

(No Model.)

J. M. MERROW & W. H. STEDMAN.
NEEDLE CARRIER FOR SEWING MACHINES AND GUIDING
DEVICE THEREFOR.

No. 497,006.

Patented May 9, 1893.

Fig. 1.

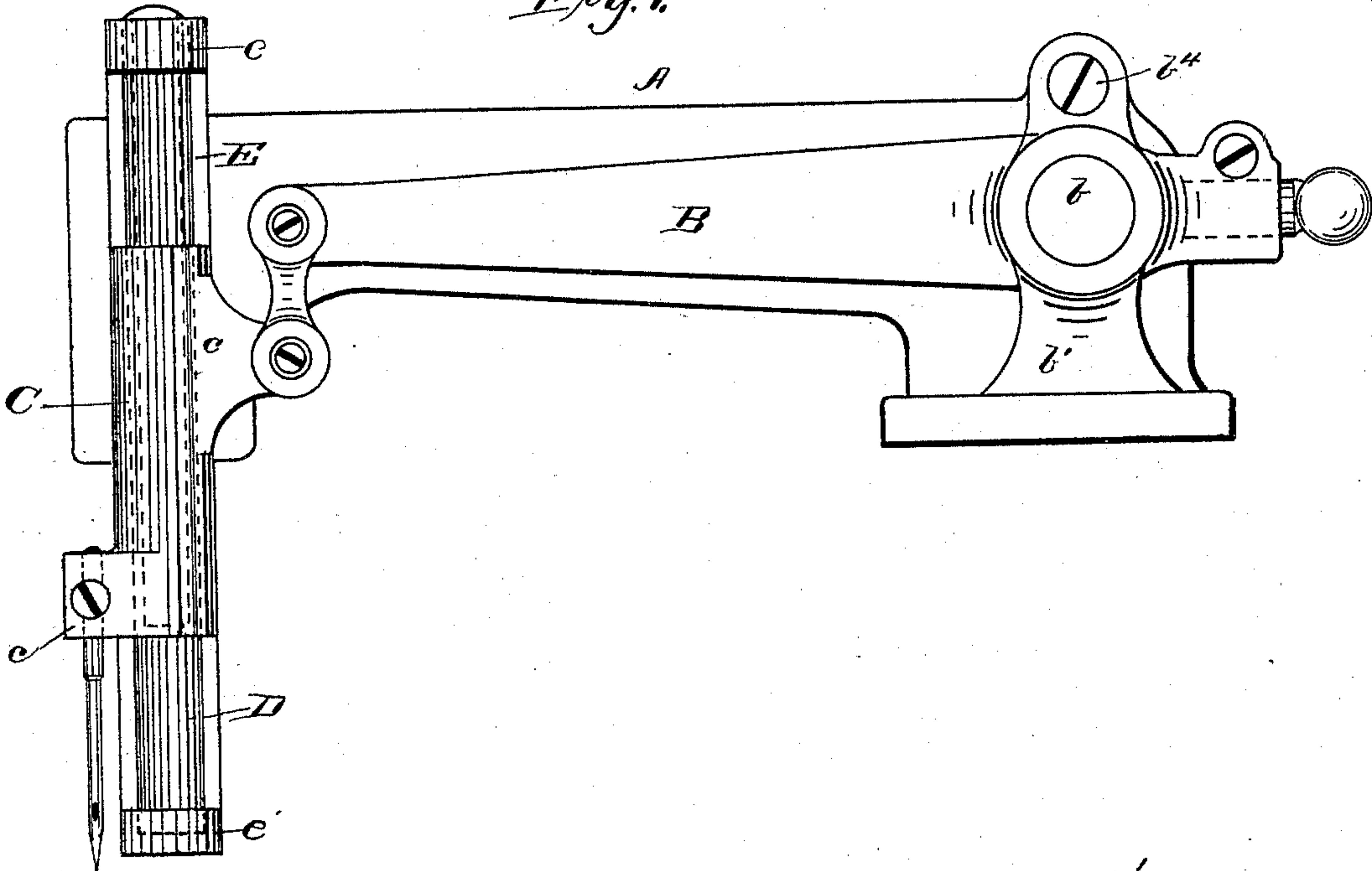


Fig. 2.

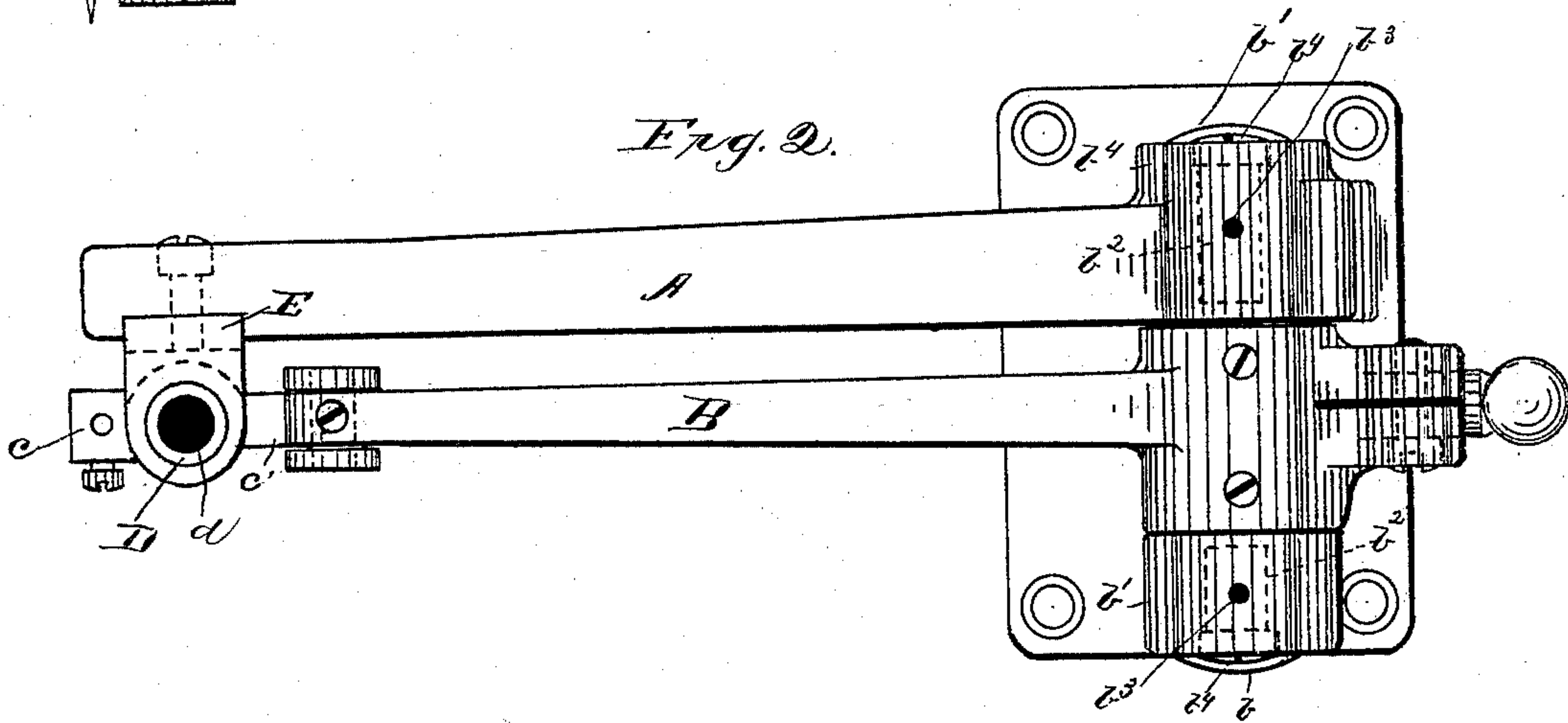
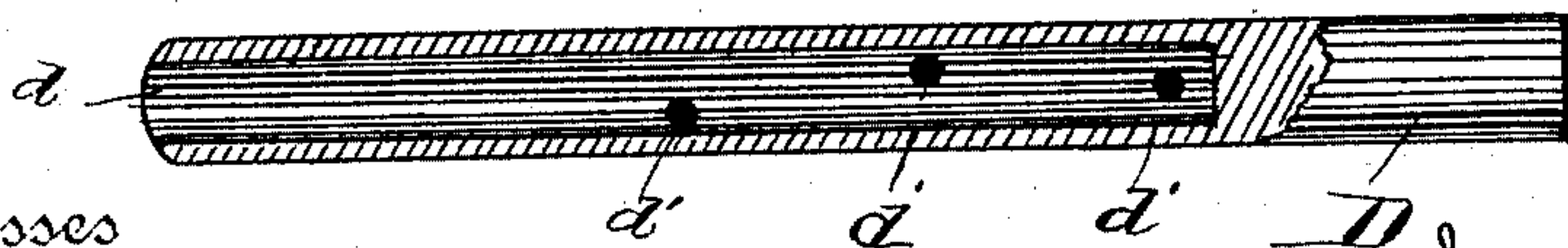


Fig. 3.



Witnesses

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NEEDLE-CARRIER FOR SEWING-MACHINES AND GUIDING DEVICE THEREFOR.

SPECIFICATION forming part of Letters Patent No. 497,006, dated May 9, 1893.

Application filed May 31, 1892. Serial No. 434,990. (No model.)

To all whom it may concern:

Be it known that we, JOSEPH M. MERROW, of Merrow, in the county of Tolland, and WILLIAM H. STEDMAN, of Norwich, in the county of New London, State of Connecticut, have invented certain new and useful Improvements in Sewing-Machines; and we do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming a part of this specification, and to the letters of reference marked thereon.

This invention relates to improvements in the construction and arrangement of the needle carrying, guiding and actuating devices of sewing machines, and it has for its object, to increase the capacity of the machine for running at high rates of speed, and, at the same, time, to preserve the wearing surfaces and thereby increase the durability of the machine.

In the manufacture of modern sewing machines one of the objects most sought for has been an increase in the running speed and a corresponding increase in the producing capacity of the machine, but it has been accomplished only at the expense of durability; and experience has shown that the wear and breakage resulting from the running of such machines at the very high speeds demanded, is not in direct proportion to the increase in speed, but is greatly in excess thereof. This is due in part to the inertia and momentum of the moving elements, of which the needle carrying, guiding and actuating devices are among the most prominent, in that they are required to perform at least one complete reciprocation for each stitch produced.

Our present invention is directed particularly to the means for overcoming, or, at least, diminishing the mechanical obstacles to high speed, and at the same time render the devices more durable and accurate whether driven at high or low speeds.

In the drawings: Figure 1 is a side elevation and Fig. 2 a top plan view of the mechanism. Fig. 3 is a sectional view of the needle-carrier support or guide.

Similar letters of reference in the several figures indicate the same parts.

A indicates a rigid supporting frame or goose-neck which may be of any desired or approved form and construction adapted to the particular style of machine to which it is to be applied.

B is the needle-lever through which motion is communicated from the actuating mechanism to the needle-carrier for effecting the reciprocations of the latter. It is desirable that the needle-lever should reciprocate in a fixed plane without lateral play or lost motion, and to this end it is provided with a stud or journal *b* on each side (preferably formed by the insertion of a bolt or pin through an opening in the lever, and detachably secured therein) the lever fitting and oscillating between two bearings or journal boxes *b'* formed integral with or firmly attached to the frame. Above or to one side of the box or bearing in which the journal *b* is received, a reservoir or hollow receptacle *b²* is provided in the bearing *b'*, said reservoir being provided with an oil duct or supply opening *b³* and a duct leading to the bearing for the journal. The reservoirs *b²* are preferably formed in the side of the bearings with the outer ends closed by removable caps, such as the screw *b⁴*. The needle-lever is thus supported and guided to reciprocate in a plane at right angles to the axis of its pivot, and provision is made for an ample and continuous supply of lubricant to the wearing surfaces.

With the object of reducing to a minimum the weight of the needle-carrier, and, at the same time, insuring the requisite strength, stiffness and extended bearing surface, the needle-carrier C is made in the form of a hollow or tubular body which is supported and guided to reciprocate in a right line upon an internal supporting post or rod D whose opposite ends are securely and rigidly attached to the frame.

The tubular needle-carrier is provided with a suitable needle clamp *c* preferably in the form of a projection or offset integral with the tube, and the point of attachment to the needle-lever is likewise preferably located in or upon an integral block, *c'*.

In practice, the tubular needle-carrier is

thus formed out of one piece of metal including projections *c* and *c'*, in order to obtain the greatest possible strength and rigidity with the least weight of metal, as it has been
 5 found to be difficult if not impracticable to effect such a union between detached blocks and the thin metal of the tube, by brazing, riveting or otherwise, as will resist the rapid vibration, torsion and shock incident to the
 10 extremely high rate of motion to which the needle carrier is subjected, varying from one thousand to three thousand or more reciprocations a minute.

By arranging the needle-carrier to reciprocate upon the exterior surface of its guide D, several very important advantages are secured. The tubular form permits the carrier to be made thin and light, and at the same time affords the requisite strength and rigidity, which latter is contributed to by the presence of the guide D fitting the bore of the carrier. Moreover the fitting and adjustment of the guiding surfaces is rendered comparatively simple and inexpensive, as all that is
 15 required to produce accurate fitting is the reduction by turning, guiding, drawing or otherwise of the rod D to the standard size, and the boring or drilling of the carrier C to the standard dimensions, both of which operations can be performed with great accuracy
 20 owing to the fact that the surfaces in contact are cylindrical.

The supporting post or rod D may be secured to the frame in a variety of ways but
 35 we prefer that shown, in the drawings wherein a cross head or bracket E is detachably but securely fastened to the outer end of the goose neck, said cross-head being provided with two arms *e e'*, projecting laterally, the lower one
 40 *e'* being furnished with a recess for the reception of the lower end of rod D and the upper one *e* with an opening for the reception of the upper end of said rod, a set screw or other fastening applied to the rod and serv-

ing to securely retain it within the arms of the cross-head. 45

By making the cross head detachable from the frame, the entire needle-carrying and guiding mechanism can be removed or applied without being dismembered. 50

To provide for the proper and efficient lubrication of the needle-carrier, the rod D is made tubular, or provided with a longitudinal recess or hole *d* communicating through one or more ducts *d'*, with the exterior of the rod. The hole *d* serves as a reservoir for the lubricant, and is preferably partially filled with wool, felt, sponge or similar absorbent material to prevent the too rapid delivery of the lubricant. The ducts *d'* are preferably
 55 so located with respect to this tubular needle-carrier surrounding the rod, that they will not be uncovered during the reciprocations of the carrier but will at all times remain closed thereby, thus preventing the lubricant from escaping too rapidly or being distributed freely upon surrounding objects. 65

Having thus described our invention, what we claim as new is—

1. The combination in a sewing machine of the needle carrier and the hollow guide rod, the latter provided with ducts *d'* located between the extremes of motion of the needle carrier so as to be at all times covered thereby, to prevent the escape of the lubricant; 75 substantially as described.

2. The combination in a sewing machine of the cross-head E provided with arms *e e'*, the former arm perforated and the latter recessed, the guide rod D fitted to the bearings in arms *e e'*, and the needle carrier reciprocating upon the rod between said arms; substantially as described. 80

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