March 19, 1940. J. N. INGALSBE 2,194,391

DRIVING HEAD FOR LATHES

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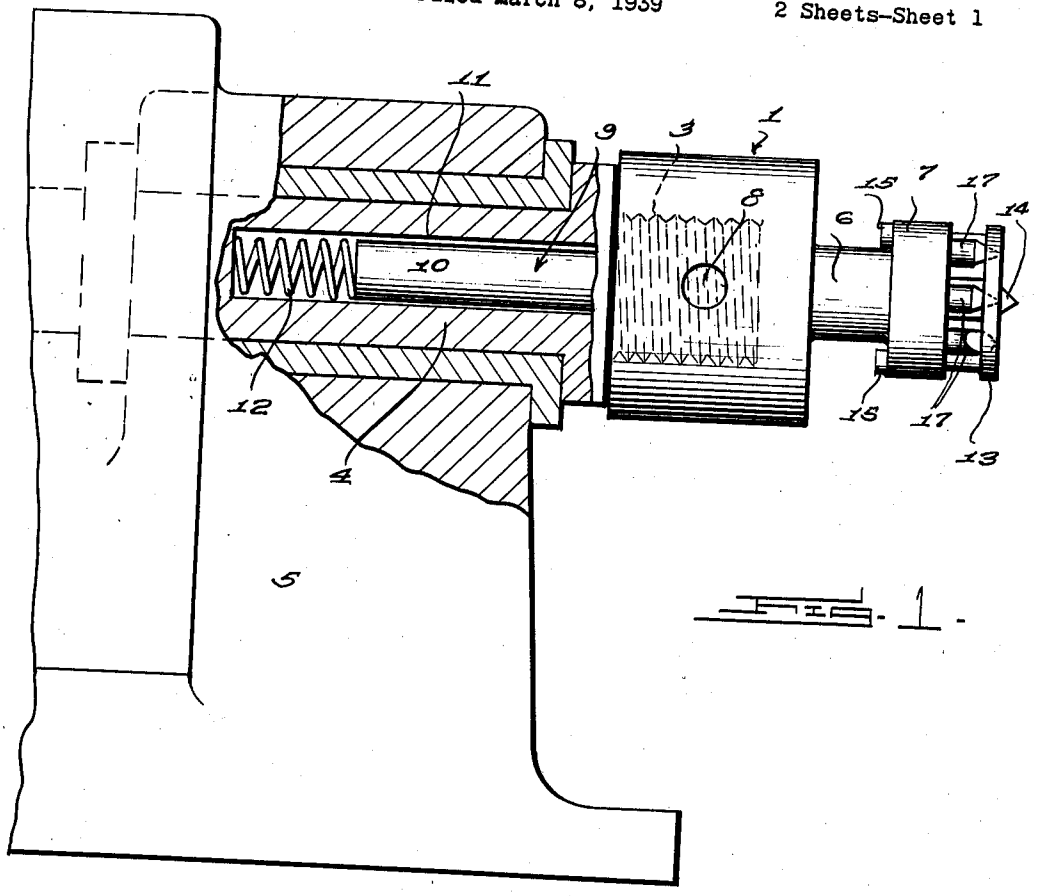


FIG. 1.

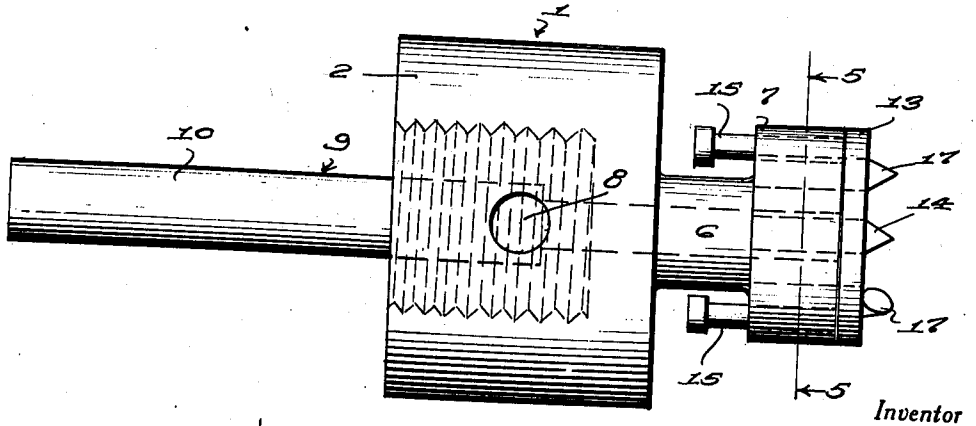


FIG. 2.

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DRIVING HEAD FOR LATHES

Filed March 8, 1939 2 Sheets-Sheet 2

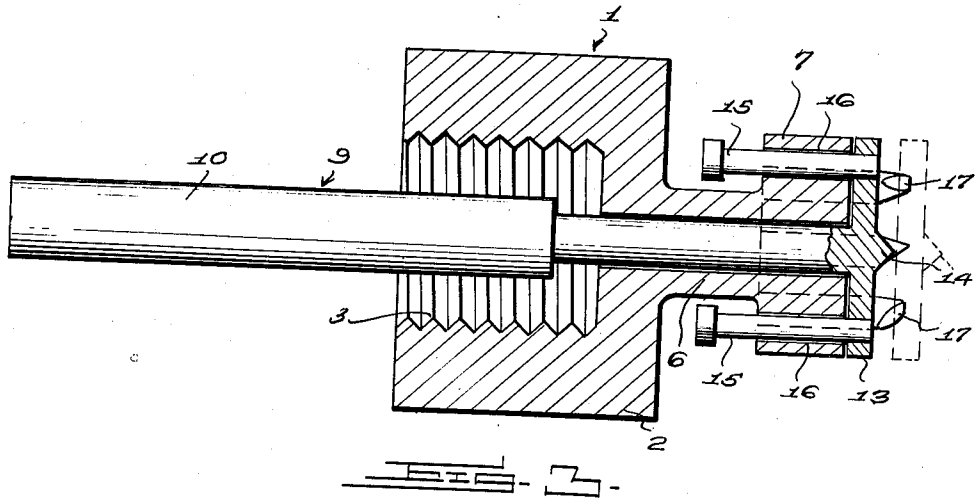


FIG. 3.

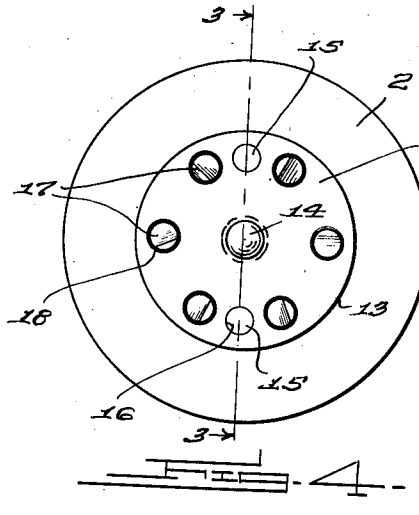


FIG. 4.

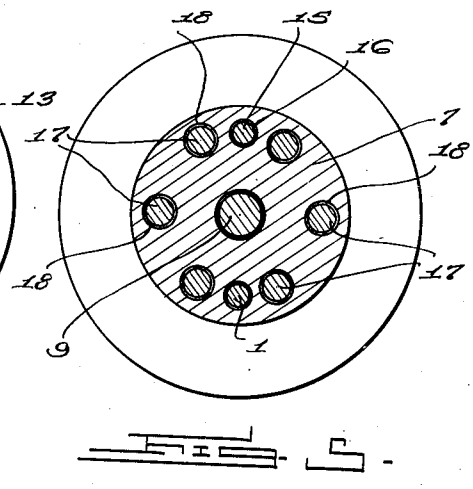


FIG. 5.

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Patented Mar. 19, 1940

2,194,391

UNITED STATES PATENT OFFICE

2,194,391

DRIVING HEAD FOR LATHES

Jabez N. Ingalsbe, Glens Falls, N. Y.

Application March 8, 1939, Serial No. 260,617

1 Claim. (Cl. 82—40)

My invention relates to improvements in lathes, and more particularly to driving heads therefor.

The invention is designed with the principal object in view of providing a rotary driving head adapted for incorporation in the head stock of standard lathes and to automatically grip and release the work without stopping operation of the head or slowing down the speed of the same.

To the accomplishment of the above, and subordinate objects presently appearing, a preferred embodiment of my invention has been illustrated in the accompanying drawings, set forth in detail in the succeeding description, and defined in the claim appended hereto.

In said drawings:

Figure 1 is a fragmentary view in front elevation illustrating my improved driving head attached to the head stock of a standard type lathe.

Figure 2 is a view in side elevation of the driving head and associated parts detached and drawn to an enlarged scale.

Figure 3 is a view in longitudinal section taken on line 3—3 of Figure 4.

Figure 4 is a view in end elevation of the head, and

Figure 5 is a view in transverse section, taken on the line 5—5 of Figure 2 looking in the direction indicated by the arrows.

Referring to the drawings by numerals, the driving head 1 of my invention comprises a cylindrical internally threaded socket part 2 adapted to be screwed tight onto the usual reduced, threaded leading end 3 of the live mandrel 4 of the head stock 5, said socket part having a short axial sleeve 6 extending therefrom toward the tail stock, not shown, of the lathe and terminating in a circular, concentric, radial flange 7. Wrench apertures, as at 8, for a spanner wrench are provided in the socket part 2 to facilitate turning said part on and off the leading end 3 of said mandrel 4. A plunger shaft 9 is slidably fitted in the sleeve 6 for endwise movement, said shaft having an enlarged rear end section 10 extending rearwardly of said socket part as best shown in Figure 3. The lathe mandrel 4 is provided with an axial bore 11 therein extending inwardly from the leading end 3 thereof for a suitable distance and in which the section 10 of the plunger shaft 9 is slidably fitted for endwise movement therein. A tension spring 12 in the bore 11, between the rear end of the bore and the section 10, urges said plunger shaft 9 outwardly of the sleeve 6 and socket part 2 into a normal position established by engagement of the front end of the section 10 with the front end of the socket part.

The leading, or front, end of the plunger shaft 9 terminates in a disc-like flange 13 similar to the flange 7, forming a false head and which in the normal position of said plunger shaft 9 is spaced forwardly of the flange 7. A conical centering stud 14 extends forwardly from the flange 7 in the axis thereof. A pair of bolt-like key members 15 extend rearwardly from said flange 13 parallel with the plunger shaft 9 and upon diametrically opposite sides of said flange 13, said members being slidable through bores 16 provided in the flange 7. A plurality of pointed driving pins 17 extend forwardly from the flange 7 in equidistantly spaced relation and parallel with the axis of the plunger shaft 9 and into correspondingly spaced apertures 18 provided in the flange 13, said pins being of a length such that the flange 13 in the normal position thereof is located forwardly of the points of said pins.

The heads of the key members 15 are designed to engage the rear face of the flange 7 and to thereby facilitate establishing the normal position of said flange 13.

As will now be seen, the flange 13, likewise the plunger shaft 9, is keyed to the flange 7 so that the entire head structure described rotates with the lathe mandrel 4 and the flange 13 together with said shaft 9 may be pushed rearwardly from normal position relative to the flange 7 in opposition to the spring 12 to cause the driving pins 17 to project through the apertures 18 in the flange 13 and forwardly of the latter.

Referring to the operation of the described driving head, the work, not shown, is positioned at one end against the usual center on the tail stock, not shown, which center may be dead or live as the case may be and the other end of the work thrust against the stud 14 by advancing the tail stock in the usual manner. Under thrust of the work against said stud 14 as pressure is applied to said tail stock the flange 13, or false head, is forced back so that the driving pins 17 project forwardly thereof and gradually enter said other end of the work far enough to hold the work firm and impart rotation thereto. When it is desired to release the work, the tail stock is backed off, under which operation the plunger shaft 9 and flange 13 or false head, are thrust forwardly by the spring 12 toward normal position, the stud 14 forcing the work off the pins 17 as will be clear.

With the described driving head, the described holding and releasing of the work may be accom-

plished without stopping the drive (not shown) of the head stock or slowing the same down.

The foregoing will, it is believed, suffice to impart a clear understanding of my invention without further explanation.

Manifestly, the invention as described, is susceptible of modification without departing from the inventive concept and right is herein reserved to all such modifications falling within the scope of the subjoined claim.

What I claim is:

The combination with the head stock of a lathe, of a live mandrel rotatably mounted in said head stock and having an axial bore extending part-way thereinto, and a work driving head comprising a socket part detachably secured on said mandrel, a plunger shaft endwise slidable in said bore and through said socket part inwardly and outwardly of the same and having a circular radial flange thereon in front of said socket part provided with a circular series of apertures therein and movable by said shaft in correspondence therewith, reactive means in said bore opposing inward movement of said shaft and flange and normally urging said shaft and flange forwardly of said socket part into projected position, a plurality of pointed driving pins extending from said socket part in axial alignment with said apertures in said flange, respectfully, for projection therethrough under inward movement of said shaft and flange and being retracted from said apertures in the projected position of said shaft and flange, a sliding key connection between said flange and said socket part establishing the projected position of said shaft and flange, said flange having a conical axial centering pin extending therefrom.

JABEZ N. INGALSBE.