

No. 649,903.

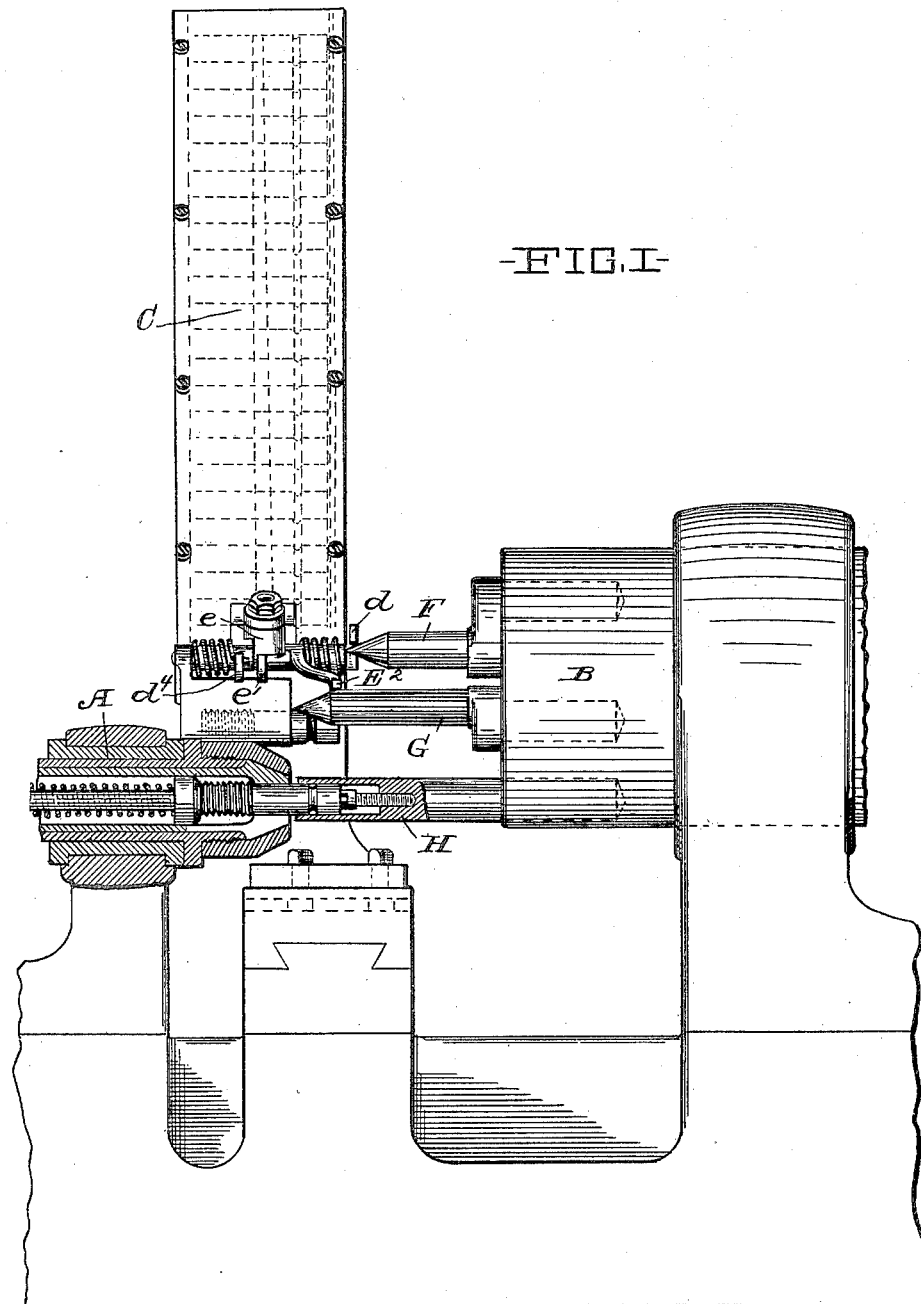
Patented May 22, 1900.

J. P. BROPHY.  
AUTOMATIC LATHE ATTACHMENT.

(Application filed July 17, 1899.)

(No Model.)

4 Sheets—Sheet 1.



Witnesses,  
J. C. Turner  
A. E. Merkel

Inventor  
By J. P. Brophy  
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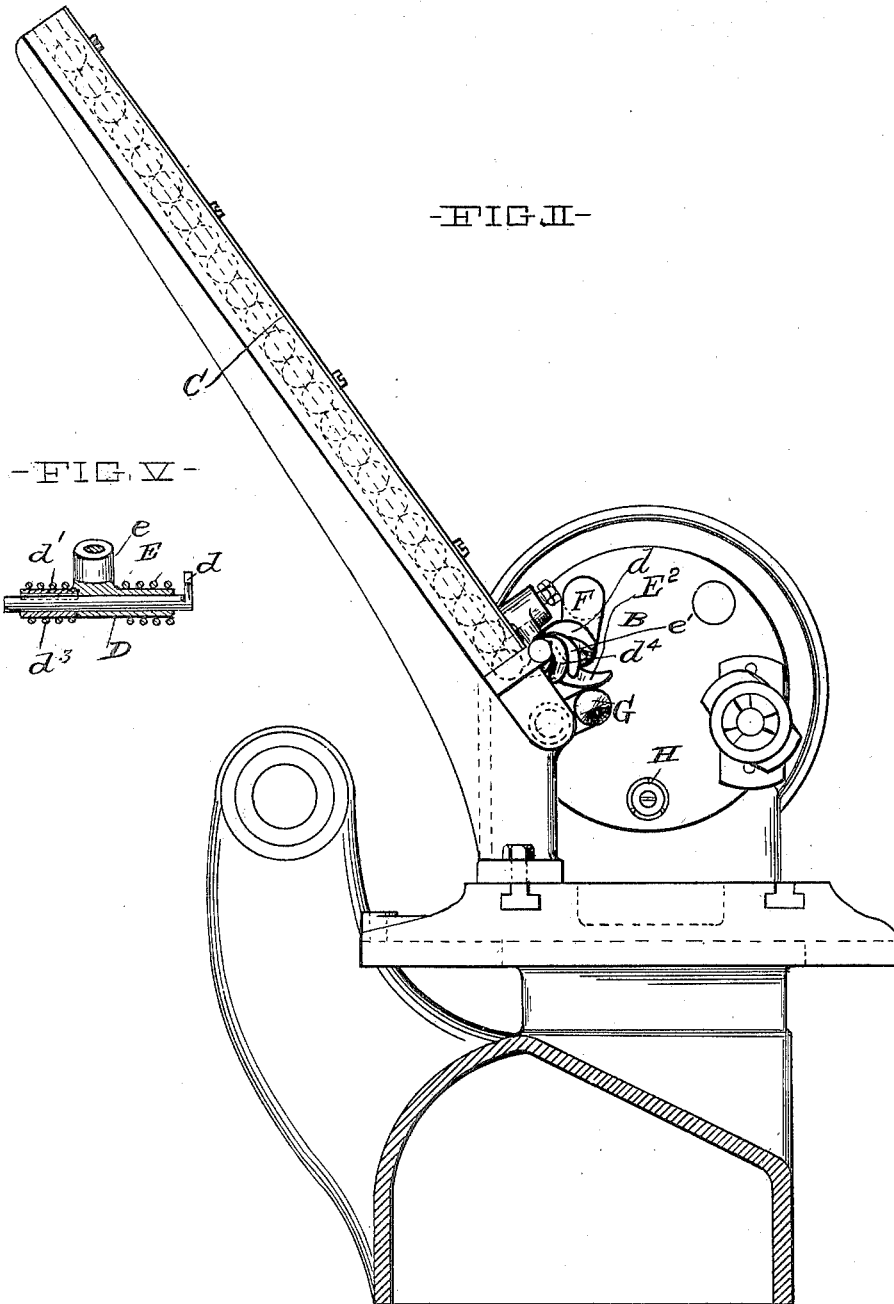
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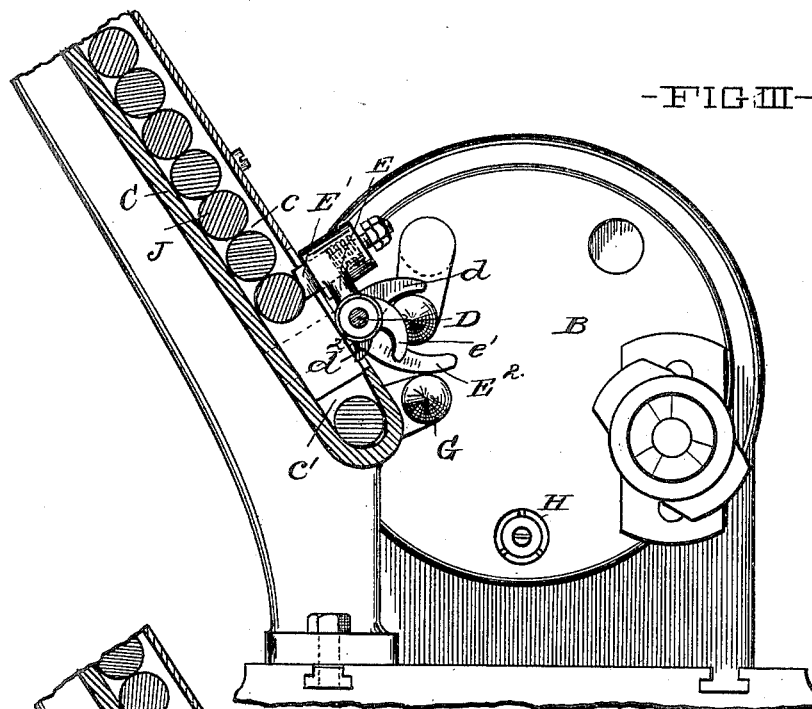
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-FIG. III-

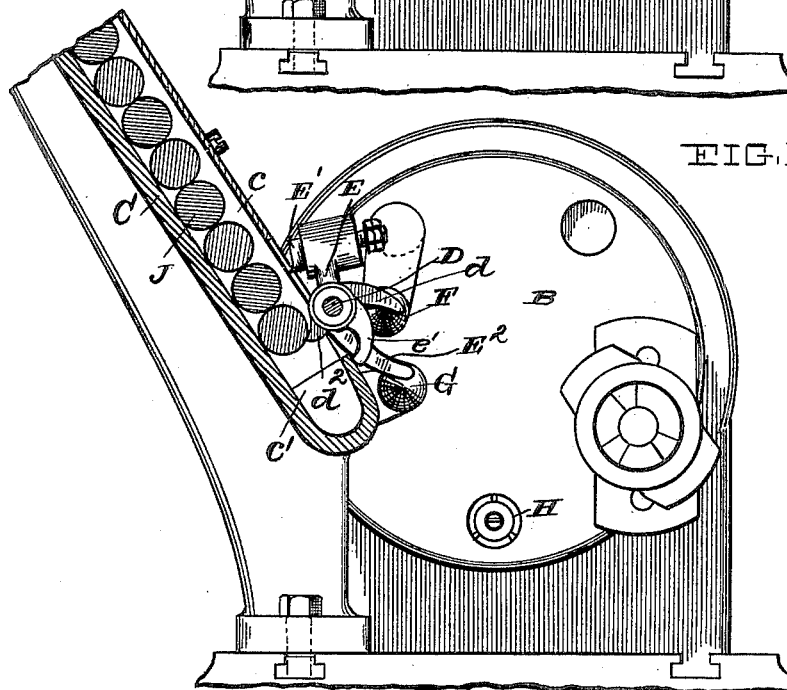


FIG. IV-

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4 Sheets—Sheet 4.

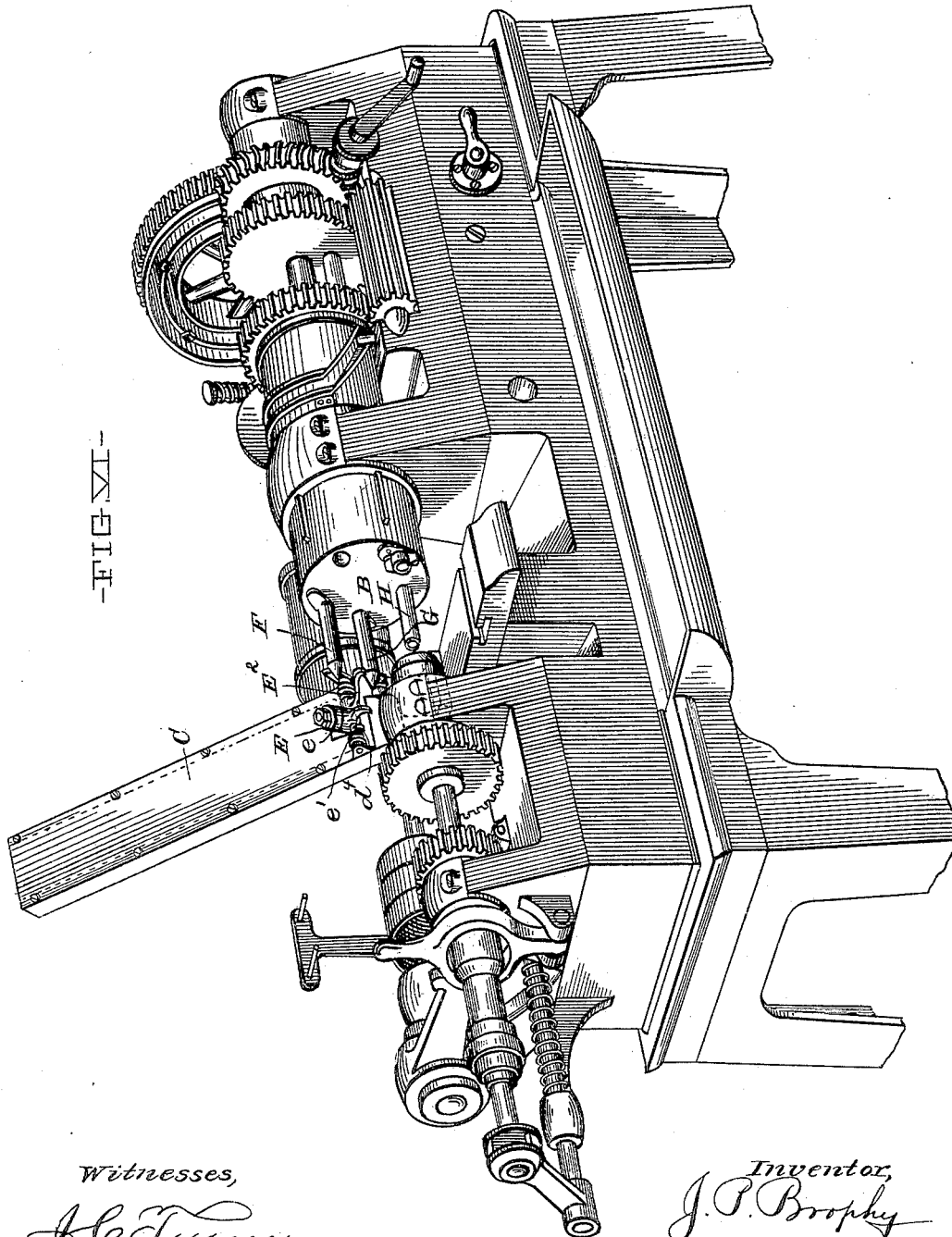


FIG. VI.

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By *J. D. Fay* Atty.

# UNITED STATES PATENT OFFICE.

JOHN P. BROPHY, OF CLEVELAND, OHIO, ASSIGNOR TO THE CLEVELAND MACHINE SCREW COMPANY, OF SAME PLACE.

## AUTOMATIC LATHE ATTACHMENT.

SPECIFICATION forming part of Letters Patent No. 649,903, dated May 22, 1900.

Applicator filed July 17, 1899. Serial No. 724,090. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN P. BROPHY, a citizen of the United States, and a resident of Cleveland, county of Cuyahoga, and State of Ohio, have invented a new and useful Improvement in Automatic Lathe Attachments, 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 attachments for automatic lathes for performing special operations upon the work, and particularly to a magazine attachment whereby a column of blanks may be held and blanks transferred therefrom to the head-stock of the lathe, where the operations are performed by the several tools on the turret.

Said invention consists of means hereinafter fully described.

The annexed drawings and the following description set forth in detail certain mechanism embodying the invention, such disclosed means constituting but one of various mechanical forms in which the principle of the invention may be used.

In said annexed drawings, Figure I represents a front elevation of a portion of an automatic lathe, showing a turret having a reciprocal movement in the direction of its axis, a vertical section of the head-stock and gripping means, the magazine attachment as particularly adapted to the manipulation of blanks of cylindrical form, and a section of the end of the transferring-holder; Fig. II, a vertical transverse section of the lathe-frame, showing a right-hand end elevation of the turret and the magazine attachment. Figs. III and IV represent two enlarged end elevations of the turret and the magazine attachment in vertical transverse section, showing the tripping mechanism in elevation and in different positions. Fig. V represents a detail view, and Fig. VI represents a perspective view, of a lathe embodying my invention.

The head-stock A of the lathe is provided with suitable blank-gripping mechanism, and the turret B is given a rotary movement and a reciprocating movement by any of the known combinations of mechanisms which are used

in machines of this character, the movements being timed as hereinafter described.

Upon the cross-slide of the machine is bolted a magazine C, provided with an inclosed and inclined blank-race c, Figs. III and IV, the drawings illustrating a race adapted to receive and hold blanks of cylindrical form. The lower portion of the race extends to a point opposite the turret in the line of reciprocal travel thereof. On the side adjacent to the turret is provided an aperture c', through which a blank lying in the bottom of the race may be withdrawn toward the turret. The width of the race at this lower point is considerably reduced, Fig. I, so that the end of each blank may project some distance laterally from the race, as shown.

A rock-shaft D is journaled in suitable bearings fixed relatively to the magazine and has secured at one end an arm d, Figs. IV and V, and upon the opposite end a sleeve d', on which is attached or formed a lug d<sup>2</sup>, which is caused to normally project into the blank-race, as shown in Fig. IV, by means of a spring d<sup>3</sup>, suitably attached, a stop-lug d<sup>4</sup> being secured to or formed on said sleeve to limit the action of said spring. Intermediately of the arm d and the sleeve d' and upon the shaft D is journaled a sleeve E, upon which is formed or secured an upwardly-extending arm e, having a transverse bore, in which is seated a spring-pressed bolt E', whose inner end projects normally to a point in the vicinity of the path of the blanks in the race, as shown in Fig. IV. A suitable spring is provided and attached so as to cause said arm to normally assume such position, and a stop e' is provided to limit the throw of such spring by engaging a stationary portion of the magazine, as is shown in Fig. II. Attached to or formed on said sleeve E is a lever E<sup>2</sup>, Figs. III and IV, which on being lifted will cause the plunger E' to project into the blank-race when the latter is empty.

Secured by suitable means in the face of the turret are two wedges F and G, respectively located with reference to each other, so that on the advance stroke of the reciprocating movement of the turret the arm d and lever E<sup>2</sup> will lie in the respective paths of said wedges, whereby the said arm and lever

may be engaged by them in a manner hereinafter described.

A blank-holder H, consisting of a cylindrical split tube secured at one end to the turret, is adapted to receive and hold a blank and constructed so as to permit the end of the blank to project, as shown in Fig. I. Said holder is located with reference to said wedges in a position hereinafter described.

The device operates as follows: A column of blanks J is placed in the race of the magazine, the lowermost blank resting upon the lug  $d^2$ , Fig. IV, whereby the column is secured and supported, the spring which actuates the sleeve  $d'$  being strong enough for this purpose. The turret now having the advance stroke of its reciprocating movement imparted to it, the wedges are also advanced, the lengths of the wedges being such that wedge G will first engage and lift arm  $E^2$ , as shown in Fig. I, and cause the plunger  $E'$  to be pressed against and hold the blank next above the lowermost blank, as shown in dotted lines in Fig. II, the end of the plunger being somewhat concave in formation, so as to more securely hold such blank. Said blank having been thus secured and the advance of the turret continuing, wedge F thereupon engages the arm  $d$ , lifting same, retracting the lug  $d^2$  from beneath the lowermost blank, thereby releasing the latter and permitting it to drop into the lower portion of the race, as shown in Fig. III, its end projecting toward the turret and free, as shown in Fig. I. The turret now returning, the reverse of the above-described operation of the tripping mechanism takes place—that is, on the retraction of wedge F lug  $d^2$  resumes its normal position, following which the plunger  $E'$  is withdrawn, resuming its normal position, and thereby releasing the then lowermost blank and permitting the column to drop upon and be supported by the lug  $d^2$ , as before. The lathe mechanism is so arranged that the turret is next caused to revolve so as to bring the blank-holder opposite the blank lying in the bottom of the magazine, the turret and holder advanced, and the free end of the blank inserted and held in said holder. The turret and holder are then retracted, the turret revolved and reciprocated, one of such intermittent revolving and reciprocating movements bringing the holder opposite the head-stock and inserting the blank in the gripping mechanism thereof, as shown in Fig. I. The blank being firmly gripped is then released from the holder by the retraction of the turret and caused to rotate,

during which rotation other operations by other tools in the turret may be performed thereon.

The cross-slide may be operated to advance and retract at the proper times by mechanism commonly used in automatic lathes, so as to bring the magazine into the proper position for the engagement of the wedges and the blank-holder, whereby said magazine may be removed from the path of other tools which it may be necessary to use in different operations, all of which is readily understood by those skilled in the art.

Other modes of applying the principle of my invention may be employed instead of the one explained, change being made as regards the mechanism herein disclosed, provided the means covered by either of the following claims be employed.

I therefore particularly point out and distinctly claim as my invention—

1. In an automatic lathe, the combination of a rotatable head-stock provided with blank-gripping means, a magazine for holding a column of blanks, an intermittently rotatable and reciprocable turret, said magazine provided with means for securing a blank in the magazine and means for supporting the column, and said turret provided with means for successively actuating said securing means to secure such blank and said supporting means to release, whereby a blank may be released, said turret provided with a blank-holder, and said magazine reciprocable in a direction transverse with respect to the reciprocating movement of the turret and located in one reciprocatory path of said holder, said gripping means located in another such path, whereby such released blank may be transferred from said turret to said gripping means, substantially as set forth.

2. In an automatic lathe, the combination with a rotatable and intermittently-reciprocable turret of an upwardly-extending magazine for holding a column of blanks, the lower portion of said magazine provided with two oscillating means, one of said means normally projecting into the blank-race of said magazine and the other normally located without said race, said turret provided with two wedges of different lengths for engaging said means whereby the latter may be actuated successively, substantially as set forth.

Signed by me this 5th day of July, 1899.

J. P. BROPHY.

Attest:

D. T. DAVIES,  
A. E. MERKEL.