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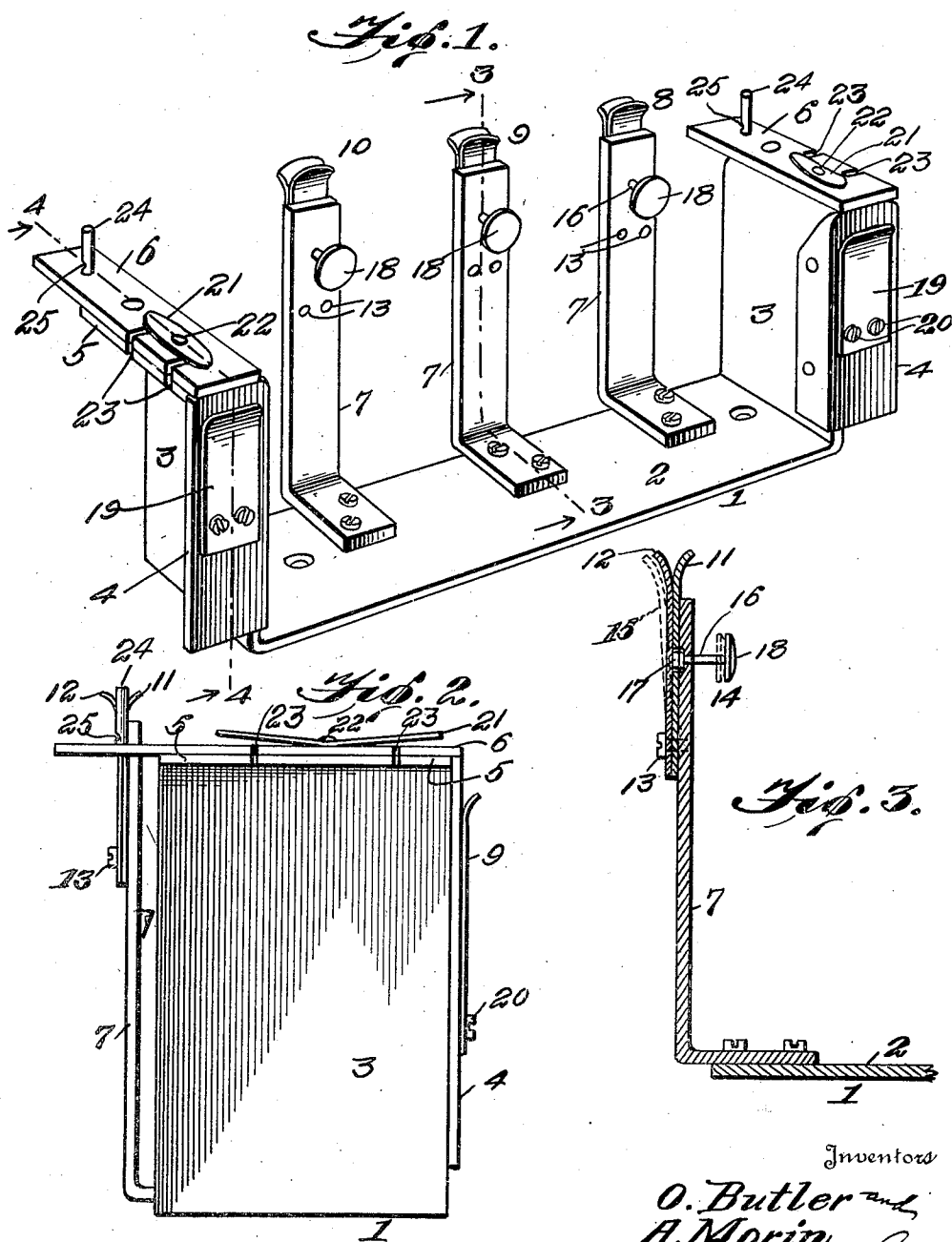
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SPLICING APPARATUS

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UNITED STATES PATENT OFFICE.

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SPLICING APPARATUS.

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To all whom it may concern:

Be it known that we, OBADIAH BUTLER and AMOS MORIN, citizens of the United States, residing at Killingly, in the county of Windham and State of Connecticut, have invented certain new and useful Improvements in Splicing Apparatus, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to a splicing apparatus, and the object of the invention is the construction of an apparatus, whereby the ends of the yarn may be quickly spliced or fastened together.

Another object of the invention is the efficient fastening of the broken ends of the yarn together to make a continuous strand.

With these, and other objects in view, our invention comprises certain novel combinations, constructions and arrangements of parts as will be hereinafter described, illustrated in the accompanying drawings, and more particularly pointed out in the appended claims.

In the drawings:

Figure 1 is a perspective view of our apparatus.

Figure 2 is an end view of the apparatus.

Figure 3 is a sectional view, taken on line 3—3, Fig. 1, and looking in the direction of the arrows.

Figure 4 is a sectional view, taken on line 4—4, Fig. 1, and looking in the direction of the arrows.

Figures 5, 6 and 7 are plan views of the apparatus showing in diagram the process of splicing the yarn.

Referring to the drawings by numerals, 1 designates the frame which comprises the base 2 and ends 3. Secured to the front of the ends 3 are front flanges 4. The upper edges of the ends 3 are bent into a horizontal position forming horizontal flanges 5. Secured upon these flanges 5 are horizontal plates 6.

Vertical standards 7 are secured to the base 2, and these standards are provided with clamp devices 8, 9 and 10.

Each of the clamp devices 8, 9 and 10 comprises an inner clamp plate 11, and an outer clamp plate 12; these clamp plates are

secured together near their bottom by screws 13. A button device 14 is provided for slightly moving the outer plate 12 away, at its upper portion, from the inner plate 11, as shown by dotted lines 15, Fig. 3, and this button device comprises a stem 16 with a head 17 and a bottom 18, Fig. 3. The head 17 extends through the inner plate 11 and bears against the inner face of the outer plate 12, whereby when the operator presses inwardly upon the bottom 18, the outer plate 12 will be moved to the position shown by dotted lines 15, allowing the strand that is between the plates to be easily removed from off the clamp device.

To the front of the front flanges 4 is fastened a vertical clamp plate 19. This clamp plate 19 is secured to the flange 4 by screws 20, with its upper end let free to be slightly moved away from the flange 4, in a similar manner to the way plate 12 is moved away from plate 11 by the button device.

Horizontal clamp plates 21 are fastened, at their center, by rivets 22 to the top of the horizontal plates 6. On the flanges 5 and plates 6, contiguous to the ends of the clamp plates 21, are formed holding notches 23 into which the yarn may be placed, at the will of the operator, as hereinafter described. Mounted upon the horizontal plates 6, near their outer ends, are vertical pins 24; each pin 24 is provided with a yarn-receiving notch 25 formed near its base.

In carrying out our process when two ends of yarn are to be spliced or fastened together, we preferably have the yarn on spools 26 and 27. The yarn 28 on spool 26 is passed under (Figs. 5 to 7) the outer end of plate 21 thence around pin 24, resting in the notch 25, thence the yarn is brought across the apparatus and placed under the plate 21 at the opposite end of the frame, Fig. 5, and secured by its knotted end in notch 23.

The yarn 29 on spool 27 is then placed (similar to yarn 28) under the outer end of plate 21, at the left-hand end of the apparatus, and said yarn 29 is then passed around the left-hand pin 24 and thence is positioned across the apparatus and placed under the inner end of plate 21 at the right-

hand of the apparatus, as clearly shown in Fig. 5, and secured by its knotted end in notch 23.

The operator preferably moistens or wets the yarn before starting the splicing process. The two pieces of yarn 28 and 29 are then separated, and in this instance each yarn is constituted by three strands 30, 31 and 32. This separation of the yarn is preferably done by the operator forcing the twist (by using the finger, or a metal awl, or pencil).

Then the operator, with the left-hand, takes hold of strand 30 of yarn 29 and with a jerk breaks off a portion; then with the right-hand, the operator takes hold of strand 30 of yarn 28 and with a little jerk breaks some of it off. Now, hold these two strands 30 taut, twist them around one another from three to five times, placing the twisted portions in the device 10 and the long or loose ends outside of the device 10 should be snipped off with scissors or clips, leaving the ends of strand 30 at 33—33.

Next, with the left-hand, take hold of strand 31 of yarn 29 and with a little jerk break it off between the ends of the apparatus; then with the right-hand take hold of strand 31 of yarn 28 and with a little jerk break it off also between the ends of the apparatus, leaving enough of the strand 31, between the ends of the apparatus, to be twisted together; the twisting operation is accomplished by holding the two ends of strand 31 taut, twisting them around one another from three to five times and then placing the twisted portion in the clamp device 9, and the long ends projecting beyond the clamp device 9 should be cut off, leaving the ends at 34—34.

Next, with the left-hand, take hold of the last remaining strand 32 and in the same manner, as when splicing strands 30 and 31, splice the ends of the strand 32 together placing the twisted ends in the clamp device 8, leaving the loose ends of twisted or spliced strands 32 at 35—35.

Next push in upon buttons 18 thus releasing the three strands which are in the three clamp devices 8, 9 and 10 and the twist will return into the spliced portions of the three strands and it may be aided by rubbing the yarn with the hand from spools 26 and 27 toward the spliced portions.

Now, hold the spliced yarn tight and fix it across the front of the apparatus under the two clamp plates 19, as shown in Fig. 7. There will be two short ends of each of the spliced strands "flying" at each of the places designated A, B and C. With scissors or clips trim off these flying ends so close to the yarn that they cannot be seen, then release the yarn from the clamp plates 19. The process is then complete and a splice is made. The yarn may now be wound all upon one spool.

It will be understood that as many vises or clamp devices, like 8, 9 and 10, may be employed as there are strands in the yarn. For the purpose of this illustration we have considered yarn twisted from three strands, but it might be yarn made up of two or more strands, without departing from the spirit or scope of this process.

By employing our apparatus and process the work is done easily, after the twist is forced out of the yarn and it is separated into strands, and if the yarn is wet; therefore, the operator uses wet portions of the yarn where the strands are separated, with a sponge, suitably moistened with water. However, this wetting is not absolutely necessary.

It is to be noted that the operator can crowd the ends of strands 30, 31 and 32 down into the holding notches 23 if desired, to keep them somewhat out of the way and also to assist in holding the strands taut across the machine.

While we have described the preferred embodiment of our invention, and have illustrated the same in the accompanying drawings, certain minor changes or alterations may appear to one skilled in the art to which this invention relates, during the extensive manufacture of the same and we, therefore, reserve the right to make such alterations or changes as shall fairly fall within the scope of the appended claims.

What we claim is:

1. In an apparatus of the class described, the combination of a frame, including a base and ends, said ends provided with front and horizontal flanges, yarn-holding means carried by said front and horizontal flanges, and strand-holding or clamping means on said frame between said ends.

2. In an apparatus of the class described, the combination of a frame provided with vertical ends, flanges formed upon the front of said ends, said ends terminating at their top in horizontal flanges, horizontal plates carried by the horizontal flanges, clamp plates secured to the front flanges and also secured to the horizontal plates, said horizontal flanges and horizontal plates provided with holding notches, pins positioned upon said horizontal plates, and strand holding and clamping means on the frame between said ends.

3. In an apparatus of the class described, the combination of a frame provided with horizontal plates, each of said plates provided with a pair of holding notches, a clamping plate fastened to each horizontal plate contiguous to its holding notches, and strand-clamping means carried by said frame between said horizontal plates.

4. In an apparatus of the class described, the combination of a frame provided with horizontal plates, a clamping plate and a

pin fastened to each horizontal plate, and strand clamping and holding means on the frame between the plates. and said frame provided with holding notches.

5 In an apparatus of the class described, In testimony whereof we hereunto affix 10 our signatures.

OBADIAH BUTLER.
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