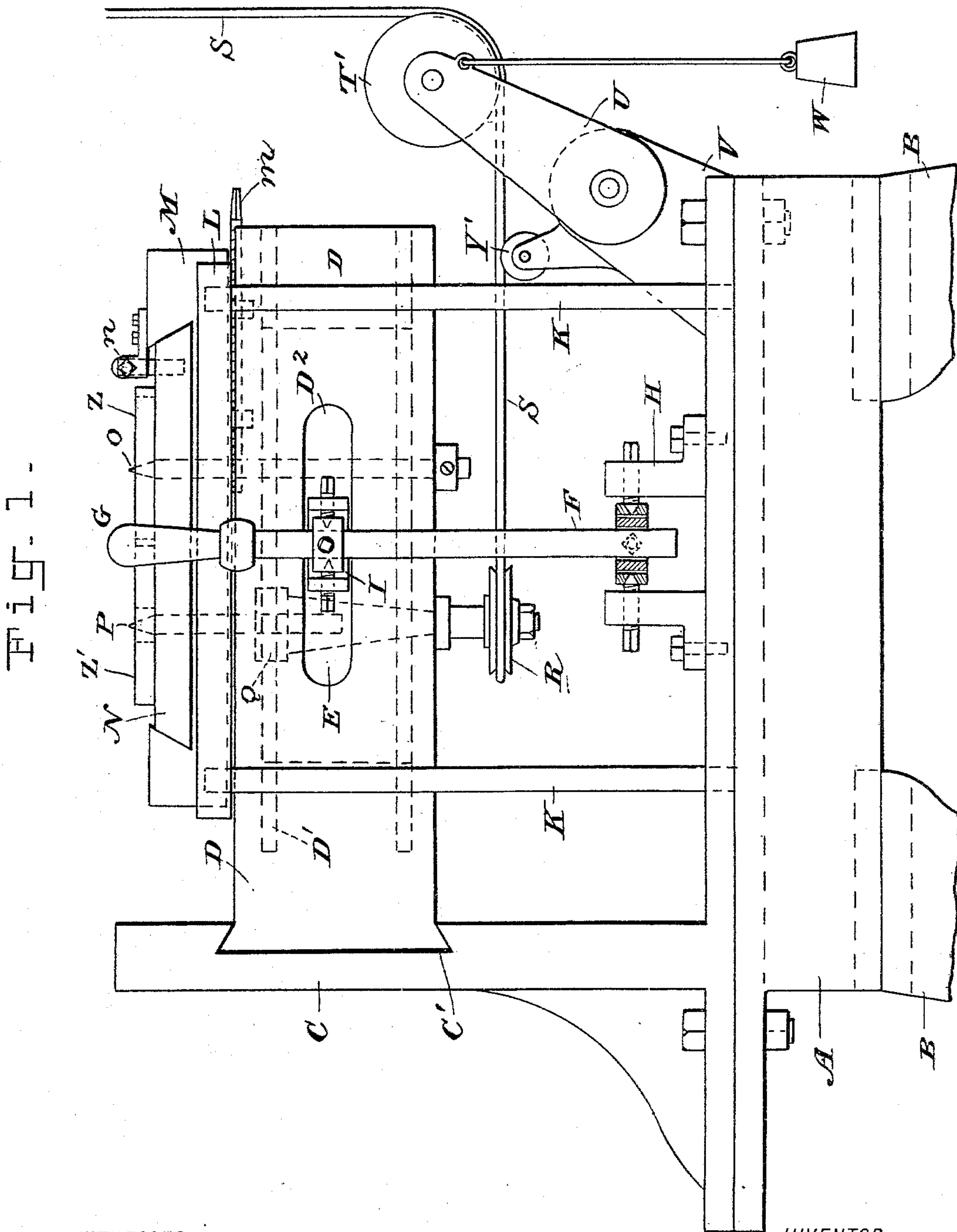


3 Sheets—Sheet 1.

No. 597,893.

Patented Jan. 25, 1898.



INVENTOR

E. B. Bolton  
O. H. Murray

Luigi Filippo Campi  
BY  
Richard J.  
ATTORNEYS

ATTORNEYS

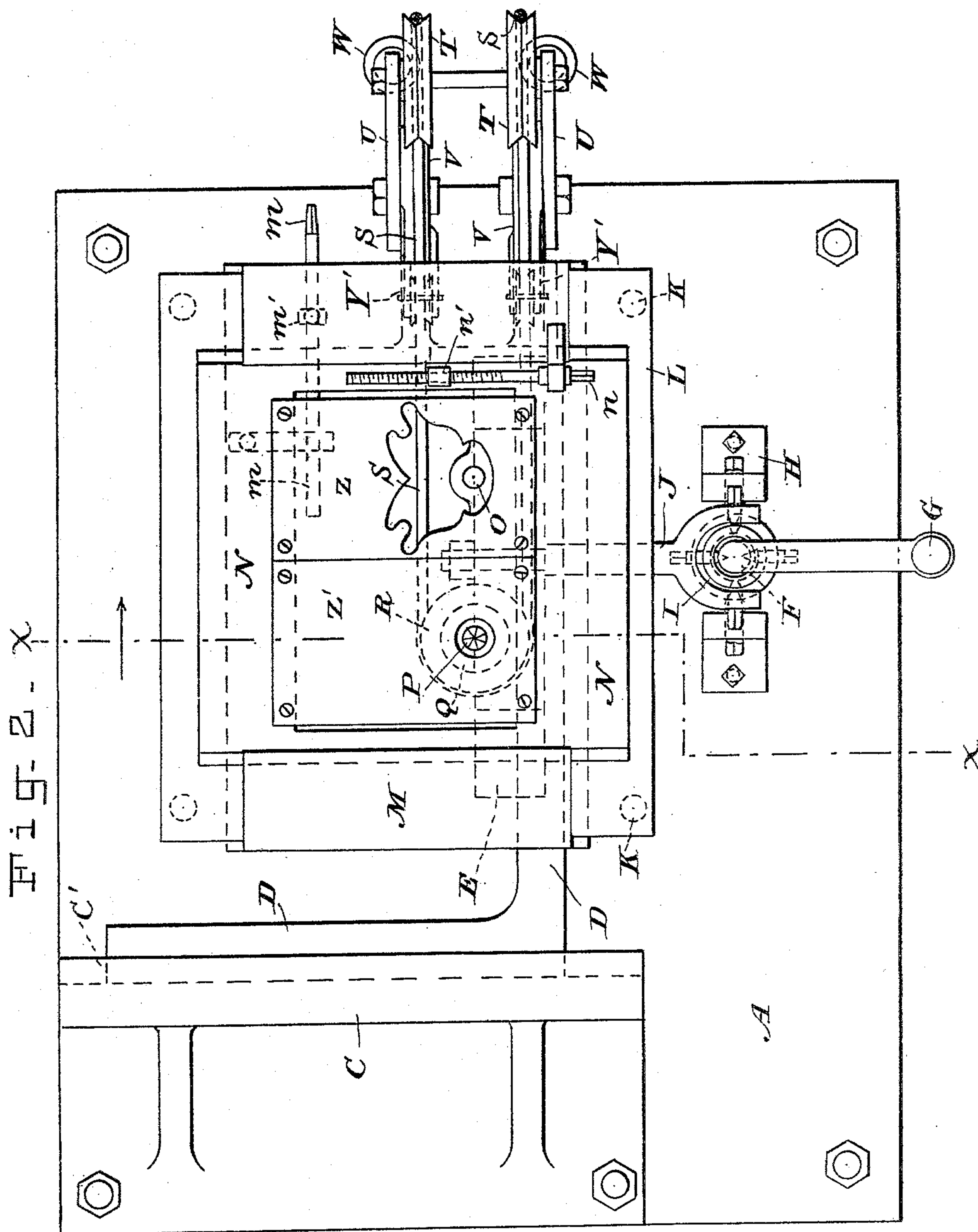
(No Model.)

3 Sheets—Sheet 2.

L. F. CAMPI.  
MILLING MACHINE.

No. 597,893.

Patented Jan. 25, 1898.



WITNESSES:

*E. B. Bolton*  
*O. Munk*

INVENTOR

*Luigi Filippo Campi*  
BY *Richardson*  
ATTORNEYS

(No Model.)

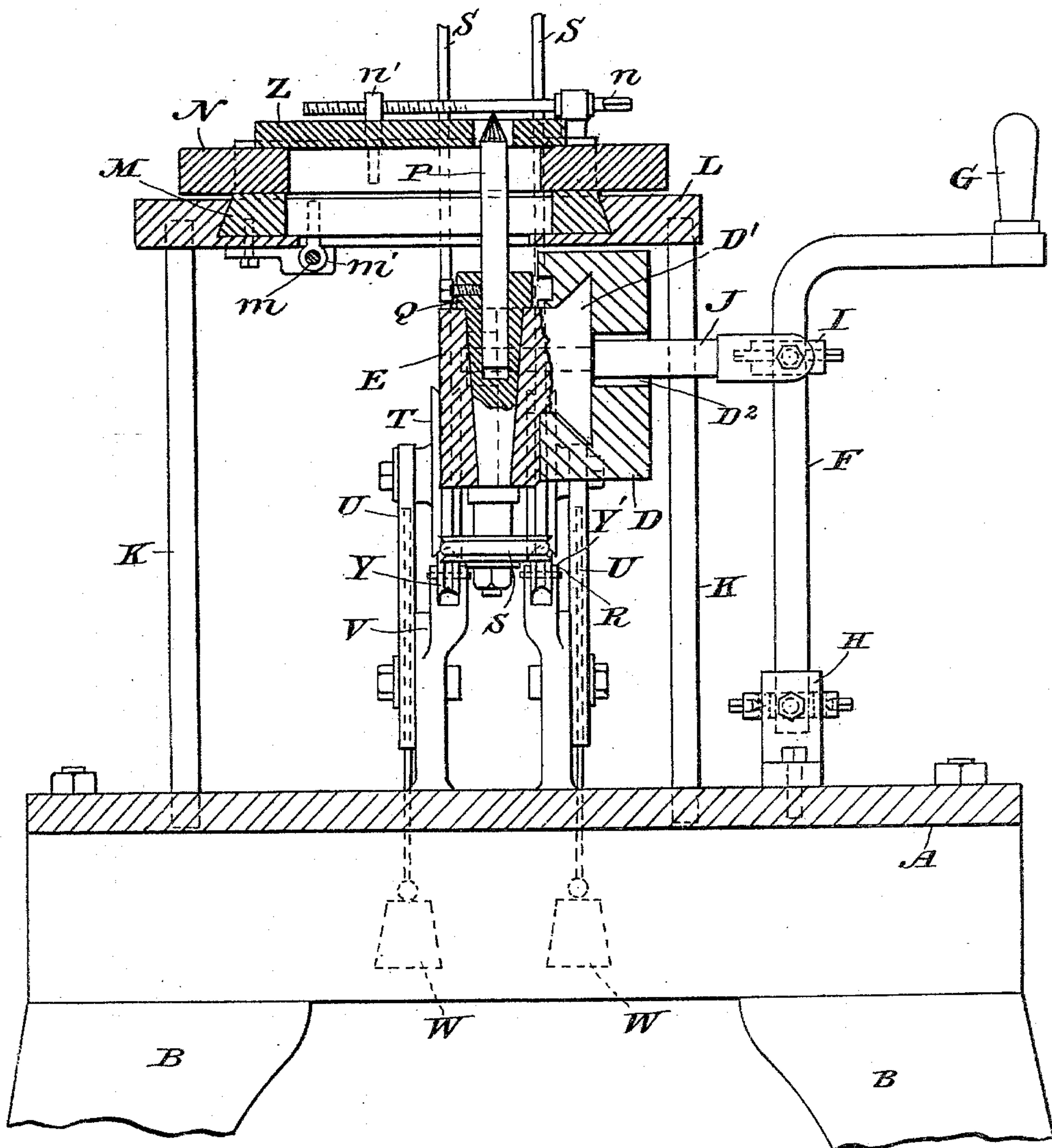
3 Sheets—Sheet 3.

L. F. CAMPI.  
MILLING MACHINE.

No. 597,893.

Patented Jan. 25, 1898.

Fig. 3.



WITNESSES:


E. B. Holton

*Ottomun*

***INVENTOR***

Luigi Filippo Cambré

BY

BY 

ATTORNEYS



# UNITED STATES PATENT OFFICE.

LUIGI FILIPPO CAMPI, OF NEW YORK, N. Y., ASSIGNOR TO SIDNEY ALEXANDER KELLER, OF SAME PLACE.

## MILLING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 597,893, dated January 25, 1898.

Application filed July 21, 1897. Serial No. 645,453. (No model.)

*To all whom it may concern:*

Be it known that I, LUIGI FILIPPO CAMPI, an Italian subject, residing at New York city, in the county and State of New York, have invented a new and useful Milling-Machine, of which the following is a specification.

My invention relates to an improved machine for cutting trimming-dies, the object being to do this work in a more rapid, economical, and perfect manner than heretofore. This object is attained in part by the use of a pattern which serves as a guide and prevents the cutting-tool from going wrong and enables an unskilled workman to operate the machine.

My improved machine is illustrated in the accompanying drawings, in which—

Figure 1 is a front elevation, Fig. 2 a plan, and Fig. 3 a transverse section on the line X X of Fig. 2.

Similar letters refer to similar parts throughout the several views.

The machine proper is supported upon a table A, having legs B B. To this is securely fastened an upright standard C, provided with a groove C', into which is fitted by a dovetail joint an arm or bracket D, which is free to move in the groove C' from the front to the back of the machine. This arm D on its rear face has a longitudinal groove D', within which is fitted by a dovetail joint a block E, which moves freely within the groove D' longitudinally of the machine. A lever F, having a handle G, is secured to the table A by a universal joint H, and by a similar universal joint I the said lever is secured near its upper extremity to a bar J, which bar is rigidly connected with the block E through an elongated slot D<sup>2</sup> in the arm D.

Supported upon standards K, near the four corners of the supporting-base, is a series of frames, the lowermost of which, L, is rigidly secured to the standards K. The interior edges of the frame L, running longitudinally of the machine, are grooved to receive projecting portions upon the under side of the frame M, which permit the frame M to reciprocate in a longitudinal direction in the grooves of the frame L. Upon the upper side of the frame M are grooves running in a transverse direction, and in these is fitted a frame N, which is thus adapted to move trans-

versely. To the frame L there is secured a screw-threaded rod *m*, the screw-threads being adapted to engage with a nut rigidly secured to the frame M. By means of this rod the table M is moved longitudinally when desired. A similar rod *n* and nut *n'* serve in like manner to move the work-supporting table N in a transverse direction. The openings in the frames L, M, and N normally coincide and are immediately over the support or block E. The bar J is rigidly secured to the block E near the middle thereof. Upon the right side of the block there is rigidly supported a tracing-point O, which projects through the openings in the several tables and to a point substantially on a level with the top of the table N. On the left side of the block E there is secured a milling-tool P. This tool P is secured with a chuck Q by any usual means. The chuck Q has its bearing in the block E, and this bearing is tapered slightly to take up wear. Upon the lower end of the chuck is mounted a pulley R, to which motion is communicated by a belt S from any suitable source of power. Since in the operation of the machine, as will be later explained, the distance between this pulley R and the source of power is continually changed, I have provided an appliance for taking up the slack of the belt. This appliance is seen in elevation in Fig. 1 and in plan in Fig. 2 and consists of two idler-pulleys T and T', under which the belt is carried, and which pulleys are mounted in the movable frame U, which is pivoted to a support V, and from the upper end of the frame near the idlers T and T' is suspended a weight W, which when the belt is slackened tends to draw down the idler-pulleys and thus tighten the belt sufficiently to convey power. In order to prevent the belt being thrown off the pulley R when these idlers T T' are drawn down, I provide another pair of idlers Y Y', between the pulley R and the idlers T T', over which the belt runs and which maintains a straight draft of the belt upon the pulley R.

Having now described the construction of my machine, I would point out its mode of operation. A pattern Z is securely fastened to the frame N upon the right-hand side of the same and immediately over the tracing-point O, and upon the left-hand side of the frame



N is fastened the piece of metal Z' to be operated upon, a hole or holes having been first bored through the same through which the milling-tool P rises. The machine being put in operation, the milling-tool is caused to revolve. The operator grasps the handle G and by means of same causes the tracing-point O to follow the pattern-design. The milling-tool P, being moved by the same handle over an exactly similar path, will by cutting reproduce in the metal Z' exactly the same design as the pattern Z. Where the design is a large one and the movement of the tracing-point O and the milling-tool P when operated by the handle G is not sufficient to reach all parts of the design, both pattern Z and the metal Z' operated upon may be moved relative to the tracing-point O and milling-tool P by shifting the frames M or N, as necessary. If it is desired to move the work to the right or to the left, then the frame M is moved in the desired direction by turning upon the screw-threaded rod m. If the work should be moved toward or away from the operator, then the frame N may be moved by turning the screw-threaded rod n. Since the relative position of the design Z and the metal Z' is not changed by these movements, the operation may be interrupted, the work moved, and the operation again resumed without any injurious effect upon the work.

What I claim, and desire to secure by Letters Patent, is—

1. In combination, the work-supporting table adapted also to support the pattern, a tracing-point for the pattern, a cutting-tool, a support for the point and tool having movement in the same plane in two directions at right angles to each other with means for moving the said tool-support, the said tool-support and work-supporting table being arranged to move in parallel planes but confined rigidly against movement toward and from each other perpendicularly, substantially as described.
2. In combination, a block movable in two directions in a horizontal plane, a work-supporting table movable in two directions in a

parallel plane, said table being arranged to receive the work and pattern side by side, and the tool and tracing-point arranged at different points on the movable block and extending to the work and pattern, the said work-supporting table and tool-block being confined against movement perpendicularly to their movements in parallel planes, substantially as described.

3. In combination, the standard C, the bracket D guided therein to move transversely and extending laterally from said standard, a block guided in said bracket to move in the same plane with but at right angles to the movement of the bracket, the work-supporting table over the bracket comprising the frames movable in a horizontal plane at right angles to each other, one of the frames being adapted to receive the work and pattern side by side, and the tool and tracing-point extending up from the block at different points thereon, substantially as described.

4. In combination, the standard C, the bracket D movable therein and slotted, the block movable on the bracket longitudinally thereof, the work-supporting table, the tracing-point and tool on the movable block and the handle connected to the block through the slot in the bracket, substantially as described.

5. In combination, the standard C, the bracket D movable therein, the tool-block movable in the bracket in the same plane with but at right angles to the movement of the bracket, the work-supporting table movable in a plane parallel with the plane in which the tool-block moves and the tracing-point and tool extending into the plane of the work through the work-supporting table, said holder and tool-block being confined against movement toward and from each other.

In witness whereof I have hereunto set my hand in presence of two witnesses.

LUIGI FILIPPO CAMPI.

Witnesses:

WILLIAM MELLAN WHITE,  
OTTO MUNK.