

(No Model.)

S. W. WARDWELL, Jr.
SEWING MACHINE.

No. 322,571.

Patented July 21, 1885.

Fig. 3.

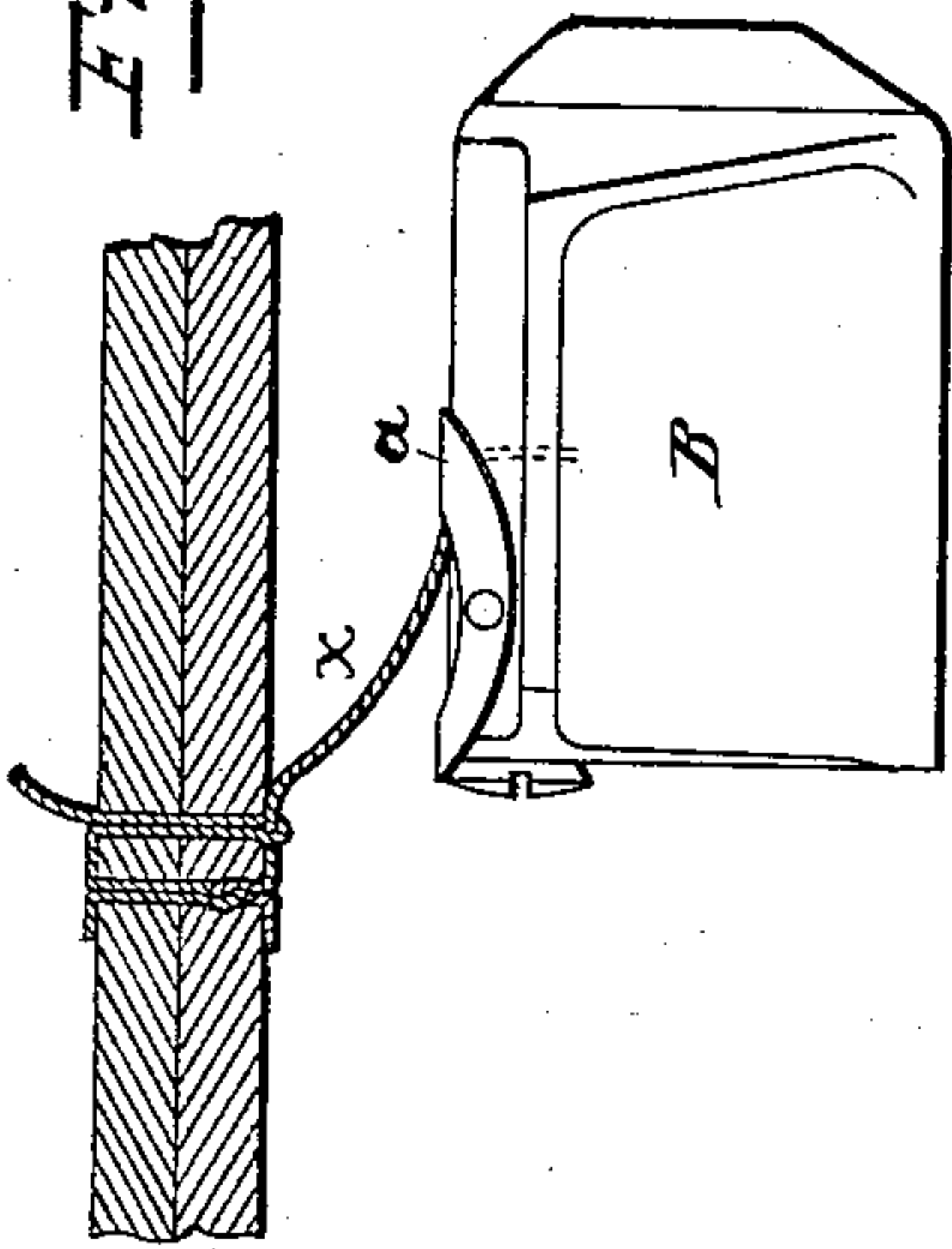


Fig. 1.

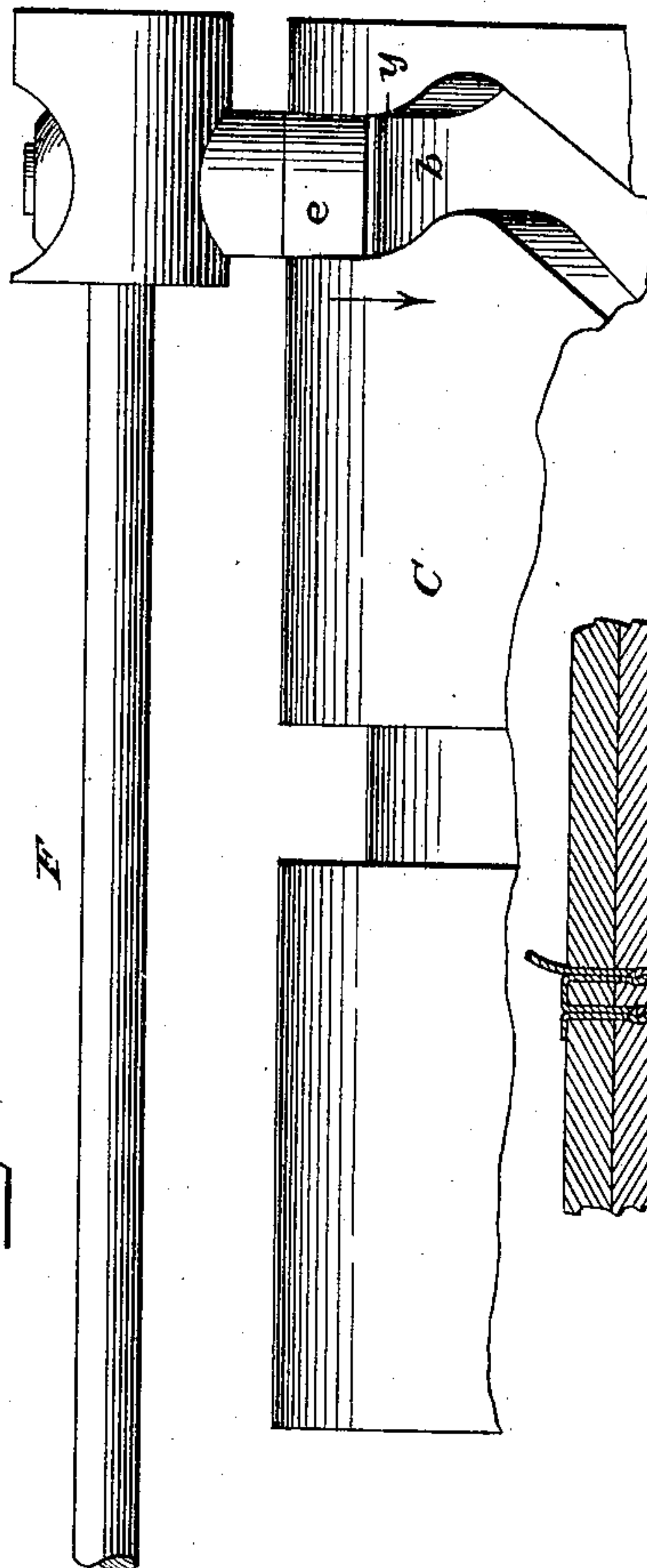


Fig. 5.

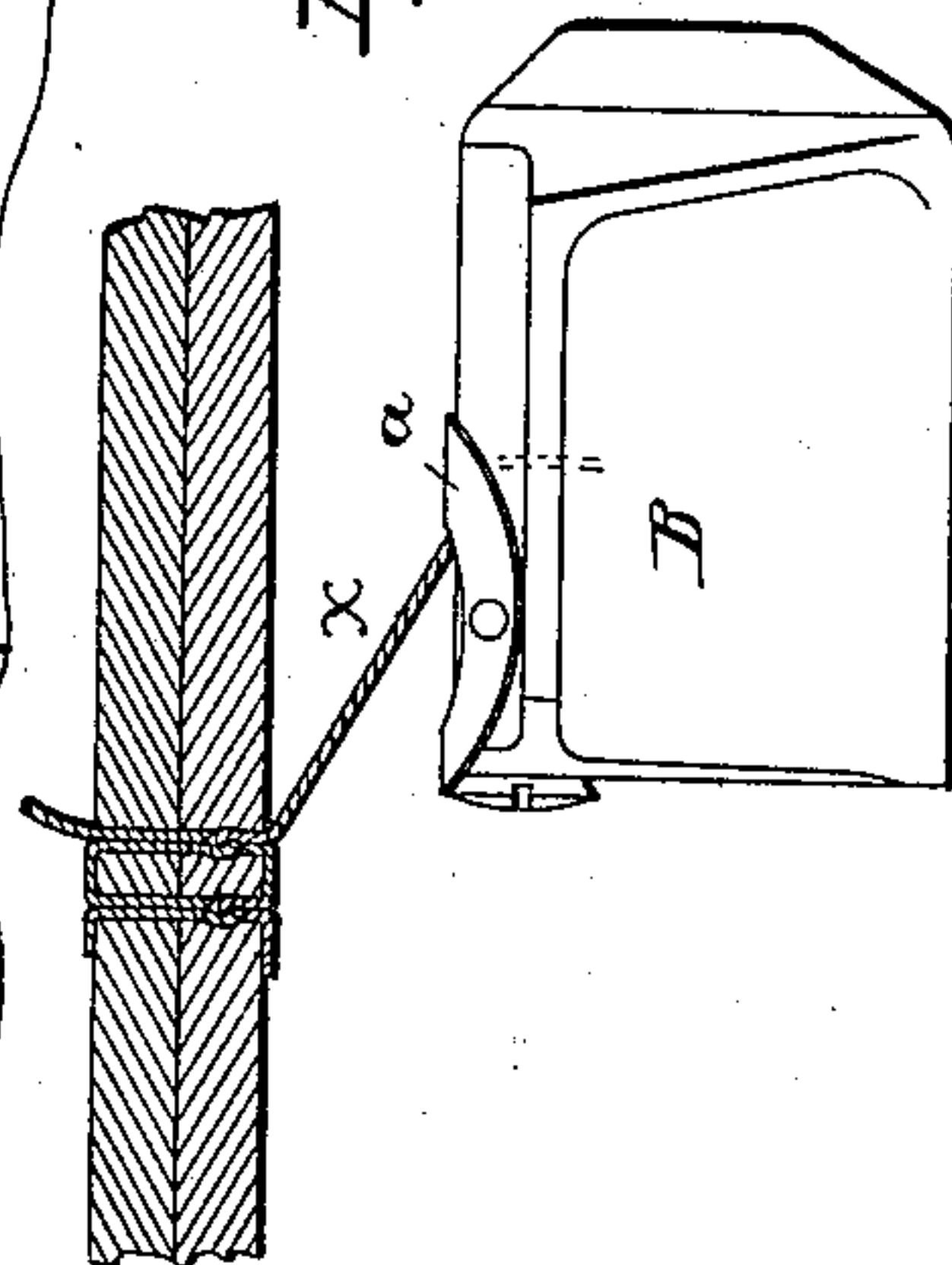


Fig. 2.

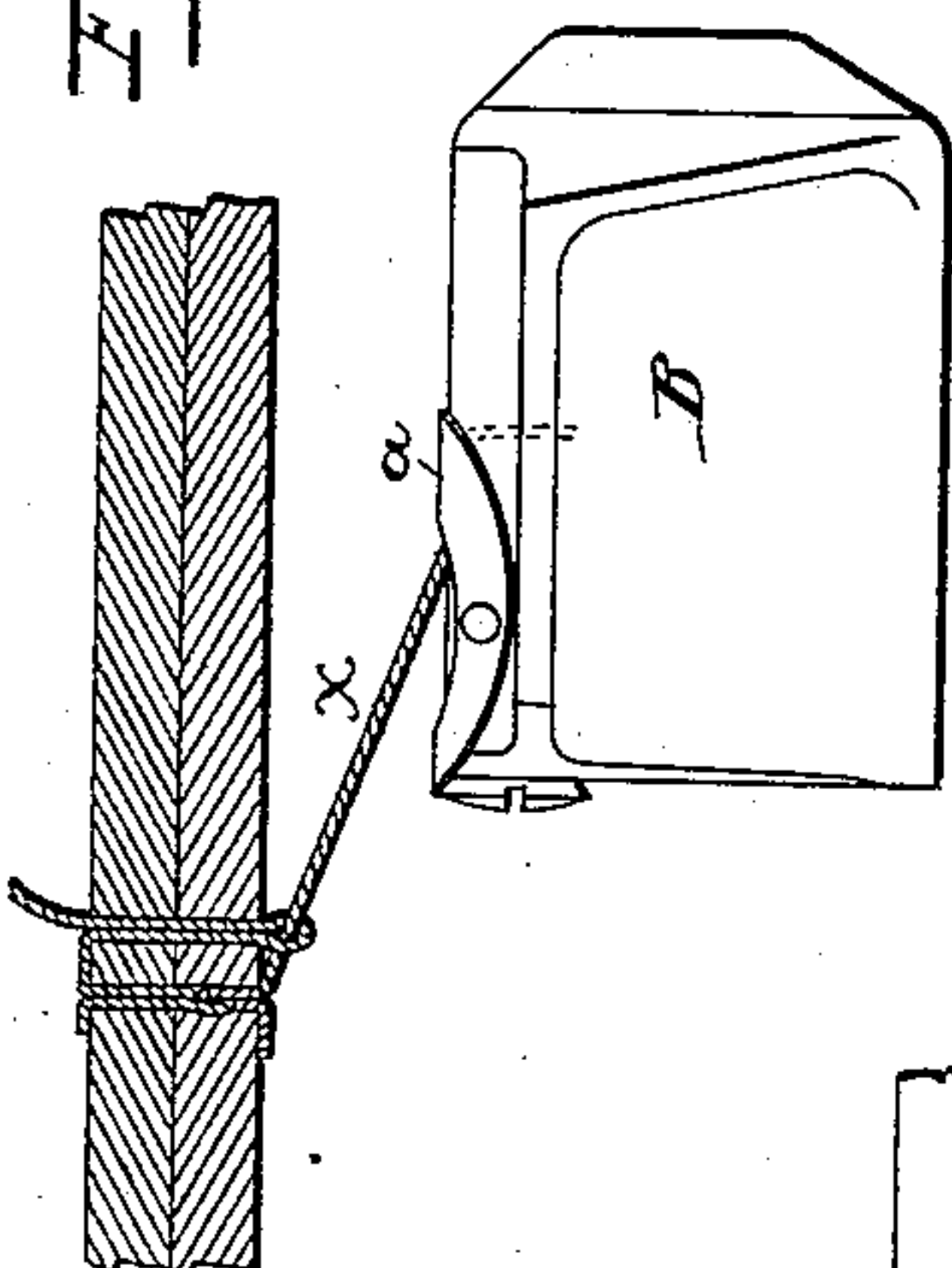
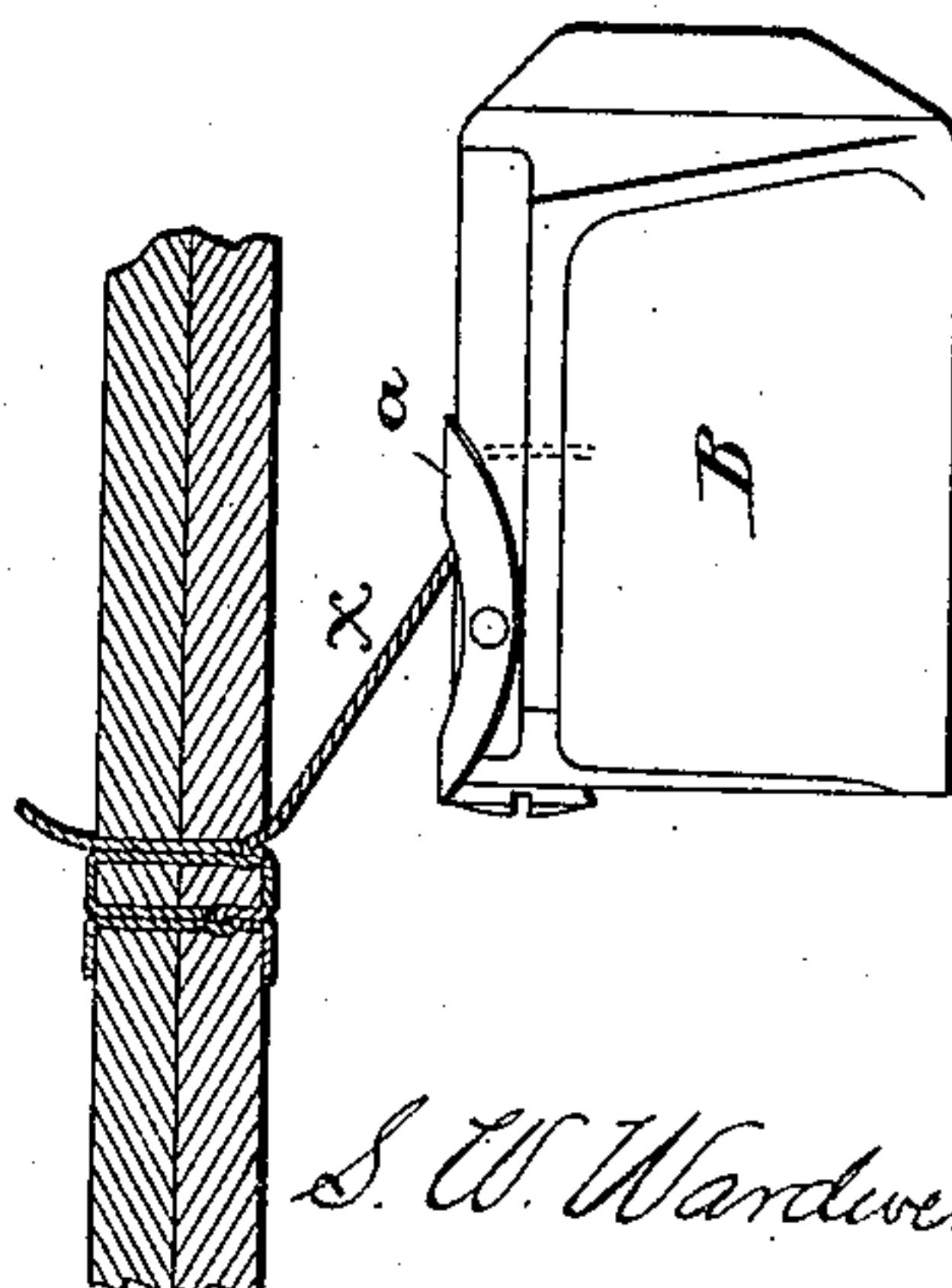


Fig. 4.



Attest:
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UNITED STATES PATENT OFFICE.

SIMON W. WARDWELL, JR., OF PROVIDENCE, RHODE ISLAND.

SEWING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 322,571, dated July 21, 1885.

Application filed June 9, 1884. (No model.)

To all whom it may concern:

Be it known that I, SIMON W. WARDWELL, Jr., a citizen of the United States, residing at Woonsocket, in the county of Providence and State of Rhode Island, have invented certain new and useful Improvements in Sewing-Machines, of which the following is a specification.

My invention relates to sewing-machines, having for its object to prevent the wearing or breaking of the thread, which results in the ordinary operation of the shuttle; and my invention consists in operating the shuttle-thread, as hereinafter fully described, so as to maintain the requisite tension upon the same when necessary, but without interfering with the drawing of the loop into the fabric.

In the drawings, Figure 1 is a longitudinal side elevation of sufficient of the parts of a wax-thread sewing-machine to illustrate my invention. Figs. 2, 3, 4, and 5 are detached views illustrating the movements of the shuttle.

Fig. 2 shows the position of the shuttle at which, in ordinary lock-stitch machines, the shuttle-thread is drawn up and bent into the fabric against the resistance of the shuttle-tension. In sewing-machines as usually constructed the shuttle has a uniform reciprocating motion and the loops of shuttle-thread are drawn up into the fabric against the resistance of the shuttle-tension. The needle-thread by sawing on the taut shuttle-thread, particularly as the lock enters the fabric, is materially abraded, even with a light tension, and with a suitably-strong tension the thread is repeatedly broken. These objections are particularly noticeable in wax-thread sewing-machines, where the hole is small in proportion to the thread, and there is much tension upon the shuttle-thread. I overcome these objections by slacking the shuttle-thread at such times so that there will be no resistance to the upward draft by the needle-thread until the shuttle-thread is drawn up and bent into the fabric, when the stitch will be completed under tension of the thread from the shuttle.

Different means may be employed for slacking the shuttle-thread. One, which is effective in connection with wax-thread sewing-machines, is illustrated in Fig. 1, in which B represents the shuttle provided with a tension device, *a*, and C illustrates the shuttle-cam,

the groove *b* of which receives a stud, *e*, upon the shuttle-rod F, which is connected to the shuttle so as to permit the needle-thread to pass through the connection, as set forth in the Letters Patent No. 218,464, granted to me August 12, 1879, and which need not be here described.

The cam is supposed to rotate in the direction of the arrow and the groove *b*, which causes the reciprocation of the shuttle, is provided with a bent or recessed portion, *y*, so that after the shuttle has been thrown forward to its full extent, as shown in Fig. 2, it will be moved back slightly, leaving the thread *x* slack, as shown in Fig. 3. The needle-thread is then drawn into the fabric and the shuttle-thread is carried up and bent into the latter without any resistance from the shuttle-tension, and consequently without any abrasion or sawing of the needle-thread until the stitch is nearly completed, as shown in Fig. 4, when the further upward movement of the needle-thread, while the shuttle remains stationary, carries the shuttle-loop to the position shown in Fig. 5 against the shuttle-tension, which insures the proper tightening of the stitch.

Any suitable tension may be used in connection with the shuttle.

It is evident, while I have specifically described one means of slacking the thread, such as is applicable to one kind of sewing-machine, that my invention is not limited to any particular mechanism or class of mechanisms, (nor necessarily to a movement of the shuttle,) as many and various forms other than a cam-movement may be used without departing from my invention, which consists, broadly, of slacking the shuttle or under thread at such times that there will be no resistance to the upward draft of the needle-thread until the shuttle-thread is bent into the fabric.

Without limiting myself to the precise construction and arrangement of parts shown, I claim—

1. The combination, with the shuttle and needle and operating appliances of a sewing-machine, of means, substantially as described—for example, a cam—for slacking the shuttle-thread, after the shuttle has passed through the loop of needle-thread, sufficient to allow its being drawn up and bent into the fabric

without offering resistance to the needle-thread until it is bent into the fabric, substantially as described.

2. The combination, with the shuttle and
5 needle and operating parts of a sewing-machine, of means, substantially as described—for example, a cam—for first slacking the shuttle-thread while it is being drawn up and bent into
10 the fabric, and for then applying tension thereto to tighten the stitch, substantially as described.

3. The combination, with the shuttle of a
15 sewing-machine, of a shuttle-driver, as a cam having a recessed portion constructed to impart a slight backward motion to the shuttle after the shuttle-thread has been carried through the loop of the needle-thread, whereby the shuttle-thread may be drawn upward with-

out tension until the loop occupies its proper position in the fabric, substantially as set forth. 20

4. The combination, with the shuttle of a sewing-machine, of a shuttle-driver and a cam constructed to impart a short backward motion to the shuttle after it has passed through the loop of needle-thread and to hold it while 25 the slackened thread is drawn up and bent into the fabric and until the needle-thread completes its upward movement, substantially as described.

In testimony whereof I have signed my name 30 to this specification in the presence of two subscribing witnesses.

SIMON W. WARDWELL, JR.

Witnesses:

EUGENE B. YOUNG,
JEFFERSON ALDRICH.