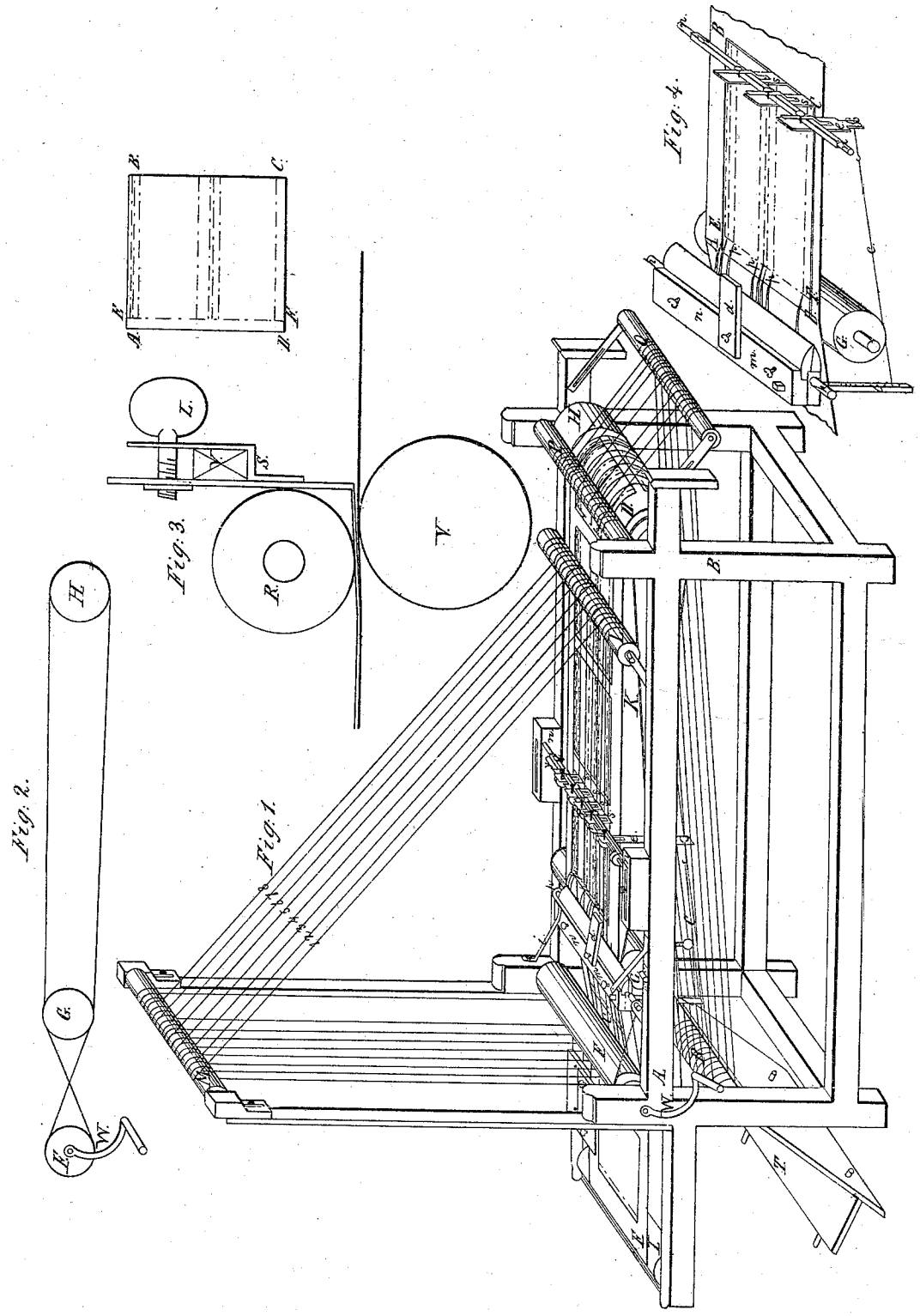
L. Edwards.
Ruling Mach.

No. 4,223. Patented Oct. 9, 1845.



UNITED STATES PATENT OFFICE.

LEWIS EDWARDS, OF NORWICH, CONNECTICUT.

RULING-MACHINE.

Specification of Letters Patent No. 4,223, dated October 9, 1845.

To all whom it may concern:

Be it known that I, LEWIS EDWARDS, of Norwich, New London county, and State of Connecticut, have invented an Improvement in the Art of Paper-Ruling, which consists of an apparatus for lifting the pens to terminate the lines at any given distance from the edge of the paper. This distance is measured and the pens are raised by the sheets of paper while in the process of ruling so that the sheets of paper may be laid on the machine at various distances from each other without varying the desired result, and the raising or lifting apparatus may be moved to a greater or less distance from the pens to accommodate different lengths or sizes of paper.

My apparatus is now attached to what is called the apron ruling machine represented and described as follows:

Figure 1 (see accompanying diagram) is a perspective view of the machine. A B is the frame made of wood about 3½ feet high 7 or 8 feet long in the direction A B, and of any width suitable for the width of paper to be ruled. There is an apron E C D K made of cloth which is caused to move from E and C, toward D, on the upper side and nearly even with the top of the frame and returning underneath in the direction D K E; this apron is moved by the rollers I, F, G, H, &c., all of which may be put in operation by turning the crank W, attached to the shaft of the roller F, or the machine may be put in motion by means of a pulley in place of the crank so as to be driven by any power provided for that purpose. The rollers G and H which assist in moving the apron are driven by a round band from the roller F, at one or both ends of said rollers running in a groove made for the purpose.

Fig. 2, represents the position and application of the band in reference to the rollers F G and H of which this is an end view. There are also rollers L M, Fig. 1, around which cords 1, 2, 3, 4, &c., pass running also under the larger roller F, the design of which cords is to keep the paper in close contact with the apron as it passes through the machine. The paper is laid on the apron at E, and is carried forward under the roller F, and under the pens *p*, *p*, &c. by means of which it is ruled, the pens being properly supplied with ink for that purpose.

The arrangement and process of lifting the pens to terminate the lines in any desired place or distance from the edge of the sheet is as follows: At a distance from the pens equal to the length of the lines to be ruled are a number of stops, *s*, *s*, made of sheet brass, about 1½ inches wide and 2½ or 3 inches long, and attached to an iron shaft *q*, which is supported on journals *n*, at either end: (a side view of one of the stops *s*, is seen at Fig. 3, where the mode of its attachment to the shaft *q*, by means of the thumbscrew L, is also exhibited) and these are fitted in such manner that the lower extremities of the stops or plates *s*, Fig. 1, just come in contact with the apron described above, so that when the edge of the sheet of paper comes in contact with them in its passage through the machine, it may carry them forward by its contact therewith, partially turning the shaft, *q*, on its journals, by means of which the pens *p*, *p* &c. are raised from the paper in the following manner, viz: Near one end of the shaft *q*, is fastened an arm or lever *e*, which is more plainly represented in Fig. 4 and this is connected by the line *c*, with an arm or lever *l*, which is firmly attached to the stock *m n*, which holds the pens and this stock, being supported on journals *h*, *h*, is made to partake of the motion communicated to the shaft *q*, by the contact of the paper with the stops, and hence, when the stops *s*, are made to advance by their contact with the paper, the lever *e*, is also made to advance in the same direction, which motion is communicated also to the lever *l*, and thereby the pens *p p*, become elevated from the paper sufficient to terminate the lines. Just before the stops *s*, *s*, &c., Fig. 1, are rollers *r*, *r*, about 1⅝ inches in diameter and of about the same width as the stops, so fitted as to be set at any place on the shaft *y*, so as to accommodate them to the position of the ruled lines. The object of these rollers is to press on the paper and cause it to move uniformly with the apron: directly under this shaft and under the apron is another roller V, Fig. 3, between which and the rollers *r*, just described, the apron and the paper is made to pass; but the roller underneath the apron is placed a little in advance of the top rollers, toward the stops *s*, which causes the edge of the paper to tend to curl upward from the apron and bear against the lines or cords, Fig. 1, which confine it to the apron, so as to insure it to strike the stops and not allow it to pass under them, without

causing them to move at the same time. The rollers *r*, should be heavy enough to prevent the paper from moving on the apron as it strikes the stops *s s*. They should also be so set on the shaft as not to run on the ruled lines, but to run between in order to avoid marring or blotting them. On the stock or clasp *m*, *n*, Fig. 1, is a movable bar or weight *d*, attached by a thumb-screw, which is designed to give a proper gravity to the side of the stock toward the pens, so that it may bring the pens to the paper at the proper time after being raised: and by varying the position of the weight it may be accommodated to different speeds of the machine. *i*, is a spring of metal fastened to the frame so as to prevent the pens from being raised too high from the paper as might be the case if the motion of the machine should be too rapid.

The stops *s*, and rollers *r*, Fig. 1, and roller V, Fig. 3, may be so connected that they can be moved together and set at any required distance from the pens, so as to accommodate the ruling to any sized sheet. The sheets of paper may be delivered from the machine, as it passes over the roller H, or it may be conveyed, by means of an apron or cords passing around the rollers P Q R, to the forward part of the machine, or to the same end where it is put on and may be deposited in a box or frame T, made to receive it.

The apparatus for terminating the lines, may be applied to other kinds of ruling machines as well as to the apron ruling machine above described.

What I claim as new and for which I ask Letters Patent is—

The causing the pens to be raised by the edge of the paper in its passage through the machine, thus causing each sheet to determine the length of its own lines.

LEWIS EDWARDS.

Witnesses:
CHARLES BARD,
RALPH BALLES.