(No Model.) 3 Sheets—Sheet 1.

G. A. AYERS.

HYGROMETRIC GOVERNOR FOR RAILWAY HEADS.

No. 278,488. Patented May 29, 1883.

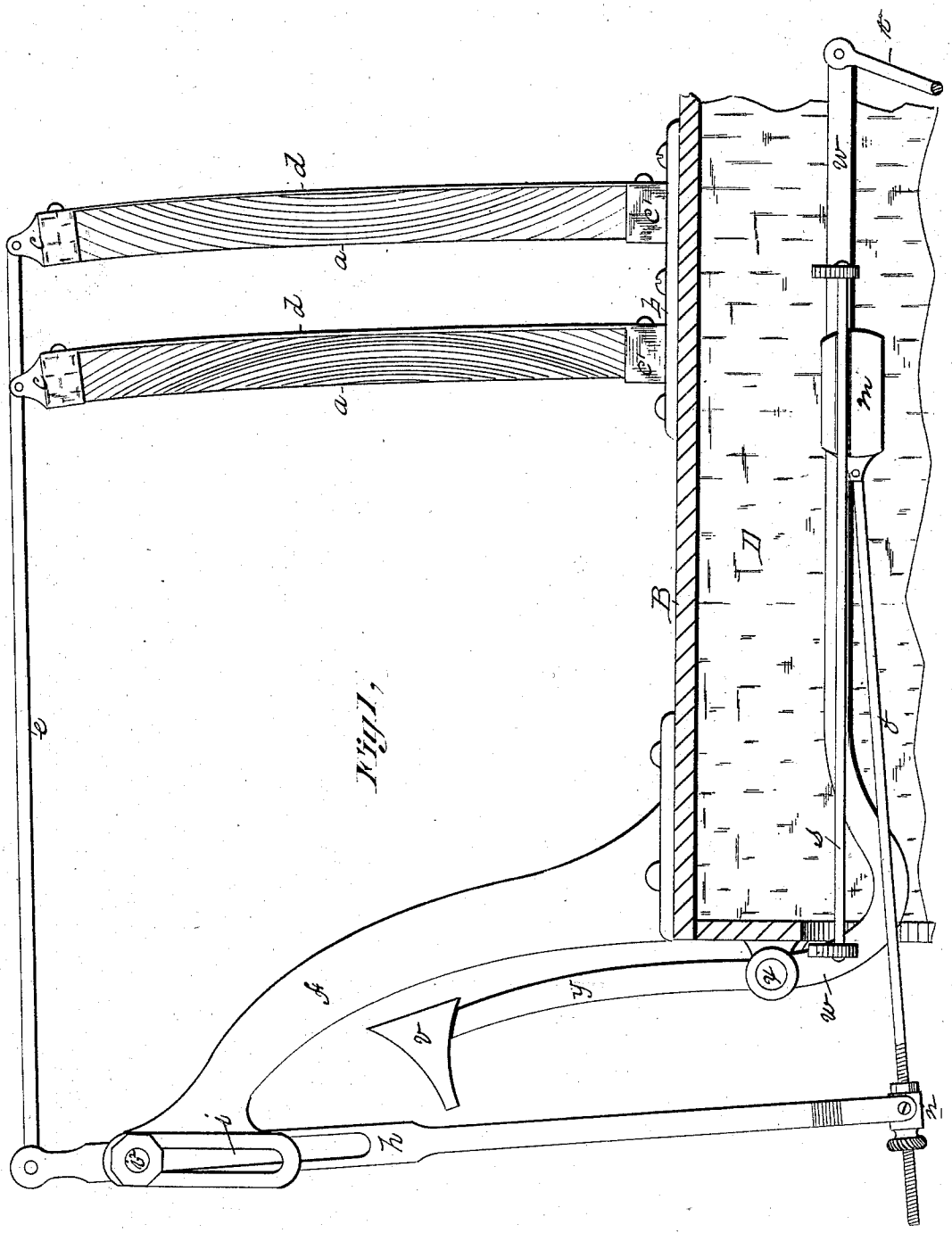


Fig. 1.

Witnesses,
R. F. Hyde
Wm. H. Chapin.

Inventor:
George A. Ayers
By Henry A. Chapin
Atty

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

(No Model.) 3 Sheets—Sheet 2.

G. A. AYERS.

HYGROMETRIC GOVERNOR FOR RAILWAY HEADS.

No. 278,488. Patented May 29, 1883.

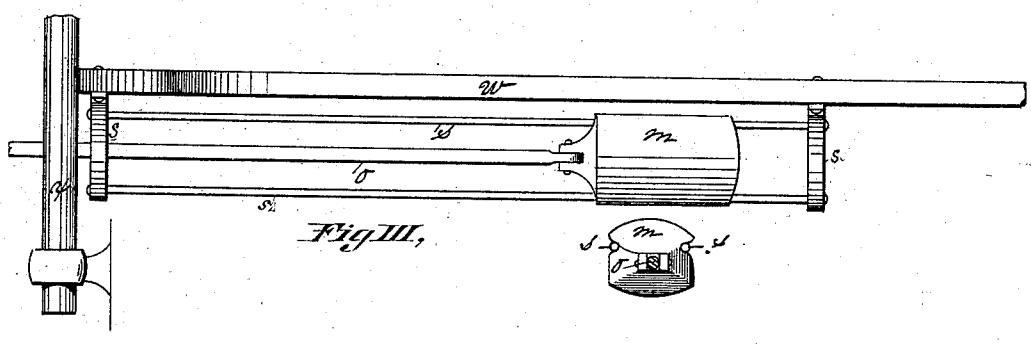


Fig III.

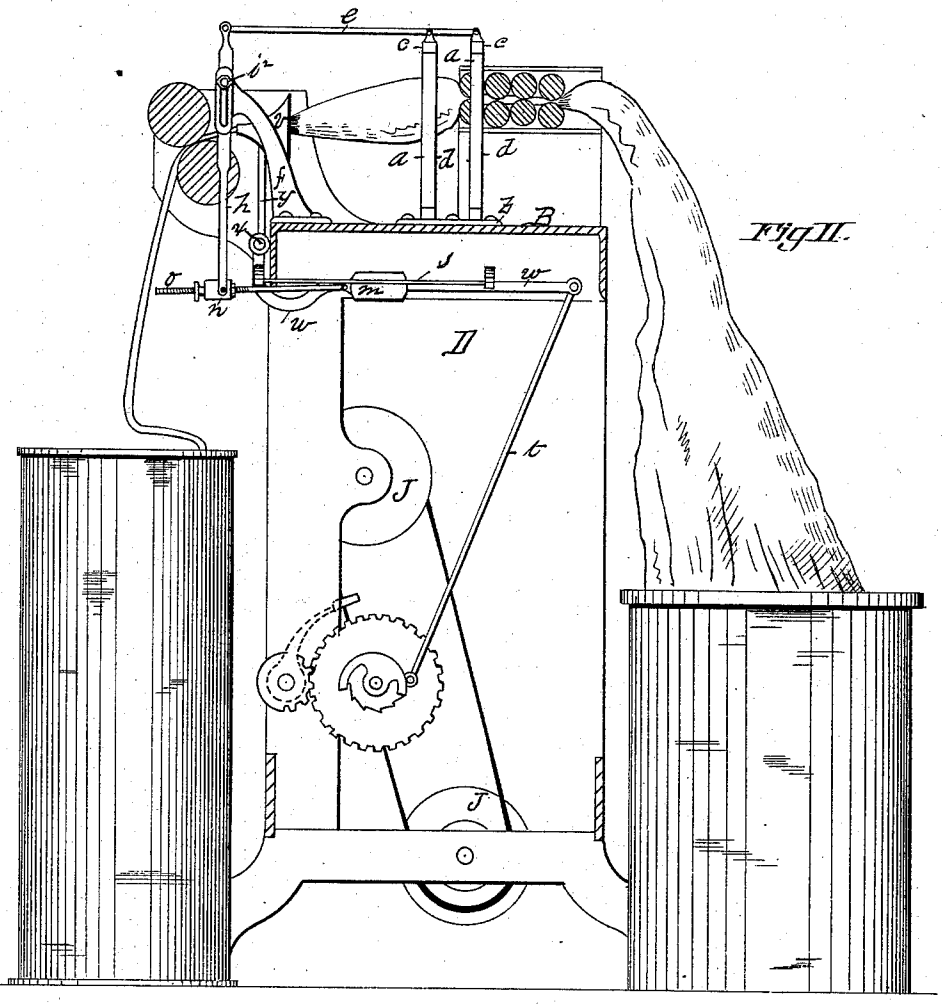


Fig II.

Witnesses,
R. F. Hyde
Wm H Chapin

Inventor
George A Ayers
By Henry A Chapin
Atty

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

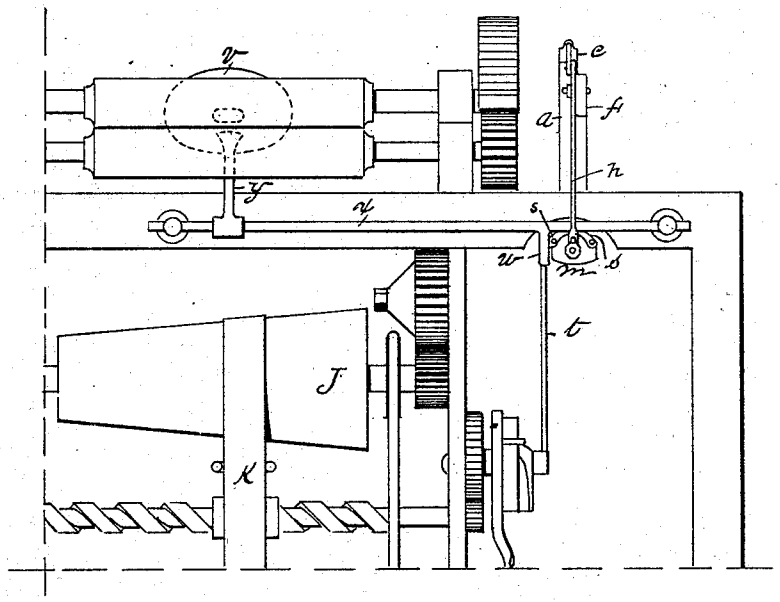
(No Model.) 3 Sheets—Sheet 3.

G. A. AYERS.

HYGROMETRIC GOVERNOR FOR RAILWAY HEADS.

No. 278,488. Patented May 29, 1883.

Fig II;



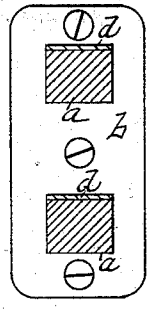


Fig I;

Witnesses;
R. F. Hyde
Wm H Chapin.

Inventor;
George A Ayers
By Henry A Chapin
Atty

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

UNITED STATES PATENT OFFICE.

GEORGE A. AYERS, OF HOLYOKE, MASSACHUSETTS.

HYGROMETRIC GOVERNOR FOR RAILWAY-HEADS.

SPECIFICATION forming part of Letters Patent No. 278,488, dated May 29, 1883.

Application filed September 4, 1882. (No model.)

To all whom it may concern:

Be it known that I, GEORGE A. AYERS, a citizen of the United States, residing at Holyoke, in the county of Hampden and State of Massachusetts, have invented new and useful Improvements in Hygrometric Governors for Railway-Heads, of which the following is a specification.

This invention relates to trumpet-governors for railway-heads; and it consists in the combination, with an ordinary railway or drawing head for reducing and drawing cotton-slivers, of a hygrometric trumpet-governor, the object being to so regulate the vibratory movements of the trumpet through which the sliver passes on said machines that said movements shall not occur in consequence of more or less moisture in the atmosphere, whereby the resistance which the aperture through the trumpet opposes to the passage of said sliver through it is varied, but that said vibratory movements of the trumpet-lever, whereby the drawing of said sliver is varied, shall be induced only by actual variations in the weight of the sliver being drawn and delivered by the machine.

In the drawings forming part of this specification, Figure I is a side elevation of a hygrometric trumpet-governor embodying my invention, and showing a section of the table of the machine to which it is applied. Fig. II is a side elevation of an ordinary drawing-head, partly in section, showing the sliver-cans on opposite sides thereof, and having said governor applied thereto. Fig. III is a detail view of parts of said governor and the trumpet-lever. Fig. IV is a front elevation of a portion of said machine and said governor. Fig. V is a detail view of parts of the latter.

In the drawings, D indicates an ordinary drawing-head. B is the table of the machine. *v* is the trumpet. *y* is the trumpet-lever. *x* is the trumpet-shaft. *w* is an arm on shaft *x*. *t* is a connecting-rod. *s* is a weight-frame. *o* is a connecting-rod. *n* is a pivot-nut. *h* is a pivoted lever. *e* is a connecting-rod. *a a* are hygrometric posts. *c c* are caps, and *c' c'* are sockets, to said posts. *b* is a post-base. *d d* are metallic straps on one side of posts *a*, secured to said caps and sockets. *m* is a weight, movable on said frame *s*. *f* is a lever-stand.

Like letters refer to like parts in the several figures.

The drawing-head D herein shown is intended to represent the main parts of a machine of this class, the use of which in cotton-manufacture is well known, and the trumpet thereof, *v*, is attached thereto and located as is commonly practiced. The end of the arm *w* on shaft *x* is connected, as usual, by the rod *t*, with the ordinary belt-adjusting devices, which govern the position of the belt *k* on the cone-pulleys J, as and for the purpose well understood by those skilled in the art. Said trumpet is secured to the upper end of a lever, *y*, and the latter to the horizontal shaft *x*, which is hung in suitable bearings on the front of the machine D, so that the vibratory movements of said trumpet as the sliver passes through it cause the arm *w* to vibrate vertically, and through its connection with said belt-adjusting devices by the rod *t* to actuate the latter, whereby the drawing-rolls shall be made to rotate at such speeds as will secure, as nearly as practicable, a sliver of uniform weight. The size of the opening in said trumpet is such as to permit a sliver of a certain bulk and weight per yard to pass through it with a certain amount of resistance, and it is customary to provide said arm *w* with a movable weight, which can be located by the operator at such a point thereon as will counterbalance said resistance, and when the proper weight of sliver is passing prevent such a degree of vibration of said arm as will cause any increase or diminution of the amount of cotton contained in the drawn sliver.

After having started the machine under the above-named conditions of adjustment, it will operate fairly well until there comes a change in the humidity of the atmosphere. If the latter becomes drier, the bulk of the sliver increases, and it draws the trumpet over toward the front rolls of the machine, swinging the arm *w* upward, and operating to so shift belt K as to vary the amount of cotton drawn into the sliver when no such variation is demanded to keep its weight to the standard; and if the atmosphere becomes more humid the bulk of the sliver decreases, occasioning a contrary effect upon said trumpet and its connecting devices, and resulting also in a variation, in a reverse sense from the above, in the amount of cotton in the sliver.

The within-described improvements provide

a remedy for the aforesaid variations in the weight of said sliver by providing novel devices for moving a counterbalance-weight, *m*, (which is adapted to slide on a frame, *s*, attached to the arm *w*,) which are actuated by the variations of the humidity of the atmosphere, so that when by dryness the sliver resistance in the trumpet is greater said weight is moved toward the end of arm *w*, and when it is less, by reason of greater humidity, said weight is moved in the opposite direction.

The aforesaid hygrometric governor consists of one or more posts, *a*, which are made from soft wood or other suitable material which is capable of action by the increase or decrease of moisture in the atmosphere. Said posts are in the form of wooden strips cut from a suitable piece transversely to the grain thereof, as illustrated in Fig. 1, and the strip so cut is secured against end motion by having its upper end covered with a cap, *c*, and its lower end enter a socket, *c'*, on a suitable base, *b*, a metallic strap, *d*, being secured to said cap and socket, and covering one side of said post. Any other material than metal may be substituted for that in said strap *d*, which is flexible, has sufficient tensile strength, and is unaffected by more or less humidity in the atmosphere. Two of said posts *a* are shown in the drawings connected to act together; but one only is required, except in cases where the dynamic force of one might be inadequate for the purpose. Said posts are secured in said sockets *c'* on the base *b*, and the latter is secured on the table B of the machine D. A lever-stand, *f*, is likewise secured on said table, and is provided with a slot, *i*. A lever, *h*, is pivoted to stand *f* by a bolt, i^2, which passes through said slot and through a slot in said lever, whereby said pivot-bolt may be moved to different positions relative to the upper end of lever *h*. A connecting-rod, *e*, is pivotally connected to the caps *c* on posts *a* and to the upper end of lever *h*. The lower end of lever *h* is pivoted to a sleeve on a nut, *n*, and the latter is located on the screwed end of a connecting-rod, *o*, whose opposite end is pivoted to one end of a weight or counter-balance, *m*. A weight-frame, *s*, is secured to one side of the arm *w*, upon which said weight *m* is adapted to be moved. The relative construction of said frame and weight is shown in Fig. 3.

The operation of my improvement is as follows, viz: The hygrometric posts *a a* will stand about vertical when there is about a normal amount of moisture in the atmosphere. The position they are shown in in Fig. 1—that is, with their tops inclined toward the trumpet *v*—is that which indicates a dry atmosphere and a consequent shrinking of the material composing said posts. The change to a moist atmosphere reverses their positions by causing their ends to incline in an opposite direction, and the said movements of posts *a* are communicated to the weight *m* through their connection with the latter by rod *e*, lever *h*, and rod *o*. Thus when, by reason of a dry atmosphere, the sliver draws the trumpet *v* unduly toward the front rolls of the machine, causing lever *w* to be swung upward, the posts *a* gradually spring forward about as shown and move weight *m* backward, thus counteracting said undue action of the sliver upon the trumpet. The presence of much moisture in the atmosphere produces the reverse effects upon the trumpet-posts *a*, and weight *m*; hence said weight is so moved by variations of the humidity of the atmosphere through its connections with posts *a* as to compensate for the variable resistance of the sliver in the trumpet, which arises from like atmospheric variations. The adjustable connection of lever *h* with rod *o*, which is provided by the nut *n*, enables one to set weight *m* to a proper position on frame *s*, and by having stand *f* and lever *h* slotted bolt i^2 can be so adjusted as to vary the length of the short arm of said lever, if desired.

I do not here claim the construction of the hygrometric posts *a*, nor broadly their use, independently of that shown for governing or indicating purposes, nor any of the features claimed in my application for hygrometers filed on even date herewith.

What I claim as my invention is—

1. The combination, in a railway-head for drawing and evening the slivers of fibrous materials, of a trumpet and supporting devices provided with a weight-bearing arm and a weight, substantially as described, and of appliances, substantially as described, susceptible of dynamic action from atmospheric influences; for moving said weight to different positions on said arm, substantially as set forth.

2. The combination, with the evening mechanism of a sliver-drawing frame, of a hygrometric trumpet-governor, substantially as described, adapted to act independently of any variation in the weight of the sliver passing through said trumpet, all as set forth.

3. In combination, the weight *m*, arm *w*, supporting the same, substantially as described, one or more hygrometric posts, *a*, the connecting-rods *e* and *o*, and the lever *h*, substantially as set forth.

GEORGE A. AYERS.

Witnesses:
H. A. CHAPIN,
R. F. HYDE.