3 Sheets—Sheet 1.

C. JUNKER.

Sewing-Machine.

No. 217,112. **Patented July 1, 1879.**

Fig. 1.

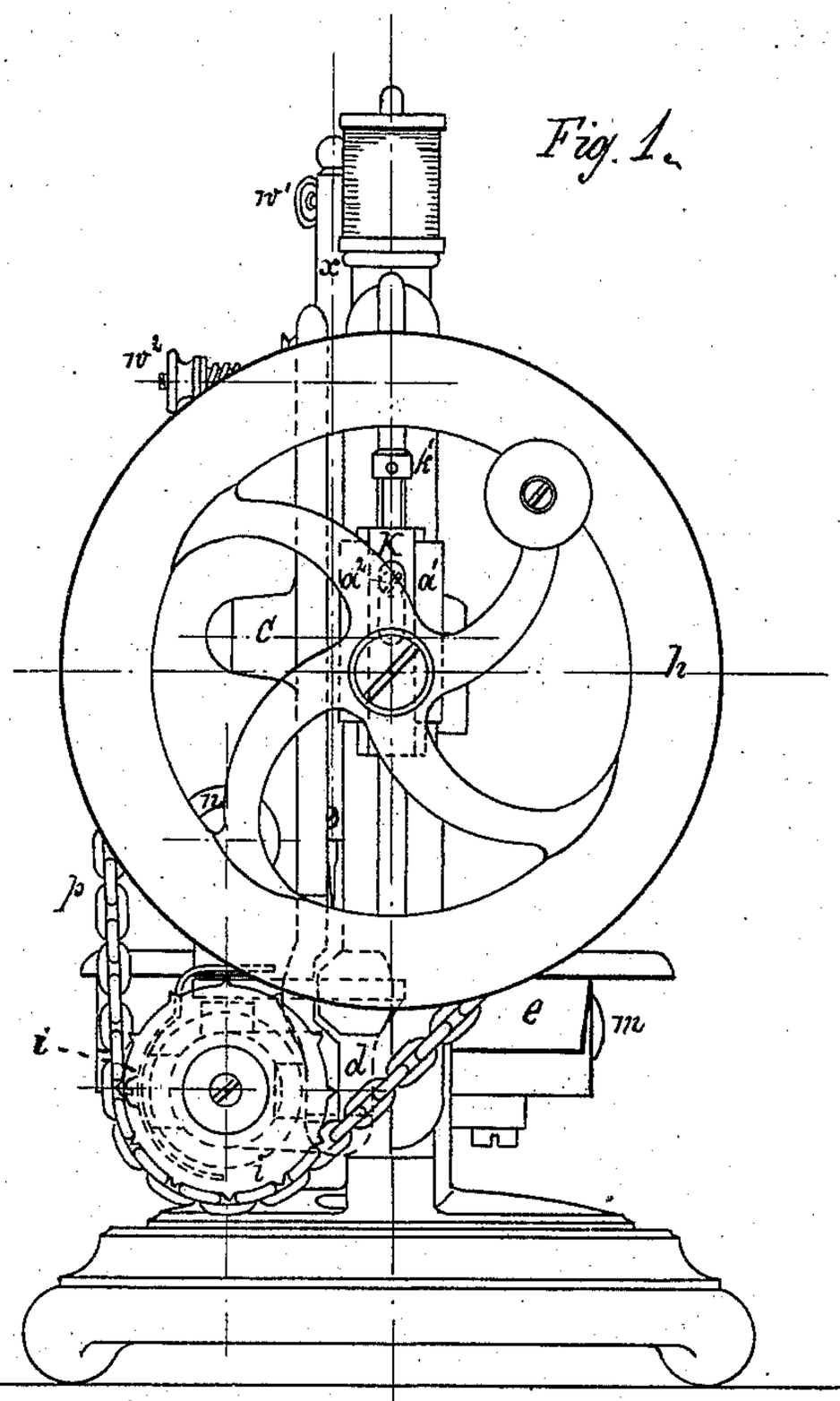
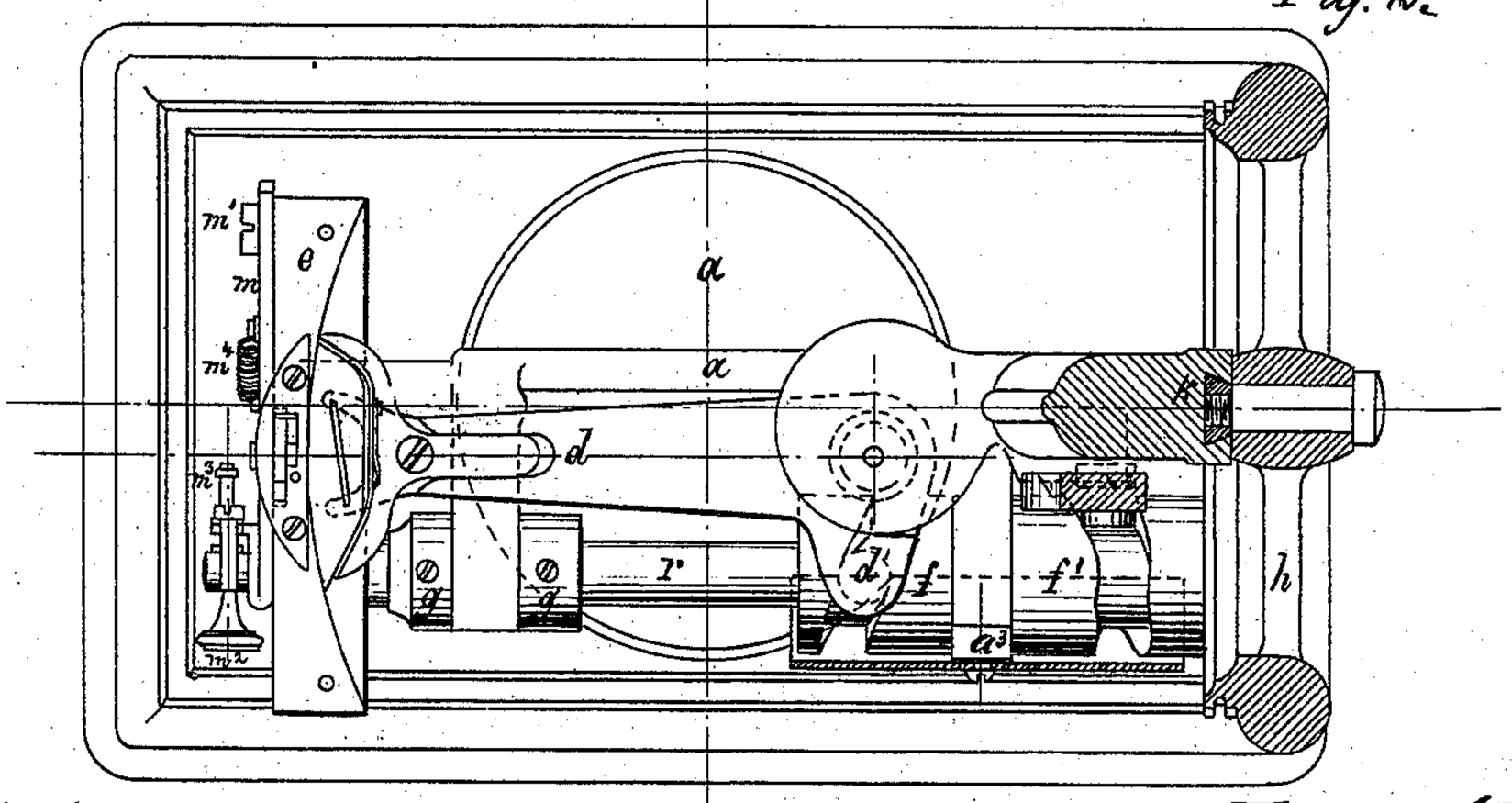


Fig. 2.



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Carl Junker
per Ernst Bilhuber
his Atty.

3 Sheets—Sheet 2

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Fig. 3.

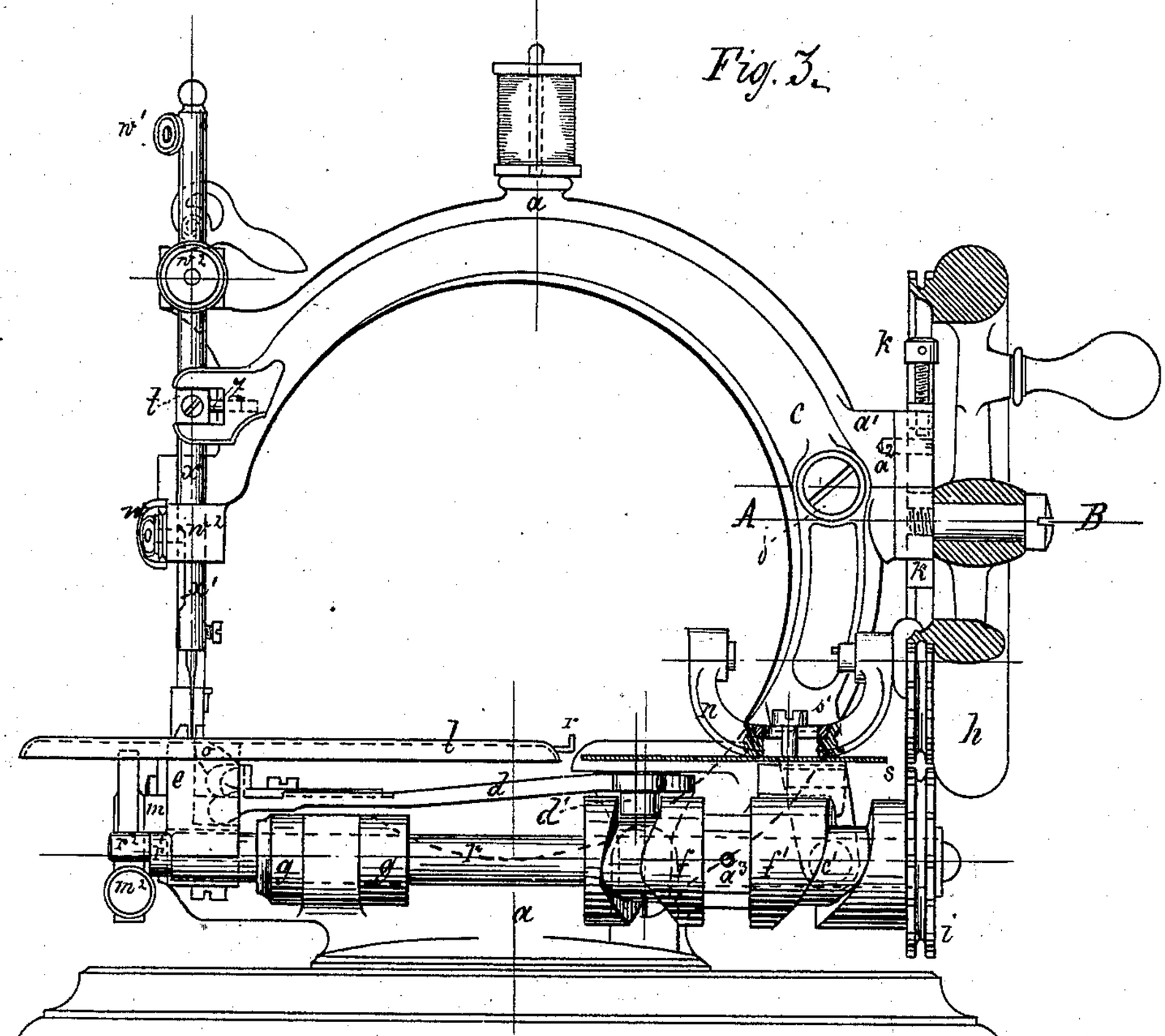
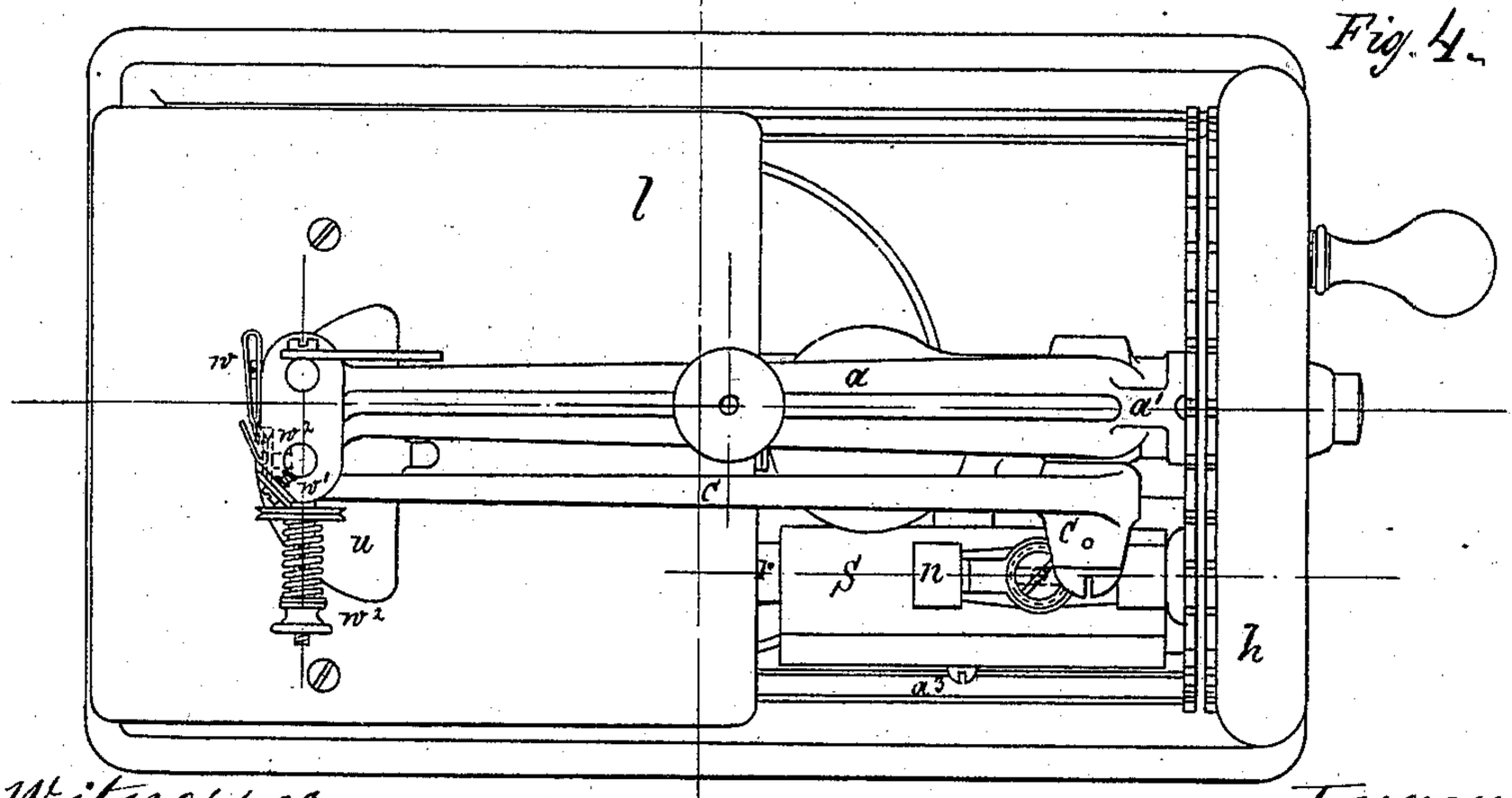


Fig. 4.



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3 Sheets—Sheet 3.

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Fig. 5.

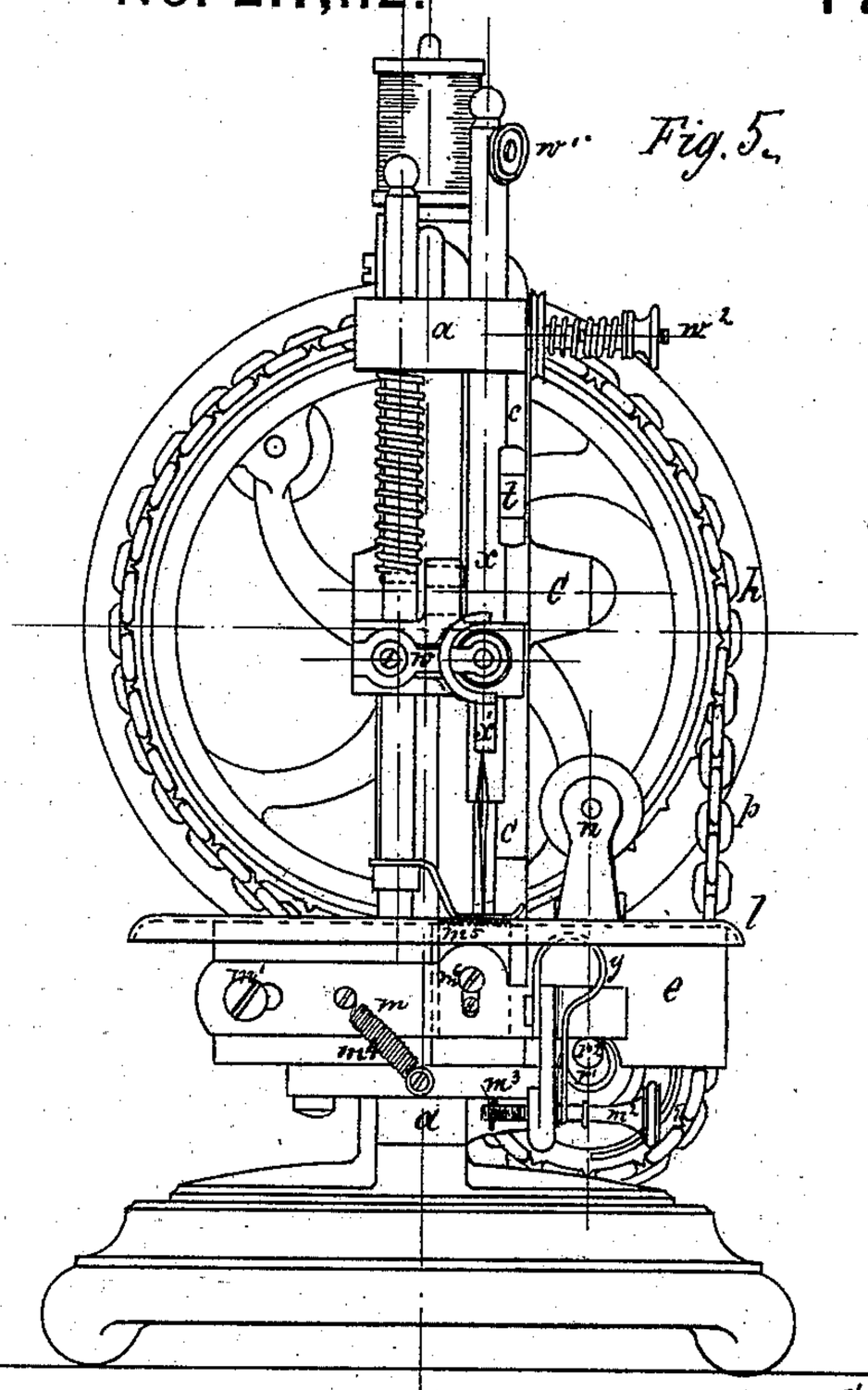


Fig. 6.

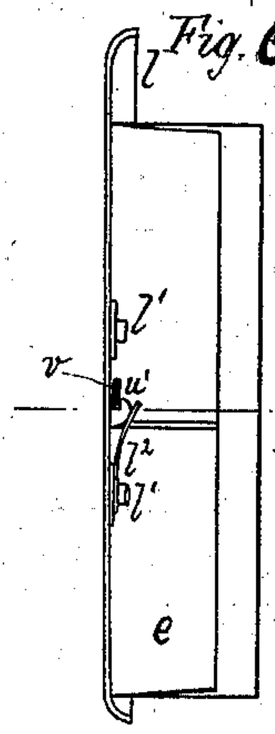
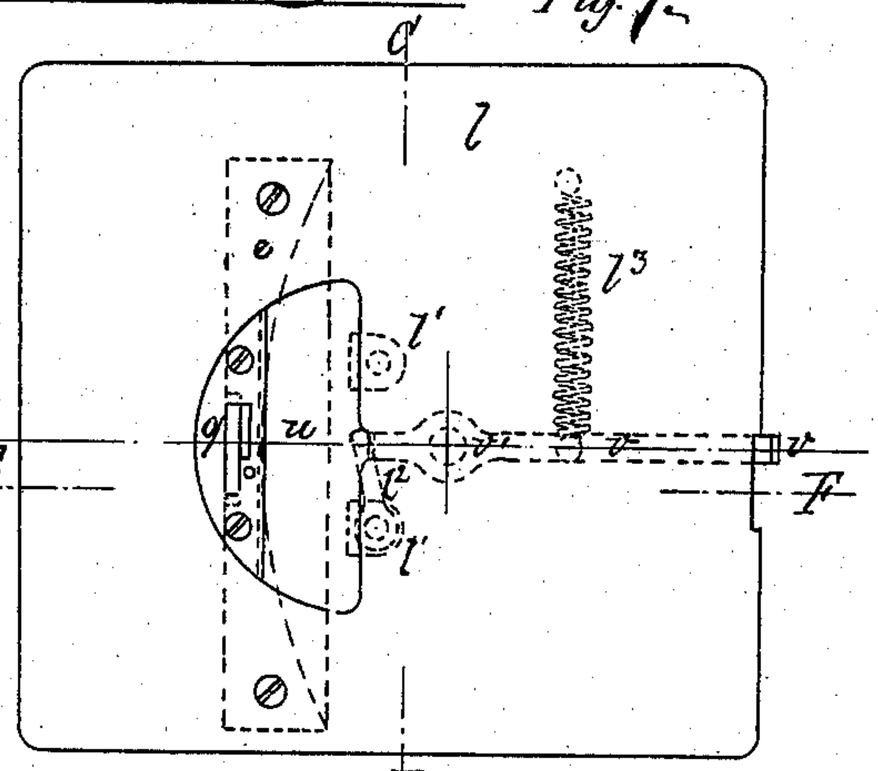
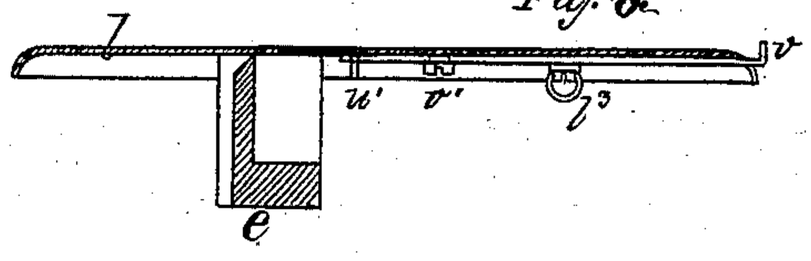


Fig. 7.



D

Fig. 8.



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UNITED STATES PATENT OFFICE.

CARL JUNKER, OF CARLSRUHE, BADEN, GERMANY.

IMPROVEMENT IN SEWING-MACHINES.

Specification forming part of Letters Patent No. **217,112**, dated July 1, 1879; application filed July 23, 1878; patented in England, May 31, 1878, and in Germany, July 30, 1878.

To all whom it may concern:

Be it known that I, CARL JUNKER, of Carlsruhe, Germany, have invented certain new and useful Improvements in Sewing-Machines, of which the following is a specification.

This invention relates to sewing-machines; and the improvements consist in an approved construction of feed device, in a novel adjustable spool-winder, and in an improved combination of devices for securing and permitting the ready removal of the shuttle-cover, all of which will be fully hereinafter described in detail.

In the accompanying drawings, in which similar letters of reference indicate like parts, and which represent a hand-machine embodying my improvements, Figure 1 is an end elevation of the machine. Fig. 2 is a plan of the principal operating parts, with the cloth-plate removed, and the standard and needle-arm in section through A B, Fig. 3. Fig. 3 is a side view of the machine with the cam-guard in section. Fig. 4 is a top view of the machine. Fig. 5 is a front elevation of the machine. Figs. 6, 7, and 8 show the locking device for the shuttle-cover.

a is the standard, which is bolted to the bed-plate, or may be cast in one piece with the same. This standard carries the following parts: first, the needle-arm *c*, and through the same the block *t* and the needle-bar *x*; second, the shaft *r*, with its collars *g*, cams *f* and *f'*, and chain-wheel *i*; third, the shuttle-arm *d*, with the forked shuttle-seat; fourth, the shuttle-race *e*, with the cloth-plate *l*, needle-plate *q*, cover *u*, and feed-bar *m*; fifth, the adjustable bearing *k*, with the chain-wheel *h*; sixth, the bobbin-winder *n*, with its support *s*; seventh, the lower tension or thread brake *w*, needle-bar thread guide or brake w^1, and the main tension apparatus w^2; eighth, the presser-foot.

By means of the chain *p*, the hand-wheel *h* revolves the chain-wheel *i*, and thereby the shaft *r*, on which the wheel *i* is mounted. The shaft *r* carries two cams, *f* and *f'*, the cam *f* imparting motion to the shuttle-arm *d*, and the cam *f'* to the needle-bar arm *c*. The shuttle-arm *d*, Figs. 2 and 3, is a bell-crank lever, the short arm of which carries at its end the roller *d'*, projecting into the groove of cam *f*. The end of the long arm is forked, and supports the shuttle in the usual manner.

The needle-bar arm *c* is pivoted at *j* to the standard. It is operated by the groove of cam *f'* acting on the roller *c'*, Figs. 2 and 3.

The forward end of the swinging needle-bar arm is forked, a small square block, *t*, Fig. 1, fitting into this square fork. This block *t* is attached to the needle-bar *x* by means of a screw pin or bolt in such a manner that it is free to turn around the pin.

To prevent the needle-bar from turning around its axis, a small pin projects from the block *t*, and passes into a socket at the inner end of the fork. During the operation of the machine the block *t* slides backward and forward in the fork, and the pin attached to it shares its motion, the socket in the arm acting as a guide.

In front of the shuttle-race *e* the feed-bar *m* is secured by means of a screw, m^1, through a slot in the feed-bar, in such a manner as to admit of a reciprocating motion in a horizontal direction, while it may at the same time vibrate around the screw m^1.

The feed-bar is, by preference, cut from a sheet of steel, and then bent into the shape shown in the drawings, the thicknesses of the part bearing on the eccentric r^1 being doubled by bending, as is also that part through which the screw m^2 passes, which serves for regulating the length of the stitch. By placing the eccentric r^2 in front of r^1, I am enabled to make the feed-bar in this manner.

The toothed feed-dog m^5 is adjustably attached to the feed-bar *m*. A spring, m^4, returns the feed-bar to its position. When the set-screw m^2 is screwed out as far as the pin m^3 near its end allows it to go, the machine will make the longest possible stitch, and the farther the screw m^2 is turned in the shorter is the stitch. The toothed feed-dog, however, always returns to the same starting-point before it is moved upward and forward, whatever the extent of this motion or the length of the stitch may be. A small piece of leather or other suitable material is inserted into the outer end of the slot in the feed-bar *m*, through which the screw m^1 passes, whereby noise during the return motion of the feed-bar is prevented. The toothed feed-dog m^5 is vertically adjustable on the feed-bar by means of a screw, m^6, which passes through a slot in said bar,

and engages in a screw-threaded hole in the dog.

The cloth-plate *l* is secured by means of screws to the top of the shuttle-race *e*. This plate has a half-moon-shaped opening, which is partly closed by the needle-plate *q*, which is likewise screwed to the top of the piece *e*. The remaining part of opening in the cloth-plate serves for removing or inserting the shuttle, and is covered by the shuttle-plate *u*. This plate *u* partly rests on the shuttle-race, and partly on the two ears l^1, Figs. 6 and 7, which are fastened to the lower side of the cloth-plate.

The straight end of the needle-plate *q* is beveled downward, so as to form a recess for the corresponding beveled side of the shuttle-cover, on the opposite side of which there is a lock-hook, *u'*, projecting downward. This hook has a sloped face, which, when the plate *u* is pressed down into its place, pushes the lever *v* aside against the tension of the spring l^2 until the lever comes opposite the notch in the hook and catches into this notch, whereby the plate is locked and held in its position.

In forcing down the plate the lower end of the hook presses on the spring l^2 and deflects it downward. The lever *r* is pivoted to the bed-plate at *v'*, and its inner end is turned up at the inner side of the cloth-plate, which is notched out for the necessary throw of the lever. The turned-up part of the lever *v* serves as a thumb-piece for opening the shuttle-cover by turning the lever *v* so as to release the hook. As soon as the hook is released the small spring l^2 throws the shuttle-plate up. In Fig. 9 the spring l^2 is omitted.

To the front of the lower needle-bar guide is secured a thread-brake, *w*, consisting of two loose disks carried by a pin projecting from a spring-arm, and passing through an aperture in the wall of the guide. The inner end of the pin presses against the needle-bar, which has its surface so shaped as to force said pin outward and permit it to be moved inward to regulate the pressure of the disks upon the thread, which passes between them.

The construction of the thread-brake substantially as described I prefer to use, but do not claim it here as my invention.

Over and partly around the two cams *f f'* a cover or guard, *s*, is placed, and secured by a screw to the bearing a^3 of the shaft *r*. On the top of this guard *s* the spool-winder is placed, which is of the usual construction.

The bobbin-winder frame has a large hole in the middle, with a circular countersunk washer on the top. This washer has an oblong hole or slot, through which passes the shank of the screw for fastening the winder *n* to the guard *s*. The washer having an oblong hole, and being free to turn in its seat, the spool-winder can be adjusted in any horizontal direction.

The standard *a* has a projection, a^1, with a vertical dovetail-shaped groove, in which the slotted prism *k* slides vertically. This prism *k* carries the pivot-bearing of the hand-wheel. The pin a^2 passes through the slot in the prism and screws into the standard. The set-screw or tightening-screw *k'* screws into the top of the prism, and rests with its lower end on the pin a^2. By means of this set-screw the prism, and with it the hand-wheel, are raised or lowered at will, for the purpose of tightening the chain or slacking it up.

The chain-wheels have on their periphery triangular prismatic projections or teeth cast on at the proper distances, corresponding to the length of a chain-link. A groove is turned in for receiving the links at right angles to the face of the wheel. The triangular form of the teeth causes the chain-gear to work without noise.

What I claim is—

1. The two eccentrics r^1 r^2 in front of the shuttle-race, in combination with the feed-bar *m*, spring *y*, and thumb-screw m^2, substantially as described.

2. The combination, with the spool-winder frame having the central opening, of the washer having the oblong slot, and the clamping-screw for securing the winder-frame in position, substantially as described.

3. The combination, with the shuttle-cover, of the lever *v*, hook *u'*, supports l^1, and spring l^2, substantially as described.

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Witnesses:
PETER BARTHEL,
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