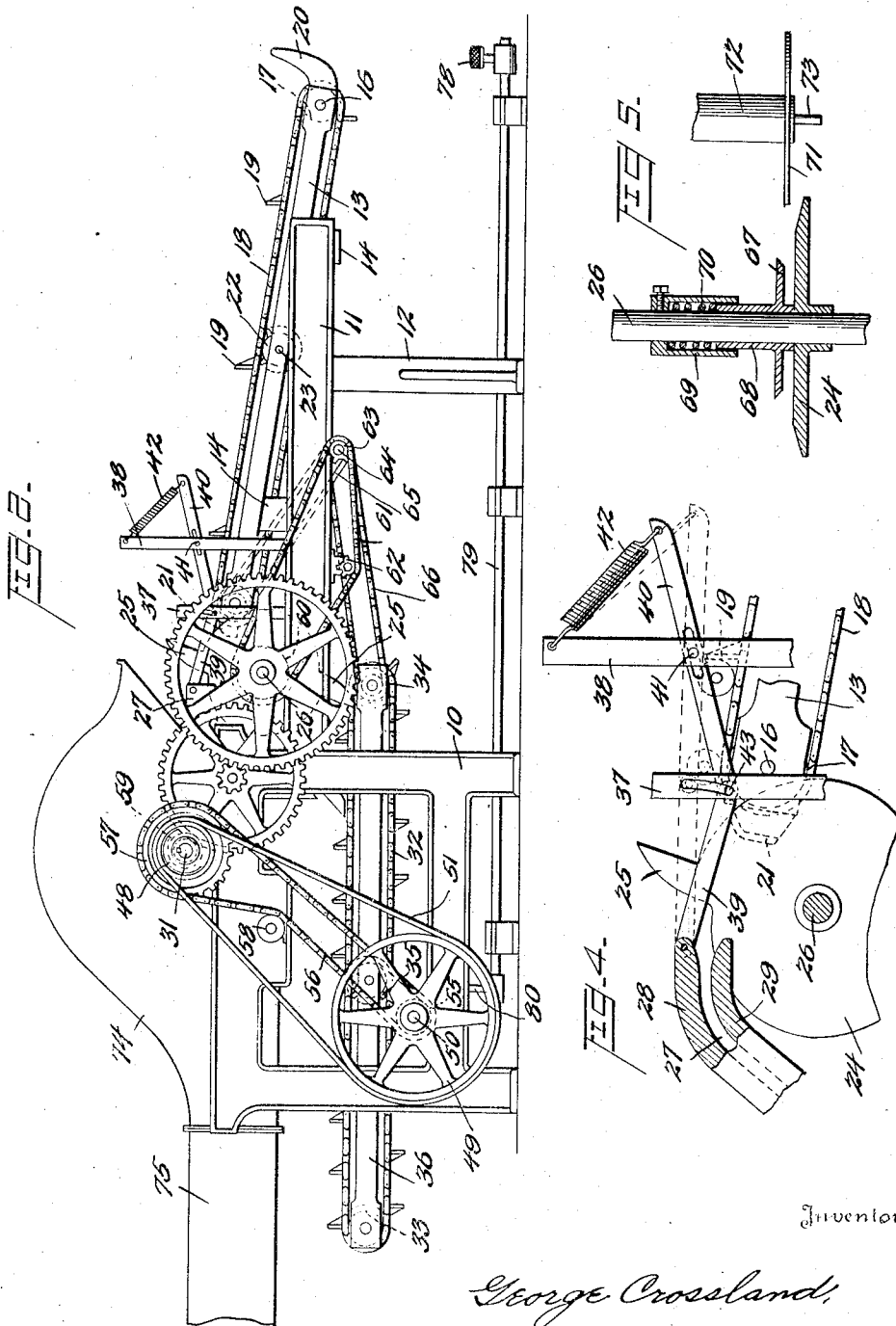
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JACK SPOOL STRIPPING MACHINE

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3 Sheets-Sheet 2



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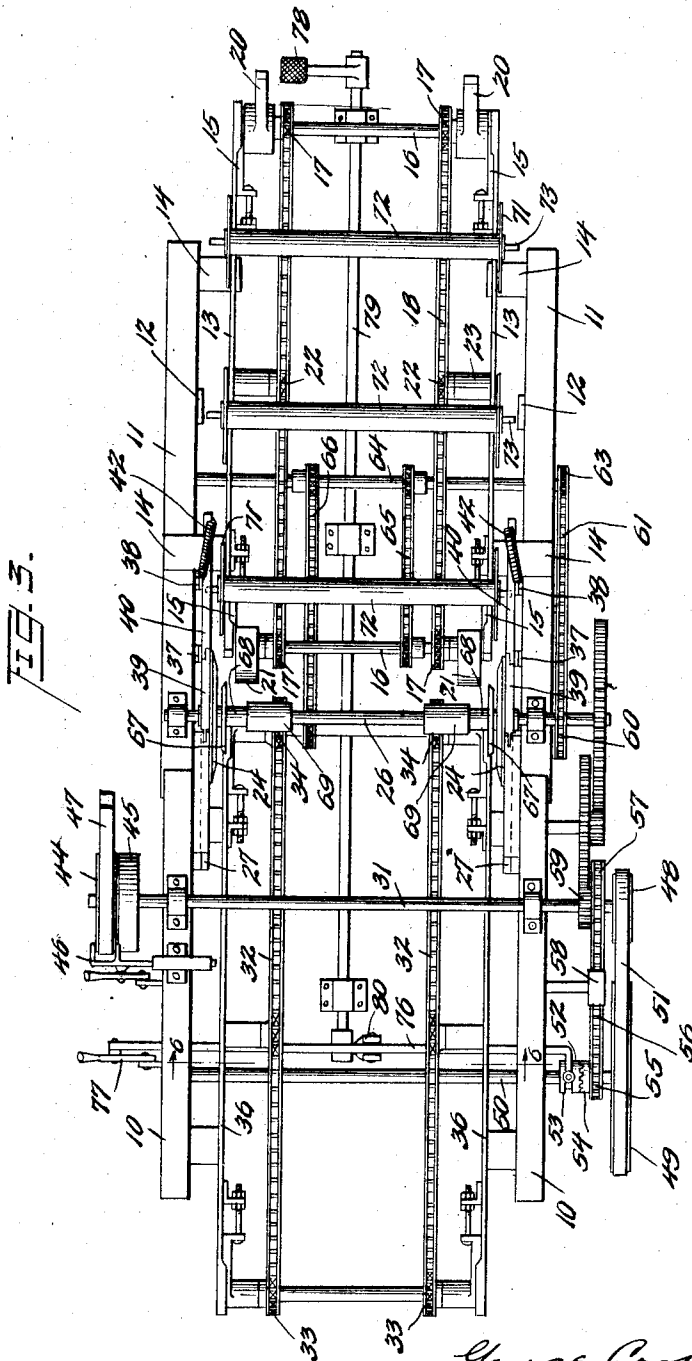
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JACK SPOOL STRIPPING MACHINE

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3 Sheets-Sheet 3



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UNITED STATES PATENT OFFICE.

GEORGE CROSSLAND, OF AMSTERDAM, NEW YORK, ASSIGNOR TO MOHAWK CARPET MILLS, INC., OF AMSTERDAM, NEW YORK, A CORPORATION OF NEW YORK.

JACK-SPOOL-STRIPPING MACHINE.

Application filed February 20, 1925. Serial No. 10,670.

This invention relates to spool stripping machines, and more particularly to machines for stripping the waste rovings from or delinting jack spools used in wool spinning mills. In such mills the wool is carded and placed on the jack spools in the form of rovings, there being a number of such rovings on each spool. These jack spools are then placed in the spinning mule or jack and the rovings spun into yarn. When the rovings on the jack spool become exhausted, the jack spool is removed from the mule or spinning machine, and replaced by another jack spool which is full of rovings. Before placing the nearly empty jack spools back on the carding machines, it is necessary to remove the remainder of the rovings from the spools. Hitherto, this has been effected by manual labor by cutting or tearing the rovings from the barrel of the spool. My invention consists in a machine that will automatically remove the remnants of wool rovings from the jack spool.

It is an object of this invention to provide a machine for automatically cleaning jack spools as above described.

It is a further object of this invention to provide a machine of this character which will deliver the waste wool from the jack spools in the form of lint to a suitable point where it may be collected for subsequent use.

It is a still further object of this invention to provide a machine of this character which will be simple in structure and reliable in operation. Other advantages and objects of my invention will be apparent from the following description and drawings.

In the drawings:

Figure 1 is a side elevation of my machine, with the external driving mechanism cut away in order that a clearer view of the working parts may be obtained;

Figure 2 is a side elevation of the complete machine, showing the external driving mechanism;

Figure 3 is a plan view of the machine as shown in Figure 2, the hood and the cleaning brush being removed;

Figure 4 is a fragmentary view showing certain parts of Figure 1 enlarged;

Figure 5 is a fragmentary view showing certain parts of Figure 3 enlarged; and

Figure 6 is a detail cross-sectional view taken on line 6—6 of Figure 3.

Referring more particularly to the drawings, in which like reference characters denote like parts throughout the several views thereof, the frame 10 of my machine is provided at each side with a longitudinal extension 11 supported on a leg 12. An inclined rail 13 is secured to each extension 11 by means of brackets 14. As best shown in Figures 1 and 3, the rails 13 support a conveyor which feeds the jack spools to the cleaning mechanism, and are provided at each end with integral side flanges between which slide longitudinally adjustable bearings 15. A shaft 16 is mounted between each pair of bearings 15, and has a sprocket 17 secured thereto adjacent each end thereof. A chain 18 is carried by each pair of sprockets 17, and each chain is provided with a plurality of projections or lugs 19, which serve to engage the barrels of the jack spools and push the same along before them, the lugs 19 on the two chains being aligned crosswise of the chains.

An upwardly projecting arm 20 is secured to each of the bearings 15 at the lower end of the conveyor by means of an integral collar which is adapted to fit over the outside of the bearing. These arms 20 are adapted to receive a jack spool and hold the same in place until a pair of lugs 19 come into position to engage the spool and carry it away. The upper or discharge end of the conveyor is provided at each side with a drop-off block 21, similarly mounted on the upper bearings 15. The conveyor chains 18 are each supported intermediate their length by an idler sprocket 22, mounted on a stud 23 secured to rail 13.

A rotary carrier 24, provided with two diametrically opposed prongs 25, is mounted adjacent each side of the discharge end of the conveyor, on a shaft 26. These rotary carriers 24 serve to pick up the spools from the conveyor, deliver them into and force them along a guideway 27, which is formed by two spaced arms 28 and 29 secured to each side of the frame 10, and having between them a slot adapted to receive the projecting shaft of the spools. A wire brush 30 is mounted on a shaft 31 adjacent the guideway 27, and in such a manner that the periphery of the brush will engage the

barrel of a spool passing through the slot. The guideway is inclined so that the spools may be fed therethrough by gravity aided when necessary by the prongs 25 of rotary carriers 24 which are shown of proper length to force the spools by said brush, and the lower end of the guideway opens into a discharge conveyor 32 substantially similar in construction to the feeding conveyor 18, but having twice as many spool engaging projections thereon. The purpose of this is to make sure that there will be a separate pair of lugs available for each spool, even though one of the spools should be slowed up for some reason in its passage through the guideway 27. The conveyor chains 32 are carried upon sprockets 33, 34 and 35 secured to shafts supported by rails 36 in the same manner as conveyor chains 18. Referring particularly to Figure 4, the extension 11 is provided adjacent the discharge end of the conveyor 18 with two vertical standards 37 and 38. An arm 39 is pivoted to the end of each upper member 28 of the guideway 27 and is also pivoted to a slotted arm 40. Each standard 38 is provided with a stud 41 which projects through the slot in the arm 40, and the outer end of the arm 40 is connected to a spring 42 connected to the top of the standard 38. The pivotal connection between arms 39 and 40 is provided with a stud 43 projecting through a slot in the standard 37. This structure results in a pair of spring actuated toggle arms which serve to hold the spools and guide them while they are being transferred from the conveyor 14 to the guideway 27. The arms 40 will engage the shaft of a spool coming up the conveyor and will be raised thereby, exerting a downward pressure on the spool by reason of the action of the springs 42. The arms 39 serve to hold the spool firmly in place on the rotary carriers 24 and direct it into the guideway 27.

Referring particularly to Figures 2 and 3, in which the drive of the machine is shown, the brush shaft 31 is provided at one end with fast and loose pulleys 44 and 45, respectively. A conventional shipper lever 46 is adapted to shift a belt 47 connecting with an overhead countershaft or other source of power, from one to the other of these pulleys, thereby starting or stopping the machine as desired. A pulley 48 is keyed to the other end of shaft 31 and drives a pulley 49 secured to a shaft 50 thru the medium of a belt 51.

The shaft 50 is provided with a clutch 52, consisting of a sliding member 53 keyed to the shaft, and a member 54 loose on the shaft. A sprocket 55 is also loose on the shaft 50 and is secured to the loose clutch member 54. When the clutch 52 is engaged, therefore, the shaft 50 will drive the sprocket 55. The sprocket 55 transmits power thru a chain 56 to a sprocket 57 loose on shaft 31. An idler sprocket 58 is used to guide the chain 56, and is mounted on a stud secured to frame 10. A pinion 59, also loose on shaft 31, is secured to sprocket 57, and drives a train of reducing gears which eventually drives the shaft 26. A sprocket 60 secured to the shaft 26 drives a chain 61 extending around an idler sprocket 62 and a sprocket 63 fast on jack shaft 64. Jack shaft 64 in turn drives conveyor 18 by means of chain 65, and conveyor 32 by means of chain 66, these chains passing over suitable sprockets secured to the respective shafts, and the conveyors being operated preferably at the same speed. It is obvious, of course, that this drive may be varied to suit particular circumstances, and any alterations made which may seem necessary or desirable.

Shaft 26 is provided with a means for centering the spools on the rotary carriers, which is shown most clearly in Figure 5. This consists of a flange 67 secured to a collar 68 slidably mounted on shaft 26. The collar 68 telescopes within a second collar 69, and a spring 70 tends to force the flange 67 towards the rotary carrier 24. It is understood, of course, that a cooperating flange 67 is provided for each rotary carrier 24. The flanges 71 of the spool 72 are engaged by the flanges 67 and the spool is thereby centered with respect to the rotary carriers 24. The prongs 25 of the rotary carriers 24 are designed to engage the shaft 73 of the spool. The brush 30 is enclosed by a hood 74 having a connection 75 for a suction blower. The wool is torn from the jack spools by the revolving wire brush in the form of lint and is picked up by this suction and carried to a suitable place for collection and disposal.

The means for operating the clutch 52 are shown most clearly in Figs. 3 and 6. A transverse rod 76 has at one end a yoke for engaging the sliding member 53 of the clutch, and is supported in suitable bearings on the frame 10. A slotted hand lever 77, pivoted to a bracket secured to the frame of the machine, may be utilized to give a longitudinal movement to the rod 76 and thereby engage or disengage the clutch. The rod 76 may also be moved by means of a treadle 78 placed within convenient reach of an operator loading jack spools on the machine. Thus, in case the machine jams for any reason, the operator may immediately stop the feed of spools by depressing the treadle 78 and disengaging the clutch 52. The hand lever 77 is employed when it is desired to start up the machine and get the brush rotating rapidly before starting the feed of spools. The treadle 78 is adapted to rotate a shaft 79, which in turn rotates

a slotted arm 80 which moves the rod 76. The shaft 79 is supported in suitable bearings secured to the floor.

The operation of my machine will be obvious from the above description and drawings. While I have described a specific embodiment of my invention, it is to be understood that various changes and alterations might be made therein without affecting the essential features thereof, and I desire to be limited therefore only by the prior art and the scope of the appended claims.

Having thus described the invention, what is claimed as new and desired to be secured by Letters Patent is:

1. A machine of the class described comprising in combination, an elongated delinting means for spools, an inclined guideway adjacent said means along which the spools may travel, and positive means for forcing said spools along said guideway past said delinting means in a direction such that the axes of the spools are perpendicular to a plane which is also perpendicular to said delinting means.

2. A machine of the class described comprising in combination, an elongated delinting means for spools, an inclined guideway adjacent to and extending past said means along which the spools may be fed by gravity onto said delinting means, and positive means for forcing said spools along said guideway past said delinting means in a direction such that the axes of the spools are perpendicular to a plane which is also perpendicular to the axis of said delinting means.

3. A machine of the class described, comprising in combination, a slotted guideway adapted to accommodate the projecting shaft at each end of a jack spool or the like, means for delivering spools into said guideway, and means for delinting said spools while passing through said guideway.

4. A machine of the class described comprising in combination, a revolving delinting brush for spools, an inclined guideway adjacent said brush along which the spools may travel, and positive means for forcing said spools along said guideway past said brush in a direction such that the axes of the spools are perpendicular to a plane which is also perpendicular to said brush.

5. A machine of the class described comprising in combination, a revolving delinting brush for spools, an inclined guideway adjacent to and extending past said brush along which the spools may be fed by gravity onto said brush, and positive means for forcing said spools along said guideway past said brush in a direction such that the axes of the spools are perpendicular to a plane which is also perpendicular to the axis of said brush.

6. A machine of the class described, com-

prising in combination, a slotted guideway adapted to accommodate the projecting shaft at each end of a jack spool or the like, means for delivering spools into said guideway, and a revolving brush adjacent said guideway having its axis parallel to the axes of the spools.

7. A machine of the class described comprising in combination, an elongated delinting means for spools, an inclined guideway adjacent said means along which the spools may travel, a conveyor for said spools, and means for transferring spools from said conveyor into said guideway and positively forcing said spools along said guideway past said delinting means.

8. A machine of the class described comprising in combination, an elongated delinting means for spools, an inclined guideway adjacent said means along which the spools may travel, a conveyor for said spools, and a rotary carrier for transferring spools from said conveyor into said guideway and forcing said spools along said guideway past said delinting means.

9. A machine of the class described, comprising in combination, a conveyor, a rotary carrier adapted to remove spools from said conveyor, a guideway adapted to guide a spool for movement in a direction perpendicular to its axis and into which said spools are delivered by said rotary carrier, means for holding said spools on said rotary carrier and directing them positively into said guideway, and means for cleaning said spools while passing through said guideway.

10. A machine of the class described, comprising in combination, a conveyor, a rotary carrier adapted to remove spools from said conveyor, a guideway into which said spools are delivered by said rotary carrier, means for holding said spools on said rotary carrier and directing them positively into said guideway, said means comprising a spring actuated toggle arm, and means for cleaning said spools while passing through said guideway.

11. A machine of the class described, comprising in combination, a conveyor, a rotary carrier adapted to remove spools from said conveyor, a slotted guideway adapted to receive the projecting shaft at each end of said spools, the spools being fed into said guideway by said rotary carrier, said guideway being inclined whereby the spools pass through the same by gravity, a spring actuated toggle arm for holding said spools on said rotary carrier and positively directing them into said guideway, a revolving brush adjacent said guideway, and a hood over said brush adapted to be connected to a suction blower.

12. A machine of the class described, comprising in combination, a conveyor, a rotary

carrier adapted to remove spools from said conveyor, an inclined guideway adapted to guide a spool for movement in a direction perpendicular to its axis and into which said
5 spools are delivered by said rotary carrier, a revolving brush adjacent said guideway, and a second conveyor onto which said guideway discharges the spools.

10 13. A machine of the class described, comprising in combination, a conveyor, a pair of rotary carriers adapted to engage each end of the spools as they reach the end of the conveyor, means for centering the spools on the rotary carriers, an inclined slotted guide-
15 way for each end of the shaft of the spools, said rotary carriers delivering the spools into said guideway, and means adjacent said guideway for delinting the spools as they pass therethrough.

20 14. A machine of the class described, comprising in combination, a conveyor for feeding spools to the cleaning apparatus, a brush for cleaning said spools, means for driving
25 said brush, means for driving said conveyor from said brush drive, and means inserted

in said last named means for optionally starting or stopping said feeding conveyor while the brush is revolving.

15. A machine of the class described, comprising in combination, a conveyor for feed- 30
ing spools to the cleaning apparatus, a brush for cleaning said spools, means for driving said brush, an auxiliary shaft, means for driving said auxiliary shaft from said brush,
35 a clutch connected to said auxiliary shaft, and means for driving said conveyor from said clutch.

16. A machine of the class described comprising in combination, a revolving delinting
40 brush for spools, inclined guideways adjacent to and extending past each end of said brush along which said spools may be fed by gravity onto said brush, and positive
45 means for forcing said spools along said guideways past said brush with their axes perpendicular to a plane which is perpendicular to the axis of said brush.

In testimony whereof I hereunto affix my signature.

GEORGE CROSSLAND.