(No Model.) 2 Sheets—Sheet 1.

D. H. COLES.

SHUTTLE CARRYING MECHANISM FOR SEWING MACHINES.

No. 335,017. Patented Jan. 26, 1886.

Fig. 1.

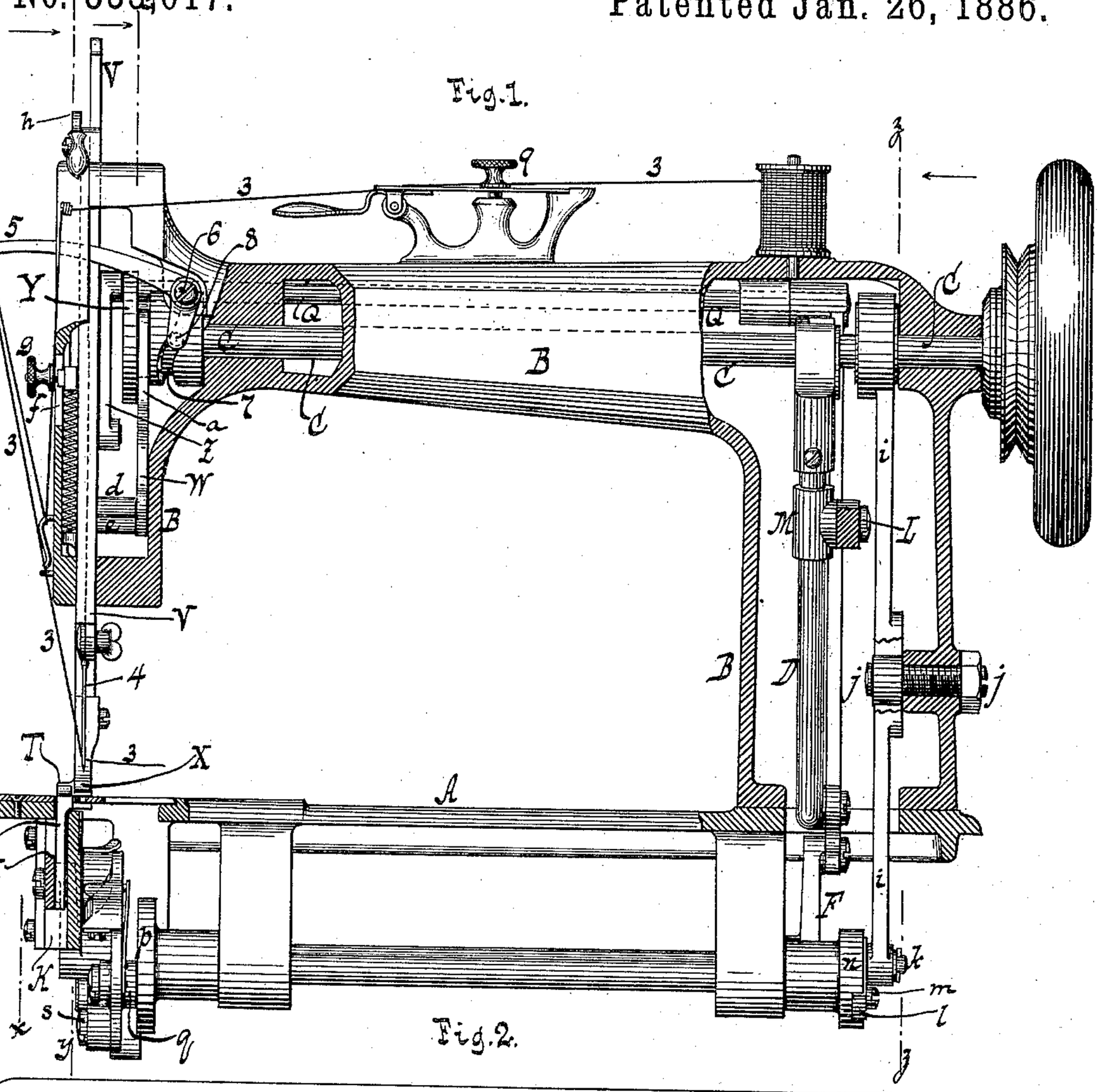
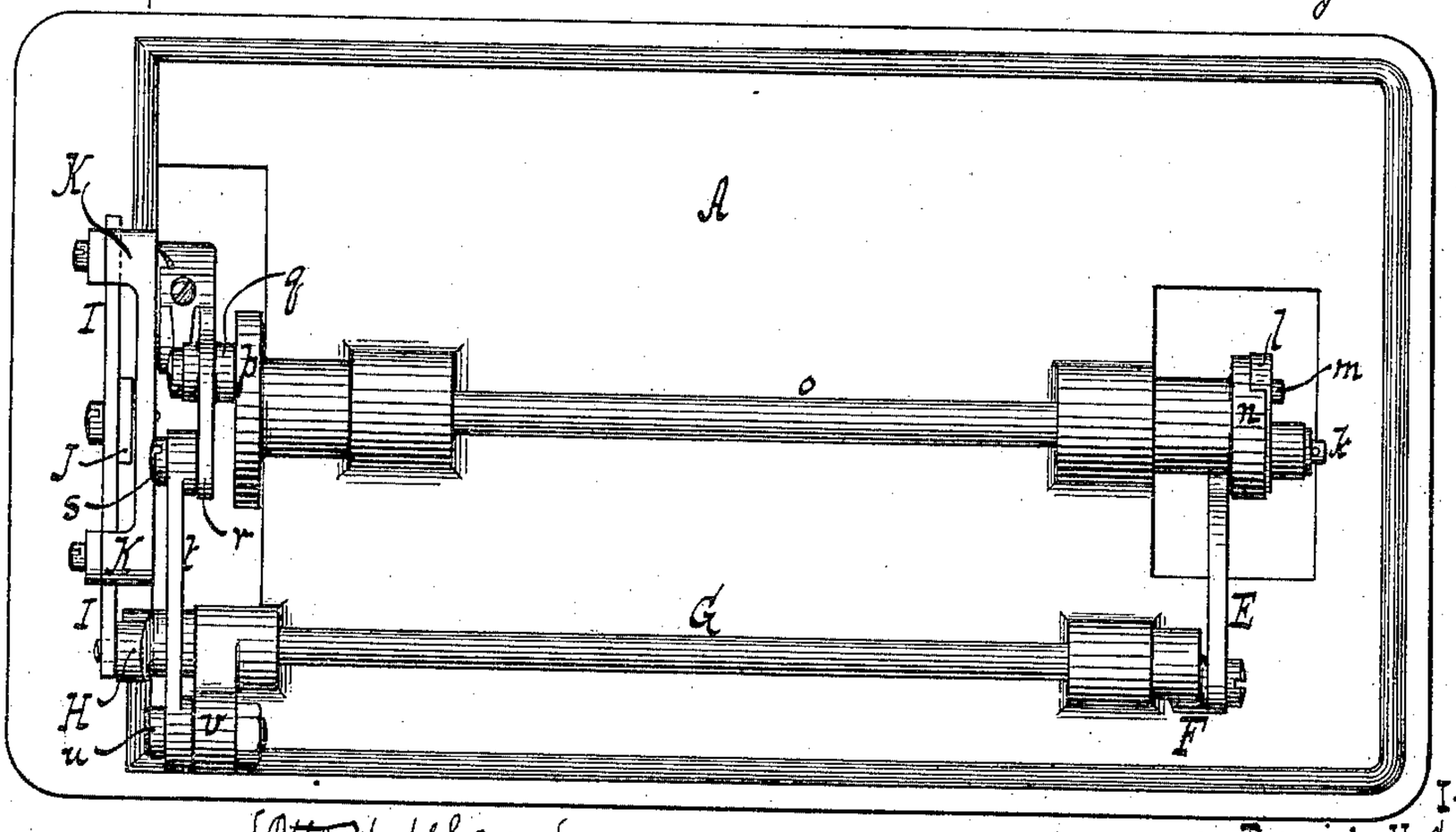


Fig. 2.



Witnesses { Otto Hufeland, William Miller }

Inventor David H. Coles by Van Santwoord & Hauff his att'ys

(No Model.) 2 Sheets—Sheet 2.

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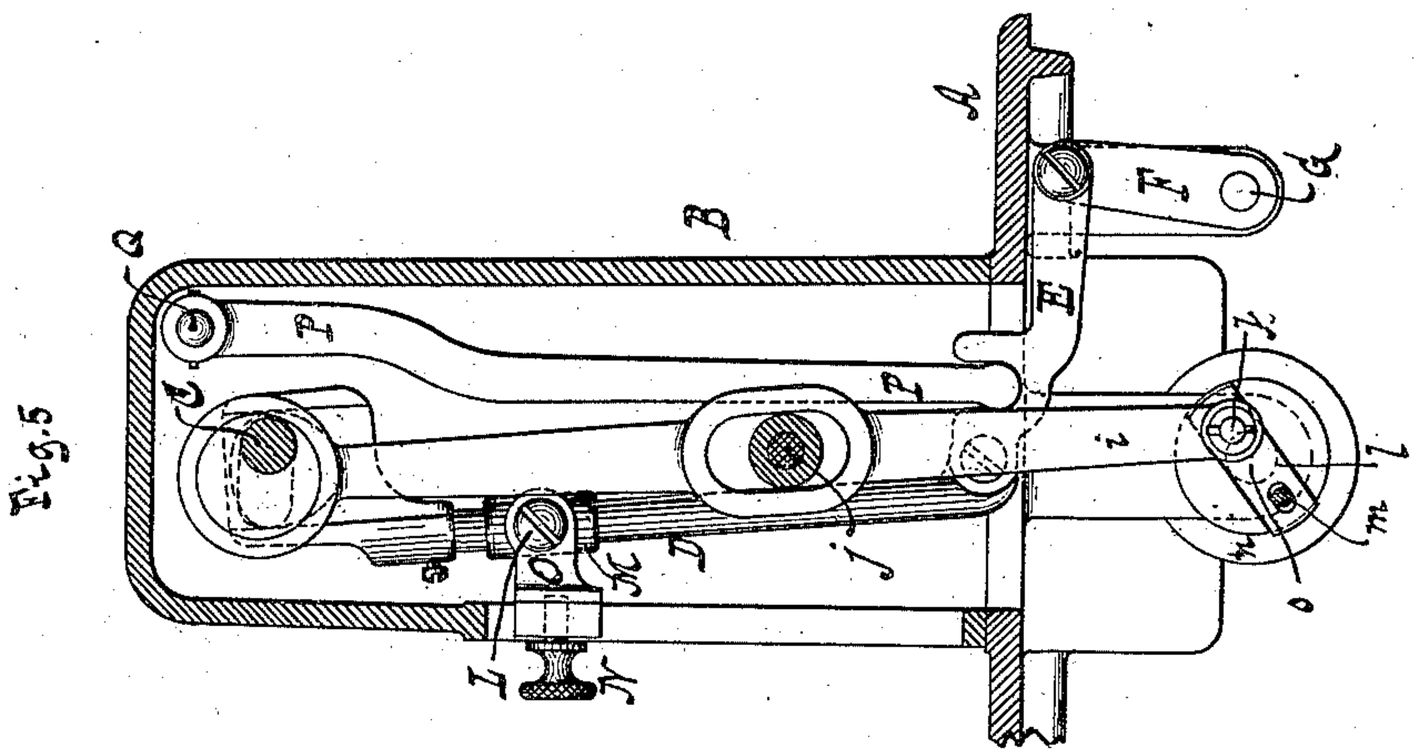


Fig. 5

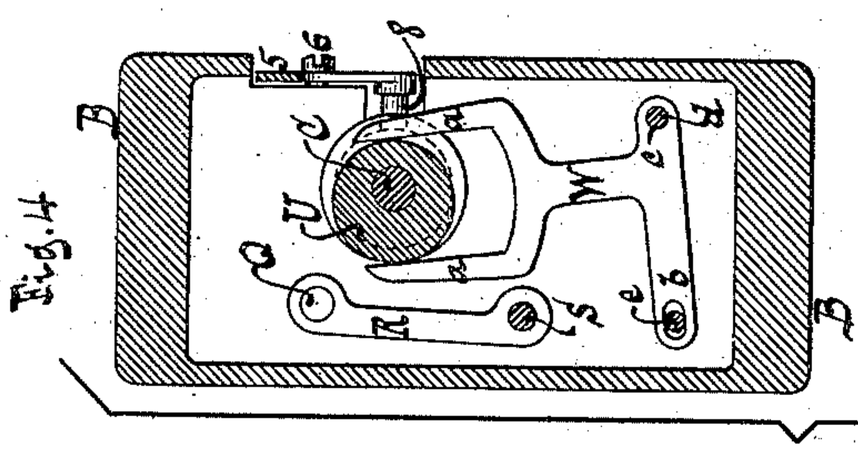
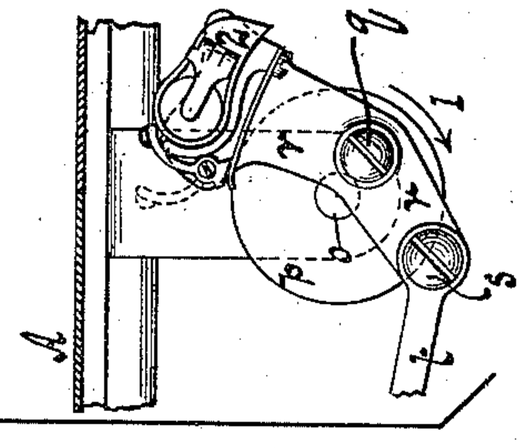


Fig. 4



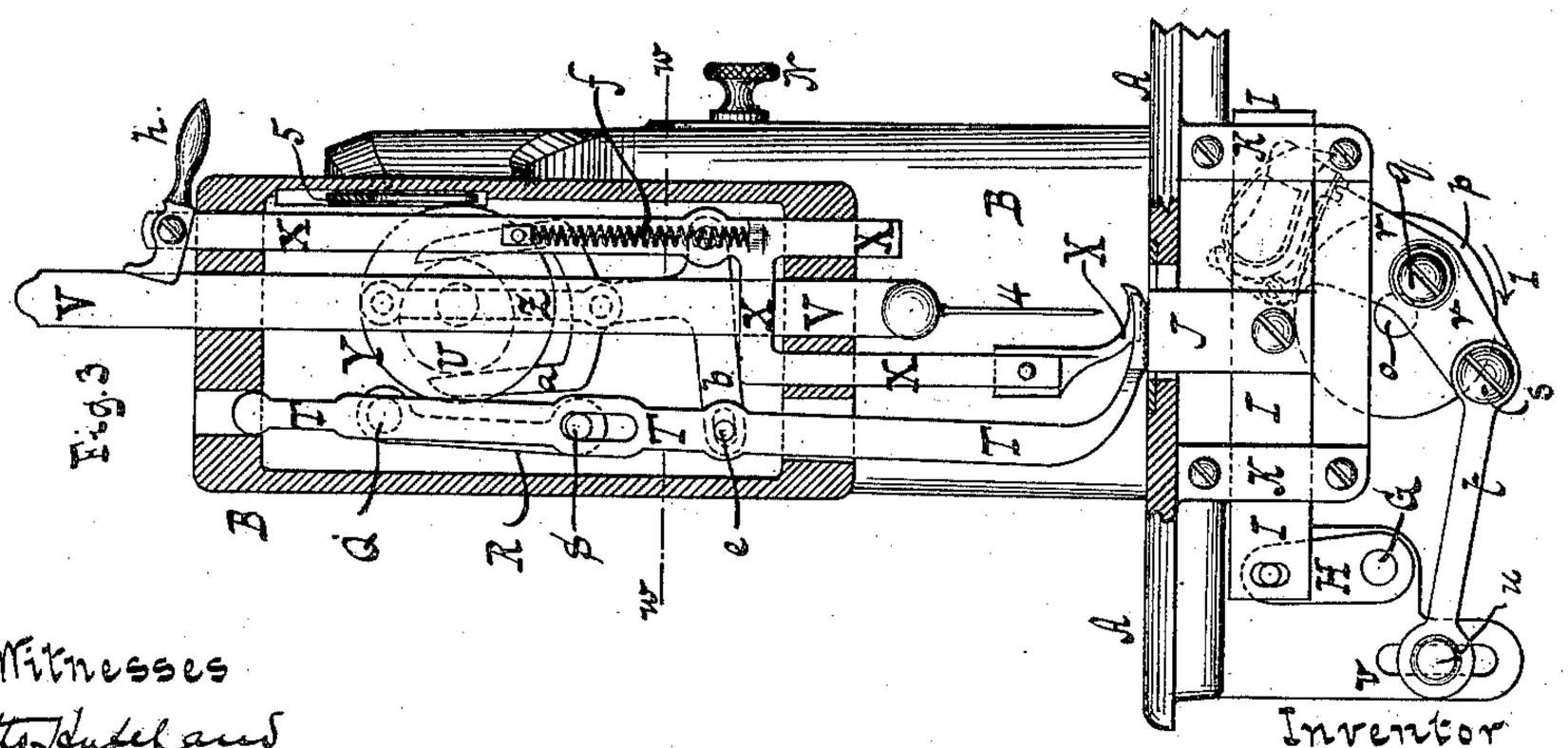


Fig. 3

Witnesses
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William Miller

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his attys

UNITED STATES PATENT OFFICE.

DAVID H. COLES, OF NEW YORK, N. Y., ASSIGNOR TO HIMSELF, A. G. DARWIN, OF GLEN RIDGE, AND JAMES C. BEACH, OF BLOOMFIELD, NEW JERSEY, AND HENRY W. GUERNSEY, OF BROOKLYN, NEW YORK.

SHUTTLE-CARRYING MECHANISM FOR SEWING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 335,017, dated January 26, 1886.

Application filed June 25, 1885. Serial No. 169,760. (No model.)

To all whom it may concern:

Be it known that I, DAVID H. COLES, a citizen of the United States, residing at New York, in the county and State of New York, have invented new and useful Improvements in Shuttle-Carrying Mechanism for Sewing-Machines, of which the following is a specification.

This invention has for its object to provide novel mechanism for operating and varying the course of the shuttle-carrier of a sewing-machine; and to such end it consists in the construction and combination of devices hereinafter described and claimed.

This invention is illustrated in the accompanying drawings, in which Figure 1 is a side elevation, partly in section, of a sewing-machine containing my invention. Fig. 2 is an inverted plan view thereof. Fig. 3 is a section in the plane *x x*, Fig. 1. Fig. 4 is a section in the plane *y y*, Fig. 1. Fig. 5 is a section in the plane *z z*, Fig. 1.

An eccentric or crank upon the shaft C imparts a rotary or circular motion to one end of a lever, *i*, (said lever *i* oscillating about a fulcrum or pivot, *j*,) causing the other end of the lever *i* to also perform a rotary or circular motion, which rotary or circular motion is communicated by a pivot or pin, *k*, to the shaft *o*. The shaft *o* is thus caused to revolve continuously. The pivot or fulcrum *j* may be provided with an anti-friction roller to secure easy working. The pivot or pin *k* is connected to a slide, *l*, which is free to move a limited distance in a channel or groove in the head *n* of the shaft *o*. A retaining pin or screw, *m*, projecting from the head *n* through a slot in the slide *l*, prevents the slide *l* from coming out of its groove or channel in the head *n*, but leaves the slide *l* free to move in its groove or channel for a limited distance. The play of the slide *l* prevents any strain from being exerted by the lever *i* upon the shaft *o*, thus avoiding breakage. Upon the shaft *o* is keyed or firmly mounted a disk or head, *p*, carrying a pivot or pin, *q*. The pivot or pin *q* carries or supports the shuttle-carrier or shuttle-driver *r*. The shuttle 2 can be secured or connected to the shuttle carrier or driver *r* by any well-known means. The shuttle carrier or driver *r* is connected by a pivot or pin, *s*, to an arm, *t*. The arm *t* is provided with a pivot or pin, *u*, which pivot or pin *u* can be adjusted at any desired point in a slot in the arm or bracket *v*. Said arm or bracket *v* is attached to or forms part of the cloth-plate A, or any suitable part of the machine. By setting or adjusting the pivot or pin *u* at various points along the bracket *v*, the inclination or position of the shuttle carrier or driver *r* on the pivot *q* is varied as desired. The arm *t* also serves to steady or hold the shuttle driver or carrier *r* in position.

When the parts of the mechanism are in the position shown in Figs. 3 and 4, the revolution of the disk or head *p* in the direction of the arrow 1 will first carry the shuttle 2 downward or away from the cloth-plate A and backward or toward the bracket *v*. When the needle-bar V and the needle 4 have moved toward the cloth-plate A into such a position that the loop in the needle-thread 3 is ready for the passage of the shuttle 2, the continued revolution of the disk or head *p* in the direction of arrow 1 will carry the shuttle 2 up or toward the cloth-plate A and forward or away from the bracket *v*, thus causing the shuttle 2 to pass through the loop in the needle-thread 3. The disk or head *p* may be replaced by a crank-arm supporting the pin *q;* but I prefer to use a disk, *p*, which disk *p* can be tapped or adapted at varying distances from the shaft *o* for the reception of the pin *q*, thus furnishing means for adjusting the shuttle driver or carrier *r* in addition to the adjustment obtained by the fixing of the pivot *u* at different points of the bracket *v*.

The shuttle-actuating mechanism which has been above described has an advantage in avoiding the blows or jerks which occur in reciprocating shuttles. The revolution of the shaft *o* and the disk or head *p* in the direction of arrow 1, Fig. 4, as already described, carries the shuttle 2 first down or away from the cloth-plate A and back or toward the bracket *v*, and then upward or toward the cloth-plate A and forward or away from the bracket *v*. The motion partaken of by the shuttle forms a closed curve, said motion in the example shown being a circular, or, more properly

speaking, an elliptical, motion, as the back and forward motions of the shuttle are somewhat greater than the up and down motion of the shuttle. At the same time it is to be noticed that the shuttle 2 always points in one general direction. In the example in the drawings the shuttle points forward or away from the bracket *v*. Of course the shuttle 2 may be made to work with its point turned in the opposite direction, or in any desired general fixed direction, it only being desirable that the shuttle shall always point in the direction or in the general direction in which it points when passing in proximity to the needle 4, or when the shuttle is in engagement with the needle 4—that is, when the shuttle passes through the loop in the needle-thread 3.

In the case of rotary shuttles heretofore in use the shuttle in making each revolution would point in different and opposite directions. A consequence of this difference of direction in which a shuttle points is, that the thread coming from the shuttle is either continually twisted or untwisted, and is thus liable to break or tear. In the case of the rotary shuttle shown in the drawings the shuttle points continually in the same general direction, so that the thread is not twisted nor untwisted by the action of the shuttle. At the same time the rotary motion or curvilinear path of the shuttle avoids the blows or jerks which are experienced by a reciprocating shuttle, and the shuttle glides easily and smoothly through the loop of the needle-thread. It is also to be noticed that when the shuttle 2 has partly passed through the loop in the needle-thread the point of the shuttle 2 is inclined in a downward direction or away from the cloth-plate A, while the back or the heel of the shuttle points upward or toward the cloth-plate. An advantage of this arrangement is, that if the needle 4 begins to move upward or away from the shuttle 2 before said shuttle 2 has passed completely through the loop in the needle-thread 3 the upward motion of the needle 4 will draw the needle-thread 3 over the heel of the shuttle, and said needle-thread 3 is not liable to be caught. By said arrangement of shuttle I am also enabled to employ a needle which has a continuous reciprocating motion, and it is not necessary to subject the needle to the stop-motion which has to be employed in the case of reciprocating shuttles, as said reciprocating shuttles have to pass entirely through the loop of the needle-thread before the needle can move upward or away from the shuttle.

In my mechanism the needle can move upward or away from the shuttle, even if the shuttle is partly within the loop of the needle-thread, and the needle-thread will not be caught.

What I claim is—

The combination of the slotted arm *v* with the steadying-arm *t*, having one end provided with the pin *u*, adjustable in the slot of said arm, the shaft *o*, having disk *p*, provided with eccentric-pin *q*, and the shuttle-carrier *r*, pivoted to the other end of the steadying-arm and to the eccentric-pin, for varying the course of the shuttle-carrier, substantially as described.

In testimony whereof I have hereunto set my hand and seal in the presence of two subscribing witnesses.

DAVID H. COLES. [L. S.]

Witnesses:

WILLIAM C. HAUFF,

E. F. KASTENHUBER.