May 27, 1941. C. L. PAGE 2,243,392

SINKER

Filed April 4, 1939

Fig. 1.

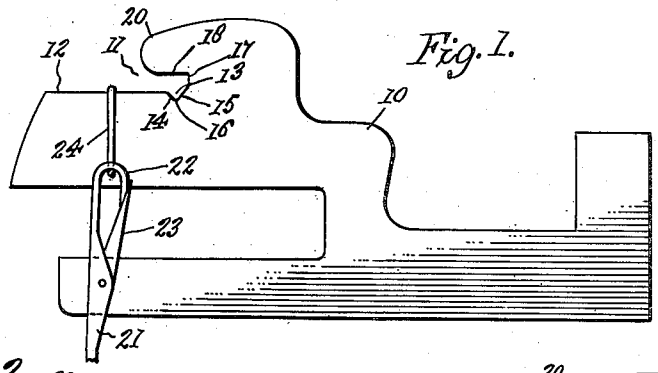


Fig. 2.

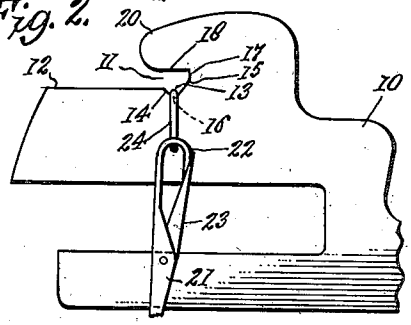


Fig. 4.

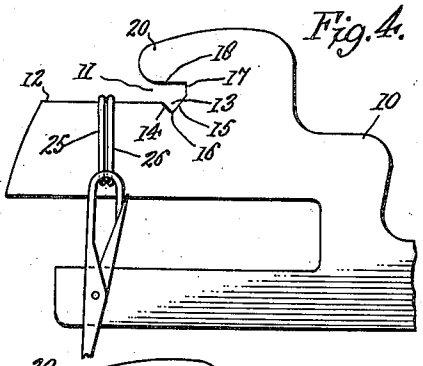


Fig. 3.

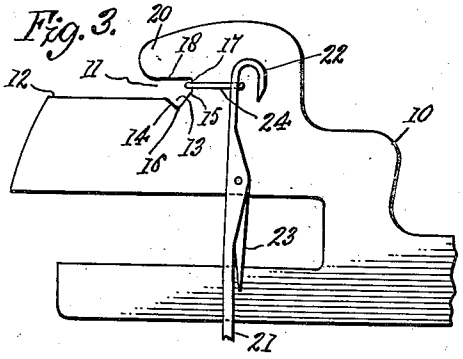
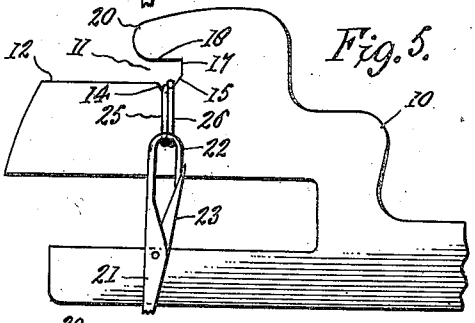


Fig. 5.



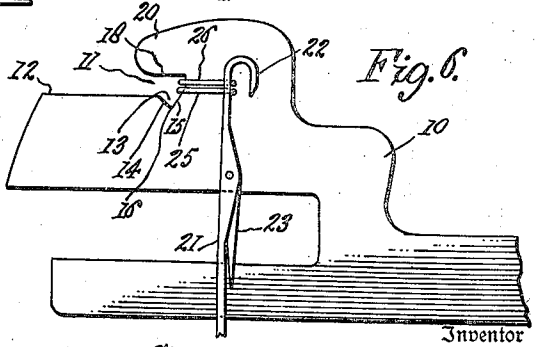


Fig. 6.

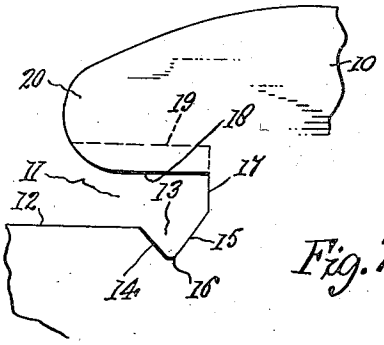


Fig. 7.

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SINKER

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3 Claims. (Cl. 66—107)

The present invention relates to improvements in sinkers and has for an object to provide an improved sinker throat construction for cooperating in a novel manner with the yarn to secure a smoother and finer stitch in the completed fabric whereby the fabric will have a better appearance contributing to its price increment.

Another object of the invention is to provide an improved sinker which will develop in the consequent fabric a tighter closer stitch in which the needle wales are closer together forming a more closely knit material in both the single and the plated work.

A further object of the invention resides in providing an improved sinker in which provision is made for closing the needle wales of the facing yarn while allowing of a longer stitch in the backing yarn thereby securing the benefits of the invention in plating work without causing the backing to in any way impinge upon the closely knit facing or to interfere with its formation.

The invention has for its still further object the securing of these benefits without departing radically from existing structures or methods of operation, the advantages of the invention being gained by a simple modification of the throat contours of the standard sinker.

With the foregoing and other objects in view, the invention will be more fully described hereinafter, and will be more particularly pointed out in the claims appended hereto.

In the drawing, wherein like symbols refer to like or corresponding parts throughout the several views.

Figure 1 is a side elevational view of the improved sinker showing the needle in fragmentary side view as having just drawn the stitch.

Figure 2 is a fragmentary side view of the sinker in a subsequent position with the needle partially raised.

Figure 3 is a similar view of the sinker moved into a further position and with the needle raised higher.

Figure 4 is a fragmentary side view of the sinker in a position similar to Figure 1 but with two yarns on the drawing platform for plating work.

Figure 5 is a view corresponding to Figure 2 only showing the two yarns instead of the single yarn.

Figure 6 corresponds to Figure 3 showing the two yarns instead of the single yarn, and

Figure 7 is a fragmentary enlarged view of the throat of the sinker showing the details of the present invention.

Referring more particularly to the drawing, 10 designates generally a sinker of conventional form and 11 represents generally the throat of such sinker. The drawing platform is represented at 12.

Ordinarily the standard or conventional sinker has a throat with an inner rounded wall. According to the invention the throat of the sinker is modified in the following particulars.

At the inner end of the drawing platform 12 is a depression 13 formed preferably of V-shape, the walls 14 and 15 of which converge downwardly to a bottom apex which is slightly rounded as indicated at 16. The wall 15 rises beyond the wall 14 and is at the back of the throat 11 terminating at its upper end in a vertical wall 17. At its upper end the vertical wall meets the throat roof 18 at substantially right angles. The roof 18 is lowered somewhat compared with the standard sinker. This is best shown in Figure 7 where the broken line 19 represents the normal position of the throat roof. According to my invention I have lowered this roof from 19 to 18. In practice this would be approximately twenty thousandths of an inch, although it might be more or less. The nose of the sinker is indicated at 20. The roof 18 is substantially horizontal as usual. The wall 17 is substantially vertical. The wall 15 will preferably be at an angle substantially thirty degrees to the vertical.

The needle is illustrated at 21, the needle hook at 22 and the needle latch at 23.

In Figures 1, 2 and 3 the single yarn is shown at 24.

In Figures 4, 5 and 6 the double yarns are indicated at 25 and 26.

In the use of the device the drawing platform 12 is substantially horizontal as usual. When knitting single yarn, as shown in Figures 1, 2 and 3, the stitch 24 is first drawn by the needle 21 to its full length on the drawing platform. This condition is shown in Figure 1.

The sinker cam then pushes the sinker forward, allowing the stitch 24 to slide down the inclined wall 14 into the depression 13; which condition is illustrated in Figure 2.

This action releases the strain on the stitch 24 and allows the needle drawing the next stitch to rob part of the yarn forming the stitch 24 previously drawn. There is of course tension on the yarn. As the needle is being raised by the cylinder side cam, the sinker moves forward to the position shown in Figure 3, allowing the stitch 24 to gradually slide up the angular rear wall 15 up to the vertical wall 17 and be held in a hori-

zontal position by the roof or top portion **18**. This type of sinker will materially reduce the number of cuts made in the fabric due to uneven yarn and knots and will produce a finer fabric with more uniform stitches.

When knitting plated work where two yarns **25** and **26** are used, both yarns are initially drawn by the needle to the full length of the stitch on the drawing platform for which see Figure 4. The facing yarn **25** will have considerably more tension than the backing yarn **26**. The yarn **25** is also referred to as the body yarn particularly in hoisery work, while the yarn **26** is also referred to as the splicing yarn or the double sole splicing yarn.

The sinker is then pushed forward as in Figure 5, allowing the backing yarn **26** with little tension to move across the depression **13** in the throat and be raised by the angular rear wall **15**, while the facing yarn **25** with more tension slides down to the bottom **16** of the depression. This action changes the position of the yarns from horizontal on the drawing platform to an angular position on the rear portion of the throat with the backing yarn above the facing yarn; and retains them in that position while the needle is being raised and the sinker moved forward as illustrated in Figure 6.

The shorter stitch drawn on the facing yarn **25** due to the tension drawing the facing yarn down into the depression closes the face of the needle wales and forces the relatively longer stitch of the backing yarn to the back of the fabric; and produces a decided improvement in plating, in which the facing yarn stitch is drawn full and then shortened.

The push-over point of any sinker is the extreme back of the throat, and the cast-off stitch will not be pushed over the hook of the needle unless the next stitch is engaged by this point. Consequently the rear wall **15**, while inclined upwardly and backwardly, is more nearly vertical than horizontal whereby, on shorter throw of the sinker, to cause the yarns or stitches to engage the push-over point, which is the vertical wall **17** adjoining the roof **18**. By bringing the roof **18** down from the normal roof **19**, the yarn or yarns are brought to the push-over point quicker, or at an earlier time point in connection with the movement of the sinker whereby cast-off is effected earlier. This arrangement also puts less strain than normal on the yarn.

The web tends to be carried up by the needle and the roof **18** being lower prevents the web from being carried upwardly by the rising needles as far as permitted in normal practice. In the improved sinker, the stitch-drawing platform is above the top of the cylinder and then has a portion depressed below the top. The full length of the stitch is drawn on the platform, and just as the needle starts to rise, the sinker is moved forward, allowing the stitch to move into the depression **13**. The rising needle and the depression in the sinker relieves the strain on the yarn and allows the needle drawing the next stitch to rob part of the yarn of the former stitch. This action shortens the length of yarn between the needles over the depressions in the sinkers and requires a shorter push of the sinker to rock the cast-off stitch over the hooks of the needles.

The sinkers act on the yarn just drawn in the needles to form the new stitch in pushing the cast-off stitch over the hook of the needle; and consequently the shorter length of yarn between needles requires less push of the sinker to rock the stitch over the needle hooks. In short the stitch is pushed over the hook of the needle at a lower point than normally in relation to the rising needle.

In making double sole work, where one yarn forming the body of the stocking is plated over a reinforcing yarn in the sole, a mechanical device is used to advance the sinkers between the needles carrying the reinforcing yarn to slacken the stitch in this portion. The heavier the yarn used in the double sole the more the sinkers have to be advanced to adjust the stitch. This mechanical device is subject to advancement and wear and it is practically impossible to set such devices exactly alike on every machine.

With the improved form of sinker this mechanical device is not necessary. When the yarns enter the depression the cast-off stitch is tilted sidewise on the sinkers retarding the robbing action. The reinforcing yarn with little tension is not drawn so far in the depression and allowing the body yarn with more tension to rob the stitch more on this yarn by drawing it down to the bottom of the depression.

The rising needle has then reached a point slightly lower than the bottom of the depression in the sinker. The continuous rising of the needle carries the web up against the roof of the sinker where it is held while the sinker completes its forward motion.

The function of the depression **13** is to shorten the stitch after it is drawn to the full length on the drawing platform.

The inclined rear wall **15** of the throat in combination with the vertical wall **17** functions to lift the cast-off stitch over the head of the needle quicker than the old rounded throat. Due to the fact that the inclined wall **15** goes down to a lower point, that is into the bottom of the depression **13**, the inclined wall **15** pushes the cast-off stitch from a lower point than the drawing table. The inclined wall **15** also maintains a plurality of yarns from rolling over and maintains the relative positions of the yarns in plated work. The depression and the inclined wall **15** permit different length of stitches to be drawn.

By dropping the roof **18** the improved sinker stops the fabric from moving up and this contributes with the early push over features of walls **15** and **17** to cast-off the stitch at an earlier period than heretofore.

The result in the fabric is a smoother finer stitch. The fabric itself is consequently smoother and finer. The improved sinker produces a finer-appearing fabric and consequently a commercially more valuable one.

It is obvious that various changes and modifications may be made in the details of construction and design of the above specifically described embodiment of this invention without departing from the spirit thereof, such changes and modifications being restricted only by the scope of the following claims:

What is claimed is:

1. An improved sinker comprising a horizontal drawing platform, a neb spaced above the rear portion of the platform and forming with the platform the throat of the sinker, a push-over wall at the inner upper portion of the throat, said sinker having a depression extending below the horizontal level of said platform at the rear end of the platform within said neb and between said platform and said push-over wall, said depression being substantially V-shaped and composed of downwardly convergent forward and

rearward sloping walls, said forward sloping wall inclining from the rear end of the platform downwardly and rearwardly to the crotch of said V-shaped depression, said rearward sloping wall sloping from said push-over wall downwardly and forwardly to its point of intersection with said front sloping wall, said front sloping wall permitting of the stitch drawn on said drawing platform to slide down into said crotch when the sinker is initially moved forward to permit the needle on the immediate supply side in its stitch-drawing descending movement to rob part of the stitch to thereby produce a shortened stitch, said rear sloping wall on the further inward movement of the sinker and on the raising movement of the needle positioned and adapted to relieve the shortened stitch of any immediate push-over action, said push-over wall being offset vertically rearward of a vertical line through said crotch to delay the push-over action of the shortened stitch with reference to the inward motion of the sinker and to cooperate with the shortened stitch to produce quicker push-over action once said push-over action is begun.

2. An improved sinker comprising a substantially horizontal drawing platform, a neb extending above and in spaced relation to said platform to provide a throat, said platform having at its inner end within said throat a substantially V-shaped depression extending below the level of the platform, said depression comprising downwardly convergent front and rear sloping walls, said sloping walls meeting at a substantial apex to produce a crotch portion for receiving and holding the yarn of the stitch drawn on said drawing platform, and a push-over wall at the inner portion of said throat and at the rear upper end of said rear sloping wall.

3. An improved sinker comprising a substantially horizontal drawing platform having at its rear portion a substantially V-shaped depression with a crotch for receiving and holding the stitch drawn upon said drawing platform, a neb overlying said depression and the rear portion of said platform and forming with the platform a throat, and a push-over wall in said throat at the inner end of said depression and spaced rearwardly back of said crotch.

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