No. 646,932. Patented Apr. 3, 1900.

A. TÉTRAULT.

SEWING MACHINE.

(No Model.) Application filed Apr. 6, 1898.

5 Sheets—Sheet 1.

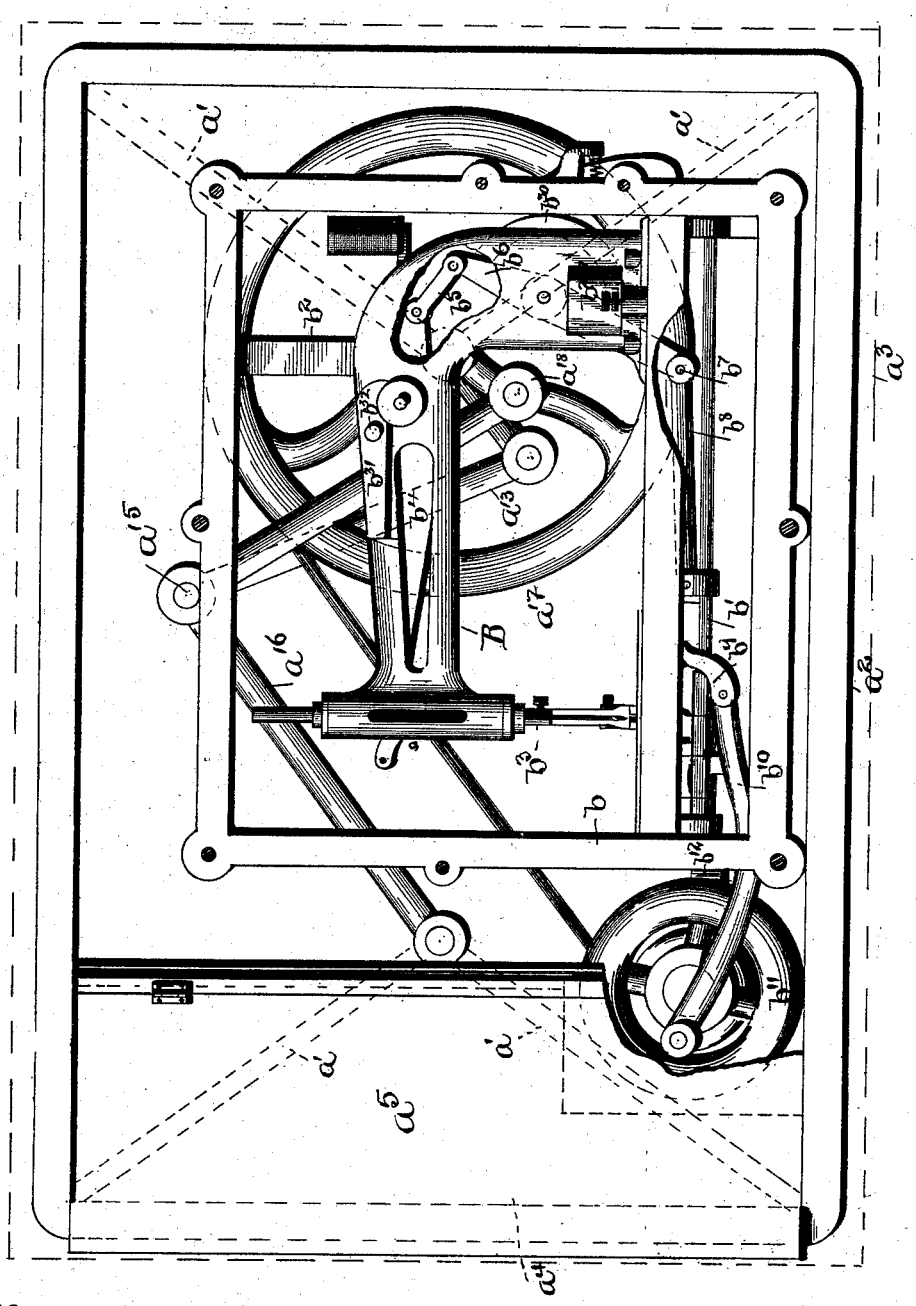

Fig. 1.

Witnesses:
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Arthur Page.

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By Marion & Marion
His Attorneys

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Fig. 2.

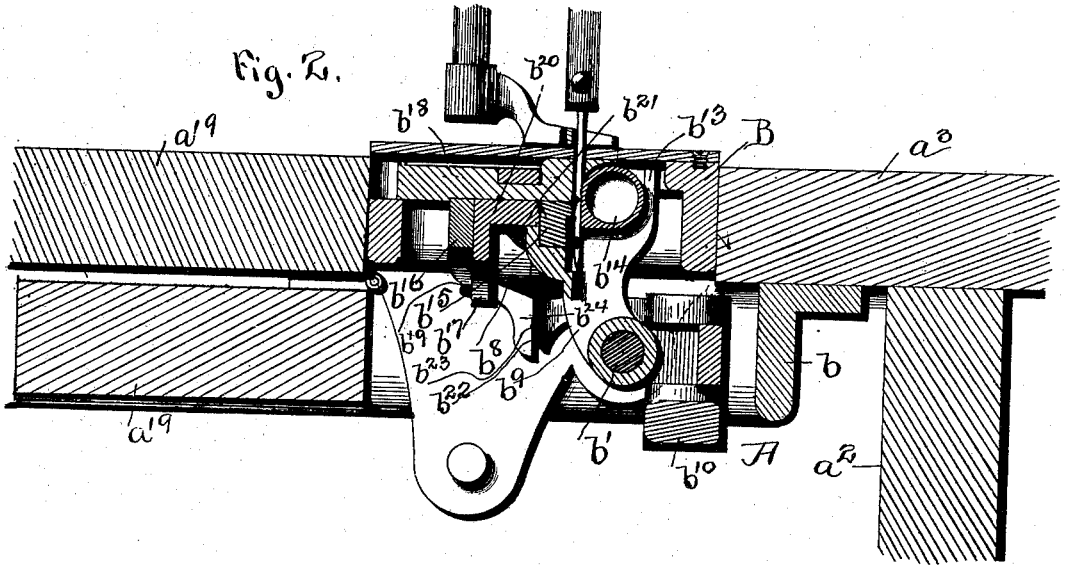
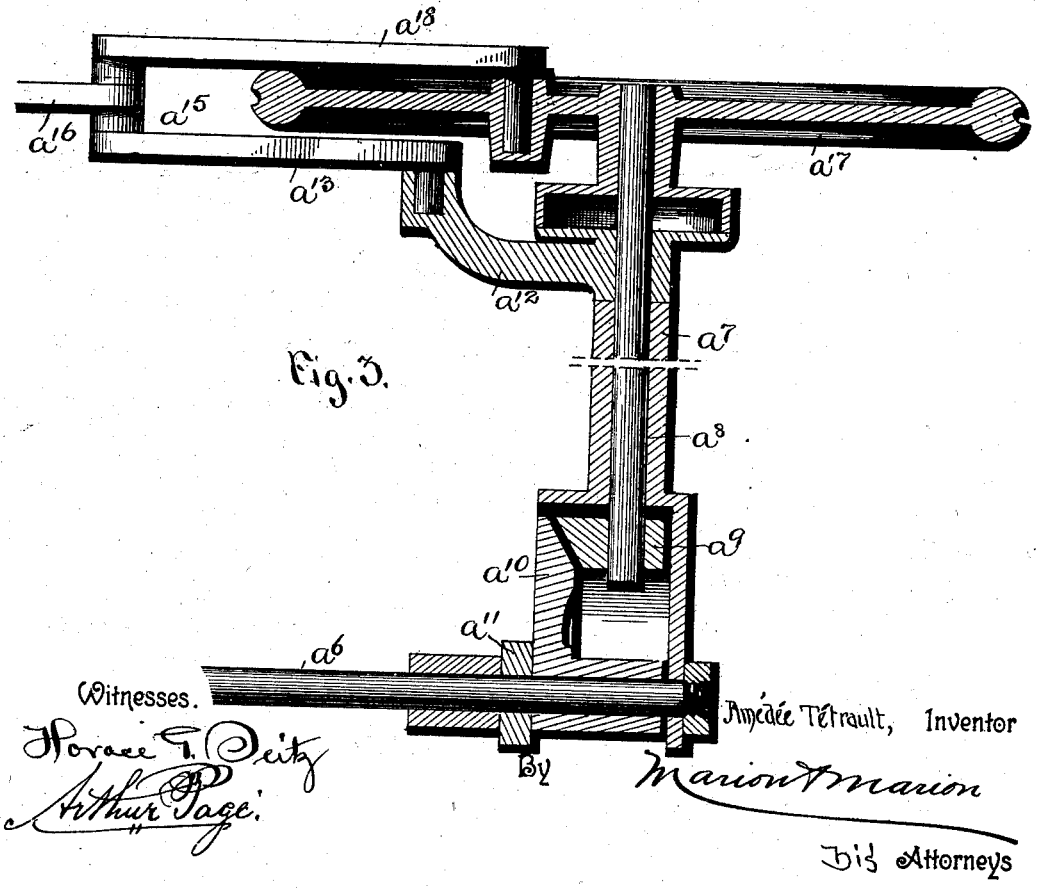


Fig. 3.



Witnesses.

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(No Model.) 5 Sheets—Sheet 3.

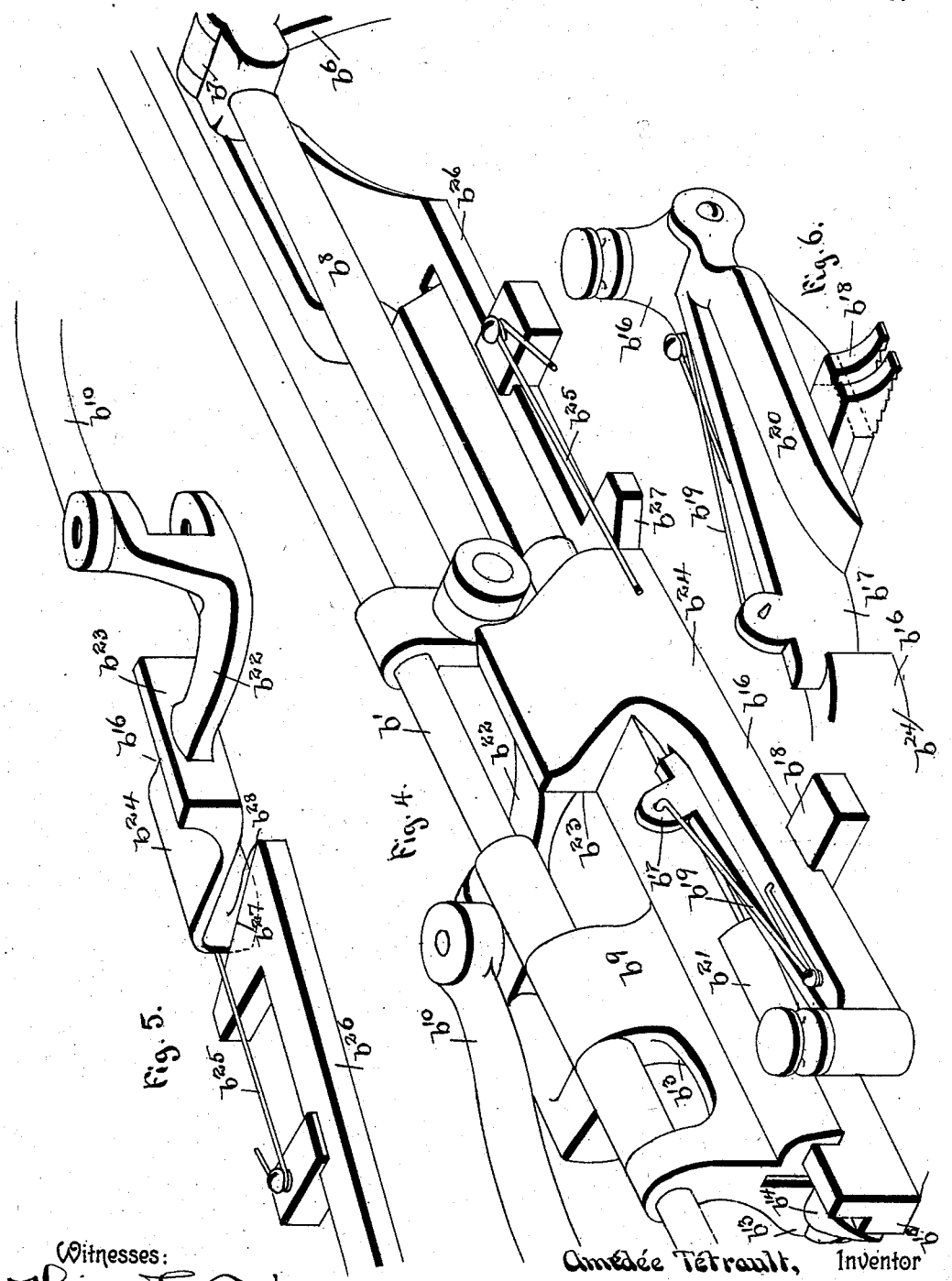

Fig. 5.

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No. 646,932. Patented Apr. 3, 1900.

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SEWING MACHINE.

(Application filed Apr. 6, 1898.)

(No Model.) 5 Sheets—Sheet 4.

Fig. 7.

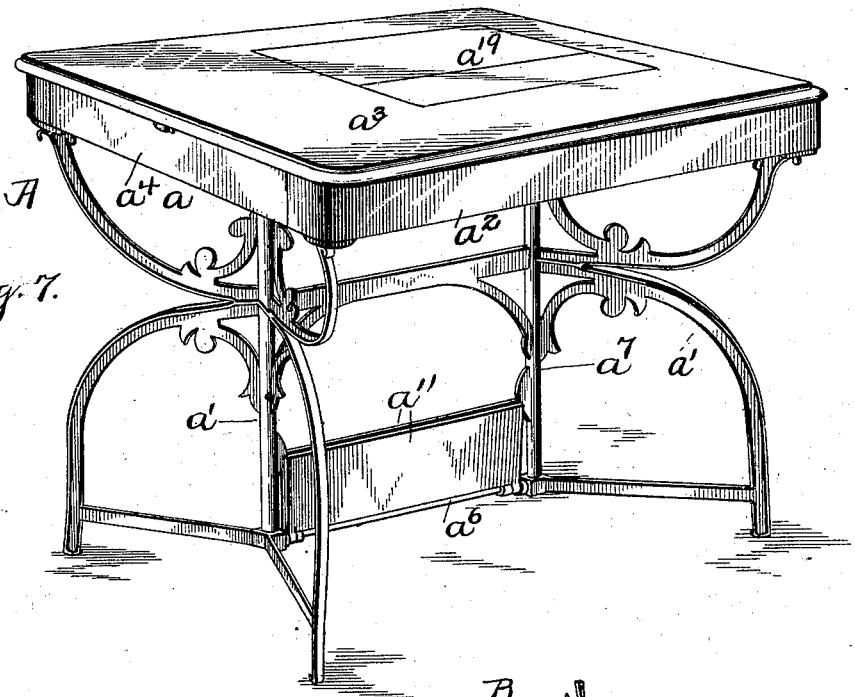
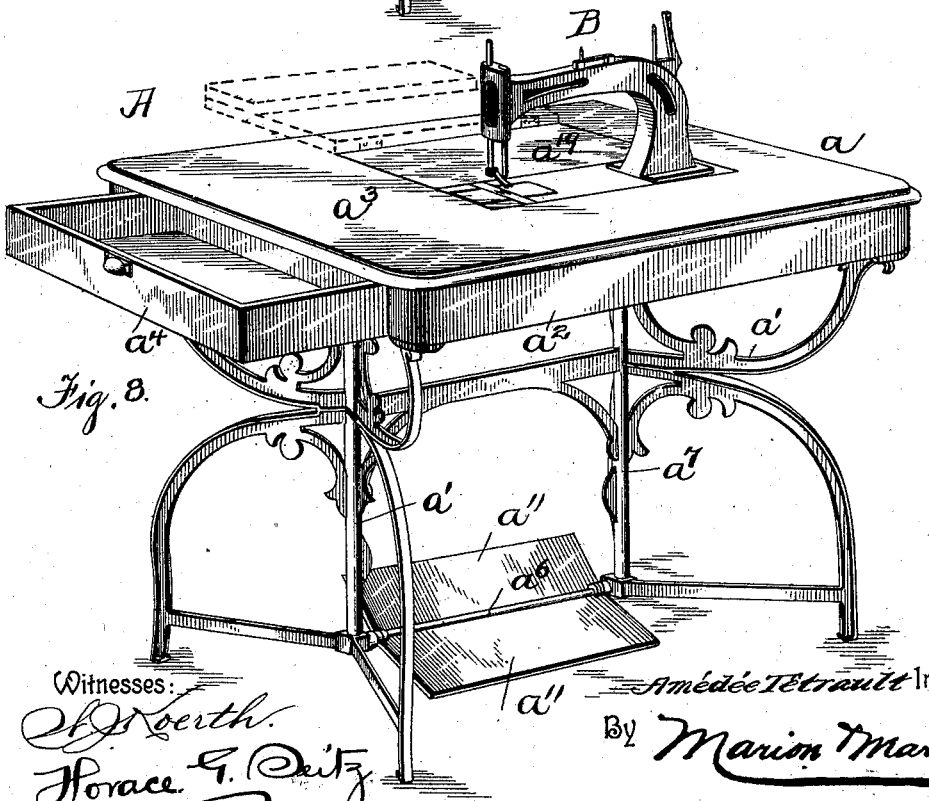


Fig. 8.



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No. 646,932. Patented Apr. 3, 1900.

A. TÉTRAULT.

SEWING MACHINE.

(Application filed Apr. 6, 1898.)

(No Model.) 5 Sheets—Sheet 5.

Fig. 9.

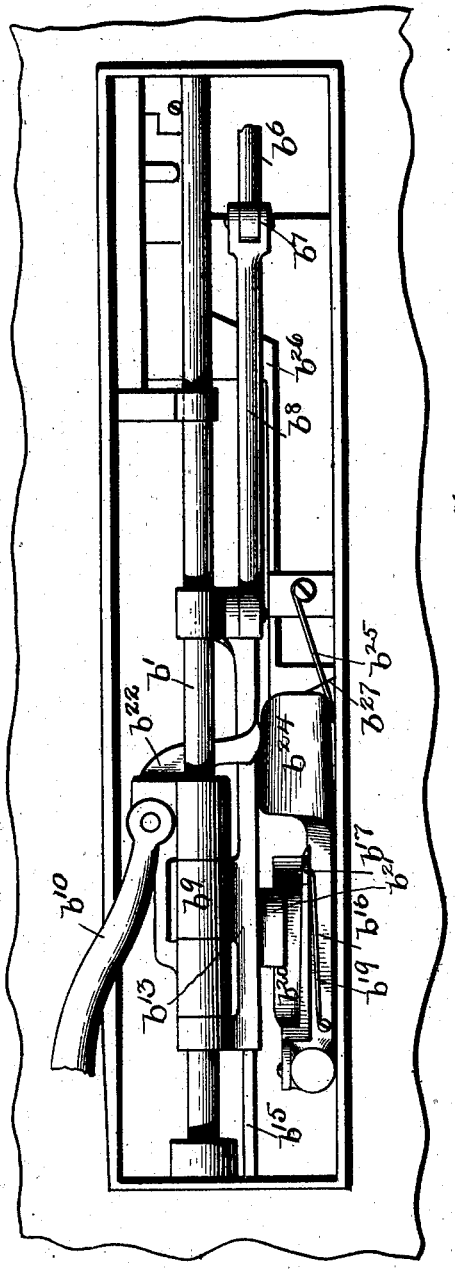


Fig. 10.

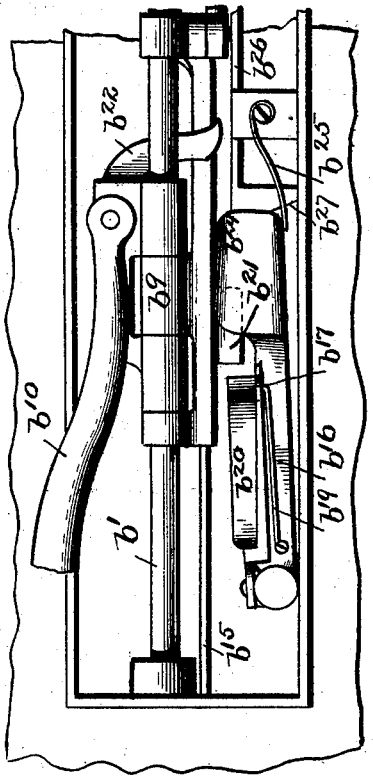
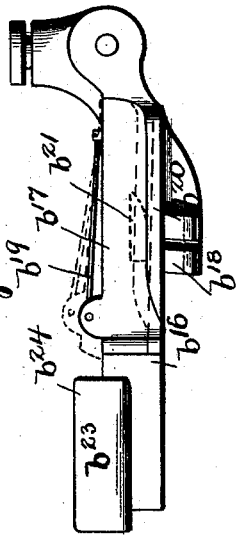


Fig. 11.



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UNITED STATES PATENT OFFICE.

AMÉDÉE TÉTRAULT, OF MONTREAL, CANADA.

SEWING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 646,932, dated April 3, 1900.

Application filed April 6, 1898. Serial No. 676,666. (No model.)

To all whom it may concern:

Be it known that I, AMÉDÉE TÉTRAULT, a citizen of the Dominion of Canada, residing at the city and district of Montreal, Province of Quebec, Canada, have invented certain new and useful Improvements in Sewing-Machines, (for which Letters Patent of the Dominion of Canada were granted January 4, 1899, No. 62,205, the application for which was filed May 16, 1898, Serial No. 81,795;) and I do hereby declare the following to be a clear, full, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to improvements in sewing-machines.

One object of my invention is to provide a sewing-machine which can be readily moved into and out of a closed compartment.

A further object is to provide a sewing mechanism which will be simple and durable in construction and of easy manipulation.

A further object is to provide a device in which the operating mechanism will be practically inclosed and in compact form.

To these and other ends my invention consists in the improved construction and combination of parts hereinafter fully described, and particularly pointed out in the appended claims.

In the drawings, in which similar letters of reference indicate similar parts in all of the views, Figure 1 is a plan view of a sewing-machine in its closed position, the table-cover being shown in dotted lines. Fig. 2 is a sectional view of a sewing-machine table. Fig. 3 is a sectional view showing the mechanism for operating the machine. Figs. 4, 5, and 6 are perspective views of a portion of the machine mechanism, taken from the under side. Fig. 7 is a perspective view of my improved machine in its closed position. Fig. 8 is a similar view showing the machine in its open or operative position. Fig. 9 is a bottom plan view of the work table or plate, showing the relative positions of the operating parts. Fig. 10 is a similar view showing the parts in a different position. Fig. 11 is an elevation of the feeding mechanism.

A designates the table portion of my device, which consists of the top portion a and the supporting-legs a'. The top portion a is formed of the rectangular frame portion a^2, to which is connected the table-top a^3. (Shown in dotted lines in Fig. 1.) One end of the top portion a is provided with a suitable drawer a^4, which may be provided, if desired, with a hinged cover a^5, which when the machine is in use forms an extension to the top of the table, although such cover may be dispensed with, as is shown in Fig. 8.

The supporting-legs a' are formed angular, as shown in Figs. 1, 7, and 8, and are connected centrally near their bottom by the treadle-bar a^6, as shown in Figs. 3, 7, and 8. The legs may be of any fanciful design desired, and at the meeting edges of each angular portion of one of the legs, preferably the one on the right, a vertical bearing a^7 is formed for the reception of the upright shaft a^8. The opposite leg is provided with a "dummy" bearing to make the machine appear symmetrical.

The lower end of the shaft a^8 is provided with a segmental bevel-gear a^9, which is adapted to be actuated by a suitable gear a^{10}, attached to or formed integral with the treadle a^{11}. The upper end of the shaft a^8 is provided with a fixed extension a^{12}, to which is pivotally connected a pitman a^{13}, the free end of which is pivotally connected to a pivot-point a^{15}, formed at one end of supporting-lever a^{16}, the opposite end of which is pivotally mounted at a suitable point, preferably above the dummy bearing. Loosely mounted on the shaft a^8 above the extension a^{12} is the horizontal balance-wheel a^{17}, to which is pivotally connected one end of a pitman a^{18}, the free end of which is pivotally mounted on the pivot-point a^{15}. By this construction it will be apparent that when the treadle is operated the gear a^{10} will serve to rotate the segmental gear a^9 in one direction, which will in turn rotate the shaft in a corresponding direction. The rotatory movement of the shaft a^8 causes the extension a^{12}, which is secured to the shaft a^8, to be moved backward or forward in the direction of movement of the extension. As a movement of the pitman a^{13} changes the position of the pivot-point a^{15} the pitman a^{18}, being connected to the pivot-point, is moved in a corresponding manner to that of the pitman a^{13}, and thus moves the balance-wheel.

Secured to the under side of the top of the table is a frame b, in which is secured a suitable shaft b'. Pivotally mounted on the shaft b' is the head B, which when not in use rests within the chamber formed under the top of the table, a lug b^2 serving to hold it in position.

When it is desired to use the machine, a hinged portion a^{19} of the top is raised and the head rotated on shaft b' until it is in a vertical position, when the hinged portion a^{19} falls back into position and the machine is ready for operation.

The head B is of approximately the usual shape longitudinally, but is narrow transversely, the mechanism permitting of the use of an exceedingly-narrow frame.

The needle-bar i^3 is of the usual form and is actuated by means of an oscillating lever b^4, pivotally mounted in the arm of the machine. The rear end of the lever b^4 is pivotally connected by means of a link b^5 with a vertically-upright oscillating lever b^6, pivotally connected, as at b^7, to one end of a pitman b^8, the free end of which is connected to a sliding bearing b^9, mounted on the shaft b'. The sliding bearing b^9 is moved longitudinally of the shaft b' by means of a pitman b^{10}, pivotally connected to said bearing and having its opposite end adapted to be pivotally connected to a drive-wheel b^{11}, mounted in an extensible bearing b^{12}, the drive-wheel being rotated by means of a belt or similar connection with the balance-wheel a^{17}. As the drive-wheel b^{11} and the pitman b^{10} remain in a horizontal position, while the head may assume various positions, I have formed the connection between the pitman a^{10} and the sliding bearing b^9 similar to a hinge, as shown in Figs. 4, 9, and 10, the shaft b' forming the axis of the hinged connection between the sewing-machine head and its support, thus insuring a positive movement of the bearing b^9 regardless of the position of the head B. By this construction it will be obvious that as the drive-wheel is rotated the pitman b^{10} will cause the bearing b^9 to be reciprocated on the shaft b', imparting a movement to the vertical oscillating lever b^6 and through the medium of the link b^5 to the oscillating lever b^4 and moves the needle-bar. The oscillating lever b^6 has its pivot-point arranged in such manner that the connecting ends of the lever b^6 and the link b^5 move past a line drawn centrally through the pivotal points of the lever b^6 and the connection between the lever b^4 and link b^5 in both directions, thus giving the needle the following motions: beginning when the needle is at its upper limit of movement, downward to its full extent, (which is reached when the three pivotal points are in alinement,) a short movement upward, a return to its lowermost position, and a full stroke upward to its initial position. By this construction the needle is in its downward position only when its presence is needed to catch the thread from the shuttle, it being at all other times away from the movement of the shuttle, although when at the end of its short upward stroke the eye of the needle is below the work being sewed.

The sliding bearing b^9 is provided with shuttle-carrying arms b^{13}, within which the shuttle b^{14} is adapted to be placed, the inner side of the shuttle being adapted to move against the face of the slide b^{15}, formed beneath the table portion of the head B. As the shuttle and the needle-operating mechanism have their movement from the same point (the bearing 9) it is obvious that there is no possible liability of either of the two elements being disarranged in such manner as to disturb the action of the machine.

The work-feed mechanism of the machine is operated by the movement of the pitman b^{10} and bearing b^9 in the following manner: Pivotally connected to the under side of the work-plate is an oscillating arm b^{16}, to which is pivotally connected spring-actuated arm b^{17}, to which the feed-block b^{18} is removably affixed, as shown in Fig. 6, the spring b^{19} serving to normally hold the feed-block b^{18} in a position below the work being sewed, as shown in dotted lines in Fig. 11. The lower face of the horizontal portion b^{20} of the arm b^{17} is inclined and is adapted to contact with the upper inclined face of a lug b^{21}, formed on the sliding bearing b^9, the contact serving to raise the feed-block b^{18} above the level of the work-plate and in position to carry the work forward, the contact taking place when the sliding bearing is near the end of its movement toward the left. When the contact between the lug b^{21} and the face of the portion b^{20} has been made, as shown in full lines in Fig. 11, and as the sliding bearing b^9 changes the direction of its movement, an extension b^{22}, formed on the end of the pitman b^{10}, contacts with a vertical face b^{23} of the rear portion b^{24} of the arm b^{17} and moves said rear portion forward, carrying with it the feed-block b^{18}, the positions assumed being as shown in Fig. 9. The contact between the extension b^{22} and the face b^{23} is made when the end of the pitman b^{10}, secured to the drive-wheel, has slightly passed the central point, and as the wheel continues its rotatory movement the pitman will move away from the central line, thus causing the extension b^{22} to be moved forward gradually, thus feeding the work forward with a gentle movement. After the work has been fed forward the feed-block b^{18} passes downward by reason of the inclined face of the lug b^{20} passing from the inclined face b^{21}, the spring b^{19} forcing the arm b^{17} downward. A spring b^{25} serves to hold the rear portion b^{24} in its normal position and against the face of the extension b^{22}.

To regulate the length of the stitch, I provide a spring-actuated rod or plate b^{26}, having its forward end provided with an inclined face b^{27}, against which the inclined face b^{28} of the rear portion b^{24} is adapted to abut when in its normal position. A suitable set-screw

b^{29}, secured above the work-table and provided with a conical lower end, serves to move the rod or plate b^{26} forward to shorten the limit of movement of the rear portion b^{24}, and thus shorten the length of the feed, the spring serving to force the rod or plate b^{26} backward when the set-screw b^{29} is released from its contact with the rod or plate.

To readily stop the movement of the machine, I provide a grip b^{30}, secured to the oscillating lever b^{6}, by means of which the movement of the lever can be readily stopped, and thus stop the movement of all of the parts.

A thread-tension plate b^{31}, formed of suitable resilient material, is secured to the side of the arm, the tension being regulated by means of a set-screw b^{32}.

As shown in Fig. 8, I may use a treadle formed in two parts, allowing the treadle to be folded, making the complete machine one which is neat and attractive in appearance.

The balance-wheel and its immediate connecting parts are mounted within the chamber formed beneath the table-top, and thus prevents dust accumulation, &c.

Having thus described my invention, what I claim as new is—

1. A sewing-machine comprising a frame; a head and work-plate pivotally mounted within said frame; sewing mechanism located within said head and plate; a wheel mounted on said frame, having operative connection with said sewing mechanism; a drive-wheel mounted below said frame on a horizontal plane with said wheel and operatively connected therewith, said drive-wheel and said wheel retaining their positions regardless of the position of said head and table; and means for imparting a rotary movement to said drive-wheel.

2. The combination with a cabinet, having a chamber normally closed; of a sewing-machine head and work-plate pivotally mounted within said chamber and adapted to extend therefrom when in position for use; sewing mechanism mounted in said head and table; a wheel mounted within said chamber for operating said sewing mechanism; a drive-wheel, operatively connected to said wheel; and means for imparting movement to said drive-wheel.

3. A sewing-machine, comprising a frame; a shaft secured therein; a head and work-plate pivotally mounted on said shaft; a shuttle-carrier mounted to have reciprocatory movement on said shaft; a needle-bar operatively connected to said shuttle-carrier; and means for imparting movement to said shuttle-carrier.

4. A sewing-machine, comprising a head and work-plate; a shuttle-carrier mounted to have a reciprocating movement in said work-plate; a needle-bar operatively connected to said shuttle-carrier; work-feed mechanism located on said plate, said mechanism being operated by the movement of said shuttle-carrier; and means for imparting movement to said shuttle-carrier.

5. A sewing-machine, comprising a head and work-plate; a shuttle-carrier mounted to have a reciprocating movement on said work-plate; a needle-bar operatively connected to said shuttle-carrier; work-feed mechanism located on said plate and operated by the movement of said shuttle-carrier, said mechanism having a regulated movement; means for regulating the movement of said mechanism; and means for imparting movement to said shuttle-carrier.

In witness whereof I have hereunto set my hand in the presence of two witnesses.

AMÉDÉE TÉTRAULT.

Witnesses:
HORACE G. SEITZ,
J. A. MARION.