

July 22, 1924.

1,502,528

L. REULBACH

EXTENSIBLE TOOL HOLDER

Filed Oct. 15, 1921

2 Sheets-Sheet 1

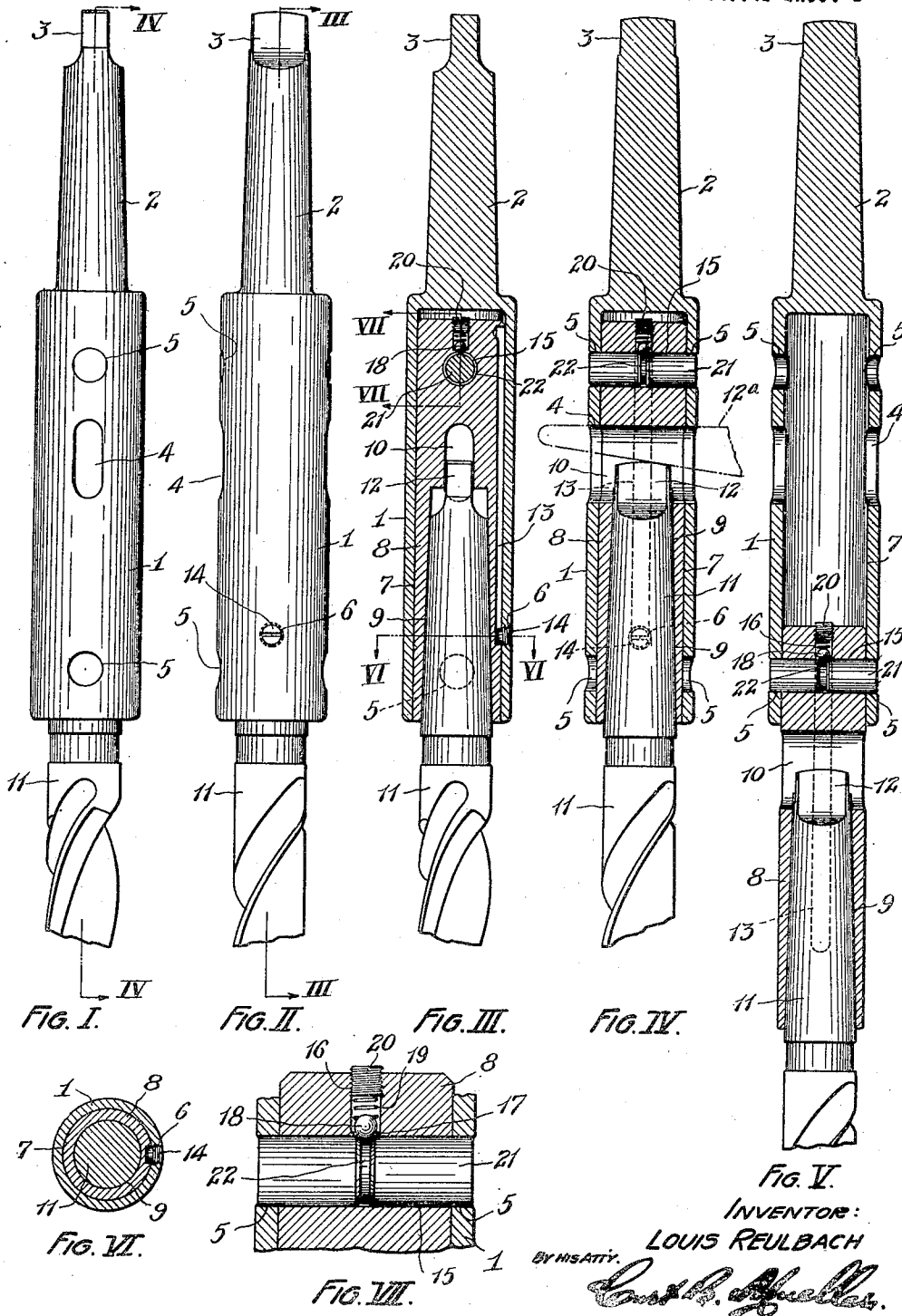


FIG. V.
INVENTOR:
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2 Sheets-Sheet 2

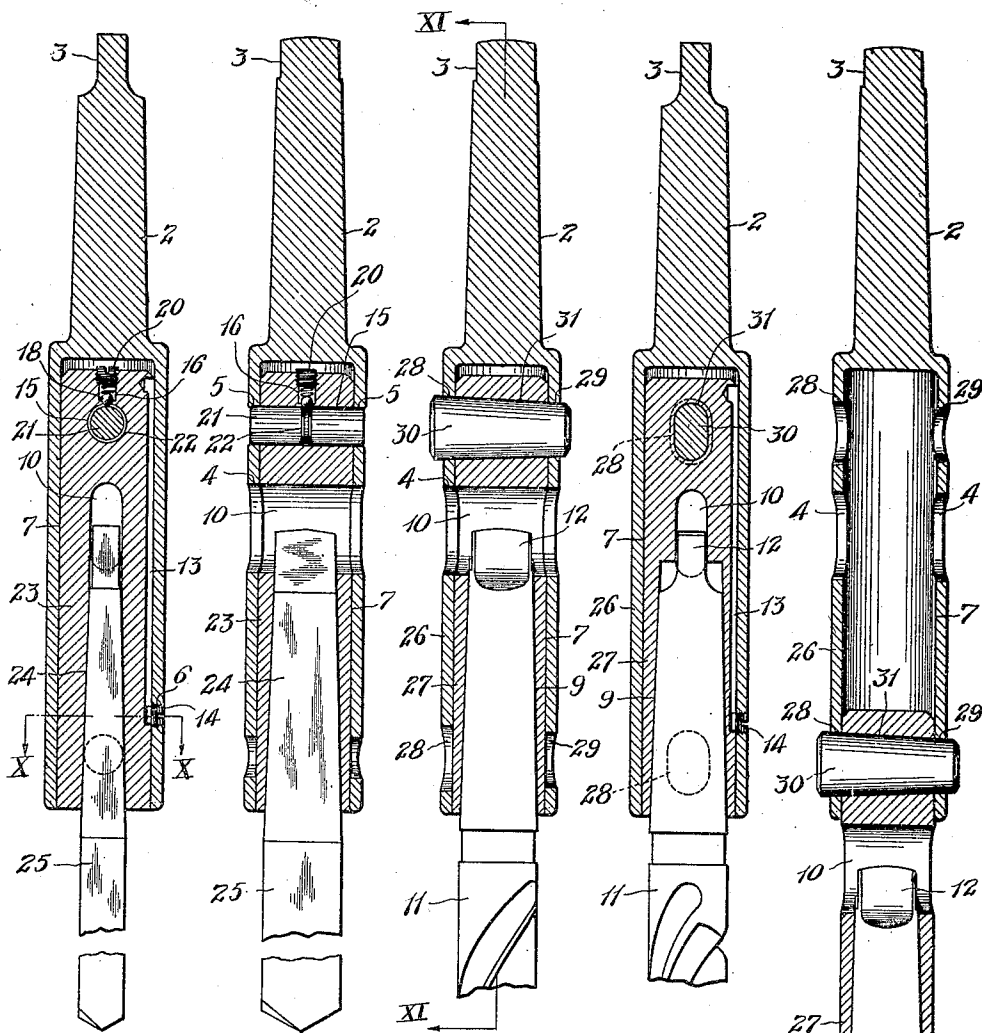


FIG. VIII.

FIG. IX.

FIG. XI.

FIG. XII.

FIG. XIII.

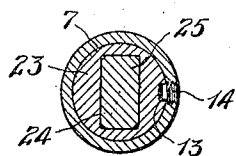


FIG. X.

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BY HIS ATT'Y.
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UNITED STATES PATENT OFFICE.

LOUIS REULBACH, OF CLEVELAND, OHIO.

EXTENSIBLE TOOL HOLDER.

Application filed October 15, 1921. Serial No. 507,918.

To all whom it may concern:

Be it known that I, LOUIS REULBACH, a citizen of the United States, residing at 7012 Hecker Ave., Cleveland, in the State of Ohio, and Cuyahoga County, have invented a new and useful Improvement in Extensible Tool Holders, of which the following is a specification, the principle of the invention being herein explained, and the best mode in which I have contemplated applying that principle so as to distinguish it from other inventions.

My invention relates to an extensible tool holder and more particularly to an appliance of the character declared by the title capable of endwise adjustment.

The drawings illustrate the application of the principle of my invention to what is known as an extension drill socket as distinguished from a shorter sleeve socket. Accordingly, the drawings really illustrate an extensible extension socket.

The range of movement of the stroke of a machine tool is necessarily limited, and while sufficient for many drilling operations sometimes allows for a stroke inadequate to finish a particular job without resetting, that is to say, without shifting or readjusting the initial proximity to each other of the spindle and work table. The object of my invention is to make this last mentioned excessive time consuming procedure unnecessary, by substituting for it the more quickly effected tool advance made possible by my invention.

Adverting to the drawings:

Figure I is a side elevation of an extensible tool holder embodying my invention, a fragment of a drill being shown inserted therein.

Figure II is a view of the parts shown in Figure I as seen from an angle of 90° with respect to the line of view of Figure I.

Figure III is a section of the holder on line III—III of Figure II.

Figure IV is a section of only the holder on line IV—IV of Figure I, and, being also shown in dotted lines, the tip of a conventional drift pin.

Figure V is a view corresponding to Figure IV though showing the drill socket in its extended position.

Figure VI is a cross section on line VI—VI of Figure III.

Figure VII is an enlarged vertical section on line VII—VII of Figure III.

Figures VIII and IX are right-angularly related sectional views of a modification.

Figure X is a section on line X—X of Figure VIII.

Figures XI, XII and XIII are views corresponding to Figures III, IV and V of a second modification.

A hollow extension sleeve 1 is formed with the usual Morse taper shank 2 terminating in a tang 3. The hollowed sleeve 1 is fashioned with the ordinary drift slot 4 and nearer each of its ends with alined circular holes 5, the purpose of which will be hereinafter explained. Near that end of the sleeve 1 which is furthest from the tang 3 I fashion a screw threaded opening 6 clearly shown in Figures III and VI. The bore 7 of the sleeve is of circular cross section and is adapted to accommodate with a telescopic fit a mainly cylindrical socket 8 which is fashioned with a Morse taper bore 9 terminating at its smaller inner end in a lateral drift slot 10 adapted, when the socket 8 occupies the position shown in Figure IV, to register by alining with the drift openings 4. The shank 11 of a drill may be fitted into the bore 9 so that the tang 12 on the drill may engage the flat walls of the drift slot 10 in the usual manner. A drift pin 12^a shown in dotted lines in Figure IV is commonly employed to loosen the shank 11 from the walls of the bore 9.

Extending in an axial direction along the outer side of the socket 8 is a groove 13, which terminates, as clearly appears in Figure III, a short distance from the outer end of the socket 8. A screw threaded pin 14 is fitted into the opening 6 and caused to project into the groove 13 whereby to limit the relative axial movement between the socket 8 and the sleeve 1 and incidentally to lock the same two parts against relative rotatory movement. In order more securely to lock the sleeve 1 and socket 8 against relative turning movement and at the same time fix such parts in a chosen position against axial movement, I provide the inner end of the socket 8 with a radial opening 15 corresponding in size and adapted to register with either alined pair of openings 5 in the sleeve, and employ means including a yielding engagement, which means will now be more particularly described.

The inner end of the socket 8 is fashioned with a central partially threaded opening 16 having constricted communication at 17 with

the opening 15 as is clearly shown in Figure VII. A ball 18 is located in the opening 16 and is enabled slightly to project through the constricted end 17, in which position it is yieldingly held by a spring 19 which latter is in turn held compressed by a screw plug 20. A pin 21 is designed to fit the openings 5 and 15 and at its middle is formed with an annular groove 22 which a portion of the ball 18 may enter thereby preventing the inadvertent dislodgement of the pin 21. As will now be readily understood, the pin 21 may serve to fix the socket 8 within the sleeve 1 in either of the two positions shown in Figures IV and V, a slight finger pressure exerted against either end of the pin 21 being sufficient to cause a sloping side wall of the groove 22 to force the ball 18 back against the action of the spring 19 and permit the pin 21 to be withdrawn.

The modification shown in Figures VIII to X inclusive merely illustrates a socket 23 having a bore 24 including flat walls and adapted to receive a flat shanked drill 25.

The modification shown in Figures XI to XIII inclusive represents a different means for locking the sleeve 26 and socket 27. In this form, the sleeve 26 instead of being provided with equisized holes on opposite sides of its drift slot, is provided near each end with alined holes 28 and 29 of varying size, the holes 28 being somewhat larger than the holes 29 and the defining edges of both being conical rather than cylindrical surfaced suited to the reception of a tapered pin 30 which likewise passes through a conical shaped hole 31 in the inner end of the sleeve 27. The employment of the pin 30 while having the advantage of being more

economical has also the disadvantage of being likely to become loose or even to fall out.

I claim:

1. An extensible tool holder comprising the combination of a pair of members telescopically fitted together so as to be capable of endwise adjustment, the outer one of said members being fashioned with longitudinally spaced pairs of registering cross openings, the inner one of said members being provided with a crosswise extending bore adapted to register with either pair of said cross openings, a part yieldingly carried by said inner member so as normally to project into said bore and a pin selectively insertible through either pair of said cross openings and into said bore, said pin being fashioned with a groove adapted to be engaged by said part when the latter is in its inserted position.

2. An appliance of the character described comprising an extension socket fashioned with a bore and a plurality of pairs of oppositely disposed lateral openings communicating with said bore, another socket telescopically fitted in the bore of the first socket, said last mentioned socket having a solid end fashioned with a hole adapted to register with said pairs of openings, a pin insertible through a pair of said openings and hole whereby simultaneously to lock said sockets against endwise and relative turning movement, said pin being fashioned with a groove and locking means yieldingly insertible in said groove.

Signed by me, this 17th day of September, 1921.

LOUIS REULBACH.