No. 837,600. PATENTED DEC. 4, 1906.

A. H. YORKE.

ROTARY SHUTTLE SEWING MACHINE.

APPLICATION FILED AUG. 10, 1905.

2 SHEETS—SHEET 1.

Fig. 1

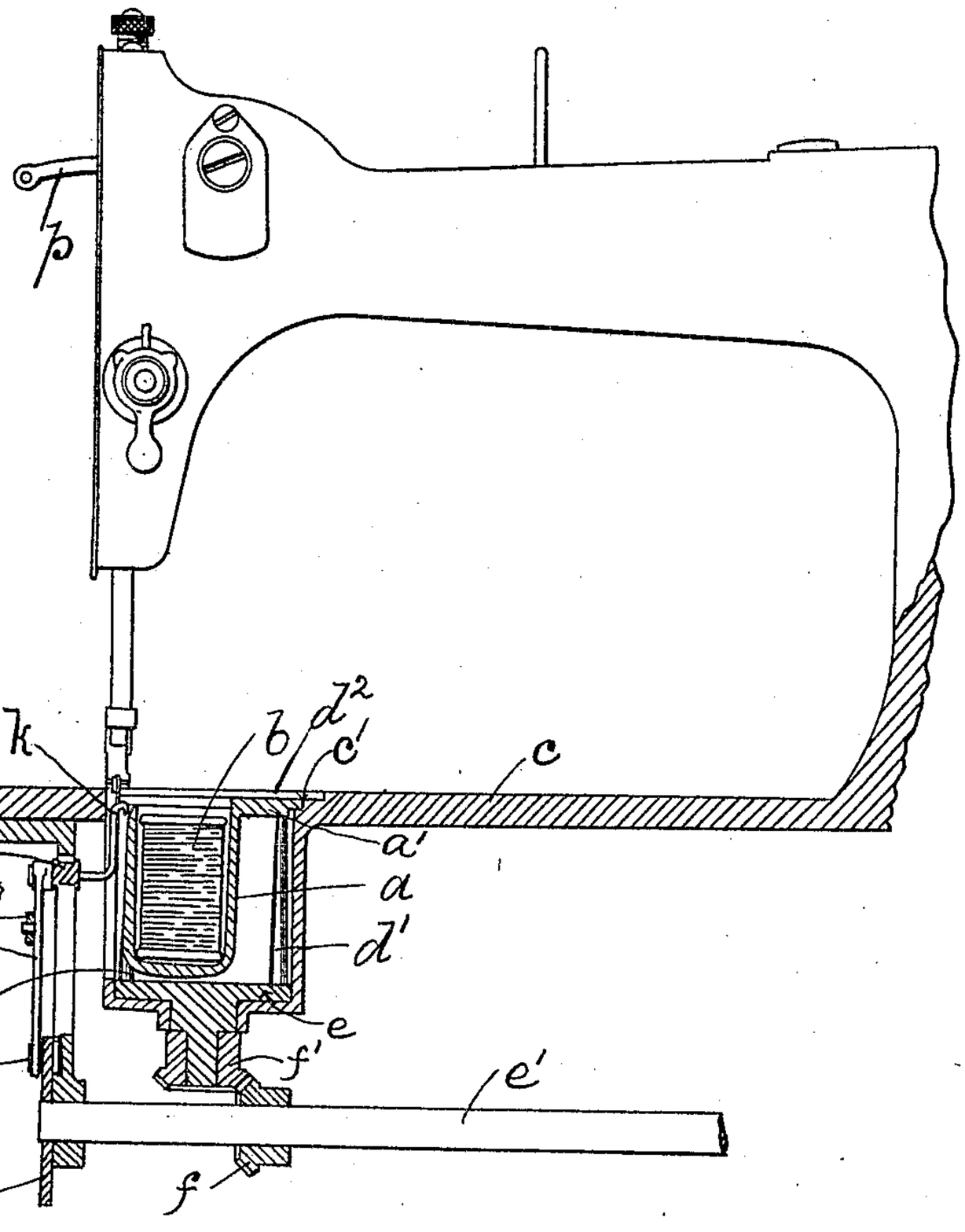


Fig. 4

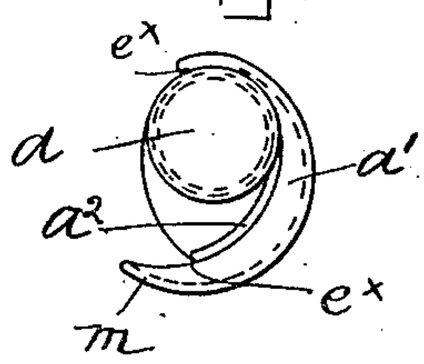
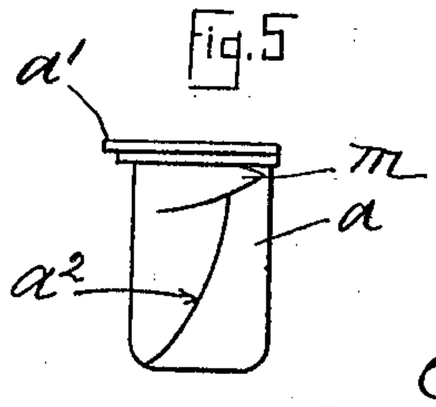


Fig. 5



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2 SHEETS—SHEET 2.

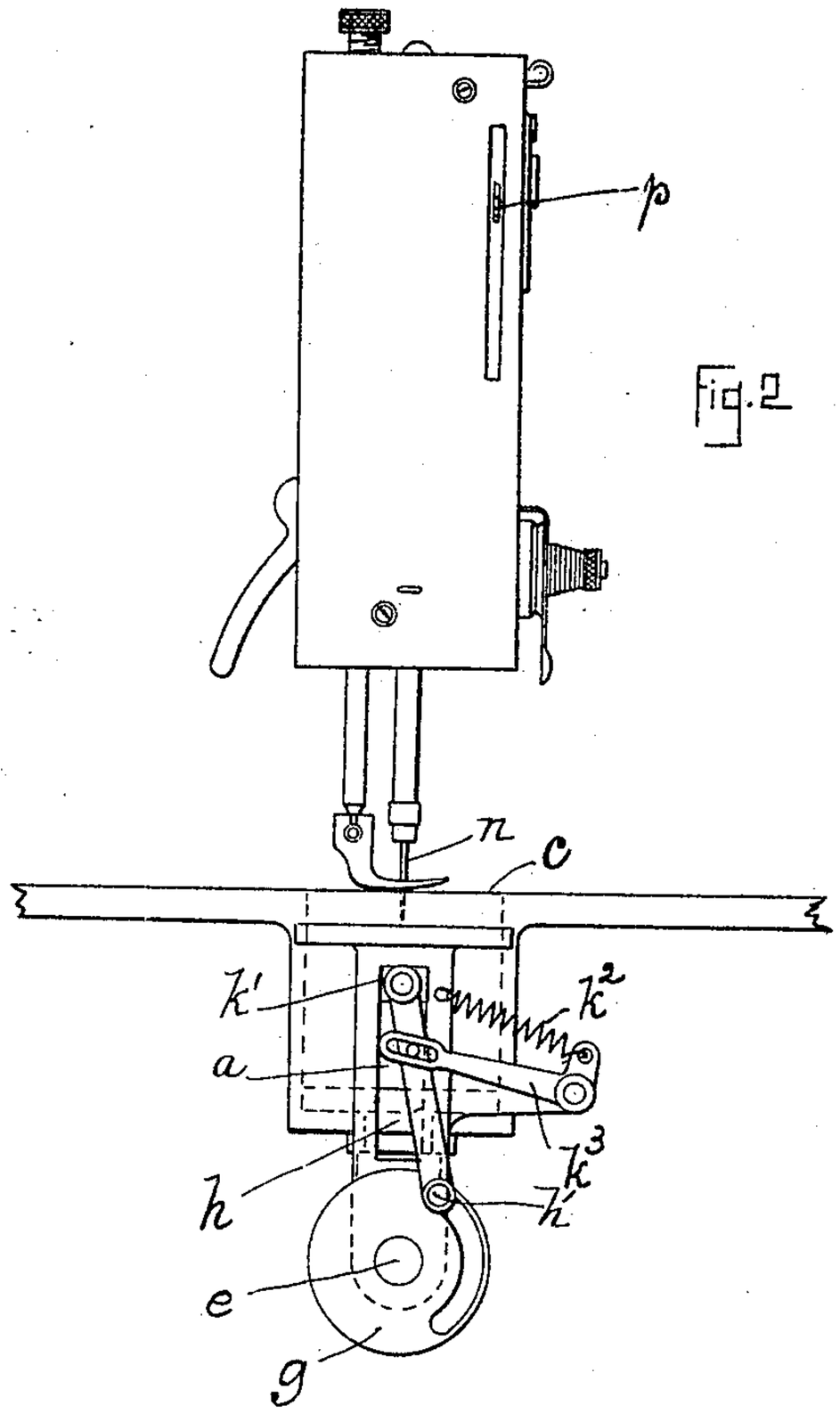

Fig. 2

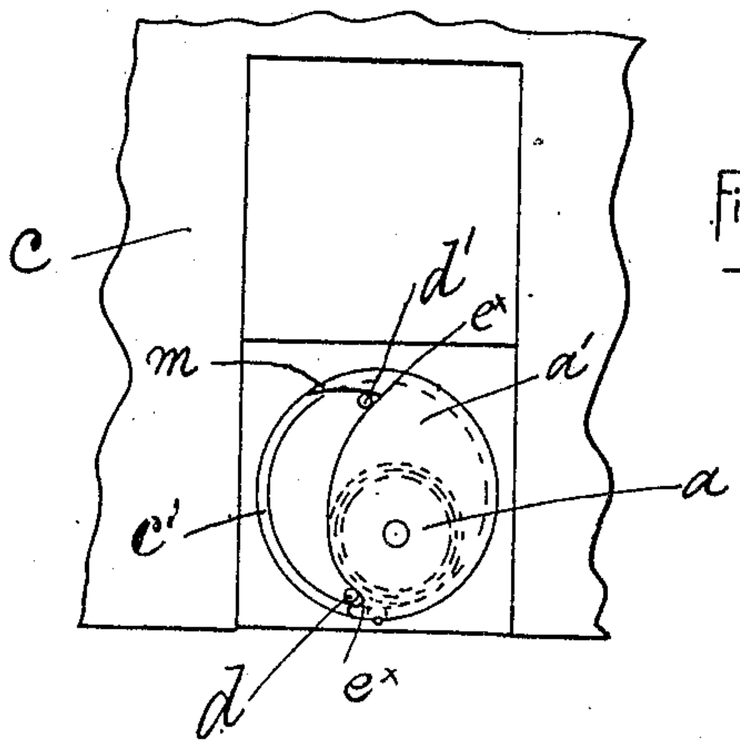

Fig. 3

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ARTHUR H. YORKE, OF BOLTON, ENGLAND, ASSIGNOR OF ONE-FOURTH TO MATTHEW CLARKSON, THREE-SIXTEENTHS TO JOHN PEARSON CLARKSON, AND ONE-FOURTH TO EDWIN BROUGHTON, OF BOLTON, ENGLAND.

ROTARY-SHUTTLE SEWING-MACHINE.

No. 837,600. Specification of Letters Patent. Patented Dec. 4, 1906.

Application filed August 10, 1905. Serial No. 273,628.

To all whom it may concern:

Be it known that I, ARTHUR HARTFIELD YORKE, a subject of the King of Great Britain, and a resident of 25 Mona street, Bolton, in the county of Lancaster, England, have invented certain new and useful Improvements in Rotating-Shuttle Sewing-Machines, of which the following description, together with the accompanying sheets of drawings, is a specification.

My invention relates to the class of machines known as "lock-stitch sewing-machines;" and it consists in the formation, construction, and application of certain parts of said machines whereby an ordinary reel or spool of thread may be used for the "under thread," so that the two threads being used in the machine may be approximately of equal length, the parts employed for this purpose being of simple formation and not liable to rapid deterioration or disarrangement.

In the accompanying sheets of drawings, which are illustrative of my improved mechanism, Figure 1 is a sectional side elevation of a sufficient portion of a sewing-machine to illustrate the application of my invention. Fig. 2 is an end elevation of parts shown by Fig. 1. Fig. 3 is a plan or view of certain of the parts as seen from above. Figs. 4 and 5 are detail plan and side views, respectively, of the receptacle for the reel or spool.

In carrying my invention into effect I make use of a cup-shaped receptacle *a* for the spool of under thread *b*. This receptacle is formed to be supported by its radial flange *a'*, which partly surrounds same, fits within the circular groove *c'*, made in the bed-plate *c* of the machine, and is free to rotate therein, the upper edge of the groove being formed by the covering-plate d^2, fitting over same in the well-known manner. Rotary motion is transmitted to this receptacle *a* by projections *d d'*, which extend vertically from the rotary disk *e* to reach into contact with shoulders $e^{\times}$, formed in the projecting flange *a'*, one of said shoulders being elongated to form a hook *m*. The disk *e* derives its motion from any motor part of the machine, such as from the shaft *e'*, to which it is connected by the bevel-gears *f f'*.

On the end of the shaft *e'* is fixed a slotted disk *g*, which is provided with a crank-pin *h'*, engaging a connecting-rod *h*, whereby vertical motion is transmitted to said rod *h*, and consequently to the hook *k*, carried by the sliding piece *k'*, coupled to said rod *h*, while the descending motion of the hook *k* is brought about by a spring, such as the spring k^2, which operates the lever k^3, taking over a projecting pin on the rod *h*, so that on or about in the position shown by Fig. 2 being reached this spring action on the rod *h* causes the hook *k* to fall or suddenly descend to its lowest position. Thus said hook *k* is made to rise and fall with each revolution of the disks *e* and *g*.

The shape or formation of the flange *a'* on the receptacle *a* is somewhat as shown by Fig. 3 and terminates in one direction in a hook *m*, which by the timing of its rotation with the disk *e* is enabled to enter the loop of thread from the needle *n*, which is formed in the usual and well-known manner. On the hook *m* thus laying hold of the needle-thread this latter is carried forward by it and by a projecting rib a^2 on the receptacle *a*, (see Figs. 4 and 5,) and when such thread has by these means been carried past the hook *k* this latter suddenly descends and so lays hold of said thread, bringing it with it until it is about level with the base of the receptacle *a*. As the receptacle *a* will have performed a portion of its rotation about its axis of rotation during these actions of the hooks *m* and *k* on the thread from the needle, it will be seen that such thread will encircle the receptacle *a*, and consequently the reel of thread which it contains, and as the end of such thread is taken over the edge of said receptacle *a* it follows that the thread on the reel *b* will be carried through the loop of the needle-thread, and thus the locking of the stitch is effected.

The taking up of the slack of the upper or needle thread is effected in any preferred or well-known manner. Also any of the well-known tension devices may be employed in connection with the thread in the carrier or receptacle *a*.

The slotted disk *g* is employed for actuating the rod *h*, so that the sliding piece *k'* may be enabled to remain somewhat stationary in its highest and lowest positions, thus enabling its hook *k* to lay hold of and retain the needle-thread, so that the recep-

tacle *a* and its contents may have time to pass through the loop formed by said needle-thread, as desired.

Such being the nature and object of my said invention, what I claim is—

1. The herein-described improvement in sewing-machines comprising a vertically-arranged cylindrical spool or reel holder provided with a supporting-flange, shoulders formed on said flange, one of said shoulders being elongated to form a hook, a rotary disk provided with pins for engaging said shoulders, a hook for laying hold of the needle-thread and mounted independently of said spool or reel holder, a crank-disk for operating the same, and means for simultaneously operating both of said disks.

2. The herein-described improvement in sewing-machines comprising a vertically-arranged cylindrical spool or reel holder provided with a supporting-flange, said flange being provided with shoulders one of which is elongated to form a hook, said reel-holder being also provided with a downwardly-extended rib contiguous to said hook, a rotary disk provided with means for engaging said shoulders, an independently-mounted hook for laying hold of the needle-thread, a crank-disk for operating the same, and means for simultaneously operating both of said disks.

3. The herein-described improvement in sewing-machines comprising a vertically-arranged cylindrical spool or reel holder provided with a supporting-flange, shoulders formed on said flange, one of said shoulders being elongated to form a hook, a rotary disk provided with pins for engaging said shoulders, an independently-mounted hook for laying hold of the needle-thread, a guideway for said hook, a crank-disk for reciprocating said hook in its guideway, and means for simultaneously rotating both of said disks.

4. The herein-described improvement in sewing-machines comprising a spool or reel holder provided with a supporting-flange having a hook said holder being also provided with a rib contiguous to said hook, a guideway adjacent said spool or reel holder, a block working therein, a hook carried by said block, a crank-disk, a pitman connecting said disk and block, and means for simultaneously rotating said spool or reel holder and said crank-disk.

5. The herein-described improvement in sewing-machines comprising a spool or reel holder provided with a hook, a guideway adjacent said spool or reel holder, a block working therein, a hook carried by said block, a crank-disk, a pitman connecting said disk and block, and means for simultaneously rotating said spool or reel holder and said crank-disk.

6. The herein-described improvement in sewing-machines comprising a vertically-arranged cylindrical spool or reel holder provided with a supporting-flange, shoulders formed on said flange, one of said shoulders being elongated to form a hook, said holder being also provided with a rib contiguous to said hook, a rotary disk provided with pins for engaging said shoulders, a hook for laying hold of the needle-thread mounted adjacent said spool or reel holder, a crank-disk for operating the same, and means for simultaneously operating both of said disks.

7. The herein-described improvement in sewing-machines comprising a vertically-arranged cylindrical spool or reel holder provided with a supporting-flange, shoulders formed on said flange, one of said shoulders being elongated to form a hook, said holder being also provided with a rib contiguous to said hook, means engaging said shoulders for rotating said spool or reel holder, a second hook for laying hold of the needle-thread mounted adjacent said spool or reel holder, means for reciprocating said latter hook, and means for accelerating the return of the second hook to its normal position.

8. The herein-described improvement in sewing-machines comprising a spool or reel holder provided with a hook, a second hook for laying hold of the needle-thread and mounted adjacent said spool or reel holder, means for moving said second hook, and a spring for returning the latter hook to its normal position by a sudden movement.

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DANIEL W. HOWARTH.