

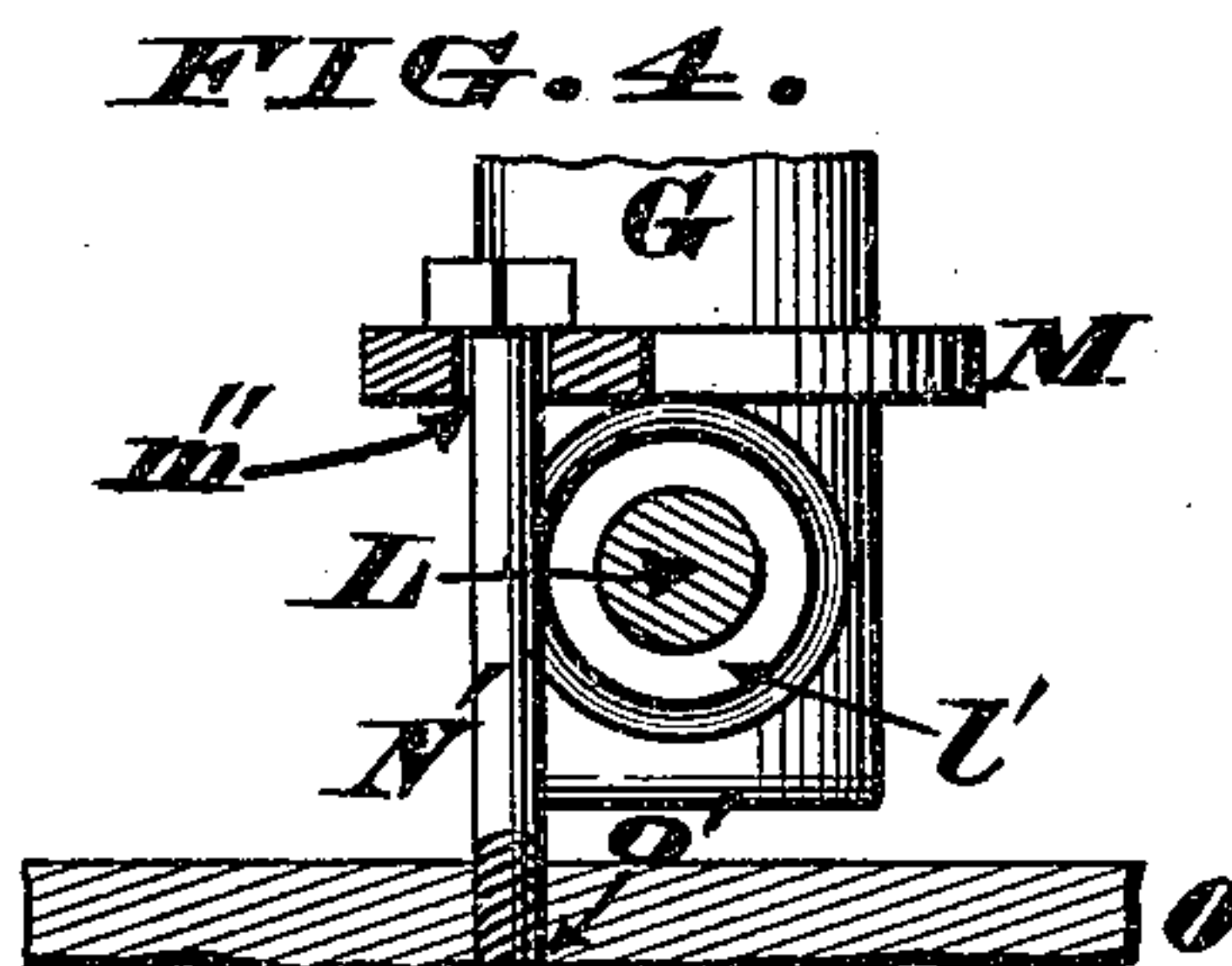
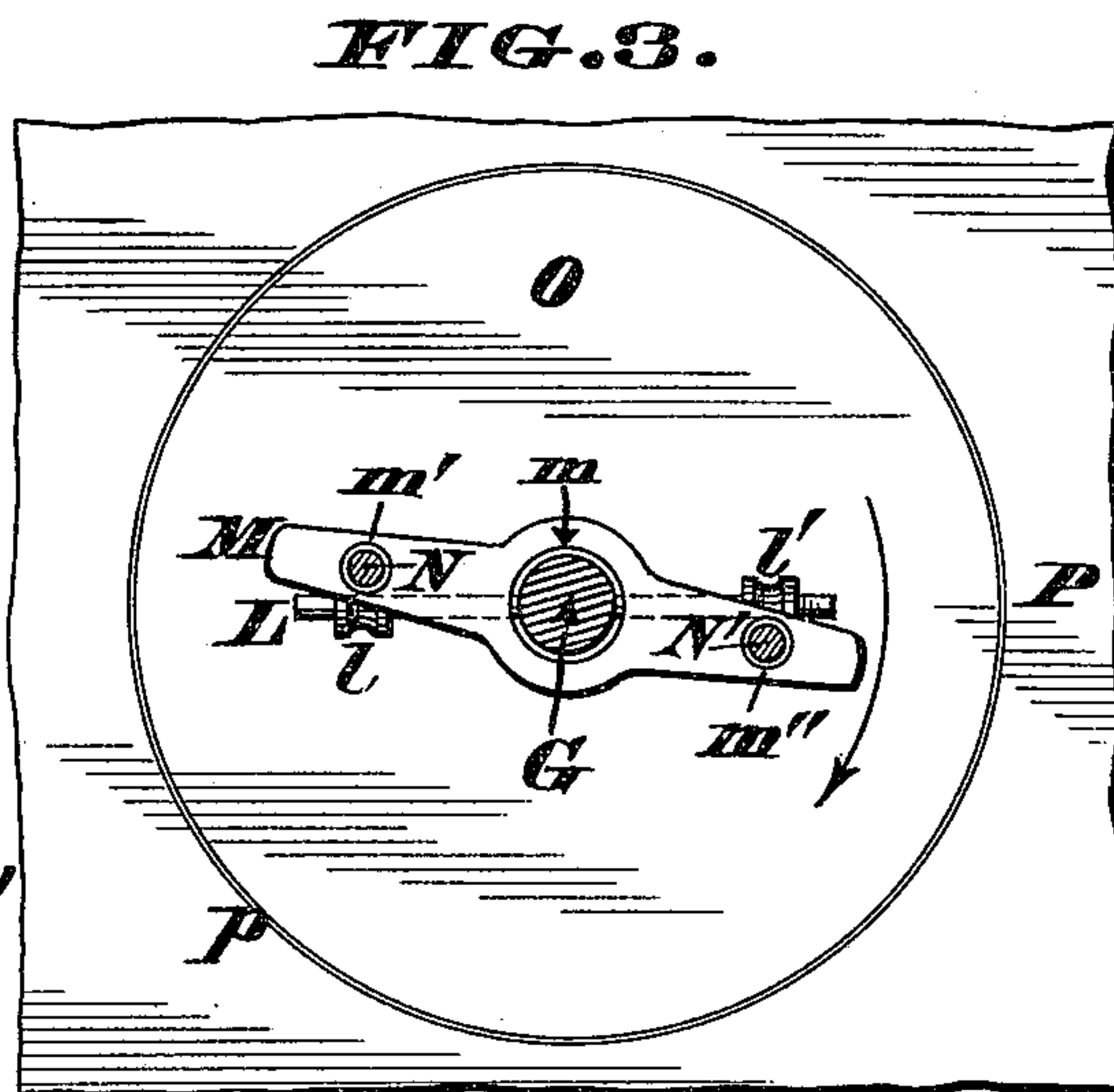
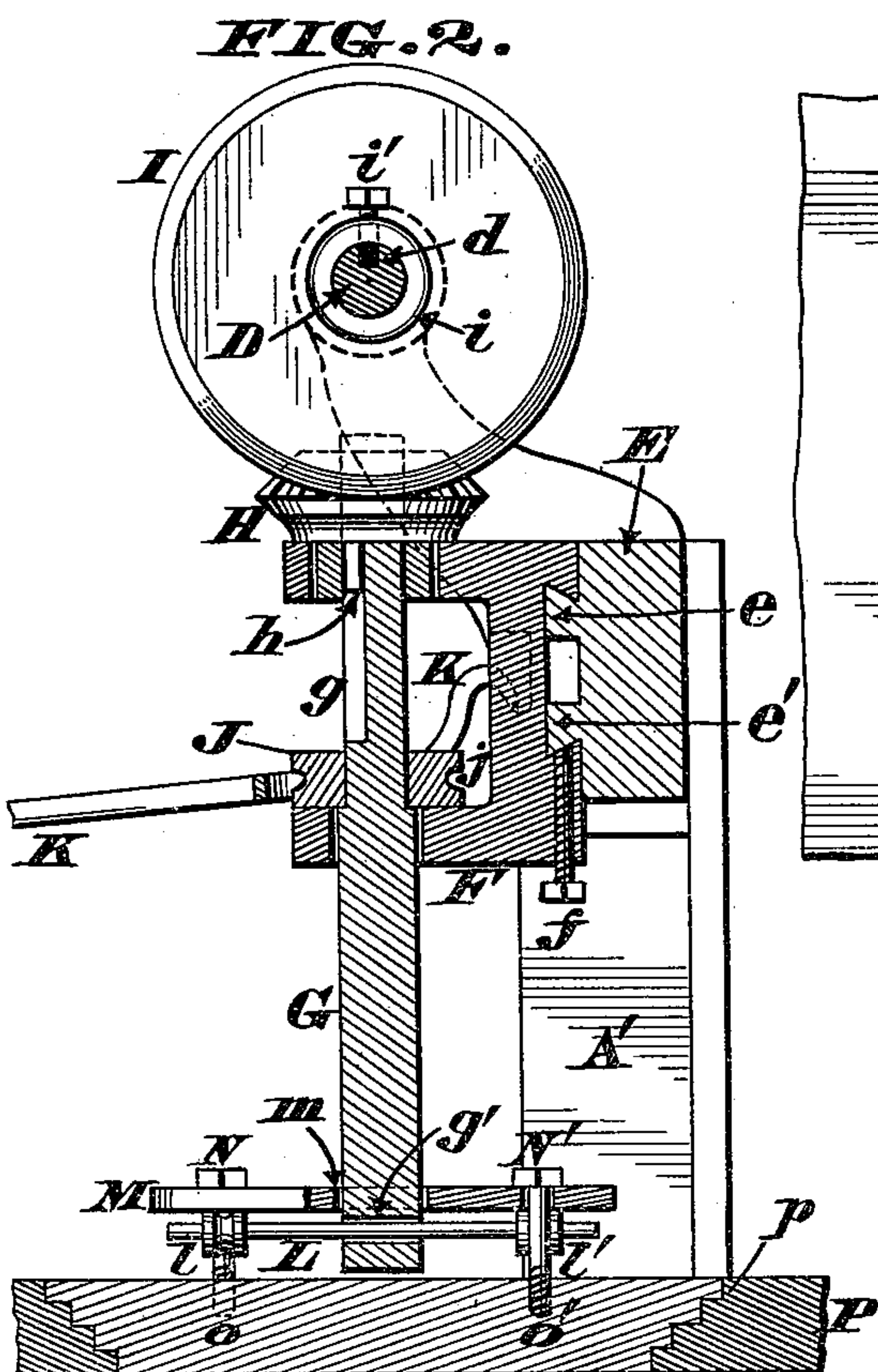
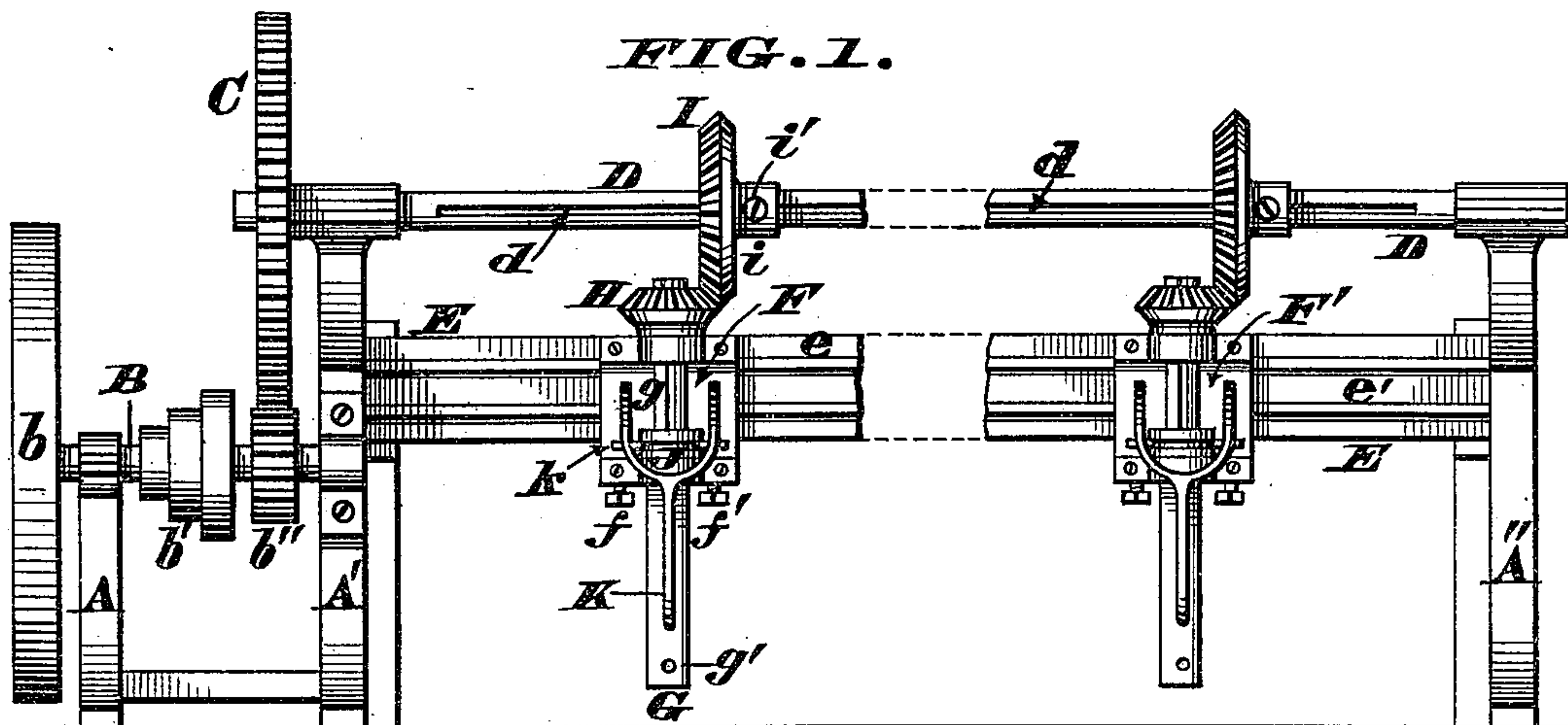
No. 635,292.

Patented Oct. 24, 1899.

C. E. BLECHSCHMIDT.
MULTIPLE METAL GRINDER.

(Application filed July 17, 1899.)

(No Model.)



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UNITED STATES PATENT OFFICE.

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MULTIPLE METAL-GRINDER.

SPECIFICATION forming part of Letters Patent No. 635,292, dated October 24, 1899.

Application filed July 17, 1899. Serial No. 724,125. (No model.)

To all whom it may concern:

Be it known that I, CHARLES E. BLECHSCHMIDT, a citizen of the United States, residing at Bellevue, in the county of Campbell and State of Kentucky, have invented certain new and useful Improvements in Multiple Metal-Grinders; and I do hereby declare the following to be a full, clear, and exact description of the invention, reference being had to the accompanying drawings, which form a part of this specification.

My invention comprises a machine in which either one or all of a set of rotating grinders may be readily brought into action for the purpose of making a very accurate fit of circular joints—such, for example, as the seatings of stepped screw-doors for safe-frames, &c.—the details of said machine, its peculiar operation, and the advantages resulting from its use being hereinafter more fully described.

In the accompanying drawings, Figure 1 is a front elevation of a multiple metal-grinder embodying my invention, a pair of sliding heads being applied thereto and the central portion of the main frame being broken away to indicate that it can be long enough to carry any desired number of such shiftable devices. Fig. 2 is an enlarged vertical section of the machine, taken in the plane of a grinding-shaft of one of said heads, a stepped door being applied to said shaft and shown in the act of being ground into a similarly-shaped door-frame. Fig. 3 is a plan of said door and frame, the grinding-shaft being sectioned horizontally. Fig. 4 is an enlarged section showing the devices wherewith a safe-door is loosely coupled to a grinding-shaft.

A A' A'' are vertical standards of my machine, and B is a driving-shaft journaled in the standards A A', said shaft being provided with a fly-wheel *b*, stepped pulley *b'*, and pinion *b''*, and said pinion being engaged with a spur-wheel C, secured to one end of a horizontal counter-shaft D, having a longitudinal groove *d*, as more clearly shown in Fig. 2. Arranged below this counter-shaft and parallel therewith is a stout cast beam E, that ties together the standards A' and A'', the front of said beam being provided with a pair of longitudinal ribs or guides *e e'*, having their upper and lower edges undercut to con-

fine to a proper path two or more sliding heads F F', the number of which shiftable devices will be determined by the length of the machine and the special duty it has to perform. *f f'* are clamp-screws for retaining these heads at any desired position along the beam E.

Journaled vertically in the slide F is a grinding-shaft G, having a longitudinal groove *g* and provided at top with a bevel-wheel H, the object of said groove being to admit a pin or feather *h*, projecting inwardly from said wheel H. By this arrangement the shaft is compelled to rotate in unison with said wheel, and yet is capable of being raised and lowered when occasion requires.

J is a collar fastened around the shaft G, and *j* is a circumferential groove in said collar to admit a pin *k*, projecting inwardly from the forked end of a lever K, coupled to the head F in any suitable manner. As more clearly shown in Fig. 2, the grinding-shaft G has near its lower end a transverse hole *g'* to permit the ready insertion of a cross-bar L, carrying a pair of loosely-fitting circumferentially-grooved rollers *l l'*; but before this bar is inserted a bridle M is applied to said shaft. This bridle has at its mid-length a circular eye *m* to fit around the shaft G, and near the opposite ends of said bridle holes *m' m''* are made for the passage of vertical screws N N', whose lower ends engage with threaded holes *o o'* in the outer plate of a stepped safe-door O. (See Fig. 2.)

P is the front of a safe, and *p* is a circular opening in the same to admit the door O.

Gearing with the bevel-wheel H is another bevel-wheel I, mounted upon the counter-shaft D and having a hub *i*, provided with a clamp-screw *i'*, that traverses the longitudinal groove *d* of said shaft.

My machine is arranged for work and then operates in the following manner: The plate P is first laid flatly under the machine and then the screws *f f' i'* are slackened to enable the head F to be shifted until the axis of its shaft G is vertically in line with the center of the circular opening *p* of said plate, after which adjustment said screws are tightened, so as to retain said head and the bevel-gear I in their proper positions. The free end of

lever K is next swung up to raise the shaft G and permit the application to it successively of the bridle M, cross-bar L, and rollers $l\ l'$. The screws N N' are now passed down through the holes $m\ m'$ of said bridle, brought to bear against the grooves of said rollers, and engaged with the holes $o\ o'$ of the door O. The free end of lever K is finally swung down to enable the door to enter the frame-opening p , after which act the machine is set in motion and the shaft G turned, so as to carry the door around in the direction of the arrow shown in Fig. 3, emery or other suitable abradant being freely used to cause the ground joint to fit very accurately together. As the bridle M is carried by the rollers $l\ l'$ and as the latter can have some little motion longitudinally of the cross-bar L and also around it, and as the supporting-screws N N' occupy the grooves of said rollers, it is evident the door is somewhat loosely suspended from the shaft G and can have a limited play either up or down or from side to side to compensate for any slight inequalities in the steps of said door or those of the frame. The grinding continues in the same direction until the joint is finished, and then the free end of lever K is again swung up, thereby lifting the door out of the frame and enabling the application to the machine of another piece of work.

By using a sufficient number of heads two, three, or more pieces of work can be ground simultaneously, thereby greatly expediting such tedious and laborious operations and effecting a corresponding saving in the manufacture of screw-door safes, although the machine is not limited to such use, but can be

employed for all grinding purposes admitting of a continuous rotation in one direction. It is evident, however, that a slight modification of the machine will enable the shafts G to impart a reciprocating rotary motion to the pieces of work loosely suspended from them, and such a change is to be considered as within the scope of my invention.

I claim as my invention—

1. The combination, in a multiple metal-grinder, of the beam E, having longitudinal guides e, e , the head F, adjustable on said guides, the grinding-shaft G, journaled vertically in said head, and grooved longitudinally at g , the collar J, secured to said shaft G, and grooved circumferentially at j ; the lever K, jointed to said head, and having a pin k , engaged with this latter groove j , devices for loosely coupling a piece of work to the lower part of said shaft G, and a bevel-wheel H, having a feather h , that traverses the groove g , in the manner described, and for the purpose stated.

2. The combination of the grinding-shaft G; the cross-bar L, applied thereto; the circumferentially-grooved rollers l, l' , loosely journaled upon said bar; the bridle M, carried by said rollers, and provided with an eye m , and perforations $m' m''$; and the screws N, N', all arranged as herein described, and operating as set forth.

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

CHARLES E. BLECHSCHMIDT.

Witnesses:

JAMES H. LAYMAN,
EARLE R. PASSEL.