June 4, 1946. E. E. WEST 2,401,535

STRINGING NEEDLES

Original Filed Jan. 26, 1942

FIG. 1.

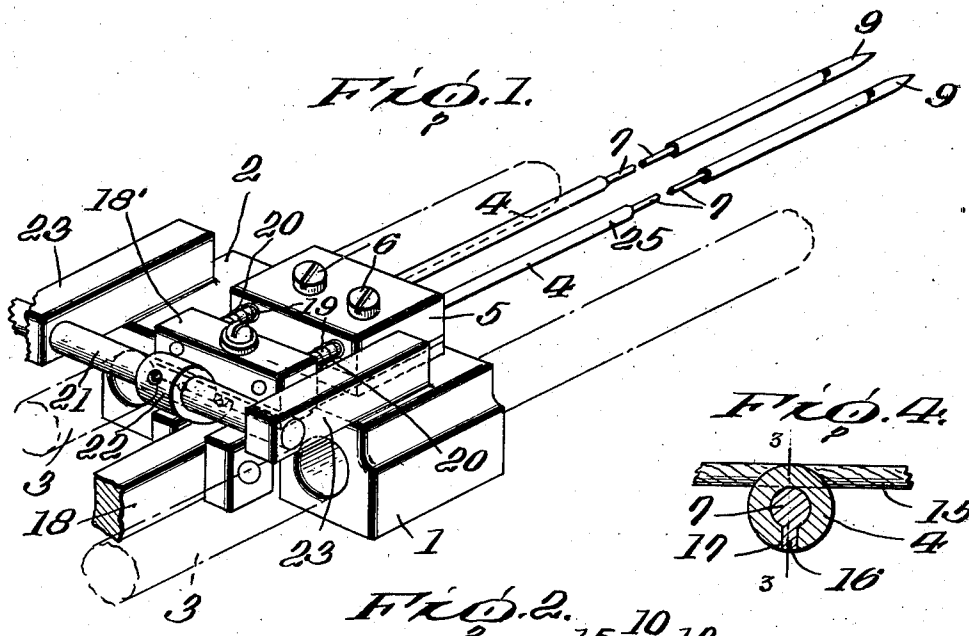


FIG. 4.

FIG. 2.

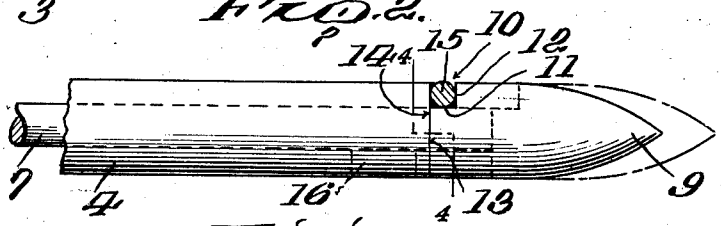


FIG. 3.

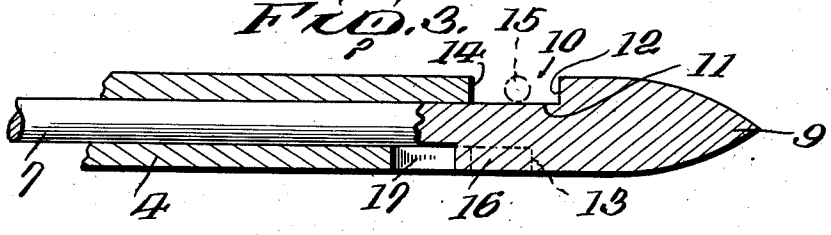
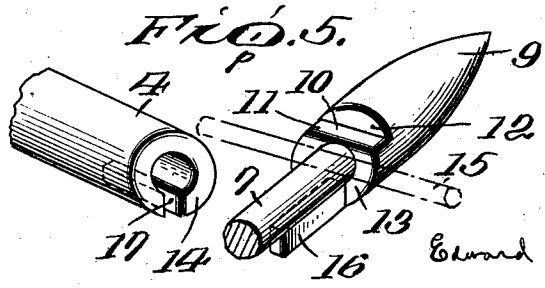


FIG. 5.



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STRINGING NEEDLES

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Original application January 26, 1942, Serial No. 428,281, now Patent No. 2,374,573, dated April 24, 1945. Divided and this application April 23, 1943, Serial No. 484,261

9 Claims. (Cl. 112—222)

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The present invention relates to improvements in stringing needles for stringing hemmed bags and this application is a division of my copending application Serial No. 428,281, filed January 26, 1942 and which has matured into Patent No. 2,374,573 April 24, 1945.

The principal object of the present invention is to provide stringing needles having improved means associated therewith for clamping strings therein to assure of the hemmed bags being accurately strung.

Another object of the invention is to provide a bag stringing needle having a string receiving gap and associated gripping means with means for strengthening the needle at the string receiving gap to prevent breakage thereof at that point or area.

Another object is the provision of stringing needles having improved string gripping means thereon and cooperating means for guiding and assuring of the uniform and accurate clamping of the strings.

These and other objects and advantages will be apparent as the specification is considered with the accompanying drawing, wherein:

Figure 1 is a perspective view of the bag stringing needles and a portion of the operating structure therefor;

Figure 2 is an enlarged side elevation of one of the stringing needles in string gripping position;

Figure 3 is a section on the line 3—3 of Figure 4, showing the needle in string receiving position;

Figure 4 is a section on the line 4—4 of Figure 2, and

Figure 5 is a detached perspective of the cooperating needle member and sleeve, and the guiding means therefor.

Referring more particularly to the drawing, wherein similar reference characters designate like parts throughout the several views, the numeral 1 denotes a stringing needle carriage of a bag stringing machine, not shown, for supporting a pair of spaced needles 25, hereinafter described, for threading draw strings through opposite sides of the hems of tobacco bags and the like, described and illustrated in my Patent No. 2,274,622 dated February 24, 1942. The stringing needle carriage 1 comprises a relatively flat, substantially rectangular needle saddle or plate 2, slidably sleeved on two spaced, horizontally positioned, guide tracks 3, suitably fixed at their outer ends in the top frame of the stringing machine, not shown.

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The needles 25 comprise two relatively movable sleeve members 4, and two pointed members 7 as best shown in Fig. 5. Thus, the longitudinally extending, substantially parallel, hollow sleeve members 4, are rigidly supported at their rear ends by and fixed in a block or plate 5, suitably secured by screws 6 to the top of the needle saddle 2, and two pointed needle members 7, slidably arranged within the sleeves 4 and projecting through the forward ends thereof, for reciprocating movement relative thereto. The forward enlarged ends of the members 7, are pointed, as at 9, and these pointed ends are preferably cut away on the tops thereof, as at 10, to form openings or recesses for receiving draw strings 15 therein. These recesses are formed with flat bottom and end walls 11 and 12 respectively and the forward ends of the sleeves 4 are squared to provide a flat end 14, which serves as one end wall of the recess or cut out portion 10. When the needle members 7 are moved forwardly through the sleeves 4, the relatively flat rear wall 13 of the enlarged pointed portion 9 of each needle is moved away from and out of abutting engagement with the relatively flat forward ends 14 of the sleeves 4, as shown in Figure 3. Conversely movement of the needle members 7 rearwardly to Figure 2 position causes the relatively flat rear walls 13 of the needle points 9 to engage with or abut the flat forward ends 14 of the sleeves. In this position the strings 15 will be clamped in the openings or recesses 10, between the walls 12 and 14, respectively.

It is essential that the string receiving recesses 10 be disposed and retained in the upper faces of the needles 25 at all times, in order to assure of the uniform and accurate positioning and gripping of the string therein. Furthermore considerable trouble has been experienced with the form of needles disclosed in my Patent No. 2,274,622 due to their tendency to break at the string receiving gap. In order to obviate this objection and to prevent relative rotation between the respective needle parts 4 and 7, I provide vertically disposed, keys 16 integrally formed on the lower portion of the members or parts 7. These keys extend longitudinally and rearwardly from the walls 13 of points 9 and are adapted to slidably fit within slots or keyways 17 in the underside and forward ends of the sleeve 4. Thus, during the reciprocation of the needle members through the sleeves, the keys 16 prevent rotating of the needle members 7 relatively to the sleeves, thus maintaining the string receiving openings or recesses in proper position to receive the draw strings.

This interconnecting means also has the advantage of strengthening the needle and preventing breakage thereof at the string receiving gap.

The needle saddle 2 is reciprocated forwardly and rearwardly on the guide tracks 3, to move the needles 25 through the hems of a bag, by any suitable means, such as a vertically disposed lever, not shown, pivotally connected at its upper end to an arm 18, in turn pivoted to the rear end of the saddle 2. The lever is rocked to reciprocate the saddle, through the medium of a cam, not shown, which operating mechanism is described and illustrated in my Patent No. 2,274,622.

The rear ends of the needle members 7 are fixed within a small block 18', mounted on the needle saddle 2 and movably connected by a pair of pins 19 to the saddle block 5, for slight sliding movement relative thereto. Thus the rear ends of the pins 19 are fixed in the block 18' and the forward ends thereof slidably extend into openings, not shown, formed in the block 5. These openings are aligned with the pins 19 and are positioned to one side of and above the fixed rear ends of the sleeves 4, as more particularly shown in Fig. 27 of my Patent 2,274,622. The block 18' is forwardly actuated, against the tension of springs 20, mounted on the pins 19 and bearing at their opposite ends against the saddle 5 and block 18' respectively, by any suitable means, such as a small cam 22 carried by one end of a crank 21, supported in a pair of journal blocks 23, secured to the rear end of needle saddle 2. The free end of the crank 21 is periodically actuated, by any suitable means, not shown, to force the cam 22 against and reciprocate the needle block 18', relative to the needle saddle 2, in an obvious manner.

When the end of a string 15 is fed across the needles, as illustrated in Figure 3, the same is gripped, pulled out to the length necessary for service as a draw string, and cut or severed, by any suitable means not shown, such as that shown and described in my Patent No. 2,274,622 hereinbefore referred to. The needles then advance and carry the severed and gripped string section through the bag hems. While the string is being gripped and pulled to the necessary length, the needle saddle 2 and needles are being moved rearwardly along the guide tracks 3. With the string 15 extending across the needles, the saddle block 18' is moved forwardly by the cam 22, and the needle members 7 are caused to move correspondingly through the needle sleeves 4 so that the needle points 9 are moved away from, or out of engagement with the squared ends 14 of the sleeves 4. The cam 22 thereupon moves out of engagement with the block 18' thus permitting the springs 20 to move the block 18' rearwardly and to retract the needle members 7 in the sleeves 4. The flattened rear ends 13 of the needle points 9 are thus moved into abutting engagement with the flattened forward ends 14 of the sleeves, and the string 15 is securely gripped or clamped between the flat walls or jaws 12 and 14. The needle saddle is then moved forwardly, by the arm 18, along the guide tracks 3, to carry the needles 25, in closed gripping position, through the hems of a bag. As the string 15 is gripped by the needles, during the feeding of the same through the bag hems, the string cannot slip through or be withdrawn from the needles and the bag hems are assured of being accurately and uniformly strung.

Having thus described my invention, what I claim is:

1. A bag stringing machine of the character described having a pair of horizontally disposed stringing needles, each of said needles comprising a pointed shank portion and a cooperating tube sleeved over said shank portion, said shank portion being recessed on the top thereof to provide a string receiving recess, means for moving said shank portions through said cooperating sleeved tubes for clamping a string positioned in said recesses against the ends of said tubes, and guiding means on the bottom of said shank portions engageable with means on the bottom of said tubes for guiding and holding said recesses in string receiving positions and for strengthening the string receiving portion of said shank portions.

2. A bag stringing machine of the character described having a horizontally disposed stringing needle, said needle comprising a pointed shank portion and a cooperating tube sleeved over said shank portion, said shank portion having a string receiving recess in the upper face thereof, said recess having a substantially flat end wall and bottom wall, means for moving said shank portion through said cooperating sleeved tube whereby the string positioned in said recess is engaged by the end of said tube and clamped in said recess, and guiding means on the bottom of said shank portion interengageable with means on the bottom of said tube for guiding and holding said recess in string receiving position and for strengthening the recessed portion of said shank portion.

3. A bag stringing needle mechanism of the character described having a stringing needle, said needle comprising a pair of members, one sleeved over the other and shiftable longitudinally relative to each other, one of said members having a string receiving opening and the other having means cooperating therewith for clamping a string therein prior to the passage of the needle through the hem of a bag, and means longitudinally disposed on said members for holding said string receiving opening in string receiving position and for strengthening the needle, said last mentioned means being diametrically disposed on said pair of members with respect to said string receiving opening.

4. A bag stringing needle mechanism of the character described having a stringing needle, said needle comprising a pair of members, one sleeved over the other and shiftable longitudinally relative to each other, one of said members having a string receiving opening and the other having means cooperating therewith for clamping a string therein prior to the passage of the needle through the hem of a bag, and means on said members diametrically disposed with respect to said opening for holding said string receiving opening in string receiving position and for strengthening the needle, said means comprising interengaging means.

5. A bag stringing needle mechanism of the character described having a stringing needle, said needle comprising a pair of members, one sleeved over the other and shiftable longitudinally relative to each other, one of said members having a string receiving opening on one side thereof and the other having means cooperating therewith for clamping a string therein, said first named member having a key thereon diametrically disposed with respect to and adjacent said string receiving opening for strengthening that

portion of said first member, and cooperating means on the forward end of said second named member adapted to slidably receive said key therein for holding said string receiving opening in string receiving position.

6. A bag stringing needle mechanism of the character described having a pair of stringing needles, each of said needles comprising a shank portion and a cooperating member sleeved over said shank portion, said shank portion having a string receiving opening therein at one side thereof and means on said member cooperating with said opening for clamping a string therein, and separate means on said shank portion and cooperating member respectively for holding said opening in string receiving position, said last mentioned means being diametrically disposed on said shank portion and said cooperating member with respect to said string receiving opening for strengthening said shank portion.

7. A bag stringing needle mechanism of the character described having a stringing needle, said needle comprising a pair of members, one sleeved over the other and shiftable longitudinally relative to each other, one of said members having a rounded end, one of said members having a string receiving opening and the other having means cooperating therewith for clamping a string therein, and each of said members having a separate means thereon for jointly holding said string receiving opening in string receiving position and for strengthening one of said members, each of said last mentioned separate means being diametrically disposed on said members

with respect to said string receiving opening and so arranged that they will at no time overlie said opening.

8. A bag stringing needle comprising a pair of longitudinally interengaging members, one shiftable longitudinally relative to the other, one of said members having a string receiving opening and the other having means cooperating therewith for clamping a string therein, said interengaging members each having a separate means operative jointly to hold the string receiving opening in string receiving position and to strengthen one of said members, each of said last mentioned means being diametrically disposed on said members with respect to said string receiving opening and so arranged that they will at no time overlie said opening.

9. A bag stringing needle comprising a pair of longitudinally interengaging members, one shiftable longitudinally relative to the other, one of said members having a string receiving opening and the other having means cooperating therewith for clamping a string therein, said interengaging members each having a separate means comprising a projection and slot connection respectively operative jointly to hold the string receiving opening in string receiving position and to strengthen one of said members, each of said last mentioned means being diametrically disposed on said members with respect to said string receiving opening and so arranged that they will at no time overlie said opening.

EDWARD E. WEST.