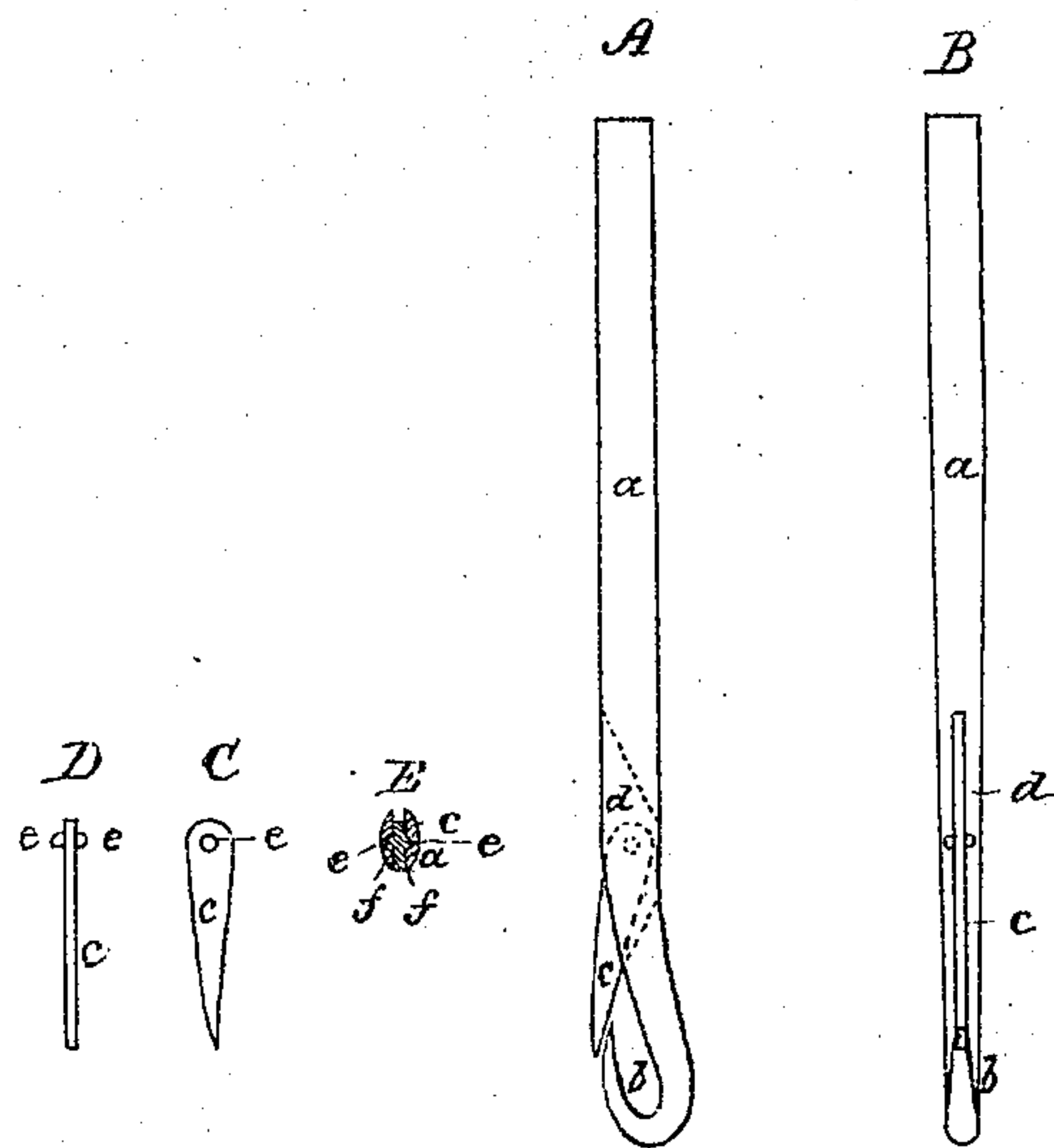


S. H. Roper.
Imp't in Knitting Machine Needles.

No. 119,651.

Patented Oct. 3, 1871.



Witnesses:
S. B. Redder
M. W. Frothingham.

S. H. Roper,
by his Attys,
Crosby Halsted & Gould

UNITED STATES PATENT OFFICE.

S. H. ROPER, OF BOSTON, MASSACHUSETTS.

IMPROVEMENT IN KNITTING-MACHINE NEEDLES.

Specification forming part of Letters Patent No. 119,651, dated October 3, 1871.

To all whom it may concern:

Be it known that I, S. H. ROPER, of Boston, in the county of Suffolk and State of Massachusetts, have invented an Improved Knitting-Machine Needle; and I do hereby declare that the following, taken in connection with the drawing which accompanies and forms part of this specification, is a description of my invention sufficient to enable those skilled in the art to practice it.

The invention relates to the construction of knitting-machine needles, or more particularly to the construction of the latch and the method of applying it to the shank of the hook. In knitting-machine needles as now or heretofore made the shank, at a proper distance below the point of the hook, is slotted through from front to back, and has a hole drilled through from side to side, or extending from each side into this slot, the slot receiving the base of the latch, and the latch having a hole drilled through it and being hung in the slot upon a pin extending through the holes made for its reception through the shank and through the latch. This construction is objectionable in that the wear of the latch upon the pin soon cuts through the pin, letting the latch drop out, or in that the pin itself becomes loose and either drops out or lets the latch out, or projects from the side of the shank so that the yarn catches upon it and breaks. Also, in that small protruding burs are formed at the ends of the bearing which support the pin, against which projections the loops catch in passing over the needle-shank. The object of my invention is to overcome these defects, to accomplish which I make the latch with trunnions integral with itself—that is to say, I form the latch and trunnions of one piece of metal, each trunnion being a projection from one side of the latch, and I journal each trunnion in a bearing sunk in the adjacent wall of the needle-slot, but not extending to the outer surface of the needle-shank; and it is in these improvements, or in a needle having such construction, that my invention primarily consists.

The drawing shows a knitting-machine needle and latch embodying my improvements.

A and B show, respectively, side and edge views of the needle. C and D show, respectively, side and edge views of the latch. E is a cross-section through the latch-trunnions. *a* denotes the shank of the needle; *b*, the hook thereof;

c, the latch; *d*, the slot made in or through the needle-shank to receive the base of the latch *c*. This latch I make from steel wire, the diameter of which is equal to the length from end to end of the trunnions *e*. The wire is fed to suitable dies, and by them swaged down to the latch-thickness in all parts excepting in line with the trunnions, so that when thus thinned the two trunnions are left projecting from and solid with the plate, and preferably conical or frusto-conical in form, as seen at C. The blanks thus formed are then pressed through a die to give them the proper contour or shape, and the latches are then hardened. The slot, having been made through the needle, is then opened sufficiently to allow of the introduction of the trunnions, which, being brought to position with the end of each at the point where its bearing is to be, the needle is subjected to the action of concave dies and the opened sides of the slot are pressed together, forcing the trunnions into the needle at the opposite sides of the slot, as seen at E, and thus forming the bearing *f* for each and securing the latch to the needle. The hole thus sunk by each trunnion does not go through to the surface of the needle, and besides leaving such surface entirely smooth it will be seen that the entire superficies of each trunnion is bearing-surface, while the formation of the latch with trunnions solid or integral with it will of course prevent any movement of the latch relatively to the trunnions, and consequently any tendency of the latch to cut through them.

Thus the needle is made more enduring than the previous constructions of latch-needles; and as no latch-pin hole is drilled through the needle-shank small needles having this construction can be made of strength equal to or superior to larger latch-needles of previous construction, and the surfaces of the shank are free from any obstructions tending to unduly catch the filaments of the yarn. By the reduction in the size of the needle the quality of knitted goods can be improved in fineness and closeness. To enable the yarn to render more readily over the latch and hook when the latch is closed I curve the shank so as to carry the point of the hook back sufficiently to bring the outer edge of the latch substantially into line with the front surface of the shank when the latch is closed, as seen at A.

I claim—

1. A knitting-machine needle the hinged latch of which has journals integral with itself, and secured in bearings sunk or indented in the walls of the slot, but not extending through to the outer surface of the shank, all substantially as described.

2. The complete needle, having all its parts constructed and combined as herein described.
S. H. ROPER.

Witnesses:

FRANCIS GOULD,
S. B. KIDDER.

(54)