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YARN SPLICING MACHINE

Filed May 27, 1922

Fig. 1

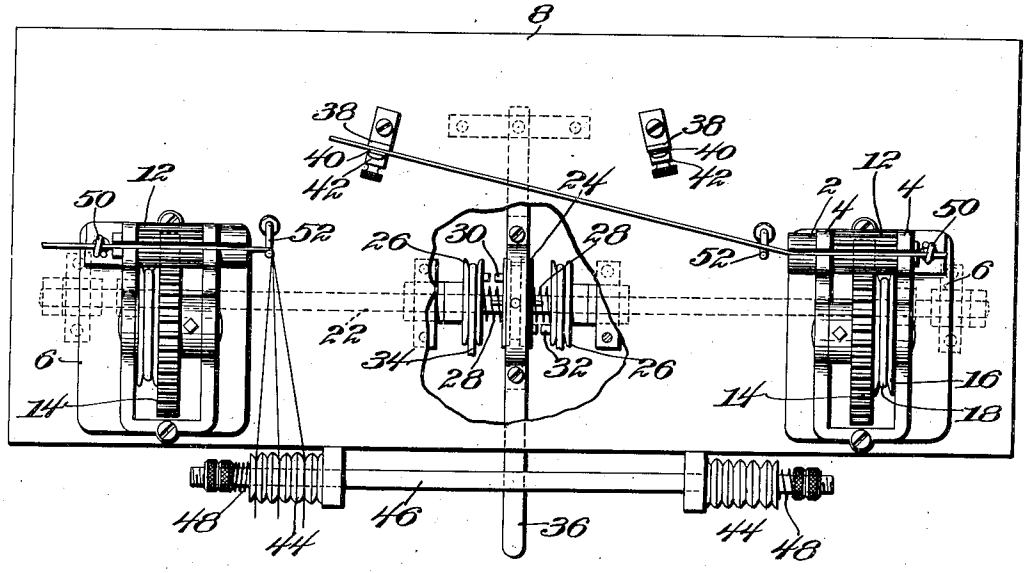
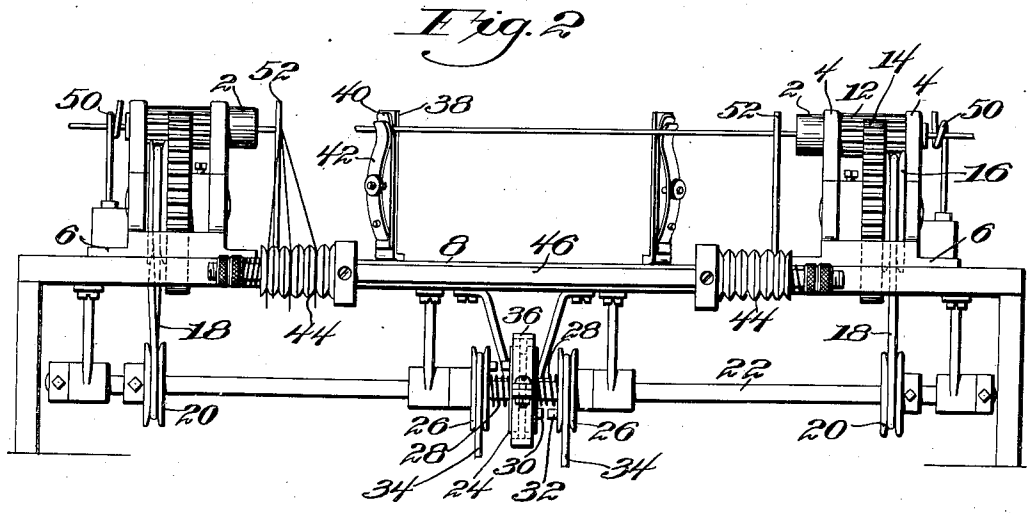


Fig. 2



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UNITED STATES PATENT OFFICE.

FRANKLIN W. BREWSTER, OF CENTRAL FALLS, RHODE ISLAND, ASSIGNOR TO MANVILLE JENCKES COMPANY, OF PAWTUCKET, RHODE ISLAND, A CORPORATION OF RHODE ISLAND.

YARN-SPLICING MACHINE.

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To all whom it may concern:

Be it known that I, FRANKLIN W. BREWSTER, a citizen of the United States, residing at 87 Hawes St., Central Falls, in the county of Providence and State of Rhode Island, have invented certain new and useful Improvements in Yarn-Splicing 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.

The invention relates to machines for splicing yarns which consist of a number of strands twisted together and its object is to facilitate and quicken the untwisting of the ends of the yarns to permit the strands to be separated and spliced and the subsequent retwisting of the spliced strands.

A machine embodying the preferred form of the invention is shown in the accompanying drawings in which Fig. 1 is a plan view and Fig. 2 is a front elevation of the machine.

As shown the machine comprises two opposed twister heads arranged in axial alinement with each other and connected to be simultaneously rotated in opposite directions from a driving shaft which may be selectively driven in either direction through a clutch under the control of the operator and arranged to be engaged with either one of two oppositely rotating driving pulleys. Each of the twister heads comprises a spindle 2 which is mounted in bearings 4 formed on a standard 6 secured to the base plate 8. The spindle and bearings are slotted to permit the yarn to be passed laterally into the axis of the spindle and at the inner end of each spindle the slot is closed to a less width than the diameter of the yarn, so that the yarn is wedged and caused to rotate with the spindle. Each spindle is provided between the bearings 4 with a pinion 12 which is engaged by a gear 14 mounted in the standard 6 and provided at one side with a grooved pulley 16. Each pulley is connected by a belt 18 with a pulley 20 secured to a driving shaft 22 which is mounted below the base plate. One of the belts 18 is an opened and the other is a crossed belt so that the two opposed twist heads are simultaneously rotated in opposite directions by the rotation of the shaft 22 in a given direction. The shaft 22 may be driven in either direction at the will of the operator through a clutch 24 keyed to slide on and rotate with the shaft and held normally in mid position between two driving pulleys 26 by springs 28. The clutch is provided on each side with a lug 30 adapted to cooperate with the corresponding lug 32 on the opposed pulley 26. The pulleys 26 are continuously driven in opposite directions from any suitable source of power through open and cross belts 34. The clutch may be shifted in either direction to connect the driving shaft with either of the oppositely rotating pulleys 26 by a lever 36, the end of which projects from the front of the base plate 8 where it may be conveniently manipulated by the operator.

The ends of the yarns to be spliced are held during the untwisting of the strands by spring operated clamping clips comprising posts 38 and plates 40 which are forced against the post by the leaf springs 42 and are provided with inclined upper ends to permit the ready insertion of the yarn end in the clip. The untwisted and separated strands of each yarn are held preparatory to the splicing by a series of tension plates 44 which are mounted on a rod 46 at the front edge of the base plate 8 and are pressed together by a spring 48.

In splicing the ends of two yarns the operator may by manipulation of the gears 14 bring the slots in the spindles into register with the slots in the bearings so that the ends of the yarns may be readily introduced into the spindles, the yarns first being threaded with the pigtail guides 50 at the outer ends of the spindles. The belt connections between the gears 14 and the driving shaft 22 permits each gear and spindle to be rotated in locating the slots in the spindles without rotation of the shaft 22 or the other gear and spindle. After the end of each yarn has been passed into the corresponding spindle its free end is introduced into the cooperating clip, the end of the yarn which passes through the right hand spindle being held by the left hand clip while the end of the yarn which passes through the left hand spindle is held by the right hand clip. After thus introduc-

ing the ends of the two yarns into the twister heads and end holding clips the operator shifts the clutch into engagement with the pulley 26 which is rotating in the proper direction to drive the twister heads in a direction to untwist the length of yarn extending from the inner ends of the heads to the clips and then releases the lever so that it returns to normal neutral position. The clutch need be held in engagement with the pulley but for an instant in order to rotate the heads sufficiently to untwist the short lengths of thread between the heads and the holding clips. The strands of the yarns having been thus quickly untwisted the operator passes her fingers between the different strands and passes them down between different pairs of tension disks as indicated at the left in Fig. 1, the separated strands leading from the ends of the twister head about a vertical guide wire 52 arranged near the inner end of the head and in front of the yarn as it leads from the head to the corresponding clamping clip. The operator also draws the strands of the other yarn in the same way over the other guide wire 52 and introduces the ends of the strands between different pairs of disks 44 in the other strand holder. Single strands are then removed from the strand holder and spliced together between the twister heads by loosely twisting one strand about the other, the twisted portions in different spliced strands being located at different points between the heads. The operator then shifts the clutch in the opposite direction and into engagement with the oppositely rotating pulley, thus simultaneously rotating the opposed twister heads in a direction to twist together the spliced strands. The spliced strands are thus quickly retwisted and upon release of the clutch shifting lever the clutch returns to neutral position so that the automatic rotation of the twister heads ceases. The operator then trims the waste ends and removes the spliced yarns from the twister heads, bringing the slots in the spindles into register with the slots in the bearings by manual manipulation of the gears 14 as before.

While it is preferred to employ the specific construction and arrangement of parts shown and described it will be understood that this not essential to the broader features of the invention and may be varied or modified without departing therefrom.

What is claimed is:

1. A yarn splicing machine having, in combination, two opposed longitudinally slotted twister spindles each provided with a pinion, a gear engaging each pinion and provided with a pulley, a driving shaft provided with pulleys connected with the gear pulleys by open and cross belts respectively, and mechanism under the control of the operator for selectively driving the shaft in opposite directions.

2. A yarn splicing machine having, in combination, two opposed twister heads, a shaft connected to simultaneously rotate the heads in opposite directions, two oppositely rotating driving pulleys, a clutch for connecting either pulley to the shaft, springs for holding the clutch in neutral position, and a lever within reach of the operator for shifting the clutch in either direction against the force of the corresponding spring.

3. A yarn splicing machine having, in combination, two opposed twister longitudinally slotted spindles each provided with a pinion, a gear engaging each pinion and provided with a pulley, a driving shaft provided with pulleys connected with the gear pulleys by open and cross belts respectively, two oppositely rotating driving pulleys loosely mounted on the shaft, a clutch between the pulleys for connecting either pulley with the shaft, springs for normally holding the clutch in neutral position between the pulleys, and a manually operated lever for shifting the clutch in either direction.

4. A yarn splicing machine having, in combination, a base plate, two opposed twister heads mounted on the upper side of the plate in axial alinement with each other, a driving shaft mounted on the under side of the plate with its axis parallel to the axes of the heads, driving connections between the shaft and heads for simultaneously rotating the heads in opposite directions, and mechanism under the control of the operator for selectively rotating the shaft in opposite directions.

5. A yarn splicing machine having, in combination, a base plate, two opposed twister heads mounted on the upper side of the base plate and each provided with a pinion, a gear engaging each pinion and provided with a pulley, a driving shaft mounted on the under side of the base plate with its axis parallel to the axes of the twister spindles, pulleys on the driving shaft connected with the gear pulleys by open and cross belts, respectively, and mechanism under the control of the operator for selectively driving the shaft in opposite directions.

6. A yarn splicing machine having, in combination, two opposed twister heads mounted in alinement with each other and rotatable in opposite directions to untwist or re-twist yarn held thereby, and a series of tension plates mounted in front of the heads and pressed together by a spring to hold the individual strands of untwisted yarn.

FRANKLIN W. BREWSTER.