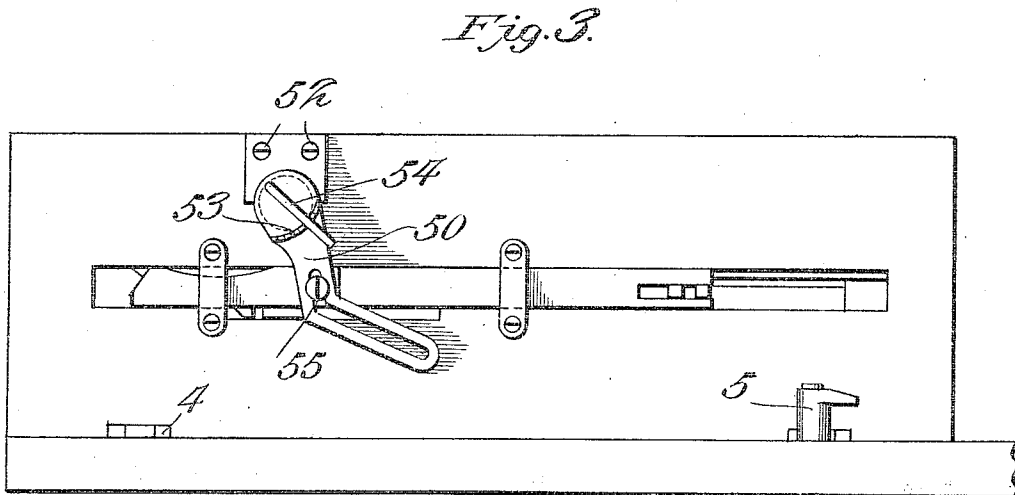
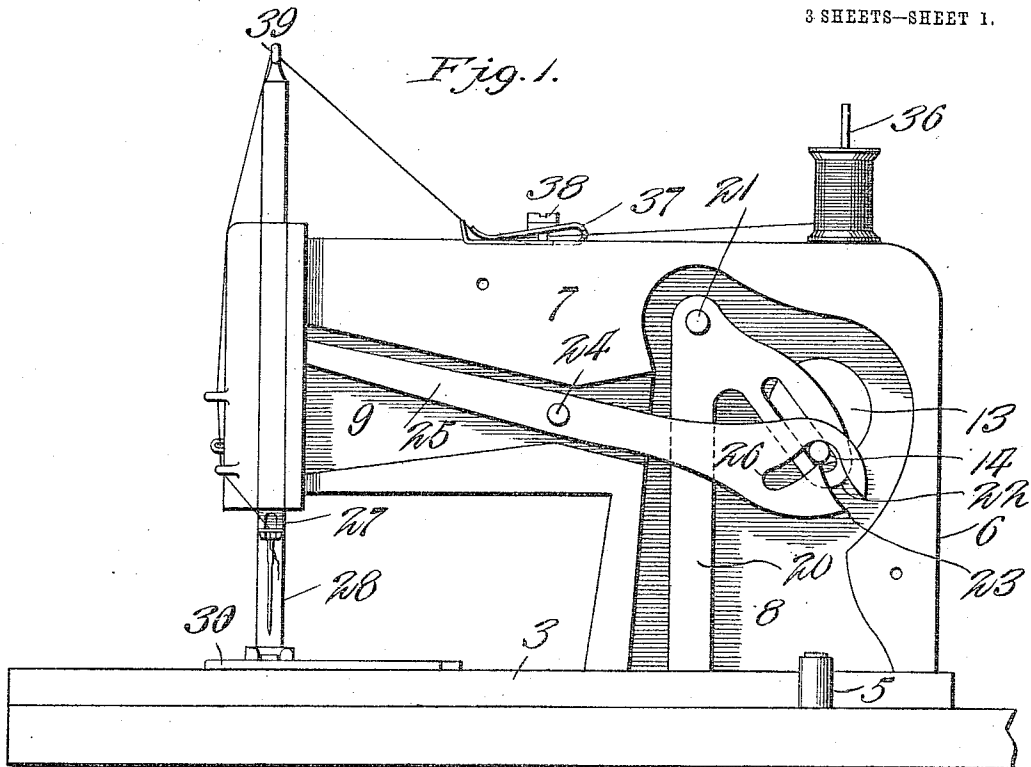


J. COMBEST.
SEWING MACHINE.
APPLICATION FILED OCT. 20, 1908.

957,545.

Patented May 10, 1910.

3 SHEETS—SHEET 1.



Witnesses

Edmund L. McFee
Wm. H. North

Inventor
James Combest

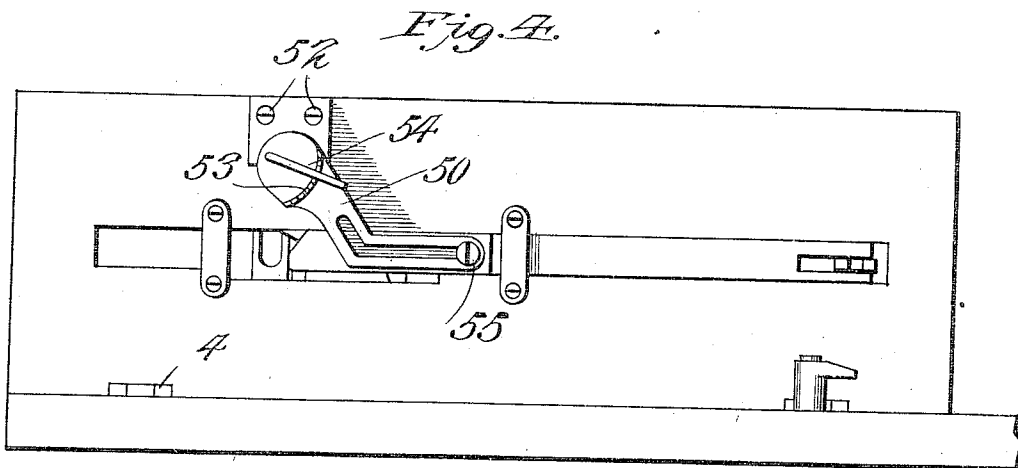
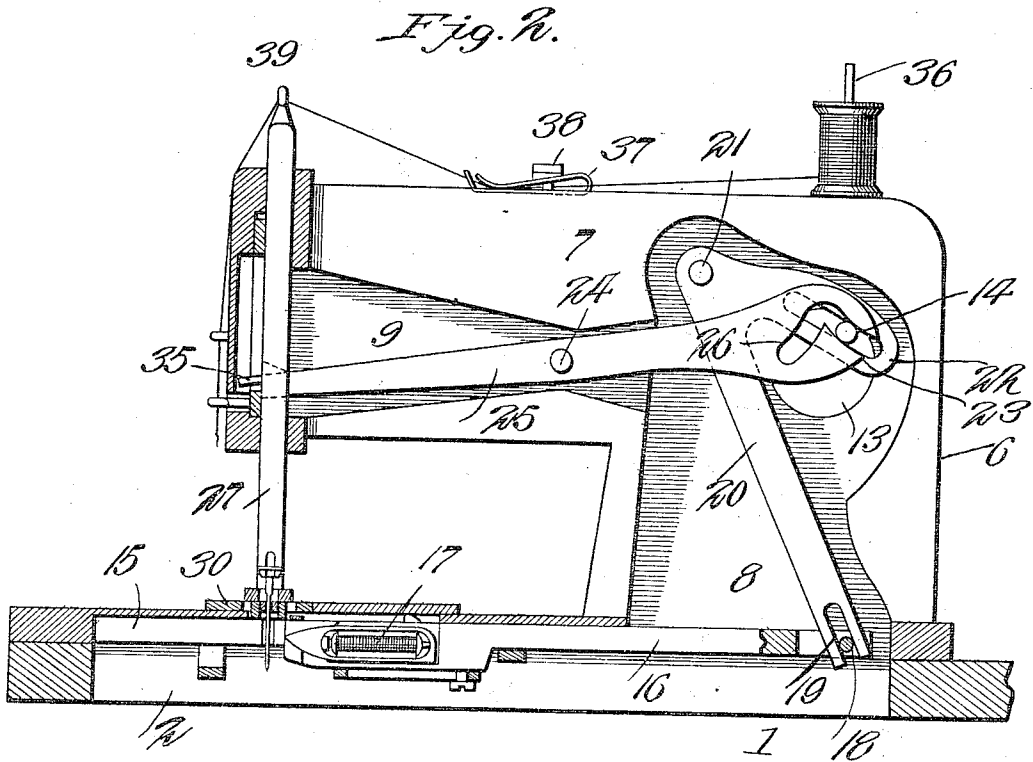
By *Victor J. Evans*
Attorney

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3 SHEETS—SHEET 2.



Witnesses

Edwin L. McKee
John D. Smith

Inventor
James Combest

Victor J. Evans
Attorney

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3 SHEETS—SHEET 3.

Fig. 5.

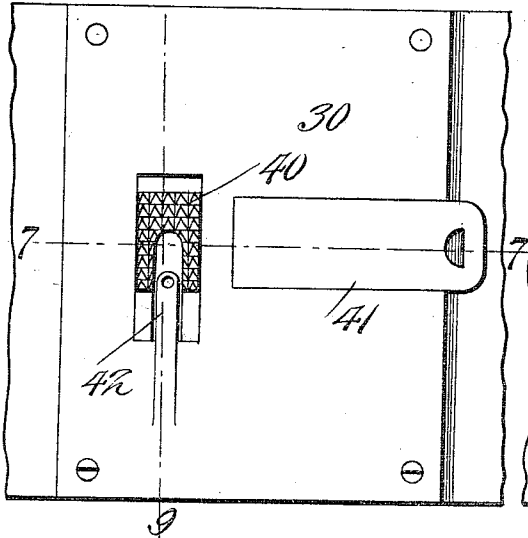


Fig. 6.

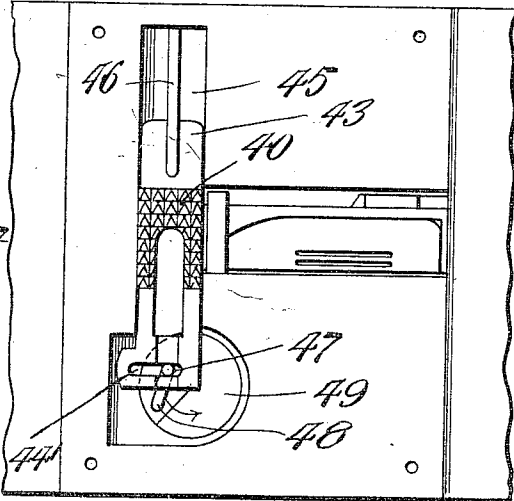


Fig. 7.

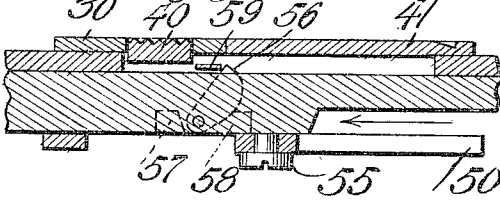


Fig. 8.

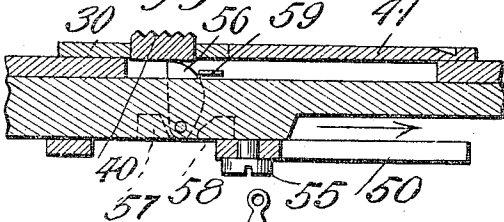


Fig. 9.

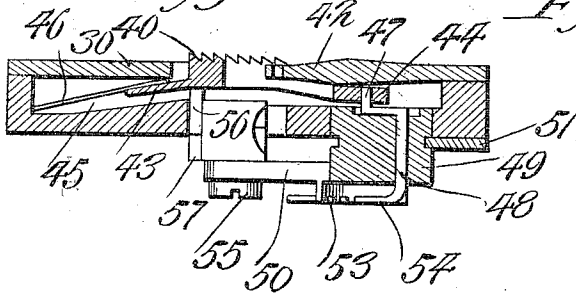
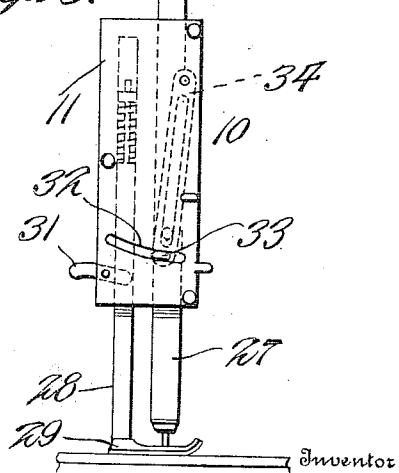


Fig. 10.



Witnesses

Edwin L. McKee
O. J. North

By Victor J. Evans
Attorney

UNITED STATES PATENT OFFICE.

JAMES COMBEST, OF PEORIA, ILLINOIS.

SEWING-MACHINE.

957,545.

Specification of Letters Patent.

Patented May 10, 1910.

Application filed October 20, 1908. Serial No. 458,624.

To all whom it may concern:

Be it known that I, JAMES COMBEST, a citizen of the United States, residing at Peoria, in the county of Peoria and State of Illinois, have invented new and useful Improvements in Sewing-Machines, of which the following is a specification.

This invention relates to sewing machines, and the primary object of the invention is to provide an extremely cheap and simple sewing machine, constructed of few parts, which are easily assembled or disconnected if desired, and which will be thoroughly effective and certain in its operation.

Another object of the invention is to produce a sewing machine having its shaft provided with a crank pin engaging the slotted ends of angularly disposed pivoted levers connecting the needle bar and the shuttle arm of the machine, whereby each revolution of the pulley will impart a vertical reciprocatory motion to the needle bar and a longitudinal reciprocatory motion to the shuttle, in timed relation with each other.

A further object of the invention is to provide simple, cheap and novel mechanism for operating the feed dog of the machine.

A still further object of the invention is to provide extremely simple and effective mechanism for varying the sizes of the stitches made by the machine.

With these and other objects in view, which will be apparent as the description progresses, the invention resides in the novel construction, combination and arrangement of parts, hereinafter fully described and claimed.

In the accompanying drawings, Figure 1 is a side elevation of a sewing machine constructed in accordance with the present invention, the side plate being removed to illustrate the interior mechanism. Fig. 2 is a vertical, longitudinal sectional view of the same. Fig. 3 is a bottom plan view illustrating the shuttle arm in its forward position. Fig. 4 is a similar view, illustrating the shuttle arm in back or rearward position. Fig. 5 is a fragmentary plan view illustrating the feed dog and cloth plate. Fig. 6 is a similar view with the cloth plate removed. Fig. 7 is a longitudinal sectional view on the line 7—7 of Fig. 5, showing the feed dog lowered. Fig. 8 is a similar view with the feed dog raised. Fig. 9 is a transverse sectional view on the line 9—9 of Fig.

5. Fig. 10 is a front elevation, illustrating the needle bar and presser foot.

In the accompanying drawings, the numeral 1 designates the table or support for the machine frame. This support may be constructed in the usual or customary manner or may be of any desired or preferred construction and has its top plate provided with a rectangular cut away portion or opening 2.

Positioned upon the top plate 1 of the support above the opening 2 is the bed plate 3 of the improved machine. This bed plate 3 has one of its longitudinal edges provided with hinges 4 by which it is connected to plate 1, and the plate is provided with a knob 5 having a suitable head or finger which is adapted to be swung over the opposite edges of the bed plate 3 to retain the same upon the support.

Formed integral with and extending vertically from the base plate 3 is the vertical arm 6, of the head of the machine. This arm is provided with the longitudinally extending arm 7, projecting in parallel relation to and overhanging the base plate 3. The arms 6 and 7 are each provided with centrally arranged channeled or cut out portions upon one of their sides as indicated by the numerals 8 and 9, and these channels are adapted to be normally closed by a plate, not shown, coinciding with the shape of the arms, and attached thereto through the medium of suitable screws or like retaining devices. The arm 7 is provided with the needle and foot bar housing 10 having its front closed by a removable plate 11.

Mounted within a suitable circular opening 12, provided by the arm 6 is a driving shaft having an enlarged head or collar 13 upon which is positioned an eccentrically arranged crank pin 14. The shaft carrying the collar 13, it will be noted is arranged at a direct right angle to the head of the machine and is adapted for the reception of a suitable pulley wheel, not shown, by which the device is operated.

The bed plate 3 is provided with a longitudinal groove or channel 15 and has a cut away portion to provide a communication with the opening 8 of the arm 6, as clearly shown in Fig. 2 of the drawings. The channel 15 provided by the plate 3 is adapted for the reception of a reciprocatory arm 16 carrying a shuttle 17. The inner end of

the arm 16 is slit or cut away and provided with a stud 18 adapted for the reception of the bifurcated end 19 of a lever bar 20. This lever 20 is pivotally connected with the opening 8 as at 21, and is provided with an offset arm 22 provided with an elongated slot 23 engaging the pin 14 of the operating shaft.

Pivotally mounted within the cut away portion 9 of the arm 7 at 24 is the needle bar operating lever 25. This lever 25 has its inner end enlarged and provided with an inverted V-shaped slot 26, engaging the pin 14, while the opposite end of the arm engages a suitable slot provided within the needle bar 27.

Secured within a suitable vertical channel provided by the housing 10 is a spring pressed foot rod 28, carrying the usual presser foot 29 and adapted to be raised away from the work plate 30 by the usual pivoted lifter 31.

The front plate 11 is secured to the housing by suitable screws or bolts and is provided with an arcuate slot 32, adapted for the reception of an eye 33 carried by a slotted link 34, pivotally connected to the inner face of the plate 11. The needle bar lever 25 is provided with a projecting finger 35 which is adapted for engagement with the slot of the link 34, and the link 34 is pivoted at an angle in relation to the vertical plane of movement of the lever 25 so as to oscillate the link thereby causing the eye 33 to travel forward and backward within the slot 32 when the machine is in motion. The head of the machine is provided with a spool pin 36 and a thread tension device 37 comprising a single plate of spring metal bent upon itself and having its ends upturned and fastened to the machine by a suitable screw 38, by which the spring arms are regulated. The lip of the tension is provided with a suitable opening, and the thread is fed from a spool upon the pin 36 through this opening and between the lips of the tension and from thence through an eye 39 provided by the needle bar, through the eye 33 and to the needle. By this arrangement it will be noted that the thread is always retained at a proper tension and that the eye 33 of the oscillatory link 34 provides an effective take up to draw sufficient thread through the tension to allow for the free operation of the needle without danger of breaking the thread carried thereby.

The work plate 30 is removably secured to the bed plate 3 through the medium of suitable screws and is provided with a suitable rectangular opening 39, through which the feed dog 40 is adapted to work, and a suitable opening closed by a slide 41, positioned directly above the shuttle arm 16 and whereby access to the shuttle is readily

attainable. The plate 30 is also provided with a finger 42, projecting centrally of the opening 39 and provided with a suitable opening through which the needle is adapted to operate.

The feed dog 40 comprises a raised toothed portion, having a central slot adapted to engage the projecting finger 42 of the work plate 30 and from the ends of which extend reduced inclined portions 43 and 44. The inclined extremities of the dog are adapted to be positioned in a transverse slot or opening 45 provided in the bed plate 3. The extension 43 upon one end of the dog is adapted to be contacted by a leaf spring 46 which normally presses the toothed face of the dog downwardly below the surface of the work holder 30. The opposite end 44 is provided with a suitable elongated slot 44' adapted for the reception of a vertical offset portion 47 of a U-shaped lever 48. The vertical arm of the lever 48 is revolvably mounted in a bearing extension 49 provided by an offset slotted lever 50. The bearing 49 is provided with an annular channel adapted for the reception of annular edge of a retaining plate 51, secured to the underface of the plate 3 through the medium of screws or other suitable removable securing devices 52. The lever 50 is provided with a segmental toothed rack 53, and the horizontal arm 54 of the U-shaped lever is adapted to engage between any of the teeth of the rack to regulate the length of the stitch to be made by the needle in a manner now to be described. The lever 50 has its slotted angular arm connected to the shuttle arm 16 through the medium of a headed member 55, and it will be noted that as the arm 16 moves forward the member 55 will follow the straight slot of the arm 50 until it contacts with the wall of the slotted offset when it will cause the bearing 49 to turn upon the plate 51, which also causes the vertical offset 47 of the U-shaped member 48, to contact the wall of the slot 44' and to draw with it the feed dog 40. It will be noted that by adjusting the arm 54 between the teeth of the rack 53 the dog 40 may be forced forwardly a greater or lesser distance as required, thus pushing forward the cloth engaged by the dog a required distance so that the length of the stitch may be readily regulated. It will also be seen that as the shuttle arm 16 is moved backwardly, the dog 40, through the medium of the offset 47 of the U-shaped member, is returned to its initial position.

It is to be understood that the spring 46 tends to normally retain the dog 40 in a "down" position below the surface of the work plate. In order to impart an upward movement to the dog I have provided the arm 16 with a pivoted finger 56 positioned between a pair of offsets or lugs 57 and 58. The

inner faces of these offsets 57 and 58 are beveled or inclined one at a greater angle than the other, and the finger 56 has one of its edges straight while its opposite or inner edge is rounded as clearly illustrated in Figs. 7 and 8 of the drawings.

Secured between the walls of the channel 15 directly to one side of the feed dog 40 is a resilient strap 59. This strap 59 is adapted to lie directly in the path of and to contact with the finger 56 when the arm 16 is reciprocated. Upon the forward movement of the arm the upper portion of the straight edge of the finger will contact the strap 59, causing it to yield to allow the finger to ride under the strap. The finger after passing the strap 59 will ride forward below the undersurface of the dog without contacting the same, it being understood that the finger is sustained at an angle through the medium of the lug 58. Upon the return stroke of the arm 16, the rounded face of the finger will contact the opposite edge of the plate 59, causing the same to rotate upon its pivot and at the same time to contact and raise the toothed dog 40. When the finger is brought beyond the perpendicular the finger will fall until its edge engages the opposite lug 57, in which position it remains until the return stroke of the arm 16 forces it into contact with the edge of the strap 59, when the operation, above described is repeated.

While I have shown and described the preferred embodiment of the invention, as it now appears to me, it is to be understood that minor details of construction within the scope of the following claims may be resorted to without departing from the spirit

or sacrificing any of the advantages of the invention.

Having thus fully described the invention what is claimed as new is:

1. In a sewing machine, a drive shaft, a needle bar and a shuttle arm operated thereby, the shuttle arm being provided with offset spaced members having their adjacent faces beveled in opposite directions, a finger pivotally connected with the shuttle arm between the offset members, said finger comprising a flattened member having one of its edges straightened and its opposite edge curved, a resilient strip carried by the machine frame and adapted to lie in the path of the finger so as to contact the same and to move it upon its pivot to force the said finger into engagement with and to raise the feed dog as the arm is reciprocated.

2. In a sewing machine, a driving shaft, a needle bar and a shuttle arm operated by said shaft, a pivoted finger upon the shuttle arm, a work holder plate, a feed dog normally retained below the plate, an offset member provided with arms connected with one end of the feed dog, a toothed rack adapted to be engaged by one of the arms of the offset member, an offset slotted bar connected with the rack, a projection upon the shuttle arm adapted to engage the slotted bar, and means for raising the pivoted finger of the shuttle arm to contact and raise the feed dog as the arm is reciprocated.

In testimony whereof I affix my signature in presence of two witnesses.

JAMES COMBEST.

Witnesses:

ANDREW H. THOMPSON,
RICHARD A. KELLOGG.