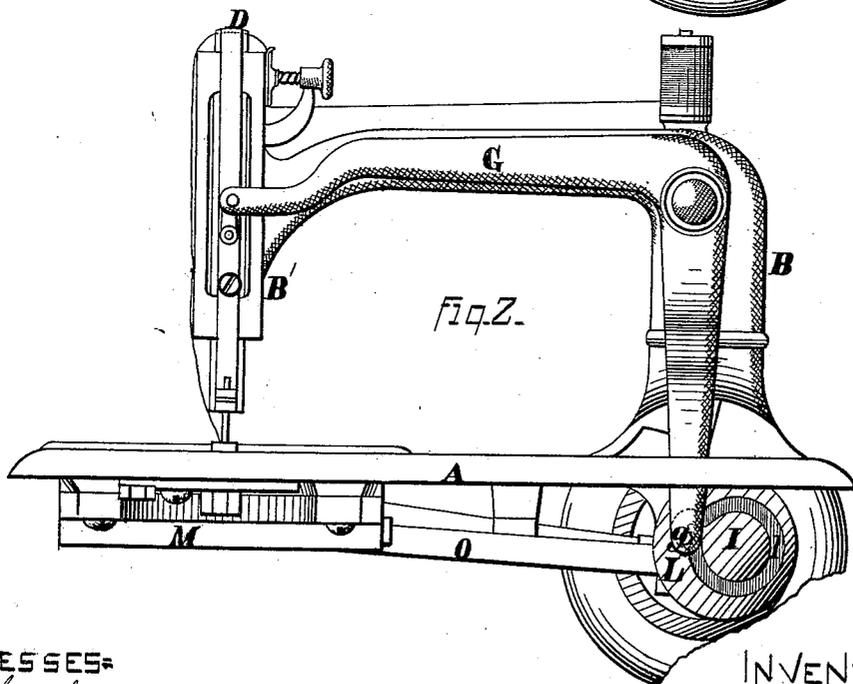
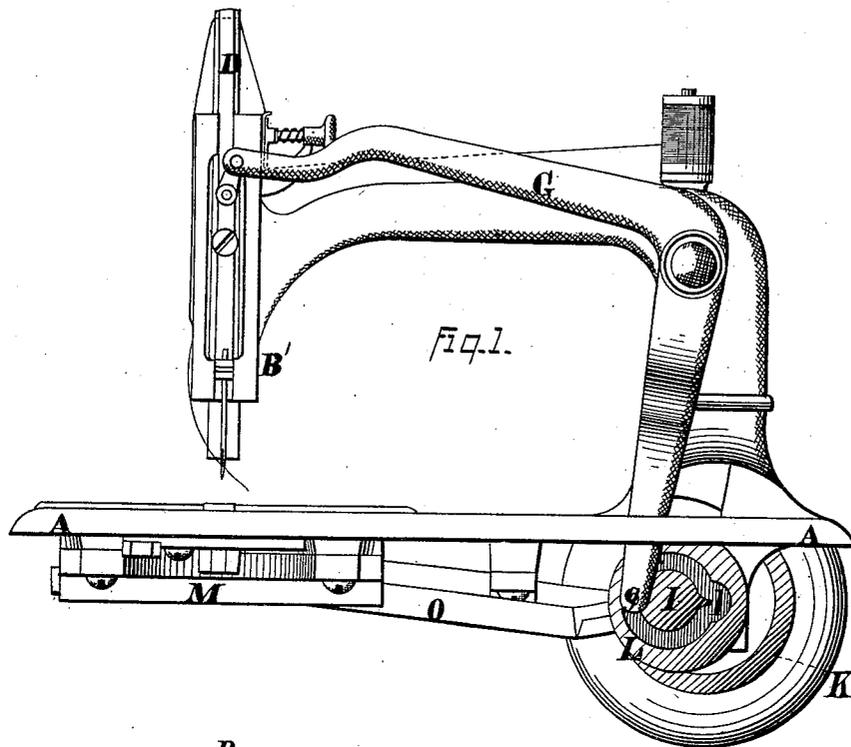


A. H. WAGNER.
SEWING-MACHINE.

No. 177,038.

Patented May 2, 1876.



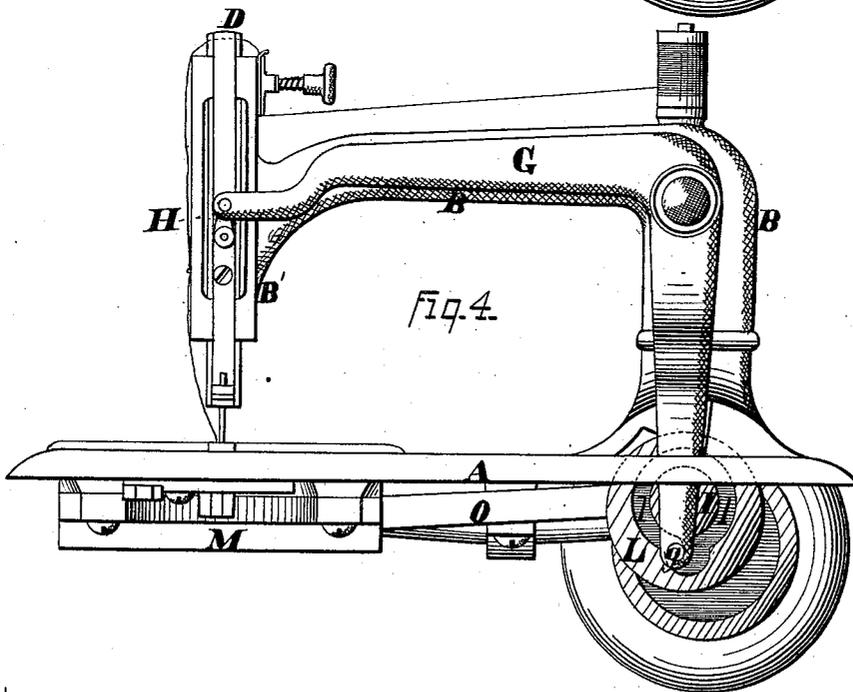
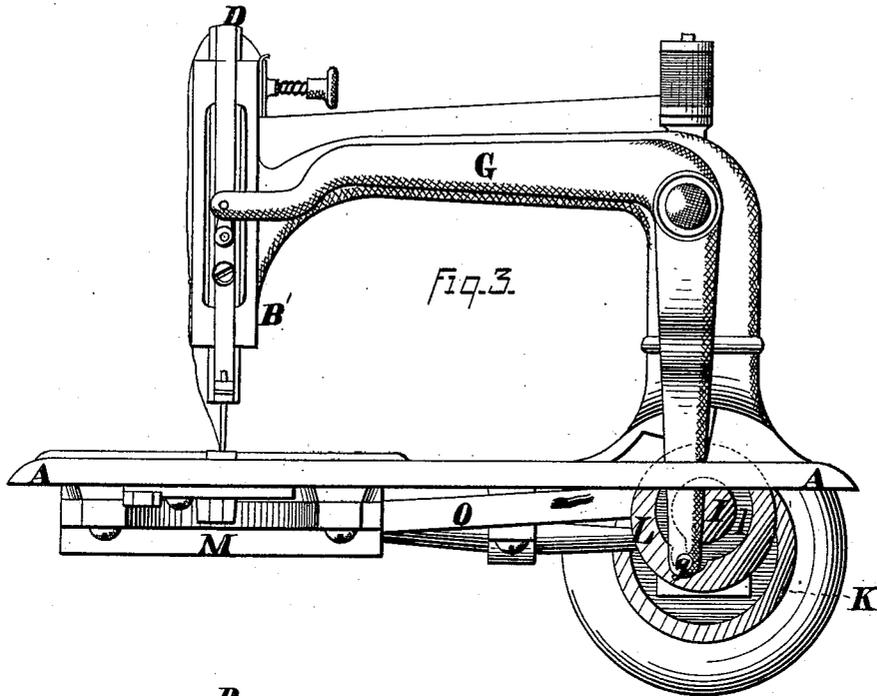
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Fig. 5.

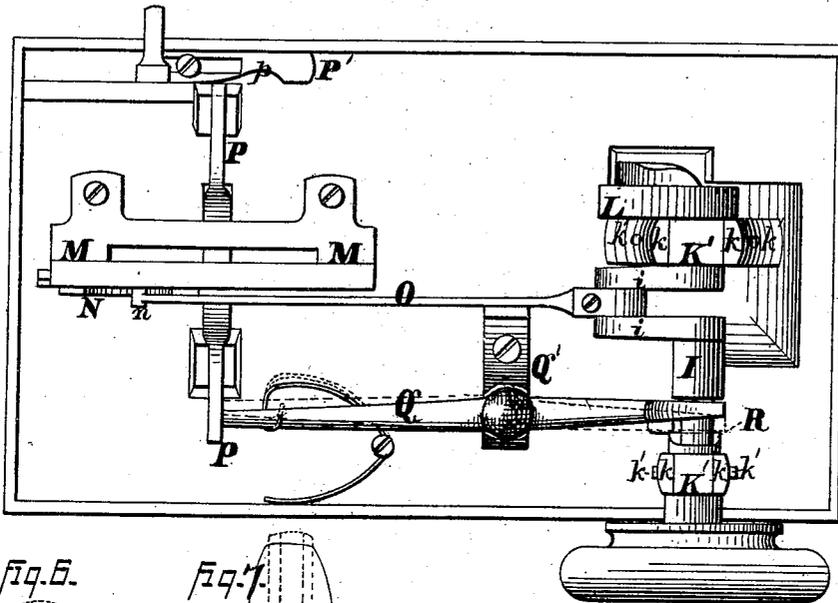


Fig. 6.

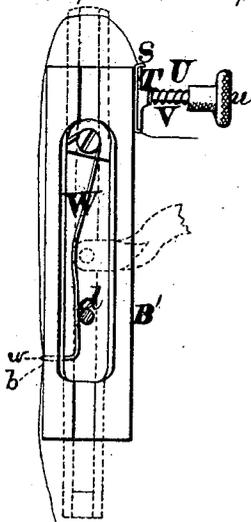


Fig. 7.

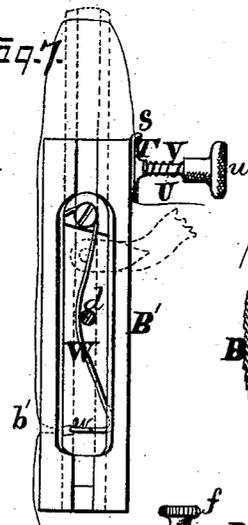


Fig. 9.

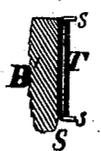


Fig. 10.

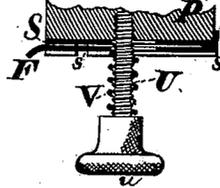


Fig. 11.

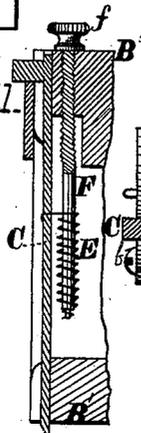
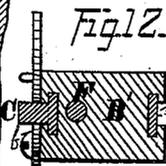


Fig. 12.



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UNITED STATES PATENT OFFICE.

AUSBERT H. WAGNER, OF CHICAGO, ILLINOIS.

IMPROVEMENT IN SEWING-MACHINES.

Specification forming part of Letters Patent No. **177,038**, dated May 2, 1876; application filed April 8, 1875.

To all whom it may concern:

Be it known that I, AUSBERT H. WAGNER, of Chicago, in the county of Cook, and in the State of Illinois, have invented certain new and useful Improvements in Sewing-Machines; and do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1 is a side elevation of my improved machine, showing the needle-bar in an elevated position. Figs. 2, 3, and 4 are like views of the same, showing, respectively, the successive positions of said needle-bar. Fig. 5 is a plan view of the lower side of said machine. Figs. 6 and 7 are side elevations of the housing or head for the needle-bar, said bar being removed so as to show the construction and operation of the take-up. Fig. 8 is a rear elevation of the tension. Figs. 9 and 10 are sections of the same upon lines xx and zz , respectively, of Fig. 8. Fig. 11 is a vertical section of the presser bar and head, showing the arrangement of the spring used for operating the former; and Fig. 12 is a horizontal section of the head or housing which contains the presser and needle bars.

Letters of like name and kind refer to like parts in each of the figures.

My invention is designed to increase the simplicity, durability, and ease of operation of a shuttle sewing-machine; and it consists, principally, in the construction and operation of the take-up, substantially as and for the purpose hereinafter shown. It consists, further, in the pivotal bearing of the lever employed for operating the feed-bar, substantially as and for the purpose hereinafter specified. It consists, further, in the construction of the journal-boxes of the driving-shaft, substantially as and for the purpose hereinafter set forth. It consists, finally, in the arrangement of the spring employed for operating the presser-bar, substantially as and for the purpose hereinafter shown and described.

In the annexed drawings, A represents the bed-plate of my machine, from one end of which extends upward and then forward the fixed arm B, that supports the operative mechanism above said base. At the front end of the arm B is a vertical head, B', which is pro-

vided within opposite sides with vertical T-shaped grooves b and b , one of which receives the presser-bar C, and the second groove the needle-bar D. As seen in Fig. 12, each of the bars C and D is flat, with a thickness equal to about one-fourth its width, and is placed so as to bring its longest transverse dimensions in a line with the arm B. A downward pressure is given to the bar C by means of a spiral spring, E, which is attached at its upper end to or upon the inner face of said bar, and at its lower end to some suitable fixed point below, the arrangement being such as to cause the longitudinal contraction of said spring to draw said presser-bar downward.

In order that the force of the spring E may be varied at will, a rod, F, is placed within said spring, and, passing upward, has its upper threaded portion contained within a correspondingly-threaded opening in the upper end of the head B'. The upper end of said screw is provided with a milled head, f , while its lower end is pointed, and, fitting into the contracted lower end of said spring, forms the fixed bearing for the same. As thus arranged, it will be seen that by moving the screw F downward within the head B', the spring E will be lengthened and caused to exert a greater downward pressure upon the bar C, while by partially withdrawing said screw from said head, such pressure will be lessened in a corresponding degree.

By arranging the spring E so as to cause it to operate by contraction, greater elasticity and durability are secured than could be the case were its force exerted by expansion.

Pivoted to or upon one side of the arm B, near the intersection of its vertical and horizontal portions, is a vibrating arm, G, which has the form shown in Figs. 1 and 4, and is capable of a certain degree of vibration in a vertical plane.

The front end of the vibrating arm G is connected to or with the needle-bar D by means of a crank, H, that is journaled at opposite ends to or upon said parts.

Directly beneath the rear end of the fixed arm B is a shaft, I, which is journaled within suitable boxes K and K, (that are connected with the lower side of the plate A,) and has a line at a right angle to the line of the vibrat-

ing arm G. The upper portion of each bearing K is cast upon and forms part of said bed-plate, while the lower half K' is detachable and fits between two vertical jaws, *k* and *k*, where it is secured in place by a pin, *k'*, that passes horizontally through said parts.

Upon the end of the shaft I adjacent to the lower end of the vibrating arm G is secured a disk, L, that is provided within its outer face with a cam-groove, *l*, which groove receives a stud, *g*, that is attached to and extends horizontally inward from the face of said vibrating arm.

The shape of the groove *l* is such as to cause the vibrating arm G to move the needle-bar downward to the limit of its stroke, slightly raise and then depress said bar again, and afterward raise the same to the upper limit of its stroke, such intermediate motion of said bar being for the purpose of loosening the thread, so as to enable the shuttle to pass through the loop with greater ease and certainty.

At a suitable point upon the lower side of the bed-plate A is secured a shuttle-race, M, of any ordinary form, the carrier N of which is operated by means of a crank, *i*, formed upon the central portion of the shaft I, and a connecting-rod, O, that is journaled at one end upon said crank, and at its opposite end upon a stud, *n*, that projects horizontally outward from one side of said carrier.

A feed-bar, P, is placed within suitable bearings directly beneath the needle-bar, and at a right angle to the shuttle-race, and is so constructed as to have the usual vertical and longitudinal motions.

Motion is imparted to the feed-bar P by means of a bar, Q, that is journaled near its longitudinal center to or upon the lower side of the plate A, and has one of its ends loosely connected with one end of said needle-bar, while its other (rear) end extends horizontally to the shaft I, and thus curves downward and rearward beneath the same.

A cam, R, secured upon and rotating with the shaft I, engages with the rear end of the bar Q, and gives to the same such lateral and vertical motion as to cause the front end of said bar to communicate the usual four motions to the feed-bar P.

In order to provide for the necessary duplex motion of the bar Q at its pivotal bearing, said bar at such point has a spherical enlargement, *q*, which fits loosely within a corresponding recess or socket that is formed within the box Q', such construction forming a ball-and-socket bearing for said bar. The longitudinal motion of the feed-bar P is regulated by means of a slide, P', which is loosely attached to the lower side of the plate A at the end of said bar, and is capable of longitudinal motion at a right angle to the line of the latter. The edge of the slide P' contiguous to the end of the feed-bar P forms an inclined plane, *p*, so that by moving said slide in one direction said inclined plane moves

outward and lessens the motion of said feed-bar in such direction, while by retracting said slide greater latitude of motion is afforded to the latter.

As seen in Figs. 8, 9, and 10, tension of the upper thread is produced by means of two plates, S and T, the first of which is rigidly attached to or upon the head B', and is flanged rearward at its upper and lower edges, while the second plate T, formed of spring metal, is attached at one end to or upon the corresponding end of said fixed plate S, and bears against the outer face of the latter between the flanges *s* and *s*. Near the outer ends of the plates S and T a notch, *s'*, is formed in each flange *s*, so as to permit a thread to pass vertically between said plates, the outer of which, T, is caused to bear with varying pressure upon said thread by means of a threaded stud, U, that is secured within the head B', and projects outward through suitable openings in the central portion of said plates. A spiral spring, V, is placed around said stud, with its inner end bearing upon the outer face of said plate T, and a nut, *u*, placed upon the outer end of said stud, and bearing against the corresponding end of said spring. By screwing the nut *u* inward or outward the spring V will be compressed or released, and caused to exert a correspondingly greater or lesser pressure upon the spring T.

The take up consists of a wire spring, W, having the form shown in Figs. 6 and 7, which is rigidly attached at one end within the interior of the head B', and at its opposite lower end is provided with an eye, *w*, that has a right angle to the line of said spring, and, by moving the latter forward, may be caused to project outward through an opening, *b'*, in the front side of said head. A pin, *d*, extending inward from the needle-bar D, bears against the inclined rear side of the spring W, and, when said bar is moved downward, forces the lower end of said spring forward to the position shown in Fig. 6, the eye *w* being caused to project sufficiently to enable a thread to be passed through the same. When the needle-bar moves upward, the spring W resumes the position shown in Fig. 7, and withdraws the eye *w*, and with it the thread, the slack of the latter being contained within the head B', where it cannot interfere with the operation of the machine.

The peculiar forms of the needle and presser bars render them easy to construct, less labor is required in fitting them to the head, and they have less dead-weight to move than in case of round bars, while by arranging said needle-bar with its greatest transverse diameter in a line with the vibrating arm, while comparatively thin, it is readily able to withstand all strain thrown upon it by the latter.

Having thus fully set forth the nature and merits of my invention, what I claim as new is—

1. The take-up spring W *w*, constructed as shown, and arranged within the head B', in

combination with the stud *d*, which bears upon its rear inclined side, and operates to withdraw the slack of the upper thread within said head, substantially as and for the purpose shown.

2. In combination with the lever *Q*, the ball-and-socket bearings *P* and *Q'*, respectively, substantially as and for the purpose specified.

3. In combination with the shaft *I*, the fixed boxes *K* and *K*, provided each with jaws *k k*, and the detachable boxes *K'* and *K'*, fitted within said jaws, and secured in place by means of the pins *k'* and *k'*, substantially as and for the purpose set forth.

4. In combination with the presser-bar *C*,

working longitudinally within the vertical slot *b* of the housing *B'*, the screw *F*, passing downward through a threaded opening in said housing, and the spiral spring *E*, attached at its upper end to said presser-bar, and at its lower end to the lower end of said screw, substantially as and for the purpose shown and described.

In testimony that I claim the foregoing I have hereunto set my hand this 26th day of December, 1874.

A. H. WAGNER.

Witnesses:

GEO. S. PRINDLE,

WILLIAM FITCH.