

E. W. BLACKHALL.
Paper-Ruling Machine.

No. 222,174.

Patented Dec. 2, 1879.

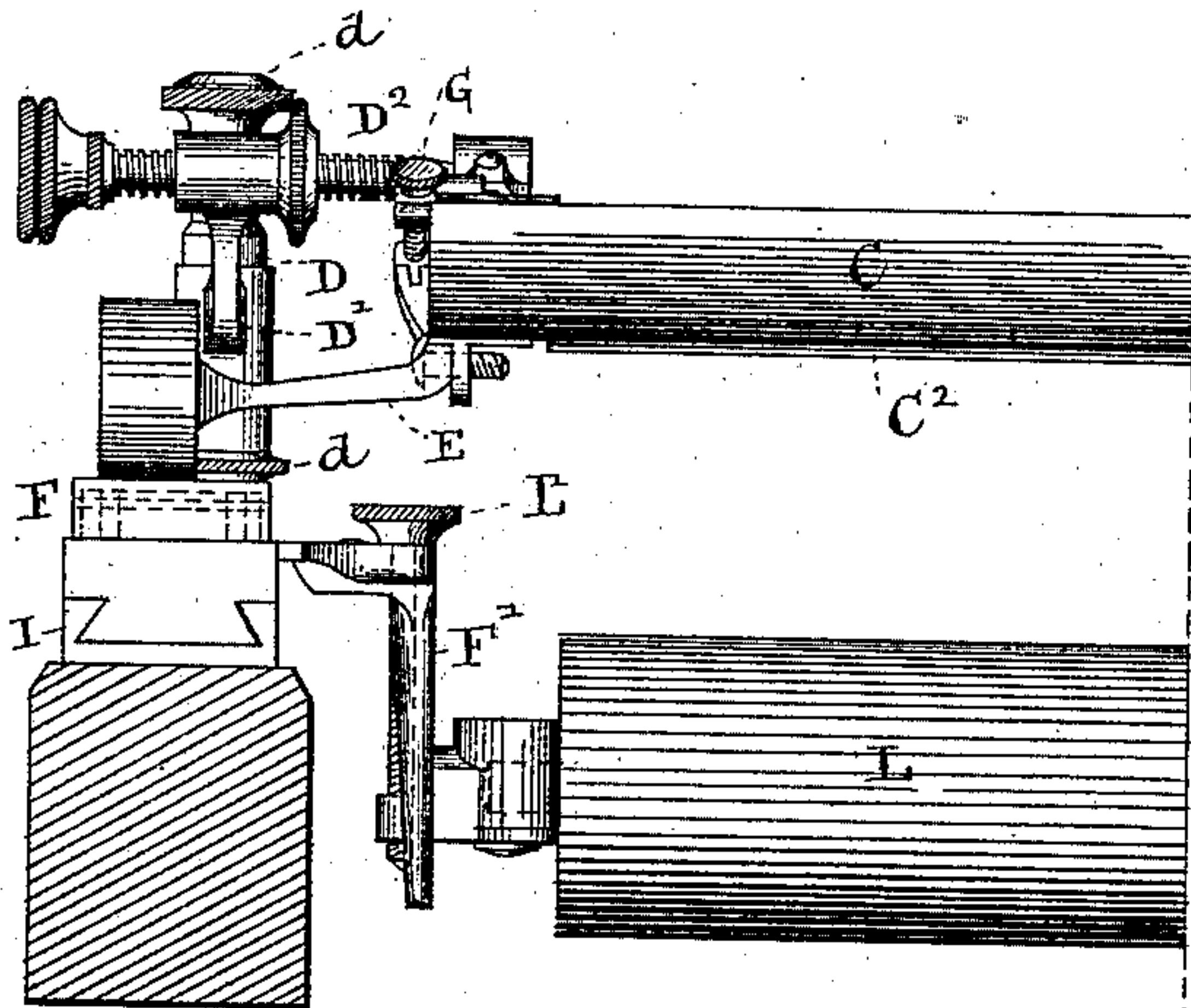


Fig. 1.

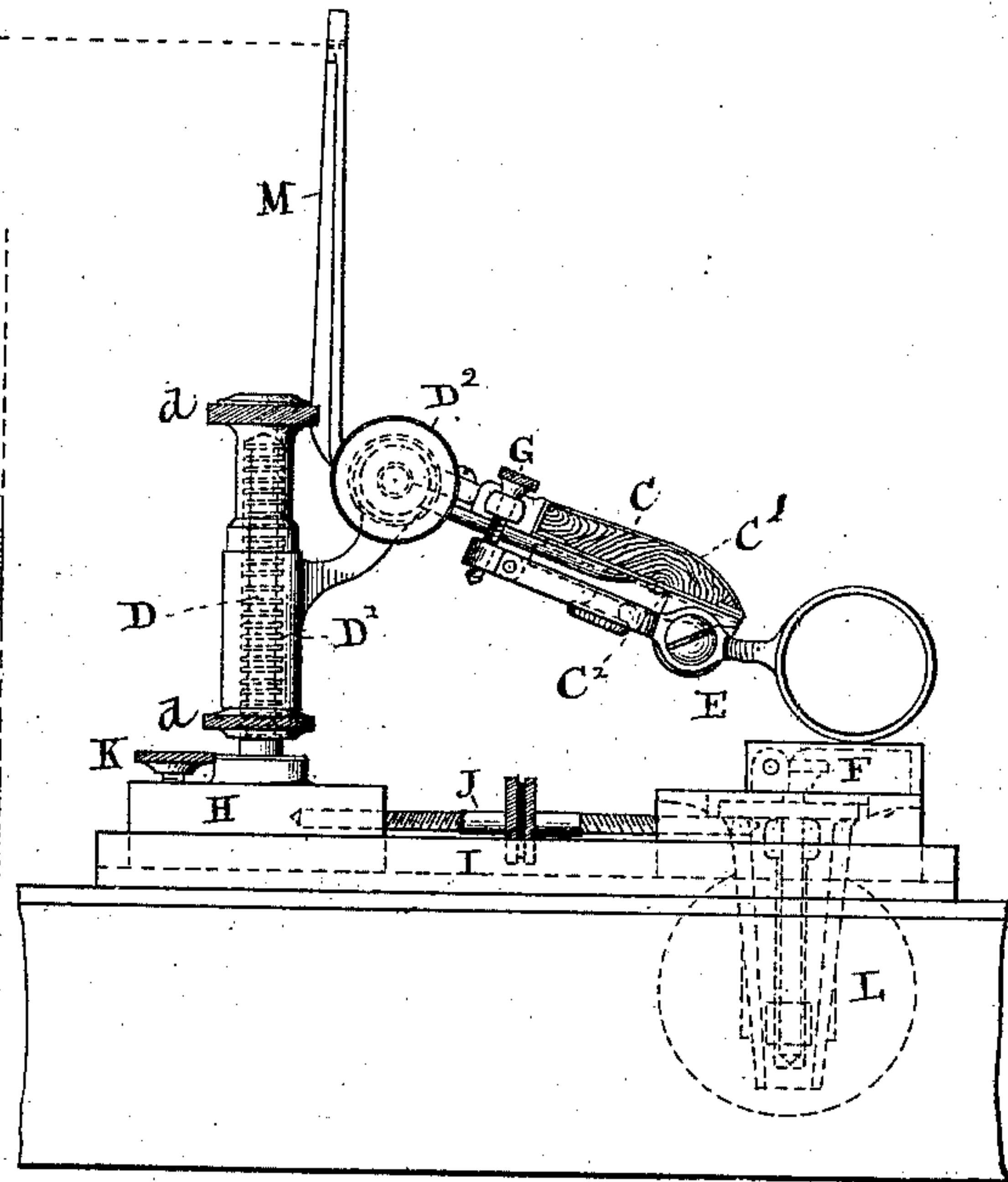


Fig. 2.

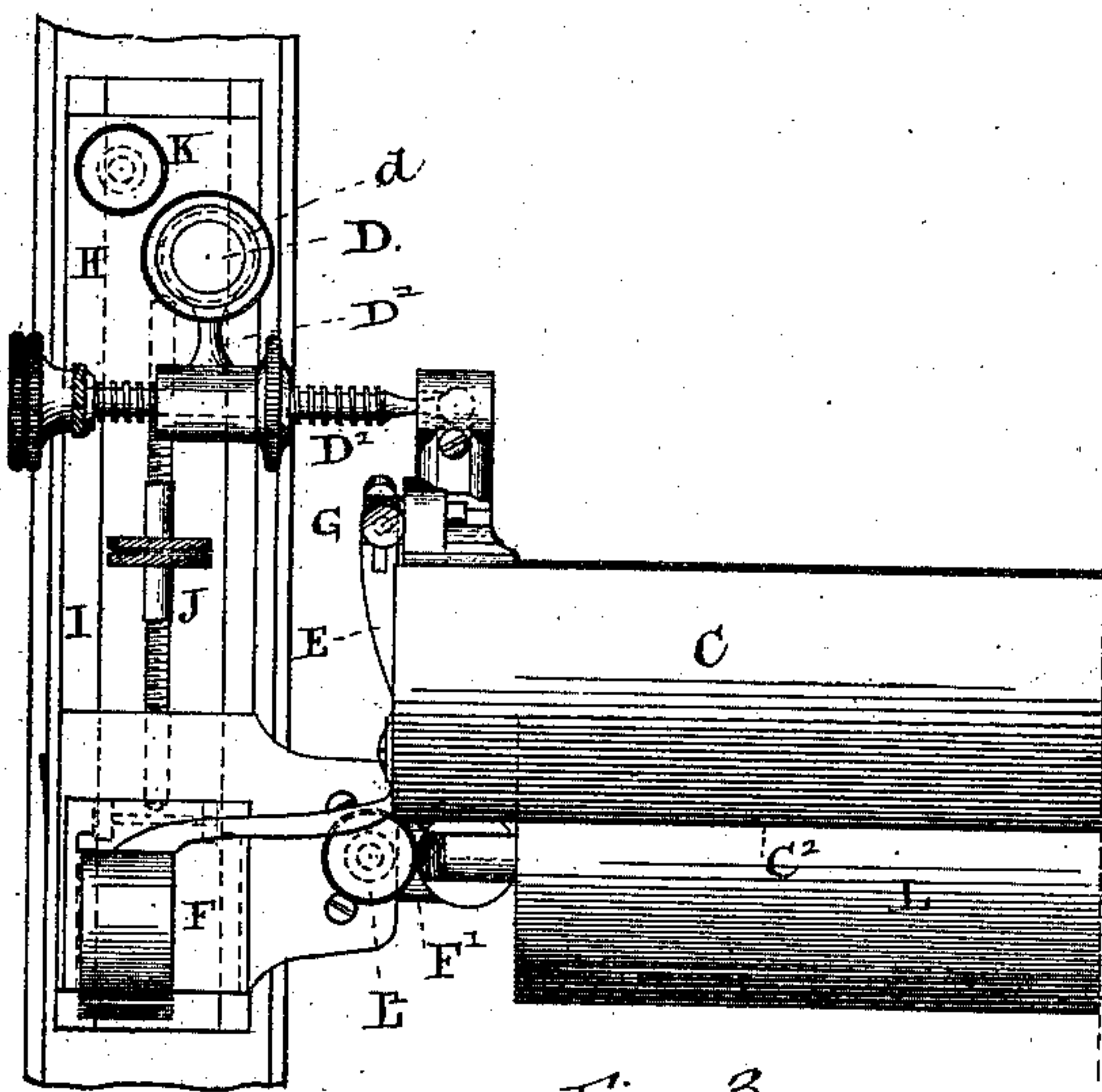


Fig. 3.

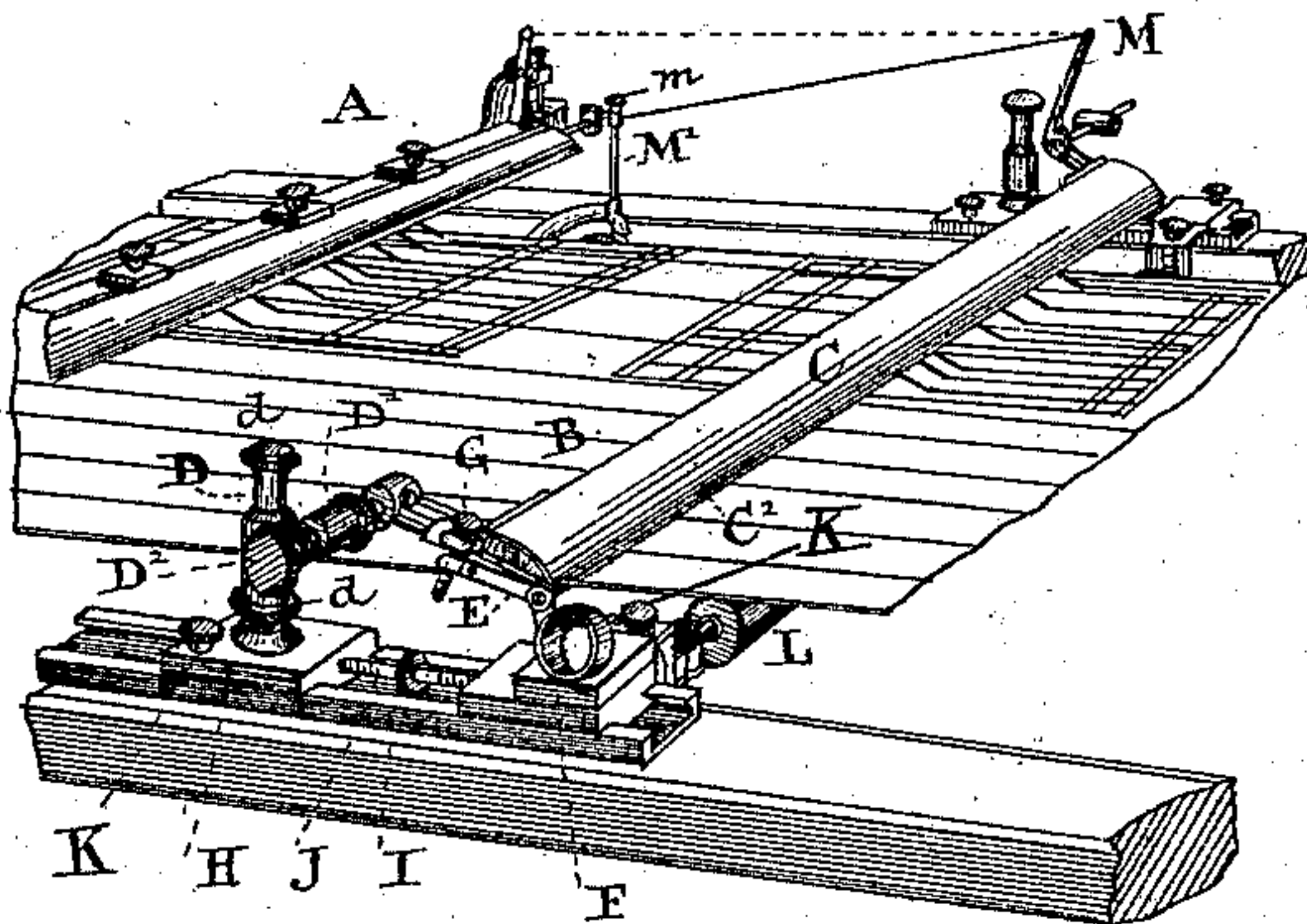


Fig. 4.

Witnesses:

L. Whitehead
John G. Ridout

Inventor:

Edward W. Blackhall
by Ridout & Co
Atty's

UNITED STATES PATENT OFFICE.

EDWARD W. BLACKHALL, OF TORONTO, ONTARIO, CANADA, ASSIGNOR OF
ONE-FOURTH OF HIS RIGHT TO JOHN YOUNG REID, OF SAME PLACE.

IMPROVEMENT IN PAPER-RULING MACHINES.

Specification forming part of Letters Patent No. 222,174, dated December 2, 1879; application filed
January 30, 1879.

To all whom it may concern:

Be it known that I, EDWARD WAKEFIELD BLACKHALL, of the city of Toronto, in the county of York and Province of Ontario, Canada, have invented certain new and useful Improvements in Paper-Ruling Machines, which improvements are fully set forth in the following specification and accompanying drawings.

My invention relates to a paper-ruling machine; and the novelty consists in the construction and arrangement of parts, as will be more fully hereinafter set forth.

In the accompanying drawings, Figure 1 is a front view of a section of the machine, showing the pen-clamp and main roller and their adjuncts; Fig. 2, a side view of a section of the machine, showing the same parts; Fig. 3, a plan of a ruling-head and clamp constructed according to my invention. Fig. 4 is a perspective view of parts of the machine.

In Fig. 4, A is the stationary ruling-head ordinarily used, and B is a second head, arranged to work in connection therewith. Any number of additional heads may be used, as required; but for the purpose of illustration the one shown is sufficient. The second head is operated from an independent cam-wheel, in which cams of varying length may be inserted; or in some classes of work the second head could be operated by a string or other flexible connection from the stationary head, as shown by dotted lines. The heads are arranged so that each set of pens work with the required intermittent motion for ruling the lines in their proper places.

Although the adjusting mechanism of the second head may be varied from that shown, I prefer to use the construction hereinafter described, as it admits of great nicety of adjustment and produces very perfect work, and its substitution for the first or stationary head now ordinarily used would be attended with great advantage.

C is the pen-clamp, the bar of which is of wood, partly incased in a metal sheathing, C', which sheathing is carried around sufficiently far to form an upper bearing for the pens.

The metal sheathing protects the wood and prevents the winding and twisting out of shape,

which causes so much annoyance under the ordinary construction.

The under plate, C², of the clamp is made of wood faced with thin rubber or other elastic material, to insure a tight gripe on the pens. The clamping-faces being of metal and rubber, respectively, the pens are always held firmly and uniformly, the elasticity of the rubber compensating for any irregularity in the thickness of the pens.

The pen-clamp is supported from a threaded standard, D, by a bracket, D', and screw D². The connection between the screw D² and clamp is made with a ball-and-socket joint, which permits of the adjustment of the clamp in any direction by means of the several adjusting-screws. The bracket D' slips loosely over the threaded standard D, and is fastened at any desired elevation by means of the nuts d d, placed above and below the bracket on the standard.

A front support for the clamp is formed by the bar E, which is pivoted at or about its center to the under side of clamp, one end projecting forward and terminating in a lifting-hook, which rests on the block F, and the other end is carried rearward and connected to the clamp-frame by a screw, G, in such manner that the elevation of the points of the pens can be altered by the movement of the screw G.

The standard D is attached to a block, H, which block and block F are fitted on a guide, I, and connected by a right-and-left screw-rod, J, in such manner that either block and connections, respectively, may be moved farther apart or brought closer together.

A set-screw, K, allows the block H to be held firmly fast in the guide I, and when thus secured the block F may be moved in either direction at will by turning the screw J. When the screw K is loosened both blocks may be moved farther apart or closer together, as desired, each moving freely in the guides.

L is the main roller, located under the position of the pens. The shaft of this roller is supported at one end in a bracket-bearing, L', which is attached to block F, and by means of the screw J the position of the roller may

be varied in one direction, while the vertical screw-connection I' , connected to the bearing of shaft, allows of perpendicular adjustment, as desired.

M is an arm on the second clamp, to which arm the connection from the cam-bracket arm M' , or the first ruling-head, is made by a flexible ribbon or cord. One end of this ribbon is attached to a winding-up screw, m , on the cam-bracket arm, for better adjustment and to compensate for any stretching of the ribbon or cord.

The position of the second ruling-head may be varied at will, as the character or size of the work to be done requires—that is, it is adjustable to every possible requirement and is independently capable of performing all classes of work that can be done at present on single-head ruling-machines in a very perfect manner, and the great superiority of its construction enables an operator to turn out work with rapidity and satisfaction.

In operation each head can be arranged to operate automatically and independently, or they can both operate with the same intermittent stroke, or either one can be operated by hand; and if the second head be not required for the time being it can be swung back out of the way.

A further advantage is that in intricate work

one color can be used on one clamp and a different color on the other clamp. One clamp can be running through lines and the other “striking” any desired number of times on each sheet.

I claim as new and desire to secure by Letters Patent—

1. The combination of the blocks H and F , guide I , pen-clamp C , adjustably supported from the block H , roller L , supported from the block F , right-and-left screw J , and set-screws K , substantially as and for the purposes specified.

2. The combination of the right-and-left screw-rod J with the blocks F and H , having set-screws K , and the guide I , as and for the purposes specified.

3. The combination of the under roll, L , bracket-bearing F' , block F , screw J , to give longitudinal adjustment, screw I' , to give vertical adjustment, and the pen-clamp C , as and for the purposes herein set forth.

4. The adjustable pen-clamp C , provided with the arm M , in combination with the cam-bracket M' , or its equivalent, substantially as and for the purpose set forth.

EWD. W. BLACKHALL.

Witnesses:

GEO. A. AIRD,
L. WHITEHEAD.