(No Model.) 3 Sheets—Sheet 1.

R. S. MATTESON.

EVENER FOR RAILWAY HEADS, &c.

No. 352,701. Patented Nov. 16, 1886.

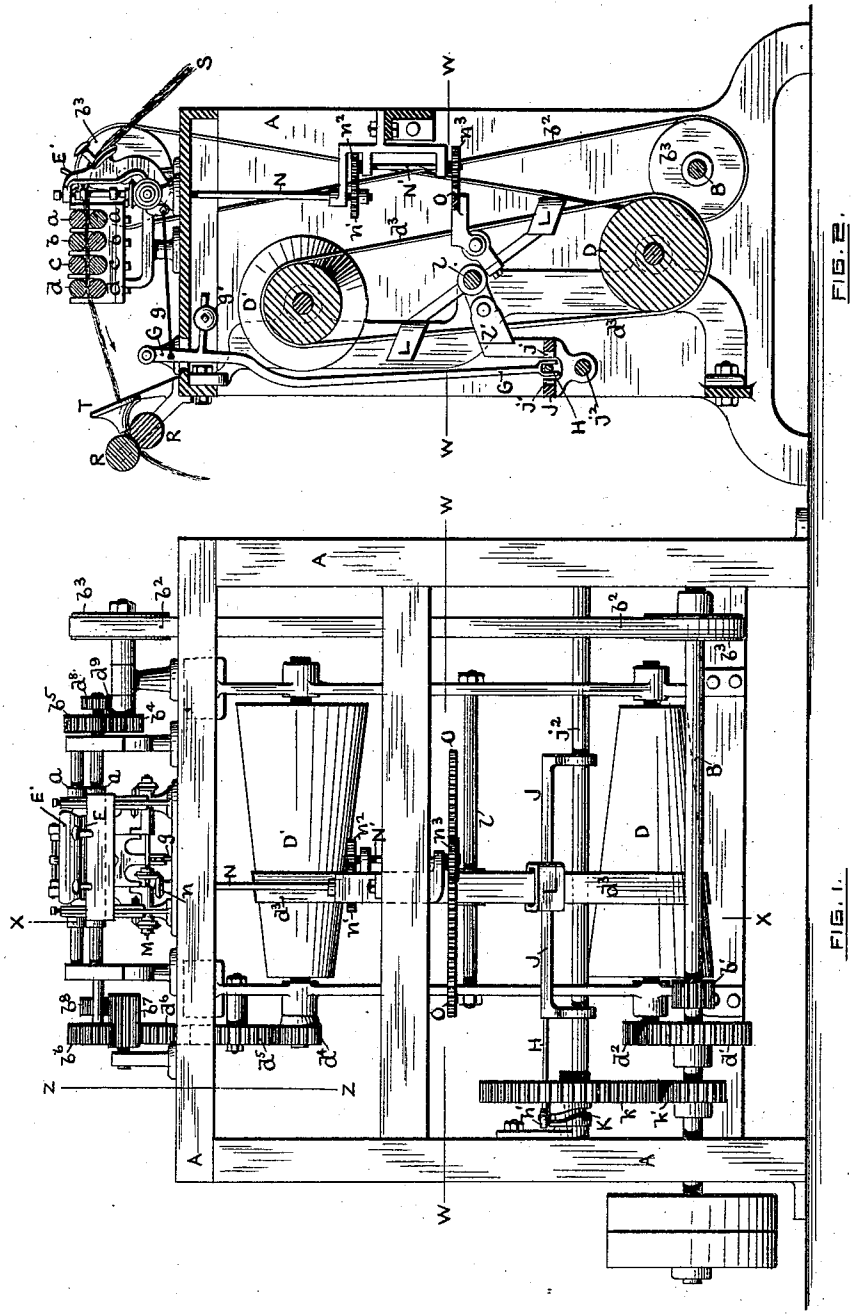


FIG. 2.

FIG. 1.

WITNESSES:

Geo. W. Cady

Benoni Waterman

INVENTOR:

Rufus S. Matteson

by Edson Salisbury Jones

Attorney.

N. PETERS, Photo-Lithographer, Washington, D. C.

(No Model.) 3 Sheets—Sheet 2.

R. S. MATTESON.

EVENER FOR RAILWAY HEADS, &c.

No. 352,701. Patented Nov. 16, 1886.

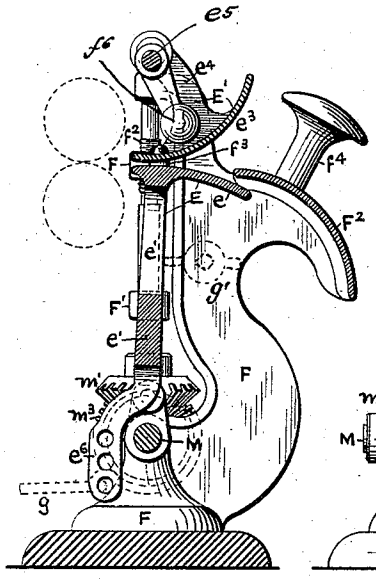


FIG. 4.

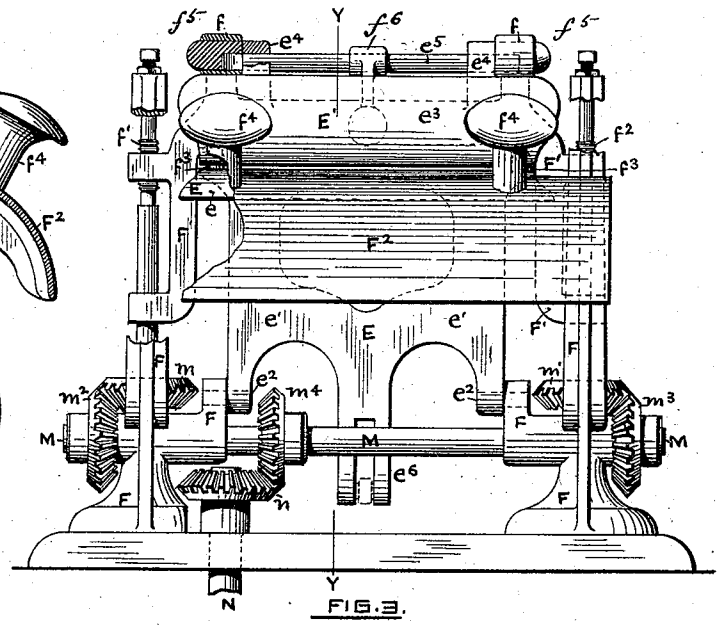


FIG. 3.

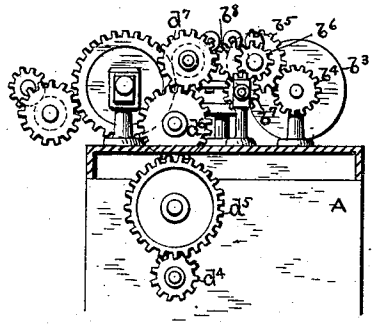


FIG. 5.

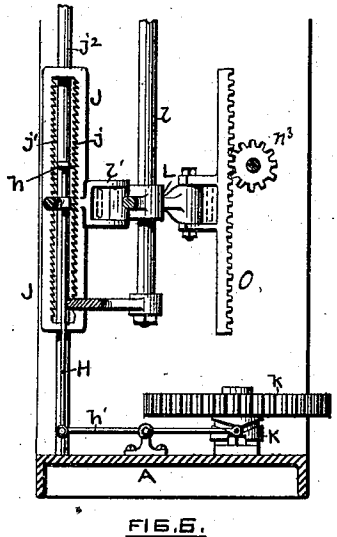


FIG. 6.

WITNESSES:

Geo. W. Cady

Benoni Valentine

INVENTOR:

Rufus S. Matteson

by Edson Salisbury Jones

Attorney.

N. PETERS. Photo-Lithographer, Washington, D. C.

(No Model.) 3 Sheets—Sheet 3.

R. S. MATTESON.

EVENER FOR RAILWAY HEADS, &c.

No. 352,701. Patented Nov. 16, 1886.

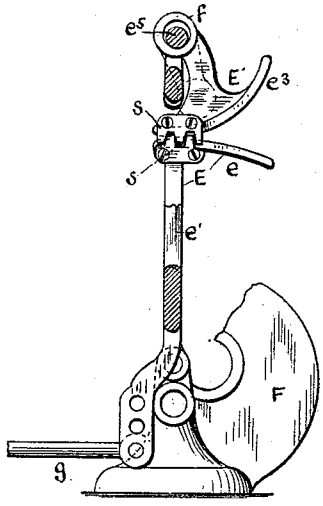


FIG. 7.

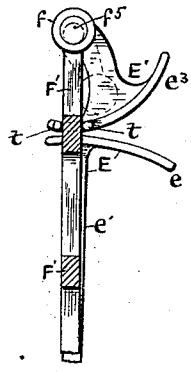


FIG. 8.

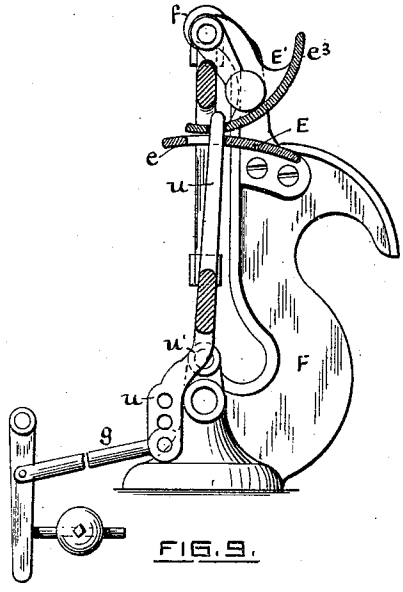


FIG. 9.

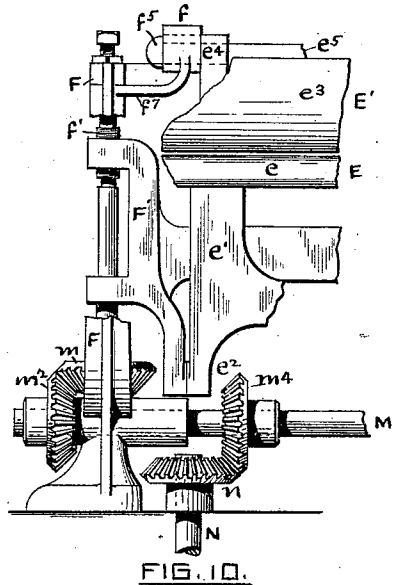


FIG. 10.

WITNESSES:

Geo. W. Casey

Leonard A. Phillips

INVENTOR:

Rufus S. Matteson

by Edson Salisbury Jones

Attorney

N. PETERS. Photo-Lithographer, Washington, D. C.

UNITED STATES PATENT OFFICE.

RUFUS S. MATTESON, OF PROVIDENCE, RHODE ISLAND.

EVENER FOR RAILWAY-HEADS, &c.

SPECIFICATION forming part of Letters Patent No. 352,701, dated November 16, 1886.

Application filed September 11, 1884. Serial No. 142,797. (No model.)

To all whom it may concern:

Be it known that I, RUFUS S. MATTESON, of the city and county of Providence, and State of Rhode Island, have invented a new and useful Improvement in Eveners for Railway-Heads and other Drawing Machines; and I do hereby declare the following specification, taken in connection with the accompanying drawings, forming a part of the same, to be a description thereof.

This invention relates to mechanism applied to railway-heads, drawing-frames, and similar machines for the purpose of evening the sliver passing through such machines in order that said sliver shall be of uniform weight throughout its length; and the invention consists in certain features of construction and arrangement, as hereinafter described and claimed.

In the drawings, Figure 1 shows in elevation the receiving side of a railway-head embodying the invention. Fig. 2 represents a vertical transverse section of the same on line *x x* through Fig. 1. Fig. 3 shows a front view of the governor, on an enlarged scale, a part of the device being broken away. Fig. 4 shows a vertical transverse section of the same on line Y Y through Fig. 3. Fig. 5 represents a vertical transverse section of Fig. 1 on line Z Z. Fig. 6 shows a horizontal section of Figs. 1 and 2 on line W W. Fig. 7 shows an end view of the swinging heads provided with segmental gears, also a portion of the governor-supporting frame and a part of the belt-shipper connections. Fig. 8 shows an end view of the heads, the upper one being arranged not to swing. Fig. 9 represents a vertical section through the heads, with the lower one arranged not to swing, the governor-frame and a part of the belt-shipper connections being also shown. Fig. 10 shows a front view of a portion of the governor, with the lower head pivoted to a frame which is vertically adjustable.

In general construction the railway-head illustrated in the drawings is the same as ordinarily used, consisting of a frame, A, upon which are mounted several sets of rolls, as *a a b b c c d d*. The rolls *a a b b* are driven at the same speed from the shaft B, which has a gear, *b'*, connected with the usual source of power (not shown in the drawings) for driving the head. A belt, b^2, passing over pulleys b^3 b^3, drives the gear b^4, which meshes with a gear, b^5, on the lower roll, *a*, and drives the same. A gear, b^6, on the opposite end of this roll, meshes with an intermediate gear, b^7, the latter gear meshing with a gear, b^8, on the shaft of the lower roll, *b*, and driving the same. The upper rolls, *a b*, are driven by contact with the lower rolls. The rolls *c c* and *d d* are driven faster than the rolls *a a* and *b b*, in order that the drawing operation shall be performed, although the said operation may take place between any of the rolls of the set, as is well known. The rolls *d d* are driven from the shaft B through gears d' d^2, the cone-pulleys D D', over which a belt, d^3, passes, (the gear d^2 being secured to the shaft of the cone-pulley D,) a gear, d^4, secured to the shaft of the pulley D', and gears d^5 d^6 d^7, the last, d^7, of which is secured to the shaft of the lower roll, *d*. Upon the opposite end of the lower roll, *d*, is secured a gear, d^8, Fig. 1, which, through a gear, d^9, drives a gear (not shown in the drawings) secured to the lower roll *c*. The upper rolls *c d* are driven by contact with their lower rolls.

In the usual form of railway-heads the speed of the drawing-rolls is governed by a trumpet, through which the sliver passes after leaving said rolls, the said trumpet being pivoted to the frame of the head and connected by mechanism to a shipper, which moves the belt d^3 along the cone-pulleys, so that the movement of said trumpet will cause the said belt to be shipped toward the left or the right, according as more or less draft upon the sliver is required to make it of uniform weight.

In the railway-head shown in the drawings, the governor, which regulates the evening of the sliver, is located upon the receiving side of the head, and consists of two members, E E'. The sliver S passes between these two members of the governor, thence through the rolls *a a b b c c d d*, thence through a trumpet, T, which is rigidly attached to the frame A and acts merely as a guide, then out between the two delivery-rolls R R. As shown in Figs. 3 and 4, the member E of the governor has a head, *e*, preferably in the shape of the arc of a circle, which is mounted upon an arm, *e'*, the said arm being pivoted at e^2 e^2 to the frame F, so as to be capable of vibrating to and from the rolls *a a* in the line of the passing sliver. The member E' has a head, e^3, preferably in

the shape of the arc of a circle, secured to two arms, e^4, which are mounted loosely upon a rod, e^5, so that the head e^3 can swing upon and from the rolls *a a*, the said rod passing into lugs *f f* on the frame F', as hereinafter described. The frame F' is mounted on right and left hand screws f' f^2, so as to be raised and lowered to increase or decrease the space or sliver-passage between the heads *e* e^3 of the governor, for a purpose hereinafter described.

In order that the two members E E' shall swing together, the head *e* is provided with two pins, f^3, Figs. 3 and 4, which fit slots in the head e^3, near the ends of said head, but gears *s s*, meshing with each other on the ends of said heads, may be employed for such purpose, as shown in Fig. 7. The frame F' is preferably provided with a table, F^2, having guide-pins f^4, which table and pins guide the sliver to the governor E E'. The member E has a finger, e^6, on its arm *e'*, which finger extends below the pivotal points of said arm and is connected by means of a rod, *g*, to an arm, G, Fig. 2, at a point below where said arm is pivoted to a stud upon the frame A. The lower end of the arm G is attached to a pawl, H, having a double-acting head, *h*, Fig. 6, which head lies between the ratcheted sides *j j'* of a frame, J, mounted to slide longitudinally upon a rod, j^2. The normal position of the pawl-head *h* is out of engagement with the ratchets *j j'*, being adjusted to such position by a weight, *g'*, on the arm G, Fig. 2, which weight is set to hold the pawl-head in said position so long as the sliver entering the governor E E' is of the desired weight or size. The weight *g'*, however, may be placed upon the arm *e'* of the member E, if desired, as shown by dotted lines in Fig. 4. The pawl H is pivoted at its rear end to a lever, *h'*, Fig. 6, which lever is pivoted to the frame A and bears a stud at its front end, which stud engages a slot in the periphery of a cam, K. The cam K is attached to a gear, *k*, which meshes with a gear, *k'*, on the shaft B, so that as the cam K is revolved the pawl H will be reciprocated longitudinally. The belt-shipper L, which moves the belt d^3, slides on a rod, *l*, and is attached to the frame J by an arm, *l'*, as shown in Fig. 2. If, now, the sliver which is about to enter the governor be too heavy, its size will create undue friction upon the heads *e* e^3 of the governor as said sliver passes between them, and will move the heads toward the rolls *a a*. This movement of the head *e* will cause the rod or wire *g* to swing the arm G and bring the head of the pawl H into a position to engage the ratchet *j* on the frame J when the pawl is retracted by the cam K, and the engagement of the moving pawl with the ratchet *j* will slide the frame J on the rod j^2, and thereby cause the shipper L, attached to said frame, to move the belt d^3 toward the left, Fig. 1, to increase the speed of the drawing-rolls, and thereby diminish the weight of the sliver delivered by said rolls. On the other hand, if the sliver which is about to pass through the governor be too light, it will not create the normal amount of friction on the heads *e* e^3 of the governor, and the head *e* will swing rearwardly or outwardly, thereby moving the pawl-head *h* into a position to engage the ratchet *j'* on the frame J when the pawl is advanced by the cam K, and the shipper L and belt d^3 will be forced toward the right to decrease the speed of the drawing-rolls, and thereby increase the weight of the sliver delivered by said rolls.

Although I have found the vibrating pawl H, connected with the governor, and the ratcheted frame J, attached to the belt-shipper L, to be an effective means for changing the position of the belt d^3 upon the cone-pulleys D D', yet any other suitable mechanism may be employed by which a movement of the member E of the governor in the line of the passing sliver will cause the shipper L to move the belt d^3 in the desired directions, and thereby change the speed of the drawing-rolls the proper amount—as, for instance, such mechanism as is shown in United States Patent No. 86,719—in using which the member E of the governor would be connected with the "notched disk" *c'* of said mechanism.

In order that the continued passage of a thick or a thin sliver through the governor shall not cause the mechanism that may be employed to shift the belt d^3 on the cone-pulleys to move said belt unduly to the left or to the right, and thereby increase or diminish too much the speed of the drawing-rolls, it is necessary that some means be used to cause the belt-shipping mechanism to cease acting when the speed of the drawing-rolls has been changed the proper amount to deliver a sliver of the proper weight.

As hereinbefore described, the frame F', to which the member E' is pivoted, is mounted upon right and left hand screws f' f^2, so that the space or sliver-passage between the heads *e* e^3 of the governor may be varied, the said space or passage being increased when the screws are turned in one direction and decreased when they are turned in the opposite direction. The object of thus varying the space or passage between the heads *e* e^3 is to decrease the friction or pull of the sliver upon the member E when a thick sliver is passing, and to increase the friction or pull of the sliver upon said member when a thin sliver is passing, in order that the member E may swing in the proper direction to bring the pawl-head *h* into its normal position between the ratchets *j j'*, and thereby stop the lateral movement of the belt d^3, when the speed of the drawing-rolls has been properly varied to draw the passing sliver to the requisite weight.

The means by which the screws f' f^2 are rotated to vary the space or sliver-passage between the heads *e* e^3, as described, are shown in Figs. 1, 2, 3. Secured to the said screws, respectively, are bevel-gears *m m'*, which mesh with gears m^2 m^3 upon the shaft M, journaled in the frame F. The shaft M bears a third gear, m^4, which meshes with a gear, *n*,

upon the vertical shaft N. This shaft bears a gear, n', which meshes with a gear, n^2, on the shaft N', and this shaft bears another gear, n^3, which meshes with a rack, O, secured to the belt-shipper L, as shown in Fig. 2. When, therefore, the shipper is moved to the right or to the left, the shafts N' N M will be rotated, thereby turning the screws f' f^2 and elevating or lowering the member E' of the governor, according to the direction in which the shipper is moved. The sizes of the various gears by which motion is transmitted from the rack O to the screws f' f^2 and the pitch of the threads of said screws are so regulated that when the drawing-rolls have attained the requisite speed to draw the sliver properly the friction or pull of the passing sliver upon the member E of the governor will be such as to allow the pawl-head h to return to its normal position, midway between the ratchets j j', where it will remain until the thickness of the sliver passing into the governor again changes.

In order that the sliver may be easily threaded or passed between the heads e e^3 of the governor, provision is preferably made for raising the member E' vertically to increase the space or sliver-passage between the heads e e^3. For this purpose the rod e^5, upon which the member E' is mounted loosely by the arms e^4, is attached at its ends eccentrically to cylindrical plugs f^5 f^5, as shown in Fig. 3, which plugs are adapted to turn in the lugs f f of the frame F', so that when a handle, f^6, secured to said rod, is raised the plugs f^5 will be revolved in their bearings, and the rod e^5 and the member E' will be raised vertically by a partial rotation of said plugs, owing to the said rod being attached eccentrically to said plugs, thereby allowing the sliver to be easily passed or threaded between the heads e e^3 of the governor.

As hereinbefore described, the member E', as well as the member E, of the governor is mounted to swing to and from the rolls a a, and this construction is preferable, as it renders the governor more sensitive than it would be were the member E' incapable of such movement. If desired, however, the member E' may be so mounted as to be capable of practically no swinging motion under the action of the passing sliver. Such an arrangement is shown in Fig. 8, where the head e^3 of the member E' is provided with lugs t t, which engage the frame F' and prevent the swinging of said member, the pins f^3, Figs. 3 and 4, being dispensed with.

Although, as hereinbefore described, the member E of the governor is connected by the wire or rod g to the arm G, yet, if desired, a connection may be made between the member E' and the arm G (instead of between said arm and the member E) for the purpose of moving the pawl H into a position to engage the ratchets j j', and the member E be capable or incapable of an oscillatory motion with relation to the rolls a a.

In Fig. 9 I have shown the member E' connected to the rod g by means of a lever, u, pivoted at u' to the frame F. The lower end of this lever is connected to said rod, and the upper end passes through a slot in the head e^3 of the member E', so that the lever is swung by said member. The member E is shown as immovable, being rigidly attached by screws to the frame F and slotted to allow the lever u to play freely through it.

If desired, also, instead of mounting the member E' on the frame F' so that said member can be vertically adjusted by the turning of the screws f' f^2, the member E may be arranged to be adjusted vertically by said screws. Such a construction is shown in Fig. 10, where the lugs f (instead of being secured to the frame F', as in Fig. 3) are attached to the frame F by arms f', and the arm e' of the member E is pivoted at e^2 to a lug depending from the frame F'. When, therefore, the screws f' f^2 are turned, the member E will be raised or lowered to decrease or increase the opening between the heads e e^3.

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

1. A governor for railway-heads, having two members, E and E', one of which is capable of swinging to adapt it to be moved by a passing sliver, and one of which is adjustable with relation to its fellow to increase or decrease the space or sliver-passage between said members, in combination with means, substantially as described, for automatically adjusting one of the members with relation to the other to increase or decrease said passage, substantially as described.

2. The combination, with the belt-shipper L, of a governor having two members, E and E', one of which is capable of swinging to adapt it to be moved by a passing sliver, and one of which is adjustable with relation to its fellow to increase or decrease the space or sliver-passage between said members, means, substantially as described, connecting the swinging member of the governor with the belt-shipper to transmit movement from said member to the shipper, and means, substantially as described, connecting the belt-shipper with the adjustable member of the governor to move said member from the shipper to vary the space or sliver-passage between the two members of the governor, substantially as described.

3. A governor for railway-heads, &c., having a frame, F, a member, E, pivoted to said frame and adapted to swing under the action of a passing sliver, a member, E', a frame, F', to which the member E' is connected, and screws f' f^2, upon which the frame F' is mounted, substantially as and for the purposes specified.

4. A governor for railway-heads, having members E E', with segmental heads e e^3, respectively, both of which members are pivoted to swing under the action of a passing sliver, means, substantially as described, which connect said members so they shall swing in unison, and means, substantially as described,

for adjusting one of said members with relation to the other to increase or decrease the space or sliver-passage between them, substantially as set forth.

5. The combination of a member, E, a frame upon which said member is mounted, a member, E′, a cam-rod, e^5, upon which the member E′ is mounted, and a frame, F′, in which the said cam-rod is journaled, whereby the member E′ can be raised to enable the sliver to be easily threaded between it and the member E, substantially as set forth.

RUFUS S. MATTESON.

Witnesses:
EDSON SALISBURY JONES,
GEO. W. CADY.