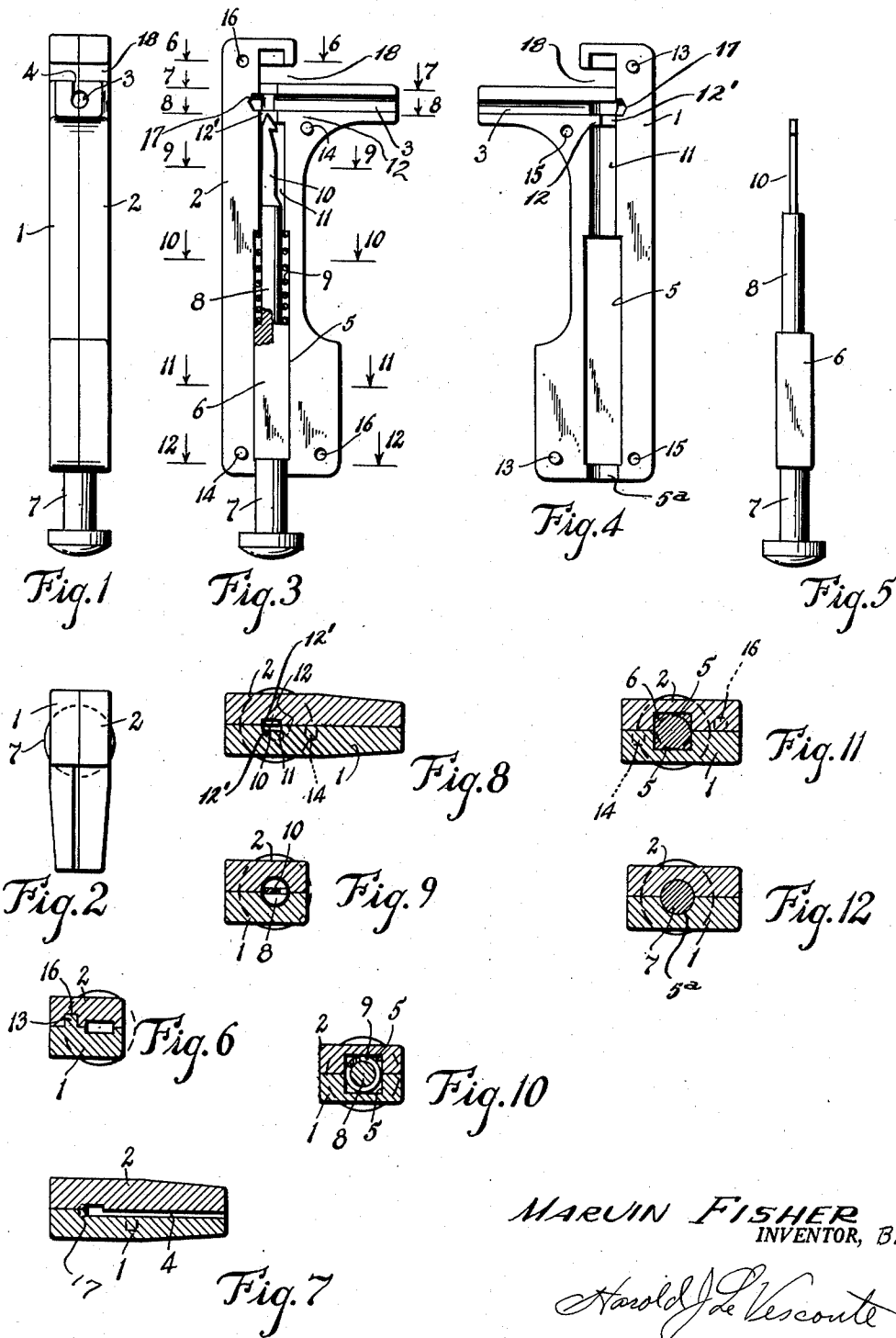


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NEEDLE THREADER

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NEEDLE THREADER

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1 Claim. (Cl. 223—99)

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This invention relates to device for threading needles and the principal object of the invention is to provide a needle threading device which may be readily used by any person and which additionally is so constructed and arranged that it may be used by a person having little or no eyesight to thread a needle quickly and surely.

Another object of the invention is to provide a needle threading device of the type employing a hook to enter the eye of a needle, and to draw a thread through the needle-eye upon retraction in which the hook is at all times confined between guiding means disposed closely adjacent to the needle-eye.

Still another object of the invention is to provide a needle threading device of the above character which is simple in construction and economical to manufacture, and which is of such size as to be readily recognized by touch and of such shape that a sightless person can readily grasp it and position it for use.

With the above objects in view, together with such other objects and advantages as may subsequently appear, the invention resides in the parts, and in the construction, combination and arrangement of parts hereinafter described and illustrated, by way of example in the following specification, reference being had to the accompanying drawings forming a part of said specification and in which:

Fig. 1 is a top plan view of a needle threader embodying the present invention,

Fig. 2 is an end elevation of the needle threader as viewed from the upper end of Fig. 1,

Fig. 3 is a plan view of the meeting or internal face of one of the body members; the threading hook and its operating parts being shown assembled therein,

Fig. 4 is a similar view of the other body member,

Fig. 5 is an elevation of the hook and its operating means, the view being taken from the right hand side of the hook and its operating means shown in Fig. 1, and

Figs. 6 to 12, both inclusive, are transverse sectional views of the assembled threading device taken on the lines 6—6, 7—7, 8—8, 9—9, 10—10, 11—11, and 12—12 of Fig. 3.

Referring to the illustrated embodiment of the invention, the body of the device comprises a pair of body members 1 and 2 of identical side outline but having their mating faces oppositely arranged so that they combine to form, first a guide means for the threading hook and its operating means, second, the needle positioning

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means, and third, a thread escape means. Each of the body members on its inner or meeting face is provided with a transverse groove, which grooves combine as shown in Fig. 1 to form a needle receiving socket means 3. The member 1 adjacent the socket 3 is cut away below the plane of the mating faces of the body members to combine with a corresponding face on the body member 2 to form a thread escape slot 4 which is offset from the plane of the meeting faces of the body members 1 and 2.

Extending longitudinally of each of the body members are oppositely disposed shallow recesses 5, 5 which, as shown in Fig. 11, combine to form a square guideway for the square portion 6 of a hook-carrying plunger 7. Adjacent the end of the body members opposite the end having the needle socket the guideway 5 terminates in a short circular portion 5a which engages the circular portion of the plunger 7. At its opposite end, the plunger member 7 is formed with a circular portion 8 of lesser diameter than the square portion 6, upon which is mounted a compression spring 9 which is housed within a portion of the square guideway formed by the grooves 5, 5 and which spring reacts between junctures of the portions 8 and 6 of the plunger at one end and by the shoulder formed by the juncture of the guideways 5, 5 with grooves 11, 11, forming a guideway for the portion 8 of the plunger. At its extreme end, the plunger carries a hook 10 formed of extremely thin sheet metal and when the device is at rest, the spring operates to retract the plunger until the hook is clear of the needle socket 3. The grooves 11, 11 terminate just short of the needle socket 3 and is separated from the needle socket by walls 12, 12 which extend across the ends of the grooves 11, 11, closely adjacent the needle socket. These walls in the region of the path of movement of the hook 10 are cut away slightly as at 12', 12' to form a guiding aperture for the hook 10 which is just wide enough to receive the hook and which is centrally disposed with respect to the plane of the meeting faces of the body members 1 and 2. It is particularly to be noted that when the plunger is completely retracted by the action of spring 9, the end of the hook is still disposed in the guiding aperture.

The member 1 is provided at its opposite ends with integrally formed dowel pins 13, 13, and the body member 2 is likewise provided with similar dowel pins 14, 14; the latter engaging sockets 15, 15 formed in the member 1 while the dowel pins 13, 13 engage corresponding sockets 16, 16

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in the member 2 upon assembly of the body members. The use of the device is believed to be obvious. The device is held in one hand and the needle is inserted in the socket 3 eye end foremost and seated in the notch 17 at the inner end thereof with the eye turned so as to be disposed for entrance by the hook 10. The plunger 7 is then pressed inwardly against the force exerted by the spring 9 with the hook passing through the eye of the needle and extending into the thread guiding notch 18. A thread is then laid over the hook and the spring 9 is then allowed to retract the hook, pulling the thread with it through the needle-eye, after which the needle can be lifted out of the socket with the thread extending from the supply to the needle passing upwardly through the slot 4. If the thread should hang slightly on the hook 10, it is necessary then only to move the hook a slight amount forward so that the bite of thread on the hook can be released therefrom.

Preferably all of the parts are plastic moldings, except the spring and the hook, and hence are capable of economical production. In assembly, the plunger and hook assembly, including the spring, are placed in one of the body halves, a slight amount of suitable cement or adhesive is applied to the mating surfaces of at least one of the body members, the other body member is pressed onto the first body member and as soon as the cement has dried, the device is ready for use.

Since the hook must be thin enough to pass through the eyes of the needles, it must of necessity be very thin. Additionally, because of its small cross section, it is most desirable that the hook be made of spring metal and spring metal in hardening, especially on very tiny parts, is apt to warp slightly. A great deal of difficulty has been experienced heretofore in accurately guiding a hook of this character to and through the needle-eye due to the liability of the thin metal parts to warp during the tempering process. The present invention solves this trouble by maintaining the hook in constant contact with its guiding means. For this reason, even bent or improperly assembled hooks can be employed, since upon assembly and misalignment of the hook will be immediately corrected by the guides, and the hook will thereafter operate in the plane determined by the guides. Since these guides are located adjacent the needle socket means, the hook will be held in line during the only part of its travel when it is important that the hook be in line, viz, the forward or entering movement of the hook into a needle-eye. Thus, production costs are reduced in that the permissible tolerance in the alignment of the hook with its body member is no longer a critical factor, and as a matter of fact, due to this novel means of maintaining the hook in a predetermined line of travel, a much thinner metal may be employed for the hook. It is also to be noted that due to the lateral offsetting of the thread escape slot, the needle receiving socket 3 is provided with a wall portion against which the needle may rest during the entry of the threading hook into the needle eye during a threading operation.

While, in the foregoing specification and drawings, I have described one embodiment of my invention, such description is by way of example only. I do not intend to limit myself to the exact form thus disclosed and the invention is

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intended to embrace all such modifications in the parts, and in the construction, combination and arrangement of parts as shall come within the purview of the appended claim.

I claim:

A needle threading device comprising a body having a thread positioning notch extending transversely to said body at one end thereof; said body being formed from complementary, oppositely identical parts assembled in side by side relation; the meeting faces of said parts having complementary recesses which combine to form a needle positioning socket adjacent to said notch and a plunger guideway extending at right angles to said guideway from a distal end adjacent to said socket to and through the opposite end of said body; a portion of said guideway intermediate the ends thereof being polygonal in cross section and the ends of said guideway being circular in cross section and of lesser diameter than the major diameter of said polygonal portion, and a narrow, rectangular, hook guiding aperture extending between said distal end of said guideway and said socket, a plunger slidably mounted in said guideway; said plunger having a distal end engaging the distal end of said guideway and having an opposite end protruding beyond the end of said body remote from said socket and having an intermediate portion of polygonal cross section slidably and non-rotatably engaging the polygonal portion of said guideway, a compression spring mounted on said distal end portion of said plunger and housed within said polygonal portion of said guideway effective to urge said plunger away from said socket; and a thin, resilient hook element carried by and extending beyond said distal end of said plunger having its distal end normally disposed within said aperture and movable upon movement of said plunger in opposition to said spring through said aperture, thence through the eye of a needle positioned in said socket and into said notch for reception of a thread; said hook being effective upon retraction of said plunger by said spring to draw a thread through the eye of a needle through which said hook has been projected; a portion of said distal end of said hook having a cross sectional configuration corresponding to and only sufficiently smaller than the cross sectional configuration of said aperture to afford free but closely guided movement of said hook through said aperture and through the eye of a needle positioned in said socket.

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