

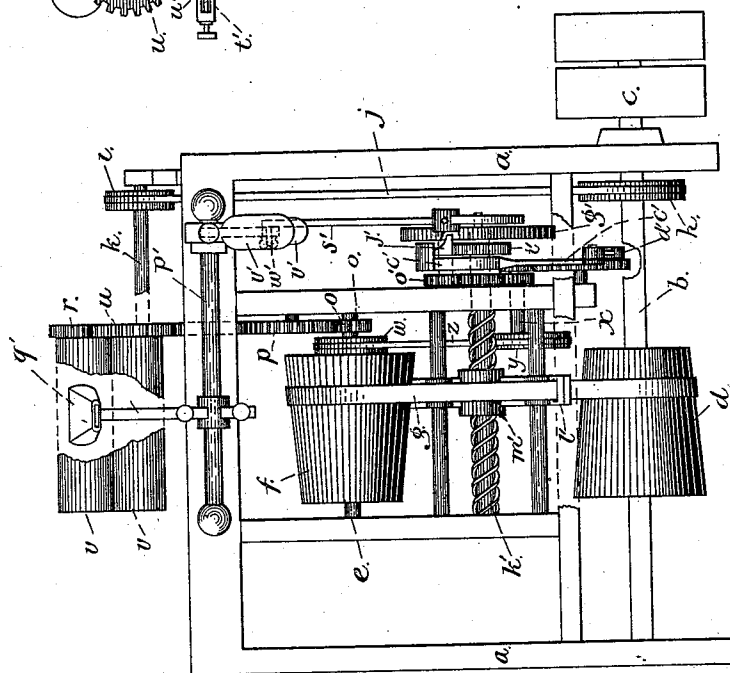
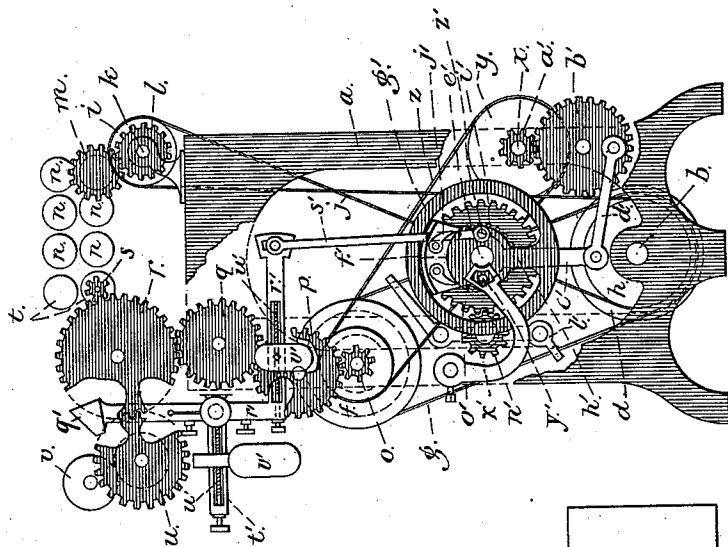
(No Model.)

3 Sheets—Sheet 1.

C. S. HADFIELD.
RAILWAY HEAD.

No. 466,410.

Patented Jan. 5, 1892.



Witnesses:

L. J. Shelby

E. B. Cummings

Inventor:

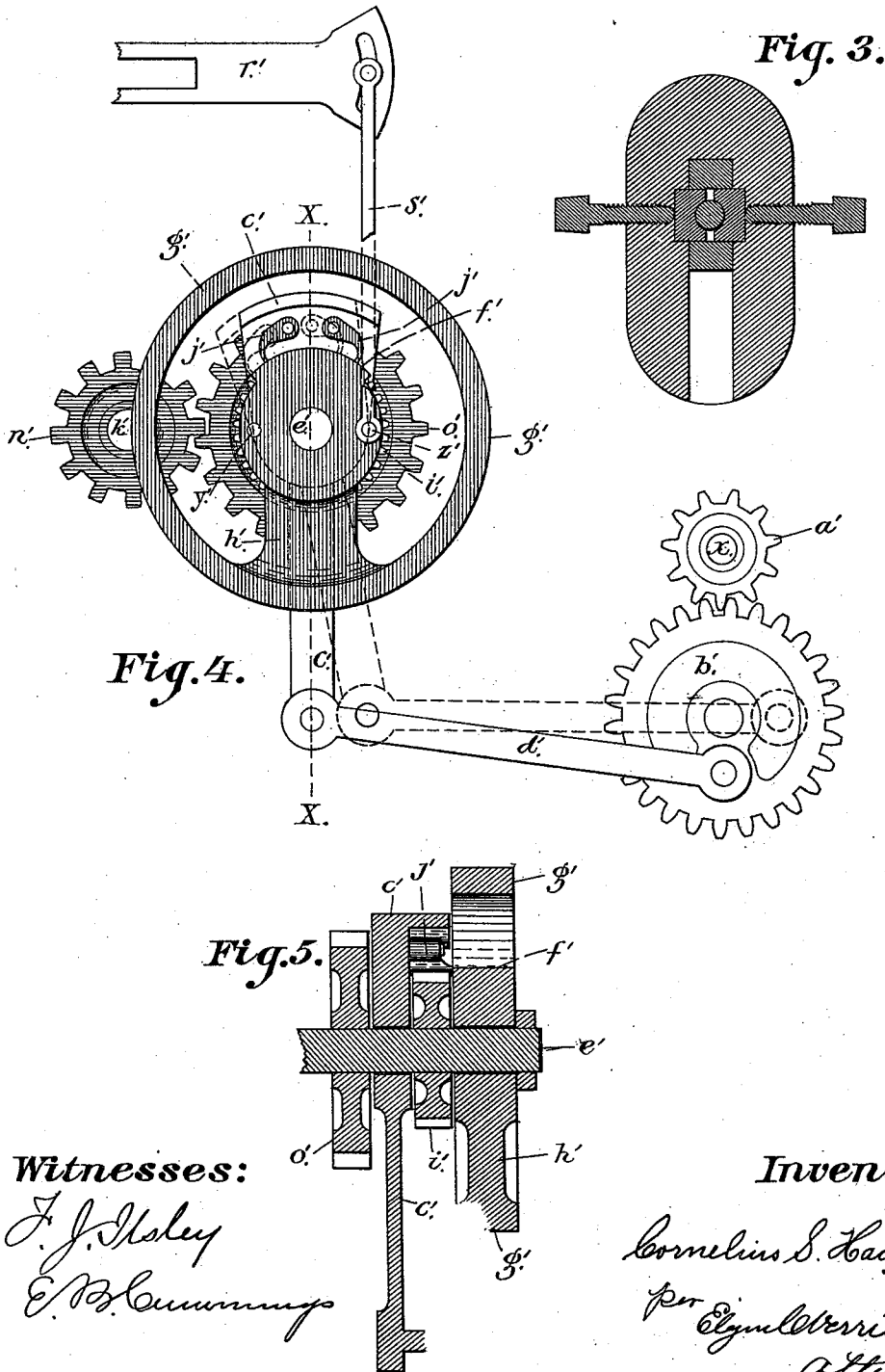
Cornelius S. Hadfield.

per Elgin Herrick,
atty.

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Witnesses:

J. J. Halsey
E. B. Cummings

Inventor.

Cornelius S. Hadfield,
per E. B. Cummings,
att'y.

(No Model.)

3 Sheets—Sheet 3.

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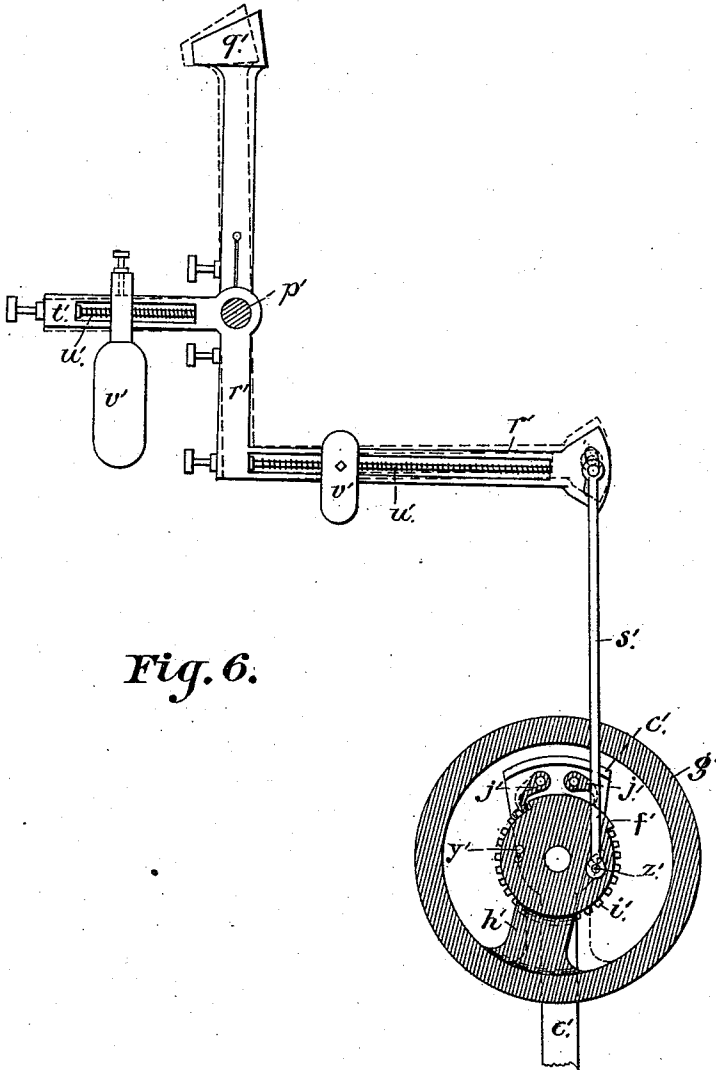


Fig. 6.

Witnesses:

L. J. Shelby
E. B. Cunningham

Inventor.

Cornelius S. Hadfield
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Att'y.

UNITED STATES PATENT OFFICE.

CORNELIUS S. HADFIELD, OF AUGUSTA, MAINE.

RAILWAY-HEAD.

SPECIFICATION forming part of Letters Patent No. 466,410, dated January 5, 1892.

Application filed May 7, 1891. Serial No. 391,883. (No model.)

To all whom it may concern:

Be it known that I, CORNELIUS S. HADFIELD, of Augusta, in the county of Kennebec and State of Maine, have invented certain new and useful Improvements in Railway-Heads; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification, in which—

Figure 1 is a front elevation of a railway-head having my improved devices attached thereto. Fig. 2 is an end elevation of the same with parts of the frame removed. Fig. 3 is a sectional view of the weight and its support. Fig. 4 is a detail showing shield and balance and mechanism for operating the same. Fig. 5 is a section of the same on line *x x* of Fig. 4. Fig. 6 is a detail of the balance, shield, and trumpet, and connecting mechanism.

The same letters refer to like parts.

In railway-heads as now commonly constructed the cotton passes between a series of rolls, thence into a trumpet, and thence between a pair of calender-rolls. The railway drawing or sliver is kept of a uniform size by having the trumpet pivoted to the frame and connected to mechanism whereby the belt on the cone-pulleys is shifted so as to cause the front and calender rolls to revolve faster or slower, according as the amount of cotton passing through the trumpet is too great or too small, the position of the trumpet being determined by the friction of the sliver passing through it.

The present invention is designed to regulate more effectually and to render more uniform the amount of cotton passing through the trumpet. The weight of the cotton passing through the trumpet determines in great measure the amount of friction. The weight of a given amount of cotton varies greatly according to the degree of moisture in the air. Consequently in order that the sliver may be uniform it is found necessary to change the balance of the trumpet frequently, according as the weight of the sliver varies.

In order to show clearly the manner of ad-

justing the balancing of the trumpet, I show in the drawings a railway-head having my improvements attached thereto.

In said drawings, *a* represents the frame of the machine, and *b* the main shaft, on which is set the driving-pulley *c*. Set on shaft *b* is a cone-pulley *d*, and on shaft *e*, journaled in the frame, is a second cone-pulley *f*, which is connected with the former by a belt *g*; also, on shaft *b* is a pulley *h*, and on a shaft *k*, journaled in the frame near the top, is a pulley *i*, connected with said pulley *h* by a belt *j*. On shaft *k* is a pinion *l*, which meshes with a pinion *m*, which operates the three rear pairs of rolls *n*.

Rigidly attached to shaft *e* is a pinion *o*, which is one of a gang of pinions marked *o*, *p*, *q*, and *r*, respectively. Pinion *r* meshes with a pinion *s*, which operates the front pair of rolls *t*, and also with a pinion *u*, which operates the calender-rolls *v*. On said shaft *e* is a pulley *w*, and on a shaft *x*, journaled in the frame, is a pulley *y*, pulleys *y* and *w* being connected by a belt *z*. On shaft *x* is a pinion *a'*, which meshes with a pinion *b'*, said pinion *b'* being eccentrically connected to the end of a rocker *c'* by a pivoted link *d'*, said rocker being loosely set on a shaft *e'*. On said shaft *e'* is also loosely set a balance-wheel *g'* and shield *f'* within said balance-wheel and connected thereto by a bridge *h'*. Between shield *f'* and rocker *c'* and rigidly set on shaft *e'* is a pinion *i'*. Rocker *c'* has two pawls *j'* pivotally attached to it and adapted to travel on the top of said shield *f'* so long as the balance-wheel and shield are in the position shown in Fig. 4 and to engage with the teeth of the pinion *i'* when said balance-wheel and shield are turned to the position shown in Fig. 6.

Journaled in the frame of the machine between the cone-pulleys is a worm-screw *k'*, to which is attached a belt-shifter *l'*, which is operated by a female screw *m'*. On the end of said worm-screw is a pinion *n'*, which meshes with a pinion *o'*, rigidly set on shaft *e'*, as seen in Fig. 4.

Attached to a shaft *p'*, journaled in the frame, is the trumpet *q'*, through which the sliver passes. Attached to shaft *p'* is an arm *r'*, extending downwardly and backwardly, and connecting with the rear end of arm *r'* is a link *s'*, which is pivotally connected by a

pin z' with the face of the shield f' , as seen in Fig. 2. Attached to and extending forwardly from shaft p' is an arm t' . In arms r' and t' are screw-bolts u' , and adapted to be moved back and forth thereon are weights v' , said weights being adapted to be moved back and forth on said arms by means of said screw-bolts passing through them. By means of said weights sliding on said arms the balancing of the trumpet may be more readily and accurately adjusted to meet the varying conditions of the sliver.

The arm r' has a slot in the rear end, and the link s' is held in any desired position to said arm by means of a set-screw w' , thereby enabling the length of said link to be changed. In the face of the shield opposite pin z' is a pin y' , and a check-bar x' , having a slot in the end thereof, through which said pin y' projects, prevents the balance and shield from turning too far in either direction. The top of the shield f' is of somewhat greater diameter than the rest of it, so that when the shield turns either way beyond a given point the pawls j' engage with the teeth of pinion i . The additional weight of the enlarged top of the shield is counterbalanced by the weight of the bridge h' and the weight of pin z' by that of pin y' . Thus the shield and balance are always perfectly balanced on their shaft.

The operation of my improved railway-head is as follows: The sliver passes between the three pairs of rear rolls n , which are operated with a constant velocity from a pulley on the main shaft. Thence it passes between the pair of front rolls t , thence through the trumpet, and finally between the calender-rolls v . The calender-rolls and the pair of front rolls t are operated by means of the intermediate gears and pulleys in connection with the cone-pulleys, and have a varying velocity, according as the velocity of the cone-pulleys varies. The velocity of the cone-pulleys is changed automatically by the trumpet. As has been before stated, the sliver varies greatly in weight as the moisture in the atmosphere varies. As the sliver passes

through the trumpet, if the weight is too great, it throws the trumpet forward, raises arm r' , and thereby turns the shield and balance until the pawls engage the pinion i' . This turns the worm-screw and shifts the belt on the cone-pulleys, thus lessening the velocity of the pair of front rolls and of the calender-rolls and consequently the amount of cotton that is fed to the trumpet, and vice versa. To change the balancing of the trumpet to conform to the varying conditions of the atmosphere requires an accurate and fine adjustment of the balance-weights. This I accomplish by making the weights adjustable on the arms by means of a screw-bolt, and especially by having two arms extending in opposite direction attached to the trumpet-supporting shaft p' . The perfect balancing of the balance-wheel and shield tends to render the trumpet more sensitive to the change in the amount of cotton being fed to it.

Too great movement of the balance and shield is prevented by means of the slotted check-bar engaging the pin in the face of the shield.

Having thus described my invention and its use, what I claim, and desire to secure by Letters Patent of the United States, is—

In a railway-head, a trumpet, a rock-shaft, lever-arms attached to said shaft, balancing-weights adapted to slide on said arms, screw-threaded rods adapted to adjust said weights on said arms, a combined balance-wheel and shield, pins set in opposite sides of said shield, a rod connecting the rear arm and one of said pins, and a check-bar having a slot in one end to engage the other pin, substantially as and for the purposes set forth.

In testimony that I claim the foregoing as my own I affix my signature, in presence of two witnesses, at Augusta, Maine, April 11, 1891.

CORNELIUS S. HADFIELD.

Witnesses:

ELGIN C. VERRILL,
J. A. CRAIG.