(No Model.) 2 Sheets—Sheet 1.

J. BOPPEL.

SEWING MACHINE.

No. 281,008. Patented July 10, 1883.

Fig. 1.

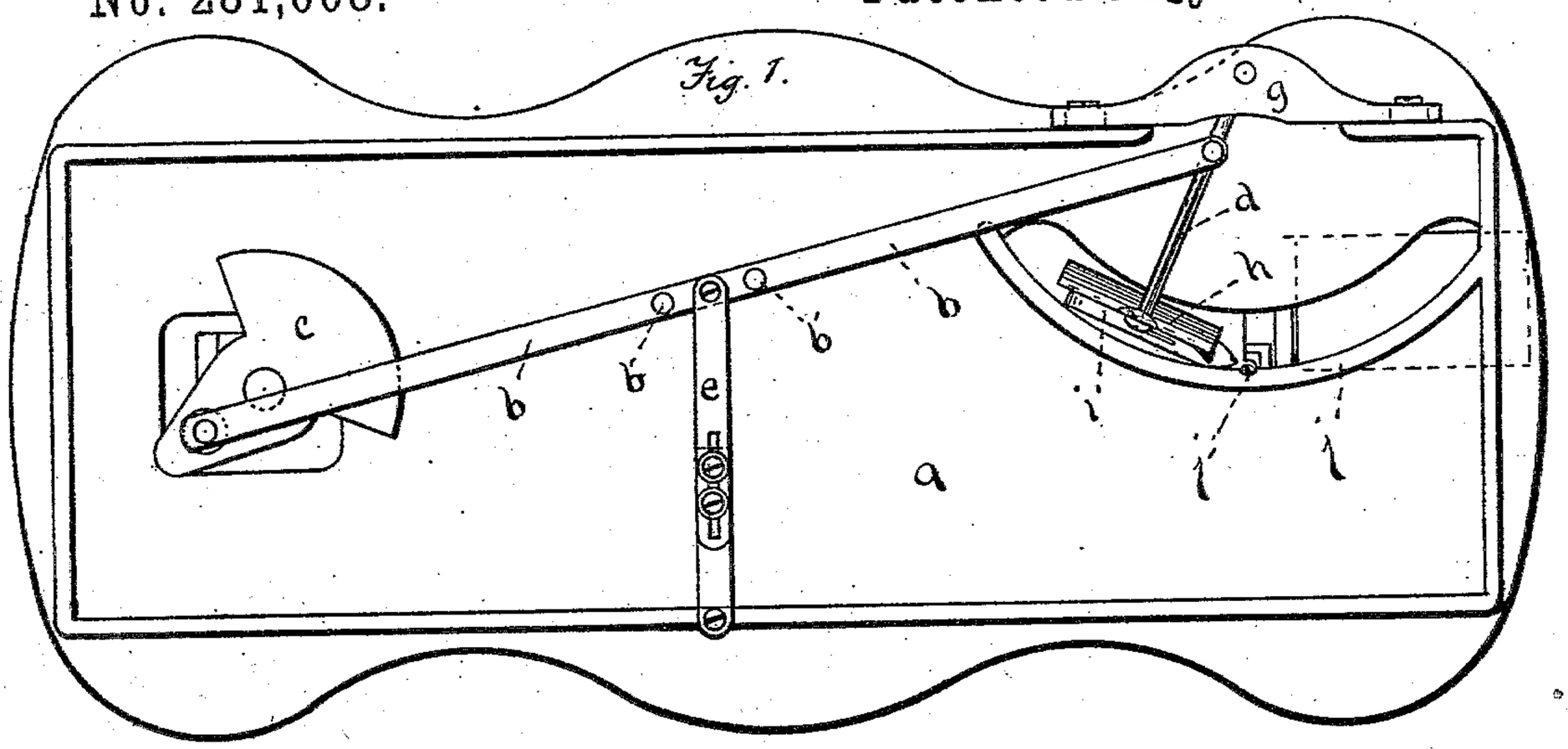
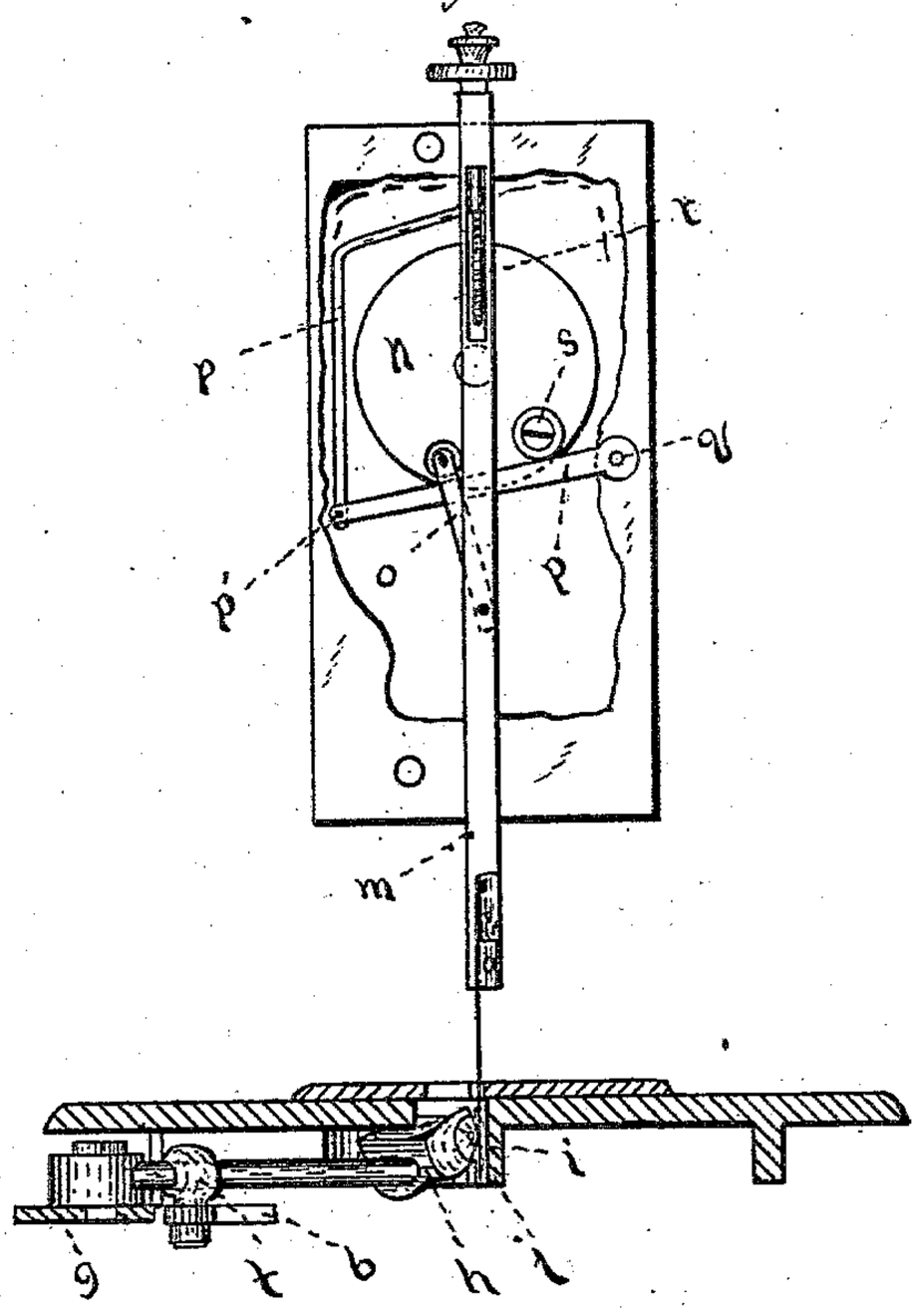


Fig. 2



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(No Model.) 2 Sheets—Sheet 2.

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Fig. 3

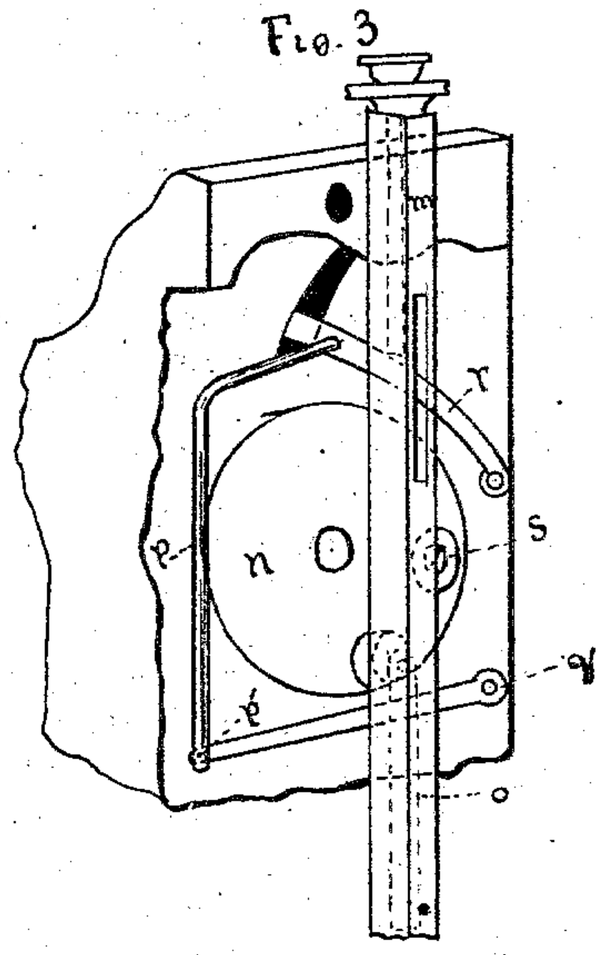
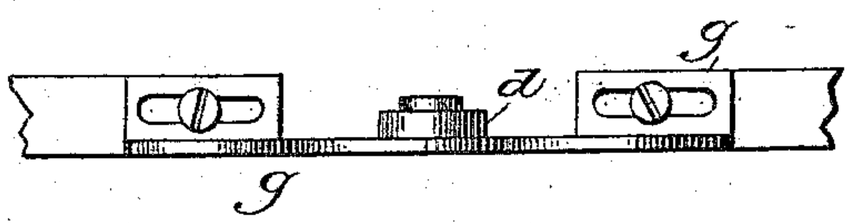


Fig. 4.



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UNITED STATES PATENT OFFICE.

JACOB BOPPEL, OF NEWARK, NEW JERSEY.

SEWING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 281,008, dated July 10, 1883.

Application filed March 5, 1883. (No model.)

To all whom it may concern:

Be it known that I, JACOB BOPPEL, a citizen of the United States, residing at Newark, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in Sewing-Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification.

My invention has reference to improvements in sewing-machines by which advantages are secured, as will be shown hereinafter.

The invention consists of such an arrangement and combination of parts as will be hereinafter set forth, and finally embodied in the claims.

In the drawings, in which similar letters of reference indicate like parts in each of the several figures, Figure 1 is a plan of the under side of a bed-plate of a sewing-machine, showing a part of the invention. Fig. 2 is an elevation of the face of the arm of a sewing-machine with the face-plate removed, showing the needle-bar and the parts of my invention connected thereto and operating in conjunction therewith, the lower part of said drawing showing the bed-plate in cross-section. Fig. 3 is a perspective view of the take-up mechanism, and Fig. 4 is a side elevation of the adjustable bracket.

The object of this invention is to simplify the construction of a sewing-machine, lessen the friction, and thus the wear and tear of the machine and the work of the operator.

In the drawings, *a* is a bed-plate of a sewing-machine. *b* is a rod connecting the crank mechanism *c* with the shuttle-driver *d*. *e* is an adjustable link, one end of which is pivoted to the said connecting-rod *b* and the other to the bed-plate, as shown in Fig. 1. The rod *b* is not connected directly to the shuttle-driver *d*, but is pivoted to a sliding eye-piece, *f*, which incloses and moves on the shuttle-driver *d*, as is evident by reference to Fig. 2. Instead of the sliding eye-piece *f*, the driver *d* may have a slot therein, with a pin attached to the connecting-rod working in said slot. The said driver *d* is pivoted to an adjustable bracket, *g*, which is fastened to the bed-plate, said bracket being adjustable by means of screws or pins working in slots in said bracket, as shown in Fig. 4, and is adapted by means of such adjustment to vary the relation of the shuttle driver and carrier to the shuttle-race. At the other end of the driver *d* is the shuttle-carrier *h*, within which is the shuttle *i*, both moving on a curved way, *j*, which is recessed at *j'* for the passage of the needle.

In Fig. 2, *m* is a needle-bar. *n* is a plate on the end of the shaft. *o* is a link, one end being pivoted to the needle-bar and the other pivoted to a projection on the shaft-plate *n*, as shown in Fig. 2. *p* is a lever jointed at *p'*, one end of which is pivoted to the face-plate of the arm at *q* and the other end fastened to the take-up *r*, forming an integral part with the same, as is shown in Fig. 3, behind the needle-bar *m*, said jointed lever *p* being behind the link and needle-bar. *s* is a roller or projection on the shaft-plate *n*, which comes in contact with the lever *p* as the shaft and shaft-plate *n* revolve.

The parts of my invention operate substantially as follows: The rotary motion of the shaft is converted into a reciprocating motion in the shuttle-carrier through the following train of mechanism: the connecting-rod *b*, adjustable link *e*, sliding eye-piece *f*, and shuttle-driver *d*, pivoted to the adjustable bracket *g*. Fig. 1 represents the shuttle about to pass forward through the loop. The lever *b* and eye-piece *f* are at the farthest point from the carrier *h*, and the power applied at this point causes the shuttle-carrier *h* to move quickly forward, and at the same time the eye-piece slips down the shuttle-driver *d*. When the shuttle-carrier moves back, the eye-piece and the connecting-rod are at the lowest point on the shuttle-driver *d*, and slide upon the said driver. Consequently the return motion is much slower than the forward motion. By this means a quick and slow motion is produced. The movement may be adjusted, if necessary, either by means of the adjustable link *e*, or by shifting the said adjustable link *e* to either of the holes *b'* in connecting-rod *b*, or by both.

When the machine is in operation the needle-bar *m*, Fig. 2, moves continually up and down, being connected with the revolving shaft-plate

n by the link *o*, and the take-up *r*, Fig. 2, moves with the needle-bar, as in the new-fashioned Singer machine. This movement of the take-up does not allow sufficient time for the shuttle to pass through the loop. Therefore it is necessary to provide some means by which the said take-up is still further depressed or retarded, in order to permit the shuttle to pass through the loop. This result I accomplish by means of the jointed lever *p*, one end of which is fastened to the take-up *r*, the other pivoted at *q*, Fig. 2, and the roller or projection *s*, all of which operate as follows: When the take-up reaches its lowest point by the downward movement of the needle-bar, the said roller or projection on the revolving shaft-plate *n* strikes the jointed lever *p* and lowers the take-up still further, thus giving the shuttle ample time to pass through the loop, and when the roller clears the lever the take-up springs up to its normal position, ready to descend with the needle-bar to finish or tighten the stitch. By means of this additional motion to the take-up I do away with the cam motion on the needle-bar heretofore employed. On account of the take-up and shuttle stopping at the same time, a more finished stitch is produced.

The shuttle can be inserted in the shuttle-carrier *h* through an opening in the bed-plate over the curved way *j*, said opening having a sliding cover, as indicated by the dotted lines, Fig. 1.

Having thus described my invention, what I claim is—

1. In a sewing-machine, the combination, with a crank mechanism, as *c*, a connecting-rod, as *b*, an adjustable link, as *e*, and a movable bearing, as *f*, of an adjustable bracket, as *g*, a shuttle-driver, as *d*, and shuttle-carrier, as *h*, all substantially as set forth.

2. In a sewing-machine, the combination, with a crank mechanism, as *c*, connecting-rod, as *b*, and an eye-piece encircling and moving or sliding upon the shuttle-driver *d*, said eye-piece being pivoted to the connecting-rod *b*, of an adjustable link, as *e*, all substantially as set forth.

3. In a sewing-machine, the combination, with a needle-bar, as *m*, and a take-up, as *r*, of means whereby the take-up is lowered still further after it has been carried down as far as possible by the needle-bar, all substantially as set forth.

4. In a sewing-machine, the combination, with a shaft-plate, as *n*, having thereon a projection or roller, as *s*, of a jointed lever, as *p*, a take-up, as *r*, a needle-bar, as *m*, and means for connecting said needle-bar with said shaft-plate, as *o*, all substantially as and for the purposes herein described.

In testimony that I claim the foregoing I have hereunto set my hand this 13th day of February, 1883.

JACOB BOPPEL.

Witnesses:
OLIVER DRAKE,
F. F. CAMPBELL.