

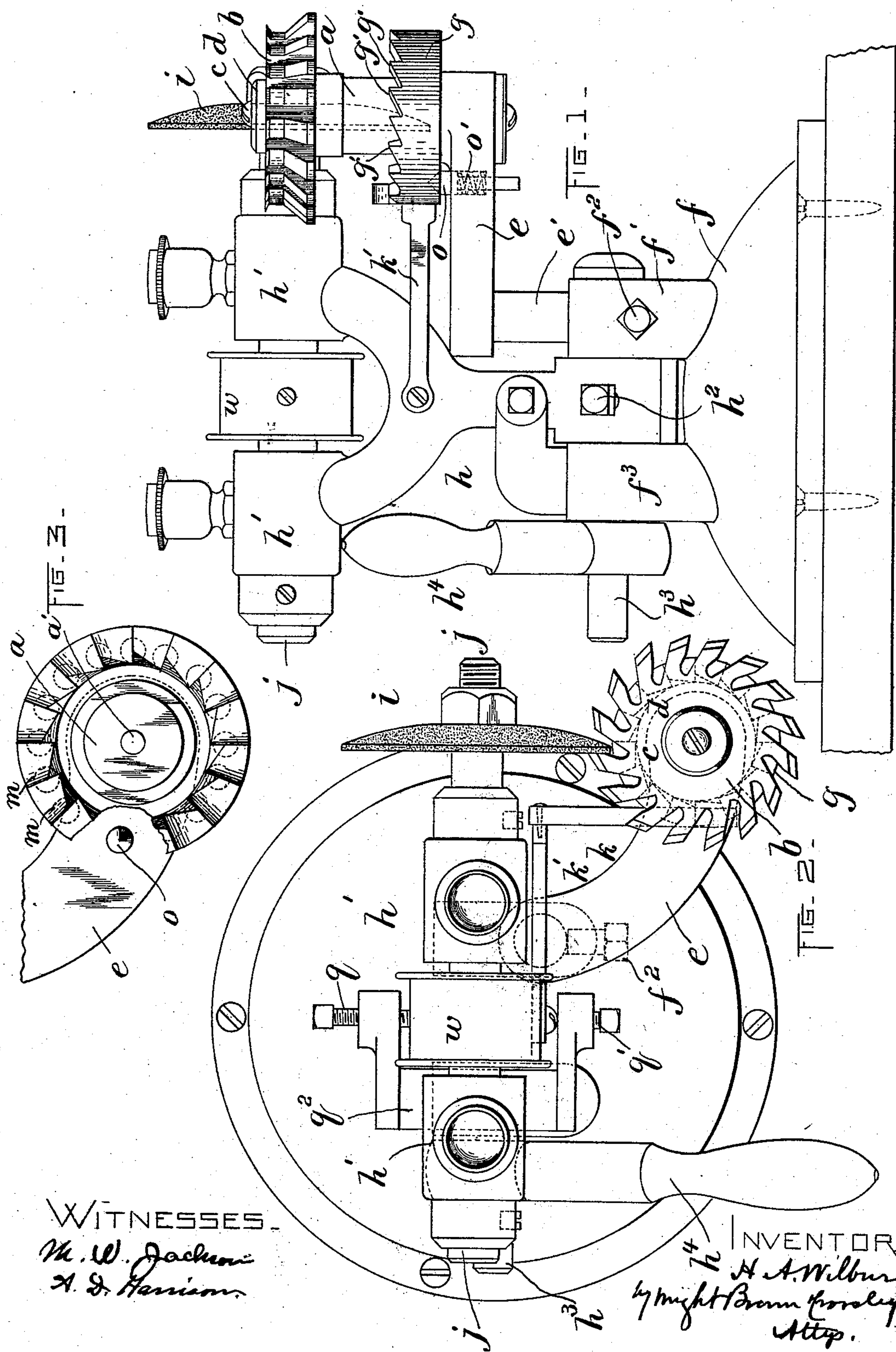
(No Model.)

2 Sheets—Sheet 1.

H. A. WILBUR.
CUTTER GRINDER.

No. 506,613.

Patented Oct. 10, 1893.



WITNESSES.

M. W. Jackson
A. D. Harrison.

INVENTOR
H. A. Wilbur
by *Myself* Brown & Co. Atty.

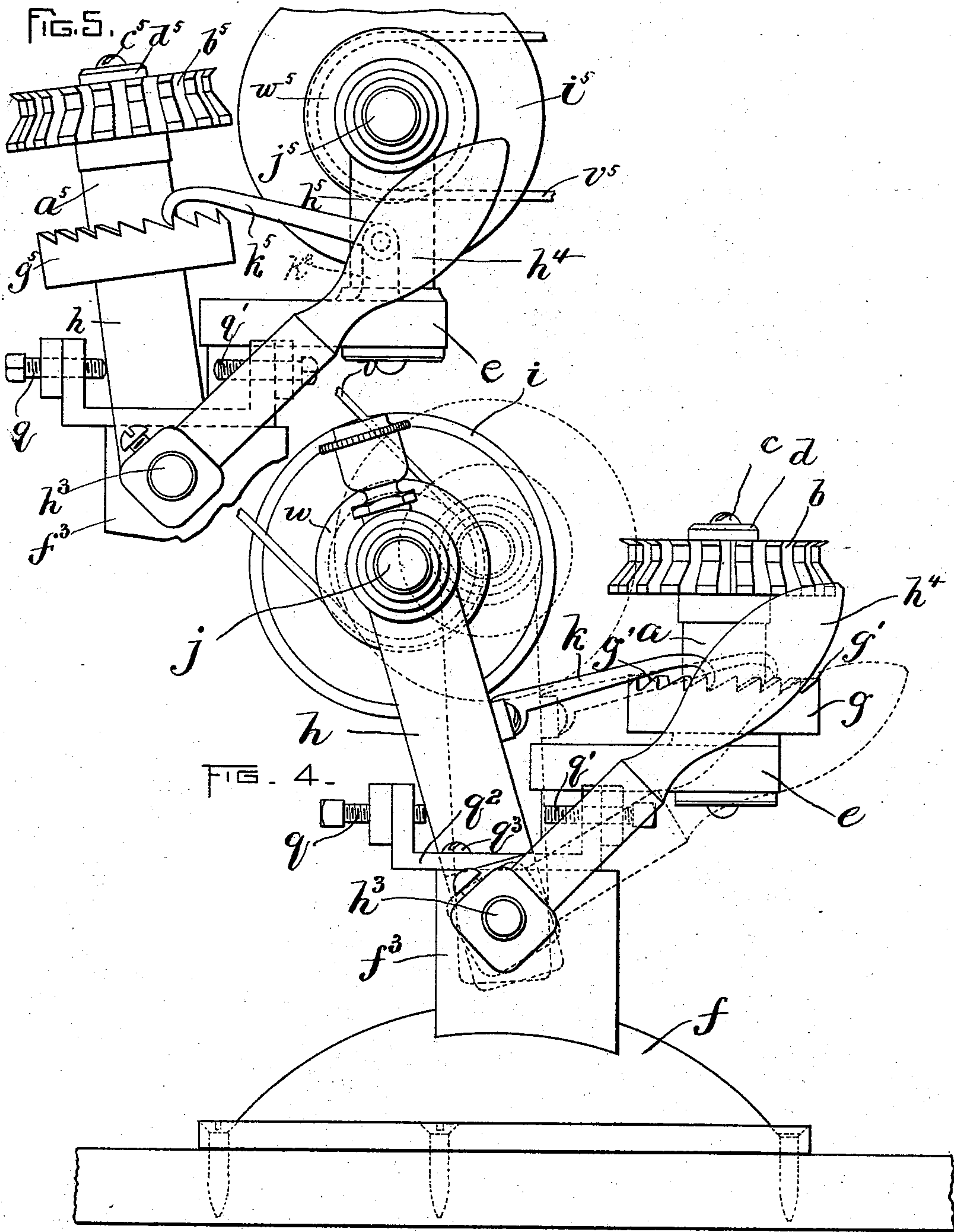
(No Model.)

2 Sheets—Sheet 2.

H. A. WILBUR.
CUTTER GRINDER.

No. 506,613.

Patented Oct. 10, 1893.



WITNESSES.

M. W. Jackson
A. D. Harrison.

INVENTOR.

H. A. Wilbur
by Wright Brown & Co.
Attys.

UNITED STATES PATENT OFFICE.

HENRY A. WILBUR, OF SOMERVILLE, ASSIGNOR TO GEORGE H. P. FLAGG,
OF BOSTON, MASSACHUSETTS.

CUTTER-GRINDER.

SPECIFICATION forming part of Letters Patent No. 506,613, dated October 10, 1893.

Application filed July 13, 1893. Serial No. 480,400. (No model.)

To all whom it may concern:

Be it known that I, HENRY A. WILBUR, of Somerville, in the county of Middlesex and State of Massachusetts, have invented certain new and useful Improvements in Cutter-Grinders, of which the following is a specification.

This invention relates to machines for grinding circular cutters, such as those employed in trimming edges of soles or other parts of boots and shoes, although my invention is not limited to this class of cutters.

The object of the invention is to automatically move the cutter after the grinding of each tooth, so as to present a new tooth to the grinding-tool; and to this end the invention consists, as a whole, in a grinding-machine comprising a rotatable work-holder, a carrier movable toward and from said holder and provided with a grinding-tool, and mechanism operated by the back and forth movements of the carrier to impart a step by step rotation to the holder, the arrangement being such that, during each movement of the grinding-tool away from the holder, the holder and the cutter thereon are given a partial rotation sufficient to present the next tooth of the cutter to the grinding-tool when the latter is again moved forward.

Of the accompanying drawings, forming part of this specification: Figure 1 represents a side elevation of my improved grinding-machine. Fig. 2 represents a top view of the same. Fig. 3 represents a top view, showing the cutter-holder partially broken away and a part of its support. Fig. 4 represents an end elevation of the machine. Fig. 5 represents a modification.

The same letters of reference indicate the same parts in all the figures.

In the drawings: *a* represents a cutter-holder, to which the cutter *b* to be ground may be secured in any suitable manner, as by a screw *c* and washer *d*, the holder being in this case provided with a flat seat or support for the cutter at its upper end, and with a socket *a'* for the reception of the screw *c*. The holder *a* is journaled in a bearing in an arm *e*, and is adapted to rotate in said bearing, the arm *e* being connected in any suitable way to the supporting-frame or base *f*. In the present case, I have shown the arm *e* as provided with

a standard *e'*, which is inserted in a socket *f'* on the supporting-base, and is secured in said socket by means of a set-screw *f²*, the standard *e'* being vertically adjustable in the socket *f'* and held at any suitable height by the set-screw.

g represents a wheel or disk, affixed to the holder *a*, and provided with a series of ratchet-teeth *g'*.

h represents a carrier, which is movable toward and from the holder *a*, and supports a grinding-tool *i*, which, in the present case, is a wheel, made of emery or other suitable material, said wheel being affixed to a shaft *j*, which is journaled in bearings *h' h'* on the carrier *h*. The carrier is here shown as affixed by a set-screw *h²* to a stud or shaft *h³*, which is journaled in bearings formed for it in the ear *f'* and in a similar ear *f³* affixed to the supporting-frame. A handle *h⁴* is affixed to the shaft or stud *h³*, and enables the operator to conveniently move the carrier *h* toward and from the cutter-holder.

k represents a pawl, which is connected with the carrier *h*, and is arranged to engage the ratchet-teeth *g'* in such manner that, when the carrier is moved forward toward the cutter-holder, the pawl will slip over one or more of the ratchet-teeth, and fall into engagement with one of said teeth; and, when the holder is moved in the opposite direction, the pawl will impart a partial rotation to the wheel *g*, the holder *a* and the cutter affixed to the holder, the parts being timed so that the described partial rotation will bring the next tooth of the cutter to the path through which the grinding-wheel moves when the carrier is moved forward. In the present case, I have shown the pawl *k* as pivotally connected to an arm *k'*, which is affixed to the carrier *h*.

In the bottom of the wheel *g* is formed a series of conical recesses *m*, shown by dotted lines in Fig. 3. These recesses are intended to be engaged by a spring-latch *o*, the upper end of which is conical and formed to fit said recesses, said latch being fitted to move vertically in a socket in the arm *e* and pressed upwardly by a spring *o'* (Fig. 1). The arrangement of the recesses *m* and latch *o* is such that the latch engages one of said recesses, and this arrests the cutter-holder and cutter in the desired position just at the close

of the outward movement of the carrier h , so that the cutter is accurately held for the next advance of the grinding-tool. The conical form of the latch and recesses causes the yielding or depression of the latch when the pawl k is moved to partially rotate the cutter-holder, as above described.

q q' represent adjustable stops, which are arranged to limit the back and forth movements of the carrier h , said stops being in the present case screws inserted in ears on the supporting-frame. The stop q determines the extent of outward movement of the carrier, and therefore the extent of partial rotation of the cutter-holder, while the stop q' determines the depth to which the grinding-tool enters the cutter.

It will be observed that the position of the cutter-holder may be varied both vertically and laterally, the vertical adjustment being effected by raising and lowering the stud e' , while the lateral adjustment may be effected by turning said stud in its socket.

The machine may be adapted for either right or left hand work. There is a socket in the ear or bearing f^3 , adapted to receive the stud e' in case it is desired to locate the cutter-holder at the left hand end of the machine instead of at the right hand end, as shown in Fig. 1. The shaft j may be removed from its bearings and re-inserted with the cutter at the left hand end. The stops q q' are supported by a plate q^2 , which is detachably secured by a screw q^3 to the top of the bearing f^3 . Said screw may be removed and the plate q^2 may be applied to the top of the bearing f' when the machine is adjusted for left hand work.

The shaft j' may be driven by a belt v , running on a pulley w , said belt being arranged so that it will be tightened and made operative by a movement of the carrier h toward the holder a , and loosened by a movement of the carrier in the opposite direction.

I do not limit myself to the described details of construction of the machine, and the same may be variously modified without departing from the spirit of the invention.

In Fig. 5 I have shown a modification in which the cutter b^5 has a back and forth motion as well as a step-by-step rotary motion, the grinding tool i^5 having no back and forth motion. In this case the bearings for the shaft of the grinding tool may be supported by the arm e , the latter being adjustable, as above described. The pawl k^5 may be pivoted to an ear k^2 on the arm e . The cutter holder a^5 may be journaled in a bearing on the frame h and moved toward and from the grinding tool by the movements of said frame. In this modification j^5 represents the grinder shaft, w^5 one of the bearings of said shaft, v^5 the driving belt, h^5 a support for the bearing w^5 , g^5 the ratchet on the cutter holder, and c^5 the screw and d^5 the washer that secure the cutter to its holder.

I claim—

1. In a grinding machine, the combination of a cutter-holder, a support therefor to which the holder is rotatively connected, a grinding-tool carrier, one of the two parts called respectively the support and the carrier being free to be moved back and forth by hand while the other has no back and forth movement, and intermediate connections between said parts through which a backward movement of one part is converted into a partial rotary movement of the cutter-holder, as set forth.

2. In a grinding machine, the combination of a cutter-holder, a support therefor to which the holder is rotatively connected, one of said parts having a latch and the other a series of recesses whereby the holder may be detained in a series of positions, a grinding-tool carrier, and intermediate connections between said holder and carrier through which a movement of one of said parts is converted into a partial rotary movement of the holder, the partial rotations of said holder being limited by the said latch and recesses, as set forth.

3. In a grinding machine, the combination of a cutter-holder, a support therefor to which the holder is rotatively connected, one of said parts having a latch and the other a series of recesses whereby the holder may be detained in a series of positions, a carrier having a grinding-tool, and a ratchet and pawl connection between said carrier and the cutter-holder, as set forth.

4. In a grinding machine, the combination of a rotatable work-holder having a ratchet and a series of recesses, a latch adapted to engage said recesses and thereby detain the work-holder in a series of positions, a carrier movable toward and from the holder and provided with a pawl arranged to engage said ratchet, a grinding-tool supported by said carrier, and means for rotating said tool, as set forth.

5. In a grinding machine, the combination of a rotatable work-holder having a ratchet and a series of recesses, a latch adapted to engage said recesses and thereby detain the work-holder in a series of positions, a carrier movable toward and from the holder and provided with a pawl arranged to engage said ratchet, a grinding-tool supported by said carrier, means for rotating said tool, a handle secured to the carrier for moving it back and forth, and adjustable stops for limiting the back and forth movements of the carrier, as set forth.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, this 8th day of July, A. D. 1893.

HENRY A. WILBUR.

Witnesses:

C. F. BROWN,
A. D. HARRISON.