J. R. V. DeCASTRO.

SEWING-MACHINES.

No. 195,262. Patented Sept. 18, 1877.

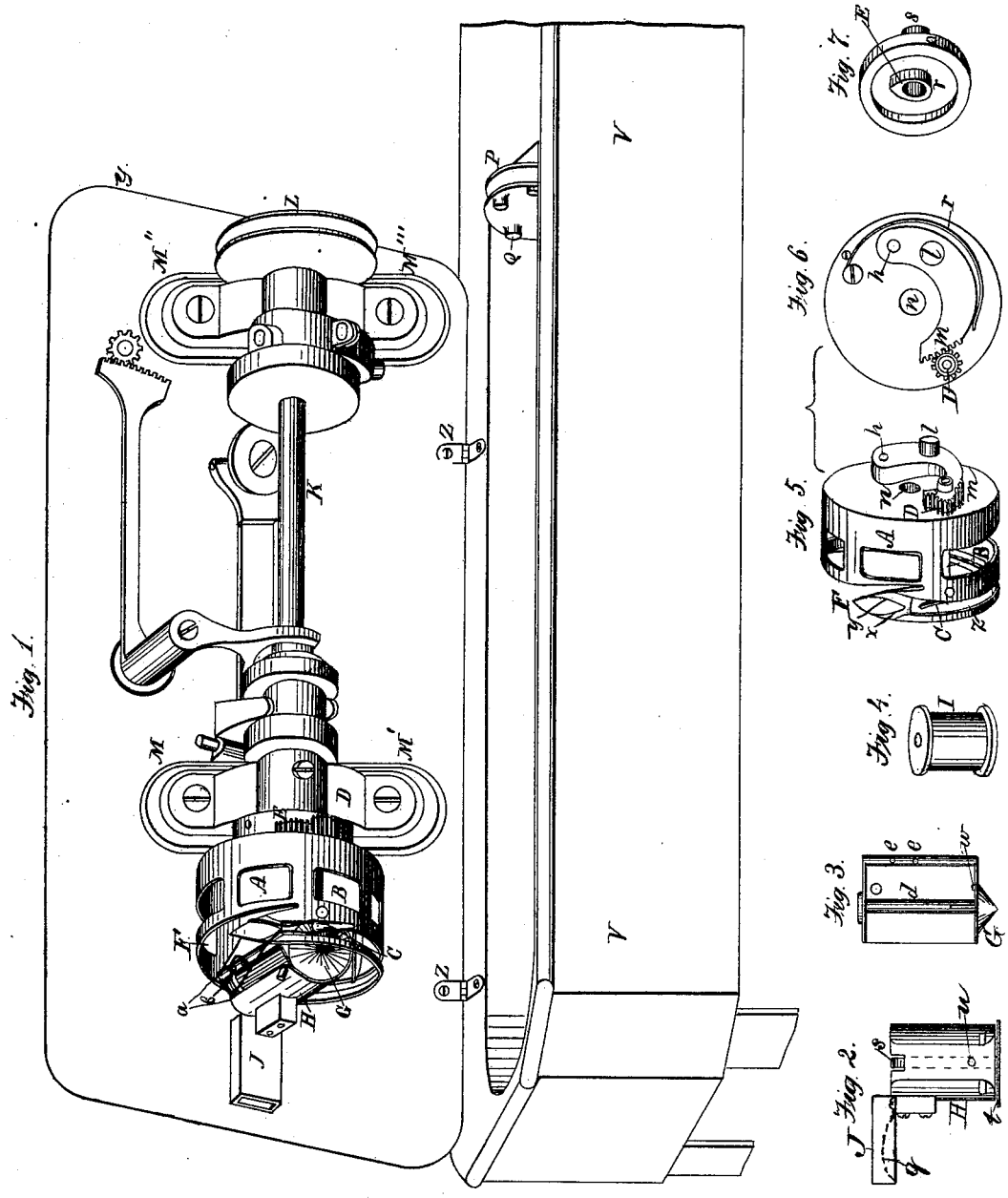

Fig. 1.

Fig. 7. Fig. 6. Fig. 5. Fig. 4. Fig. 3. Fig. 2.

Witnesses

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UNITED STATES PATENT OFFICE.

JOSÉ RIBEIRO VIEIRA DE CASTRO, OF OPORTO, PORTUGAL.

IMPROVEMENT IN SEWING-MACHINES.

Specification forming part of Letters Patent No. 195,262, dated September 18, 1877; application filed November 21, 1876.

To all whom it may concern:

Be it known that I, JOSÉ RIBEIRO VIEIRA DE CASTRO, of Oporto, in the Kingdom of Portugal, have invented certain Improvements in Sewing-Machines, of which the following is a specification:

My invention belongs to that class in which a common spool of commerce is used to hold the lower thread; and my improvements consist in certain features of construction hereinafter described, relating mainly to the hollow revolving head or cylinder, and to the spool-case or tubular holder and its connections.

To make my invention more easily understood, I will describe the same by reference to the annexed drawing.

Figure 1 represents, in perspective, the lower part of a sewing-machine arranged according to my invention. Figs. 2 to 7 represent the details. Fig. 4 shows, at I, an ordinary spool, which is placed on the axis of the case represented in Fig. 3.

This case carries a cone, G, and tie-piece, in which holes *e*, *e* are made, through which passes the thread unwound from the bobbin before its passage into the knot or loop of the thread of the needle, in order to regulate the tension. This case, which should be crossed by the upper thread, is placed freely in the tube, Fig. 2. This tube consists of a metallic cylinder, H, open laterally, and furnished at *j* with a slide, suitable for fixing it under the machine.

Fig. 5 represents the apparatus for passing the upper thread around the case, Fig. 3.

It is composed of a hollow grooved and slotted cylinder, A, provided in front with a point, F, furnished with two grooves, *x y*, serving to receive the thread. A hook, C, movable around an axis, and arranged to play in the slot *z* of the cylinder, is moved by a small arbor, B, having at its other end a pinion, D. This pinion gears with a toothed segment, *m*, Figs. 5 and 6, placed at the extremity of an arm oscillating round the point *h*, and furnished with a projecting knob or pin, *l*, which can be introduced into the groove *r* of a cam, E, (shown separate at Fig. 7;) or the cam may be used without the groove.

It will be understood that, the cylinder A and the eccentric being in their place, the rotating movement of the shaft K, Fig. 1, will give to the segment *m*, to the pinion D, and consequently to the hook C, an alternate or reciprocating circular movement.

This being done, the cam E is fixed in its place, the cylinder A being on the extremity of the shaft K, and the spool I is placed in the case and on the arbor *d*, Fig. 3, which is inclosed in the chamfered or sloping tube H, itself fixed at *j* in a suitable slide. The axis K being put in motion, the stitch is made as follows: If the needle-thread be passed through and underneath the bed-plate or table, the hook C seizes it in its passage and draws it with it. The point F, in passing, in its turn separates it, and the two sides of the loop are placed in the grooves *x y*. The two parts or sides of the loop *a* of the needle-thread, Fig. 1, are then separated, and, in the position shown in Fig. 1, the upper part of the case commences to pass between them. Then cam E, commencing to act, causes the hook C to go back into the interior of the cylinder A. The thread is released when its curve has passed the cone G, and is thus introduced into the tube H. The spool and the case having passed through the loop, it remains in this position for about half a turn. Then the small hook C, in returning, takes the needle-thread to form a new loop, each loop encompassing the thread of the spool, and in this manner the stitch is regularly formed, the thread of the spool unwinding in a regular manner in consequence of its passage through the holes *e e*.

The slide *j*, to which the spool-case tube H is attached, dovetails to the under side of the bed, so that it may slide in a right line to move this tube spool-case and spool to their working positions within the cylinder, or to remove them therefrom, and this mode of attachment allows such insertion or removal at whatever position the cylinder may have stopped in its revolution; whereas if the piece *j*, instead of sliding, were pivoted and swung upon a center, as has heretofore been the practice, it could not be swung out unless a portion of the wall of the cylinder were cut away for that purpose; nor then, until the operator, at considerable inconvenience and loss of time, and with skill, should first rotate the cylinder

to the precise point required, as well as in the proper direction. For the better securing a firm hold of the slide to the bed, it is provided with a spring, *q*. (Shown in dotted lines in Fig. 2.)

In order that the reacting spring *r*, which bears upon the segment *m*, may exert its power to the best advantage to insure the action of the segment under all conditions, its bearing end acts upon this segment-lever at the farthest practicable distace from its fulcrum, thus giving a long leverage; and in order that the inside of the hollow cylinder A shall be as free as possible from any devices which might interfere with the free action of the thread, and of the devices which are lodged within such cylinder, this spring is placed outside the cylinder, and not, as heretofore, inside of it, or acting upon the segment near its axis.

The tube H is furnished on its outer side and opposite its open side with a spring-guard, *s*, whose upper end curves slightly inward, so as to reach over the top of the spool-case G when the latter is in place, and detain it with a gentle pressure, yet permitting the loop of needle-thread to pass between such guard and the case G at the proper juncture. This spring is adjustably or removably secured to case or tube H by a screw at the point *u*, and its lower end is furnished with a rigid bar, *t*, which, passing under the tube and under the spool-case, prevents the latter from dropping through the tube. A small and delicate spring, *v*, in the bottom of the conical tip of G, rests upon this bar *t*, and permits the loop to pass freely. A pin, *w*, projecting slightly into the bottom of case G, serves to lift the spool above its base, so that there shall be but little resistance or friction to prevent its free revolution to deliver its thread.

The driving-shaft of the machine, to which motion is transmitted by any suitable motor, is terminated by a pulley, P, Fig. 1, on which is placed the driving-band. One of the faces of the pulley is terminated by projections taking into the corresponding face of the pulley L, when this pulley is lowered with the rest of the machine by means of hinges Z. This mode of gearing allows of raising the machine to examine the lower part without it being necessary to remove the strap.

What I claim is—

1. In combination with the revolving hook-cylinder A, constructed as shown and described, the bobbin-case tube or holder H and its dovetailed supporting-slide *j*, as and for the purposes set forth.

2. The tube H, provided with the spring-bar *s t*, and also with a slide, *j*, whereby the tube may be readily applied to or removed from the bed-plate, and also slid in right lines into and out of the hollow revolving cylinder A, as shown and described.

Oporto, June 2, 1876.

JOSÉ RIBEIRO VIEIRA DE CASTRO.

Witnesses:

[ILLEGIBLE.]