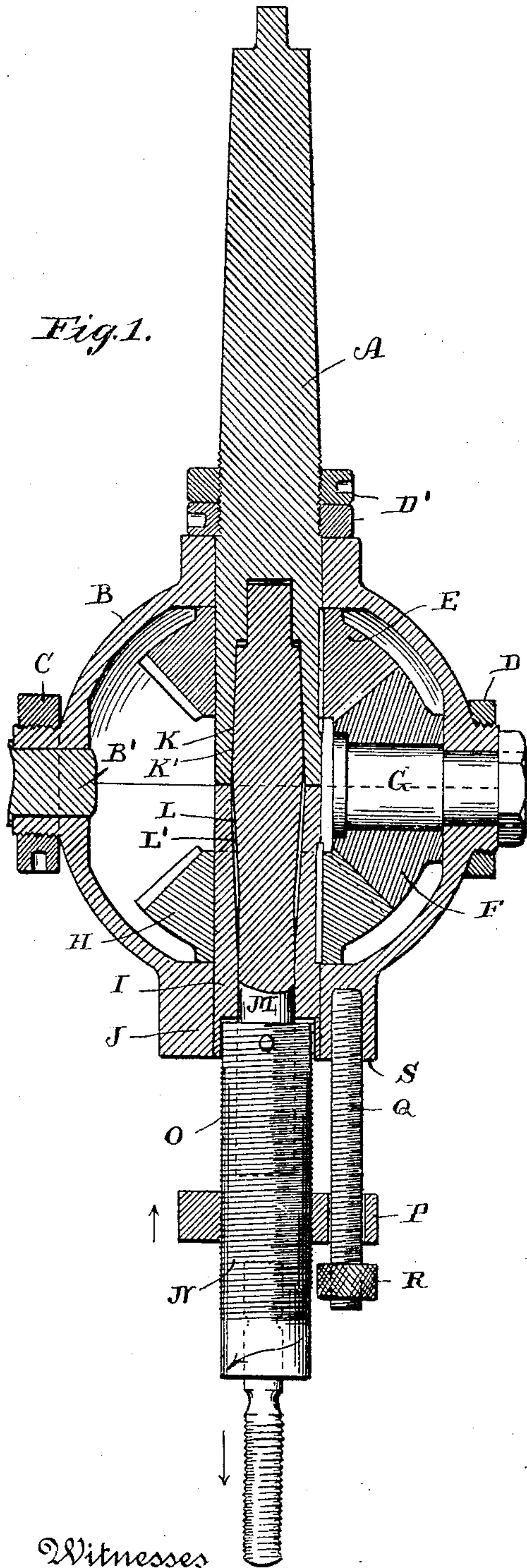
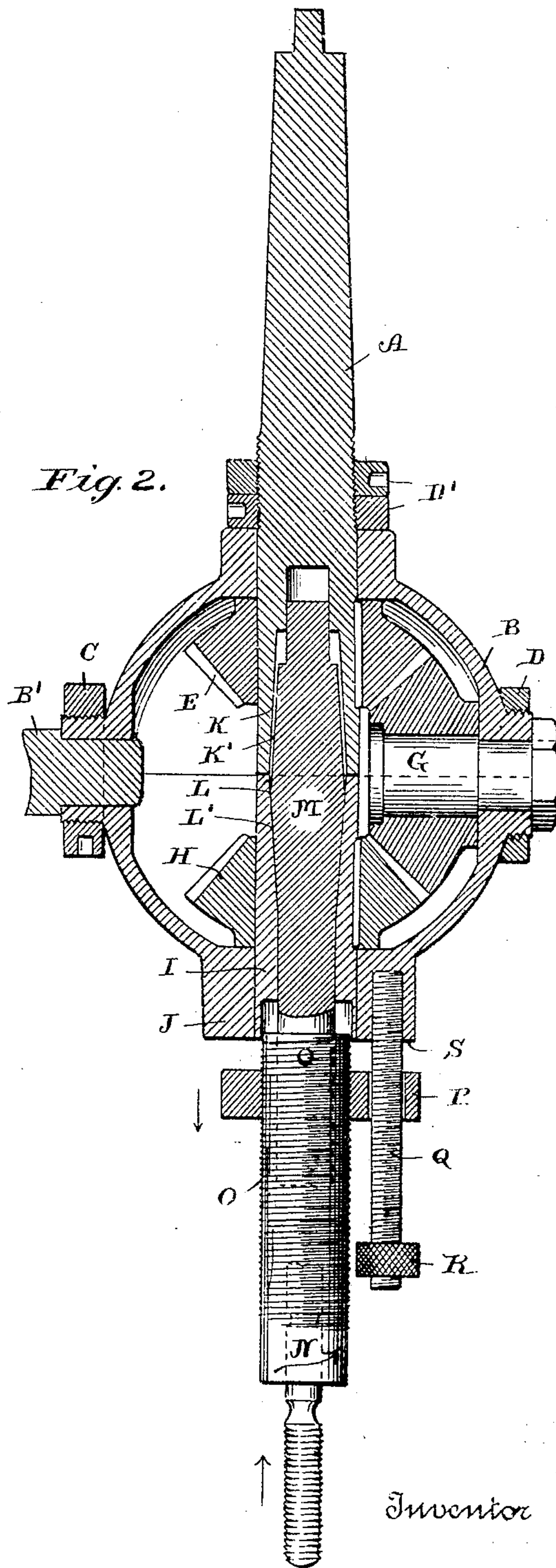


G. H. HOLLM.
TAPPING ATTACHMENT.
APPLICATION FILED MAY 13, 1904.



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TAPPING ATTACHMENT.

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To all whom it may concern:

Be it known that I, GUSTAV H. HOLLM, a citizen of the United States, and a resident of Fairfield, in the county of Fairfield and State of Connecticut, have invented certain new and useful Improvements in Tapping Attachments, of which the following is a specification.

My invention relates to new and useful improvements in tapping-fixtures, and more especially to what may be termed an "automatic reversible fixture," adapted to drive a tap in a prearranged distance and then to automatically reverse its direction of rotation in a manner to withdraw the same.

It is the object of my invention to improve upon fixtures of the above class by simplifying and cheapening their construction, to provide a tool which shall be complete in itself and attachable to the rotary spindle of various forms of drill-presses or other machine-tools, to provide an improved reversing clutch mechanism and adjustable means to regulate the depths of movement of the tap, and likewise to accommodate the thread, as is obviously important in connection with apparatuses of this sort.

The construction embodies means for rotating a tap-spindle or carrier in opposite directions and shifting the same vertically to reverse the direction of rotation, and to provide an adjustable device for changing the point of reversal of said rotation, thus raising the amounts of such vertical movement to accommodate different depths of holes.

With the above and other minor objects in view my invention resides and consists in the novel construction and combination of parts shown upon the accompanying drawings, forming a part of this specification, upon which similar characters of reference denote like or corresponding parts throughout the several figures, and of which—

Figure 1 shows a central vertical section through my improved device complete, the tapping-spindle being in a raised position and in engagement for the direct or downward drive of the tap. Fig. 2 is a similar vertical sectional view, but with the spindle in its lowered position and in engagement for the reverse or the withdrawal movement of the tap.

Referring in detail to the characters of reference marked upon the drawings, A indicates a spindle, which is of a tapered construction, adapted to be inserted into the spindle of a drill-press in the usual way.

B is a casing in which the spindle is journaled and further serves to inclose the gear and clutch mechanism. This casing is preferably formed in two sections and may be secured together in any suitable way—as, for instance, by means of nuts C and D. The threaded portion of the spindle is provided with nuts D', which are set against the case to hold the part in position. The casing is provided with a handle B', which may extend out sufficiently far to engage the column of the drill-press in a way to hold the casing in check and prevent its turning. Within the casing I arrange a set of bevel-gears for securing a reverse-drive for the tap-carrier. The top one of these bevel-gears E, as shown, is keyed to the spindle in a way to be driven thereby and meshes with and drives an idle bevel-gear F, mounted upon a stud G, secured within the casing. This idle gear in turn meshes with and drives a third bevel-gear H, keyed to a sleeve I, journaled in a bearing J of the lower end of the casing. By reason of these gear connections it will be seen that the sleeve is driven in an opposite direction from that of the spindle.

The spindle A and the sleeve I are provided with tapering recesses K and L, respectively, to receive a shank M, having an upper and lower tapered face K' and L' to engage the faces of the recesses K and L of the spindle and sleeve, respectively. This shank is slightly shorter than the combined openings of the recesses and is consequently susceptible of a longitudinal movement therein, sufficient so that when in its raised position, as shown in Fig. 1, it will be in engagement with the spindle and free from the sleeve, and when in its extreme lowered position, as shown in Fig. 2, will be in engagement with the sleeve and free from the spindle. The result of this construction obviously is that the said shank is driven to the right or left, according to which of its bevel-faces is engaged. To the lower end of this shank is attached the tap-carrier N, which may be provided with any suitable means for engaging the tap. This carrier also contains an external thread O, as shown, for the purpose of engaging the collar P, which is fed up and down thereon by the rotation of said carrier. To the lower end J of the casing is attached a guide-rod Q, threaded to receive an adjustable stop-nut R, which may be set at any point upon the rod to limit the downward movement of the col-

lar, while the end S of the casing serves as an upper stop for the collar when it is moved in the other direction.

The purpose and operation of this construction therefore is to feed the collar upward by its threaded engagement with the drill-spindle while the same is tapping and until the collar engages the under face S of the casing, which engagement and continued rotation of the spindle O cause its shank to be drawn down out of engagement with the recess K of the spindle and into engagement with the recess L of the sleeve, thus imparting a reversed rotary movement to the shank and carrier from said sleeve in a manner to withdraw the tap. With this reversed rotation of the carrier the collar is fed down thereon until it strikes the adjustable stop R, which causes the rise of the carrier and disengagement of the shank from the sleeve, as will be apparent, thus stopping the movement of the tap. The stop R is adjustable for the purpose of accompanying different depths of movement of the tap and may be set to accommodate a large variety of work.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In a tapping-fixture, the combination with a driving-spindle having a conical recess, of a sleeve in alinement with said spindle with a conical recess, gear connections for driving the sleeve from the spindle, a shank intermediate of the spindle and sleeve having conical surfaces to frictionally engage either, a rotatable tap-carrier attached to said shank, means for automatically shifting the shank and carrier to engage and disengage it from the clutch-face of either the spindle or sleeve to rotate the carrier in opposite directions.

2. In a tapping-fixture, the combination with a driven spindle and a sleeve, each provided with a socket and connected to rotate oppositely from each other, a shank adapted to frictionally engage either, a tap-carrier attached to the shank, a collar mounted upon said carrier and adapted to be fed longitudinally therewith, an adjustable stop for the engagement of said collar whereby the carrier and shank are operated longitudinally to shift its engagement from the spindle to the sleeve.

3. In a reversible tapping-fixture, the combination with a driving-spindle, of gear and sleeve connections whereby the latter may be driven in a direction opposite to the spindle, a tap-carrier bearing a shank for engagement with both said driving-spindle and sleeve, a collar threadably engaged by the carrier in a manner to be moved longitudinally therewith and means for limiting the amount of movement of the collar in a way to shift the position of the carrier and change its engagement from the spindle to the sleeve to reverse its rotary movement.

4. In a reversible tapping-fixture, the combination with a tap-carrier and means for rotating the same in opposite directions, of a collar threadably engaged with said carrier adapted to be carried longitudinally thereon, a guide-rod for the collar, stops upon the rod to limit the movement of the collar and shift the position of the carrier to change its connections and direction of rotation.

Signed at Bridgeport, in the county of Fairfield and State of Connecticut, this 4th day of May, A. D. 1904.

GUSTAV H. HOLLM.

Witnesses:

C. M. NEWMAN,
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