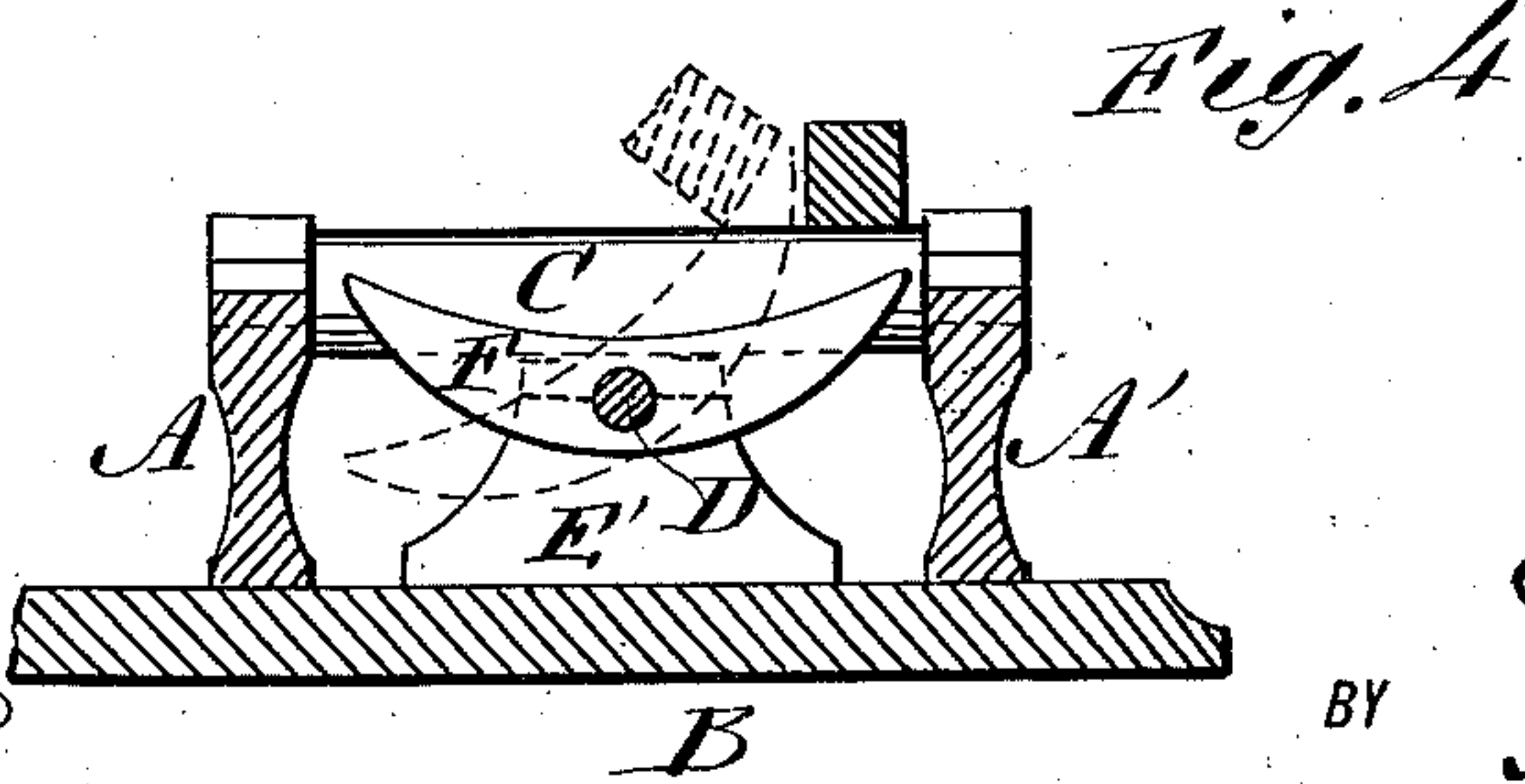
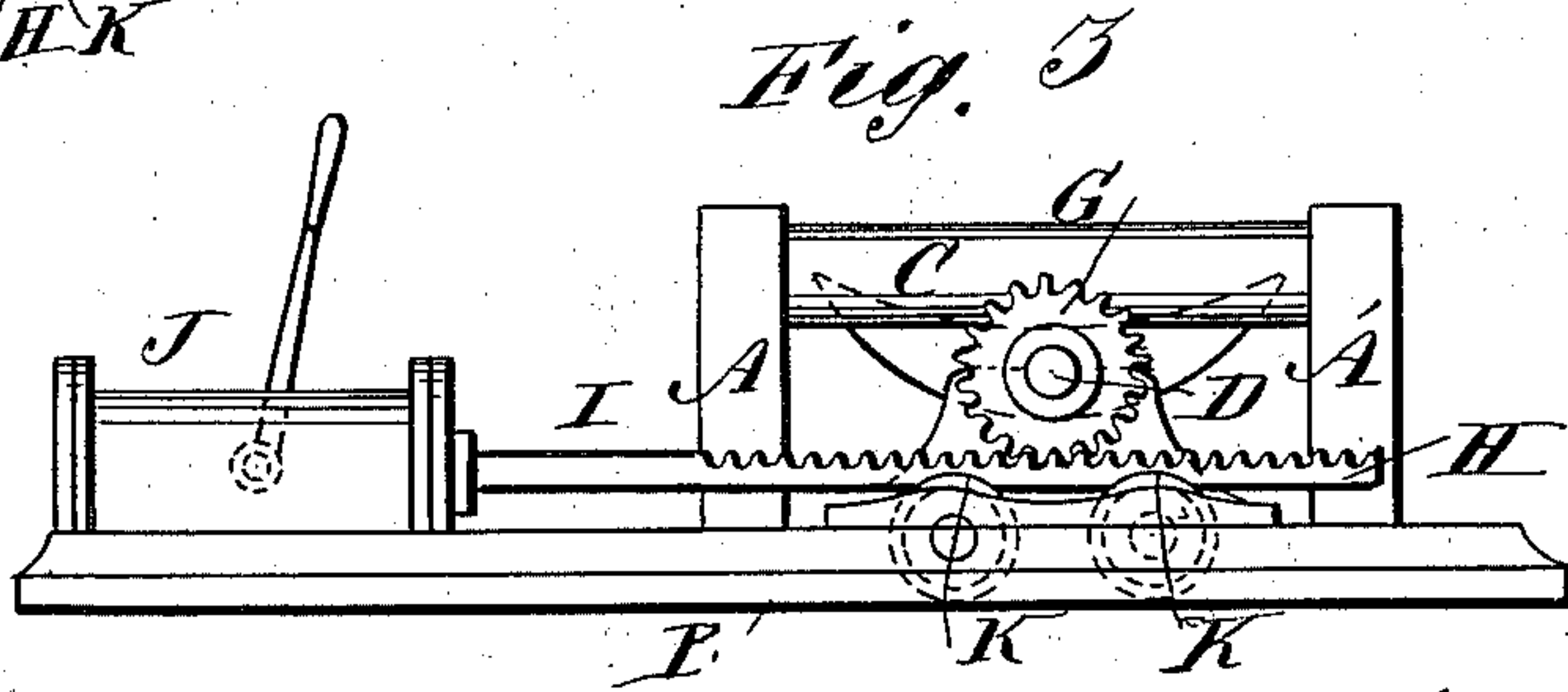
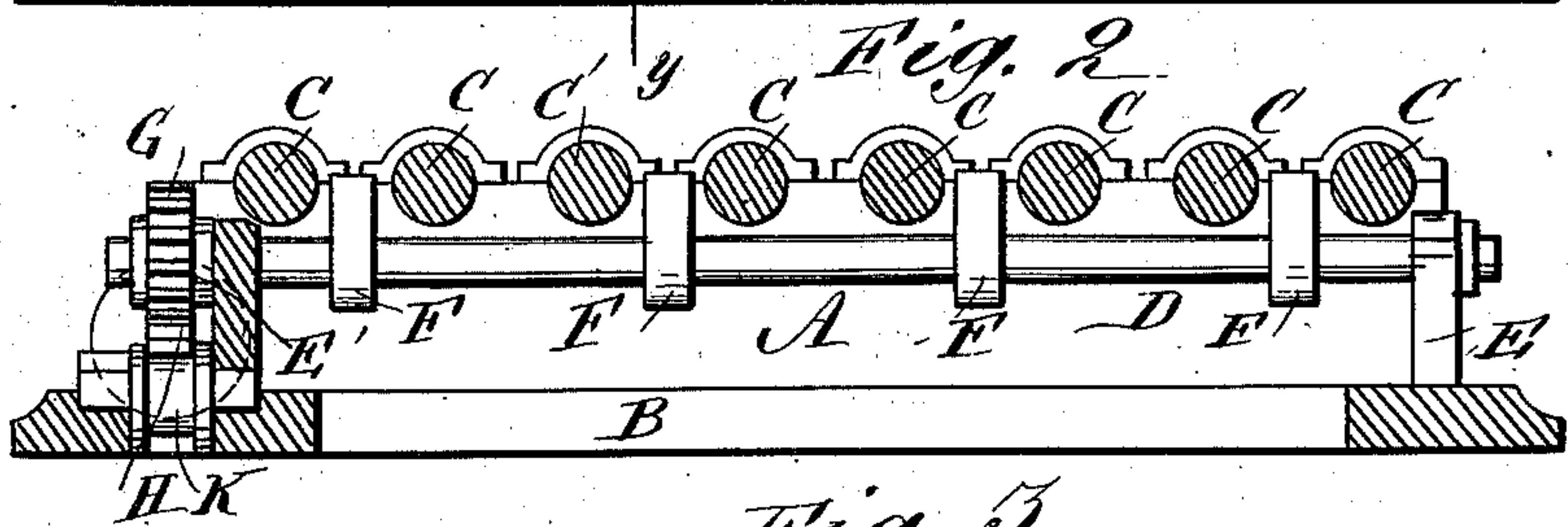
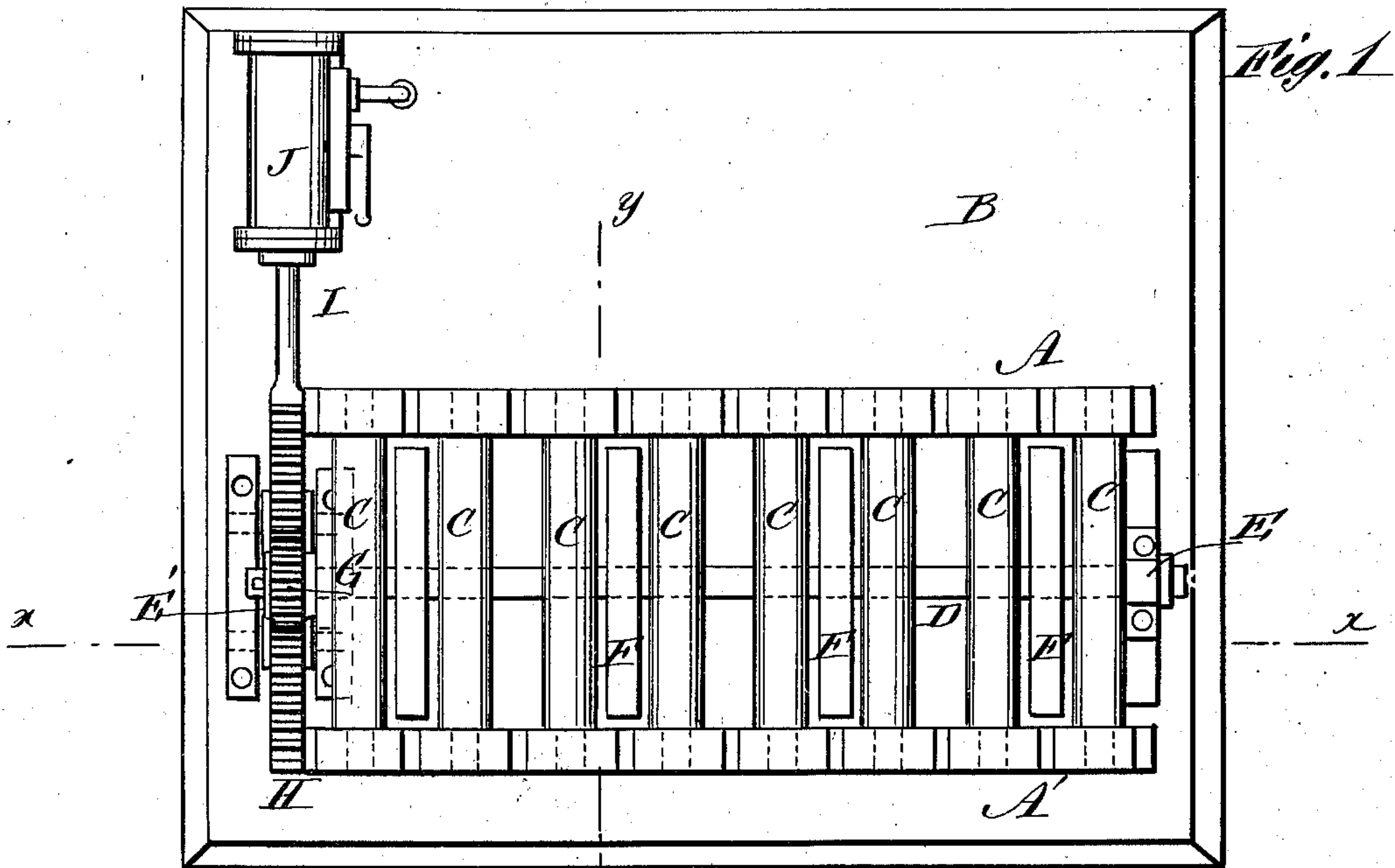


(No Model.)

O. P. MASON.  
INGOT MANIPULATOR.

No. 388,570.

Patented Aug. 28, 1888.



**WITNESSES:**

C. Neveu  
c. Sedgwick

***INVENTOR:***

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BY

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# UNITED STATES PATENT OFFICE.

ORLANDO P. MASON, OF BELLAIRE, OHIO.

## INGOT-MANIPULATOR.

SPECIFICATION forming part of Letters Patent No. 388,570, dated August 28, 1888.

Application filed July 11, 1888. Serial No. 279,665. (No model.)

*To all whom it may concern:*

Be it known that I, ORLANDO P. MASON, of Bellaire, in the county of Belmont and State of Ohio, have invented a new and Improved Ingot-Manipulator, of which the following is a specification, reference being had to the annexed drawings, forming a part thereof, in which—

Figure 1 is a plan view of my improved ingot-manipulator. Fig. 2 is a longitudinal section taken on line *xx* in Fig. 1. Fig. 3 is an end elevation, and Fig. 4 is a transverse section taken on line *yy* in Fig. 1.

Similar letters of reference indicate corresponding parts in all the views.

In the manufacture of steel blooms, billets, slabs, &c., it is usual to work the cast ingot of steel down to the smaller sizes of blooms, &c., in a kind of rolling-mill known as a "blooming-mill." There are two principal forms of this mill; first, the "two-high"—that is, having two rolls—and, second, the "three-high"—having three rolls. This invention has reference to the two-high mill. In this mill the cast ingot is worked down into the various sizes of rolled blooms, &c., by being passed between the two rolls forward and backward successively until it is reduced to the desired size. In the operation the ingot is fed to the rolls by means of tables having driven rollers on which the ingot lies and by which it is moved backward and forward as it is passed to and fro through the rolls. During the operation it is frequently necessary to turn the partially-worked piece on its edge and also to move it from one side of the table to the other. In case of a blooming-mill making a variety of sizes this work has always been done by hand.

The object of my invention is to move the ingots by power.

My invention consists of a horizontal shaft carried on proper bearings, said shaft being provided with a series of projecting arms, of any suitable shape—preferably of a crescent-shape—at right angles to its axis. At any point on the shaft—preferably at the end—is a pinion working into a rack, which is actuated by a hydraulic cylinder, by a small reversing engine, or in any other suitable manner, the length of the rack being such as to allow the

shaft to make one complete revolution. This shaft, with its arms, is arranged on its bearings under the rollers of the blooming-mill table with the arms extending upward between the rollers and just below the level of same.

The side bars, *A A'*, of the table are mounted on the solid base *B*, and in the said bars, near their upper edges, are journaled the rollers *C*, in the usual way. Under the rollers *C*, and at right angles to their axes, is journaled a shaft, *D*, in pillar-blocks *E E'*. Upon the shaft, between the pillar-blocks, are secured crescent-shaped cross-arms *F*, which are a little shorter than the space between the bars *A A'*, and upon the end of the shaft projecting through the pillar-block *E'* is secured a pinion, *G*, which is engaged by a rack, *H*, the said rack being attached to or formed upon the piston-rod *I* of the steam or hydraulic cylinder *J*. The rack *H* is supported upon grooved rollers *K*, journaled in the base *B*.

The operation of my improved machine is as follows: The ingot having been placed on the rollers *C*, forming the table, it is manipulated in the usual way until it becomes necessary to turn it over upon another side, when it is brought by the rollers to a position which will enable it to be moved by the arms *F*. Steam or water is let into the cylinder *J*, moving forward the rack, turning the shaft *D*, and causing the arms *F* to catch the piece on its lower corner and tumble it over. After turning it over, if it is desirable to move it still farther the rotation is continued in the same manner, and the piece may be moved to any desired position upon the table by causing the arms *F* to engage it upon one side or the other.

By means of my improved apparatus a piece can be turned in either direction, or it can be moved at will to any desired position.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. The combination, with the table formed of the rollers *C*, of the shaft *D*, provided with cross-arms *F*, adapted to swing upward between the rollers, substantially as specified.

2. The combination, with the rollers *C*, forming the table, of the shaft *D*, the arms *F*, carried by the shaft and arranged to extend upward between the rollers, and rack and pinion

mechanism for turning the shaft D, substantially as specified.

3. The combination, with the rollers C, forming the table, of the shaft D, the arms F, carried by the shaft and arranged to extend upward between the rollers, rack and pinion mechanism for turning the shaft D, and the

steam or hydraulic cylinder F for moving the rack, substantially as specified.

ORLANDO P. MASON.

Witnesses:

EDGAR THOMAS,  
J. F. LAZURE.