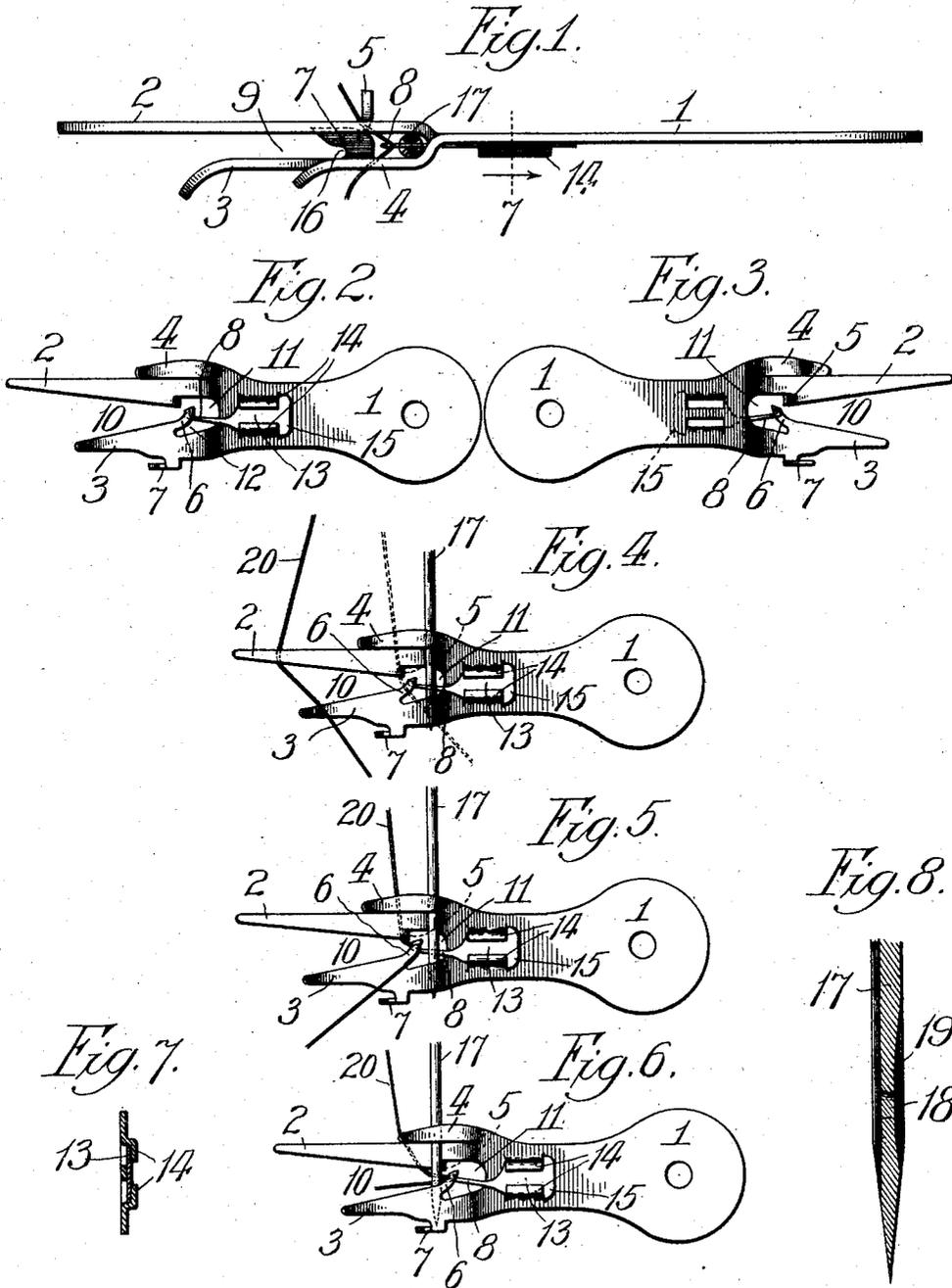


J. H. BOYE.
 NEEDLE THREADER.
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905,641.

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UNITED STATES PATENT OFFICE.

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NEEDLE-THREADER.

No. 905,641.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, JAMES H. BOYE, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Needle-Threaders, of which the following is a specification.

This invention relates particularly to devices for use in threading the needles of sewing-machines, although the device is not necessarily limited to use in connection with sewing-machine needles.

The primary object is to provide a device of the character indicated which will enable the needle-threading operation to be performed with facility and certainty by certain simple manipulations which require little skill or care in their performance.

The invention is illustrated in its preferred embodiment in the accompanying drawings, in which—

Figure 1 represents a plan view, on an enlarged scale, of the improved needle-threader in its relation to a needle (shown in section), showing the thread in engagement with the thread-hook preparatory to being drawn through the needle-eye; Fig. 2, a front side view of the threader; Fig. 3, a rear side view of the same; Figs. 4, 5 and 6, views illustrating the steps by which the thread is brought into engagement with the thread-hook and then drawn through the needle-eye; Fig. 7, a sectional view showing a detail of the thread-hook connecting-means; and Fig. 8, an enlarged broken sectional view of a sewing-machine needle.

In the construction illustrated, the threader comprises, generally stated, a shank, or handle, 1; a relatively long upper main furcation 2; a relatively short lower main furcation 3; a still shorter auxiliary needle-engaging furcation 4 above the furcation 2; a thread-stop 5; a guard-arm or cam 6; a gage-arm 7; and a thread-hook 8.

According to the construction illustrated the parts are formed integrally with each other with the exception of the thread-hook, which is separately formed and detachably mounted. The device is formed from sheet-metal (except the thread-hook), the metal being longitudinally split, or sheared, at one end to provide the furcations mentioned. The furcations 3 and 4 are struck or offset laterally in one direction from the plane of the shank, or handle, 1; and the furcation 2

is struck or offset laterally in the opposite direction. Thus there is provided, as clearly shown in Fig. 1, a vertical needle-receiving space 9. The extremities of the furcations 3 and 4 are preferably curved away from the plane of the long furcation 2, as shown.

The furcation 3 is preferably wholly below the furcation 2, and the lower edge of the furcation 2 and the upper edge of the furcation 3 diverge from near their base-ports, thus affording a horizontal space 10 for the entry of a horizontal portion of the thread. Near the junction of the furcations 2 and 3, the slot or space 10 widens into a bay or opening 11, affording space for manipulation of the thread in bringing it into engagement with the thread-hook 8. A portion of the metal at the lower edge of the base-portion of the furcation 2 is sheared and bent laterally to form the stop 5. A portion of the metal is sheared from the upper base portion of the furcation 3 and curved upwardly to form the guard, or cam-arm, 6. Said cam-arm 6 thus extends towards the shank 1 and is curved upwardly, thereby providing the slot 12 beneath the arm 6, said slot 12 really forming a branch or bay of the opening 11.

The thread-hook 8 is preferably formed of flat spring steel and has an enlarged shank 13 received between guides 14 formed by punching portions of the metal of the shank 1 through, as shown in Fig. 7. The base portion of the shank 13 of the thread-hook is provided with a head 15 which limits the movement of the thread-hook when it is forced between the guide-flanges 14 to the operative position. The operative end of the thread-hook projects into the crotch between the main furcations 2 and 3 of the device, and the hook-portion lies between the guard-arm 6 and the plane of the furcation 2, as will be best understood from Figs. 1 and 2.

The gage-member 7 extends across the bottom of the vertical channel 9, and is provided at its front edge with a recess 16 which receives the point-portion of the needle during the initial portion of the operation of applying the device to a needle.

In the operation of the device, the needle-threader is disposed so as to extend horizontally while lying in a vertical plane, and is moved to cause the needle 17 of the sew-

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ing-machine to be received in the vertical channel 9, the point-portion of the needle first encountering the groove 16 of the gage, and then, as the threader is lowered, riding over the gage 7. In this operation, the point of the thread-hook usually is in position to encounter either the eye 18 (Fig. 8) of the needle, or the groove 19 into which the eye opens, thus rendering the manipulation of entering the thread-hook into the eye of the needle very easy. In some instances, however, as where the eye is high above the needle-point, it is necessary to raise the threader with relation to the needle, which movement is permitted by reason of the fact that the rear edge of the gage-member is in front of the thread-hook, as clearly shown in Fig. 1, thus enabling the threader to be raised until the thread-hook is in position to enter the needle-eye. After the thread-hook has been entered, the thread 20, which depends from the arm of the sewing-machine head, is passed beneath the relatively long furcation 2, through the horizontal channel 10 until the vertical portion of the thread encounters the stop 5. In the further movement of the end portion of the thread, the thread rides on the cam or guard-arm 6 and is thereby carried over the hook of the needle, and, by a reverse movement of the thread, the thread is caused to ride beneath the cam 6 and be brought with certainty into engagement with the thread-hook. A simple withdrawal of the threader from the needle will operate to draw the thread through the eye of the needle.

It is observed that the use of the relatively short furcation 4 above the long furcation 2 aids in maintaining the threader in a vertical plane and facilitates the operation to the extent of centering the thread-hook with certainty with relation to the eye of the needle. In some cases, however, the furcation 4 may be omitted. So, also, the use of the gage-member 7 and the thread-stop 5 may be omitted. All of the features shown and described are valuable features, however, and the precise form of invention shown is preferred, although not indispensable.

The instrument is cheap, and its operation is easy and certain, requiring no special effort at steadiness on the part of the operator.

What I regard as new, and desire to secure by Letters Patent, is—

1. A needle-threader, comprising a shank carrying furcations which lie in different planes to adapt them to embrace a needle, a thread-hook projecting into the needle-receiving space between the planes of said furcation adapted to limit the movement of said furcations, and a thread-stop adjacent to the base portion of said last-named furcation adapted to limit the movement of the vertical portion of the thread as the thread is being carried beneath said last-

named furcation and over the hook-portion of the needle-hook.

2. A needle-threader comprising a shank, carrying a furcation adapted to engage the side of a needle, a thread-hook having its operative end near the base of and at one side of said furcation, a gage-member located beneath said furcation on the same side thereof as said thread-hook, said gage-member being constructed to permit it to pass in front of the needle-point when the threader is raised to bring the thread-hook to the level of the needle-eye.

3. A needle-threader, comprising a shank carrying a relatively long furcation and a lower shorter furcation which lie in different planes to adapt them to embrace a needle, a thread-stop projecting laterally from the base-portion of said first-named furcation, and a thread-hook projecting into the crotch between said furcations.

4. A needle-threader, comprising a shank, upper and lower furcations carried thereby which lie in different planes to adapt them to embrace a needle, a laterally projecting thread-stop near the base of the upper furcation, a thread-hook projecting into the needle-receiving space between the furcations, and a guard-arm carried by the lower furcation and located in position to carry the thread over the hook-portion of the thread-hook as the thread is moved to bring it into engagement with the thread-hook.

5. A needle-threader, comprising a shank, a relatively long furcation carried by said shank and struck in one direction from the plane of said shank, relatively short upper and lower furcations struck in the opposite direction from the plane of said shank, a needle projecting into the crotch between the said first-named furcation and said lower furcation, and a guard carried by the lower furcation, over which the thread may ride while being passed to the position for engagement with the thread-hook.

6. A needle-threader, comprising a shank, a lower furcation carried by said shank, a relatively long furcation above said first-named furcation and carried by said shank, a relatively short furcation above said second-named furcation and carried by said shank, said first-named and third-named furcations lying in one vertical plane and said second-named furcation lying in another vertical plane to provide a vertical channel for the needle, a thread-hook projecting into the crotch between said first-named furcation and said second-named furcation, a guard carried by said first-named furcation and lying adjacent to the operative end of the thread-hook, and a thread-stop carried by said second-named furcation.

7. A needle-threader, comprising a shank, a lower furcation carried by said shank, a relatively long furcation above said first-

named furcation and carried by said shank, a relatively short furcation above said second-named furcation and carried by said shank, said first-named and third-named
 5 furcations lying in one vertical plane and said second-named furcation lying in another vertical plane to provide a vertical channel for the needle, a thread-hook projecting into the crotch between said first-
 10 named furcation and said second-named furcation, a guard carried by said first-named furcation and lying adjacent to the operative end of the thread-hook, a thread-stop
 15 carried by said second-named furcation, and a gage-member carried by the lower portion of said first-named furcation, over which the point of the needle may ride.

8. A needle-threader, comprising a shank carrying furcations lying in different vertical
 20 planes to provide a needle-receiving space, a thread-hook extending into said space, and a gage-member at the bottom of said space, having a recessed front edge adapted to receive the point of the needle,
 25 the gage-member being constructed to permit it to pass in front of the needle-point

when the threader is raised to bring the thread-hook to the level of needle-eye.

9. A needle-threader comprising a shank, a furcation with a thread-stop near its base,
 30 a thread-hook having its operative end near the base of and at one side of said furcation and a guard on the opposite side of the operative end of the thread-hook, whereby the
 35 thread may be carried over and then drawn beneath said guard to engage the thread-hook.

10. A needle-threader comprising a shank, a furcation with a thread-stop near its base,
 40 a thread-hook having its operative end near the base of and at one side of said furcation, a guard on the opposite side of the operative end of the thread-hook, whereby the thread
 45 may be carried over and then drawn beneath said guard to engage the thread-hook, and a gage-member located some distance beneath the thread-hook.

JAMES H. BOYE.

In presence of—

W. T. JONES,

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