

No. 701,424.

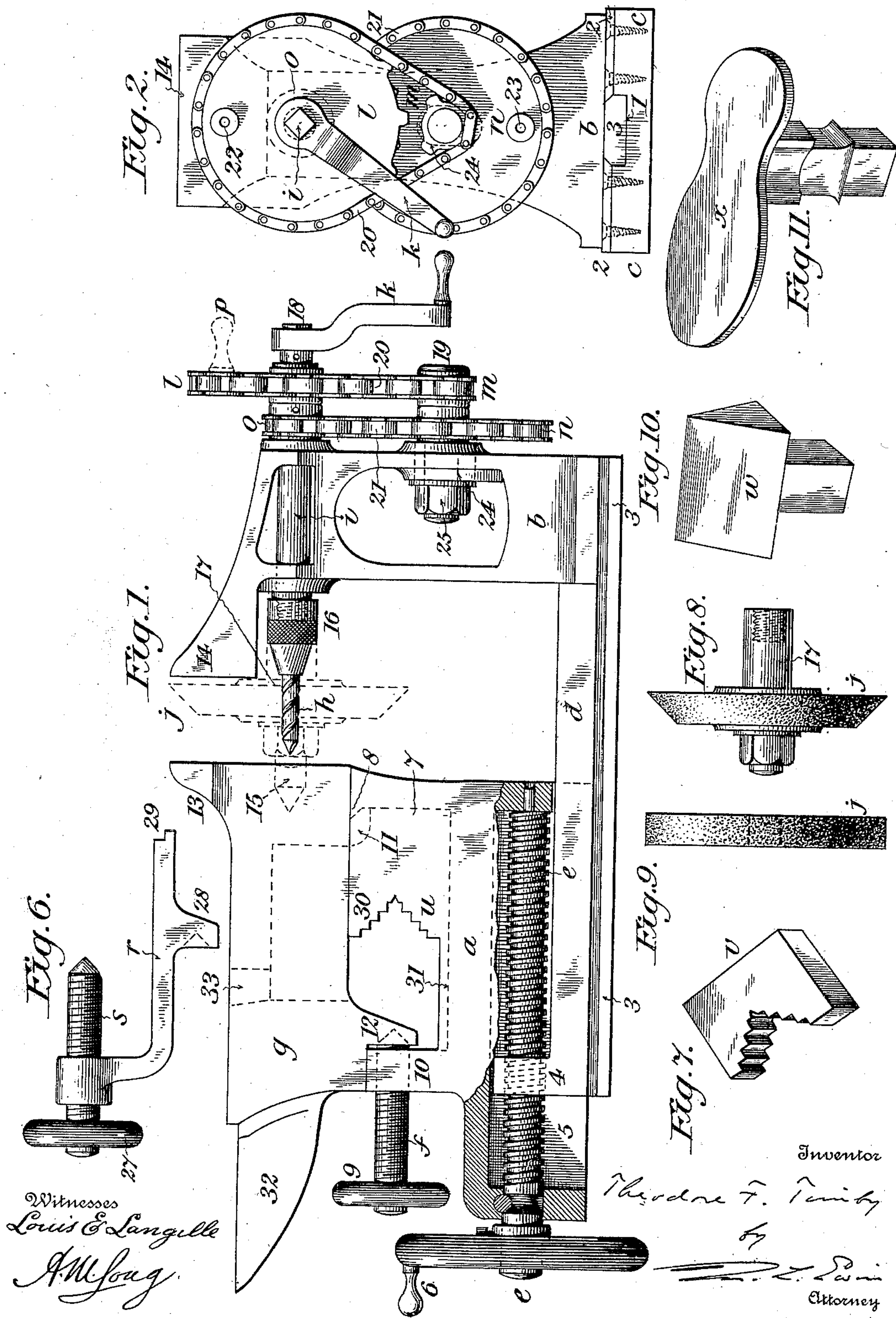
Patented June 3, 1902.

T. F. TIMBY.  
CONVERTIBLE MACHINE TOOL.

(Application filed Aug. 28, 1901.)

(No Model.)

2 Sheets—Sheet 1.



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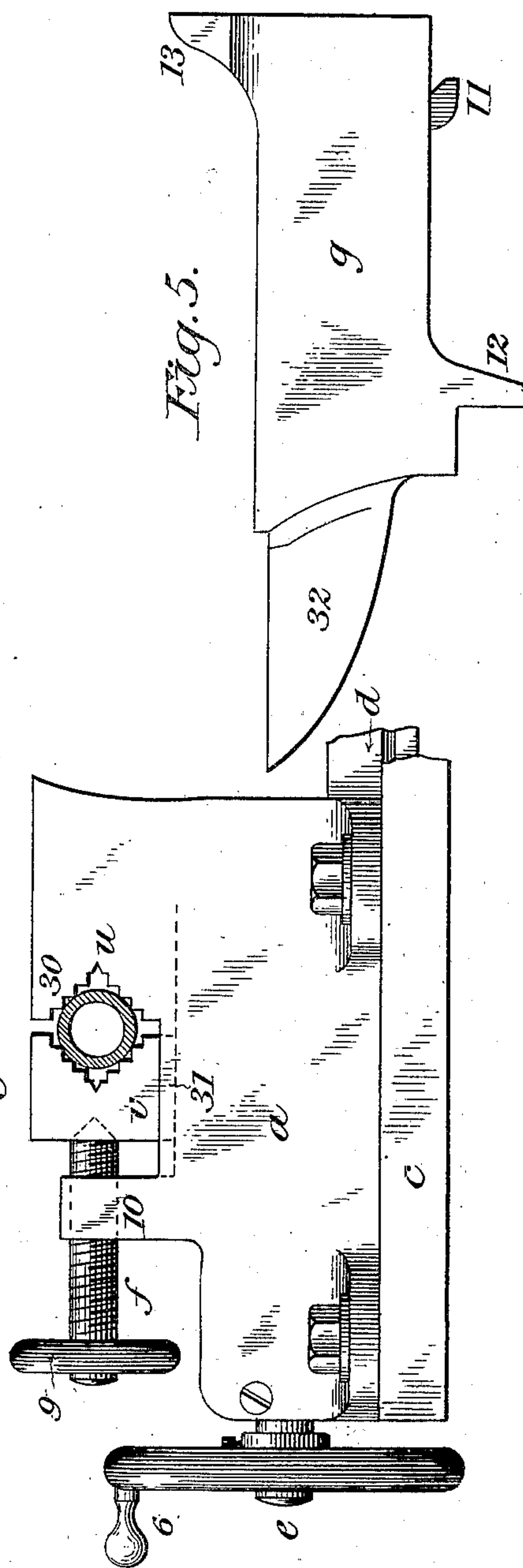
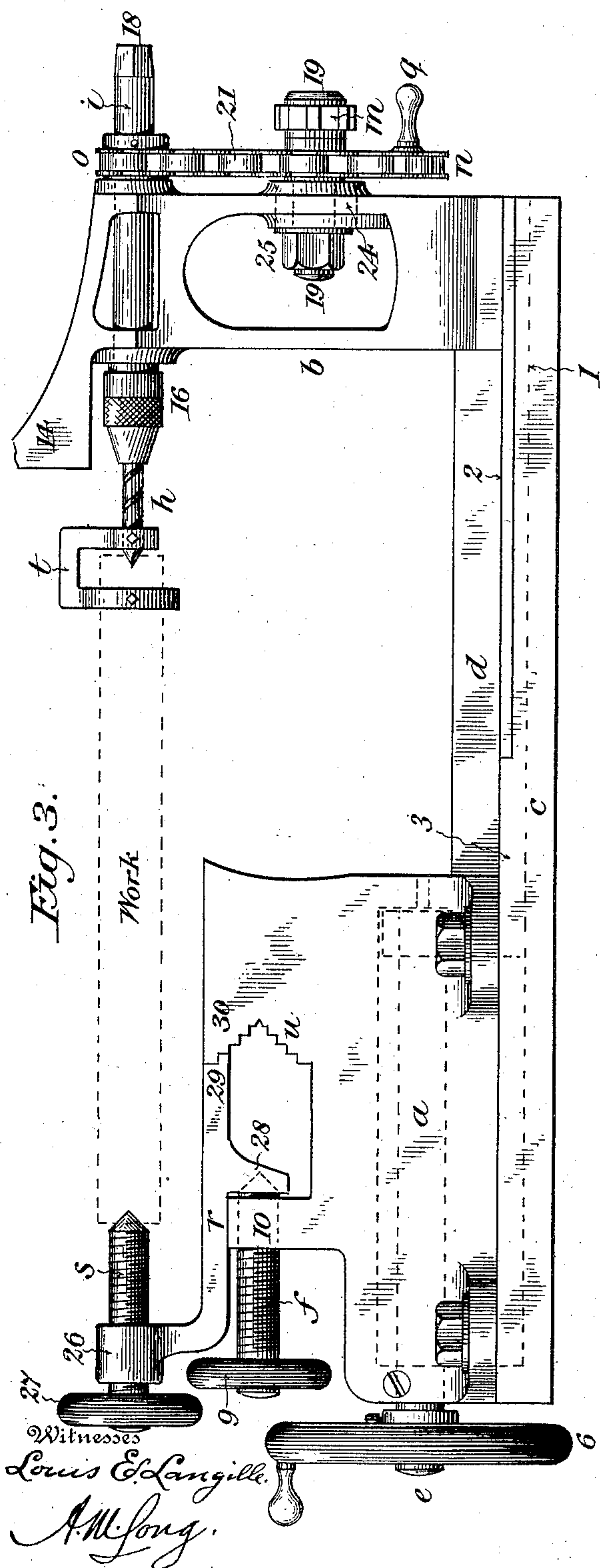
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2 Sheets—Sheet 2.



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# UNITED STATES PATENT OFFICE.

THEODORE F. TIMBY, OF ALPENA, MICHIGAN.

## CONVERTIBLE MACHINE-TOOL.

SPECIFICATION forming part of Letters Patent No. 701,424, dated June 3, 1902.

Application filed August 28, 1901. Serial No. 73,598. (No model.)

*To all whom it may concern:*

Be it known that I, THEODORE F. TIMBY, a citizen of the United States of America, and a resident of Alpena, in the State of Michigan, have invented a new and useful Improvement in Convertible Machine-Tools, of which the following is a specification.

This invention relates to those convertible metal-working "machine-tools" the basis of which is a convertible anvil or combined anvil and vise; and the object of the present improvement is to provide a simple and convenient convertible machine-tool having an increased range of usefulness as compared with other machine-tools of its class, the same being designed for general use among mechanics, farmers, lumbermen, miners, &c.

The invention consists in certain novel combinations of parts, hereinafter set forth and claimed, adapting the machine-tool to serve as a drill, a grinder or polisher, a small hand-lathe, or a pipe and rod vise, as well as for anvil-work and ordinary visework.

Two sheets of drawings accompany this specification as part thereof.

Figure 1 is a side view of the improved convertible machine-tool, partly in section, with base omitted, organized as a drill or grinder. Fig. 2 is an end elevation projected from Fig. 1 with the base added. Fig. 3 is a side elevation of the improved tool organized as a small lathe. Fig. 4 represents a like view of the same organized as a pipe-vise. Fig. 5 is a side view of the anvil-top detached. Fig. 6 is a like view of the lathe back-center detached. Fig. 7 is a perspective view of the movable pipe and rod vise-jaw detached. Figs. 8 and 9 are side views of grinding-wheels detached. Fig. 10 is a perspective view of a "hardy" detached, and Fig. 11 is a perspective view of an iron shoe-last detached.

Like letters and numbers refer to like parts in all the figures.

The main parts *a* and *b* of the improved convertible machine-tool are recessed steel castings mounted upon the respective ends of a horizontal wooden base *c*, to which the part *a*, hereinafter termed the "anvil-base," is fixedly bolted. The part *b*, hereinafter termed the "movable main jaw," is slidable upon the base *c*, which is grooved longitudinally and provided with metallic top plates,

as shown, respectively, at 1 and 2 in Fig. 2, to coact with a guide-rib 3, projecting downward beneath said movable main jaw and extending lengthwise beneath a connecting-bar *d*, which terminates in a nut projection 4 within a stop-chamber 5 in the anvil-base *a*. A feed-screw *e*, extending lengthwise of said stop-chamber 5 through said nut projection 4 and swiveled within the outer end of the anvil-base, completes the connection between said main parts *a* and *b*, and a crank-wheel 6 on the outer end of said feed-screw provides for sliding the movable main jaw *b* back and forth at will.

The upper part of the anvil-base *a* is constructed with an open-topped chamber 7, overhung at its inner end by a ledge 8, Fig. 1, and penetrated at its outer end by a screw *f*, having a hand-wheel 9 fast on its outer end and coacting with a fixed nut 10, forming part of the rear wall of the anvil-base. To the top of the anvil-base so chambered and furnished an anvil-top *g*, Fig. 5, is detachably fitted, being held in place by a foot-lug 11, interlocking with said ledge 8, as in Fig. 1, and by the conical point of said screw *f*, to coact with which the anvil-top has at bottom a lug 12, and the opposing face of said lug is countersunk to receive the end of the screw, as in dotted lines in Fig. 1. The upper extremity of the anvil-top *g* at its inner end and the upper end of the main movable jaw *b* are in common so shaped as to form a pair of vise-jaws 13 and 14. In the face of the jaw 13 or beneath the same a chamber 15, Fig. 1, is formed in the anvil-top *g* to admit the point of a drill-bit *h*, Fig. 1, and beneath the overhanging vise-jaw 14 the screw-threaded end of a rotatable horizontal shaft *i* protrudes, so as to conveniently carry such drill or any like bit by means of a screw-chuck 16. A grinding-wheel chuck 17, Figs. 1 and 8, is interchangeable with said bit-chuck 16 and may carry an emery-wheel *j*, Fig. 8 or Fig. 9, of any required shape. For driving said shaft *i* at the required low speed for drilling its rear end 18 is squared and provided with a detachable hand-crank *k*, Figs. 1 and 2. To provide at the same time for driving said shaft at the relatively high speed required for grinding or polishing a large sprocket-wheel *l* is loose thereon. A small sprocket-



wheel *m* is loose on a subjacent stud-shaft 19. A chain 20 connects said wheels. A large sprocket-wheel *n* is carried by the hub of said wheel *m*. A small sprocket-wheel *o* is fast on the shaft *i*, and a sprocket-chain 21 connects said wheels *n* and *o*. The large sprocket-wheels *l* and *n* are provided, respectively, with screw-sockets 22 and 23, Fig. 2, for the attachment at will of a crank handle or handles *p q*, Figs. 1 and 3. When the handle *k* is detached and a crank-handle is screwed into the socket 22 in the wheel *l*, as at *p* in Fig. 1, motion is transmitted from such crank-handle through the whole of such sprocket-gearing, and its speed is thus multiplied, so that the speed at the shaft *i* and grinding-wheel *j* may be as high as may be required. A vertical slot 24 in that wall of the main movable jaw *b* which supports the stud-shaft 19 serves, in connection with the screw-nut fastening 25 of the latter, for adjusting the stud-shaft to tighten or loosen both sprocket-chains. When they are loosened, the wheel *l* and therewith the chain 20 may be removed, together with the hand-crank *k*, and a crank-handle may be used in the socket 23 of the wheel *n*, as at *q* in Fig. 3, for an intermediate speed. This speed may be used for some grinding and milling operations, but is specially designed for use when the tool is converted into a small lathe, as in Fig. 3.

To effect the lathe conversion, the anvil-top *g* is loosened by turning back the screw *f* and removed from the anvil-base *a*, and a back-center attachment, Fig. 6, is substituted therefor, such attachment being composed of a frame-piece *r*, Figs. 3 and 6, and a horizontal tail-spindle *s*, screwed through a fixed nut 26 on the frame-piece and operated by means of a hand-wheel 27, said frame-piece *r* having a countersunk projection 28 at bottom to coact with said screw *f* and a rabbeted front end 29 to interlock with opposing undercut edges 30, forming part of the sides of the anvil-base *a*. The drill-bit *h* may serve as the center of the live-spindle, as in Fig. 3, or a spindle-center may be substituted therefor in the bit-clutch 16, a suitable device *t*, Fig. 3, connecting therewith the work in customary manner. Said undercut edges 30 of the anvil-base *a* are preferably and conveniently parts of the fixed jaw *u*, Figs. 1, 3, and 4, of a pipe and rod vise, Fig. 4, which is completed by substituting a detachable movable jaw *v*, Fig. 7, for the detached anvil-top, Fig. 5, or back-center attachment, Fig. 6. The opposing faces of the two jaws are of the customary stepped form, adapting them to hold pipes and rods of widely-differing sizes. The back of the movable jaw *v* is countersunk to receive the conical point of the screw *f*, and a depressed horizontal surface 31 within the

anvil-base *a*, adapted to be kept well lubricated, guides the same. A pipe or rod may thus be quickly clamped or released by means of the screw *f* without manipulating the movable main jaw *b* by means of the feed-screw *e*.

The anvil-top *g* in addition to the customary horn 32 is provided with a hardy-hole 33, Fig. 1, to which a hardy *w*, Fig. 10, is fitted, and also, preferably, a metallic shoe-last *x*, Fig. 11, interchangeable with said hardy. Other like substitutions and modifications will suggest themselves to those skilled in the art.

Having thus described said improvement, I claim as my invention and desire to patent under this specification—

1. A convertible machine-tool comprising an anvil-base adapted to support alternatively, a detachable anvil-top having at its inner end a chamber to admit the point of a drill-bit or a back-center attachment for lathe-work, a movable main jaw, a horizontal shaft mounted in said movable jaw and constructed and arranged to carry interchangeable bit and grinding-wheel chucks or to form a lathe-spindle, and connections between said anvil-base and movable jaw including a horizontal feed-screw.

2. A convertible machine-tool comprising a chambered anvil-base having an open-topped chamber overhung at its inner end by a ledge and constructed and arranged to support, alternatively, a detachable anvil-top or a back-center attachment for lathe-work, constructed in common with a foot-lug to interlock with said ledge, a movable main jaw, a horizontal shaft which is mounted in said movable jaw and is adapted to carry interchangeable bit and grinding-wheel chucks or to form a lathe-spindle, connections between said anvil-base and movable jaw including a horizontal feed-screw, a short screw above and parallel with said feed-screw whereby said anvil-top or said back-center attachment is fastened in place, and mechanism for driving said shaft at different speeds including a detachable hand-crank applied directly to said shaft, a vertically-adjustable stud-shaft supported by said movable main jaw parallel with the shaft first named, and high-speed sprocket-gearing one wheel and one chain of which are detachable together with a crank-handle for such detachable wheel, such gearing as a whole serving to transmit rotary motion from such detachable crank-handle to the shaft first named and to the bit or grinding-wheel carried thereby, substantially as hereinbefore specified.

THEODORE F. TIMBY.

Witnesses:

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C. M. STEPHENS.