

(No Model.)

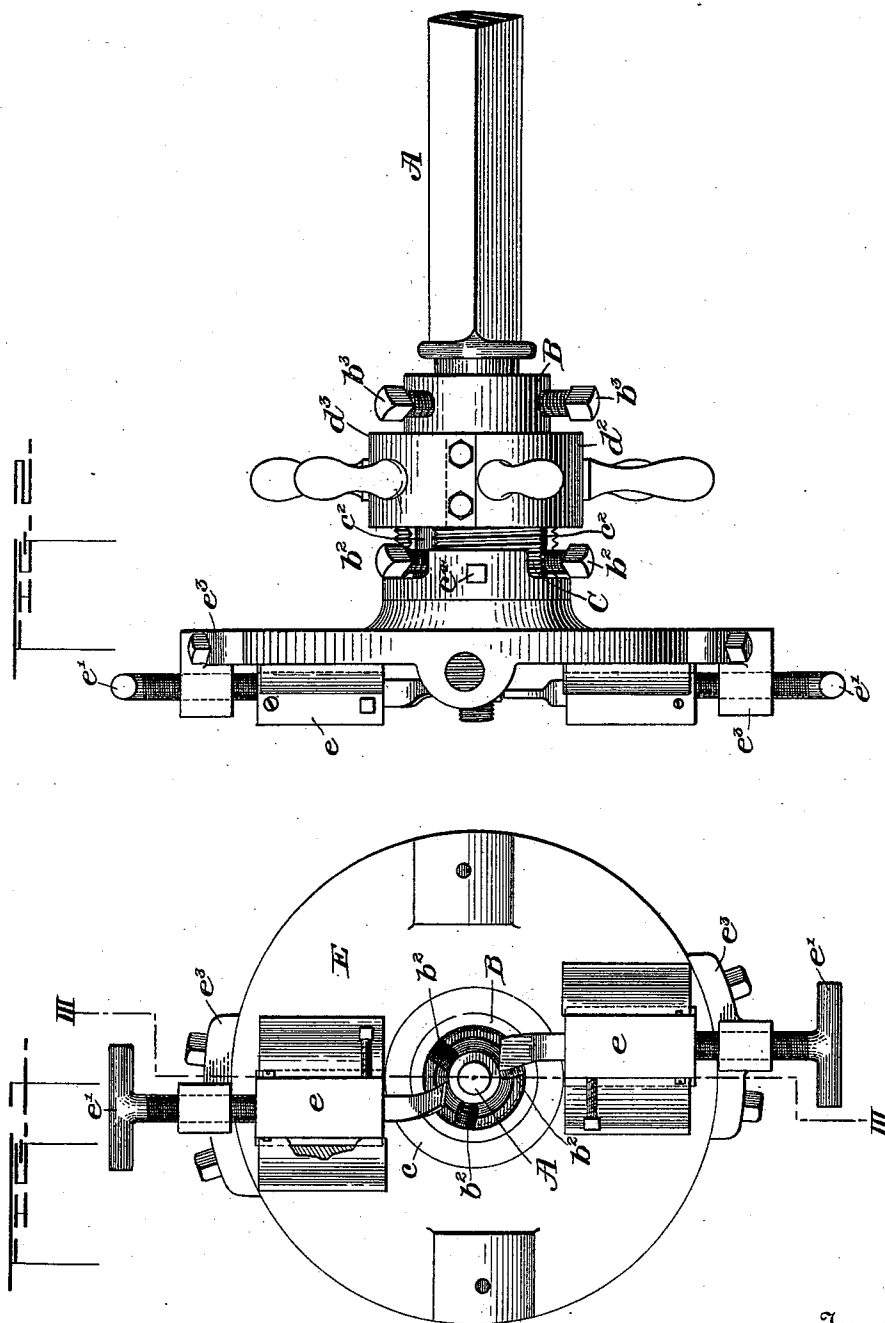
2 Sheets—Sheet 1.

J. A. DONALDSON.

METAL WORKING TOOL FOR TURNING AXLES.

No. 536,609.

Patented Apr. 2, 1895.



Witnesses

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his Attorney.

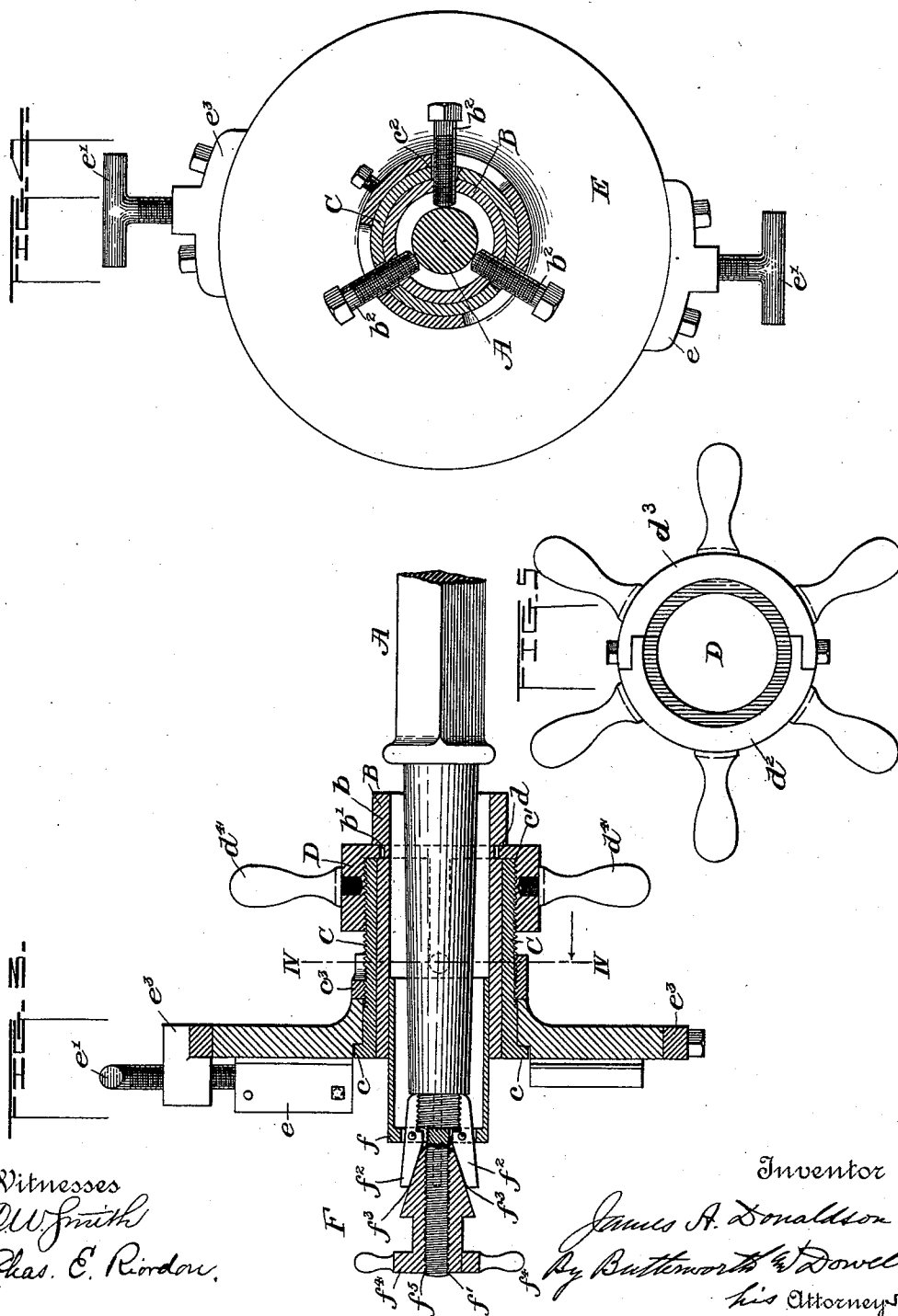
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UNITED STATES PATENT OFFICE.

JAMES A. DONALDSON, OF GREENVILLE, PENNSYLVANIA.

METAL-WORKING TOOL FOR TURNING AXLES.

SPECIFICATION forming part of Letters Patent No. 536,609, dated April 2, 1895.

Application filed May 4, 1894. Serial No. 510,053. (No model.)

To all whom it may concern:

Be it known that I, JAMES A. DONALDSON, a citizen of the United States, residing at Greenville, in the county of Mercer and State of Pennsylvania, have invented certain new and useful Improvements in Metal-Working Tools; 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.

My invention relates to improvements in metal working tools, and particularly to that class of tools used for turning and trimming vehicle axles.

Primarily the object of my invention is to provide a simple, compact and effective device which may be readily applied to the work or material to be operated upon.

A further object of the invention is to provide a simple and effective centering device for properly adjusting the work within the cutter head or plate.

With these objects in view the invention consists in the construction and arrangement of the parts as will be more fully hereinafter set forth and then defined in the claims at the end of the description.

Referring to the accompanying drawings, forming a part of this specification, Figure 1 is a front elevation of the invention. Fig. 2 is a side elevation. Fig. 3 is a vertical sectional view on the line III—III of Fig. 1, with the centering device in position for adjusting the work. Fig. 4 is a vertical section on the line IV—IV of Fig. 3; and Fig. 5 is an elevation of the hand nut.

In the drawings A may designate a vehicle axle in position for having a shoulder turned or cut thereon, though it is obvious that the invention would be equally applicable for cutting pipes, bars and other articles. Surrounding the axle is a hollow casing or tube B having at or near one end thereof an enlarged annular portion or band b preferably formed integrally therewith; the said casing being provided with an annular groove b' on the exterior thereof and adjacent to the band b. Radially arranged and passing through threaded apertures of the casing is a series of screw-threaded bolts b² and b³ preferably located respectively near the fore and rear

part of the casing. These bolts are sufficient in number to adjust and retain the work within the casing B. Slidingly held upon the casing is a sleeve C having an annular shoulder c at one end, and its opposite end provided with an exterior screw-thread c'. This sleeve is provided with slots or slotted apertures c² for the passage of the bolts b², which bolts prevent rotation of the sleeve but allow same to slide or move lengthwise of the casing B. Engaging the screw-threaded end of the sleeve is an interiorly threaded hand nut D, which is rotatably held upon the casing B by means of the shoulder d engaging the annular groove b' of said casing; the said groove and shoulder permitting the nut to rotate but preventing any lengthwise movement of said nut. The nut is preferably composed of two interlocking members d² and d³ securely bolted together, each member being provided with suitable handles d⁴ for turning the nut to move the sleeve C back and forth.

E is a tool-carrying head or plate rotatably held upon the sleeve C between the shoulder c and a collar c³; the said collar having an interior screw-thread engaging the screw-thread of the sleeve and adjustably held thereon by a set-screw c⁴ for the purpose of taking up any lost motion that may occur by the wearing of the cutter head, and to prevent any lengthwise movement of said head.

The plate or head E has arranged upon the face thereof the jaws e arranged to slide in dove-tailed grooves in said plate. These jaws are adapted to hold the different kinds of cutting tools used in such work; the said tools being retained in the jaws by set screws or in any other suitable manner. The adjustment of the jaws e is secured by the hand screws or bolts e'. These screws pass through threaded apertures in the brackets or bosses e³ and engage, with their lower ends, the jaws e in such manner as to rotate in same, but to raise or lower said jaws by the engagement of the threads of the screws with the threaded apertures of the brackets. The brackets or bosses e³ may be secured to or formed integrally with the cutter head or plate, as desired.

To properly center the work within the casing I provide a separate centering device F, as shown in Fig. 3. This device has a cup-

shaped bushing f adapted to snugly fit the bore of the casing B, and an outwardly extending screw-threaded stem or bolt f' preferably formed integrally with said bushing.

- 5 Arranged in the end of the bushing are the centering jaws f^2 , preferably four in number, though more or less may be used if so desired. These jaws are pivotally secured to the bushing and have their inner ends arranged to
10 clamp and adjust the work, while the outer ends have cam faces f^3 adapted to be acted upon by the tapering plug or nut f^4 . The plug f^4 is provided with an internal screw-thread f^5 which engages the screw-thread of
15 the bolt or stem f' ; the said plug being turned by hand or provided with a polygonal surface so that a wrench may be used.

To turn or cut the work, it is first necessary to center the same by the device F, as shown
20 in Fig. 3, by turning the plug f^4 which acts upon the centering jaws f^2 . The work is then secured by the bolts b^2 and b^3 and the proper tool brought in contact with said work by the screw e' operating the jaws e . By revolving
25 the cutter head or plate by hand the tool will cut according to the degree the same is forced into the work. This cutting may be continued by forcing the tool again into the work and revolving the head, or the work may be
30 turned lengthwise by simply turning the nut D, which will cause the sleeve C and head E to move, and by revolving the head E as it moves with the sleeve.

I have shown two cutters arranged on the
35 head, but I may increase this number or simply use one if so desired. Instead of using the cutters I might place a solid die in the jaws and thereby adapt the machine for cutting threads. Some of the parts which are in-
40 tegral with other parts may, in some instances, be made removable. Instead of the plug of the centering device being made with an internal thread the bore of same may be perfectly smooth and adapted to slide upon the
45 stem of the bushing.

Other changes of substantially like character to my invention may be made without departing from the spirit of the invention.

Having thus fully described my invention,
50 what I claim as new, and desire to secure by Letters Patent of the United States, is—

1. A tool of the character described comprising a tubular casing, retaining devices arranged in said casing, a sleeve slidably held
55 upon the casing, a tool carrying head arranged to rotate upon the sleeve, together with means for adjusting the cutter in the head, substantially as described.

2. A cutting tool comprising a tubular casing, retaining bolts arranged in said casing, a sleeve having slots through which said bolts pass, the said sleeve being slidably held upon
60 said casing, a tool carrying head arranged to rotate upon the sleeve, together with means for adjusting the cutters in the head, substantially as described.

3. A tool of the character described com-

prising a tubular casing, retaining devices arranged in said casing, a sleeve having a screw-threaded end arranged to slide upon
70 the casing, a nut engaging the screw-thread of the sleeve and revolvably retained upon said casing to cause the sleeve to move when the nut is revolved, a tool-carrying head arranged to revolve upon the sleeve, and means for ad-
75 justing the cutters in the head, substantially as described.

4. A cutting and turning tool comprising a tubular casing, retaining bolts arranged in said casing, a sleeve having a screw-threaded
80 end and provided with slots through which said bolts pass, the said bolts serving to slidably hold the sleeve upon the casing, a nut engaging the screw-thread of the sleeve and revolvably retained upon the casing to cause
85 the sleeve to move when said nut is revolved, a tool carrying head revolvably held upon said sleeve, and means for adjusting the cutters in the head, substantially as described.

5. A tool of the character described comprising a tubular casing, work-retaining devices arranged in said casing, a sleeve slidably held upon the casing, the said sleeve
90 having a shoulder and an adjustable collar arranged upon the sleeve, a tool-carrying head arranged to revolve upon the sleeve between the shoulder and the adjustable collar, and means for adjusting the cutters in said head, substantially as described.

6. A tool of the character described comprising a tubular casing, work retaining bolts arranged in said casing, a sleeve having a
95 shoulder at one end and provided with slots through which the bolts pass, the said bolts serving to slidably hold the sleeve upon the casing, an adjustable collar arranged upon the sleeve adjacent to the shoulder, and a tool
100 carrying head arranged to revolve upon the sleeve and to be retained between said shoulder and adjustable collar, substantially as described.

7. A tool of the character described comprising a tubular casing, work retaining bolts arranged in said casing, a sliding sleeve embracing the casing and having a shoulder at
105 one end and a screw-thread at its opposite end and provided with slots through which the retaining bolts pass, an adjustable collar arranged upon the sleeve adjacent to the shoulder, a tool carrying head revolvably held
110 upon the sleeve between the shoulder and adjustable collar, and means for adjusting the tools in the head, together with a nut held to revolve upon the casing and engaging the screw-threaded end of the sleeve, whereby
115 same may be moved when the nut is revolved, substantially as described.

8. In a metal working tool, the combination with a tubular casing, of a bushing adapted to fit in said casing, centering jaws pivotally
120 secured in the end of the bushing, and means for operating the jaws in unison, substantially as described.

9. In a metal working tool, the combination

with a tubular casing and work retaining devices located in said casing; of a cup-shaped bushing adapted to fit in the casing, centering jaws pivotally secured to the bushing, a screw-
5 threaded stem on the bushing, together with a tapering screw-threaded plug located on the stem for actuating the centering jaws, substantially as described.

10. A cutting tool comprising a tubular casing, retaining bolts arranged in said casing, a

sleeve slidingly held upon the casing, a tool-carrying head held so as to rotate upon the sleeve, together with means for adjusting the cutter in the head, substantially as described.

In testimony whereof I affix my signature 15
in presence of two witnesses.

JAMES A. DONALDSON.

Witnesses:

CHAS. E. RIORDON,

J. A. E. CRISWELL.