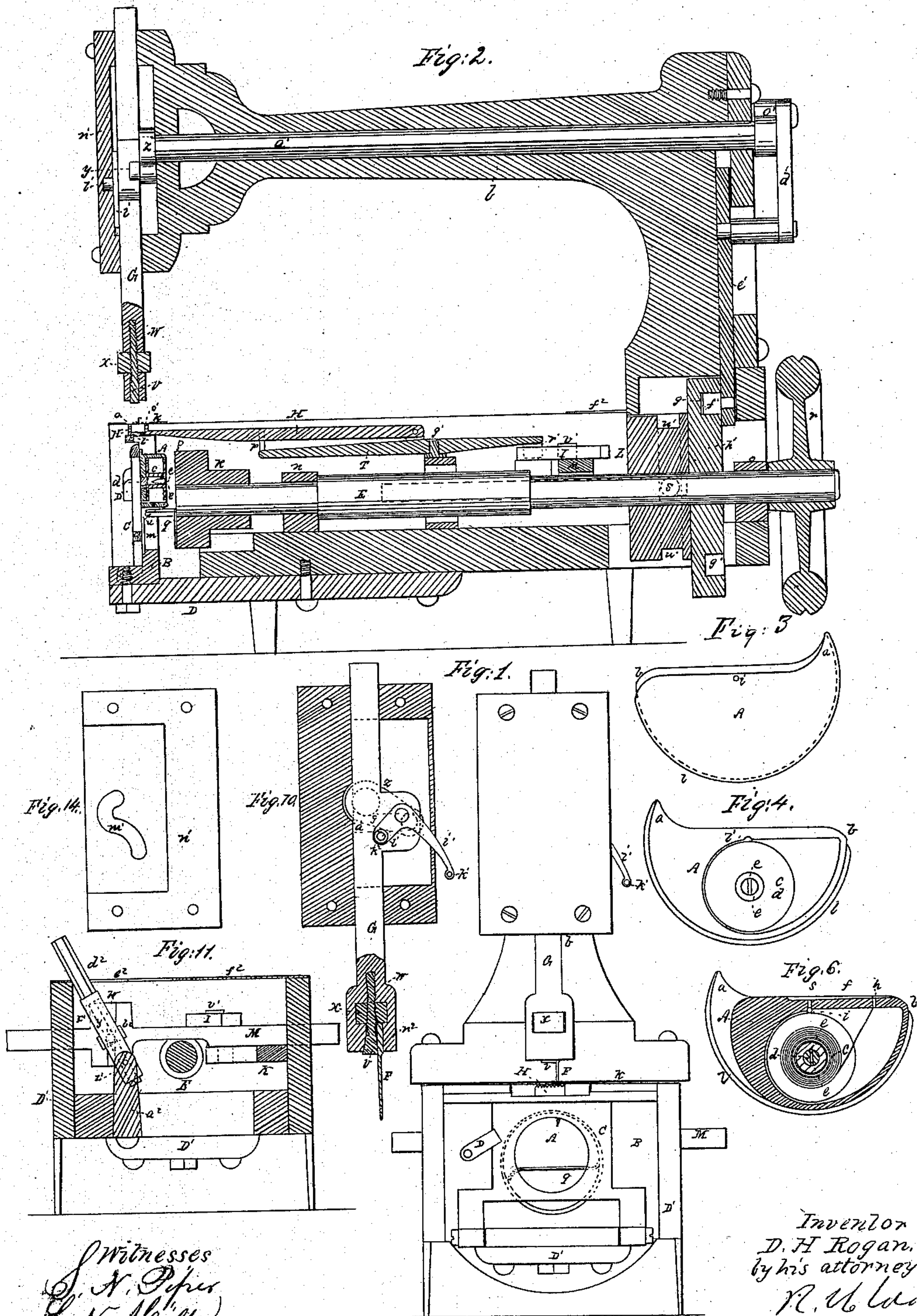


D. H. ROGAN.
Sewing Machine.

No. 87,595.

Patented March 9, 1869.



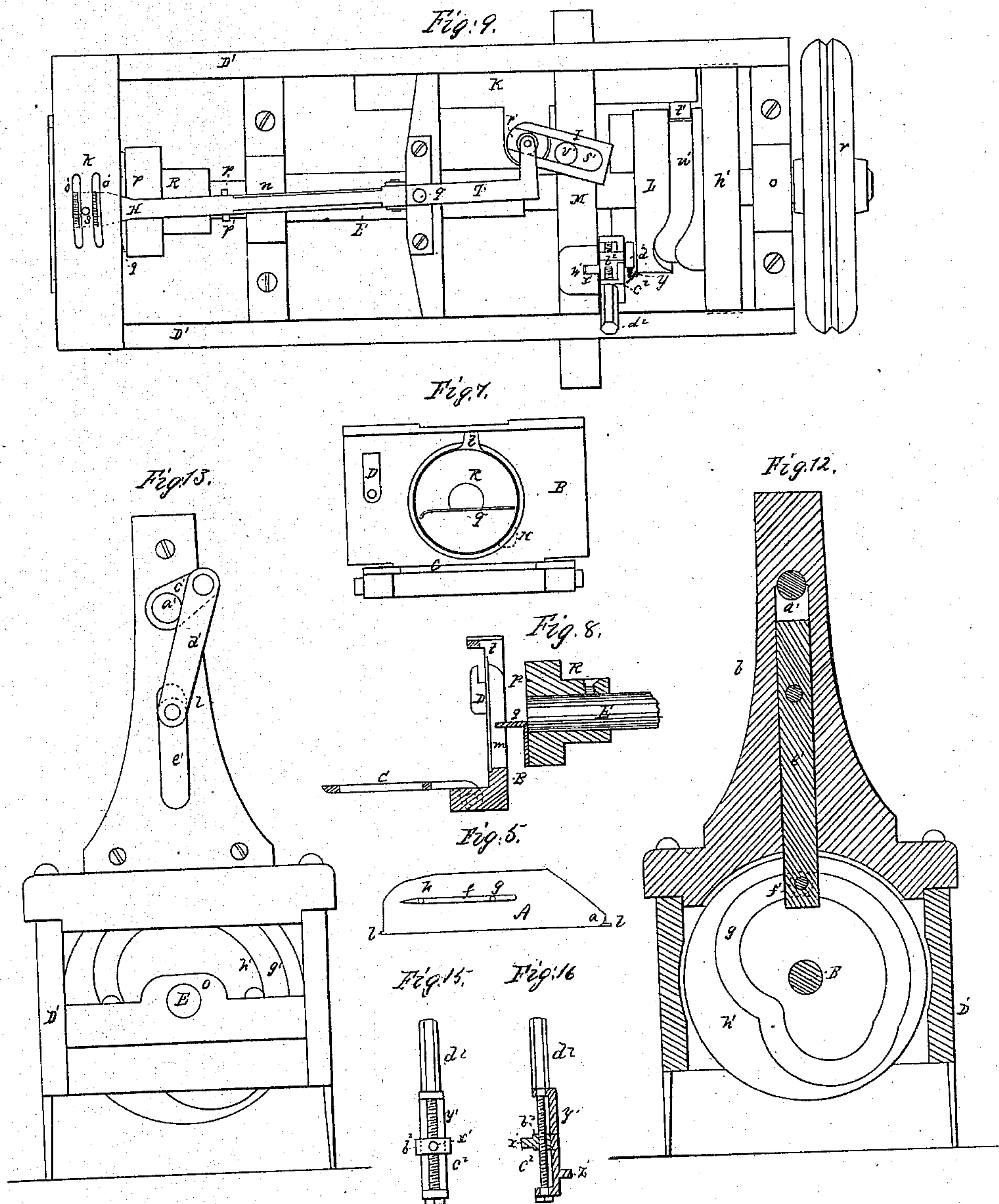
Witnesses
S. A. Piper
L. N. Mollen

Inventor
D. H. Rogan,
by his attorney
R. V. Lacy

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UNITED STATES PATENT OFFICE.

DANIEL H. ROGAN, OF HUDSON, WISCONSIN, ASSIGNOR TO HIMSELF AND
CYRUS L. HALL, OF SAME PLACE.

IMPROVEMENT IN SEWING-MACHINE.

Specification forming part of Letters Patent No. **87,595**, dated March 9, 1869.

To all persons to whom these presents may come:

Be it known that I, DANIEL H. ROGAN, of Hudson, in the county of St. Croix and State of Wisconsin, have made a new and useful invention having reference to Machinery for Sewing Cloth or various other matters; and I do hereby declare the same to be fully described in the following specification and represented in the accompanying drawings, of which—

Figure 1 is a front-end elevation, and Fig. 2 a longitudinal section, of a sewing-machine provided with my invention. Fig. 3 is a front view, Fig. 4 a rear elevation, Fig. 5 a top view, and Fig. 6 a longitudinal and vertical section, of the shuttle and its thread spool or bobbin. Fig. 7 is a front elevation, and Fig. 8 a vertical and transverse section, of the shuttle-rotator and the shuttle box or carrier, with the shuttle-retainer turned down to a horizontal position. Fig. 9 is a top view of the bed-plate and the feeder and the operative mechanism of the latter. Fig. 10 is a vertical section, showing the mechanism for taking up the slack of the thread of the needle, also the mechanism for fastening the needle in its carrier. Fig. 11 is a transverse section of the base-box of the frame, such section being taken through the mechanism for varying the length of the stitch. Fig. 12 is a vertical and transverse section, and Fig. 13 is a rear elevation, of the mechanism for operating the needle-shaft.

The shuttle of the sewing-machine represented at A in Figs. 1 and 2, and more particularly in Figs. 3, 4, 5, and 6, is, in general form, a circular segment, somewhat greater than a semicircle, and it has at one end of its chord a hook or curved nose, *a*, the other end of such chord being rounded, as shown at *b*. This shuttle has a chamber within it to receive a bobbin, *c*, which is supported on a pivot, *d*, having springs *e e* in it to press against the inner surface of the pivot-hole, in order to produce friction on the bobbin in order to prevent it from unwinding too freely.

There is a groove, *f*, in the top of the shuttle, such groove having two holes, *g h*, leading from it down through the top. One of the said holes is directly over the axis of the bob-

bin. Another hole, *i*, leads through the front side of the shuttle and in the axis of its revolution. The thread from the bobbin passes out of the shuttle through the hole *h*; thence along the groove *f*, and back into the shuttle through the hole *g*; thence out of the shuttle through the hole *i*, and thence up to the cloth when on the base-plate *k*. While the shuttle is at work its thread will be drawn tight between the cloth and the axis of the shuttle.

By arranging the eye *i* in the axis of motion of the shuttle there will be no slack of the thread between such eye and the cloth while the sewing is being performed. The shuttle also has a flange, *l*, projecting from its curved periphery, as does the flange of a railway-wheel from the circumference thereof.

The box or shuttle-carrier is shown, at B, as consisting of a thick metallic plate, having a circular passage, *m*, through it to receive the shuttle, such passage having a diameter a little greater than that of the shuttle. The shuttle is to be capable of being freely revolved within the passage *m*, as a journal of a shaft does in its bearing, and the shuttle is held in the passage *m* by the flange *l* and a movable cap or shuttle-retainer, C, the latter being formed as shown in the drawings and hinged to the shuttle-box, so as to be capable of being turned from a vertical position against the shuttle down into a horizontal one, so as to enable the shuttle to be removed from its box or bearing. The retainer is held in a vertical position by a turn-button, D, applied to the shuttle-box.

The shuttle-carrier, fastened within the front part of a box-like base, D', of the frame of the machine, has in rear of it, and arranged so as to revolve in bearings *n o* within the base, a shaft, E, which carries on it and next the shuttle-box the shuttle-rotator R. This rotator consists of a head, *p*, and a flange or lip, *q*, the latter being extended from the front face of such head, so as to lap on the chord of the shuttle. When the shaft E is in revolution the flange *q* will cause the shuttle to revolve within the box or bearing *m*. The shaft E may be put in revolution by a crank, or by a band going around a grooved wheel, *r*, fixed on the rear end of such shaft.

The needle F plays vertically through openings *s t*, made in the base-plate and upper part of the shuttle-box, and is secured in a carrier, G. Such needle is held in the socket *n*² of the carrier by a wedge, *v*, provided with a male screw, *w*, which screws through a nut, *x*, arranged within the carrier, as represented. The needle-carrier has a groove, *y*, made horizontally in it, to receive the wrist-pin of a crank-arm, *z*, projecting from the needle-shaft *a*¹, which is supported in the "goose-neck" or standard *b* of the frame. On the rear end of the said shaft is another crank-arm, *c*¹, from which a connecting-rod, *d*¹, extends, and is pivoted to a vertical slider, *e*¹. From this slider a pin or stud, *f*¹, extends into a cam-groove, *g*¹, made in the side of a wheel, *h*¹, such wheel being fixed on the driving-shaft of the shuttle-rotator. When such shaft is in revolution the proper reciprocating movements of the needle will be effected.

A bent lever, *i*¹, is pivoted to the front side of the needle-carrier, the same being as shown in Fig. 10. Near the end of the longer arm of such lever there is a hole, *k*¹, made through the said arm, such hole being for reception of the thread which leads to the eye of the needle. From the shorter arm of the lever *i*¹ a stud, *l*², carrying a friction-roller, *l*¹, projects and extends into a curved groove, *m*¹, made in a stationary plate, *n*¹. (See Fig. 14, which is an inner-side view of such plate and groove.) While the needle-carrier may be in movement, the cam-groove *m*¹, acting on the bent lever, will impart to it such movements as to cause it to take up any slack of the thread of the needle.

Extending underneath the base-plate, and up through slots *o' o'* in it, is the feeder H, which, at its rear end, is so hinged to a forked lever, T, as to be capable of moving vertically between the prongs *p' p'* of such lever. This lever, having its fulcrum at *q'*, can turn horizontally. From the rear arm of the lever, which is a bent arm, a stud, *r'*, extends downward into the groove *s'* of a radial arm or lever, I, which is pivoted to a slider, K. From the said slider a pin or stud, *t'*, extends into the groove *u'* of the periphery of a cam-wheel, L, fixed on the driving-shaft. When the said wheel is in revolution a reciprocating rectilinear movement will be imparted to the slider K. Another slider, M, arranged at right angles to the slider K, and directly over it, has a stud, *v'*, which projects up into the groove *s'* of the radial arm I. By moving the slider M, the said arm may be moved so as to reverse the movement of the feeder.

The feeder may be operated in either direction, so as to cause the cloth to be fed either forward or backward, as may be desirable, the feeder being moved up to the cloth by the action of a cam, N, projecting from the periphery of the head of the shuttle-rotator.

The slider M is provided with a vertical groove, *w'* which receives an adjustable stud, *x'*, projecting from a slider, *b*², arranged in a

lever, *y'*, whose fulcrum *z'* is supported by a standard, *a*². (See Fig. 15, which is a side view of the lever.)

A screw, *c*², applied to the lever, as shown in Fig. 16, (which is a section of it and the lever,) screws through the slider *b*², so as to move it either upward or downward. The handle *d*² of the screw projects up from the lever and through a slot, *e*², in the bed-plate, or a separate plate, *f*², fixed to the top of the base-box of the machine. The ends of the slot serve as stops to arrest the motion of the lever.

The extent of movement of the slider M during any movement of the lever-screw handle *d*² from one to the other of the end of the slot *e*² will depend on the height of the stud *x'*, which may be altered or changed by revolving the handle *d*². The farther the stud is moved from the fulcrum of the lever, the greater will be the extent of motion of the slider M. The length of stitch will depend on the distance of movement of the feeder, and this latter will depend on the position given to the stud *v'*, which projects into the groove *s'* of the arm I.

From the above it will be seen that the mechanism described not only effects the feeding along of the material to be sewed, but enables me to sew in either direction—that is, either to the right or to the left—and also enables the length of the stitch to be varied, as circumstances may require.

The machine, like other needle and shuttle sewing-machines, performs its work with two threads, one leading through the bent lever *i*¹ and the eye of the needle, the other being led from the bobbin of the shuttle.

I would remark that the diameter of the shuttle-box should be sufficiently greater than that of the shuttle to allow the shuttle to pass through the loop of the needle-thread, the needle being so arranged that the flat face of the shuttle shall work next to it, in order that the nose of the shuttle may easily take the loop while the shuttle may be in revolution.

I claim—

1. The combination of mechanism for operating the feeder H back and forth horizontally, such consisting of the forked lever T, its stud *r'*, the slotted radial arm or lever I, the stud *v'*, the slider K and its stud *t'*, and the operative cam-wheel L, arranged as described.

2. And in combination with the stud *v'*, the slotted radial arm I, the slider K, and the forked lever T, applied to the feeder, and provided with mechanism for operating the said slider in manner as described, I claim the slider M, or its equivalent, the same being for effecting the reversal of the feed of the cloth or material to be sewed.

3. And in combination with the parts so combined, and for moving the feeder horizontally, and reversing the feed, as described, I claim the groove *w'*, (arranged in the slider M,) the adjustable stud *x'* and its operative mechanism applied to the lever *y'*, and a slot,

e^2 , in the plate f^2 , as set forth, and for the purpose of effecting the variation of the length of the stitch or distance of movement of the feeder, as explained.

4. I also claim the combination for fastening the needle to its carrier, the same consisting of the wedge v , screw w , and nut x , arranged in the said carrier, as specified.

5. The combination and arrangement of the stationary cam or groove m' , (of the plate n'), the stud k^1 , and bent lever i' , applied to the needle-carrier and its supporting-arm, the whole being constructed and operated as and for the purposes shown and set forth.

6. I also claim the combination for effecting the reciprocating rectilinear movements of the needle-carrier, the same consisting of the groove y , the rocker-shaft a^1 , the crank-arm z , the connecting-rod d^1 , the slider e^1 , the stud f^1 , and the groove g' of the wheel h' , fixed on the driving-shaft of the shuttle-rotator.

D. H. ROGAN.

Witnesses:

R. H. EDDY,
J. R. SNOW.