June 1, 1954 E. VON ULLISPERGER, SR., ET AL 2,679,959

NEEDLE THREADER

Filed Sept. 23, 1952 2 Sheets-Sheet 1

FIG. 1

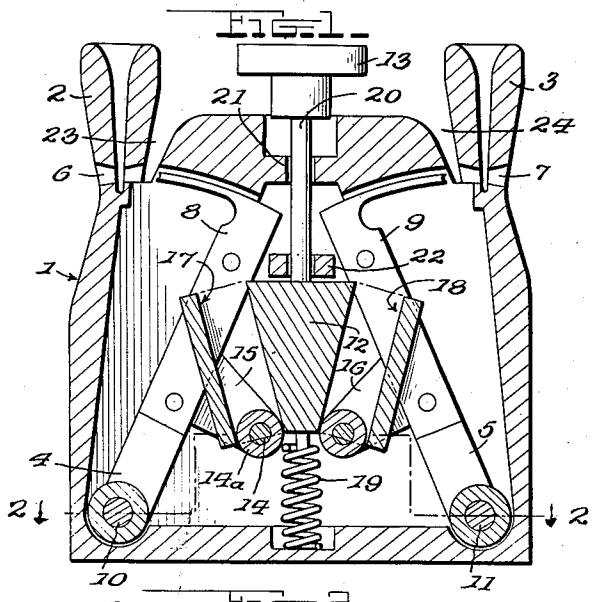


FIG. 2

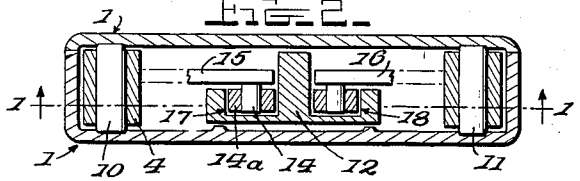


FIG. 3

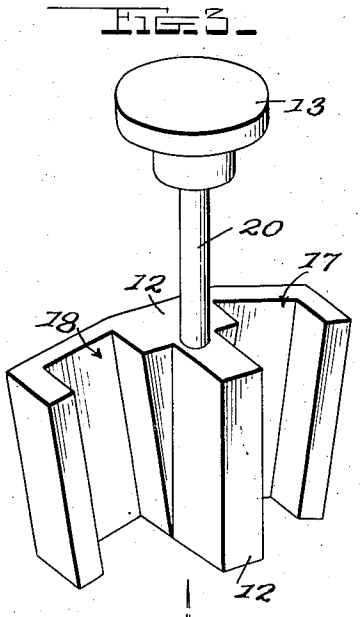


FIG. 4

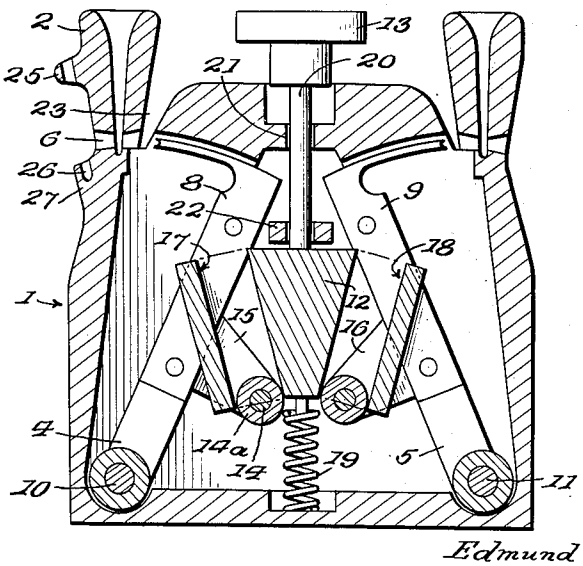
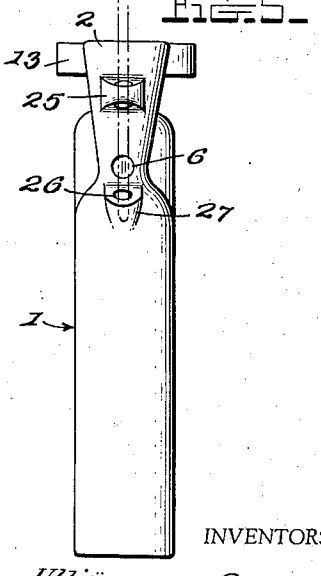


FIG. 5



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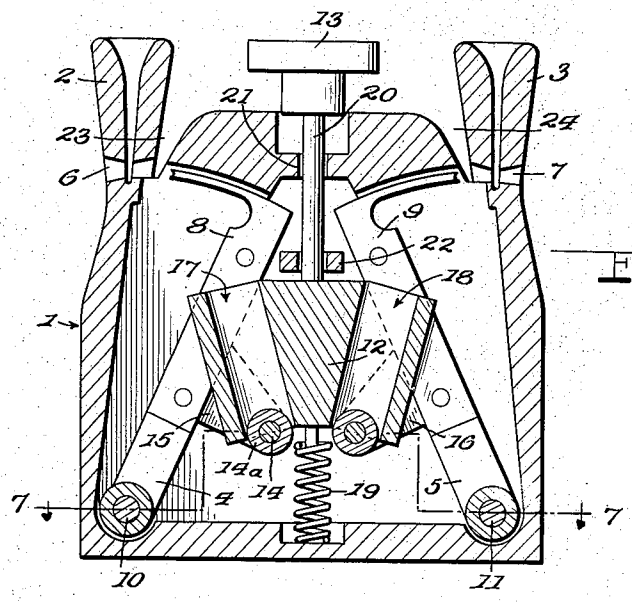


FIG. 6

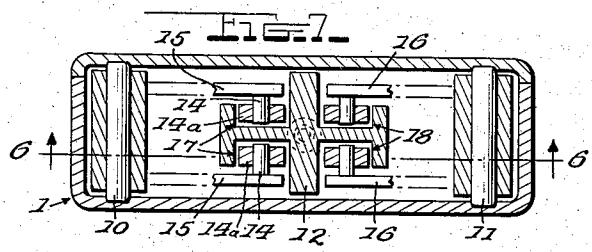


FIG. 7

FIG. 8

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NEEDLE THREADER

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8 Claims. (Cl. 223—99)

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This invention relates to a needle threader in which, with the help of a threading device, a thread can be automatically passed through the eye of a needle, awl or the like.

The automatic needle threader operates in such manner than an arc shaped guided threading device is rotatable about a pivot point and can be operated, by means of an operating member against the action of a spring to perform a threading operation. The thread laid in the path of the threading device is passed through the correspondingly arranged sewing needle, viz. the eye of the same by operation of the said device.

Since the guides for the threading device and also for the needle holder must be arranged correctly in relation to one another, in order that an automatic threading operation should be possible, the threading device can, in practice, only be used for a predetermined range of needle sizes. However, a series of needle sizes are commonly in use, commencing from the finest sewing needle up to the largest darning needle. For the individual needle groups in previously known devices a special needle threader was necessary for each size.

The device according to the invention also takes this necessity into account. This is accomplished by providing a threading device for each receiver for the needle groups to be threaded. The separate threaders are mounted together in a single housing and the separate threading devices can be operated by a common operating member.

With advantage, the receiving parts for the needles may be arranged at opposite ends of the housing and between them is the common operating member. In this manner a handy needle threader is obtained which permits needles in a substantially increased range of sizes, particularly the various sizes of darning needles to be threaded. One receiving part is provided for needles of the larger kind, e. g., darning needles, while the other part is provided exclusively for the smaller needles. Since each receiving part is provided with its own threading device or corresponding size, fault free and reliable operation is guaranteed. Furthermore, the whole housing is of small and convenient size, and for all the threading devices, only a single operating member is required. The whole apparatus only requires a small overall size compared with prior needle threading devices of a similar type.

Also, the cost is only slightly higher than prior threading apparatuses having a reduced range of usefulness.

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The independently arranged receiving parts for the needles of various sizes are advantageously made like funnels which towards their lower ends become of oblong, e. g., rectangular section, suited to the flattening of the eye end of the needle. By this means it is sought to ensure that the needle is located in the right position in relation to the threading device, with the threading device movable in the direction of the shorter side of the rectangular funnel cross section. The pivotal points of the threading devices, which advantageously are made like flat needles, lie in the axis of the corresponding funnel. The common operating member operates simultaneously on the several threading devices which are in use, preferably with the inter-position of a wedge guide.

For example, the threading device may engage in the wedge guides of the operating member by means of rollers, which wedge guide may move in the vertical direction, and suitable means is carried by the operating member and extends exteriorly of the housing to facilitate movement of the operating member.

In the drawings is illustrated a constructional example of the device according to the invention.

Figure 1 is a vertical longitudinal section of a threading device constructed in accordance with the invention;

Figure 2 is a horizontal cross-section on the line II—II of Figure 1;

Figure 3 shows in perspective a detail of the device,

Figure 4 is a vertical longitudinal sectional view of a modified form of the invention showing an additional needle-receiving support;

Figure 5 is an end elevational view of the invention shown in Figure 4;

Figure 6 is a vertical longitudinal sectional view of another form of the invention taken on line VI—VI of Figure 7;

Figure 7 is a horizontal sectional view taken on line VII—VII of Figure 6, showing the needle threading devices arranged in pairs, one behind the other with a pair at each end of the housing; and

Figure 8 is a perspective view of the operating member for the two pairs of needle threading devices of Figures 6 and 7.

The constructional example illustrated is an automatic needle threader having two threading devices and a common operating member.

On the housing 1 are two reception devices for the sewing needles, namely, the funnels 2 and 3, arranged in spaced relation, and respectively as-

sociated with threading devices 4 and 5. The reception funnels 2 and 3 have tapering bores of progressively increasing diameter in the upward direction and in the downward direction become of rectangular cross section, so that needles inserted with their eye ends into the openings 6 and 7 come into the right position in relation to the corresponding flat needle threaders 8 and 9.

The threading devices 4 and 5 in the form of levers are rotatable about the bearings 10 and 11 which respectively lie in the axes of the funnels 2 and 3. The two levers 4 and 5 are simultaneously operated with the aid of a wedge block 12 which is connected to a knob 13. The connection of the levers 4 and 5 with the guide block 12 is effected, for example, by pins 14 having rollers 14a which are arranged on arms 15 and 16 of levers 4 and 5, respectively. The rollers 14a engage in guide grooves 17 and 18 of the guide block 12 and slide therein. The guide block is subject to the action of a spring 19. The knob 13 is connected with the guide block 12 by a stem 20 which is guided in the housing for reciprocating movements as at 21 and 22.

The funnel 3 is provided, for example, for the smaller needle sizes, e. g., for the sizes 0–3, while the funnel 2 is suitable for the larger sizes, e. g., 5–8. In front of each of the funnels are cut away portions 23 and 24 which extend into the path of the flat needle threaders 8 and 9, respectively, and in which the thread is laid.

The mechanisms according to the present invention may be constructed with more than two receiving parts with corresponding threading devices, all the threading devices being operated by a common operating member. Also, one may provide two funnels one behind the other, with the guide block 12 constructed symmetrically in the other direction. Further the arrangement may be such that the funnels are arranged cross wise.

Furthermore, more than two receiving parts, which lie in the same plane, can be arranged, f. i., for large darning needles which cannot be put in the usual funnels. The reception device need not be a complete funnel, but can consist only of an eye 25 and a cavity 26 on a lug 27, these parts being so arranged that the needle eye comes in the height of the openings 6 or 7. By pressing down the stem 20 a little deeper than usual the corresponding end of the flat threading needle 8 or 9 will push the thread through the openings 6 or 7 and then through the needle guided by the eye 25 and cavity 26.

While there is herein shown and described the preferred embodiment of the invention, it is nevertheless to be understood that minor changes may be made therein without departing from the spirit and scope of the invention as claimed.

What is claimed is:

1. A needle threader comprising a housing, at least two needle receiving and supporting devices carried by the housing, a needle threading member for each needle supporting device, a single operating member for the needle threading members, the needle receiving and supporting devices being of funnel shape and respectively arranged at opposite ends of the housing and the operating member for the needle threaders being disposed between the threaders, said operating member being vertically movable and normally biased in an upward direction, the needle threading members each comprising a lever pivoted at its lower end below and in vertical alignment with its associated funnel, the operating member having an inclined guide groove at each side thereof and an arm extending from each lever and having a roller at the end thereof disposed in an adjacent guide groove whereby upon depression of the operating member against biasing action thereon the levers of the needle threading members are moved on their pivotal mountings.

2. A needle threader as in claim 1, wherein the operating member has a handle to facilitate lowering movement thereof.

3. A needle threading device comprising a housing, a needle receiving support at each upper end of the housing, a needle threader associated with each support and including a lever pivotally mounted at its lower end and having a thread engaging member at its upper end adapted to move a thread through the eye of a needle positionable in the adjacent support, a single depressible operating member between said levers including an inclined movable guide slidably engaging the levers intermediate their ends whereby depression of the operating members moves the upper ends of the levers away from each other and towards the needle-receiving supports for simultaneous needle threading activities.

4. A needle threading device comprising a housing, a needle receiving support at each upper end of the housing, a needle threader associated with each support and including a lever pivotally mounted at its lower end and having a thread engaging member at its upper end adapted to move a thread through the eye of a needle positionable in the adjacent support, a single operating member between said levers including an inclined movable guide slidably engaging the levers intermediate their ends whereby depression of the operating member moves the upper ends of the levers away from each other and towards the needle-receiving supports for simultaneous needle threading activities, said operating member including a vertically slidable upwardly biased block.

5. A needle threading device comprising a housing, a needle receiving support at each upper end of the housing, a needle threader associated with each support and including a lever pivotally mounted at its lower end and having a thread engaging member at its upper end to move a thread through the eye of a needle in the adjacent support, a single depressible operating member between said levers and an inclined movable guide connection between the levers and operating member whereby depression of the operating member moves the upper ends of the levers away from each other and towards the needle-receiving supports for simultaneous needle threading activities, said operating member including a vertically slidable upwardly biased block the movable guide connections between the block and levers including inclined guide grooves in the block and an arm extending from each lever having its outer end disposed in the adjacent guide groove.

6. A needle threader as in claim 1, wherein a transverse opening is provided at the lower end of the funnel to receive the eye end of a needle positionable in the funnel, a protuberance at the outer side of the funnel above said transverse opening and having a needle passage opening therein, a lug on the housing subjacent the transverse opening with a cavity in the upper end thereof whereby the eye end of a needle may be passed through the protuberance and supported in the lug with the eye of the needle aligned with the transverse opening laterally of the funnel.

7. A needle threader as in claim 1, wherein the

needle supporting devices comprise two pairs with a pair at each end of the housing and a needle threading member for each needle support, the inclined guide grooves in the operating member being arranged in opposed pairs for coaction with an arm and roller of an adjacent needle threading lever.

8. A needle threader comprising a housing, a needle-receiving and supporting device carried by the upper end of the housing and being of funnel shape, a needle threading member for the needle threading device, an operating member for the needle threading member positioned laterally thereof and extending downwardly into the housing from the upper end of the housing, said operating member being vertically movable and normally biased in an upward direction, the needle threading member comprising a lever pivoted at its lower end at the lower end of the housing with said lever pivot in vertical alignment with said funnel, the operating member having an inclined guide groove at one side thereof and an arm extending from said lever and having a roller at the end thereof disposed in said guide groove whereby upon depression of the operating member against biasing action thereon the lever of the needle threading member is moved on its pivotal mounting.

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