

B. M. W. HANSON.
INDEXING MECHANISM.
APPLICATION FILED NOV. 9, 1903.

2 SHEETS—SHEET 1.

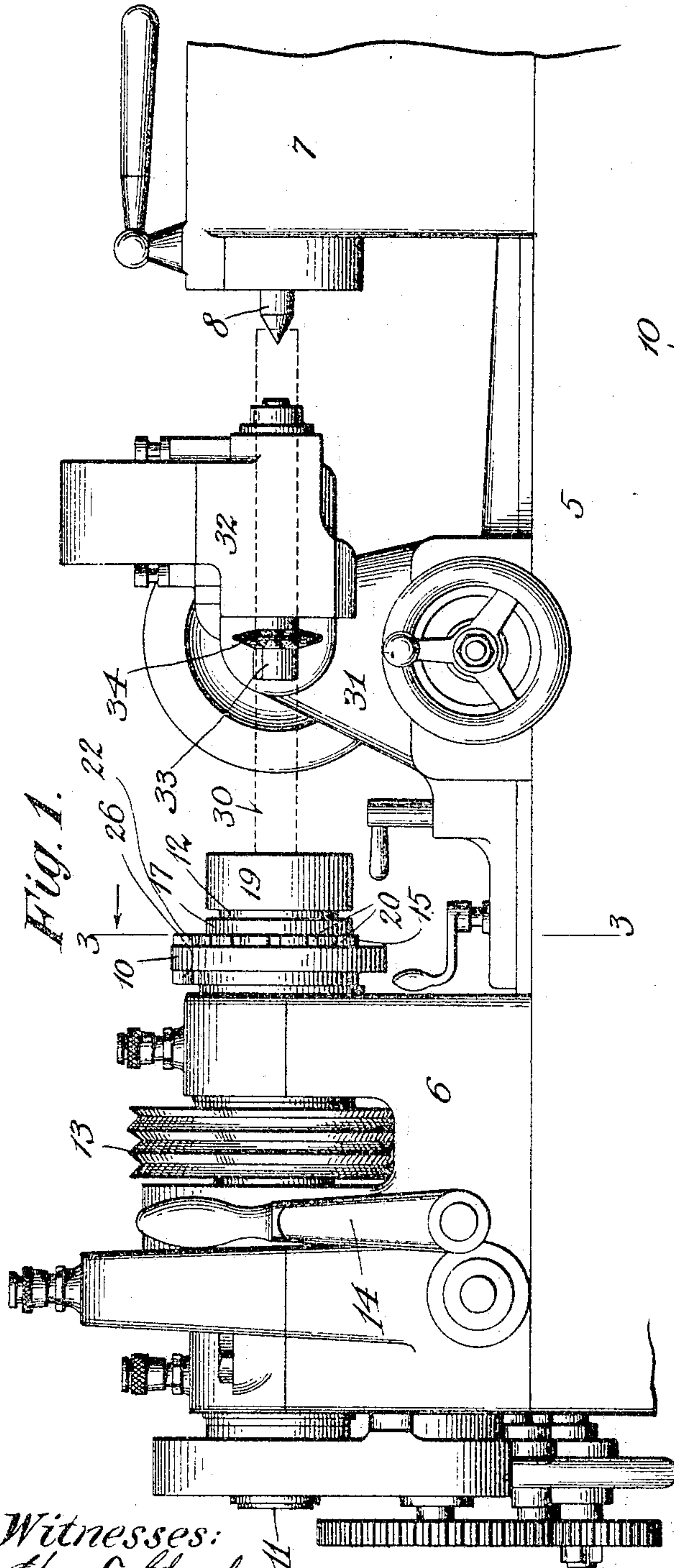


Fig. 1.

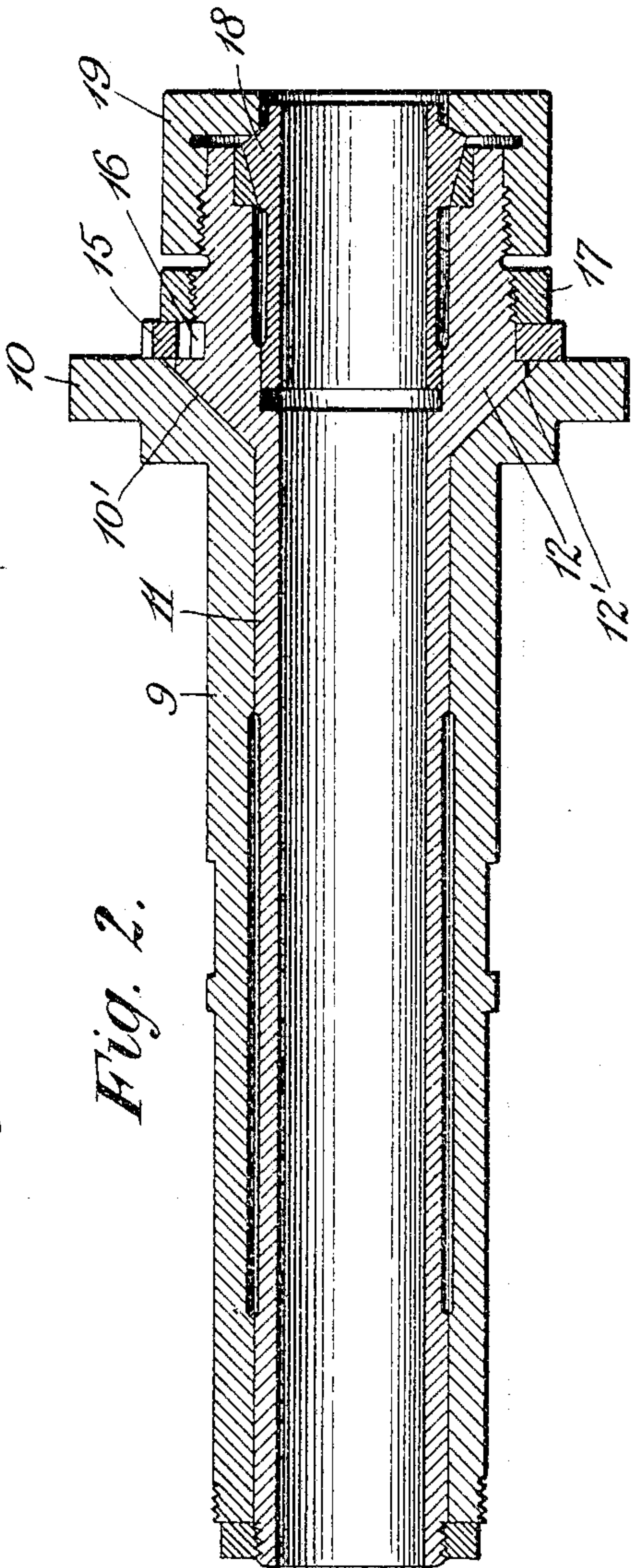


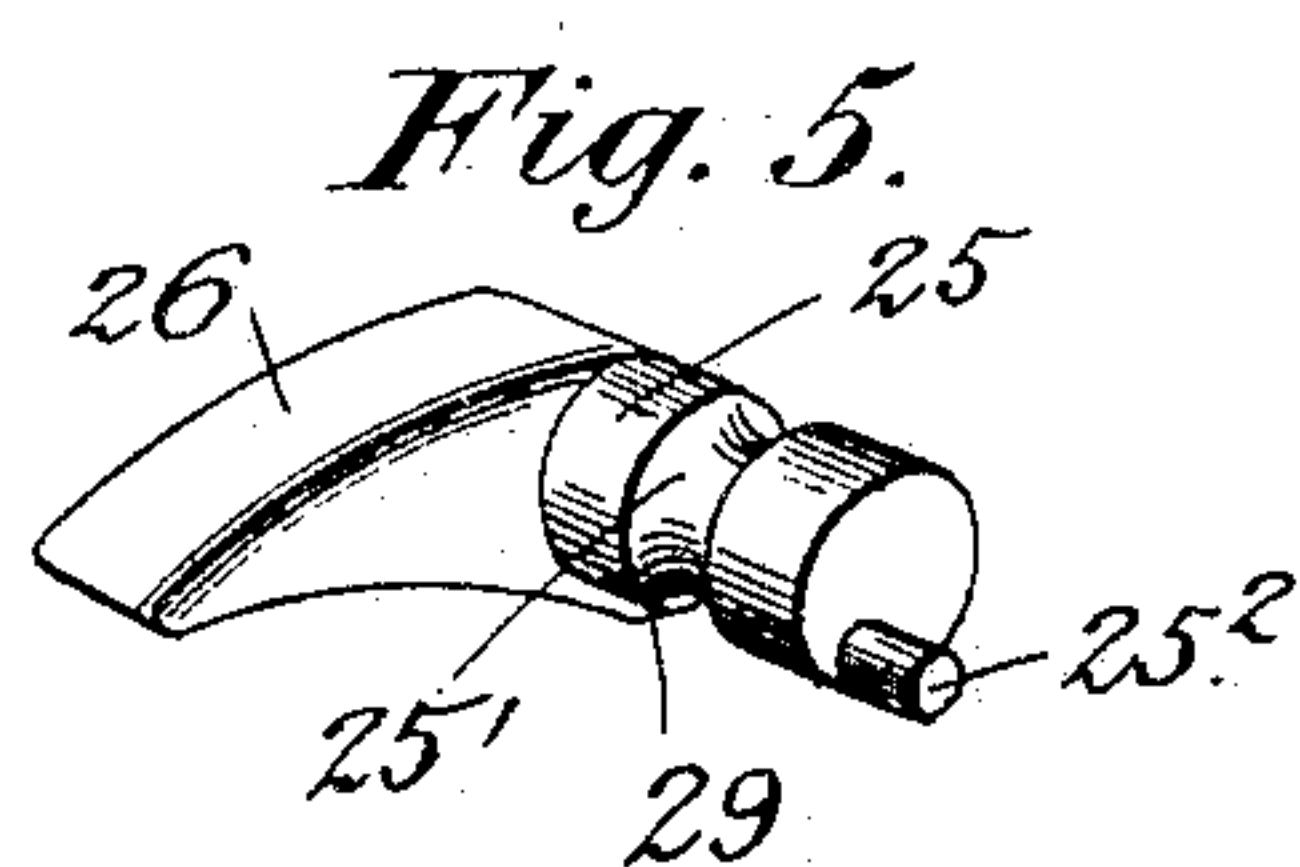
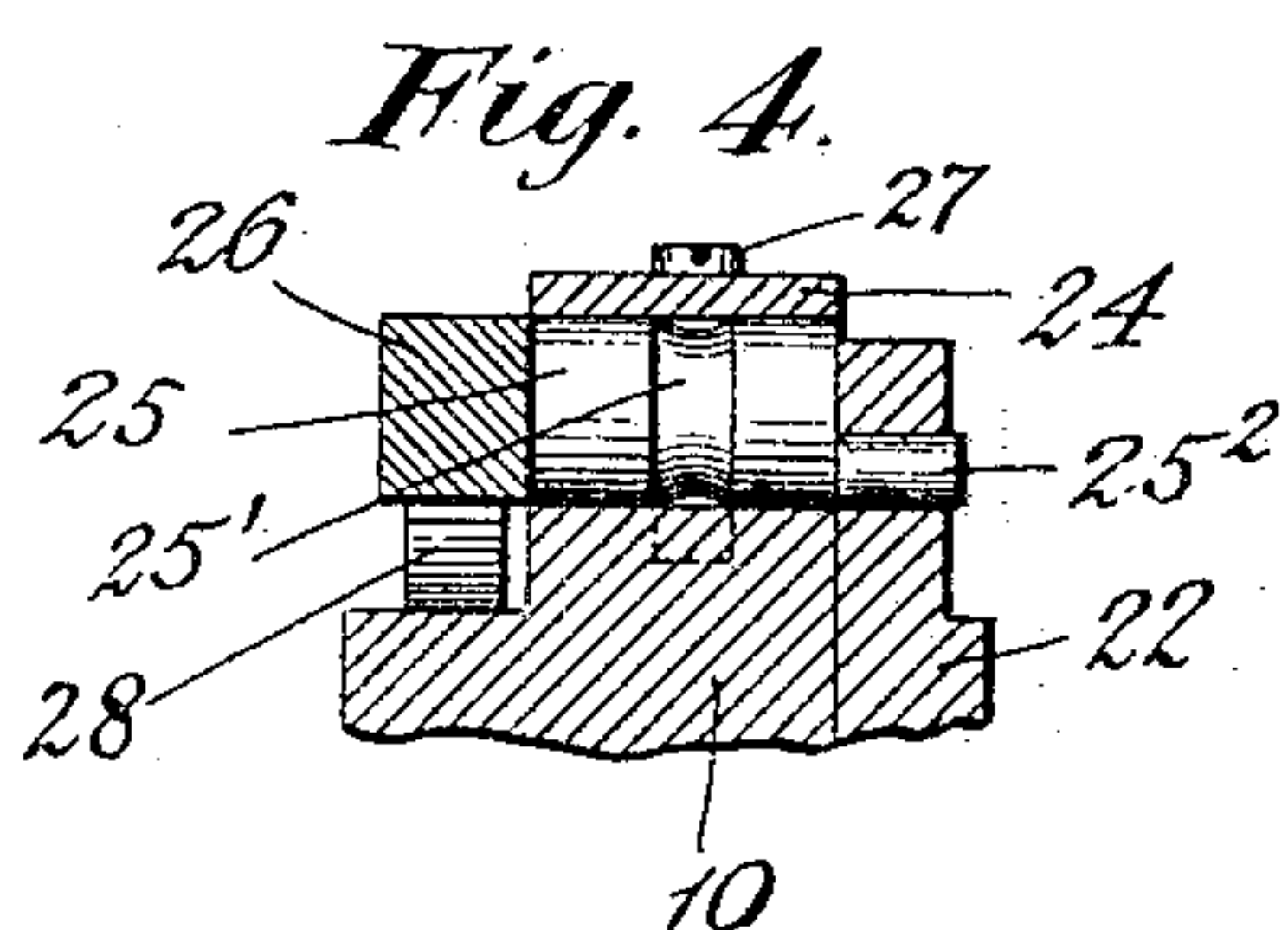
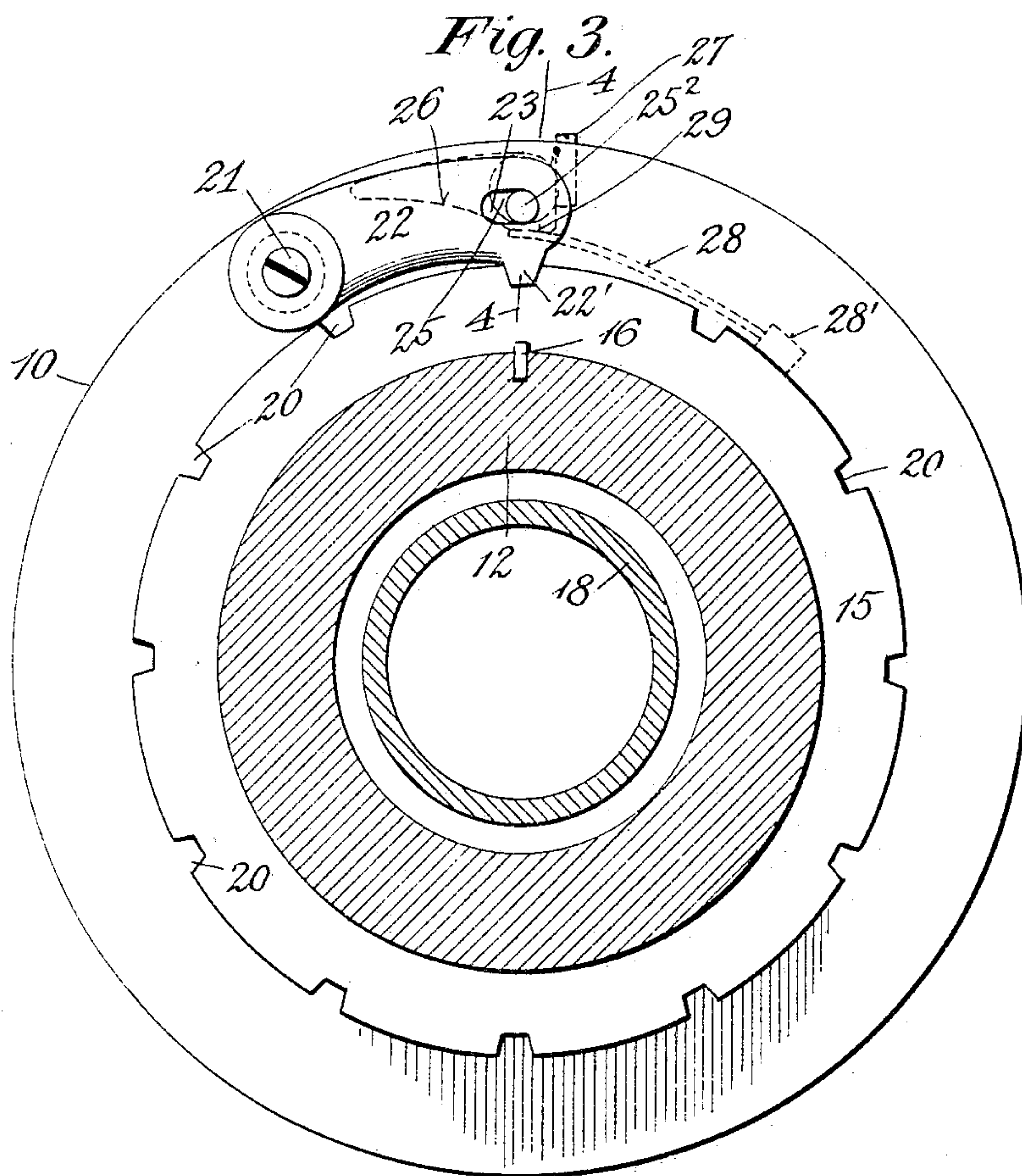
Fig. 2.

Witnesses:
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Daniel Weston

Inventor:
B. M. W. Hanson,
By his Attorney
Wm. A. D. Stutz

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2 SHEETS—SHEET 2.



Witnesses:
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UNITED STATES PATENT OFFICE.

BENGT M. W. HANSON, OF HARTFORD, CONNECTICUT, ASSIGNOR TO
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CORPORATION OF NEW JERSEY.

INDEXING MECHANISM.

SPECIFICATION forming part of Letters Patent No. 782,240, dated February 14, 1905.

Original application filed July 12, 1902, Serial No. 115,337. Divided and this application filed November 9, 1903. Serial No. 180,319.

To all whom it may concern:

Be it known that I, BENGT M. W. HANSON, a citizen of Sweden, residing at Hartford, in the county of Hartford and State of Connecticut, have invented certain new and useful Improvements in Indexing Mechanism, of which the following is a specification.

This invention relates to indexing mechanism and is shown applied to a spiral milling-machine of the character set forth in my application filed July 12, 1902, Serial No. 115,337, of which the present case is a division.

Primarily the object of the invention is the provision of improved means for indexing the work-carrying spindle, and in this connection it is to be said that although my invention is shown applied to a machine of the kind above set forth it is not limited to such use, being capable of general application to various machines in the metal-working and other arts.

A further object of the invention is the provision of a work-carrying spindle, an indexing-ring rigid therewith, a lever having a device adapted to engage said ring, said lever being pivoted to the support for the spindle, and means for actuating the lever.

A further object of the invention is the provision of a rotary spindle, a tubular spindle mounted within said rotary spindle, a notched index-ring secured to the tubular spindle, and means carried by the outer spindle for engaging the notches of said index-ring, and thereby locking the inner spindle after it has been indexed.

Further objects of the invention will be given in the detailed description, which now follows.

In the accompanying drawings, Figure 1 is a side elevation of a type of metal-working machine to which my invention may be applied. Fig. 2 is a longitudinal vertical section of the inner and outer tubular spindles, showing a part of my invention. Fig. 3 is a transverse section on line 3 3 of Fig. 1. Fig. 4 is a transverse section on line 4 4 of Fig. 3,

and Fig. 5 is a detached perspective view of the device for actuating the index-detent.

Like numerals designate similar parts throughout the several views.

Referring to the drawings, the numeral 5 designates the frame or bed of the machine, which may be of any suitable construction, 6 a head-stock, and 7 a tail-stock, the latter having the usual dead-center 8. Journaled in bearings of the head-stock 6 is a tubular spindle 9, having a flange or collar 10, provided with an inclined inner face 10'. Fitted within the spindle 9 is a tubular chuck-spindle 11, provided with a head 12, said head having an inclined surface 12' fitting against the complementary incline 10'. A pulley 13 may be employed for driving the spindle 9, and clutch-and-gear mechanism similar to that disclosed in my application aforesaid may be used in connection with said pulley 13. These details constitute no part of my present invention, although the clutch-actuating lever thereof is designated by 14. Fitted in a recess of the head 12 and just forward of the collar 10 is a notched index-ring 15, said ring being secured in the recess by a key 16 and being held against displacement longitudinally of the spindle by a collar 17, threaded upon said spindle and bearing against the ring, as shown in Fig. 2. In the chamber at the forward end of said spindle is fitted a common form of chuck 18, which may be compressed upon the work by a cap 19 in threaded connection with the head 12. Index-ring 15 is provided with a series of notches 20, spaced at the desired distance apart.

Pivoted at 21 on the flange 10 of spindle 9 is a lever 22, having a detent 22' at its end remote from the pivot, said lever being slotted at 23 for a purpose hereinafter stated. Journaled in a transverse bearing 24 of the flange or collar 10 is a short shaft 25, having a circular groove 25', said shaft carrying at one end a crank or wrist-pin 25² and at its opposite extremity a lever-arm or handle 26. To permit free rotative movement of this shaft 25

when actuated by its lever-arm 26, and to prevent the longitudinal displacement of said shaft, a screw or pin 27 is inserted in an opening of the flange and passes into the groove 25', as illustrated in Figs. 3 and 4.

Designated by 28 is a spring, which is secured at one end to the head 10 at 28', said spring bearing at its other extremity against the under side of the base of the lever-arm or handle 26, as illustrated in Figs. 3 and 4.

As will appear from the illustrations just mentioned, when the shaft 25 is rotated by its lever-arm 26 to the position shown in Fig. 3 the crank or wrist-pin 25² of said shaft, which is inserted in the slot 23, will turn the lever 22 upon its pivot and cause the detent 22' to enter the desired locking-notch 20 of index-ring 15, and to prevent accidental release of said shaft, and consequently the pawl, either by centrifugal force or by gravity, the spring 28 is provided, said spring bearing at its free end upon a slightly-flattened base 29 of the lever-arm or handle 26, as illustrated in Figs. 3 and 5.

Designated in a general way by the numeral 31 is a carrier in the shape of a slide fitted upon ways of the bed, and on this carrier is mounted for angular adjustment a frame 32, in which is journaled a shaft 33, carrying a milling-cutter 34 for operating upon the stock, this construction being that illustrated in my application aforesaid and being but one of many that could be employed in connection with my improved indexing mechanism.

Other means may be provided for locking the indexing device and for securing the same against accidental displacement without departure from the invention, which is not limited to the precise details shown for accomplishing these results.

In operation my improved machine works as follows: Stock (designated by 30 and shown in dotted lines in Fig. 1) is inserted into spindle 11 and chuck 18 and is supported on the dead-center 8, the chuck being then compressed upon the stock by screwing the internally-threaded cap 19 upon said spindle 11. Frame 32 is then adjusted to set the cutter to the desired angle with relation to the stock, and the carrier 31 is actuated by common means (not shown) to move said cutter along the stock. When it is necessary to index the stock, lever 26 is grasped and shaft 25 is rotated, the wrist-pin 25² of said shaft actuating lever 22 and raising its detent 22' out of the notch 20 of index-ring 15, in which it is seated. Shaft 11 is then turned to bring another notch 20 beneath the detent 22' and the lever-arm 26 is grasped and thrown down, thus forcing the detent into the notch of the ring in line with it, spring 28 acting as a friction-brake to prevent movement of said parts, as above stated.

While a manually-actuated device is shown for rocking the shaft 25, the invention is not limited thereto, for other means may be em-

ployed for this purpose, if desired. So, too, other means may be used for locking the shaft 25 against displacement, the invention not being limited to the spring shown.

Having thus described my invention, what I claim is—

1. The combination, with an index-ring and a rotary support, of a device pivoted to the support and having a part adapted to engage said index-ring; a shaft carried by the support and connected with said device; and means for actuating said shaft.

2. The combination, with a spindle, and with means for supporting the same, of a notched index-ring secured to said spindle; a lever having a detent adapted to enter the notches of the index-ring, said lever being pivoted to the support for the spindle and having a slot; a shaft having a wrist-pin entering the slot of the lever; and an arm attached to said shaft.

3. The combination, with a spindle, and with a rotary support for the same, of an index-ring secured to the spindle; a slotted lever pivoted to the spindle-support and having a detent adapted to enter the notches of said index-ring; a shaft journaled in the support and carrying a wrist-pin entering the slot of the lever; a handle secured to the lever; and means for preventing the lever from displacement.

4. The combination, with a tubular spindle and with means for rotating the same, of a chuck-spindle mounted in said tubular spindle; a notched index-ring secured to the chuck-spindle; a slotted lever having a detent adapted to enter the notches of the index-ring, said lever being pivoted to the head of the tubular spindle; a shaft having a wrist-pin entering the slot of said lever; a handle attached to said shaft; and a spring secured to the head of said tubular spindle and bearing against the shaft.

5. In a machine of the class specified, the combination, with a tubular live-spindle, of a tubular chuck-spindle fitted in said live-spindle; an index-ring secured to the chuck-spindle; a detent carried by the live-spindle for engaging said index-ring; and means also carried by the live-spindle for actuating said detent.

6. The combination, with a tubular spindle of a rotary spindle surrounding the tubular spindle; an index-ring rigid with said tubular spindle; a pivoted detent carried by the rotary spindle; means also carried by the rotary spindle for actuating said detent; and a device for locking the detent-actuating means.

In testimony whereof I affix my signature in presence of two witnesses.

BENGT M. W. HANSON.

Witnesses:

ARTHUR E. THAYER,
ANGUS BALLARD.