

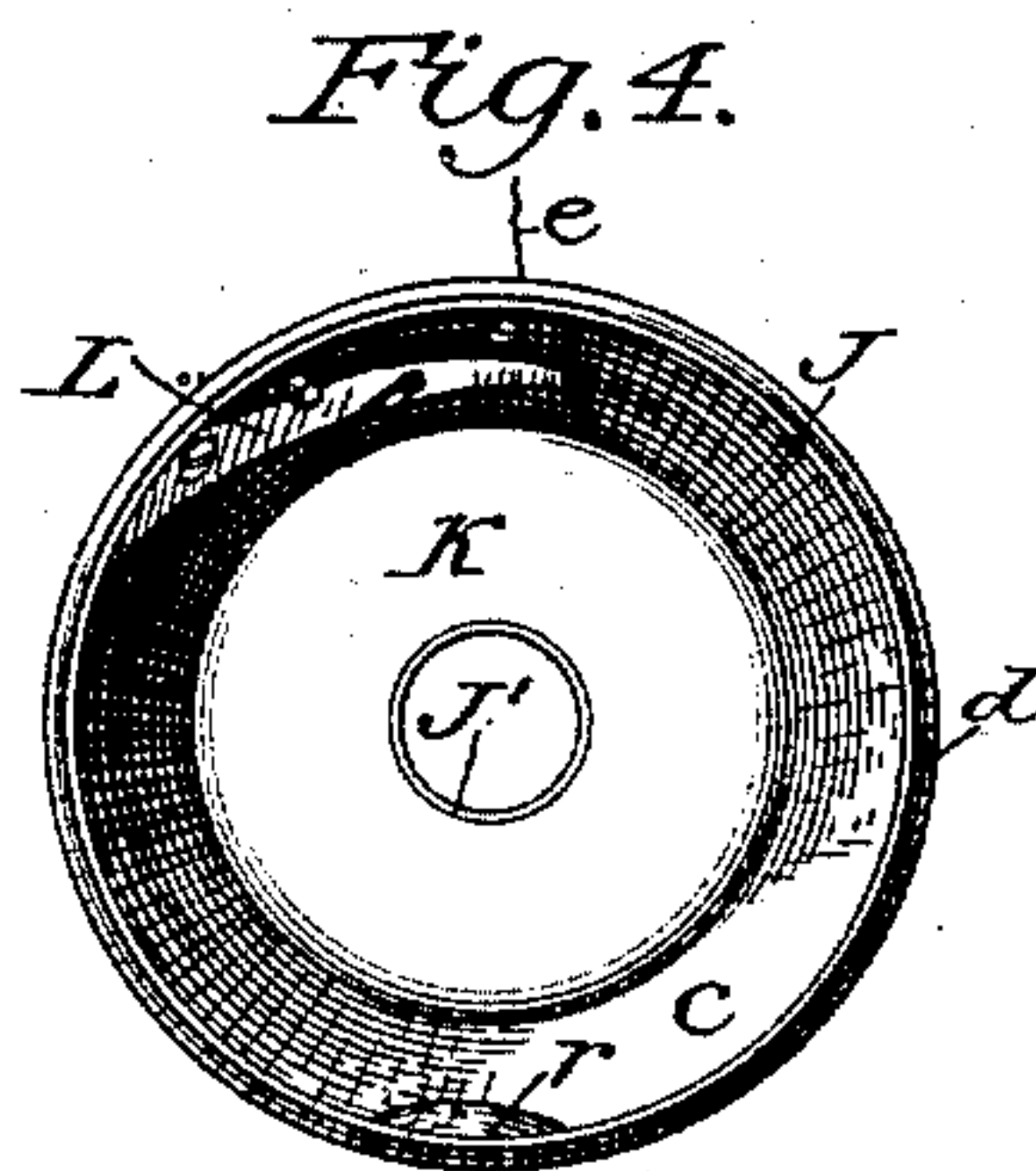
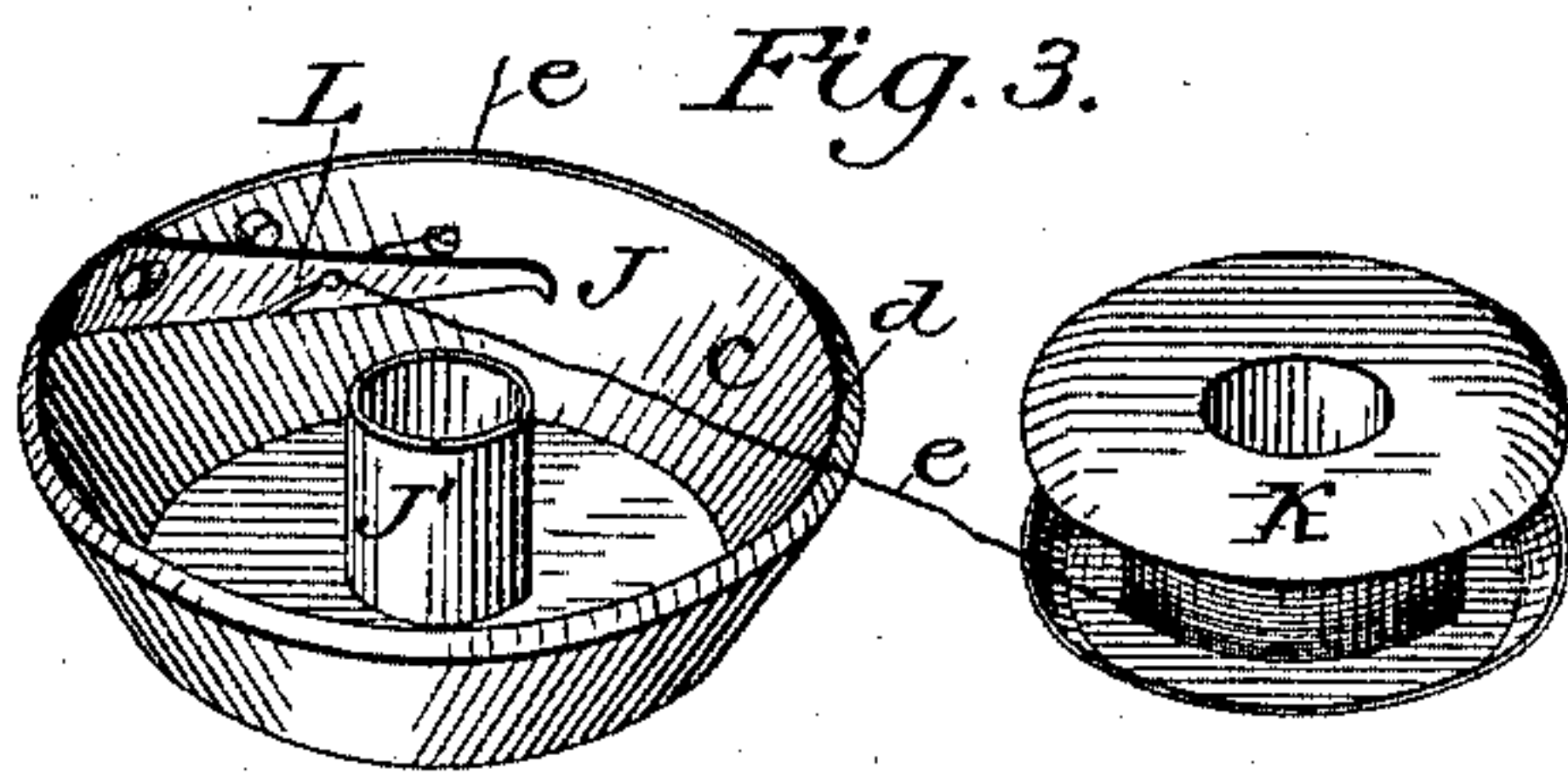
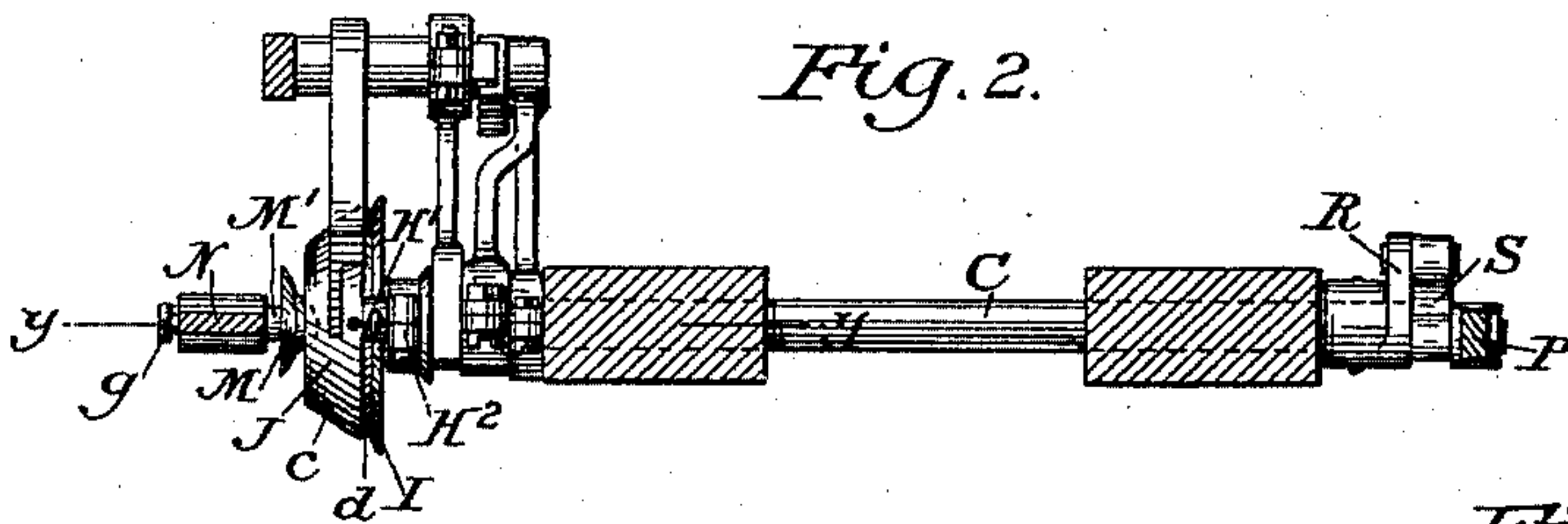
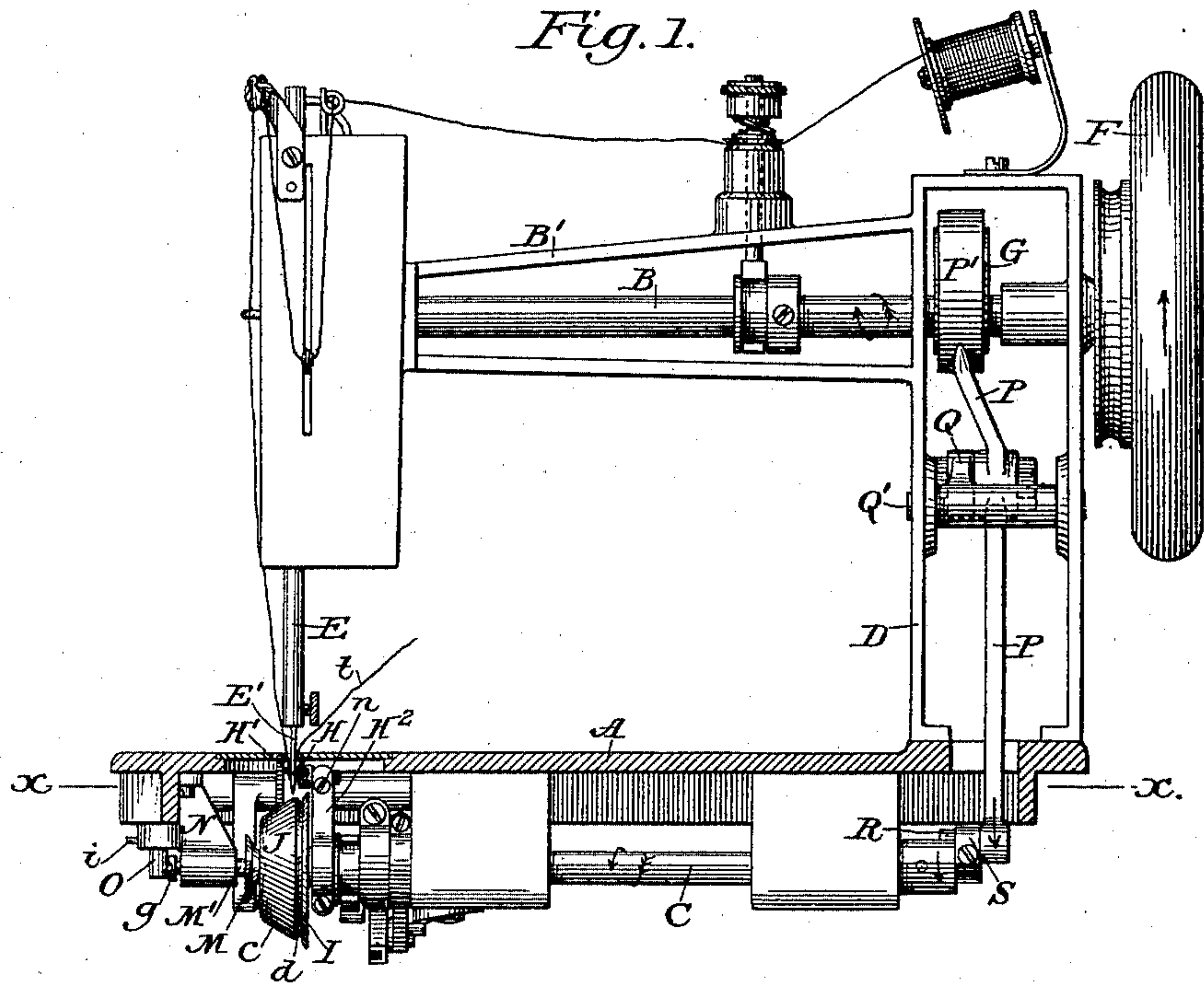
(No Model.)

2 Sheets—Sheet 1.

C. W. WEISS.
SEWING MACHINE.

No. 442,083.

Patented Dec. 2, 1890.



Attest:
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E. M. Watson

Inventor:
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By David A. Burr
Atty.

(No Model.)

2 Sheets—Sheet 2.

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Fig. 5.

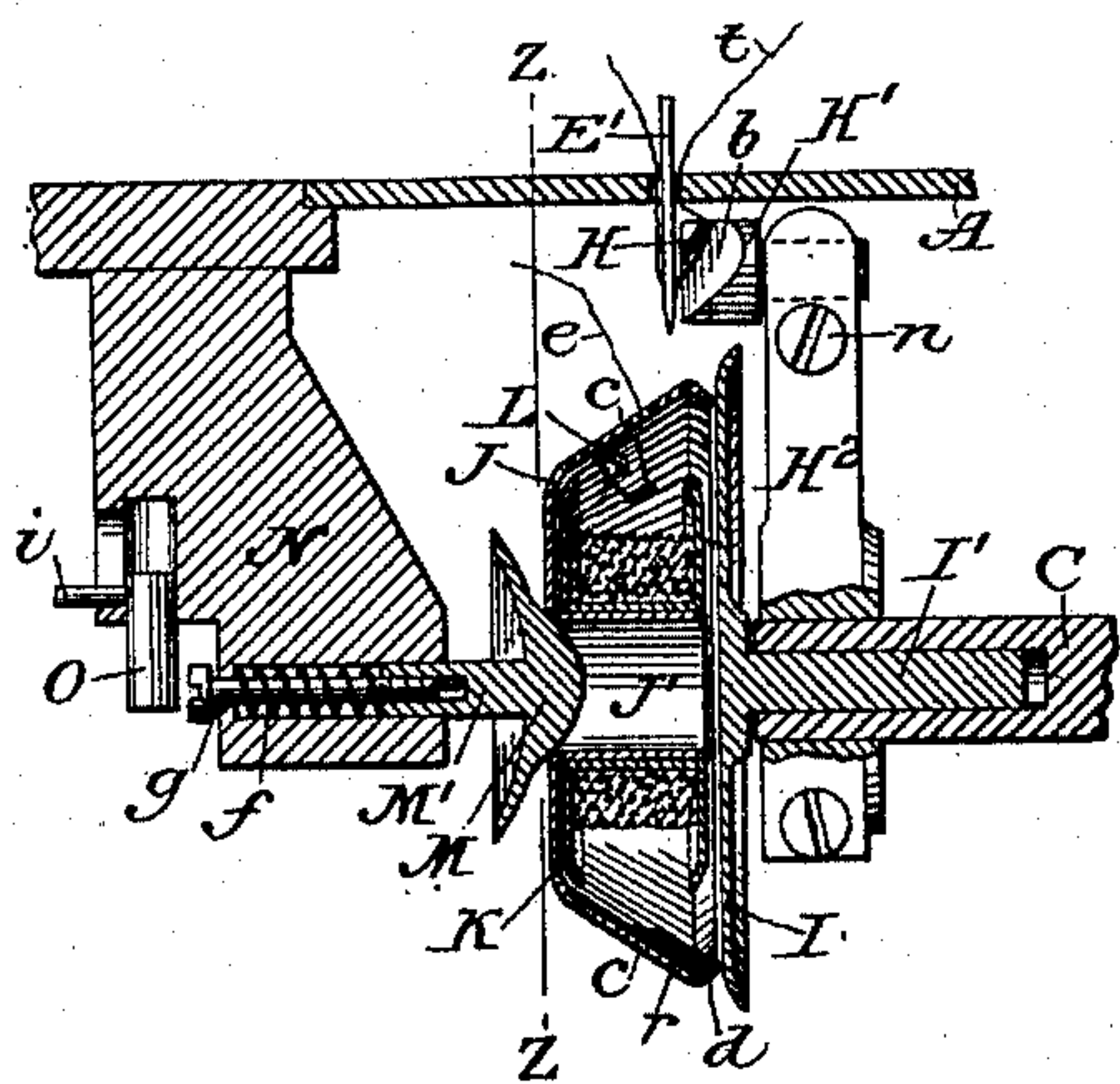
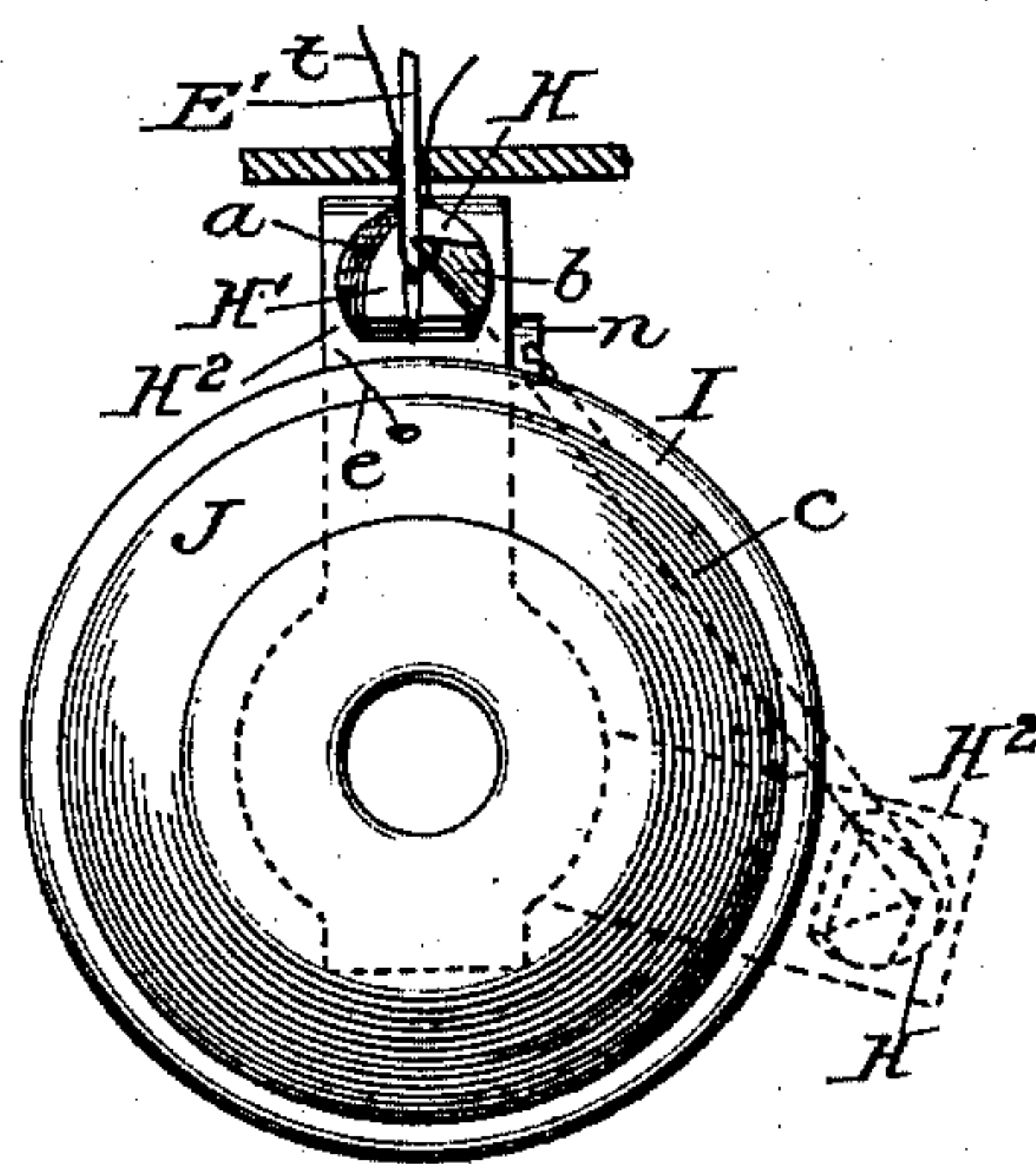


Fig. 6.



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UNITED STATES PATENT OFFICE.

CHARLES W. WEISS, OF BROOKLYN, ASSIGNOR OF ONE-HALF TO CHARLES KRUSE, OF NEW YORK, N. Y.

SEWING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 442,083, dated December 2, 1890.

Application filed March 21, 1889. Serial No. 304,146. (No model.)

To all whom it may concern:

Be it known that I, CHARLES W. WEISS, of the city of Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Stitch-Forming Mechanisms of Sewing-Machines; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, making a part of this specification.

My invention relates to an improvement in the stitching mechanism of that class of sewing-machines in which the loop of the needle-thread is carried by means of a revolving hook over a loose stationary shuttle containing a bobbin filled with the lower thread.

It consists in an improvement in the construction and arrangement of the shuttle or bobbin case and of the devices for supporting and adjusting the same, substantially as is hereinafter described and claimed.

In the accompanying drawings, Figure 1 is a side elevation of my improved sewing-machine with a portion of the casing inclosing its standard and horizontal arm removed to fully expose the driving mechanism. Fig. 2 is a horizontal section taken immediately under the table or cloth-plate in line xx of Fig. 1. Fig. 3 is a view in perspective, on an enlarged scale, of the shuttle or bobbin case and of the bobbin removed therefrom. Fig. 4 is a plan or interior view of the same with its bobbin in place therein. Fig. 5 is a vertical axial section in line yy of Fig. 2, but upon an enlarged scale, illustrating more fully the operation of the shuttle in combination with the needle and revolving hook. Fig. 6 is a section in line zz of Fig. 5, with the retaining-head for the shuttle withdrawn.

Similar letters indicate like parts in all of the figures.

A represents the table; B, the needle-shaft, mounted in the needle-arm B'; C, the parallel hook-shaft mounted under the table; D, the hollow standard supporting the needle-arm; E, the reciprocating needle-bar; E', the needle; F, the fly-wheel and pulley on the needle-shaft, and G the eccentric on said shaft, to which the hook-shaft C is geared, all

of said parts being constructed and arranged with reference to each other substantially as in the well-known sewing-machines of this type.

The revolving hook H in the stitch-forming mechanism is formed upon the end of a pin H', projecting horizontally from the end of an arm H², extending radially from the inner end of the shaft C to revolve therewith in a plane proximate to that in which the needle E' reciprocates, so that the hook H is carried thereby into position to enter the loop of the needle-thread just after the needle has passed its lowest point. The pin H' carrying the hook is fitted in a split seat or clamp in the arm H² in such manner as to admit of being adjusted both longitudinally and by rotation upon its axis and of being firmly secured when properly adjusted in relation to the needle and the shuttle by means of a transverse screw n . Its end is beveled back of the hook, as at a , and in front and inside of the hook, as at b , (see Figs. 5 and 6,) to present suitable inclined surfaces to facilitate the movement of the thread in slipping off from and clearing the hook after the loop is engaged by the shuttle. A disk I is mounted to rotate loosely outside of the hook-arm H² upon a spindle I', fitted within an axial recess formed in the inner end of the shaft C.

The shuttle or bobbin case J to contain and carry the lower thread is dish-shaped, having an outwardly-flaring wall c , terminating in a slight inwardly-flaring flange or rim d , and is provided with a central tubular post J', extending from an opening in the bottom of the shuttle to the level of its rim d . Upon this post as an axis a bobbin K is fitted (see Fig. 5) to revolve loosely thereon, said bobbin being filled with the under or lower thread e for use in the machine. The tension of said lower thread e is regulated by means of a flat spring L, (see Figs. 3 and 4,) secured against the inner face of the flaring wall of the shuttle, the thread being passed through a hole pierced in said spring, then under the spring-plate, and to a hole in the wall of the shuttle, through which it is carried to engage the loop of the needle-thread t , carried by the hook H.

The shuttle J, having the bobbin K fitted upon its post J', is secured in place in the ma-

chine by placing its rim *d* against the face of the loosely-revolving disk I and allowing a spring-actuated conoidal head M to bear centrally against its bottom side. This supporting-head M is fitted upon the end of a spindle M', mounted to play longitudinally and rotate freely in an aperture formed to coincide with the axis of the shaft C in a hanger N, depending from the under side of the table A. The head M is automatically carried toward the disk I and the interposed shuttle J by means of a spiral spring *f*, which is preferably made to encircle a screw *g*, driven axially into the outer end of the spindle M' as an extension thereof, as shown in Fig. 5, the head of the screw serving in such case as a stop to control the movement of the head toward the shuttle.

To confine the spindle M', and thereby prevent an accidental displacement of the shuttle when it is confined by the revolving head M, a bolt O is fitted in a vertical recess in an offset formed in the hanger N immediately in the rear of the horizontal aperture in which the spindle is seated, and is allowed to drop by its weight far enough to engage the end of the spindle or the head of the stop-screw *g* therein when the shuttle is in position and the head in contact therewith, and thereby prevent the head from moving back to clear and free the shuttle. The bolt O is controlled and prevented from dropping out of its seat by a lateral pin *i*, projecting from the bolt through a lateral slot in the hanger. (See Fig. 5.)

The conoidal head M enters and fits in the central recess or opening in the bottom of the shuttle loosely enough to allow the loop of thread passing around the shuttle to slip through between the head and shuttle, its movement being facilitated and the friction thereof reduced by reason of the rounded form of the conoidal head.

The manner, as described, of carrying the loop of the upper thread from the needle directly over and around the shuttle J and the novel form of the shuttle itself permit the use of a shuttle large enough to contain the entire length of thread of an ordinary spool, in combination with a very short needle, since the revolving hook is made to pass very close to the throat-plate.

The shuttle J is preferably weighted at a point *r* diametrically opposite the thread-aperture in its rim under the tension-spring L, so that the shuttle-thread will be automatically carried above the axis of the shuttle in the best position for starting again whenever the action of the machine ceases. The action of the loosely-revolving disk I as a support for the open end of the shuttle serves to prevent the wear of the shuttle, while the inwardly-

inclined flange *d*, crowning the rim of the shuttle, prevents the fraying or cutting of the looped thread carried around the shuttle.

In the operation of the machine when the needle E' has passed its lowest point, the hook K' engages the loop of the needle-thread *t*, which opens as the needle begins to rise and carries the loop with it around the shuttle or bobbin-case J while the needle is completing its upward stroke. The loop as it is thus carried forward is divided by the rim *d* of the shuttle, (see dotted lines in Fig. 6,) and the one division of the loop is carried between the rim *d* and disk I and the other between the bottom of the shuttle and its supporting-head M. The shuttle and the under thread *e* therein are thus made to pass through the loop to form the required lock-stitch, the loop being drawn up into the fabric by suitable take-up devices in the machine.

I claim as my invention—

1. The combination, in the stitch-forming mechanism of a sewing-machine, of a circular revoluble shuttle or bobbin case having outwardly-flaring sides and an inwardly-flanged rim, with a central spindle secured within the shuttle, a bobbin fitting loosely upon said spindle, a tension-spring fitted within the shuttle at one side, and a weight secured to the shuttle on its opposite side, substantially in the manner and for the purpose herein set forth.

2. The combination, in the stitch-forming mechanism of a sewing-machine, with the hook-shaft and a revoluble shuttle or bobbin case having outwardly-flaring sides and an inwardly-flanged rim mounted opposite the end of said shaft, of a disk fitted to revolve loosely upon the end of the hook-shaft and made to bear against the open end of the shuttle to support the same, substantially in the manner and for the purpose herein set forth.

3. The combination, in the stitch-forming mechanism of a sewing-machine, of the shuttle J, the outer bearing I and inner bearing M for its support, the longitudinally-moving spring-actuated spindle M', carrying the bearing M, the hanger N for the support of said spindle, and the automatic latch-bolt O, depending from said hanger, to control the longitudinal movement of the spindle, substantially in the manner and for the purpose herein set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

CHAS. W. WEISS.

Witnesses:

A. N. JESBERA,
E. M. WATSON.