July 22, 1924. 1,502,056

W. H. PEARSON

MACHINE FOR SPLICING CORDS

Filed May 5, 1923

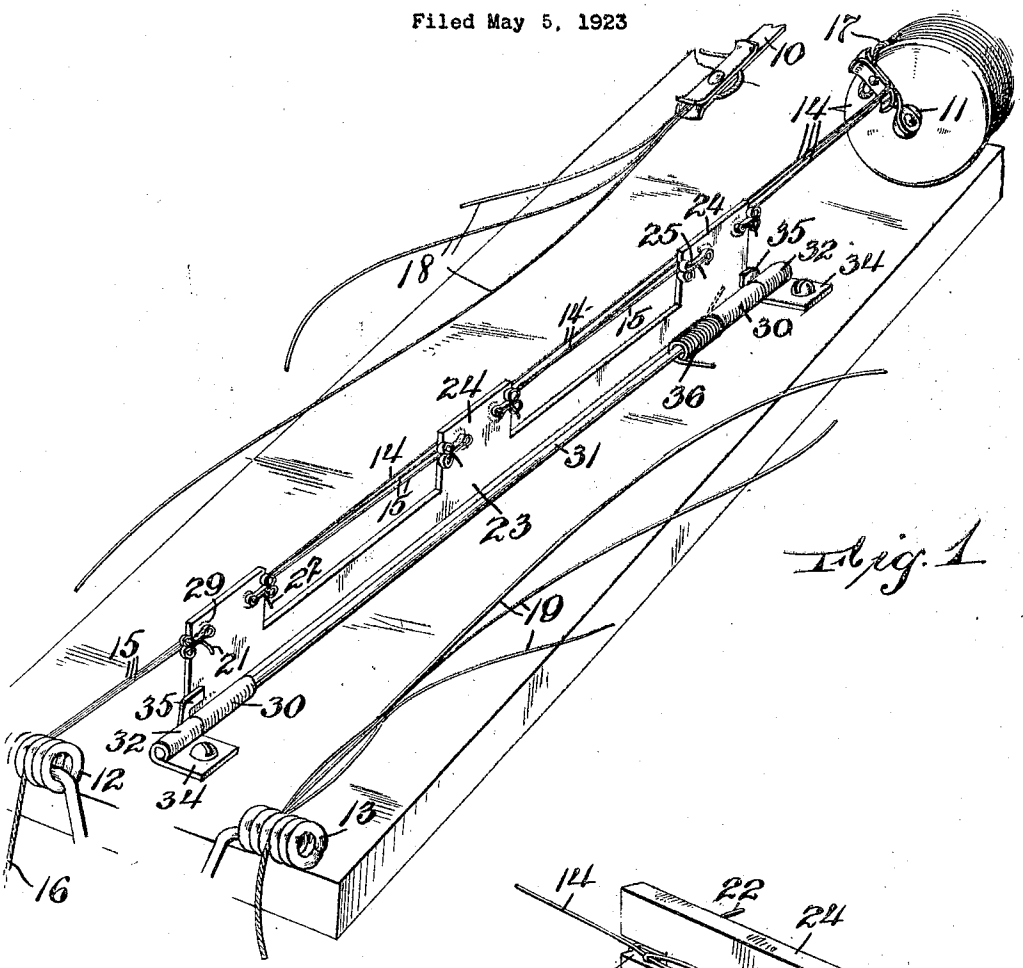


Fig. 1

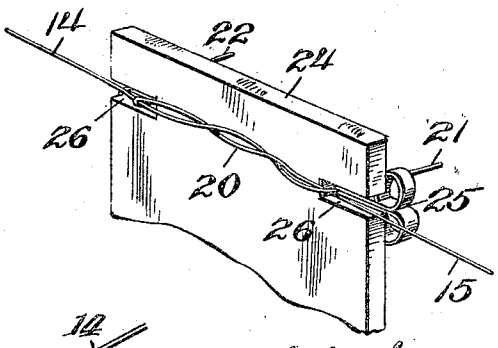


Fig. 4.

Fig. 3.

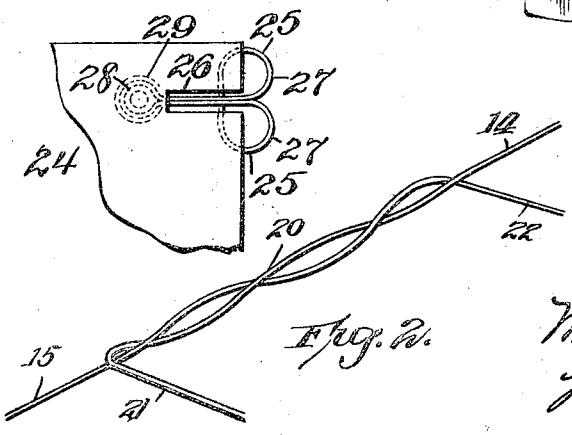


Fig. 2.

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UNITED STATES PATENT OFFICE.

WILLIAM H. PEARSON, OF PASSAIC, NEW JERSEY.

MACHINE FOR SPLICING CORDS.

Application filed May 5, 1923. Serial No. 636,798.

To all whom it may concern:

Be it known that I, WILLIAM H. PEARSON, a citizen of the United States, and a resident of Passaic, county of Passaic, and State of New Jersey, have invented certain new and useful Improvements in Machines for Splicing Cords, of which the following is a specification.

This invention relates to an improved machine for splicing cord, and the improvement is embodied in a construction that holds the ends of the strands of the opposed ends of the cords that are to be spliced so that they need not be knotted, and the twisting that follows, when the strands are twisted to complete the splice, is smooth, since there are no knots where the strands are joined.

In splicing machines the ends of the cords that are to be joined are mounted side by side, usually in parallel relation, and are untwisted by a suitable mechanism so that the strands of the cord are parallel and easily separated, then these strands are cut off, not at one place, but so that the splicing of the strands takes place at intervals in the cord when it is again twisted, but before the cord is again twisted these strands must be joined, and this has formerly been done by knotting them, and to facilitate this knotting the machines have been supplied with posts which form a ready means around which the ends of the strands can be tied, and then they are slipped from the post and the knot completed. These knots are undesirable, more so in some industries than in others, since they form slight projections or thickened parts on the cord where the knots are located.

In this invention the ends of the strands are not knotted, but I provide mechanism where, after simply slightly twisting the overlapping parts of the strands where they join, the ends of these lightly twisted parts are held until the twisting has proceeded far enough to put a sufficient pull on the ends to release them, by such pulling, from the clamps or holding means which hold them, and as the twisting is proceeded with until it is finished these ends are turned or twisted into the convolutions of the other strands, and the outside of the cord, when completely spliced, is smooth and is no thicker at any point than the unspliced portion of the cord.

The invention is illustrated in the accompanying drawing, in which Figure 1 is a perspective view of the improved clamp or holding means engaging the ends of lightly twisted strands before the mechanical twisting operation commences. Figure 2 is a perspective view to illustrate how the lightly twisted portion can be placed in the strand. Figure 3 is an enlarged detail of one of the spring jaws for holding the end of a twisted portion, showing the opposite side from that illustrated in Figure 1, and Figure 4 is a perspective view taken from such opposite side and showing one of the clamps or holding means for a loop on an enlarged scale as compared with Figure 1.

The mechanism of the machine, so far as the twisting means is concerned, is not fully illustrated since it forms no part of this invention, but I show a rotating arbor 10 and a rotating armor 11, the latter being, if desired, in the form of a spool, this part of the machine being similar to that illustrated in my application for machine for splicing cords, filed Sept. 25, 1922, Serial No. 590,235.

Suitable holding or gripping means, such as the spring coils 12 and 13, are utilized to hold the ends of the cord that are to be joined, the cord from the arbor 11 being fastened to the holding means 13, and that from the arbor 10 being gripped by the holding means 12, and then these cords are simultaneously rotated the proper number of turns until the cords are untwisted so that their strands, usually three, are substantially parallel and can be easily separated. When so separated they are severed so that the opposed strands overlap sufficiently to permit a light manual twisting of these opposed ends, and I show the strands 14 of one cord extending from the arbor 11, and the strands 15 of the other cord extending from the holding means 12, these opposed ends being adapted to be joined so that the cord 16 is joined to the cord 17 when the splicing is completed. The complementary ends of these cords that have been severed, these being shown at 18 and 19, are taken from the machine and thrown away as these are the unused ends of the untwisted cords.

Before the twisting begins, these opposed strands must be joined, and in my machine I may do this by loosely twisting them, usually by a complete turn, one over the other, as shown in Figure 2, where the two strands 14 and 15 are twisted as at 20, and the ends 21 and 22 are grasped by the person who does the twisting, and these ends are placed in a yielding means for holding them until

they are released by the pull consequent to the twisting operation.

The form of clamping means I show comprises a bar 23 which has the plates 24 extending up from it, the plates 24 having spring clamps 25 at their opposite ends, each of the plates being slotted, as at 26, to give access deep enough to permit a thorough grasping of the ends of the twisted portion by the clamp 25. The clamps 25 may be of any desired construction, but I usually make them of flat thin spring material, formed with the divergent outer ends 27, and having the inner end 28 fastened to the plate by suitable means such as the solder 29.

The ends 21 and 22 of the twisted portion can thus be swung in from the ends of the plate well within the spring clamps 25 and pulled sufficiently to tighten them up so that the twisted part 20 rests against the face of the plate 24, as shown in Figure 4. If the ends 21 and 22 protrude too far, the girls who operate the machines cut them off so that no undue lengths will be provided to project from the spliced cord.

When these twisted portions have all been placed each against its plate 24, the splicing begins, and the part 20 is tightened as the splicing proceeds, and as the strands are twisted one around the other in the twisting operation, caused by the rotation of the arbor 11, the ends 21 and 22 are pulled on enough to overcome the grip of the spring clamps 25 and they are pulled through the plate 24 and twisted tightly in the cord itself by the other two strands that are being twisted around it. When the splicing has been completed, that is, the mechanical twisting is accomplished, the ends 21 and 22 have entirely disappeared within the cord and the spliced cord is smooth along its whole exterior.

If desired, the bar 23 from which the plates 24 project may be mounted so that it can be swung down out of the way when the cutting of the strands, preparatory to their being joined by the manual twisting, is done, and I show the bar 23 provided with knuckles 30 which receive the pivotal rod 31 which extends into the knuckles 32 of the leaves 34. The stops 35 can be provided to limit the movement of the bar 23 so that it does not swing backward, and the bar can be yieldingly held in position by the spring 36.

Many modifications of the spring clamp can be provided, and the parts can be assembled in various relations, without departing from the scope of the invention.

I claim:

1. A machine for splicing cord comprising rotatable arbors, holding means, said arbors being adapted to untwist cords held by their respective holding means, and clamps for holding the ends of lightly twisted overlapping ends of strands in said untwisted cords and adapted to permit the release of said ends under a normal twisting strain.

2. A machine for splicing cord comprising twisting means for the overlapping strands of two cords, and clamps for yieldingly holding the ends of said strands where their overlapping ends are lightly twisted together.

3. In a splicing machine, a twisting mechanism for the strands of a cord, said strands being lightly twisted where they are joined, a set of plates against which the lightly twisted portions are rotated when the mechanical twisting begins, and yielding means for holding the ends of said lightly twisted portions.

4. A machine for splicing cords comprising means for twisting the overlapping strands of untwisted cords, and holding means for securing lightly twisted overlapping portions of said strands said holding means being adapted to release said lightly twisted portions under the twisting strain of the machine.

5. A machine for splicing cords comprising rotatable arbors, holding means, said arbors being adapted to untwist cords held by their respective holding means, and clamps at intervals between one arbor and the holding means of the other for yieldingly holding the ends of lightly twisted overlapping strands of the untwisted cords.

6. In a machine for twisting the overlapping strands of untwisted cords after said overlapping strands are lightly twisted, clamps to receive the ends of said lightly twisted portions and including spring arms to release said ends under the twisting strain of the machine.

7. In a machine for twisting the overlapping strands of untwisted cords after said overlapping strands are lightly twisted, a plate against which said lightly twisted portions bear and including clamps to yieldingly hold the end of said portions against the plate and adapted to release said ends during the twisting operation of the machine.

8. In a machine for twisting the overlapping strands of untwisted cords after said overlapping strands are lightly twisted, a bar with plates projecting therefrom against which plates the lightly twisted portions bear said plates having spring clamps at their ends for holding the ends of said portions and adapted to release them during the twisting operation of the machine.

In testimony that I claim the foregoing, I have hereto set my hand, this 28th day of April, 1923.

WILLIAM H. PEARSON.