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APPARATUS FOR ADJUSTING MULTIPLE CUTTER HOLDERS OF TURNING LATHES.

APPLICATION FILED DEC. 20, 1913.

1,142,362. Patented June 8, 1915.

Fig. 1.

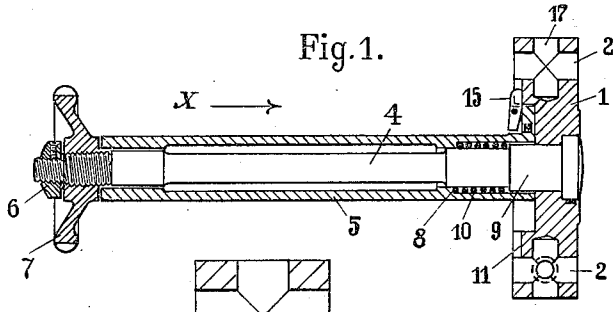


Fig. 2.

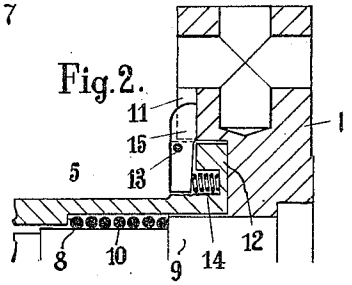


Fig. 4.

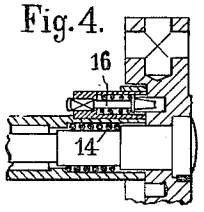


Fig. 3.

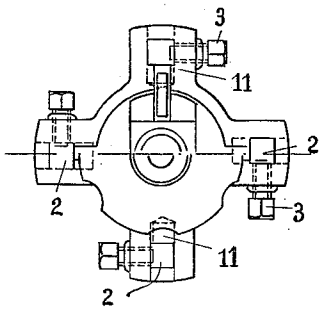
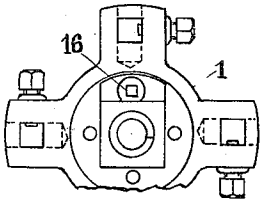


Fig. 5.



WITNESSES

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APPARATUS FOR ADJUSTING MULTIPLE-CUTTER HOLDERS OF TURNING-LATHES.

1,142,362. Specification of Letters Patent. Patented June 8, 1915.

Application filed December 20, 1913. Serial No. 807,948.

To all whom it may concern:

Be it known that I, HENRIK PETZ, a subject of the King of Hungary, and residing at IX Mihálkovics utca 18, Budapest, in the Empire of Austria-Hungary, have invented certain new and useful Improvements in Apparatus for Adjusting Multiple-Cutter Holders of Turning-Lathes, of which the following is a specification.

In turning lathes hitherto known, which are constructed for operating with a plurality of cutters, the latter are fixed in a head, which, with the object of adjusting the various cutters in the working position, may be rotated and secured in the various positions by means of fixing bolts. In turning lathes with cutter holders of this description, the bolt must be loosened each time the knife is changed, the head must then be exactly adjusted in the necessary position by hand, and finally the bolt must be again screwed tight. This kind of adjustment wastes time, is inconvenient and also laborious, as the fixing bolt must be screwed very tight in order to prevent the head from becoming loose, when the machine is working.

This invention relates to an apparatus for adjusting the cutter-holder, which apparatus removes the above mentioned drawbacks and considerably facilitates the changing of the cutter, and renders it possible to perform this operation using considerably less force than hitherto. Further, it is quite impossible for the gripping head as constructed according to the present invention to become loose, and, during the adjustment, it is not necessary to pay any special attention as to whether the gripping head has reached the correct position, as this is automatically attained. According to this invention, it is attained by connecting the gripping head with a screw spindle, which, on being rotated in one direction, draws the gripping head against the stationary coupling member and couples it with same, whereas, on being rotated in the other direction, it first uncouples the gripping head from the coupling member, and then rotates the released head until the next cutter has reached the exact working position. On reaching this position, a certain resistance prevents the further rotation of the head, thus indicating that said head has reached the necessary position.

The accompanying drawing illustrates this apparatus in two modes of construction.

Figure 1 is a longitudinal section of the apparatus. Fig. 2 is a similar section drawn to a larger scale. Fig. 3 is the inner front view of the gripping head. Figs. 4 and 5 are modified forms of construction.

The gripping head 1 (Fig. 2) is constructed disk-shaped in the usual manner, and is provided with the four projecting seatings 2 (Fig. 3) for the reception of the cutters, in which seatings the shanks of the cutters are fixed in the known manner by means of bolts 3. Similar seatings 17 are also formed on the circumference of the head 1, so that the cutters may be fixed in the seatings 2 or 17 according to whether external or internal work is to be performed.

The head 1, which, in the illustrated example, is constructed for receiving four cutters, is rigidly connected with a spindle 4 (Fig. 1), which latter lies inside a sleeve 5 preferably of square cross section and immovably secured in the turning lathe and provided at its left end with a nut 6. A hand wheel 7, having an internally screw threaded hub, is screwed on the spindle 4 between the nut and the left end of the sleeve 5, while a spring 10 is arranged between the projection 8 of the sleeve 5 and the enlarged strengthened end 9 of the spindle 4.

The distance between the nut 6 and the left end of the sleeve 5 is somewhat greater than the length of the hub part of the hand wheel 7. It is obvious that the spring 10 has the tendency to move the head 1 in the direction of the arrow x. When the parts are in the position illustrated in Fig. 1, this movement is, however, prevented as the hand-wheel 7 bears against the end of the sleeve 5. If, however, the hand-wheel 7 is screwed back against the nut 6, then the head 1 moves the same extent from the right end of the sleeve 5, whereas, if the hand-wheel 7 is rotated in the opposite direction, the head 1 is drawn back against the sleeve 5. The head, movable in this manner, is provided on the inner front side with four cavities 11, of which each is arranged beneath one of the seatings 2. The pawl 15 (Fig. 2), mounted on the pin 13 in the flange 12 of the sleeve 5 so that it may pivot against the action of a spring 14, coöperates with these cavities in the following manner:—When the parts are in the position

illustrated in Figs. 1 and 2, the upper arm of the pawl 15 engages in a cavity 11, whereby the head 1 is coupled with the stationary sleeve 5 and is thus securely fixed while the machine is working. If now, another cutter is to be placed in working position, the hand-wheel 7 is screwed toward the nut 6, the spring 10 then pushes the head 1 in the direction of the arrow x and the pawl 15 is drawn out of the cavity.

The dimensions are so chosen, that after the hand-wheel 7 has been screwed right back to the nut 6, the upper end of the arm of the pawl 15 still lies slightly in the cavity 11. This end of the arm of the pawl is cut slantingly on one side, and thus causes the pawl to swing against the action of the spring 14 when the hand-wheel 7 is further rotated, and to be thus entirely lifted out of the cavity. The spindle 4 together with the head 1 is now carried along by the hand-wheel 7, and the pawl 15 snaps into the cavity beneath the next cutter-seating. At the moment when the pawl snaps in, the next cutter has exactly reached its working position, so that now nothing further need be done than to rotate the hand-wheel 7 in the opposite direction, whereupon the head 1 is again drawn back, and the pawl 15, entering right into the cavity 11, secures the head in the new working position.

The form of construction illustrated in Figs. 4 and 5 differs from that hereinbefore described owing to the fact that, in this case, a pin 16, movable against the action of a spring 14, is used instead of the pivotal pawl, for fixing the head. The head of this pin is also slantingly cut and acts in a similar manner to the specified pawl.

It can be seen from the above that the cutter may be very simply and rapidly changed in the apparatus hereinbefore described.

The details may be considerably altered within the scope of the invention, for instance the pawl 15 may be arranged on the head 1, and the cavity 11 may be formed in a disk of the sleeve 5.

Having now described my invention what I claim as new and desire to secure by Letters Patent is:—

1. A device of the kind described, comprising in combination, a spindle, a gripping head on one end, a stationary sleeve surrounding said spindle, means for moving the head and spindle longitudinally of the sleeve in either direction, and also for rotating the spindle and head, and a coupling member between the head and the sleeve which is adapted to become coupled with, or uncoupled from, the sleeve according to the direction in which the head and sleeve are longitudinally moved.

2. A device of the kind described, comprising in combination, a spindle screw threaded at one end, an enlargement at the other end, a handwheel on the spindle and engaging the screw threaded part thereof, a cutter gripping head at one end of the spindle, a stationary sleeve surrounding the spindle, an internal shoulder within the sleeve, a spring surrounding the spindle and arranged between the enlargement thereon and the internal shoulder, a fixed abutment at the screw threaded end of the spindle, and a coupling member between the head and the sleeve which is adapted to become coupled with or uncoupled from the sleeve, according to the direction in which the head and sleeve are longitudinally moved.

3. A device of the kind described, comprising in combination, a spindle, a cutter gripping head on one end of the spindle, a stationary sleeve surrounding the spindle, an internal shoulder within the sleeve, a spring surrounding the spindle and arranged between the enlargement thereon and the internal shoulder, a fixed abutment at the screw threaded end of the spindle, recesses in the adjacent surfaces of the sleeve and head, and a spring pressed engaging member mounted on the recess in the sleeve and extending normally into a recess in the head, the arrangement being such that the engaging member is adapted to first snap into one of the recesses in the head to a slight depth and afterward enters so far into the recess that the gripping head is securely fixed in the working position.

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

HENRIK PETZ.

Witnesses:
NEUFELD ARMIN,
JOHN J. RONTO.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."