

A. PIRCH.  
Blacksmith's Combined Machine.

No. 199,741.

Patented Jan. 29, 1878

Fig. 2.

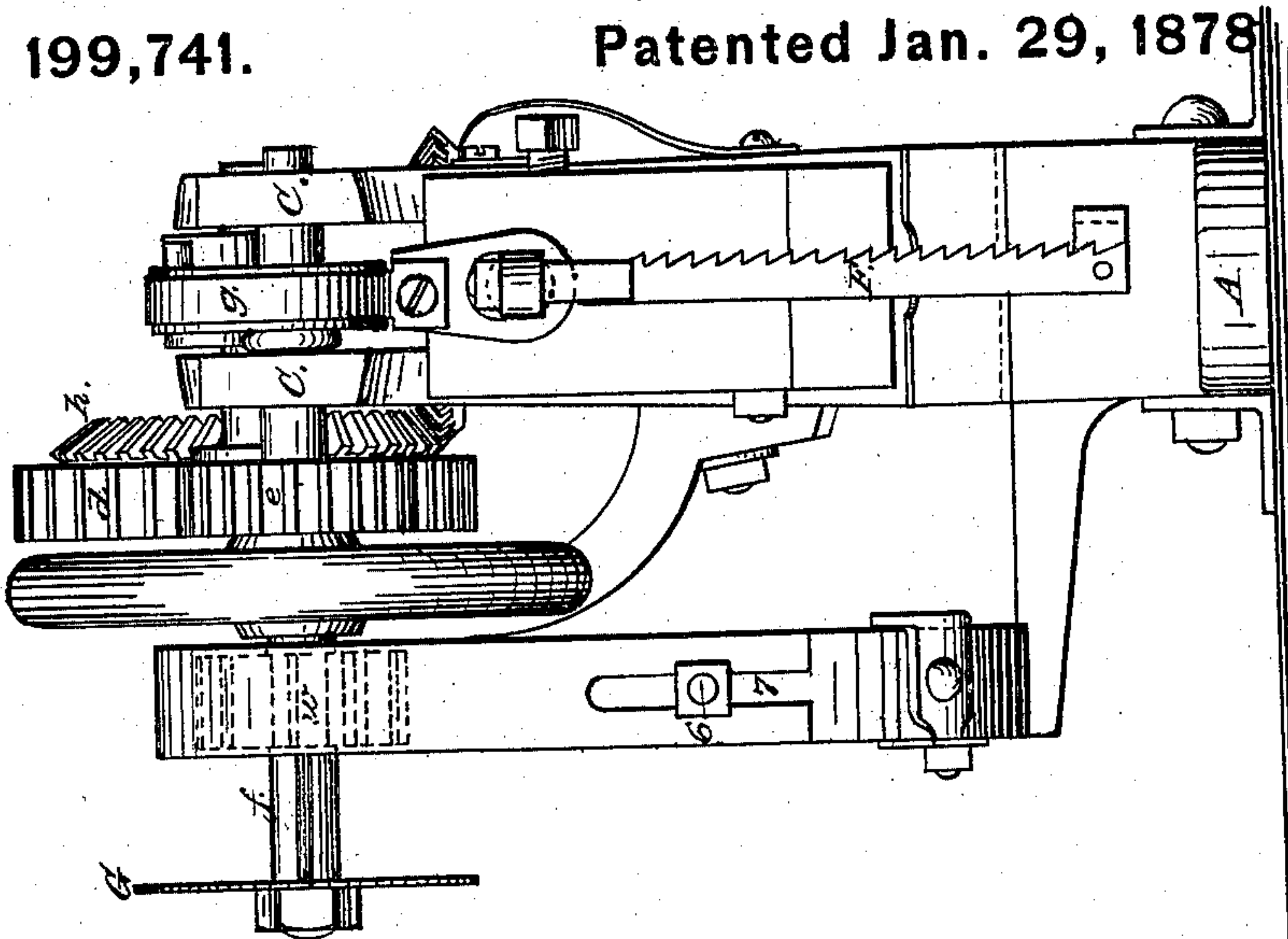
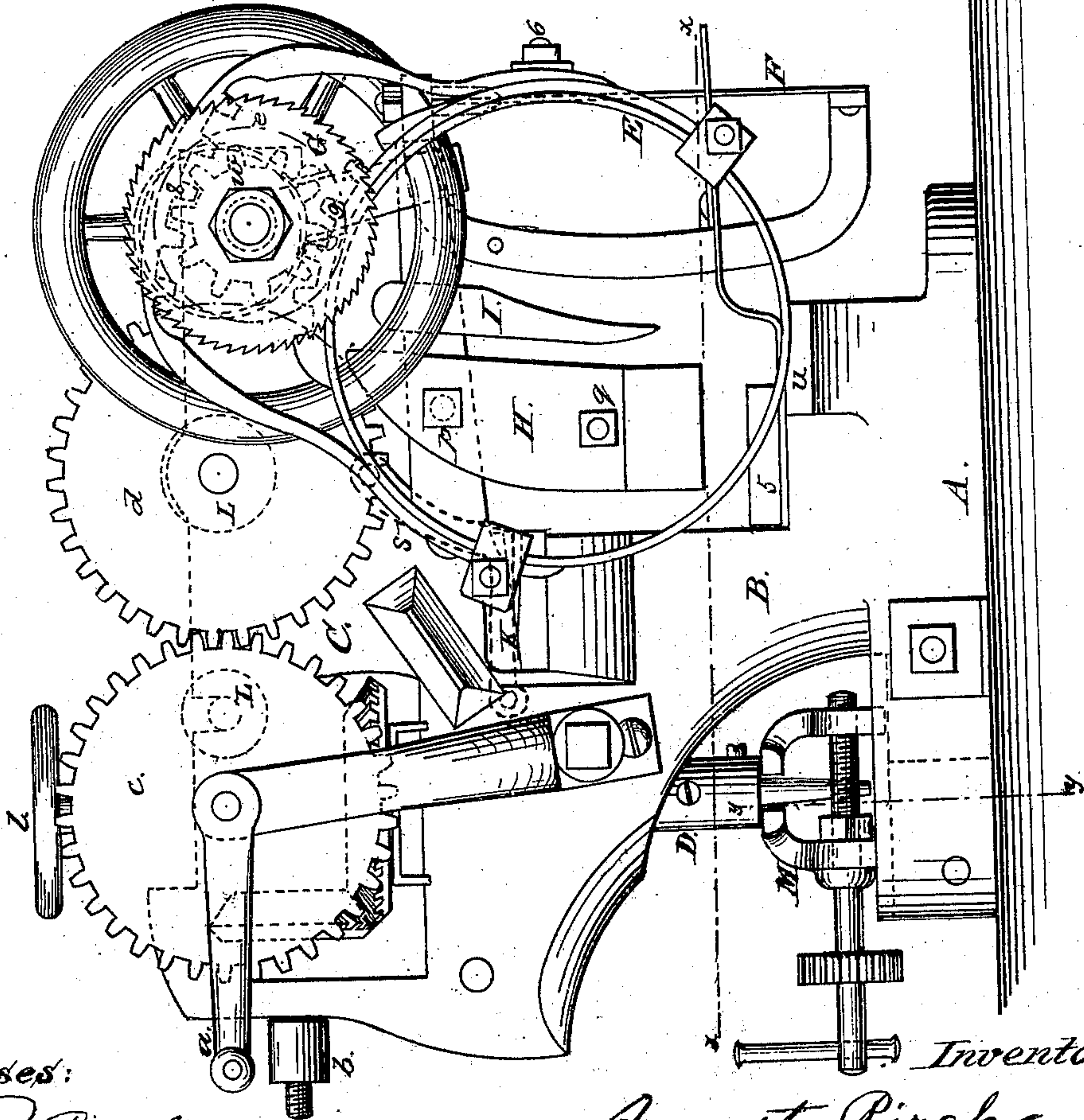


Fig. 1.



Witnesses:

J. C. Brecht.  
A. H. Evans

Inventor:

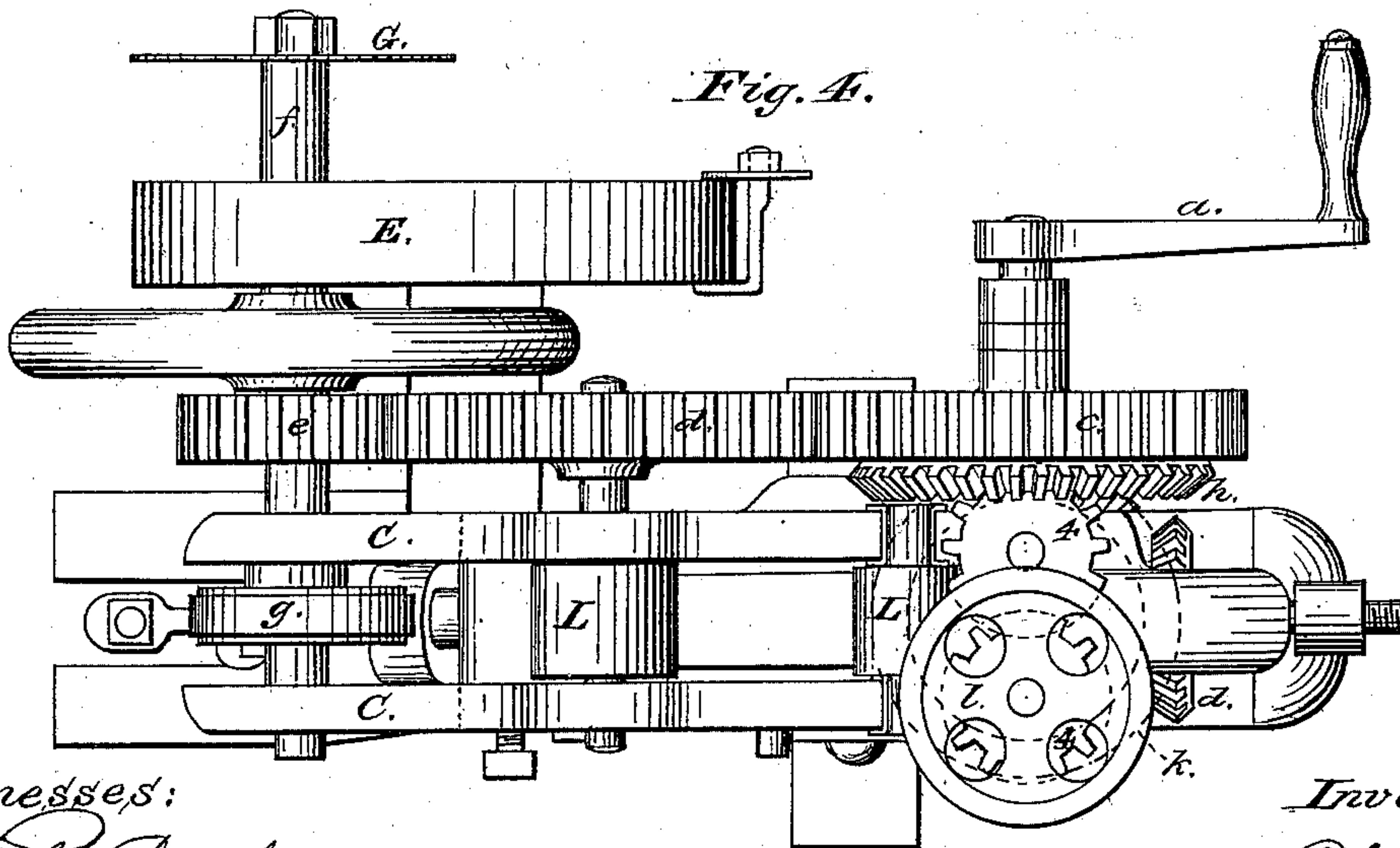
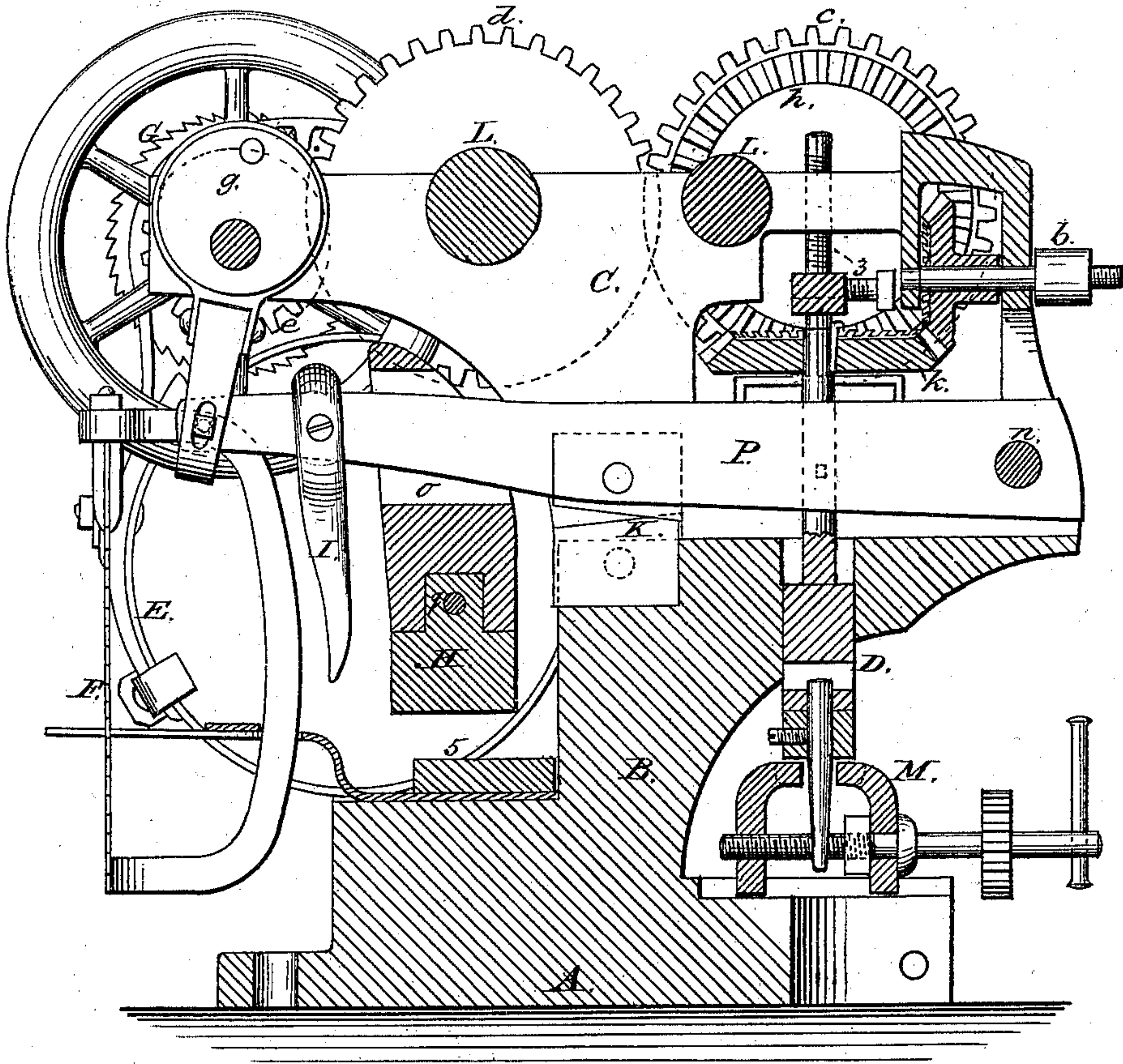
August Pirch,  
by James H. Handeville,  
his Attorney



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*Fig. 3.*



Witnesses:

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Fig. 5.

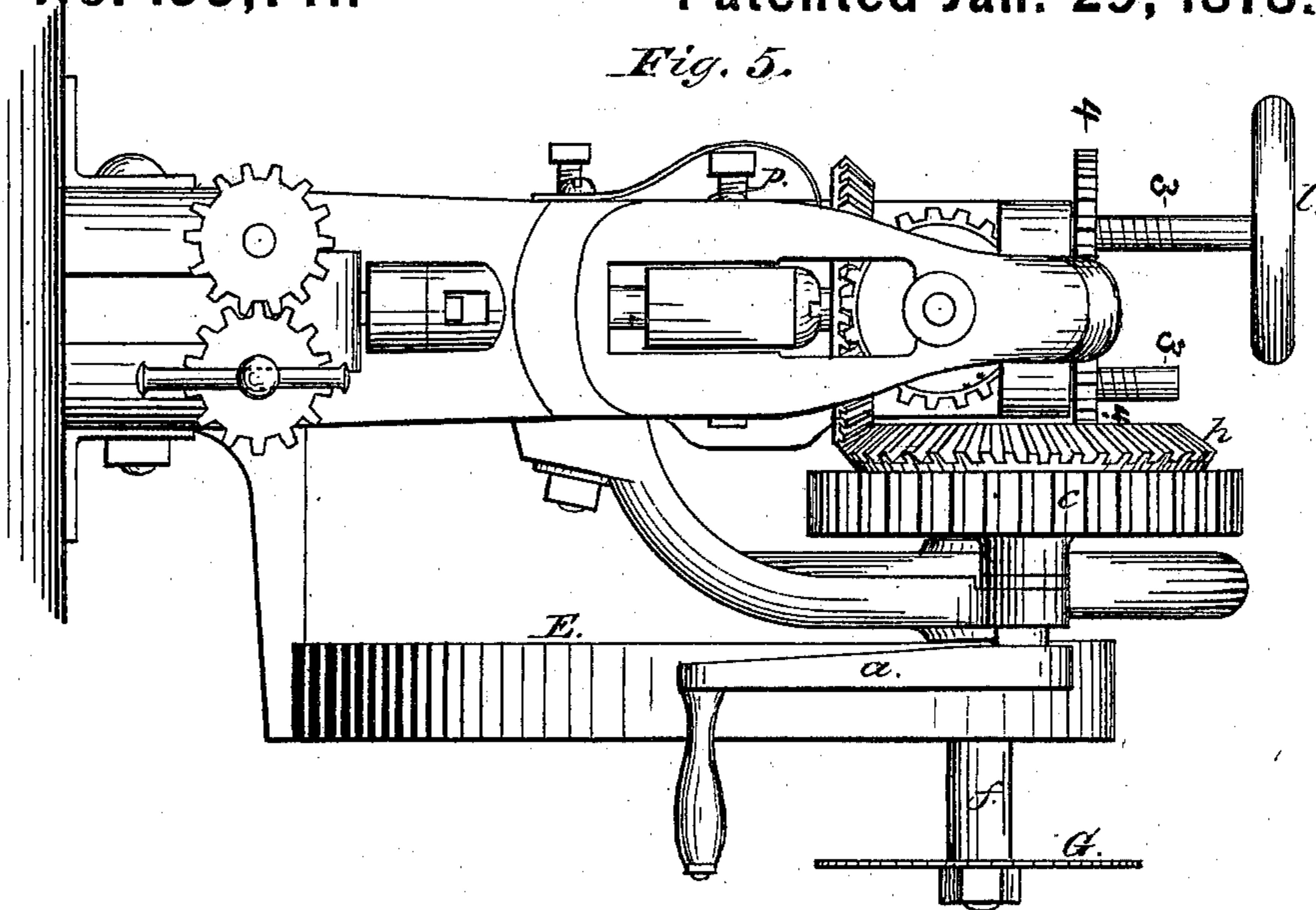


Fig. 6.

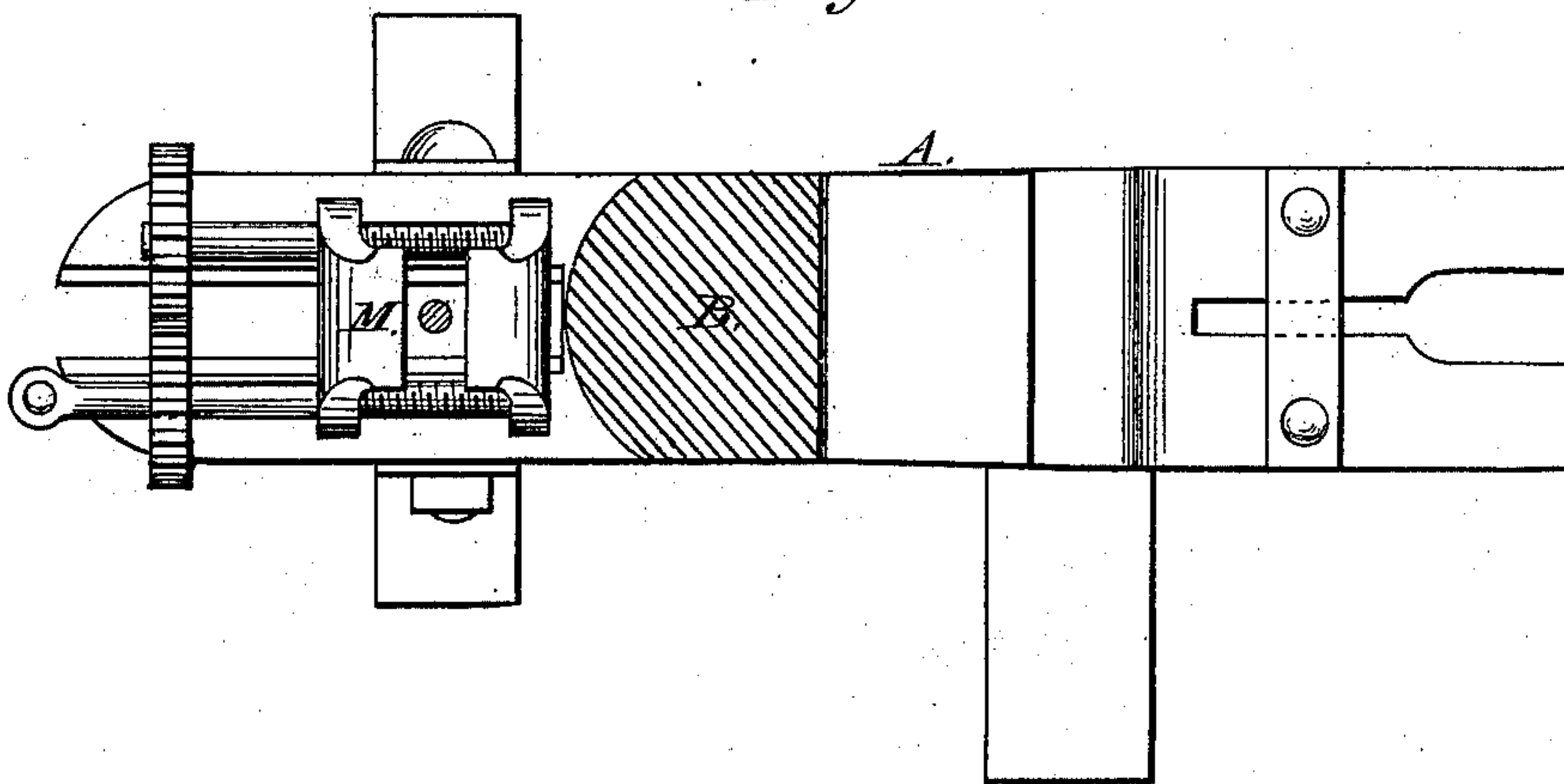
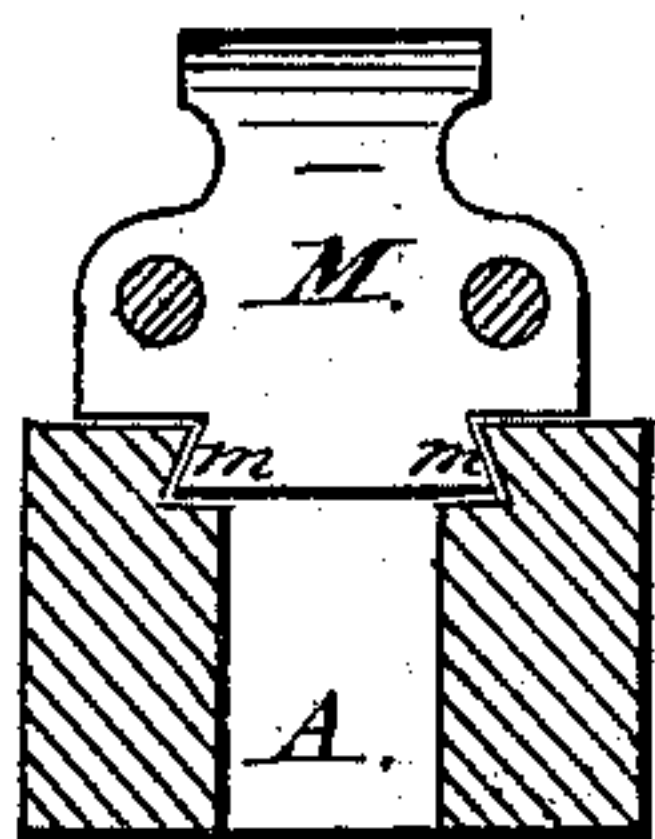


Fig. 7.



Witnesses:

J. C. Brecht.  
A. H. Evans.

Inventor:

August Pirch  
by James H. Mandeville  
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# UNITED STATES PATENT OFFICE.

AUGUST PIRCH, OF DENVER, COLORADO.

## IMPROVEMENT IN BLACKSMITHS' COMBINED MACHINES.

Specification forming part of Letters Patent No. **199,741**, dated January 29, 1878; application filed September 3, 1877.

*To all whom it may concern:*

Be it known that I, AUGUST PIRCH, of the city of Denver, in the State of Colorado, have invented a new, useful, and important Blacksmith's Machine, fully set forth in this specification.

This invention consists in a peculiar frame adapted to the operation of driving-gear, feed mechanism, and several of the common implements necessary in blacksmith-shops, the relative position of the parts being such that the devices may be operated by the same driving power, whether hand power or otherwise, and great convenience is attained.

Referring to the drawings forming part of this specification, Figure 1 is a side elevation of the machine. Fig. 2 is a front end elevation; Fig. 3, a vertical longitudinal section; Fig. 4, a top or plan view; Fig. 5, a rear end elevation; Fig. 6, a section on the line *x x*, and Fig. 7 a section on the line *y y*.

The parts of the machine are represented as follows: A, frame-base; B, frame-pillar, and C frame-top, all preferably made in one solid piece; D, stock for insertion of a drill, punch, or mortising-chisel; E, adjustable tire-shrinker; F, scroll-saw; G, circular saw; H, adjustable power-hammer; I, swage or reamer; K, shears; L, tire-bender; M, vise.

The machine is intended to be operated by hand or other power, the handle *a* for the former and the pulley *b* for the latter. For ordinary drilling, punching, mortising, tire bending and upsetting, and metal cutting or shearing, hand-power is sufficient. For circular and jig sawing, heavy swaging, hammering and punching, power can be applied to the pulley.

Power is transmitted directly, by means of the gear-wheels *c d e*, to the shaft *f*, for the purpose of operating the circular saw, tire-shrinker, and the tire-bender; and power is further transmitted indirectly, by means of an eccentric, *g*, to operate the scroll-saw, swage, power-hammer, shears, punch, and chisel. The crank also, by means of the angle-gear *h* fastened to its shaft, operates the drill. When power is applied to the pulley it is transmitted, by means of the bevel-wheel *k* on the shaft of the tool-stock D, to the bevel-wheel *h*, and thence, through the

cog-wheels *c d e*, to the main shaft, for operating the devices described. When it is desired to run only the drill, the gear-wheel *d* is pressed toward the frame and thrown out of gear with the wheels *c* and *e*. The hand-wheel *l* is for operating the parallel feed mechanism which raises and lowers the tool-stock. The upper end of the stock has an annular groove to receive a set-screw in the yoke connecting the lower ends of the adjusting-screws 3 3. By turning the wheel *l* to the right or left the cog-wheels 4 4 will be operated, and the parallel screws will lower or raise the tool-stock by means of the yoke, the annular groove, and the set-screw.

The vise is inserted in V-shaped ways *m m* in the frame, and is therefore horizontally adjustable with reference to the tool-stock, so that a greater range of holes may be made by shifting the vise. By means of parallel twin screws and connecting cog-wheels a square clamp in the vise is obtained, and the tool in the tool-stock unobstructed as it passes between the screws. The vise may be removed or retained in position when great power is applied. A platform, provided with a treadle having a vertical motion, may be employed as an auxiliary attachment.

The fulcrum of the power-hammer is at *n*, at the tool-stock end of the frame. The hammer is adjustable on its lever P by means of a slot, *o*, in the body of the hammer, and a set-screw, *p*, so that the travel of the hammer may be varied. A flat-faced hammer is shown; but as the face is detachable, by taking out the bolt *q* a face of any desired shape—as convex, concave, a right or left bevel, or any other shape—may be substituted. The anvil 5 is also removable, and may be replaced by another with a surface corresponding to the face of the hammer. In a continued motion of the machine the travel of the hammer would be limited to its adjustment, and it would be the same at each stroke; but in a partial motion of the machine, by turning the crank back and forth, the travel of the hammer is not limited, and a succession of variable blows may be struck, as in hammering.

The shears are adjustable, and easily removable for sharpening or substitution, and are so located as to be very effective with little



power. The gage *s* on the side of the frame opposite the shears (shown in dotted lines) serves to aid in cutting metal a given length, and to hold it from flying up, insuring a square cut.

The tool-stock, when rotating, is disconnected from the lever *P* and keyed to the bevel-wheel *k*, which imparts rotary motion. When the tool-stock is reciprocated with a punch or chisel, it is disconnected from the bevel-wheel and pinned to the lever, which gives it vertical motion.

The tire shrinker or upsetter is fastened at its base to an arm, *u*, of the frame. Its upper ends are free, and are provided with a tongue, 6, and a groove, 7, and cog-segments 8 and 9, between which rotates a gear-wheel, *w*, on the main shaft. When a heated tire is placed in the upsetter for shrinkage, motion is given to cog-segments, and they are drawn in opposite directions, which causes the tongue 6 to enter the groove 7, and consequently the circular shrinker to be contracted, and the tire within correspondingly pressed and shrunk.

In the upper part of the frame are two rollers, *L L*, for tire-bending, for which purpose the eccentric *g* must be removed and a similar plain roller placed in its stead on the

shaft, to revolve with it. The hand-wheel *l* should also be removed. The tire must be partially bent and placed under the middle roller, the ends projecting above and resting upon the outside rollers. The motion of the roller on the main shaft will draw the tire and cause it to be curved as it is passed under the middle roller. By placing the rollers nearer together or farther apart, the size or curve of the tire may be varied.

I claim as my invention—

1. The combination of the main frame, the tool-stock, bevel-wheel *k*, feed mechanism 3 3 4 4, and driving-gear, substantially as and for the purpose set forth.

2. The combination of the main frame *A B C*, lever *P*, eccentric *g*, shaft *f*, tool-stock *D*, and driving-gear, relatively located and adapted, as set forth, for the operation of a hammer, shears, swage, reciprocating saw, punch, and chisel, substantially as shown and described.

In witness whereof I hereunto subscribe my name in the presence of two attesting witnesses this 27th day of August, 1877.

AUGUST PIRCH.

Witnesses:

RICHARD BEGER,

JAMES R. TREADWAY.