2 Sheets—Sheet 1.

W. O. HICKOK.

PAPER-RULING MACHINE.

No. 185,747. Patented Dec. 26, 1876.

Fig. 1.

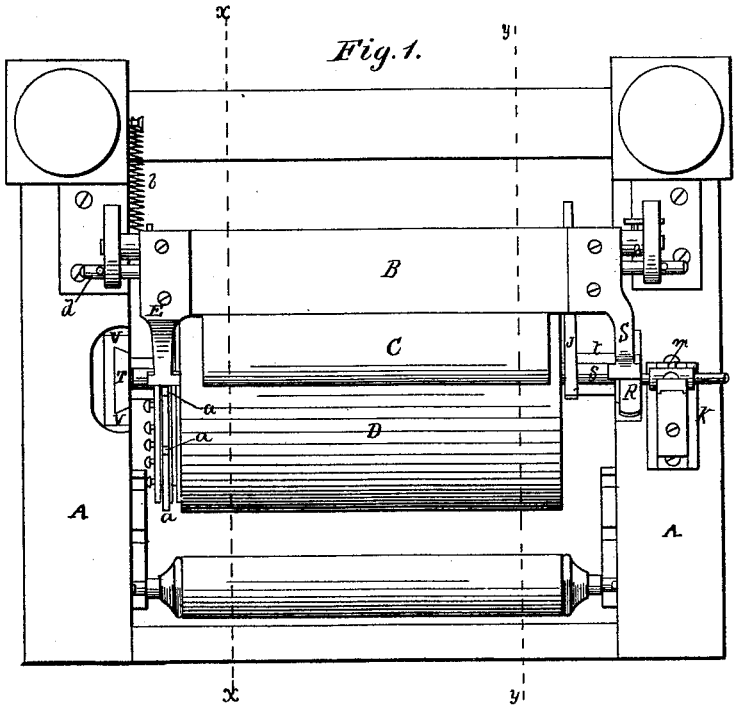
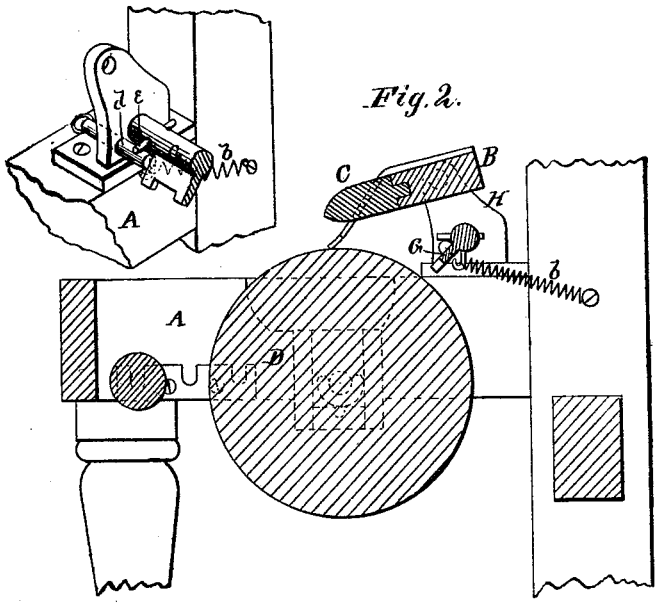


Fig. 2.



WITNESSES

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2 Sheets—Sheet 2.

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PAPER-RULING MACHINE.

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Fig. 3.

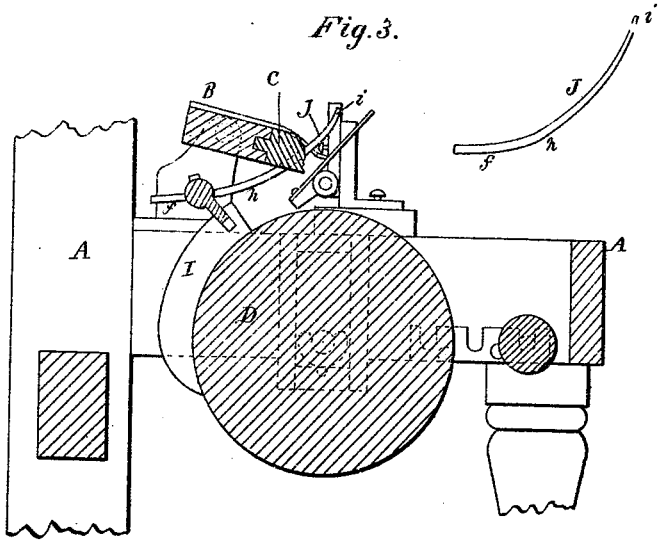


Fig. 5.

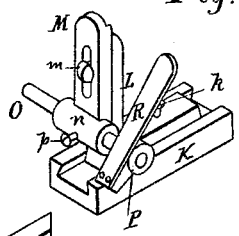
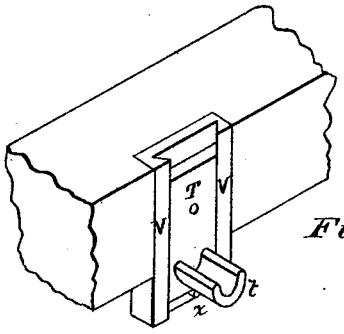
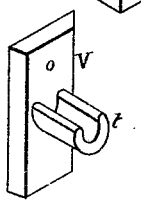


Fig. 4.





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UNITED STATES PATENT OFFICE.

WILLIAM O. HICKOK, OF HARRISBURG, PENNSYLVANIA.

IMPROVEMENT IN PAPER-RULING MACHINES.

Specification forming part of Letters Patent No. **185,747**, dated December 26, 1876; application filed December 5, 1876.

To all whom it may concern:

Be it known that I, WILLIAM O. HICKOK, of Harrisburg, in the county of Dauphin and in the State of Pennsylvania, have invented certain new and useful Improvements in Ruling-Machines; and do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, making a part of this specification.

My invention relates to ruling-machines; and it consists in a pin or bolt for holding the gate stationary; in the peculiar construction of the arm attached to the gate for operating the same; in a device for preventing the jar of the beam; and in the construction of the boxes or devices, whereby cylinders of different diameters are held with their upper surfaces in the same horizontal plane, all as hereinafter more fully set forth.

In order to enable others skilled in the art to which my invention appertains to make and use the same, I will now proceed to describe its construction and operation, referring to the annexed drawing, in which—

Figure 1 is a plan view of so much of a ruling-machine as will illustrate my invention. Figs. 2 and 3 are transverse vertical sections of the same through the lines *x x* and *y y*, respectively, of Fig. 1. Figs. 4 and 5 are detailed views of certain parts thereof.

A represents a part of the frame of a ruling-machine. B is the pen-bar or pen-beam, provided with the clamp C; and D is the revolving drum or cylinder over which the paper is carried while the pens are ruling the same, said cylinder being at one end provided with adjustable cams *a a* for operating the striker E attached to one end of the pen-beam, to raise and lower the same, as required. Below the pen-beam B, in the same standards H H in which this beam is pivoted, is also pivoted the gate G, which is held down by means of a spring, *b*, and raised by means of a cam, I, at the other end of the drum or cylinder D, operating on an arm, J, projecting from the gate. Through one of the standards H is passed a pin or bolt, *d*, which is movable out and in through the same. When drawn out this pin or bolt is entirely free from the gate G, and allows the gate to operate freely. When it is desired to have the gate not operating, it is raised and the pin or bolt *d* pushed inward, so as to come under a pin, *e*, projecting from the head of the gate, and thus hold the gate in an elevated position, so that the cam I will not come in contact with the arm J during the revolution of the drum or cylinder D. The arm J, attached to the head of the gate G, and operated by the cam I on the end of the drum or cylinder D, is constructed in the form shown in Fig. 3—that is to say, its inner end from *f* to *h* is straight. At *h* is an abrupt curve, and from this curve the arm is nearly straight to near the outer end *i*, which end is still further curved upward. The arms heretofore used on the gates of ruling-machines have been of such form that almost invariably the pen-beam has had to be more or less cut out to give room for the working of said arm; but by my peculiar construction of said arm this is entirely obviated, and the arm can be adjusted in the gate in its proper position without the necessity of making any change in the pen-beam.

On one side of the frame, opposite the end of the drum or cylinder D, is secured a casting or plate, K, formed with a dovetailed longitudinal groove, in which slides an L-shaped standard, L, fastened at any point desired by means of a set-screw, *k*. On the front of the standard L is a vertically-adjustable plate, M, held by means of a screw, *m*, passing through a slot in the plate. At the lower end of the plate M is formed a hub, *n*, through which is passed a horizontal rod, O, and on the inner end of said rod is secured a suitable arm or casting, P, to which a flat spring, R, is attached. The rod O can be adjusted longitudinally in the hub *n*, and also turned on its axis, so as to place the spring R at any angle desired, and the rod then fastened in the hub by a set-screw, *p*. Then, by the adjustment of the plate M and standard L, the spring R can be properly adjusted to receive the blow of an arm, S, attached to the pen-bar, whereby the jar of the fall of the pen-bar is entirely obviated. The pen-drum or pen-cylinder D is provided with journals *s s*, which rest in open bearings or half-boxes *t t* formed with and projecting from plates T T, having bev-

eled edges, which plates are placed in castings V, having vertical dovetailed grooves for the reception of said plates, and the plates rest upon suitable stationary stops *x* at the lower ends of said grooves.

In ruling-machines a number of these drums or cylinders of different diameters are interchangeable, one for another, and whatever size cylinder is used it should always have its top or upper surface in the same horizontal plane, and to this end various devices have been employed. I provide each drum or cylinder with its appropriate plates T, from which the bearings or half-boxes *t* project at varying distances from the lower end.

The advantage of this device is that the operator has no adjustment to attend to, but simply remove one cylinder with its boxes and insert another cylinder with the boxes belonging thereto.

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

1. The combination, in a ruling-machine, of the pivoted gate G, having a projected pin, *e*, and the sliding pin or bolt *d*, substantially as and for the purposes herein set forth.

2. The arm J, constructed as described, with the straight end *f*, abrubt curve *h*, then nearly straight to the outer curved end *i*, in combination with the gate G, and cam I on the pen-cylinder D, substantially as and for the purposes herein set forth.

3. The combination of the adjustable standard L, adjustable plate M, with hub *n*, the adjustable rod O, with casting P, spring R, and the arm S on the pen-beam B, substantially as and for the purposes herein set forth.

4. In a ruling-machine the pen-drums or pen-cylinders D, provided with plates T, having bearings or half-boxes *t* at varying height, in combination with the grooved castings V, having bottom stops *x*, substantially as and for the purposes herein set forth.

In testimony that I claim the foregoing I have hereunto set my hand this 23d day of November, 1876.

W. O. HICKOK.

Witnesses:
C. L. EVERT,
FRANK GALT.