

May 9, 1939.

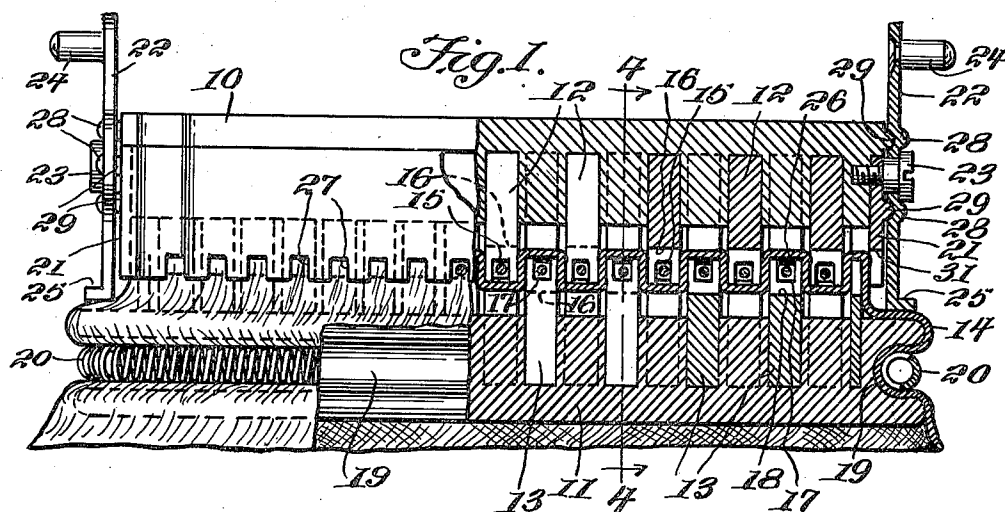
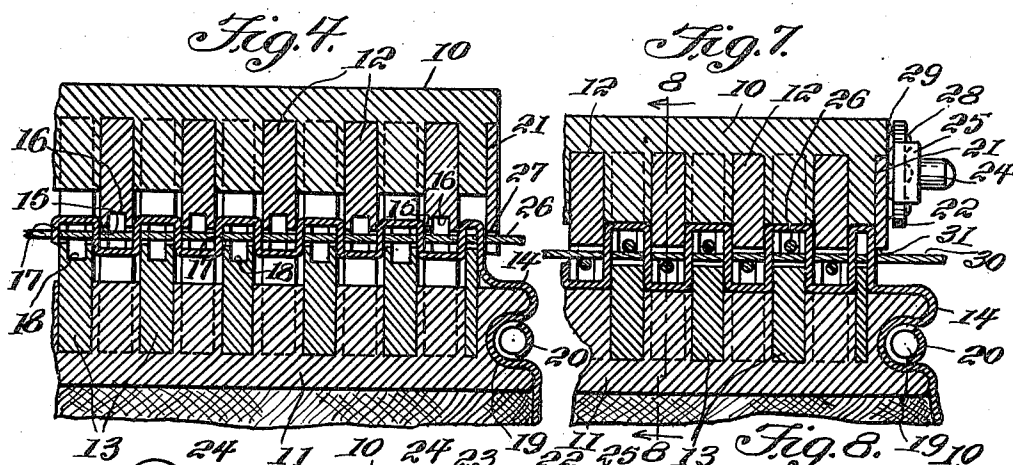
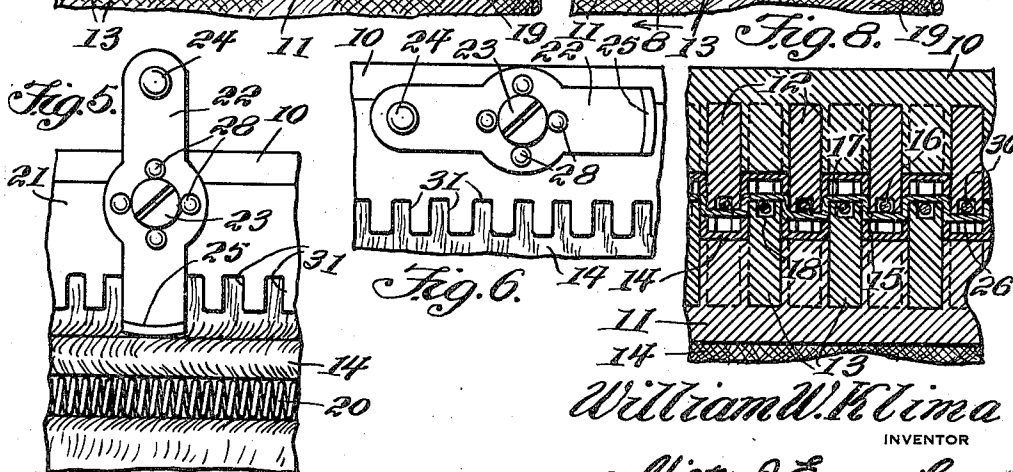
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DARNING DEVICE

Filed Aug. 22, 1938

2 Sheets-Sheet 1



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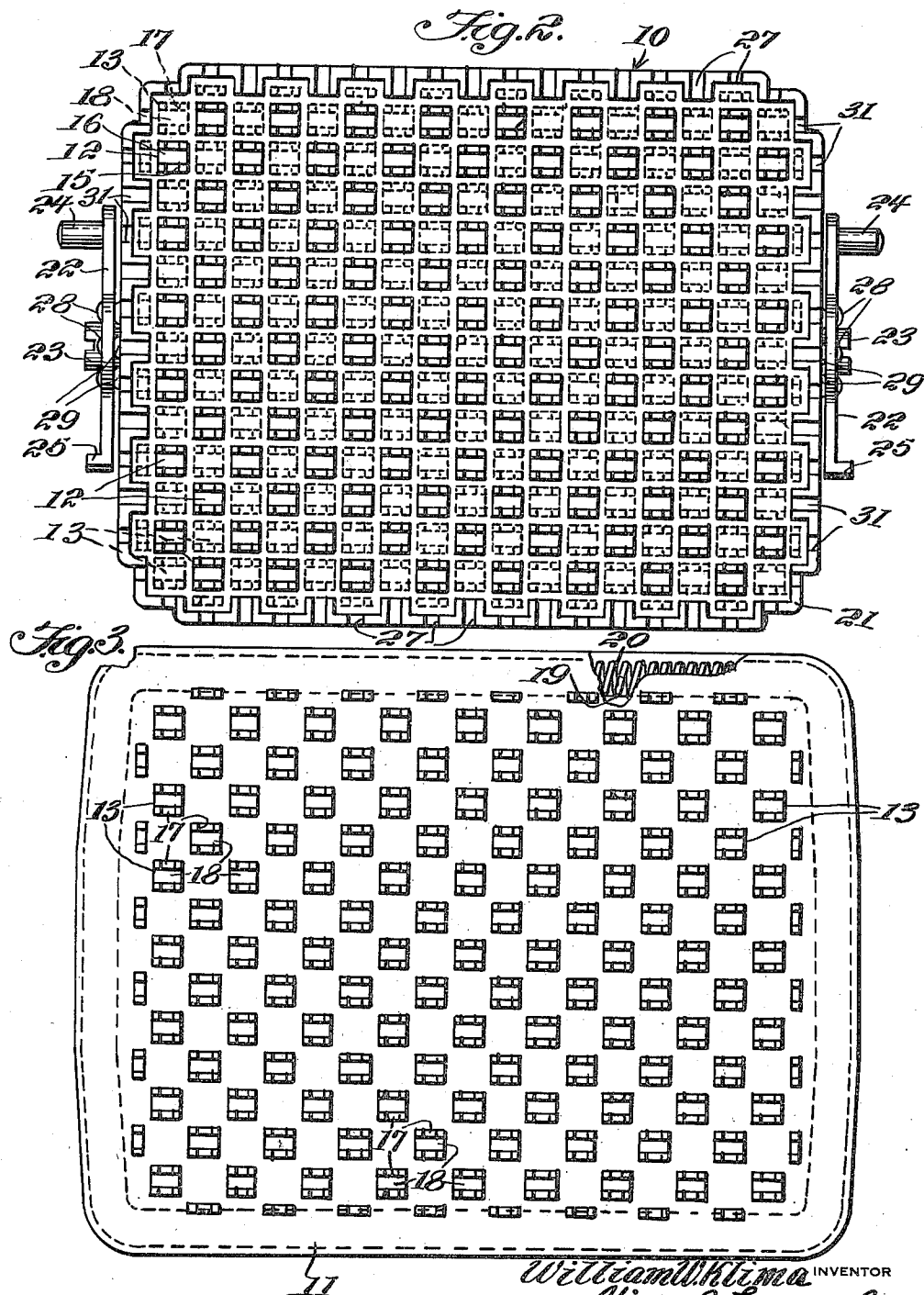
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UNITED STATES PATENT OFFICE

2,157,791

DARNING DEVICE

William W. Klima, Stewart, Minn.

Application August 22, 1938, Serial No. 226,206

3 Claims. (Cl. 139—33.5)

This invention relates to darning devices and has for an object to provide a device of this character for darning holes in socks and other garments and material in quicker time and with less manual effort than conventional devices of this character.

A further object is to provide a darning device having plates provided with interdigitating studs and levers for holding the plates spaced during application of the darning thread in one direction prior to release of said levers so that the plates may be forced together in clamping engagement on the material to form loops in the threads preparatory to applying the binding thread or yarn, the resultant woven patch resembling an ornamental basket weave.

A further object is to provide a darning device of this character which will be formed of a few strong simple and durable parts, which will be inexpensive to manufacture, and which will not easily get out of order.

With the above and other objects in view the invention consists of certain novel details of construction and combinations of parts hereinafter fully described and claimed, it being understood that various modifications may be resorted to within the scope of the appended claims without departing from the spirit or sacrificing any of the advantages of the invention.

In the accompanying drawings forming part of this specification,

Figure 1 is a longitudinal sectional view of the device with parts in elevation, showing the goods and threads or yarns passed through loops formed in the goods.

Figure 2 is a bottom plan view of the top plate of the device and showing in dotted lines the studs of the bottom plate interleaved between the studs of the top plate.

Figure 3 is a top plan view of the bottom plate of the device.

Figure 4 is a fragmentary cross sectional view taken on the line 4—4 of Figure 1.

Figure 5 is a fragmentary end elevation of the device showing one of the levers in position to hold the plates slightly spaced.

Figure 6 is a detail end elevation of the device showing the spacing lever in released position to permit the plates to be forced closely together.

Figure 7 is a fragmentary longitudinal sectional view with the plates forced tightly together to permit insertion of the secondly applied threads.

Figure 8 is a detail cross sectional view taken on the line 8—8 of Figure 7 and showing both

sets of the threads in the goods of the finished product.

Referring now to the drawings in which like characters of reference designate similar parts in the various views, the darning device is shown to comprise upper and lower plates 10 and 11 each having respective studs 12 and 13 arranged in rows transversely and longitudinally of the plates with the studs of both plates staggered relatively to each other so that the plates may be superposed with the studs of one plate interdigitating and spaced from the studs of the opposite plate so that the material 14 to be darned will be deformed to provide loops alternate ones of which extend in opposite directions from the normal plane of the material.

The studs of the upper plate are provided at the tips with shallow notches 15 and with deep notches 16 intersecting the shallow notches at a right angle. The shallow notches of the studs of each row are aligned transversely of the plate and the deep notches of the studs of each row are aligned longitudinally of the plate.

Likewise the studs 13 of the lower plate 11 are provided with shallow notches 17 and with deep notches 18, the shallow notches of the studs of each row being aligned transversely of the plate while the deep notches of each row of studs are aligned longitudinally of the plate.

The bottom plate 11 is provided all around the edge thereof with a groove 19 into which the material 14 is inserted and clamped through the medium of a helical endless spring 20. This yielding clamping of the goods permits the goods to be drawn underneath the spring as the studs of the top plate deform the goods over the studs of the bottom plate to provide alternate elevations and depressions as shown in Figure 1.

A flange 21 depends from the upper plate 10 and the free edge of the flange is substantially in the plane of the free ends of the studs 12. A lever 22 is pivotally mounted intermediate its ends on each end of the flange through the medium of a pivot pin 23. The lever is equipped at one end with a grip 24 and at the opposite end with a cam 25. When the goods or material to be darned is initially laid over the studs 13 of the bottom plate the top plate is then applied to the fabric with the levers 22 extending upright so that the cams 25 thereof clamp the material to the bottom plate and space the studs of the top plate from the bottom plate so that shallow loops and elevations are formed in the goods or material as best shown in Figure 1. In this position of the parts an initial thread or yarn 26 may be

threaded through the registering shallow grooves of the studs 12 and 13 of both plates, there being openings 27 in the sides of the flange 21 to permit the needle being threaded through the shallow grooves of both sets of studs.

Each lever 22 is provided with an annular series of struck out socket members 28 which spring over projections 29 carried by the flange 21. These inter-engaging projections and grooves lock the levers in vertical operative position or in horizontal released position which latter position is best shown in Figure 6. In the released position of the levers 22 the plates may be pressed closely together to align the deep grooves in both sets of studs 12, and 13 with each other so that a yarn or thread 30, best shown in Figures 7 and 8 may be threaded through these grooves and through the alternate deep depressions and elevations produced in the goods or material as the plates are moved closely together. There are openings 31 formed in the ends of the flange 21 to permit the darning needle and thread to be trained through the deep slots of the studs, to intersect the initially applied threads 26 at right angles. When both sets of threads have been applied the top plate may be removed and the woven goods or material disengaged from the lower plate by removing the resilient clamp spring 20. When the material is stretched out it will be found that the woven spots present the appearance of an ornamental basketweave.

Since the operation of the parts has been described as the description of the parts progressed it is thought that the invention will be fully understood without further explanation.

What is claimed is:

1. Darning apparatus comprising a pair of plates having interdigitating studs, the studs being provided with crossed grooves of respectively different depths for the passage of the darning needle and thread therethrough, a flange on one of the plates, levers on the flange having cam ends adapted to engage the other plate and space

the plates so that all of the grooves of one depth will be aligned, the levers being adapted to be swung back upon the flange to permit the plates being moved closer together so that all the studs of another depth will be aligned, and means for yieldably holding the work to be patched on one of the plates.

2. Darning apparatus comprising a pair of plates having interdigitating studs, the studs being provided with crossed grooves of respectively different depths for the passage of the darning needle and thread therethrough, a flange on one of the plates, levers on the flange having cam ends adapted to engage the other plate and space the plates so that all of the grooves of one depth will be aligned, the levers being adapted to be swung back upon the flange to permit the plates being moved closer together so that all the studs of another depth will be aligned, one of the plates having a groove, and an endless helical spring seated in said groove for yieldably clamping the work to be darned in said groove.

3. A darning apparatus comprising a pair of plates, studs on the plates adapted to interdigitate when the plates are superposed one upon the other, there being grooves perpendicular to each other in the end of each stud and of respectively different depths, a flange extending from one of the plates, levers carried by the flange and movable into engagement with the other plate for spacing the plates apart so that all of the grooves of one specific depth align, said levers being movable to released position to permit said plates being moved closer together so that all of the slots of the other specific depth align, inter-fitting means between the levers and the flange for yieldably holding the levers in operative or in released position, there being a groove in the peripheral edge of one of the plates, and an endless helical spring for yieldably clamping the work to be darned in said groove.

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