

(No Model.)

2 Sheets—Sheet 1.

J. VANNETTE.
SEWING MACHINE.

No. 575,580.

Patented Jan. 19, 1897.

Fig. 1,

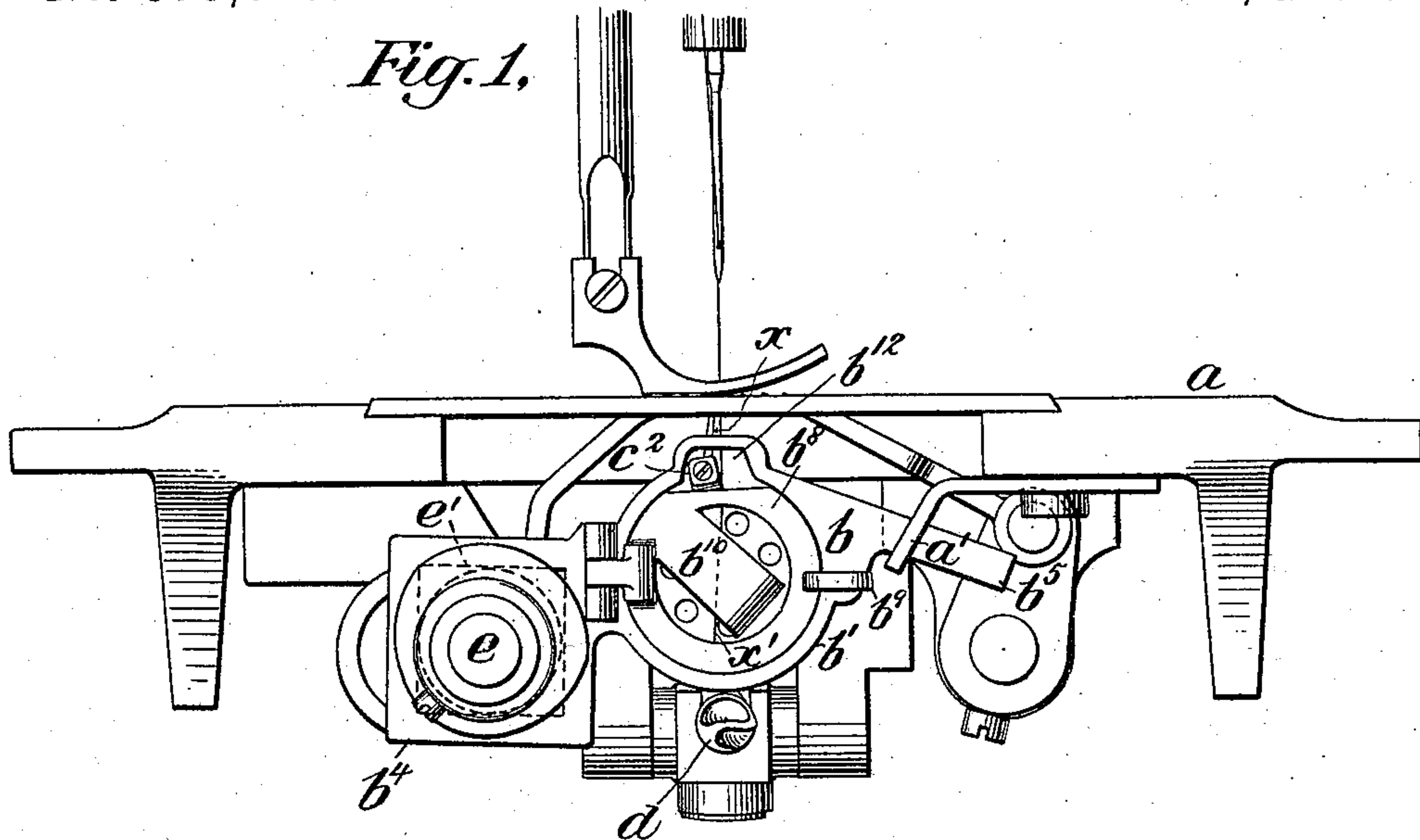
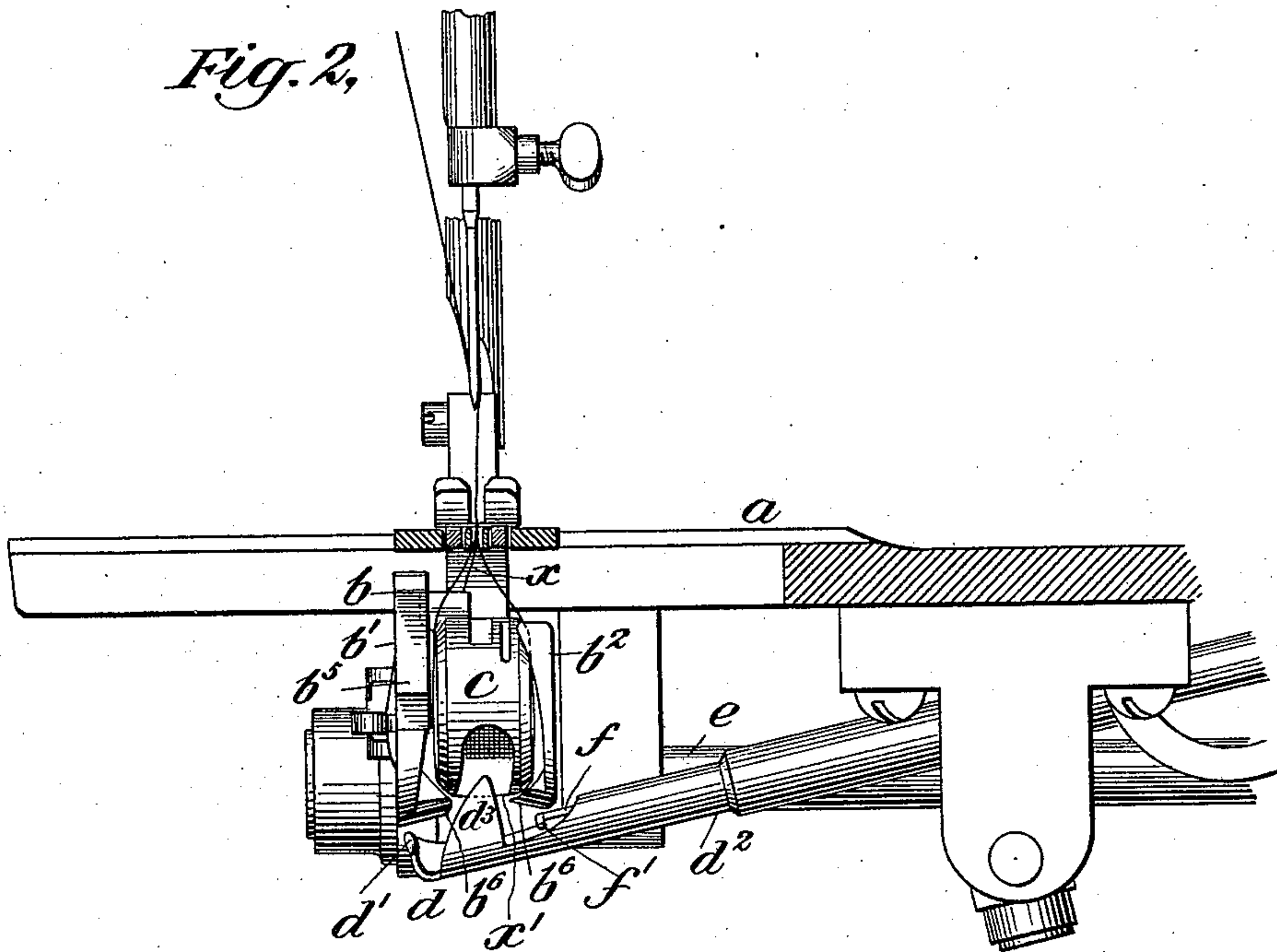


Fig. 2,



WITNESSES:

O. H. Kaynor
Fred W. Damm

INVENTOR

Jasper Vannette
BY *Chas. F. Damm & Co.*
his ATTORNEYS

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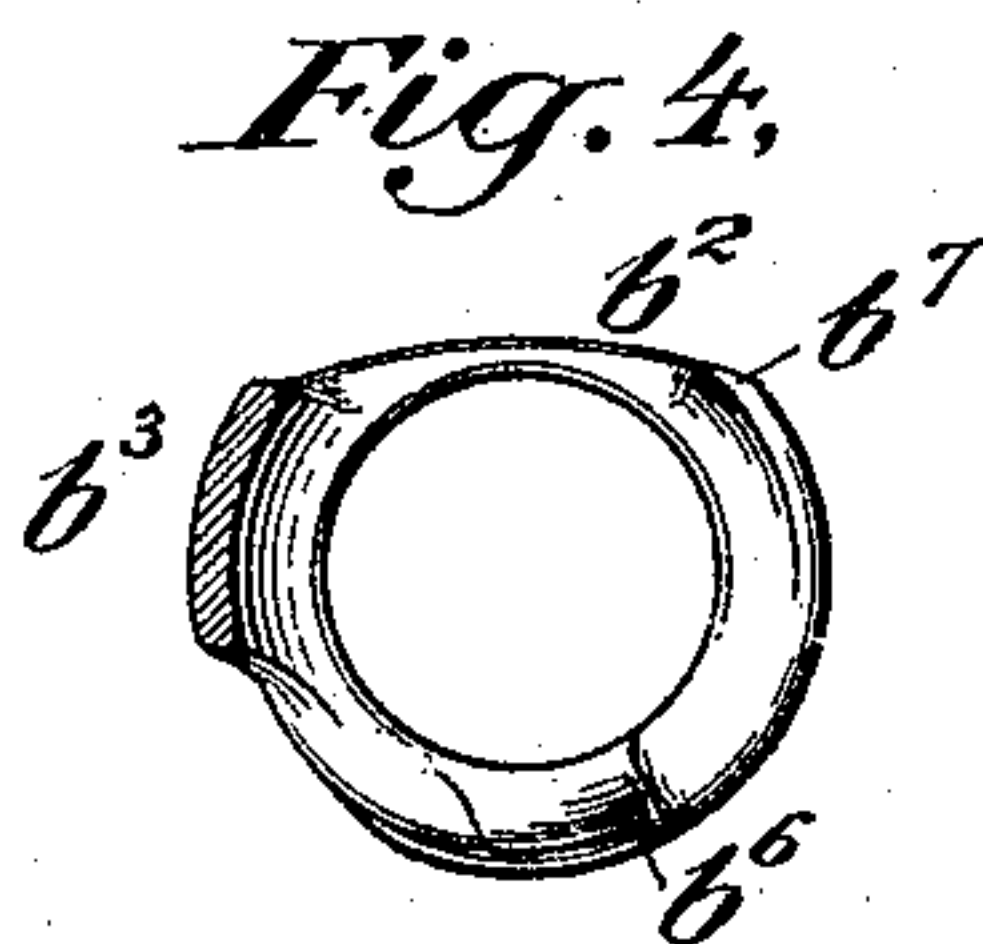
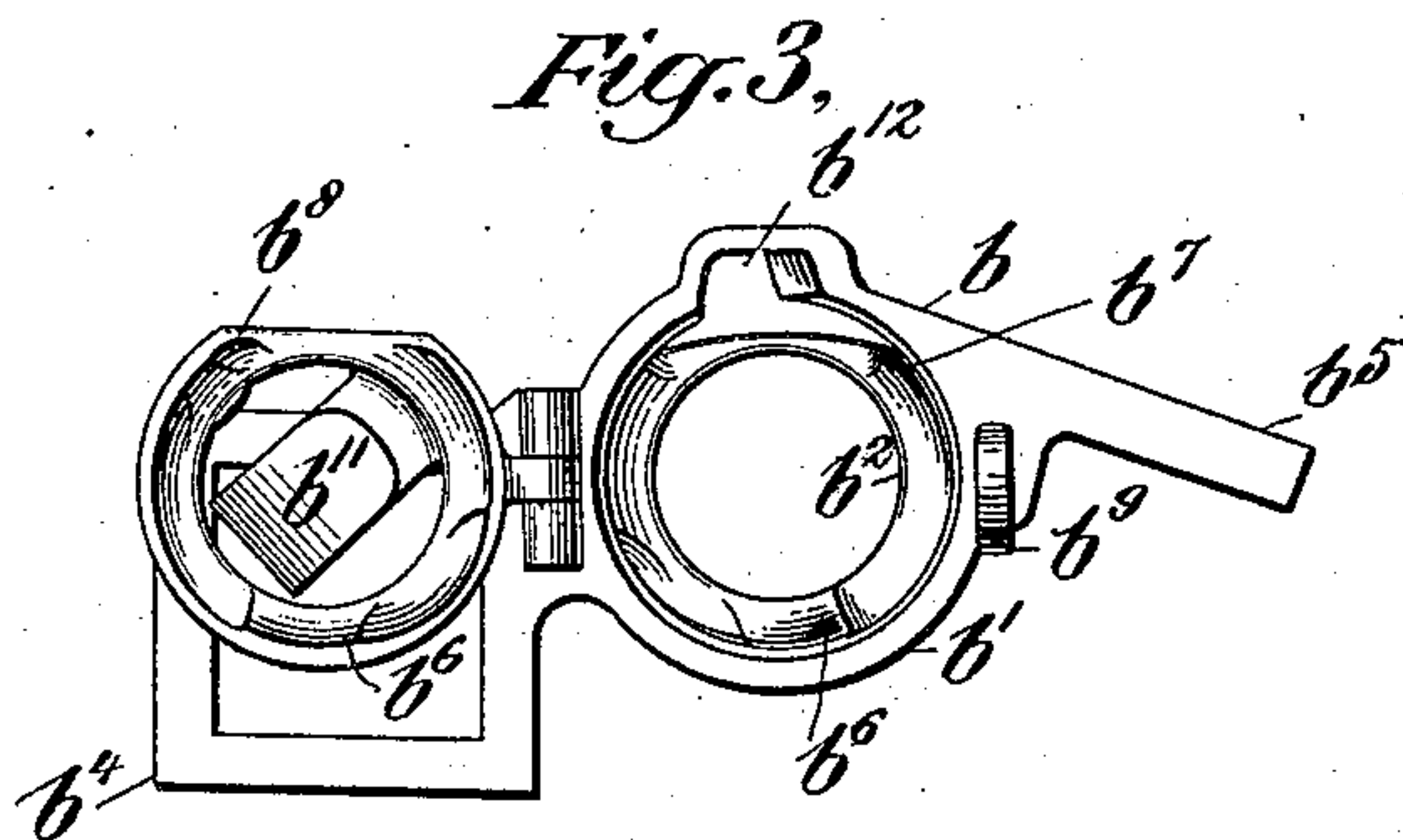


Fig. 5.

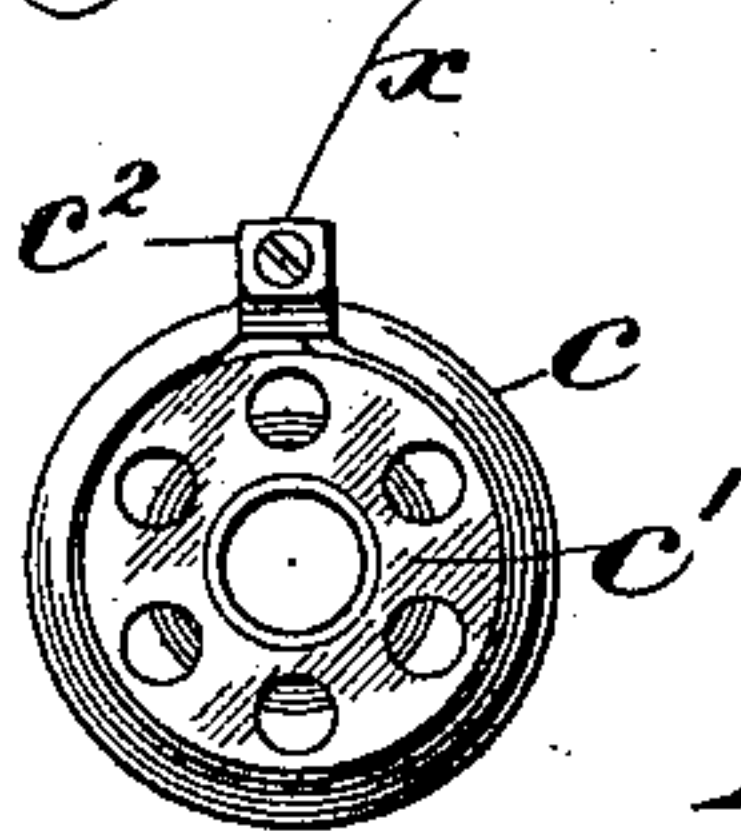


Fig. 7.

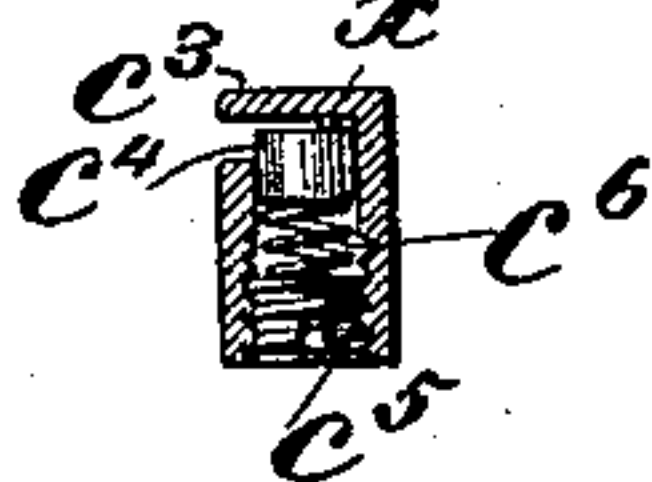


Fig. 6.

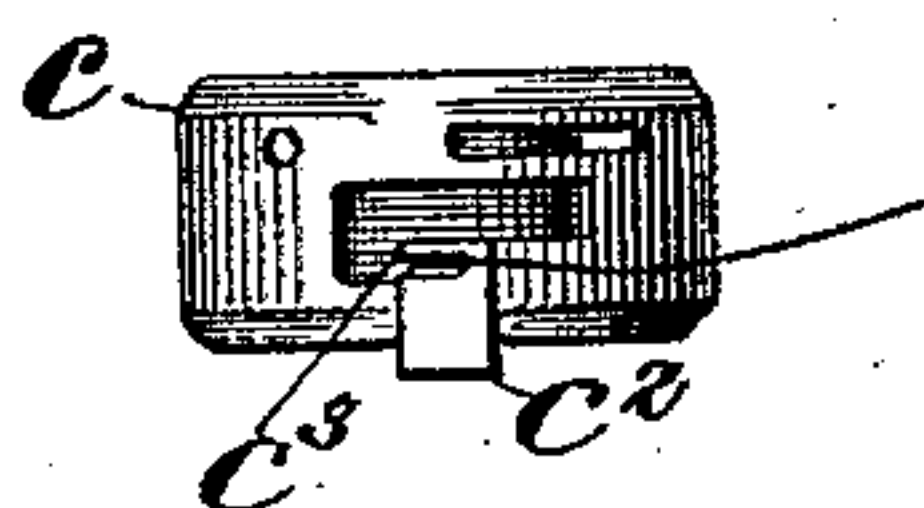
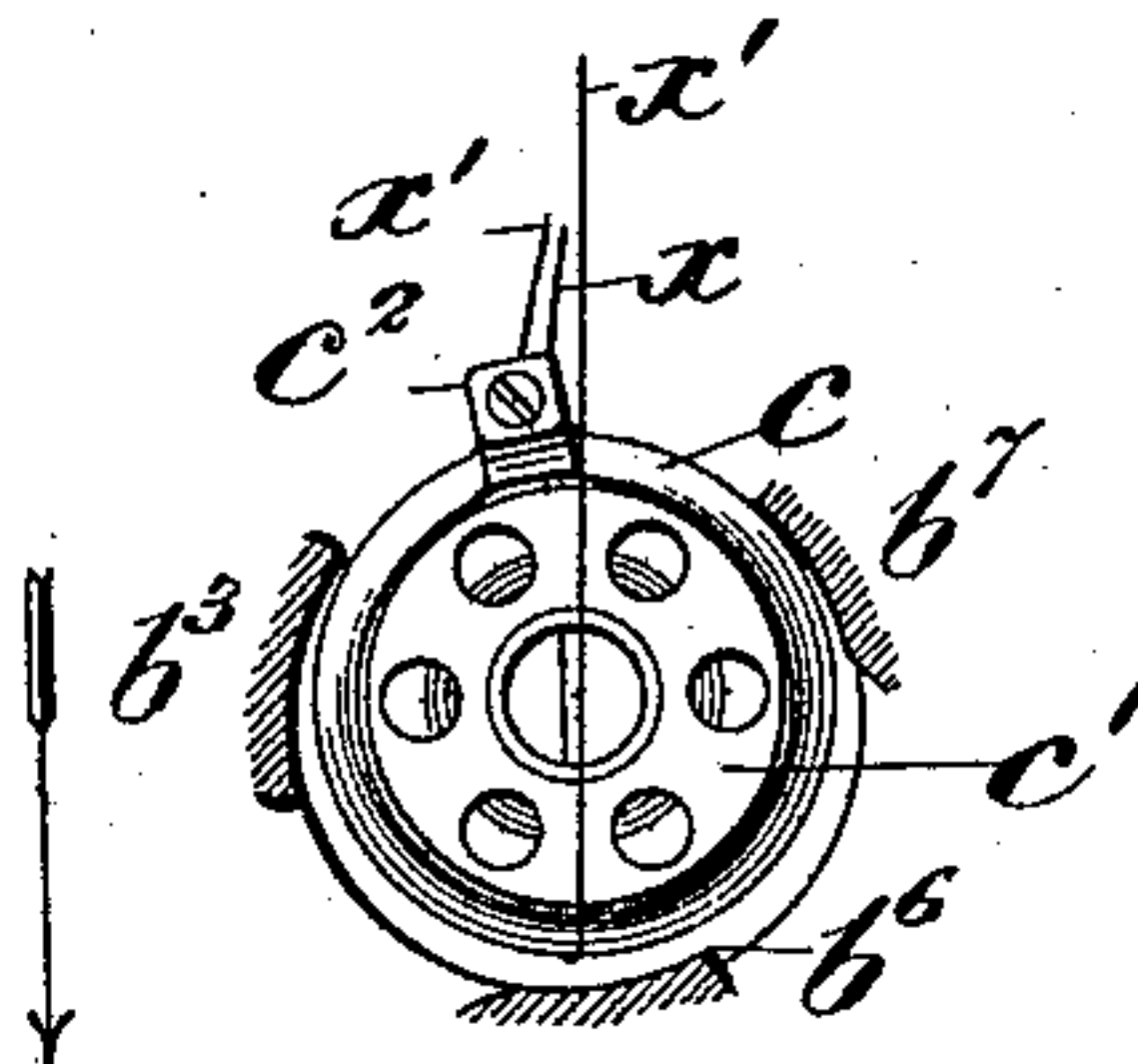


Fig. 8.



WITNESSES:

B. A. Raymond

Edw. W. Damm

INVENTOR

Jasper Vannette
BY *Chas. F. Damm & Co*

ATTORNEYS

UNITED STATES PATENT OFFICE.

JASPER VANNETTE, OF TIFFIN, OHIO, ASSIGNOR TO THE STANDARD SEWING MACHINE COMPANY, OF CLEVELAND, OHIO.

SEWING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 575,580, dated January 19, 1897.

Application filed September 3, 1895. Serial No. 561,194. (No model.)

To all whom it may concern:

Be it known that I, JASPER VANNETTE, a citizen of the United States, residing at Tiffin, in the county of Seneca and State of Ohio, have invented certain new and useful Improvements in Sewing-Machines, of which the following description, taken in connection with the drawings herewith accompanying, is a specification.

My invention relates to that class of lock-stitch sewing-machines in which the needle-thread is carried around a bobbin containing the interlocking-thread by means of a loop-taker which operates either by way of oscillation or of complete rotation; and it consists of additional improvements to those embodied in the machine forming the subject-matter of Letters Patent No. 526,470, granted to me September 25, 1894, the object of my present invention being to secure a free and unobstructed passage of the needle-thread loop around the bobbin-case and its inclosed bobbin, in order to reduce the friction upon the thread and the consequent wear and weakening of the same, and also to insure the proper and free handling of the thread by the several parts when the machine is run at high rates of speed.

In carrying my invention into effect I provide a vertically-moving bobbin-case frame or supporter, within which the bobbin-case, with its inclosed bobbin, is supported in a manner to be movable therewith and also be capable of vertical movement therein, so that said bobbin-case, which rests in a normal position upon the lower wall or walls of its supporter when the machine is at rest, will be held stationary by the bobbin-thread upon the downward movement of the supporter, and be suspended by such thread above the lower supporting-walls of the descending supporter, to leave a free and unobstructed space beneath its under side for the passage of the needle-thread loop, which is carried around the bobbin-case at this time by the loop-taker. While the loop is thus being carried around the bobbin-case, the supporter has a continued downward movement to carry with it the bobbin-case a sufficient distance to pull off enough thread from the bobbin for the formation of the succeeding stitch.

Referring to the accompanying drawings, Figure 1 represents a front end view of the lower part of a sewing-machine embodying my invention, also showing the presser-foot and needle with a portion of their supporting-bars. Fig. 2 is a side view of the front end of the machine, looking from the right in Fig. 1, the bed-plate of the machine being in section. Fig. 3 is a face view of the bobbin-case supporter detached from its position on the machine, showing the hinged face cap or ring opened. Fig. 4 is a view of one of the rings forming part of the bobbin-case supporter broken from the other through their connecting-arm, showing the lugs or projections thereon for supporting the bobbin-case. Figs. 5 and 6 represent a face and top view, respectively, of the bobbin-case with its inclosed bobbin. Fig. 7 is an enlarged horizontal section through the projection on the bobbin-case, showing the construction of the tension device contained therein. Fig. 8 is a detail view showing the relative positions of the bobbin-case and its supporter at a certain time during the operation of the machine, as will hereinafter be referred to in detail.

To explain in detail, *a* represents the bed-plate of the machine; *b*, the movable bobbin-case supporter; *c*, the bobbin-case, and *d* the loop-taker.

The bobbin-case supporter *b* consists of two rings *b'* and *b''*, united by a connecting piece or arm *b'''*, the ring *b'* being provided at one side thereof with an extension in the form of a yoke *b''''*, which latter embraces a driving cam or eccentric *e'*, located on a rotating shaft *e*, journaled on the under side of the bed-plate, from which the supporter is operated vertically to move in substantially a circular path. The opposite side of the ring *b'* is provided with an arm or extension *b''''''*, which extends and operates through an opening located in a depending arm *a'* on the under side of the bed-plate, which said depending arm serves both as a guide and support to the supporter, the latter being supported wholly at its ends and by its connection, as described.

The rings *b'* and *b''*, between which the bobbin-case is loosely supported laterally to allow a free passage of the loop around the same, are each provided with an inwardly-

projecting lug b^6 on their lower side and with an inwardly-projecting lug b^7 at or adjacent to their upper side, between which and the connecting-arm b^3 the bobbin-case is adapted to be retained and held from vertical displacement. The space thus formed between the supporting and retaining lugs b^6 and b^7 and the arm b^3 , in which the bobbin-case is supported, is, according to my present invention, of greater dimensions vertically than the sustained bobbin-case to allow vertical movement of the supporter independent of the bobbin-case, whereby the latter at a certain time during the formation of a stitch may be held vertically stationary during the downward movement of the supporter, so that a free and open space is provided beneath the same for the passage of the needle-thread loop (represented at x') thereunder when carried by the loop-taker d around or to the point below the same, where it is taken by the take-up device, as will hereinafter be referred to more in detail.

The outer ring b' of the bobbin-case supporter is provided with a ring b^8 , hinged thereto, which may be opened for the insertion or removal of the bobbin-case, and when closed is adapted to be secured by a turn-button b^9 or other suitable latch. This hinged ring b^8 is provided with a spring-arm b^{10} , which in the present instance shown projects from one side thereof into the space within its inner rim and is turned or bent back upon itself in the form of a loop, the inner part b^{11} of which is in a position to loosely hold the bobbin in position within its case.

The bobbin-case c , in the present instance illustrated, consists of an open-faced cylindrical shell, within which a disk-bobbin c' of ordinary construction is loosely supported.

The bobbin is held in position within its case c by the said spring-arm b^{11} , carried by the supporter b , which said arm extends in such position relative to the outer face of the bobbin as to hold the same loosely within the case and also allow a free passage of the thread-loop between the same. Any suitable device might, however, be employed in lieu of the spring-arm b^{11} for holding the bobbin in position within its case c , and be carried by either the supporter b or said case c . The construction illustrated, however, I consider as the most preferable by reason of its cheapness and simplicity.

The bobbin-case is provided with a lug or projection c^2 on its upper side, which extends into a recess b^{12} , formed in the upper side of the bobbin-case supporter in the ring b' , such construction being adapted to hold the bobbin-case from rotary movement. The bobbin-case is also provided with a tension device on its upper surface, which is formed in the present instance shown, as more clearly illustrated in Fig. 7, by an arm or extension c^3 of the lug c^2 and a spring-pressed pin c^4 , supported in an opening in said lug to act toward and against said arm c^3 , between which said sta-

tionary part c^3 and yielding part c^4 the bobbin-thread (represented at x) is adapted to be guided and receive its proper tension. The pressure or tension of the pin c^4 upon the thread is regulated by an adjusting-screw c^5 , supported in said lug c^2 , which acts upon said pin through the medium of an interposed spring c^6 .

The loop-taker d , in the present instance illustrated, is of the same construction and operation as that embodied in my said Letters Patent No. 526,470, dated September 25, 1894. This said loop-taker, as described and illustrated in said Letters Patent above referred to, consists of a loop-seizing hook d' , carried at one end of a tubular lever d^2 , which is supported and operated in a manner to move its forward hook-carrying end in a circular path around the bobbin-case. A plunger f , also provided with a loop-engaging hook f' at its forward end, is supported within said tubular lever d^2 and operated to slide back and forth therein and operate in combination with the hook d' , as follows: When the end of the lever is in its highest position and the loop-seizing hook d' is entering the loop being thrown out by the needle, the hook f' will be housed within or below the hook d' , but when the end of the lever d has moved down below the bobbin the hook f' will have moved away from the hook d' , so as to spread the thread-loop laterally in such manner that it will readily pass around the bobbin-case, and also, by reason of such spreading, will prevent friction on the needle-thread. When the said hooks have reached a position about central beneath the bobbin-case, the thread-loop will be engaged by the said projecting lugs b^6 and be disengaged thereby from the hooks. After being thus released from the said hooks, the loop is engaged by the loop-carrier d^3 on the lever d^2 , as shown in Fig. 2, and carried thereby beneath the bobbin-case to a position where it will be drawn up by the usual take-up device. The particular construction of this loop-taker and its operation in engaging with the needle-thread loop and carrying it around the bobbin-case and in closed bobbin to the position to be drawn up by the take-up device are not of my present invention and therefore have not been further illustrated or described herein.

In the operation of the machine the bobbin-case supporter moves vertically in a circular path in opposition to the movement of the loop-taker in such manner that the supporter will be lowered when the loop-taker is above and be raised when the loop-taker is below the same, so as to permit a smaller loop to encircle the bobbin-case than would otherwise be possible. When the needle descends and throws out a loop in the usual manner, the loop-taker engages with the same and carries it around the bobbin-case and bobbin to a position to be drawn up by the take-up, as before described. While the loop-taker is thus carrying the loop around toward the un-

der side of the bobbin-case, and before it has reached such position, the supporter *b* is operated to move downwardly and from its position supporting the bobbin-case, the latter remaining stationary during such movement of the supporter, whereby a free and unobstructed space is provided between the under side of the bobbin-case and the supporter for the passage of the thread, as clearly shown in Fig. 8. The bobbin-case is thus held stationary at the downward movement of the supporter by the bobbin-thread, the hold of the tension device upon the thread being sufficient to hold the bobbin-case without other support. The bobbin-case remains stationary, as described, until it is engaged on its upper side by the supporter, as shown in Fig. 8, at which time the continued downward movement of the latter carries with it the bobbin-case a sufficient distance to draw off enough slack thread from the bobbin for the formation of the succeeding stitch.

The bobbin-case supporter in the present instance shown is operated and timed in its operations to move in combination with the loop-taker and bobbin-case in the manner as described by means of the driving-cam *e'* at one side thereof and the angular guiding-arm *b⁵* at the opposite end thereof.

Having thus set forth one practical embodiment of my invention, it will be obvious that the construction and arrangement of the several parts may be more or less materially modified without departure from my invention. For instance, any suitable means for giving the bobbin-case supporter its proper movement, as described, or any suitable loop-taker for carrying the needle-thread loop around the bobbin-case, other than that as shown and described might be employed and be within the spirit of my invention.

Having thus set forth my invention, what I claim as new, and desire to secure by Letters Patent of the United States, is—

1. In a sewing-machine, the combination with the needle-bar and needle and their operating mechanism, of a bobbin-case and bobbin, a loop-taker for carrying the needle-thread loop around the bobbin, a vertically-moving bobbin-case supporter loosely supporting said bobbin-case and bobbin, means for actuating said bobbin-case supporter so as to give it a vertical movement independent of the supported bobbin-case throughout part of its downward movement, whereby the bob-

bin-case and bobbin may be supported and held stationary by the bobbin-thread at the beginning of the descent of the supporter, to provide an open space or passage beneath the same for the passage of the needle-thread loop thereunder, and means for supporting and guiding said bobbin-case supporter whereby it will move in a vertical plane, substantially as described and for the purpose set forth.

2. In a sewing-machine, the combination with the needle-bar and needle and their operating mechanism, of a bobbin-case and bobbin, a loop-taker for carrying the needle-thread loop around the bobbin, a vertically-moving bobbin-case supporter carrying said bobbin-case and bobbin, consisting of two connected rings provided with bearing-surfaces between which the bobbin-case is retained, the space vertically between said bearing-surfaces being greater than the diameter of the bobbin-case, whereby the bobbin-case and bobbin may be supported and held stationary by the bobbin-thread at the beginning of the descent of the supporter, to provide an open space or passage beneath the same for the passage of the needle-thread loop thereunder, a driving-shaft provided with a cam or eccentric thereon for engaging with said supporter or a connected part thereof, and means for engaging with the supporter or a connected part thereof, acting in combination with said cam or eccentric to support and guide the said supporter whereby it will move in a vertical plane, substantially as and for the purpose set forth.

3. In a sewing-machine, the combination with the needle-bar and needle and their operating mechanism, of a bobbin-case and bobbin, a loop-taker for carrying the needle-thread loop around the bobbin, a vertically-moving bobbin-case supporter loosely supporting said bobbin-case and bobbin, provided with an arm or extension thereon, means for engaging with said arm or extension so as to support and guide the connected bobbin-case supporter whereby it will move in a vertical plane, and a rotating shaft provided with a cam or eccentric thereon for operating the said supporter, substantially as described and for the purpose set forth.

JASPER VANNETTE.

Witnesses:

CHAS. J. YINGLING,
J. C. STONER.