

(No Model.)

R. W. WHITNEY.

AUTOMATIC TENSION FOR SEWING MACHINES.

No. 277,094.

Patented May 8, 1883.

Fig. 1.

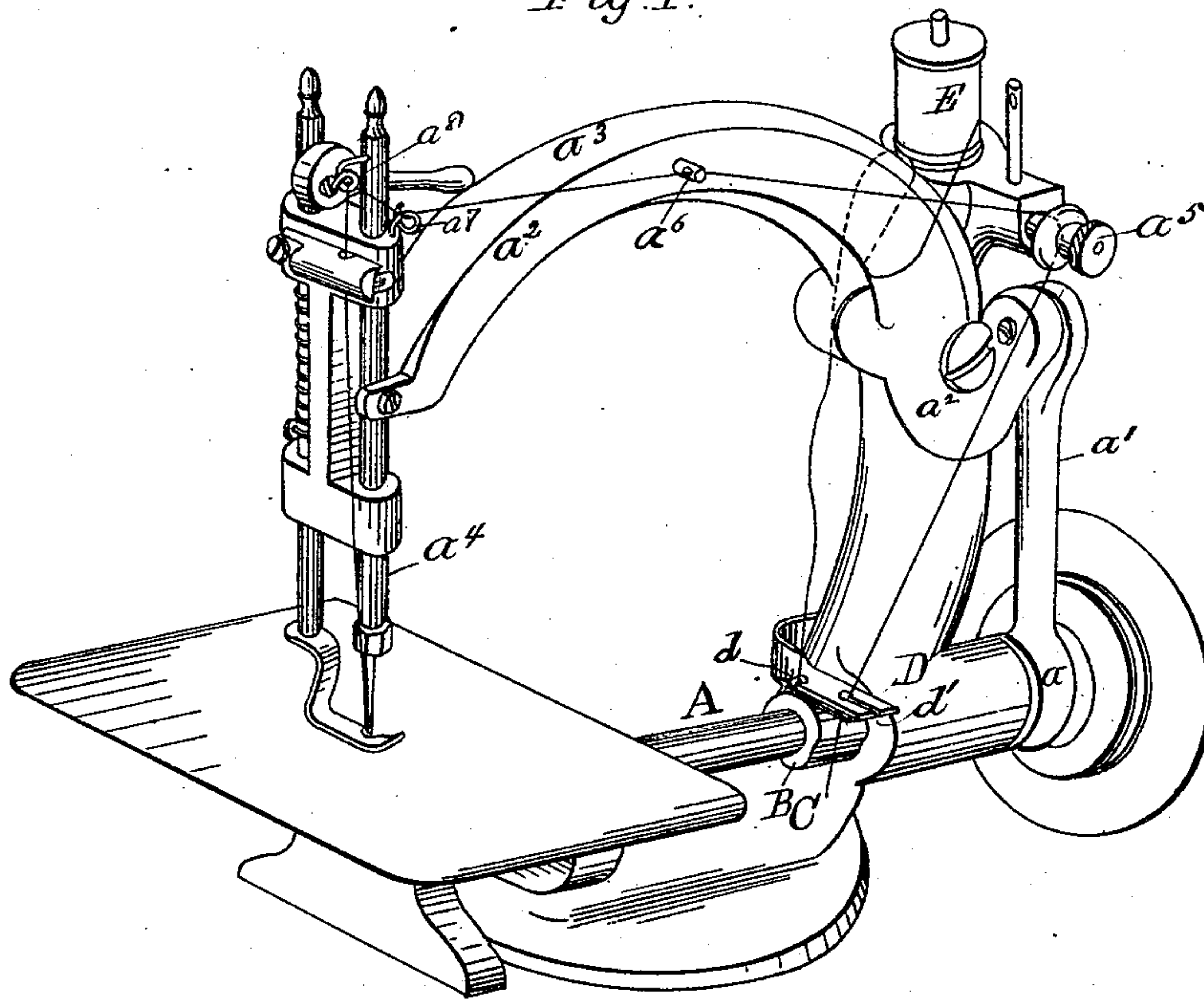


Fig. 2.

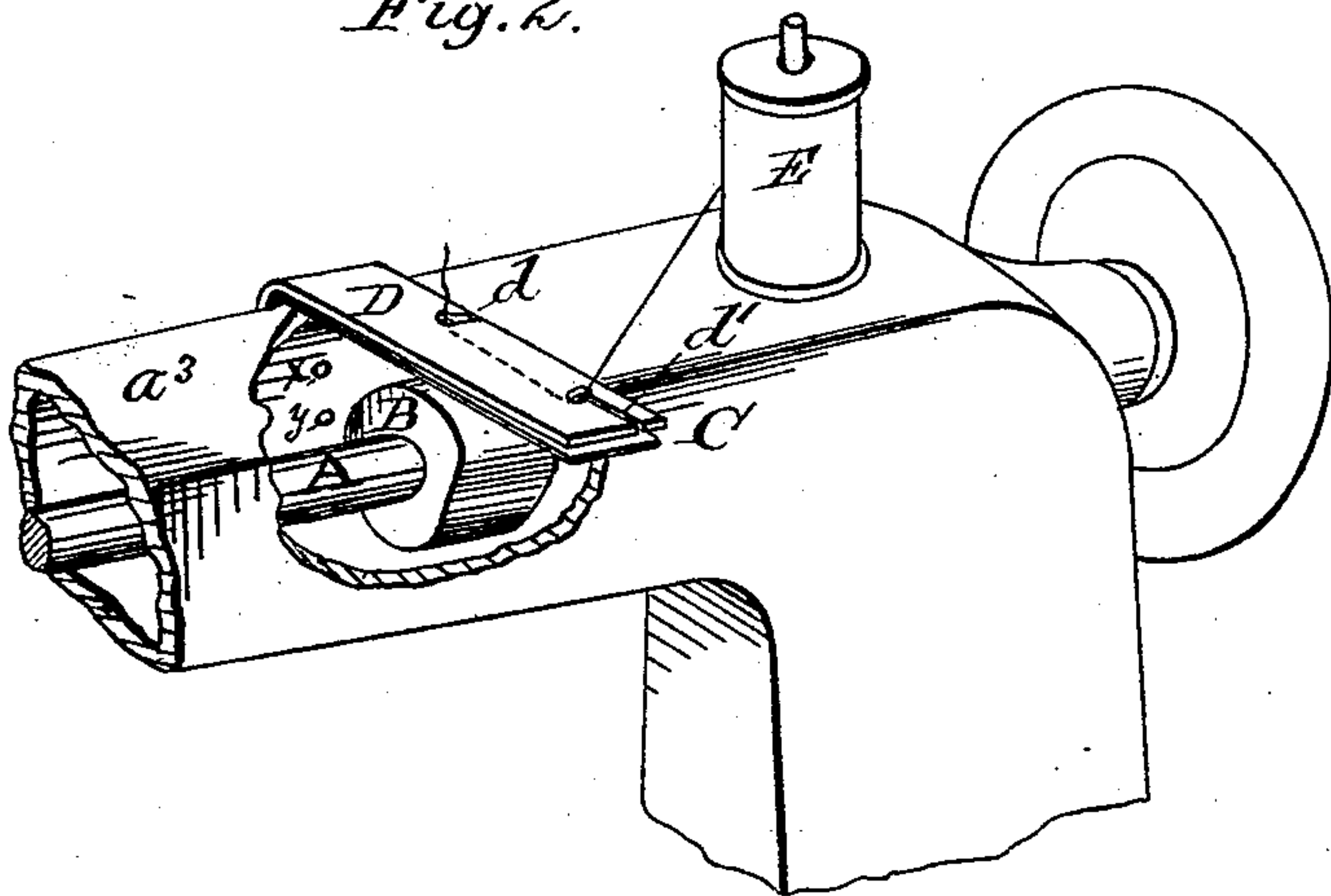


Fig. 3.

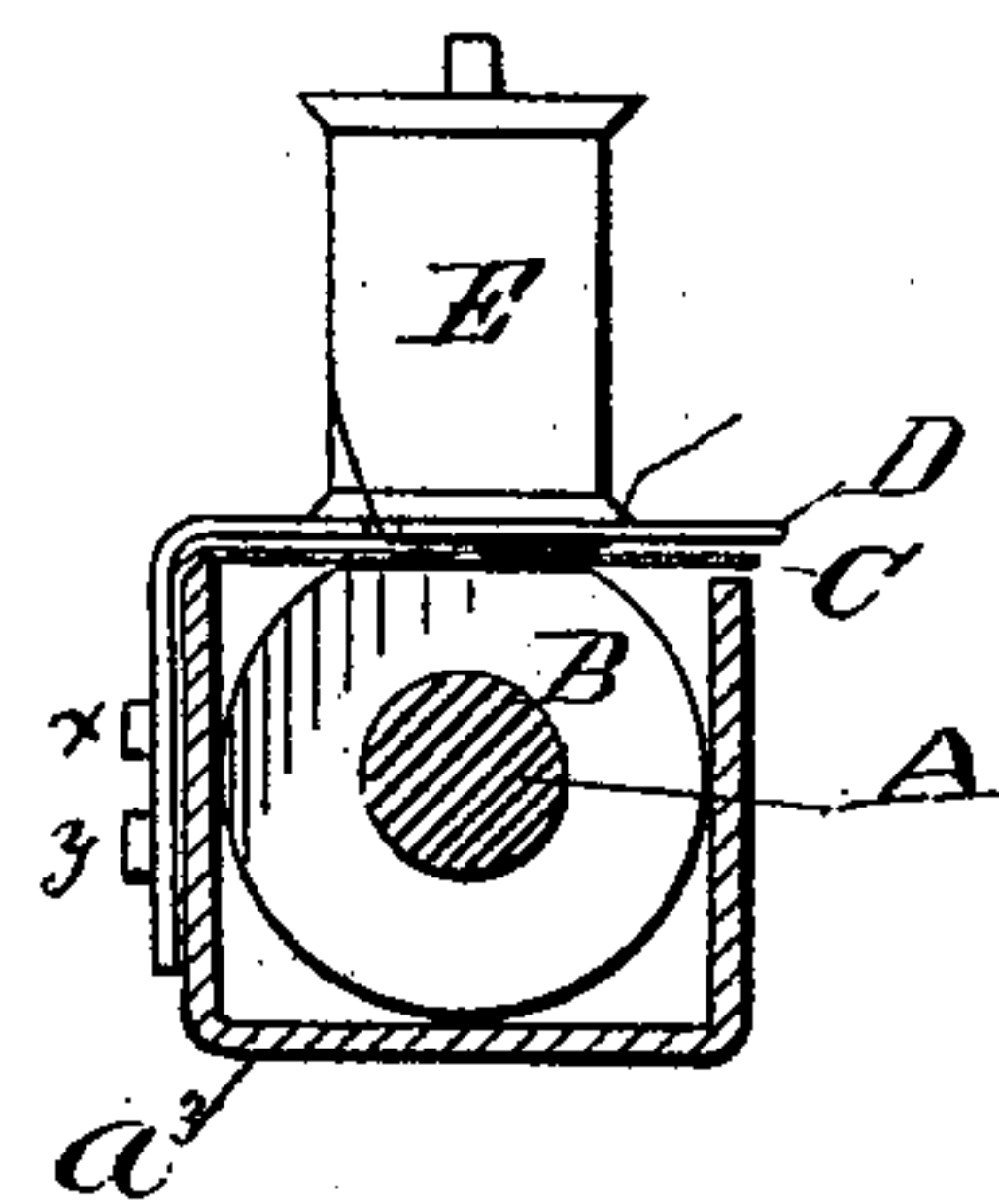
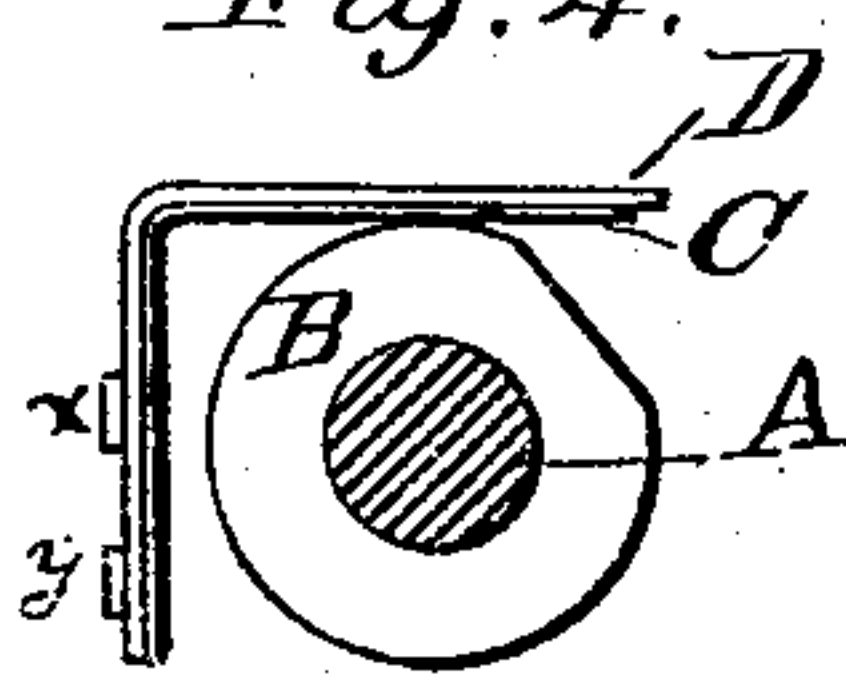


Fig. 4.



Witnesses:

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UNITED STATES PATENT OFFICE.

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AUTOMATIC TENSION FOR SEWING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 277,094, dated May 8, 1883.

Application filed March 14, 1883. (No model.)

To all whom it may concern:

Be it known that I, RUEL W. WHITNEY, a citizen of the United States, residing at New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Automatic Tensions for Sewing-Machines, of which the following is a specification, reference being had therein to the accompanying drawings, in which—

Figure 1 is a perspective of a single-thread or loop-stitch machine provided with my improved automatic-tension devices; Fig. 2, an illustration of one manner of applying said devices to a shuttle-machine, and Figs. 3 and 4 sections hereinafter referred to.

Like letters refer to like parts in all the figures.

This invention relates to a class of automatic-tension devices comprising a spring and a fixed plate, between which the thread is passed on its way to the needle, and means for intermittently forcing said spring against said plate in order to retard the progress of the thread therethrough; and my invention is more particularly described, and specifically set forth in the claims.

A represents what is hereinafter designated as the "main shaft" of the machine—that is to say, as in Fig. 1, the main shaft is arranged below the working bed or table of the machine and operates the loop-hook, and by means of the eccentric a , connecting-rod a' , and rock-arm a^2 , pivotally supported on the fixed arm a^3 , to reciprocate the needle-bar a^4 , while, as in Fig. 2, the main shaft is located and arranged above the working bed or table of the machine, and is adapted to operate the needle-bar. The means employed for this purpose and other purposes and functions of machines in general are not particularly shown and described herein, as they are or may be of any usual construction, and do not form any essential part of my invention.

I deem it proper to state that any other than the main shaft of a machine may be employed in an embodiment of my improvement, the requisite being that such shaft shall have a rotation related properly to the movements of the stitch-forming mechanism.

Upon a shaft, A, I fix, so as to rotate therewith, a cam, B, and adjacent to said cam I ar-

range a spring-plate, C, so that it shall constantly bear against the periphery of said cam. Adjacent to the spring-plate I arrange a fixed or rigid plate, D, parallel to the spring-plate. The plate D is provided with slots d d' , the former leading inwardly from the side and the latter inwardly from the end of the plate, and each terminating in an eye of suitable shape to retain a thread therein when introduced by means of the slots. Upon the fixed arm, or it may be at any suitable place, I support the spool E, from which the thread is taken and passed into the slot d , then into the slot d' , and drawn into the eyes at the ends of the slots, so that there is a portion of the thread passing between the plates.

One manner of threading the machine consists, as shown in Fig. 1, in passing the thread first from the spool beneath the rock-arm a^2 , thence over the fixed arm a^3 , thence to and between the spring C and plate D, as described, thence back of a post, a^5 , projecting from the fixed arm, and thence through a guide, a^6 , on the rock-arm, and through guides a^7 a^8 , the latter being upon the needle-bar. In fact, any usual well-known manner of threading and means of taking up and pulling off the thread may be employed.

It will be seen that the cam B is timed to rotate once during the formation of each stitch, so that when its longer radii are in contact with the spring-plate it is forced against the fixed plate, (see Fig. 4,) and the thread is held firmly between them. This operation takes place during the ascent of the needle, and by the fixed and movable guides the slack of the thread is taken up and tension produced to set the stitch, and when the shorter radii or removed portion of the cam is adjacent to or pressed by the spring (see Fig. 3) the thread is free to move between it and the fixed plate. While the needle is passing through its downward movement the thread is held between the spring and plate, and the rock-arm acts as a pull-off, and thread is taken from the spool. In other words, the thread is free to move between the spring and plate while the needle is elevated and clear of the material being sewed. In a shuttle-machine the operation is the same.

Although I have designated the plate D as

"fixed" and as "rigid," a slight flexibility in the same would not be objectionable, but advantageous in case the thread is variable in size.

Any suitable means may be employed to secure the spring and plate to a fixed portion of the machine, and their position may be varied to conform to any particular class of machines, it being preferable, however, that they be arranged in the order shown relatively to the cam, and that the direction of approach and departure of the thread thereto be such that it is not drawn around or sharply against the edge or edges of either plate. In this instance, by means of screws *x y*, passing through both the spring and plate and into the fixed arm, they are secured in place. It is evident that the spring may be secured to the plate, and the latter secured to the arm.

Having described my invention and its operation, what I claim is—

1. In a sewing-machine, an automatic tension comprising the following devices, viz: a cam fixed upon a shaft relatively timed to the stitch-forming devices, as described, a spring-plate arranged adjacent to and against the periphery of the cam, and a fixed plate arranged adjacent to and parallel with the spring-plate and provided with thread-slots, substantially as specified.

2. The combination of a main shaft, as A, a fixed plate, as D, having an end slot and a side slot, and a cam, as B, arranged on said shaft, and operating against an intermediate spring, as C, substantially as shown and described.

In testimony whereof I affix my signature in presence of two witnesses.

RUEL W. WHITNEY.

Witnesses:

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SETH WILKS.