

S. S. BLACK.
Sewing-Machines.

No. 146,642.

Patented Jan. 20, 1874.

Fig. 1.

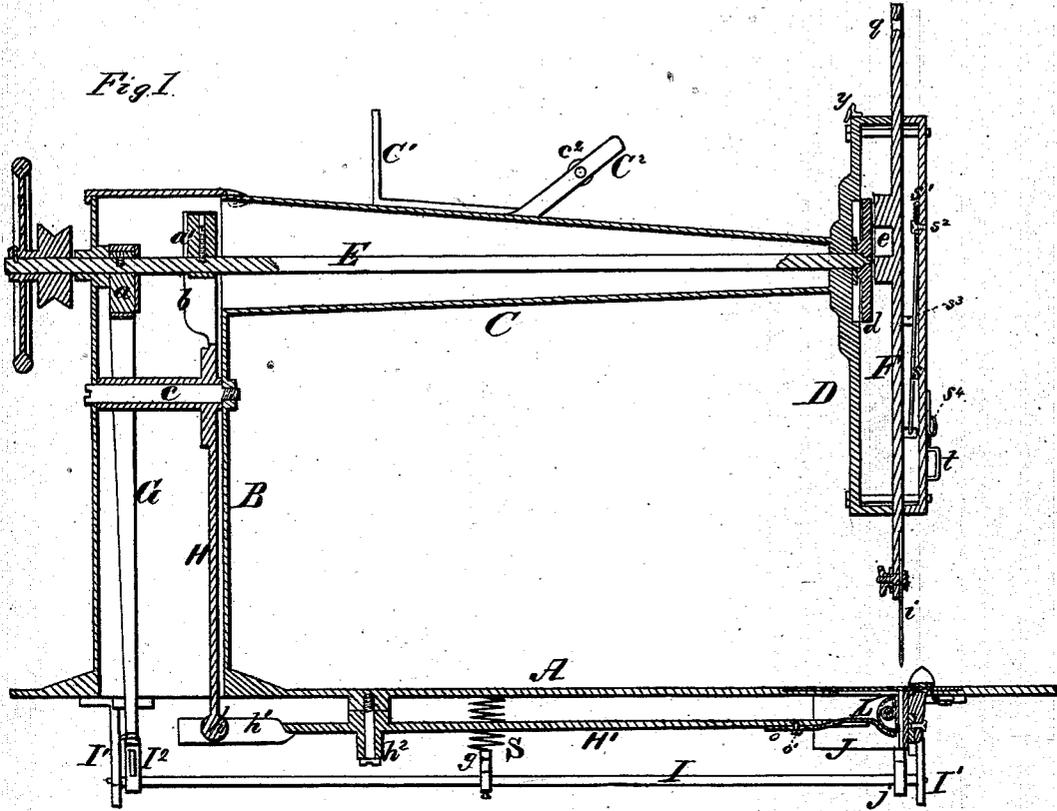
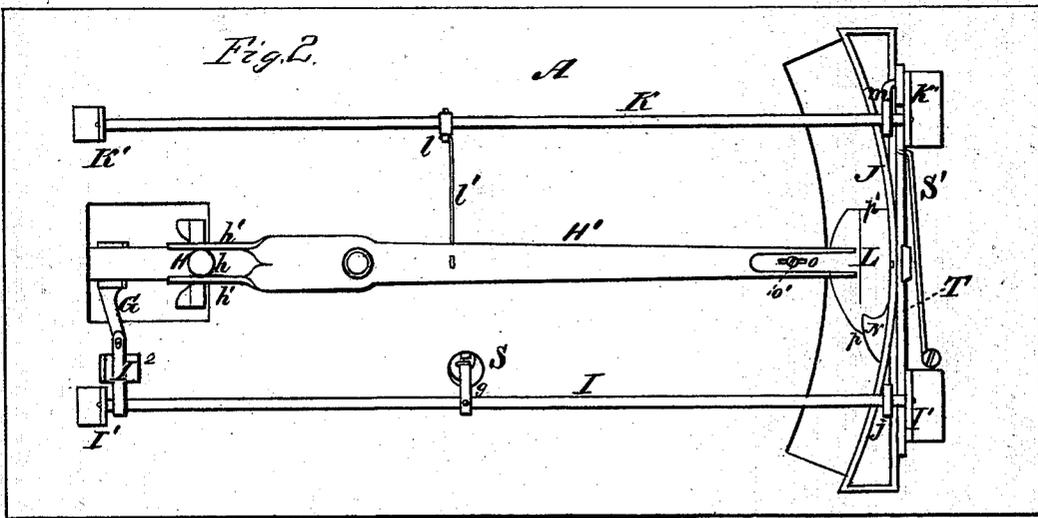


Fig. 2.



WITNESSES

E. A. Bates.

George E. Upham. By

INVENTOR

Samuel S. Black

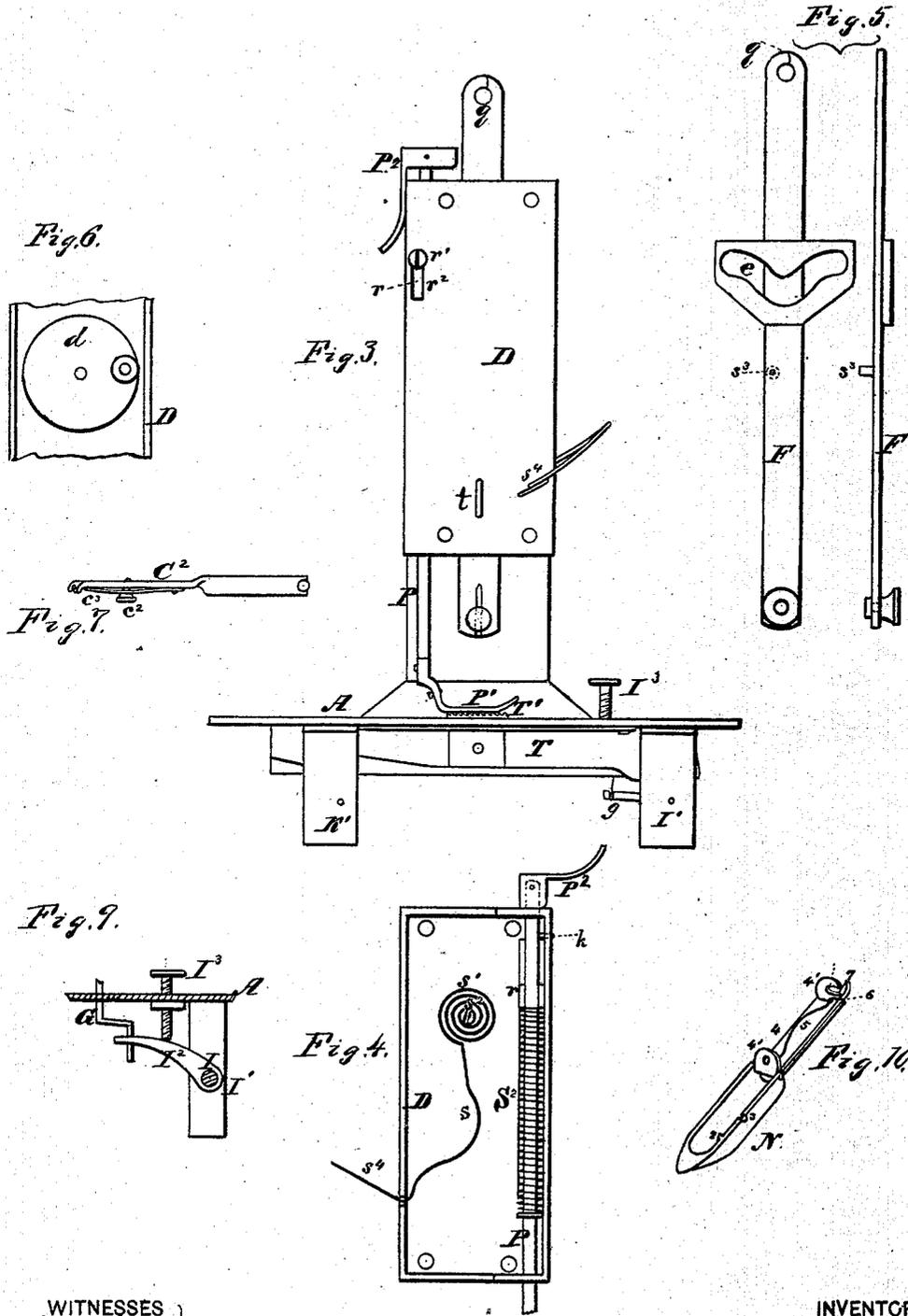
Chipman & Farnum

ATTORNEYS.

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WITNESSES
E. H. Bates
George E. Upham, By

INVENTOR
Samuel S. Black
Clipman & Paine Co
 ATTORNEYS.

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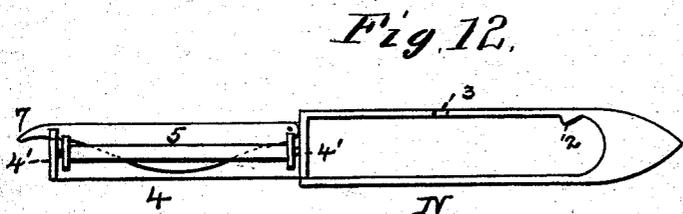
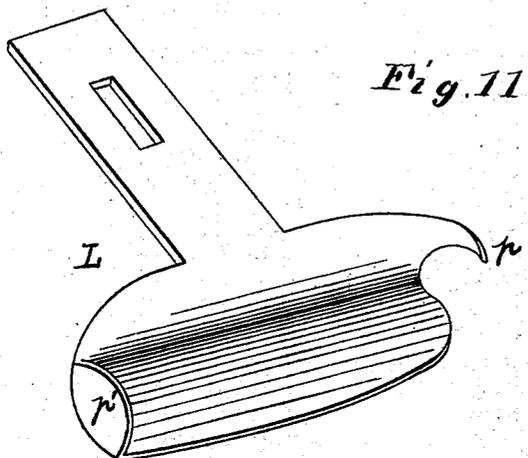


Fig. 13.



WITNESSES
E. H. Bates.
George E. Upland. By

INVENTOR
Samuel S. Black
Chapman & Furman & Co.
 ATTORNEYS.

UNITED STATES PATENT OFFICE.

SAMUEL S. BLACK, OF WEST ALEXANDRIA, OHIO, ASSIGNOR OF THREE-FOURTHS HIS RIGHT TO JOHN BLACK, SAMUEL BLACK, AND L. C. BLACK, OF SAME PLACE.

IMPROVEMENT IN SEWING-MACHINES.

Specification forming part of Letters Patent No. 146,642, dated January 20, 1874; application filed November 1, 1873.

To all whom it may concern:

Be it known that I, SAMUEL S. BLACK, of West Alexandria, in the county of Preble and State of Ohio, have invented a new and valuable Improvement in Sewing-Machines; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawings, making a part of this specification, and to the letters and figures of reference marked thereon.

Figure 1 of the drawings is a representation of a sectional view of my sewing-machine. Fig: 2 is a plan view of the same. Figs. 3, 4, 5, 6, 7, 9, 10, 11, 12, and 13 are detail views of the same.

This invention relates to shuttle sewing-machines; and consists, first, in certain means for giving an endwise reciprocating motion to the serrated cloth-feeder, and at the same time giving vertical motion thereto, in combination with means for adjusting the length and height of strokes of this feeder; second, in a curved or bow spring pivoted to the bearing-plate of the shuttle, and constructed to serve as a catch for this plate when closed, and also give an equal tension on the bobbin-thread when drawn from all parts of the bobbin.

The following is a full description of my improvements:

In the annexed drawings, A represents the cloth-plate; B, the hollow standard of the hollow overhanging bracket C, and D the vertical and hollow bracket-head. E designates the horizontal driving-shaft of the machine, which passes through the upper end of the standard B and through the bracket-arm C; and has keyed on it two eccentrics, *a a'*, and a wheel, *d*, to the face of which latter a wrist-pin is fixed, which plays in a V-shaped slot, *e*, and reciprocates the needle-bar F. The eccentric *a'* on shaft E rotates between the forked ends *b* of a lever, H, which has its fulcrum at *c*, and which has a ball, *h*, on its lower end. The ball *h* plays between the forked ends *h'* of a horizontal lever, H', which is located beneath the cloth-plate A, and has its fulcrum at *h²*. This lever H' receives a vi-

bratory motion, and between its front forked ends it receives the tongue *o* of a shuttle-carrier, L. By means of a set-screw, *o'*, which passes through an oblong slot through the shuttle-carrier tongue *o*, the shuttle N, which lies in the carrier, can be adjusted so as to slide closely against a curved slideway, J, and any wearing away of the parts can be compensated for. The eccentric *a* gives a vertical motion to a rod, G, the lower end of which is bent so as to form two right angles, and is inserted loosely through the free end of a vibrating arm, I², fixed on a shaft, I. The rod G depresses the arm I² when it descends, and a spring, S, raises this arm when rod G ascends, until it is arrested by an adjusting thumb-screw, I³, tapped through the cloth-plate A, as shown by Fig. 9. The shaft I has its bearings in pendants I¹ I¹, and to it the spring S is attached by means of an arm, *g*, which is adjustable by means of a set-screw. A crank-arm, *j*, is also secured to the shaft I, which is connected to the transverse face-plate T of a serrated cloth-feeder, T', and gives endwise motion thereto. Vertical vibration is given to the feed-plate T by means of an anti-friction roller on an arm, *m*, keyed to a rock-shaft, K, on which roller the feed-plate T is held by means of a spring, S¹, fixed at one end to the bottom of the cloth-plate A. The shaft K has its bearings in pendants K' K', and to it an arm, *l*, is adjustably secured by means of a set-screw. This adjustable arm *l* is connected by a rod, *l'*, to the shuttle-carrier lever H', and receives vibration from this lever. By means of the thumb-screw I³, the length of strokes given to the feed-plate T can be nicely adjusted, and, by adjusting the arm *l* on its shaft, the cloth-feeder can be made to rise higher or lower, as may be required.

The shuttle-carrier L presents a concave bed for the shuttle-case N, having a rear abutment, *p'*, and a front hook or horn, *p*, which curves over the case N near its front or pointed end, and holds it down in place. This carrier allows the shuttle-case to settle closely in contact with the guideway J, and accommodate itself thereto, while being recipro-

cated, without the use of pressure-springs, set-screws, or other contrivances of this kind. The shuttle-case N has pivoted to its butt-end a plate, 4, which is constructed with bearing-lips 4' 4' for the shuttle-bobbin. The bearing-lip nearest the pivoted end of plate 4 is perforated, and the opposite lip is slotted for readily introducing and removing the shuttle. To the inner surface of the pivoted end of plate 4 a tension-spring, 5, is pivoted, between which and plate 4 the thread from the bobbin is passed, and thence carried out of the case through a notch, 3. The spring 5 is bowed and fish-bellied, and constructed with a reduced extension, 7, which engages with a notch, 6, made into one of the lipped bearings when spring 5 is in the position shown in Fig. 10. When the plate 4 is closed into the shuttle-case, the extension 7 is received behind a catch, 2, on the inner side of the upper edge of the case, which holds the plate 4 and its tension-spring in place. The convex portion of the spring 5 does not bear against the plate 4, but only serves as the guiding-edge for allowing the thread to be drawn from the bobbin at or nearly at right angles to its axis. The upper thread is carried from a spool applied on a stem, C¹, through a fixed tension device; thence through a fixed split eye, *y*, to and through a split eye, *g*, at the upper end of the needle-bar F; thence through an eye, *s*⁴, formed in the external end of a spring-arm, *s*, to and through the eye of the needle *i*. The stationary tension device consists of an inclined arm, C², fixed to the bracket-arm C, and having a notch through its upper bent end for guiding the thread, and a spring, *e*³, which is bowed, as shown in Fig. 7, secured to the arm C² at its lower end, and acted on by a thumb-screw, *e*², which presses its upper end against the thread near the notch through arm C². The eye *s*⁴ is formed on an arm, *s*, which is bent around in front of the bracket-head D, so as to play through a loop or staple, *t*. This arm, which is made of spring-wire, is coiled so as to form a light spring, *s*¹, which is secured, by a screw, *s*², to the bracket-head inside. This constitutes the take-up device for taking up the slack thread while sewing.

That portion of the arm *s* which is inclosed inside of the head D is curved, as shown in Fig. 4, and is acted on by a stud, *s*³, on the needle-bar at every down-stroke thereof. As the needle-bar rises, the arm *s* springs outward and takes up the slack in the thread. P is the bar, to which the pressure-foot P¹ is secured, which passes up through the bracket-head D, and has a lifting-lever, P², pivoted to its upper end. This bar P is held down by means of a spring, S², which is coiled around it, and presses against lugs formed on a plate, *r*, that is fitted into a vertical groove inside of bracket-head. For the purpose of adjusting the tension of the spring S² on bar P, the plate *r* is secured to the front plate of the head D by means of a thumb-screw, *r*¹, which is on the outside of this head D, and which passes through a slot, *r*², made vertically through its front plate. By raising or depressing the plate *r*, which can be done when screw *r*¹ is loosened, the spring S² can be made to act with greater or less force on the pressure-foot bar P. By means of a pin, *k*, on the pressure-bar P, which plays in a slot made vertically through the head D, this bar is prevented from turning about its axis unless the said pin *k* is raised out of the slot.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The oscillating shaft I, connected loosely to rod G by means of an arm, P, and acted on by a spring, S, and connected by a crank, *j*, to the feed-bar T, in combination with the depressing-spring S¹, and an elevating-arm, *m*, on a shaft, K, the latter being connected by an adjustable arm, *l*, and a rod, *v*, to a vibrating lever, H', substantially as described.

2. The curved or bow spring 5, pivoted to the bearing-plate 4, and constructed with an extension, 7, as and for the purposes set forth.

In testimony that I claim the above I have hereunto subscribed my name in the presence of two witnesses.

SAMUEL S. BLACK.

Witnesses:

H. CAMPBELL,
DAVID GOPE.