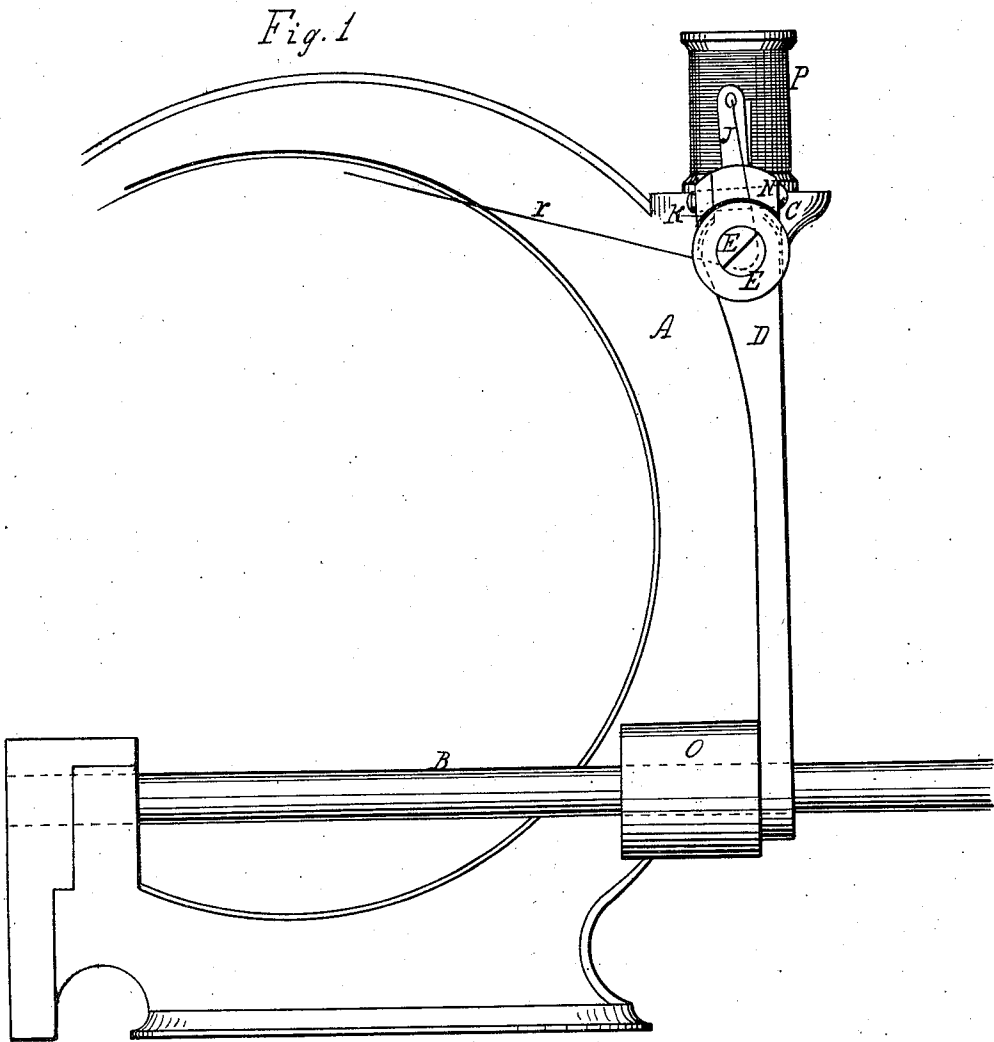


No. 43,819.

PATENTED AUG. 9, 1864.

C. H. WILLCOX.
SEWING MACHINE.

2 SHEETS—SHEET 1.



Witnesses
J. L. Coombs
Jules Devaureix

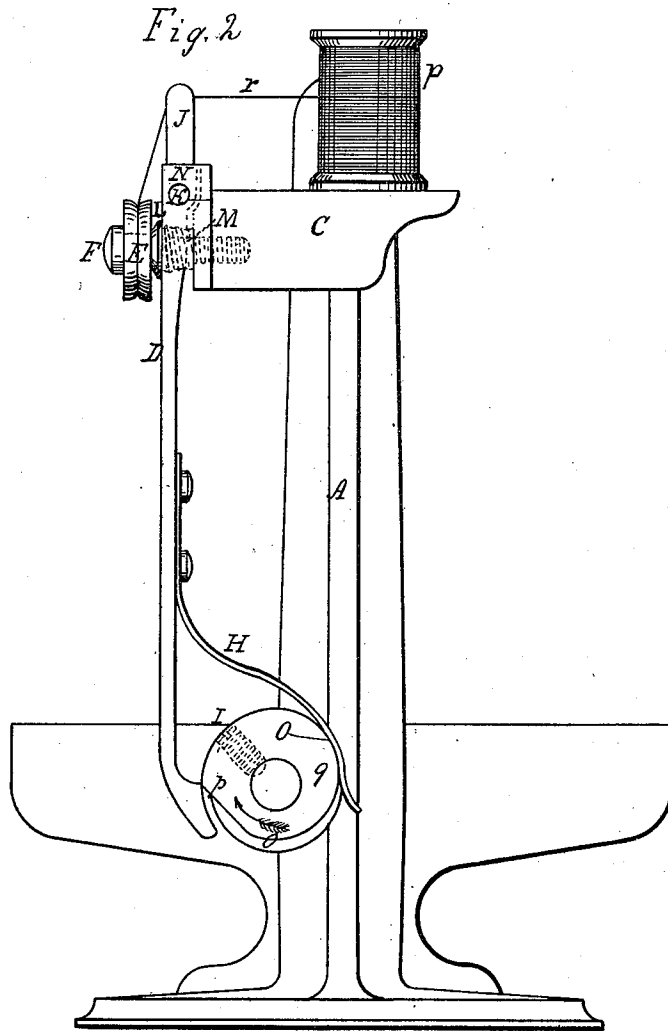
Inventor
Chas. H. Willcox
by *A. T. Cook*
his atty.

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J. L. Coombs
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Inventor
Chas. H. Willcox
by *A. Tollock*
his atty.

UNITED STATES PATENT OFFICE.

CHARLES H. WILLCOX, OF NEW YORK, N. Y., ASSIGNOR TO JAMES WILLCOX,
OF SAME PLACE.

IMPROVEMENT IN SEWING-MACHINES.

Specification forming part of Letters Patent No. 43,819, dated August 9, 1864.

To all whom it may concern:

Be it known that I, CHARLES H. WILLCOX, of New York, in the county and State of New York, have invented certain new and useful Improvements in Sewing-Machines; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, in which—

Figure 1 represents a front and Fig. 2 a side view of part of a sewing-machine to which my improvement is applied.

In all sewing-machines the "tension" holds its place as one of the most important of the devices constituting the machine, as upon it depends the proper tightness of the thread to produce perfect sewing. It is also the most difficult to regulate or adjust, as it has to be varied to suit the ever-varying size of the thread, length of stitch, and thickness or nature of material being sewed. It will readily be seen what a constant source of trouble it is to the operator, since at each change of thread, stitch, or material the tension must be regulated accordingly before proceeding to sew.

To make a tension which would be automatic in its operation, and such as will require no change or alteration by the operator for every required variety of work, although very desirable, would seem to be almost impossible. This result, however, is accomplished by the simple device I am about to describe. Of its usefulness there can be no question, as by making the tension automatic the one constant source of trouble and anxiety to the operator on a sewing-machine is removed; at the same time perfect work, as far as the tension is concerned, is secured, for by this device, the thread is always drawn up to the proper tightness, whatever may be the material and thread used.

My improvement therefore relates to a tension device to be used in connection with any sewing-machine, whether the same be operating with a single or double thread, in which the thread or one of the threads is supplied to an eye-pointed needle from a spool or bobbin; and my invention consists in the employment of a suitable apparatus for holding the thread firmly in a sewing-machine until the loop or stitch is nearly or wholly drawn up to the material,

at which point it is suddenly released, little or no tension being applied to the thread. By the use of this apparatus no adjustment of the tension will ever be required by the operator. This apparatus may be applied to all sewing-machines, suitable minor modifications being requisite for each class of machine; but as applied to the machine known as "Willcox & Gibbs" it will consist of two glass or metal disks moving freely upon a headed spindle screwed into the frame of the machine, one of the disks being made to approach toward the other by means of a lever worked by a suitable cam or eccentric, which is so shaped as to hold the disks together and nip the thread between them during a certain portion of its revolution and then to release them. The thread should be allowed to unwind freely from the spool, passing thence direct between the nipping-disks, whence it proceeds to the needle.

A in the drawings is the framing of the machine, and of which the bearing O and spool-stand C form a part.

B is the driving-shaft, on which is secured by the set-screw I the cam G, a portion of the periphery of which cam, from *q* to *p*, is concentric with the center of the shaft. At *p* the periphery suddenly approaches the center, after which it gradually recedes, and by an easy curve regains the full diameter at *q*.

To the front end, N, of the spool-stand C is hinged, by means of the fulcrum-pin K, the lever D, the lower end of which bears against and is caused to follow the motion of the cam G, by means of the spring H acting upon the opposite side of the said cam. The stud-screw F, on which are loosely fitted the two disks or washers E, the washer L, and the spiral spring M, (shown by dotted lines in Fig. 2,) is passed through a hole in the lever D of sufficient diameter to permit of the free movement of the spiral spring M, and is screwed firmly into the spool-stand C.

P represents a spool, on which is wound the thread *r*.

The operation is substantially as follows: The thread *r* from the spool P passes through the thread-guide J, and thence between the two washers E, partly round the stud F, and out from between the washers at right angles,

to be acted upon by the needle and looper or other device used in forming the stitch. The lever D, upon being forced outward by the cam G, holds the washers E, and with them the thread *r*, firmly between the washers L and the head of the stud F, in which position they are held by that portion of the cam between *q* and *p*. until by the operation of the looping or other devices the loop or stitch is drawn up nearly or quite to the surface of the cloth. When at *p* the lever is suddenly released and allowed to approach the center of the shaft, and thereby relieves the washers E of all the pressure, except the slight pressure exerted by the spiral spring M, which causes sufficient friction to prevent too much thread being jerked through between the washers upon their sudden release by the lever D. The continued revolution of the cam G causes the lever D to be again gradually forced outward, and again firmly holds the thread between the washers E, preparatory to the drawing up of another stitch.

Having now fully described my invention, I

would observe that I lay no claim to the clamping or nipping of the needle-thread, nor to the special devices herein shown for effecting that; but

I claim—

The combination of devices for producing in sewing-machines a self-acting intermittent tension of the needle-thread by holding such thread rigidly between suitable nipping-surfaces until the stitch or loop is nearly or quite drawn up to the surface of the material being sewed, and then releasing the thread suddenly, so as to allow sufficient thread to be drawn through the apparatus with little or no tension or friction for the forming of the next stitch, substantially in the manner herein set forth.

In testimony whereof I have signed my name to this specification before two subscribing witnesses.

CHAS. H. WILLCOX.

Witnesses:

E. P. HATCH,
JAMES KILNER.