(No Model.) 2 Sheets—Sheet 1.

E. H. ALGER.

ATTACHMENT FOR RULING MACHINES.

No. 542,747. Patented July 16, 1895.

Fig. 1.

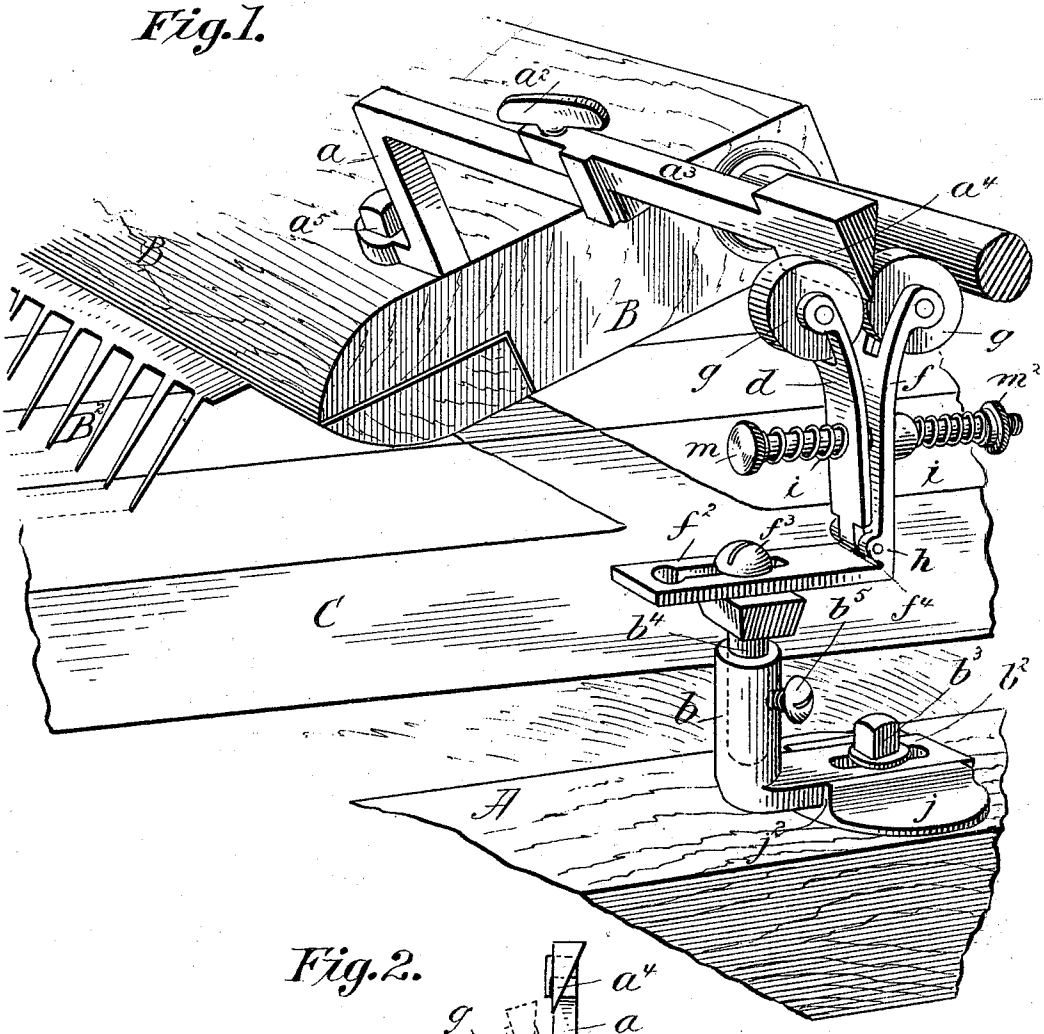
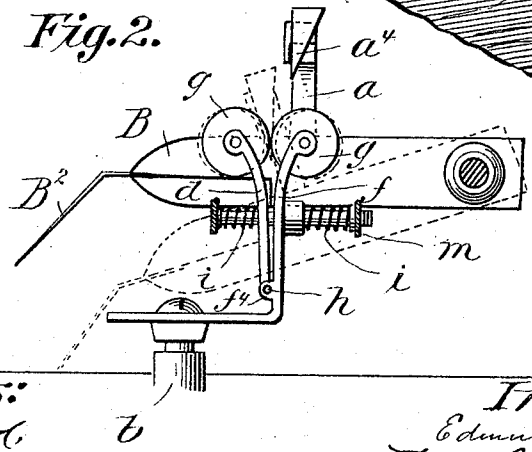


Fig. 2.



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(No Model.) 2 Sheets—Sheet 2.

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Fig. 3.

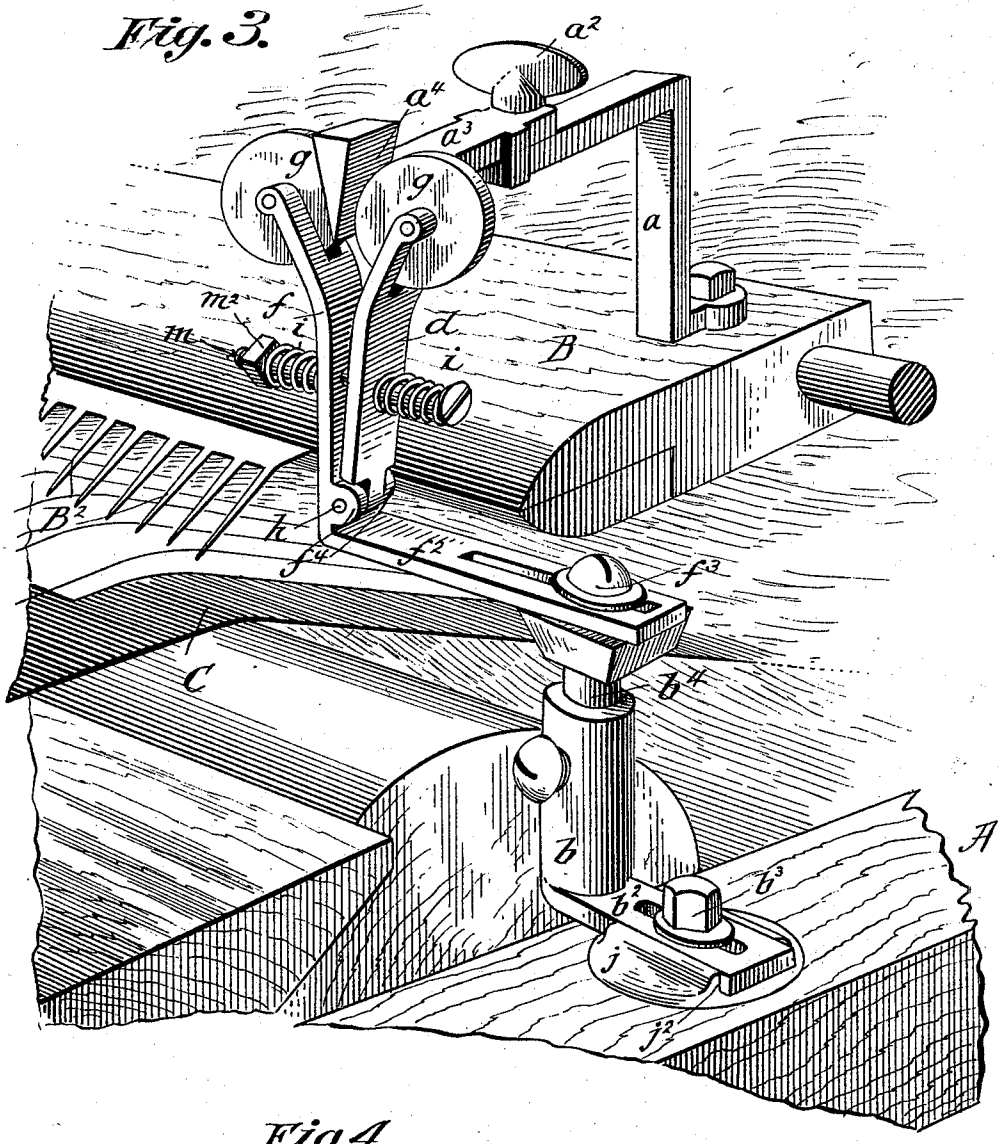
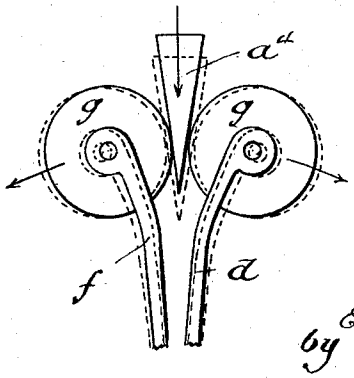


Fig. 4.



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ATTACHMENT FOR RULING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 542,747, dated July 16, 1895.

Application filed January 25, 1895. Serial No. 536,174. (No model.)

To all whom it may concern:

Be it known that I, EDMUND H. ALGER, a citizen of the United States of America, residing at Holyoke, in the county of Hampden and State of Massachusetts, have invented new and useful Improvements in Attachments for Paper-Ruling Machines, of which the following is a specification.

The object of this invention, relating to paper-ruling machines, is to provide improved means for and in combination with the pen bar or beam, whereby as the latter descends there will be a cushioning action, so that the points of the pens will not be thrust hard upon the paper being ruled, but will be presented thereupon with an easy contact, which manifestly is desirable and necessary in this class of machines.

The invention also has for its purpose to provide means whereby the yielding resistance may be varied and whereby the appliances may be susceptible of all necessary adjustments, so that they will be applicable not only upon ruling-machines for which they are specially constructed, but upon ruling-machines which are already in use.

The invention consists in constructions and combinations of parts, all substantially as will be hereinafter fully described, and covered in and by the claims.

Reference is to be had to the accompanying drawings, in which—

Figure 1 is a perspective view of so much of a paper-ruling machine as is here necessary to show, the same having thereupon the appliances which constitute the present invention. Fig. 2 is an elevation of the principal parts comprised in Fig. 1. Fig. 3 is a perspective view similar to Fig. 1 and showing the same improved appliances, the arrangement, however, of the latter being somewhat varied without substantially affecting their operativeness. Fig. 4 is a view showing the wedge-shaped projection and the pressure-rollers which act in conjunction with it and indicating a capacity for a peculiar operation to be hereinafter particularly referred to.

In the drawings the pen-bar is indicated at B, the same being understood as mounted as usual for the rocking movements common in ruling-machines.

B^2 represents the pens.

C represents the carrier-apron, and A represents a part of the frame of the machine.

The pen-beam has at its end the attached angular metallic part *a*, on which is by the set-screw a^2 secured the extension-bar a^3, having the wedge-formed end a^4. This wedge-formed part has its location above the standard *b*, which supports the arms *d f*, which latter have journaled in their properly-separated upper ends the friction-rolls *g g*. One of the arms is pivotally mounted, as seen at *h*, whereby it may have a swinging movement toward or away from the other arm against or with the reaction of the spring *i*, all so that as the pen-bar has its descending movement the wedge-formed member a^4, which is as a part of the pen-bar, will have its impingement between and against the yielding resistance of the aforesaid rollers.

The fixtures and appliances for the support of the yielding part or parts, impinged against by the aforesaid wedge-shaped projection of the pen-bar, will be described in detail, although limitation is not understood as made thereto in all particulars.

On the frame A is a plate *j*, having the slideway j^2 therein, as constituted by the upturned parallel ribs. The standard *b*, which is tubular, has a slotted foot-piece b^2, which fits in the slideway, being adjustably held by the bolt b^3. The standard *b* has the supplemental vertically-adjustable part b^4, which is held at the proper height by the set-screw b^5. On the widened upper extremity of the part b^4 is supported the foot-plate f^2, from which the roll-supporting arm *f* rises—in this instance as a rigid part thereof. This foot-plate is slotted and held in its adjustment by the set-screw f^3. The arm *f* has the ear-pieces f^4, between which is pivoted the lower end of the opposite roll-carrying arm *d*. Both of the arms *d f* are transversely perforated, through which is passed the rod *m*, having the head at one end and being screw-threaded at the other to receive thereon the nut m^2. The springs *i i* are applied between the head of the rod *m* and arm *d* and between the arm *f* and the nut m^2, all whereby the roll-carrying arms may on occasion be separated against the steady resistance of the springs. The

spring-resistance may be varied by turning the nut m^2 in the proper direction and extent. Thus it will be seen with reference to Sheet 1 of the drawings that in these appliances the wedge-shaped projection a^4 may be adjusted longitudinally of the pen-bar, and by reason of the bolt connection at the foot-lug a^5 the parts comprising and supporting the wedge may have swinging movements, whereby the extension a^3 may be more or less angular to the length of the pen-bar, and there are ample capabilities for adjusting the rolls g g, whereby they may be higher or lower and forward or rearward relative to the length of the pen-bar, and also whereby the rolls may have their plane of rotation always perpendicular to the length of the extension a^3, which carries the wedge.

The arrangement or combination of the novel parts upon the ruling-machine such as shown in Fig. 1 is not necessary, although a practicable, one, and in Fig. 3 what is regarded as the preferred and most efficient arrangement of the devices is shown, and here the parts b^2 f^2 and the rollers g g are mounted in a plane approximately parallel to the length of the pen-beam, the length of the wedge a^4 and the extension-arm a^3, of which it is a part, here extending about at right angles to the length of the beam.

In practice the pen-beams of most ruling-machines have only such an oscillation as to impart about a quarter of an inch thrust to the pens B^3, and this movement is so slight in extent that the wedge would have even a less extensive degree of vibration between the rollers and never so much as to cause their withdrawal from between and subject to the spring-compression of the rollers. In Fig. 4, by full and dotted lines, the extent of the changes of position between the wedge and rollers at the two extremes of movement of the pen-bar of an ordinary ruling-machine as the same is most usually operated are indicated; yet while the slight movements, as above explained, are the more usual, still in some ruling-machines a much greater throw of the pen-beam is imparted, and of course in such cases the limits between which the wedge is reciprocated are correspondingly increased. The slight throw of the wedge, as indicated in Fig. 4, or the much greater one, as indicated in Fig. 2, will be acquired when the appliances are arranged either as shown in Fig. 3 or as shown in Fig. 1, the movement, more or less, in both cases being dependent on the extent the pen-beam is oscillated.

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

1. In a paper ruling machine, the combination with the oscillating pen-bar, of paired rollers adjacent the pen-bar, mounted to move the one toward and away from the other and having a spring or springs for maintaining them yieldingly in their approached relations, and a wedge-shaped member supported by the pen-bar to move in conjunction therewith and arranged to have upon its descending movement a spreading impingement between and against the said rollers, substantially as and for the purpose described.

2. In a paper ruling machine, the combination with the pen-bar, of the rollers, g, g, adjacent the pen-bar mounted to move the one toward and away from the other, and having a spring or springs for maintaining them yieldingly in their approached relations, and the standard, a, secured on the pen-bar, which has the extension bar, a^3, provided with the wedge, a^4, adjustable horizontally on the standard, substantially as described.

3. In a paper ruling machine, the combination with the pen-bar and the wedge-shaped member mounted thereon, of paired rolls adjacent the pen-bar and supports therefor which are movable the one toward the other and which are vertically adjustably mounted and a spring or springs applied to the roll supports for forcing the one toward the other, substantially as and for the purposes set forth.

4. In a paper ruling machine, the combination with the pen-bar and the wedge-shaped member, a^4, mounted thereon, of the two-part and vertically extensible standard, b, the plate, f^2, horizontally adjustable on the upper end of said standard, the arms, f, d, supported on said plate, f^2, the one being movable toward and away from the other, and carrying the opposing rollers, g, g, and a spring or springs applied for forcing the one arm toward the other, all substantially as and for the purposes set forth.

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WM. S. BELLOWS.