

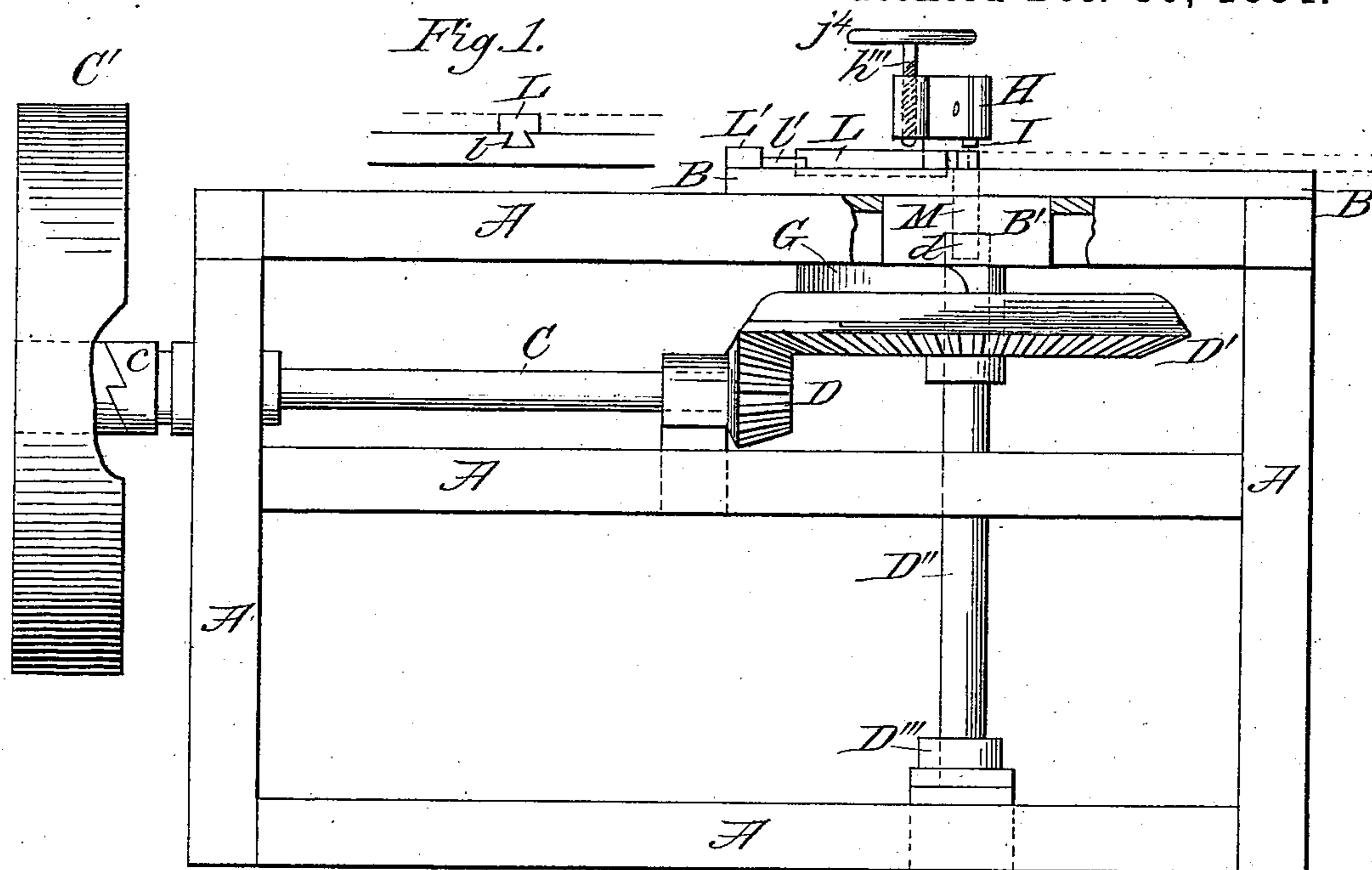
(No Model.)

J. ORM.

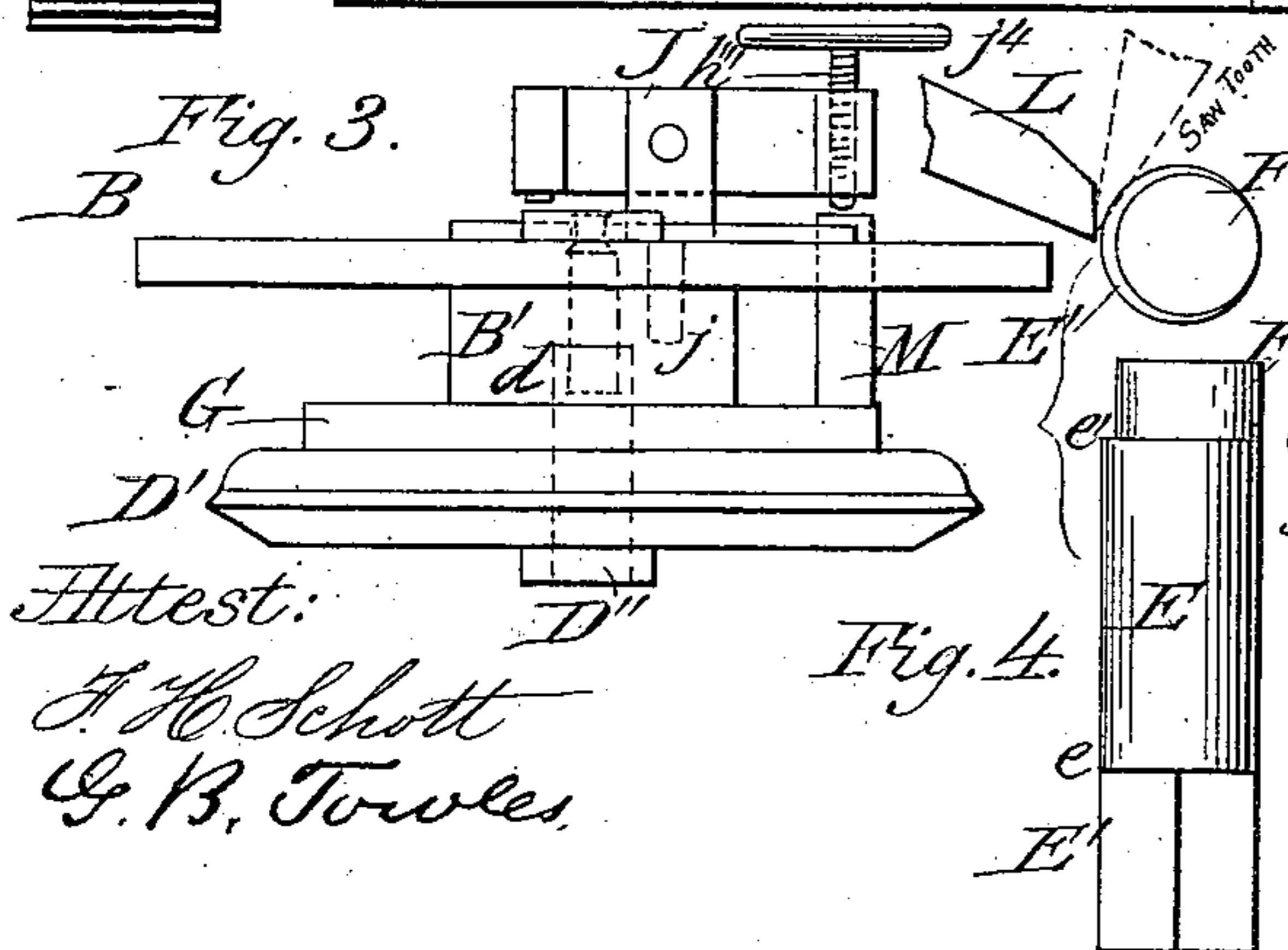
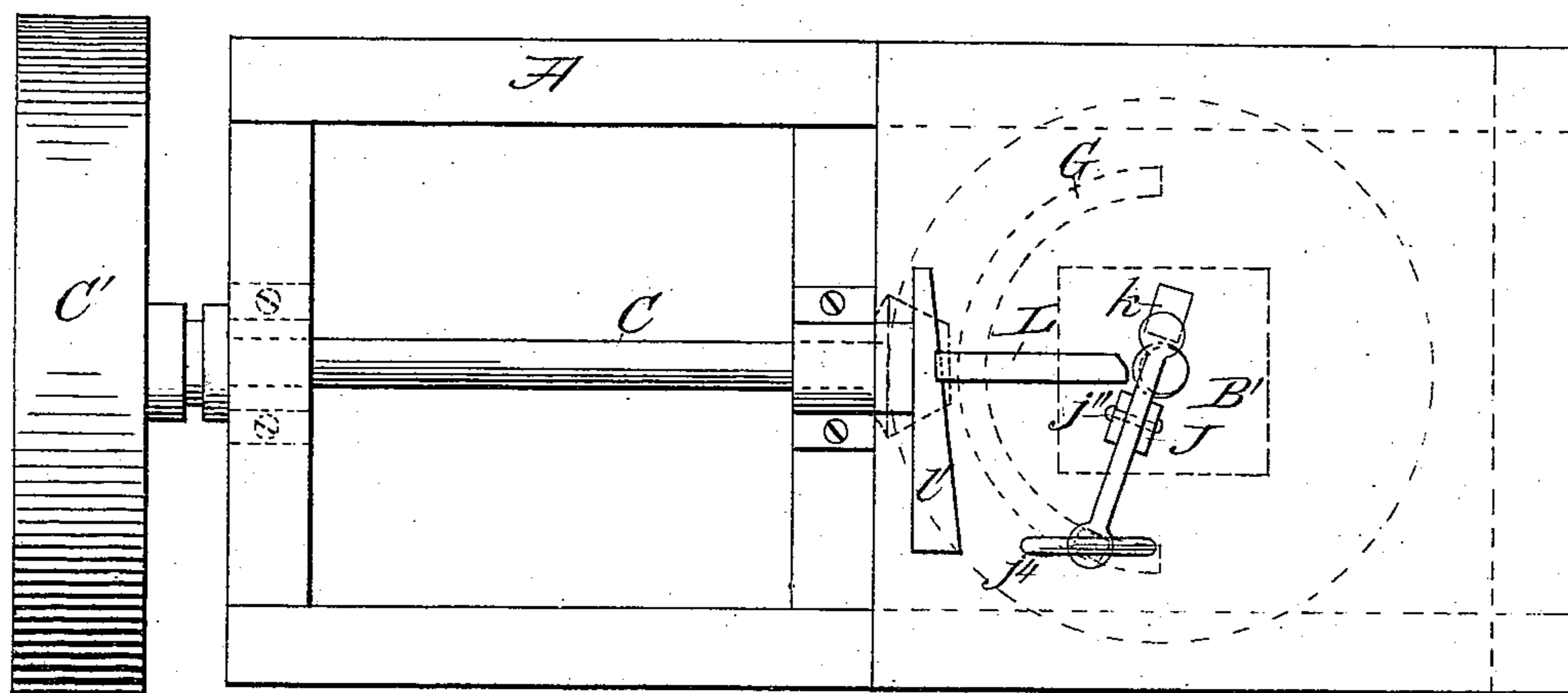
MACHINE FOR SWAGING SAW TEETH.

No. 309,870.

Patented Dec. 30, 1884.

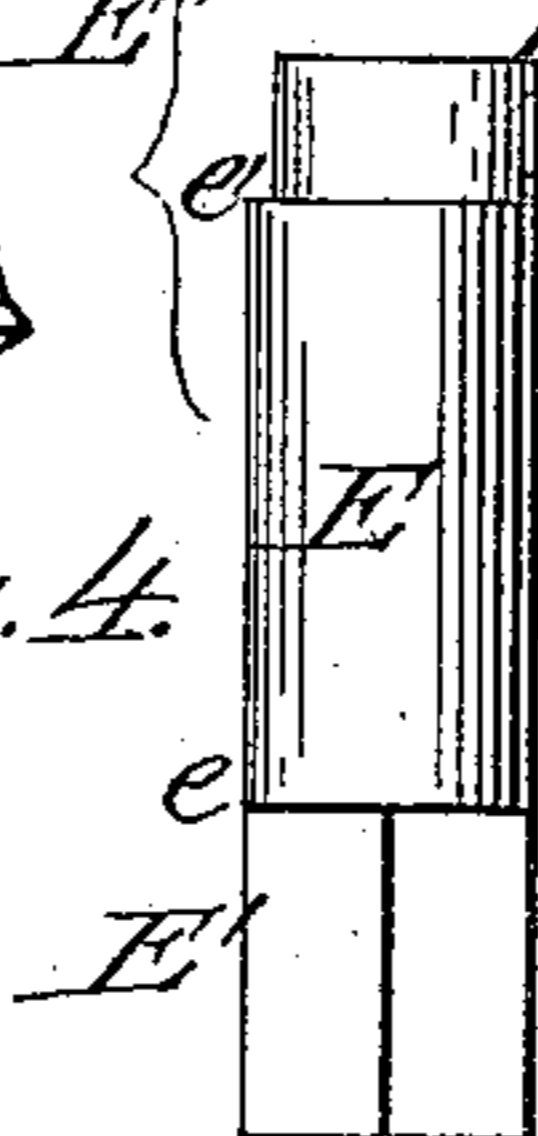


*Fig. 2.*

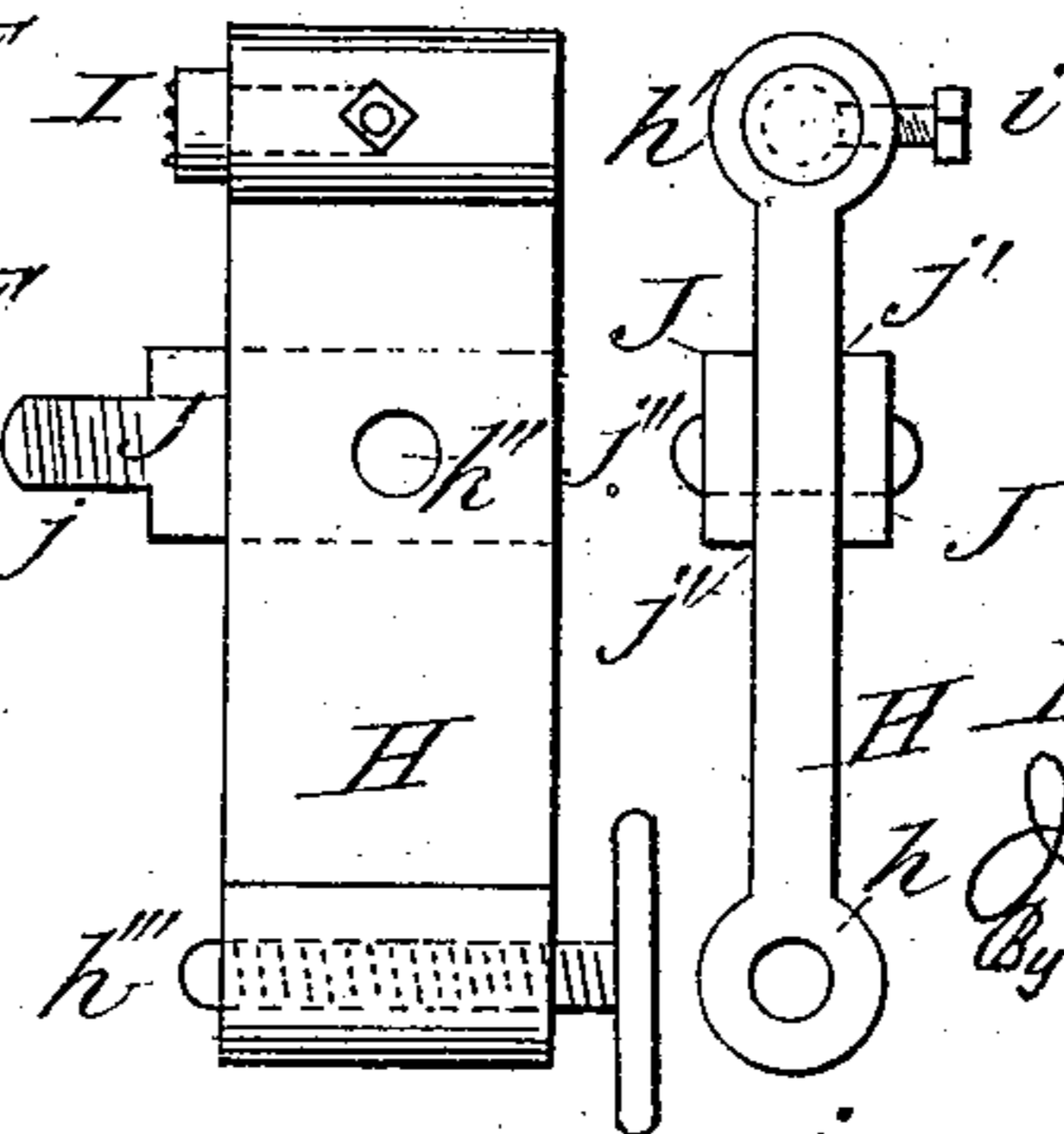


Attest:  
H. H. Schott  
G. B. Towles.

*Fig. 4.*



*Fig. 5.*



Inventor:  
John ORM  
By N. Crawford  
attly.

# UNITED STATES PATENT OFFICE.

JOHN ORM, OF PADUCAH, KENTUCKY.

## MACHINE FOR SWAGING SAW-TEETH.

SPECIFICATION forming part of Letters Patent No. 309,870, dated December 30, 1884.

Application filed August 6, 1884. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN ORM, a citizen of the United States, residing at Paducah, in the county of McCracken and State of Kentucky, have invented certain new and useful Improvements in Machines for Swaging Saw-Teeth, of which the following is a specification, reference being had to the accompanying drawings.

The object of this invention is to improve the saw-tooth-swaging machines patented to me and numbered as follows: No. 106,978, dated August 30, 1870, and No. 272,465, dated February 20, 1883, and in which the swaging of the saw-teeth is accomplished by a revolving eccentric; and it consists in the construction of the machine and the combinations of the parts of the machine to accomplish the results aimed at.

In the drawings, Figure 1 represents a side view of the machine. Fig. 2 represents a top view of the same. Fig. 3 represents the operating parts of Fig. 1 in detail. Fig. 4 represents an upright side view of the eccentric, and a top view with a saw-tooth in place to be swaged; and Fig. 5 represents a side and bottom view of the lever-clamp and its attachments.

A represents the frame of the machine, which is by preference of iron, although it may be of any suitable material that will not yield or give way under the necessary strain required in swaging saw-teeth.

B is the table, upon which a saw is placed the teeth of which are to be operated upon, is preferably made of cast-iron, with a boss or projection, B', centrally upon its under side.

C is a horizontal shaft to freely revolve in proper bearings attached to the frame A, and is put in motion by the driving-band wheel C' and the clutch c, that slides on shaft C. On the inner end of shaft C is a bevel gear-wheel, D, the teeth of which gear with the teeth on bevel gear-wheel D', that is secured to the upright shaft D'', which revolves at its lower end in an ink or step, D''', in which it is free to revolve, while its upper end revolves in a bearing attached to frame A; or it can revolve in a bearing attached to the boss B', or in said boss itself. In the upper end of shaft D'' is a

square mortise, d, of sufficient depth for strength to be used in revolving the upright eccentric that is used to swage the saw-teeth.

E is an upright shaft, having a square tenon, E', at its lower end, to fit into the mortise d in the upper end of shaft D'', and to revolve with the shaft. The body part of this short shaft E, from point e to e', is concentric to the axial line of shaft D'', and with itself, and this body part may be the journal to the upper end of shaft D''. At the upper end of this shaft E is an eccentric section, F, Fig. 4. This eccentric projects a distance up through table B, and above it far enough to act upon any thickness of saw-tooth that it is required to swage. This short shaft and eccentric are removable.

G is a half-circle cam, fast upon the upper side of gear-wheel D', and revolves with it, and its center is coincident with the axis of motion of said gear-wheel D' and shaft D'', and its ends are or may be of less height than the body of it.

H is a pivoted clamping-lever, having enlarged ends with holes h h' therein, as seen in Fig. 5, and a pivot-hole, h'', is made laterally through the body of the lever-clamp, but nearer to one end than to the other end, as is seen in said Fig. 5. In hole h is cut a screw-thread, which receives a temper or adjusting screw, h''', with a wheel, lever, or winch, j<sup>t</sup>, on its top end to turn the screw to any adjustment required. In hole h' is placed a clamping-pin, I, having a roughened or file-cut surface upon its outer and projecting end, and is held in place by the holding-screw i, that is screw-tapped through the enlarged end of lever H into hole h' and against the tang of pin I, or into a circumferential groove therein, if desired.

J is a metal fork or grooved stud, with a screw-shank, j, at its lower end to screw into the table B, and there be permanently fixed in proper position, as seen in Fig. 2.

j' is a groove or slot in the top end of the fork J, to receive the lever-clamp H, when a pivot-pin, j'', passes through hole h'' in the lever-clamp and through coincident holes in the fork J at right angles to the groove j', as seen in Figs. 2 and 5. At a point in table B and under clamping-pin I, as seen in Fig. 2,

is inserted a plate of steel, *k*, that is file-cut or corrugated on its top surface and hardened, on which the saw bears.

*L* is a steel die or anvil, against the inner end of which the back of a saw-tooth is placed while being swaged. This die or anvil is placed in a dovetail groove, *l*, cut in the upper face of table *B*, and in which the anvil *L* can freely slide.

*L'* is a block of metal, made fast to the upper side of the table *B*, and *l'* is a wedge-shaped key, that bears against the side of block *L'*, or in a groove that receives it, while the opposite edge bears against the anvil *L* in a groove in the end thereof, and by this wedge the anvil is regulated to accommodate the size of the saw-teeth to be swaged.

*M* is a steel bar fitted to slide freely in a hole in table *B*, to be directly over the pathway of cam *G* in its revolution, and so that the cam will raise the bar upward and hold it up during the continuance of the cam to bear against it, and as the cam passes it drops a short distance by its own weight. This steel bar is placed in the table to be directly under and coincident with the lower end of the adjusting-screw *h'''*, and against which it bears during the action of the cam in its contact with the bar *M*. By this construction and arrangement of the parts, the saw being placed upon the table *B* in proper position for the revolving eccentric swage to act upon a tooth, the cam *G* raises the bar *M* against the temper-screw *h'''*, raising that end of clamp-lever *H*, forcing the opposite end, having the clamping-pin *I*, down upon the saw, which is firmly held between the roughened surfaces of pin *I* and the steel plate *k* in table *B* until the revolving eccentric swage has acted upon the point of a tooth to swage it that is placed between the swage *E* and the anvil *L* when the cam *G* will have passed from its bearing against bar *M*, when the bar falls and the saw is relieved from its clamp, and to be changed

in position to bring another tooth in place to be swaged, when the revolution of cam *G* again forces the bar upward, clamping the saw firmly, when the eccentric is again brought into contact with a saw-tooth and that tooth is swaged, so on until all the teeth in a saw are swaged without stopping the machine after once adjusting it in its parts, to give ample time for the operator to change the saw from tooth to tooth while the cam *G* on shaft *D''* is making a revolution. By such construction of machine, the whole action of swaging saw-teeth is in clear view of the operator.

Having thus fully described my improvement, what I claim, and desire to secure by Letters Patent, is—

1. In a saw-tooth-swaging machine, the revolving upright shaft *D''*, having the revolving eccentric *F* secured to its upper end and revolving in table *B*, in combination with the adjustable anvil *L*, substantially as and for the purposes described.

2. In a saw-tooth-swaging machine, the adjusting-wedge *l'* and block *L'*, in combination with the sliding anvil *L*, substantially as and for the purposes described.

3. In a saw-tooth-swaging machine, the combination of the revolving half-circle cam *G*, sliding bar *M*, pivoted clamping-lever *H*, having screw *h'''*, and adjustable pin *I*, with the roughened-face steel plate *k* in table *B*, all substantially as and for the purposes described.

4. In a saw-tooth-swaging machine, the combination of the upright revolving and removable short shaft *E*, having the eccentric *F* thereon, with the upright revolving shaft *D''*, substantially as and for the purposes described.

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

JOHN ORM.

Witnesses:

M. B. E. GREIF,  
M. B. NASH.