No. 674,475. Patented May 21, 1901.

A. J. SCHUSTER.

EXPANSION CHUCK FOR LATHES.

(Application filed Dec. 14, 1900.)

(No Model.)

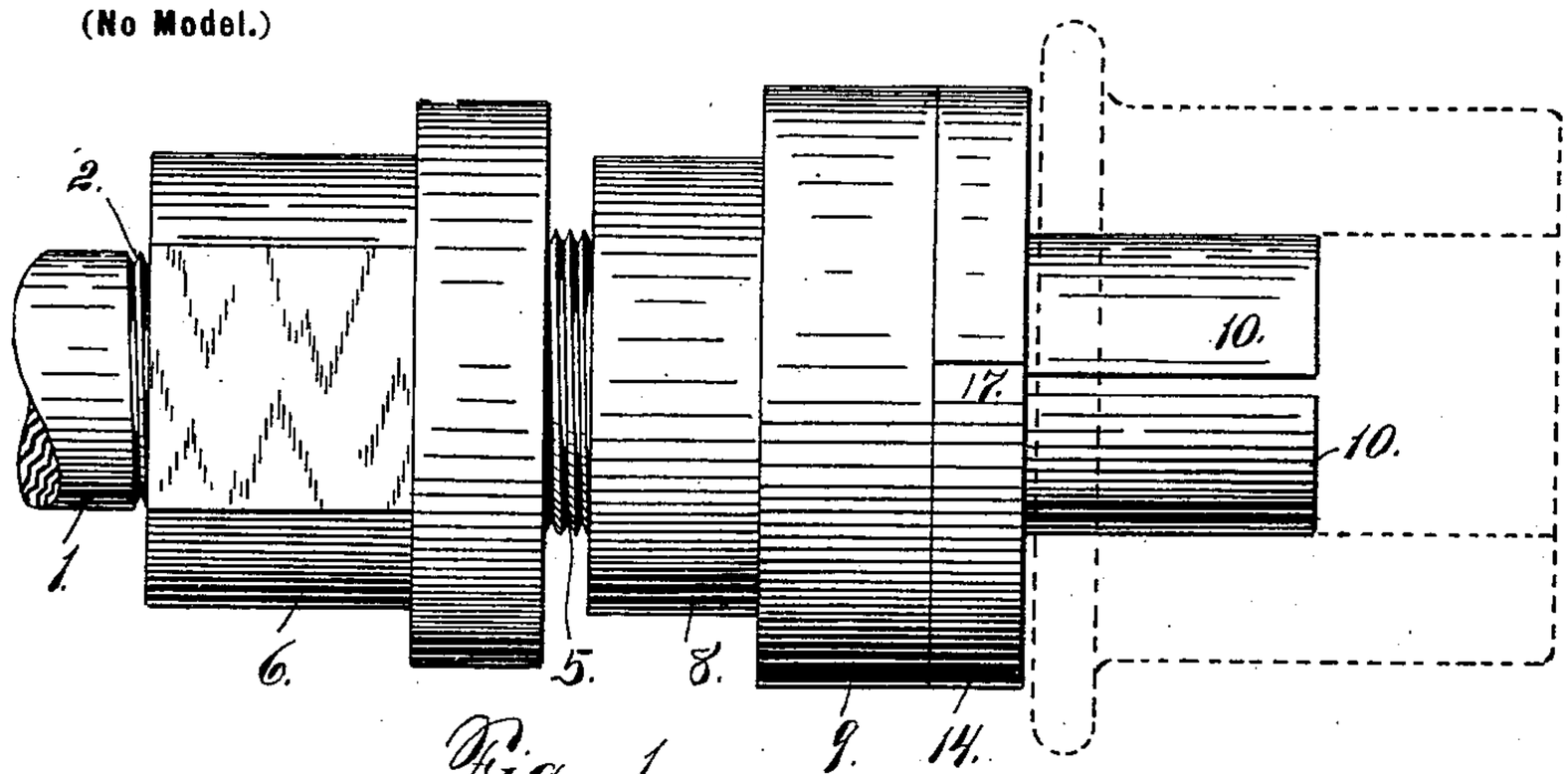

Fig. 1.

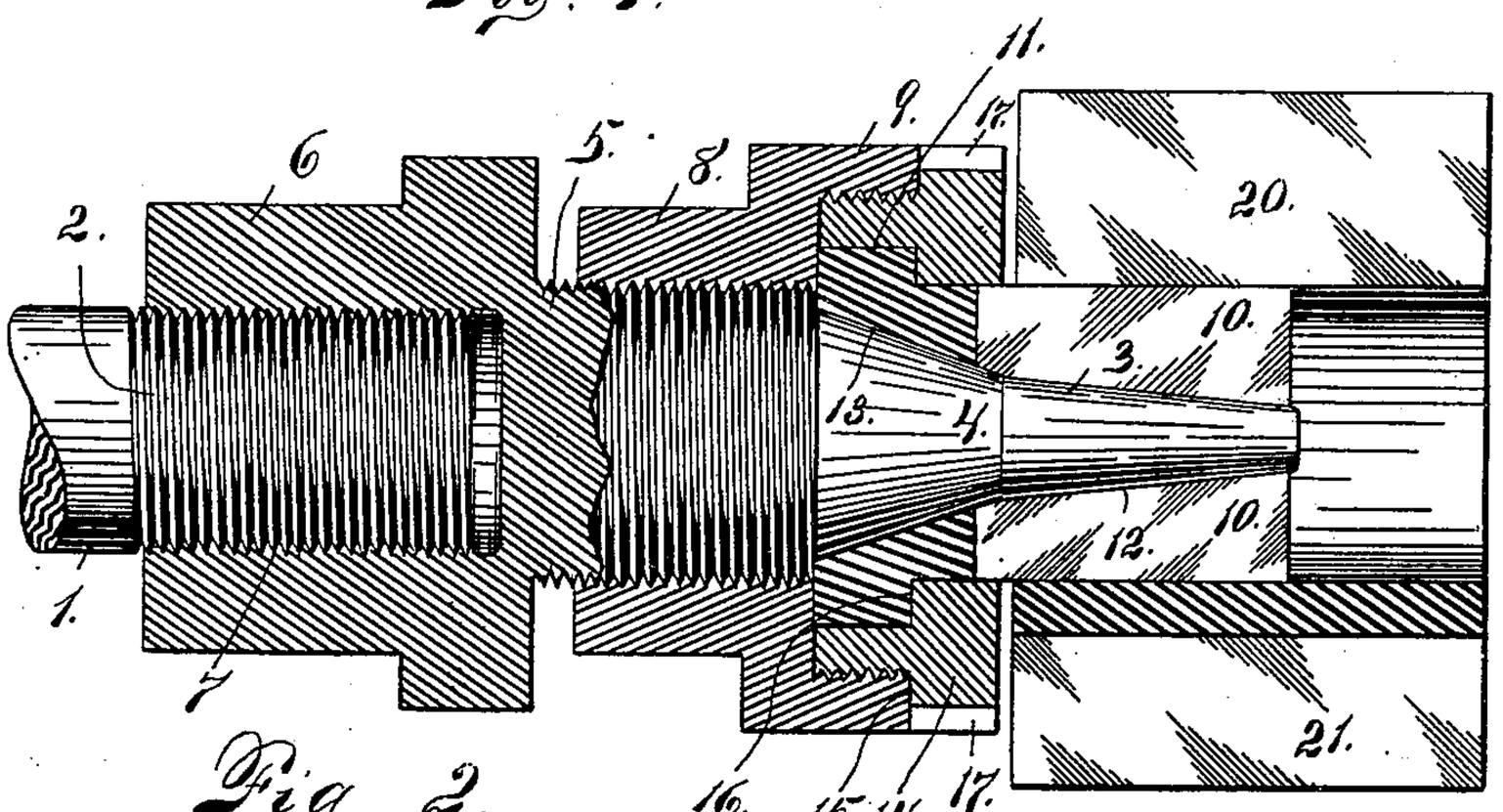

Fig. 2.

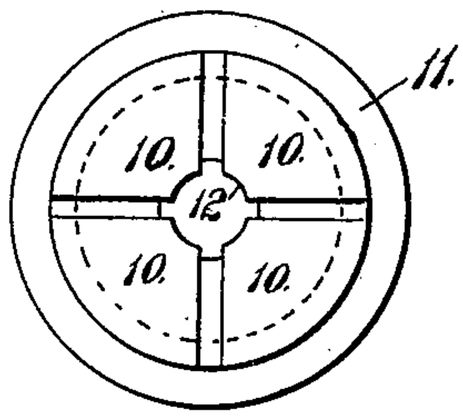

Fig. 3.

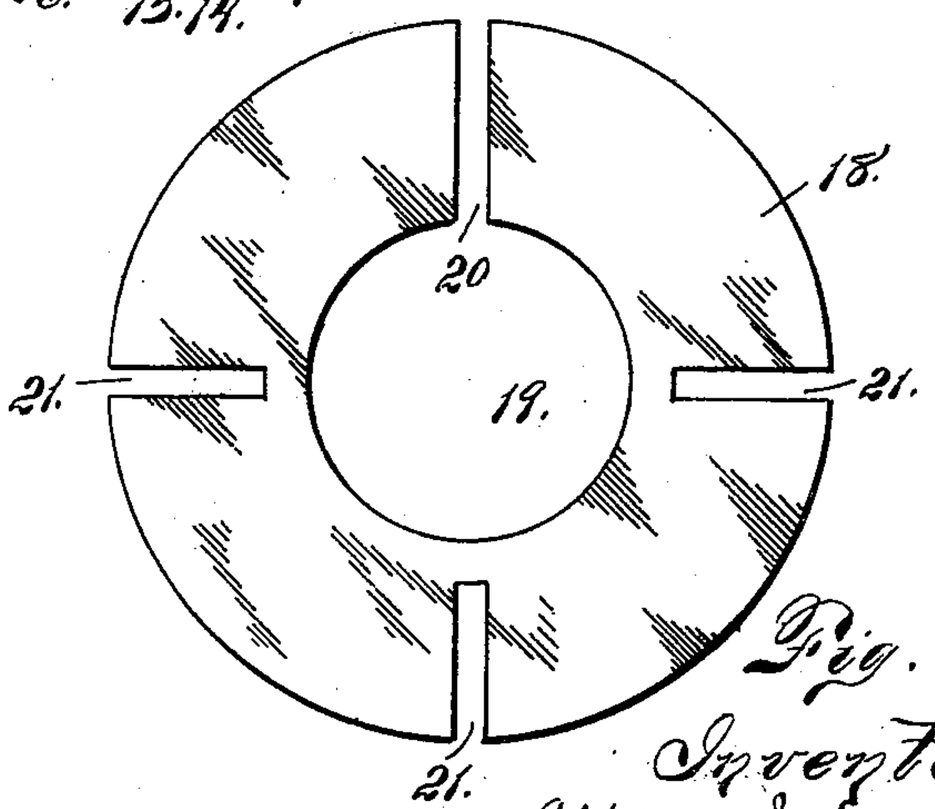

Fig. 4.

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UNITED STATES PATENT OFFICE.

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EXPANSION-CHUCK FOR LATHES.

SPECIFICATION forming part of Letters Patent No. 674,475, dated May 21, 1901.

Application filed December 14, 1900. Serial No. 39,902. (No model.)

To all whom it may concern:

Be it known that I, ALPHONS J. SCHUSTER, a citizen of the United States, residing at Buffalo, in the county of Erie and State of New York, have invented certain new and useful Improvements in Expansion-Chucks for Lathes; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to figures of reference marked thereon, which form a part of this specification.

My invention relates to improvements in expansion-chucks for lathes, its object being to provide a device which avoids a multiplicity of parts and which is both simple in construction and easy of manipulation.

To that end my invention consists of a conical expander in engagement with the lathe-spindle, a follower in screw-threaded adjustable engagement with the expander, a split mandrel with conical socket adapted for operative engagement with the conical expander, and a lock-nut for joint engagement with the follower and the mandrel.

My invention further consists of an auxiliary mandrel to be employed in connection with the above-outlined device, all of which will be more fully hereinafter described and claimed.

In the drawings, Figure 1 is a side elevation of my improved expansion-chuck. Fig. 2 is a central longitudinal section of Fig. 1. Fig. 3 is an end elevation of the mandrel detached, and Fig. 4 is a similar view of the auxiliary mandrel.

Referring to the drawings, 1 is the lathe-spindle, with screw-threaded end 2. The expander is preferably formed of the long end conical portion 3 and the short inner conical portion 4, the portions being of different degrees of taper. Integral with the conical expander 3 4 is the screw-threaded shank 5, of slightly larger diameter than the base of the conical portion 4. Beyond the shank 5 and integral therewith is the hexagonal extension 6, having the central screw-threaded socket 7, adapted for engagement with the lathe-spindle 1.

8 is the follower, interiorly screw-threaded to adapt it for adjustable engagement with the screw-threaded shank 5 of the expander.

9 is an annular shoulder on the follower 8, also provided with an interior screw-thread of larger diameter than the screw-thread of the follower.

The mandrel is preferably composed of the four split sections 10, (see Fig. 3,) of cylindrical configuration, and the inner annular shoulder 11. It is provided with a central socket consisting of the long end conical portion 12 and the short inner conical portion 13, adapted to register with the conical surfaces 3 and 4 of the expander.

14 is the lock-nut adapted for screw-threaded engagement with the shoulder 9 of the follower. It is provided with the outer shoulder 15, which abuts against the follower when in position, and the interior shoulder 16, which has locking engagement with the shoulder 11 on the mandrel, as clearly shown in Fig. 2. Longitudinal grooves 17 are cut in the periphery of the lock-nut 14 to permit of its manipulation with a wrench.

In operation the object to be turned, such as shown in dotted lines in Fig. 1, is slid upon the projecting split end of the mandrel. By manipulating the lock-nut 14 the mandrel may be forced against the conical expander, which spreads the split sections 10 of the mandrel and firmly holds the object to be turned. To release the same, the lock-nut is turned in the opposite direction, thus releasing the internal pressure upon the mandrel and permitting the split sections 10 to spring back to their normal positions.

It will be seen from the foregoing description that the operative parts of my improved chuck are few in number, extremely easy of manipulation, and positive in their action.

In Fig. 4 I have shown an auxiliary mandrel to be employed in connection with the mandrel proper, as illustrated in Fig. 2, where objects of large bore are to be secured to the lathe. It consists of a cylindrical piece of metal 18 with a central bore 19, adapted to fit snugly upon the mandrel proper, 10, before it is expanded. It is cut entirely through in a longitudinal direction, as at 20, and at 21 21 21 are three longitudinal cuts extending

from the outside nearly to the central bore 19. The expansion of the mandrel proper, 10, causes a corresponding expansion of the auxiliary mandrel 18, thus tightly gripping the object placed thereon.

The projecting ends 10 of the split mandrel proper can be provided with a screw-thread, so that the object to be turned can be screwed thereon, the expanding action remaining the same.

I claim—

1. An improved expansion-chuck for lathes consisting essentially of a conical expander in engagement with the lathe-spindle, a follower in screw-threaded engagement with the expander, a split mandrel provided with an annular shoulder and a conical socket adapted for operative engagement with the conical expander, and a lock-nut provided with interior annular shoulder and adapted for screw-threaded engagement with the follower and for longitudinal engagement with the annular shoulder on the split mandrel all combined and operating substantially as and for the purpose stated.

2. An improved expansion-chuck for lathes consisting essentially of a conical expander in engagement with the lathe-spindle, a follower in screw-threaded engagement with the expander, a split mandrel provided with an annular shoulder and a conical socket adapted for operative engagement with the conical expander, a lock-nut provided with interior annular shoulder and adapted for screw-threaded engagement with the follower and for longitudinal engagement with the annular shoulder on the split mandrel, and an auxiliary mandrel for use upon the mandrel proper consisting of a cylinder with central bore and cut entirely through on one side and partially through upon two or more of its other sides all combined and operating substantially as and for the purpose stated.

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

ALPHONS J. SCHUSTER.

Witnesses:

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