

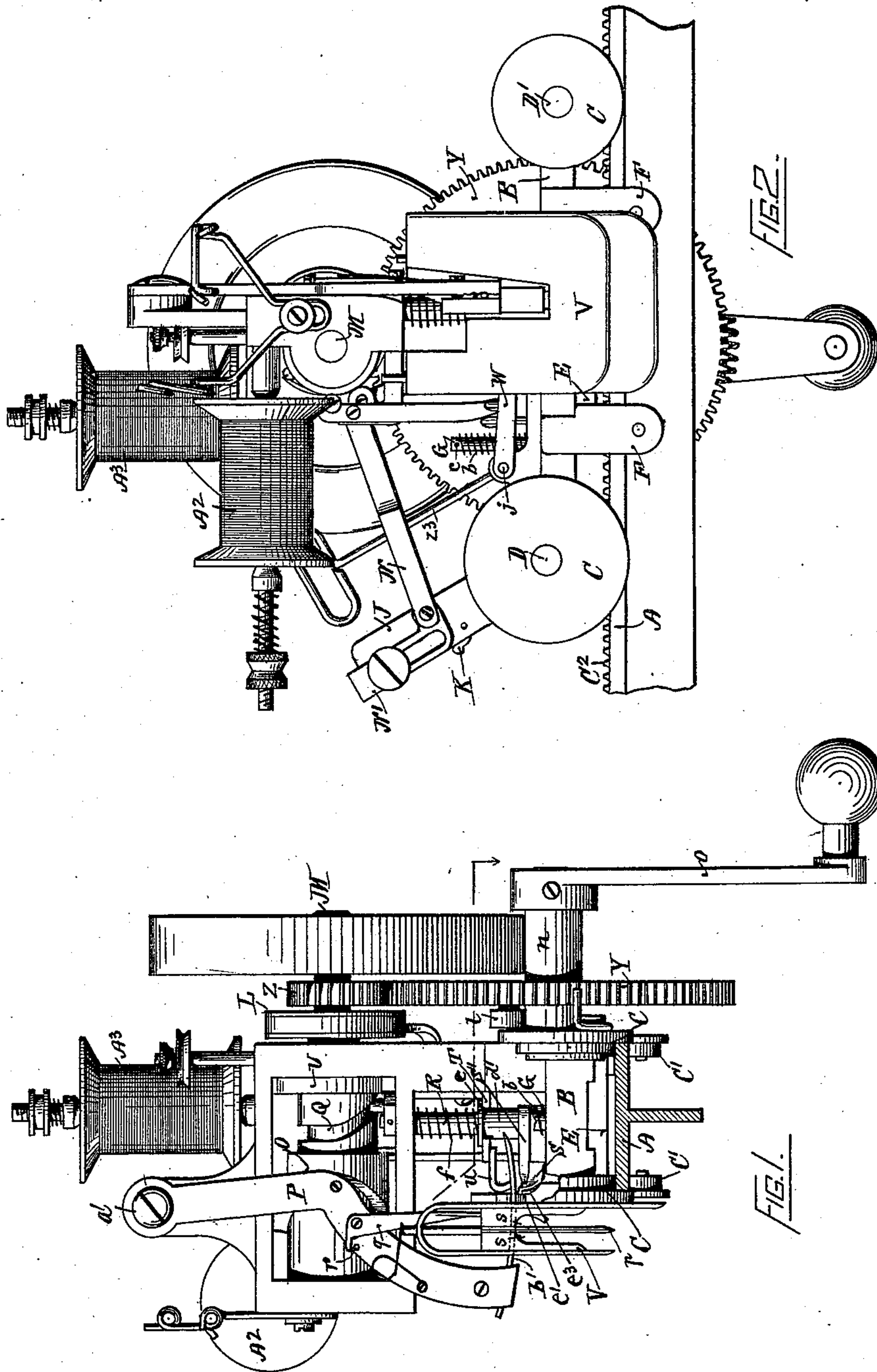
(No Model.)

4 Sheets—Sheet 1.

J. C. TAFT.  
SEWING MACHINE.

No. 547,867.

Patented Oct. 15, 1895.



WITNESSES:

Harry J. Garceau.  
John S. Lynch

INVENTOR:

Jerome C. Taft  
BY S. Scholfield  
ATTY.

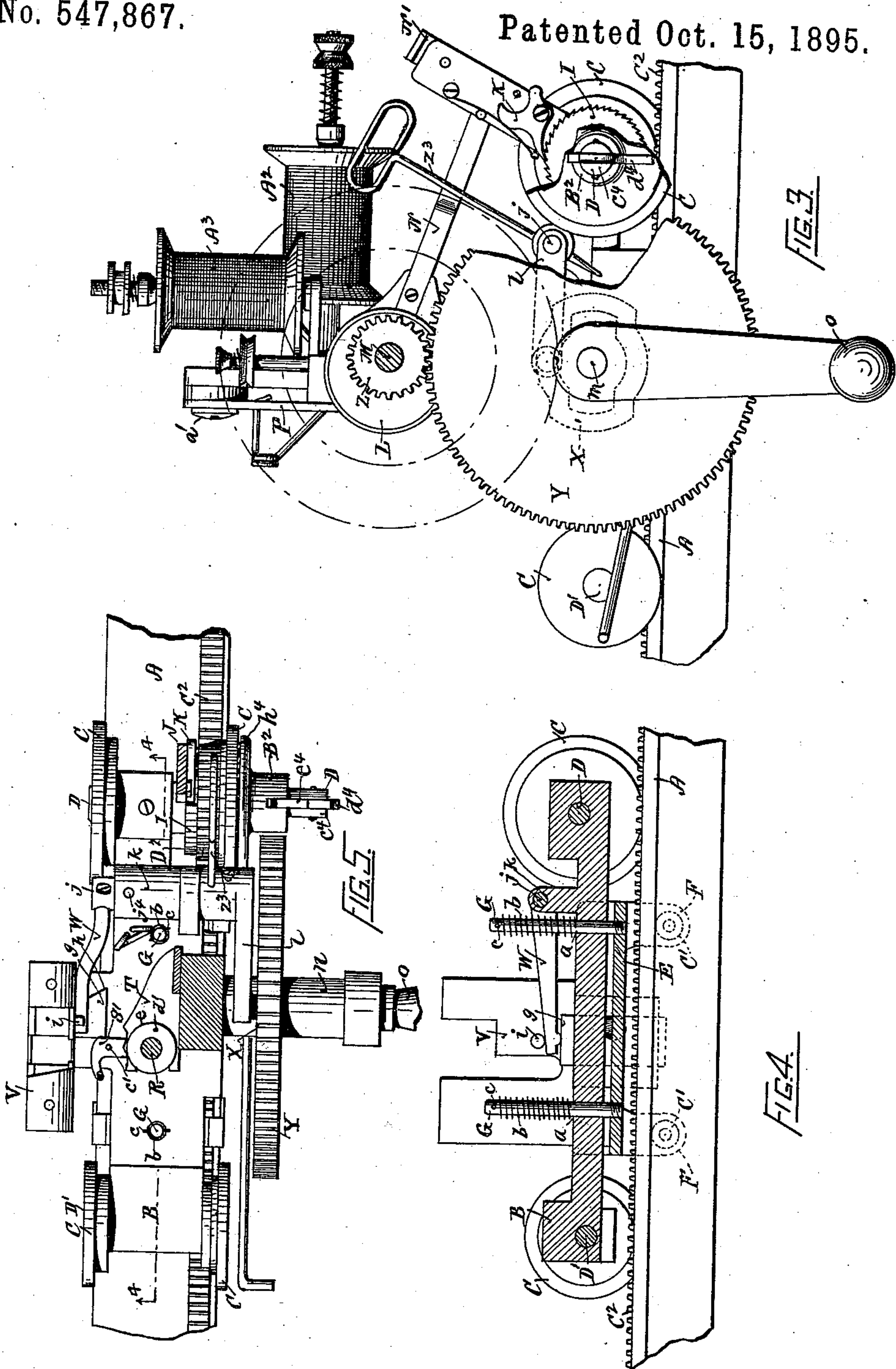
(No Model.)

4 Sheets—Sheet 2.

J. C. TAFT.  
SEWING MACHINE.

No. 547,867.

Patented Oct. 15, 1895.



WITNESSES:

Harry J. Garceau.  
John S. Lynch

INVENTOR:

Jerome C. Taft  
By A. Scholfield  
ATTY.



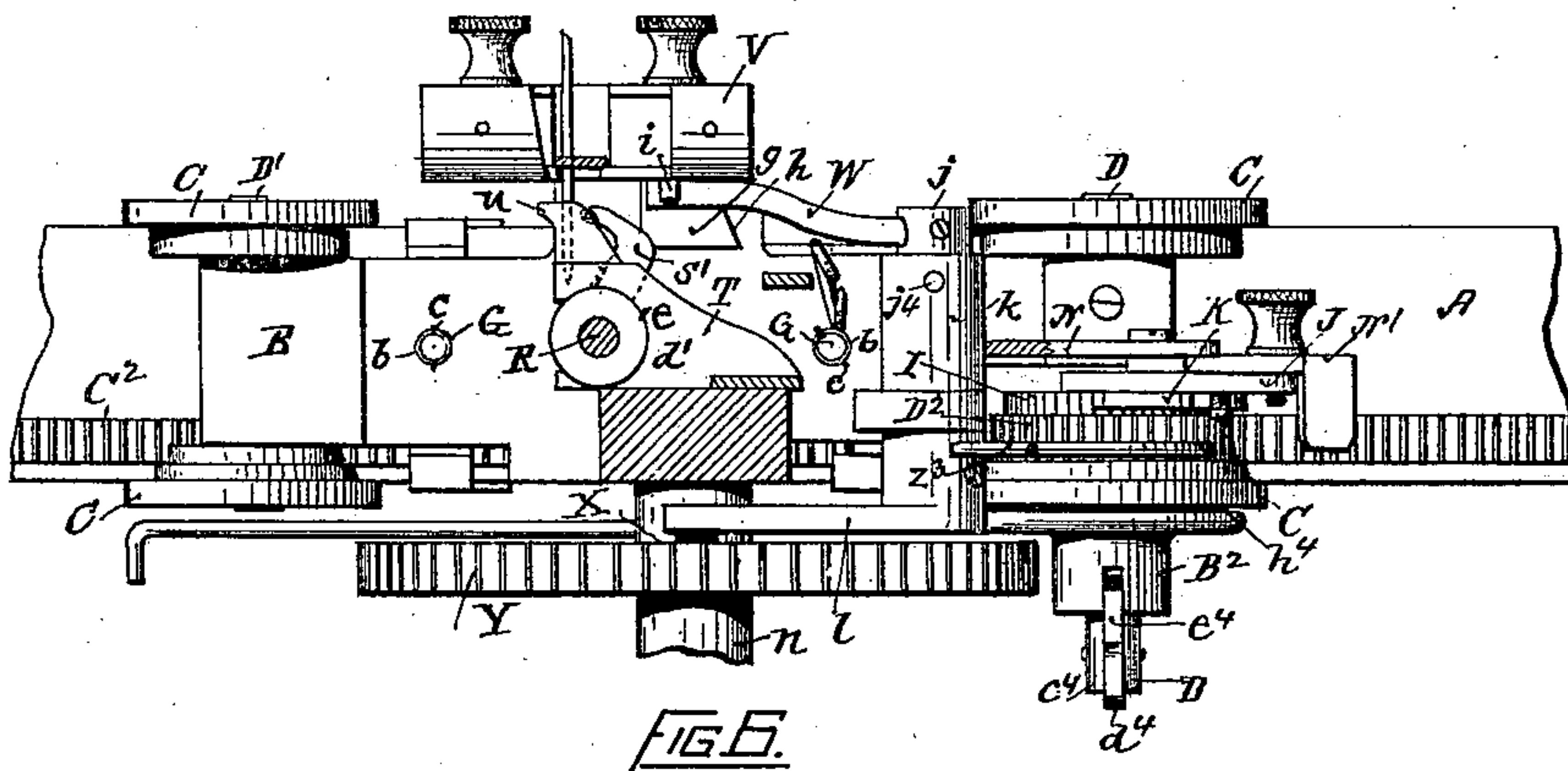
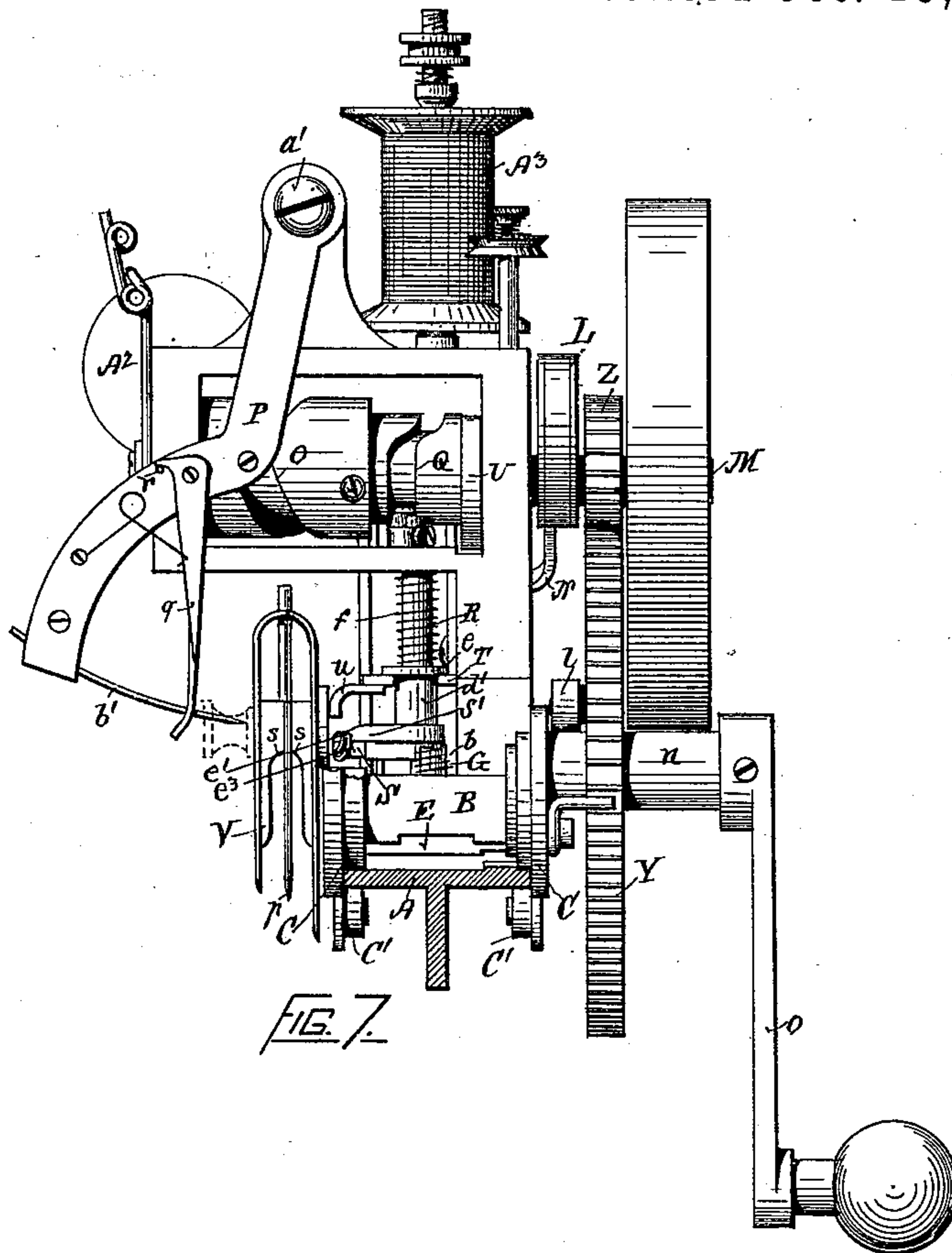
(No Model.)

4 Sheets—Sheet 3.

J. C. TAFT.  
SEWING MACHINE.

No. 547,867.

Patented Oct. 15, 1895.



WITNESSES:

Harry Garceau.  
John S. Lynch

INVENTOR:

By S. Scholfield      Berome to Taft

ATTY.

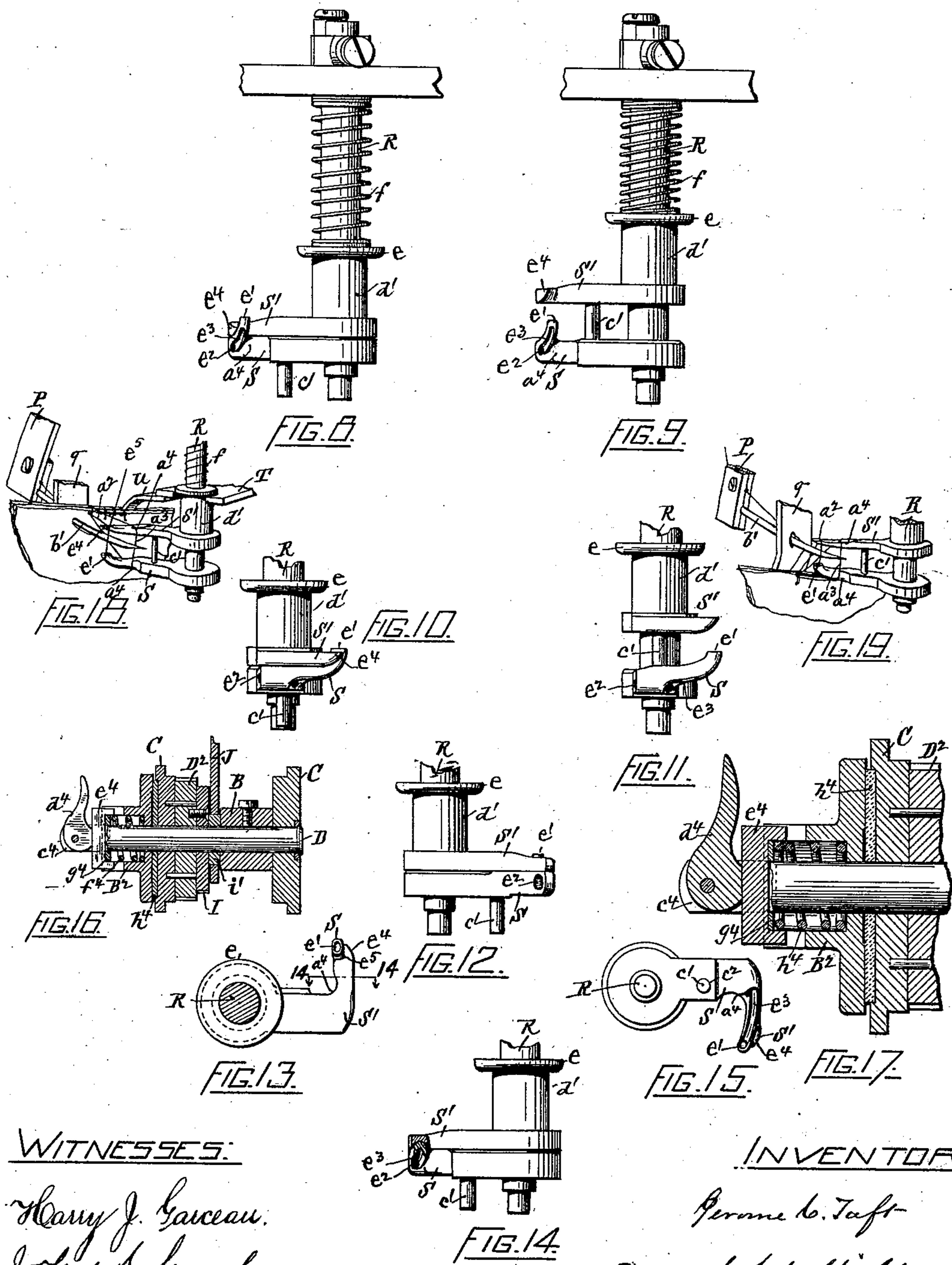
(No Model.)

4 Sheets—Sheet 4.

J. C. TAFT.  
SEWING MACHINE.

No. 547,867.

Patented Oct. 15, 1895.



WITNESSES:

Harry J. Gauceau.  
John S. Lynch

INVENTOR.

Jerome C. Taft

By S. Scholfield

ATTY.



# UNITED STATES PATENT OFFICE.

JEROME C. TAFT, OF PROVIDENCE, RHODE ISLAND.

## SEWING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 547,867, dated October 15, 1895.

Application filed February 16, 1895. Serial No. 538,670. (No model.)

*To all whom it may concern:*

Be it known that I, JEROME C. TAFT, a citizen of the United States, residing at Providence, in the State of Rhode Island, have invented a new and useful Improvement in Sewing-Machines, of which the following is a specification.

My invention relates to a sewing-machine in which the needle is alternately passed through the fabric and over the edge of the same, whereby the needle-loop of each alternate stitch will be drawn across the said edge; and it consists in the improved construction of the looper-arms for the employment of two threads in the stitch and in the improved combination of the needle and the looper-arms with means for changing the position of the stitch in the fabric and in certain details of construction, as hereinafter fully set forth.

In the accompanying drawings, Figure 1 represents a side elevation of the machine with the needle at its inward position. Fig. 2 represents a front elevation. Fig. 3 represents a rear elevation, partly in section. Fig. 4 represents a section taken in the line 4 4 of Fig. 5. Fig. 5 represents a top view of the carriage with the upper portion of the machine removed, showing the looper-arms at their extreme forward position. Fig. 6 represents a similar view with the looper-arms at their rearward position. Fig. 7 represents a side elevation with the needle in its outward position. Figs. 8 to 15 are detail views of the looper-arms. Figs. 16 and 17 are sections showing the construction of the frictional device for preventing the improper forward movement of the machine along the track. Figs. 18 and 19 are perspective views illustrating the formation of the stitch.

In the accompanying drawings, A represents the supporting-track upon which the machine moves, and B the carriage, which is supported for movement along the track by means of the flanged wheels C C C C, which wheels are held loosely upon the fixed axles D D', and to the carriage B is secured the under plate E, provided at its corners with the ears F F F F, which extend downward below the level of the under surface of the track A, and are provided with the antifriction-rollers C' C', which bear against the under surface of the track A in opposition to the flanged wheels

C C above the said track. The under plate E is connected to the carriage B and adapted to transmit a yielding pressure to the track by means of the upright studs G G, attached to the plate E and passing loosely through the perforations *a* in the carriage B, and which are provided at the upper side of the carriage B with the springs *b* held upon the studs G by means of the collets *c*. Upon the stationary axle D is loosely held the ratchet-wheel I, and loosely upon the loose collar *i'* upon the said axle, at the side of the ratchet-wheel, is placed the vibrating arm J, to the side of which is pivoted the pawl K, which engages with the teeth of the ratchet-wheel I; and operative connection is made from the vibrating arm J to the eccentric L upon the cam-shaft M by means of the connecting-rod N, the said connecting-rod being pivoted to the adjustable piece N', secured to the side of the arm J.

To the side of the loose ratchet-wheel I is secured the gear D<sup>2</sup>, which is also secured to the adjacent side of the flanged wheel C, so that the said ratchet-wheel, gear, and flanged wheel will be caused to move together, the gear D<sup>2</sup> being made to engage with the rack C<sup>2</sup>. The end *e*<sup>4</sup> of the stationary axle D is slotted to receive the tightening cam-lever *d*<sup>4</sup> and also the sliding shoe *e*<sup>4</sup> for the action of the said cam-lever, and loosely upon the axle D is placed the sliding flanged sleeve B<sup>2</sup>, which is recessed to receive the spiral spring *f*<sup>4</sup> and the loose washer *g*<sup>4</sup>, which rests against the forward edge of the shoe *e*<sup>4</sup>, and between the sliding flanged sleeve B<sup>2</sup> and the flanged wheel C is placed the yielding friction-disk *h*<sup>4</sup>, by means of which the proper degree of friction may be produced to prevent the free movement of the machine when the ratchet-wheel I is not being positively acted upon by the pawl K, thus tending to hold the carriage and the attached sewing mechanism in their properly set position for making stitches of uniform length in the fabric. Upon the shaft M is placed the cam O, which serves to operate the needle-arm P, which arm is pivoted to the frame at the point *a'* and at its lower end carries the curved needle *b'*. To the shaft M is also secured the cam Q, which serves to impart a vibratory movement to the upright spindle R, to the lower end of which is attached the hook-formed lower looper-arm S,



and loosely upon the spindle R is placed the slidable hook-formed upper arm S' of the looper, which arm is prevented from turning upon the spindle R by means of the downwardly-extending pin c', which passes loosely through a suitable perforation c<sup>2</sup> made in the lower looper-arm S. The hub d' of the arm S' is provided with the flange e, and upon the spindle R, above the hub d', is placed the spiral spring f, which will serve to force the upper arm S' down upon the lower arm S, the said upper arm being raised against the downward action of the spring f, by means of the forked bell-crank lever T, which engages with the under side of the flange e, and is operated by the cam U upon the shaft M, and to the bell-crank lever T is attached the guide u, which serves to prevent the formation of a loop upon the upper side of the needle. The hook-formed lower looper-arm S is provided at its outer end with the eye e', through which the thread a<sup>2</sup> from the horizontal spool A<sup>2</sup> is made to pass and also with the rear guiding-eye e<sup>2</sup> and the open groove e<sup>3</sup> at the under side of the hook. The hook-formed upper looper-arm S' is provided with the projecting horn e<sup>4</sup>, which forms the thread-receiving recess e<sup>5</sup>, which is adapted to hold the binding-thread a<sup>2</sup> running from the horizontal spool A<sup>2</sup>, while the threads from the spools A<sup>2</sup> and A<sup>3</sup> are being spread for the entrance of the needle between them. To the side of the needle-arm P is pivoted the spring-actuated arm q, which at its lower end embraces the needle and serves, by bearing against the outer side of the fabric, to secure the proper formation of the needle-loop when the stitch is being taken over the edge of the fabric and operates in this case to prevent the backward movement of the loop with the needle, and a suitable stop is provided for the arm q by means of the pin r. The fabric guide V is provided with a dovetailed slide g, which enters a corresponding vertical groove h made in the side of the carriage B, whereby the said guide is made capable of an up-and-down movement, which movement is imparted thereto by means of the arm W, the said arm being held between the top of the slide g and the under side of the pin i, which pin projects backward from the inner side of the guide V. The arm W is attached to the rock-shaft j, which is held loosely in the transverse bearing k, and to the opposite end of the said rock-shaft is attached the cam-arm l, which engages at its outer end with the cam X. (Shown in dotted lines upon the inner side of the gear Y, the said gear being held to turn loosely upon the stud m and engaging with the teeth of the pinion Z upon the shaft M.) To the hub n of the gear Y is attached the hand-crank o, by means of which the machine is operated. The guide V for the fabric may be preferably provided with the downwardly-projecting blade p, which enters between the edges of the two pieces of fabric which are to be sewed. The pieces of fabric to be sewed

together edge to edge are to be suitably stretched side by side and held by a proper support independent of the machine, so that the edges of the said pieces of fabric will rest against the horizontal bearing-surfaces s s of the guide and also have a lifting tendency thereon, whereby the edges of the said pieces will automatically follow the said guide in its upward movement.

Upon turning the hand-crank o the machine will be fed along the track intermittently by means of the ratchet mechanism, each forward movement of the machine being made equal to the desired length of the stitch, and as the needle-arm P is moved forward by the action of the cam O, the threaded needle b' will be first passed through the fabric and then drawn back to make the loop. The looper-arms S S' are now passed together through the needle-loop, and the needle withdrawn from the fabric, leaving its loop at the bend a<sup>4</sup> of the hooks of both looper-arms. The fabric is now, by the downward movement of the fabric-guide V, pressed down below the penetrating plane of the needle, and the upper looper-arm rises from the lower looper-arm, thus spreading the needle-loop and the accompanying binding-thread a<sup>2</sup>, which binding-thread is held in advance of the needle-loop at the forward ends of the looper-arms. The needle now passes forward over the fabric and through the loop of the binding-thread a<sup>2</sup> and in advance of the needle-loop a<sup>3</sup>, as shown in Fig. 19. The looper-arms are now caused to recede and discharge the loop of the binding-thread a<sup>2</sup> onto the needle, and receding farther the needle-loop a<sup>3</sup> is discarded from the looper-arms onto the loop of the binding-thread. Now the upper looper-arm closes down upon the lower looper-arm and the needle recedes to form another loop. Then the looper-arms come forward and pass through the needle-loop. Then the needle recedes, leaving the needle-loop upon the looper-arm at the base a<sup>4</sup> of the looper-hook. Now the fabric is allowed to rise above the penetrating line of the needle, and the upper looper-arm is caused to rise to spread both the needle-loop and the loop of the binding-thread a<sup>2</sup>, so that the needle will pass through the fabric and through the loop of the binding-thread a<sup>2</sup> in advance of the needle-loop. The looper-arms now recede and discard the loop of the binding-thread a<sup>2</sup> upon the needle, and upon the further backward movement of the looper-arms the needle-loop is discarded upon the loop of the binding-thread a<sup>2</sup>, as before; and this operation is continuously repeated in sewing the fabric, the operation of the needle being the same whether the stitch is taken over or through the fabric. The cam-arm l is attached to the rock-shaft j by means of the removable pin z<sup>3</sup>, which enters a suitably-located perforation made in the said shaft, and when the said cam-arm l is thus attached the fabric-guide V will be so operated that each



alternate stitch will be taken above the fabric; but if it is desired to take the stitches uniformly through the fabric, as may be desirable in some cases, then by removing the pin  $z^3$  from the cam-arm  $l$  the said cam-arm will be rendered loose upon the shaft  $j$ , so that the cam X will not affect the fabric-guide to cause the up-and-down movement of the same, and then by inserting the pin  $z^3$  into the perforation  $j^4$  in the carriage B, so as to enter a corresponding hole in the shaft  $j$ , the fabric-guide V may be permanently held in an elevated position, so that the stitches will be taken uniformly through and through the fabric.

I claim as my invention—

1. In a sewing machine, the combination of the reciprocating eye pointed needle, with the lower looper-arm, provided with the thread guiding and thread delivering eyes, and the intermediate groove at the under side of the looper arm, and the movable upper looper-arm, provided with the projecting horn which forms a recess for holding the thread when spreading the loop, substantially as described.

2. In a sewing machine, the combination with the oscillating looper arms, and the fabric guide, of the reciprocating eye pointed needle, and the spring actuated arm arranged upon the needle carrier, and having an open-

ing through which the needle passes, substantially as described.

3. In a sewing machine, the combination with the track provided with the rack, the carriage, the flanged wheels, the loose gear engaging with the rack, the ratchet wheel and pawl for operating the gear, and the spring actuated frictional means arranged upon the fixed axle, to prevent the improper movement of the carriage along the track, in spacing the stitch substantially as described.

4. In a sewing machine, the combination with the stitch forming mechanism, and the carriage, the vertically moving fabric guide, and the cam for giving the fabric guide an up and down movement, of the intermediate rock-shaft and the connecting arms, and means for optionally either securing the fabric guide in an inoperative elevated position for making the stitch through and through the fabric, or securing the cam arm to the shaft, whereby an up and down movement will be imparted to the fabric guide, to cause the loop of each alternate stitch to be drawn over the edge of the fabric, substantially as described.

JEROME C. TAFT.

Witnesses:

SOCRATES SCHOLFIELD,  
JOHN S. LYNCH.