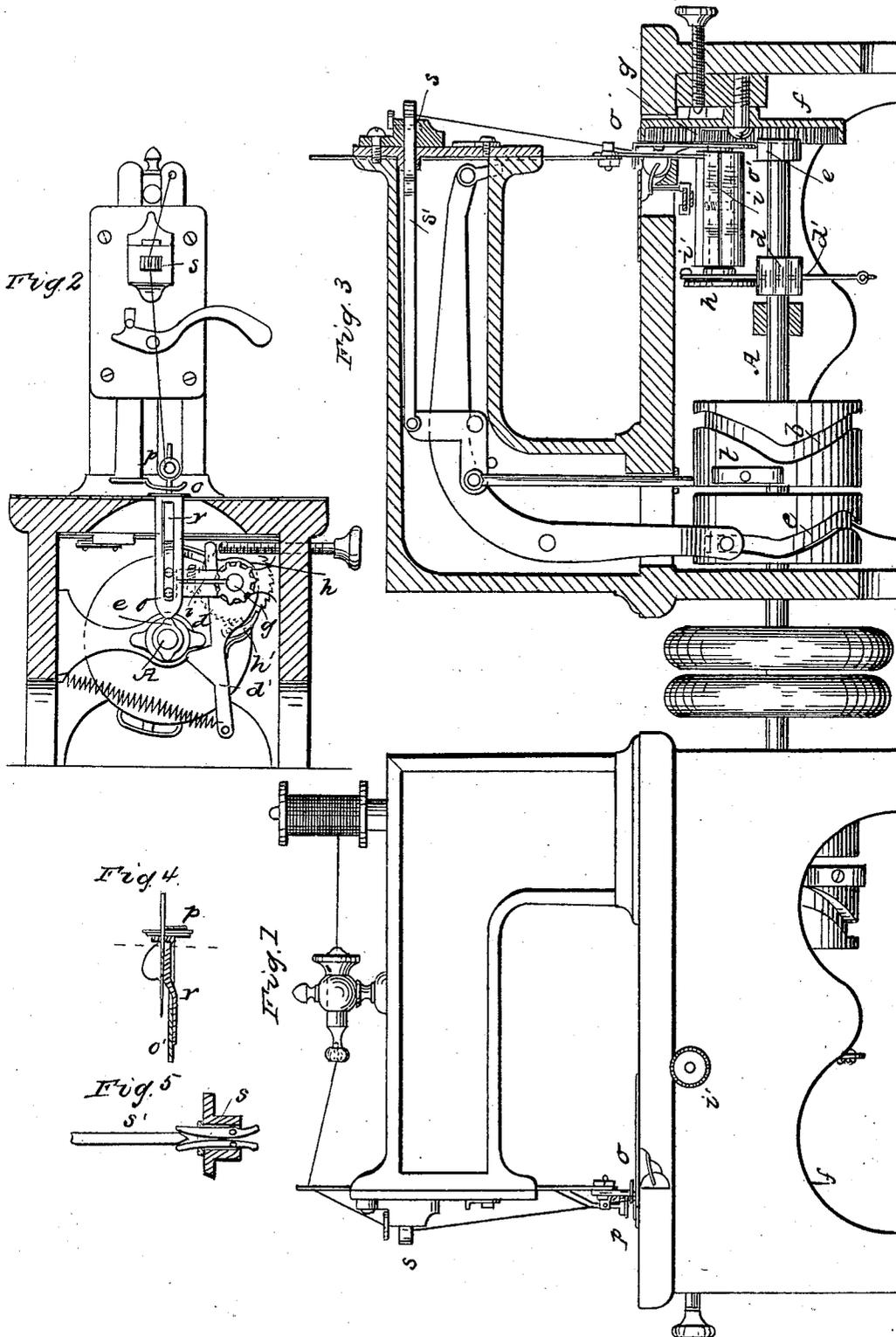


W. G. WATSON.

Sewing Machine.

No. 14,433.

Patented March 11, 1856.



UNITED STATES PATENT OFFICE.

WM. C. WATSON, OF NEW YORK, N. Y., ASSIGNOR TO IRA W. GREGORY,
OF SAME PLACE.

IMPROVEMENT IN SEWING-MACHINES.

Specification forming part of Letters Patent No. 14,433, dated March 11, 1856.

To all whom it may concern:

Be it known that I, WILLIAM C. WATSON, of New York, county of New York, 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 annexed drawings, making a part of this specification, in which—

Fig. I is a side view or elevation. Figs. II and III are vertical sections. Figs. IV and V are of parts in detail; and similar letters indicate similar parts throughout.

My invention consists, principally, of the following improvements: first, in a spring-pressure plate located beneath the table in line with and so as to spring against the needle on the side opposite to the bobbin of the shuttle, the use of which is to prevent the formation of the loop on that side of the needle, and thereby escape the shuttle; secondly, in the arrangement of the tension-clamp through which the thread passes to stop the feed, and thereby take up the slack of the stitch.

In form the machine is similar to others, consisting of a table beneath which plays the cam-shaft A, with appropriate cams for driving the needle-bar and shuttle, as shown at *b c*. At *d* is a cam which operates upon the feed-motion, and at *e* is another which raises the plate forming a portion of the table referred to hereinafter. At *f* is the feed-wheel, of usual construction generally, the upper surface being roughened and projecting just above the table. It is made to revolve by means of a pinion, *g*, engaged with teeth cut as interior gear. Upon the opposite end of the shaft which carries this pinion is a ratchet-wheel, *h*, by which intermitted motion is imparted for the feed. The shaft plays in a friction-bearing—that is to say, a bearing which may act as a clamp—so that by means of an adjusting-screw more or less friction may be brought upon the axis to retard its motion. This is shown at *i*, and the object of it is to prevent the feed-wheel from continuing on by the momentum imparted in rapid working, thus making stitches of greater length than desired, and also to keep the wheel in place when the click is drawn over the ratchet-teeth for a new hold. The click or pawl which

operates the ratchet-wheel *h* is seen at *h'* attached to a vibrating arm, *d'*, the axis of which is on the same shaft as the ratchet. The part of the arm below the axis is in range of the cam *d*, the striking of which impels the pawl forward and gives the feed. As the cam *d* throws at all times a like distance, some means must be provided to vary the length of the vibrations of the same. This is accomplished by arresting the back motion of *d'* sooner or later, and thus causing the pawl to pass over more or less teeth of the ratchet, thereby governing the throw of the latter, as may be. To effect this there is a screw to the stud *i'*, the end of which forms a stop to the bar *d'* on that end which is above the center. Thus by withdrawing the point of the screw the vibration will be lengthened, and the stitches likewise made longer, while by screwing the point in toward the bar the reverse will be the case. The feeding of the cloth and length of stitch can thus be regulated with great nicety.

In machines in which the cloth is fed by means of a wheel or other similar device, combined with a spring-pressure pad, there is a difficulty experienced while turning curves in maintaining the stitches of equal length, because as the needle is at one side, the cloth being held by the pad and feed-wheel at a little distance off, it will turn in the bight or place where it is held as an axis. Consequently in turning a curve to the right the stitches will be crimped or gathered, and the reverse in turning to the left, they will be lengthened, to obviate which the cloth should turn on the needle as an axis. This cannot be done while the cloth is all the while clamped between the feed-wheel and presser-pad. Under the needle, therefore, the table is cut out for a small square, into which a plate is fitted, as shown at *o*, through which there is a hole for the needle to pass. The plate is supported upon a rod or stem, *o'*, which drops down just at the back of the feed-wheel, the end resting upon the cam *e*, so that the plate is made to rise above the surface of the table and feed-wheel after each stitch, and before the needle is withdrawn. The pressure-pad *p* is broad enough to lap over the inside face of the feed-wheel and the plate *o*, as seen in Fig. I. Therefore when said plate is lifted by the cam *e* it strikes

against the spring-pad, raising that from the feed-wheel. The cloth at such moment would be clamped between said plate and pad and near the needle. Thus the cloth may be turned on the latter as an axis, whereby the needle itself becomes the starting-point from which the feed is taken. The operation of this part is as follows: When the needle has been fully withdrawn, the feed-wheel receives its motion and carries the cloth along for the distance of the length of a stitch. The needle now enters and the plate *o* is raised up by the cam *e*, lifting the cloth and presser-pad from the face of the feed-wheel. The cloth being thus all the while kept by the needle from moving its place, the clamping is now directly around the needle. If the next stitch is at a corner or curve, the cloth may be shifted to the proper angle by turning it upon the needle. The needle is now withdrawn, the plate *o* descends, and the pad pressing the cloth once more upon the feed-wheel; the feed is given in the direction in which the cloth was placed. Now, it will be seen that without this plate the cloth would have to be turned when the needle was out, and upon the place where it was held between the pad and wheel as a center, and therefore the line from that point to the needle would be a radius, a curve being described at the needle. Consequently the stitches would in turning in one direction be lengthened and in turning in the other contracted. At this part of the machine is the fixture for preventing the loop forming on both sides of the needle, and thereby insuring the formation of the same always on the side on which the shuttle passes through. This is a small but very important feature, for by it the breaking of a needle through "kinking thread" is prevented. This breaking is a very common occurrence in all shuttle-machines, for when the thread is, as it is called, "kinky," a loop will often form on each side of the needle, and that from the reverse side bending round, the shuttle enters both, when, of course, the needle must be carried away. The device for preventing this consists of a narrow strip or tongue of metal fixed in a slot cut in the post *o'* by a spring, which tends to project it beyond the face of the same, as seen at *r*, and in the detached view, Fig. IV. This tongue has a groove on its face, and lies directly in the path of the needle in its descent, so that the latter must strike it. The top is therefore rounded off, so that the needle in striking will press the tongue back, and then going on, the needle slides, as it were, down the groove. The eye of the needle is perpendicular to the groove, and is near the point, as usual. The thread therefore on one side will lie in said groove, and as the tongue is pressing all the while against the needle no loop can be formed on

this side, and of course the whole of the slack will be on the opposite side, and the loop or bow always there in readiness for the shuttle to pass through.

The tension-clamp is a pair of nippers placed so as to grasp and hold the thread during the withdrawal of the needle and the taking up of the slack. They are shown at *s*, and in the detached view, Fig. V. The nippers are made to close upon the thread by means of a wedge-shaped bar, *s'*, which is thrust between the legs of the same, as shown in Fig. V, and which is moved back and forth by a cam, *t*, as shown in Fig. III.

The operation will now be as follows: The thread passing from the spool over the friction-piece is guided down so as to lie in the mouth of the gripper *s*, and thence to the eye of the needle. The article to be sewed is fed under until the feed-wheel and clamp take hold, thence it goes on for itself in a straight line, as usual. The needle passing down through the cloth strikes the beveled top of the tongue *r*, forcing it back, and glides down by the side thereof. As the needle commences its back-stroke, the thread on that side is clamped and the loop puffs out on the opposite side, when the shuttle-point enters and passes through; also, at the downstroke of the needle the cam *e* is set so as to raise the plate *o*; but although this rises at every vibration, still it is only of use when it is desired to turn a corner or curve in the seam, as already mentioned. The gripper *s* comes into play on the retreat of the needle, when the slack has been taken up from the last stitch, the cam *t* then operating to close the grippers upon the thread and so hold it until the needle has descended and commenced passing through the cloth, when it is released to allow of the feed of thread. This effects the holding of the thread, so that it cannot slip back and loosen the previous stitch. The feed of the cloth is effected by the ratchet-wheel and pawl working the pinchers *g* in the feed-wheel *f*. The other parts are operated substantially as usual in other machines of this class.

I claim as my invention—

1. The spring or tongue *r*, in combination with the needle, for insuring the formation of loops on one side only, as described.
2. The gripper for seizing the thread and holding it until the needle has entered the cloth, thus securing the last stitch against slacking up, as described, the whole being constructed and operating substantially as set forth herein.

W. C. WATSON.

Witnesses:

J. P. PIRSSON,
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