

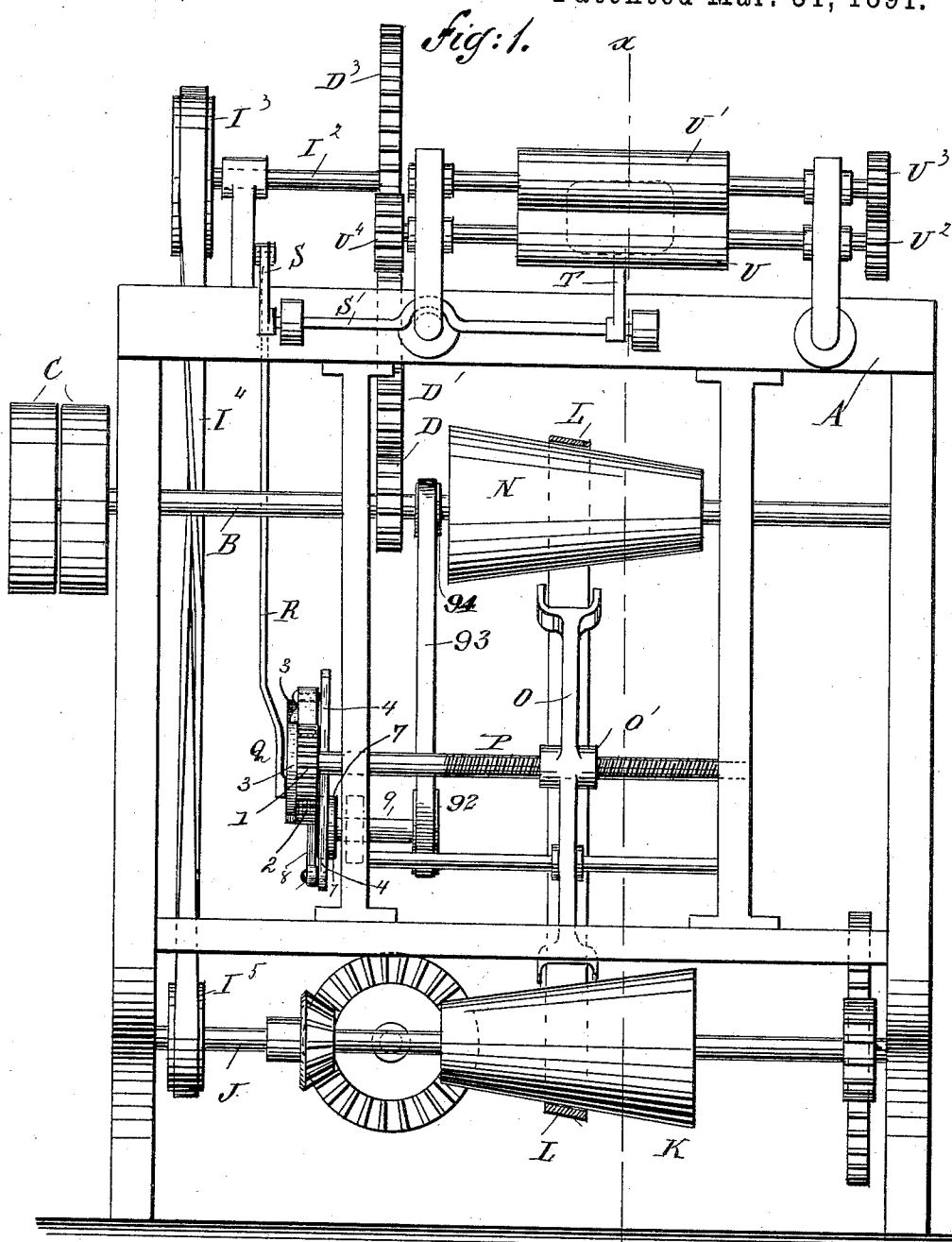
(No Model.)

3 Sheets—Sheet 1.

S. W. HILDRETH.
RAILWAY DRAWING HEAD.

No. 449,477.

Patented Mar. 31, 1891.



WITNESSES:

Chas. Nida
C. Sedgwick

INVENTOR:

S. W. Hildreth
Munn & Co

BY

ATTORNEYS.

(No Model.)

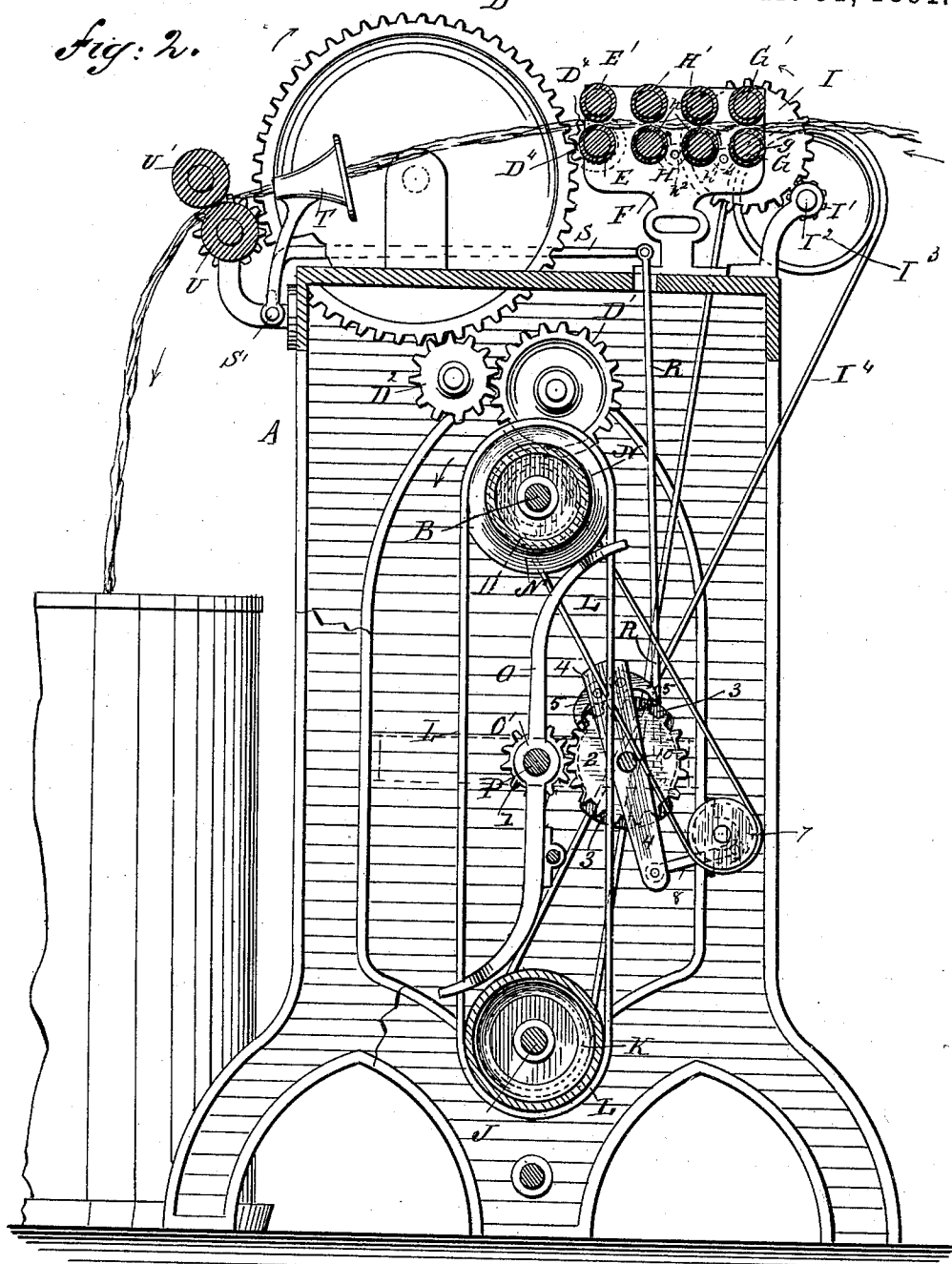
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Fig. 2.



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(No Model.)

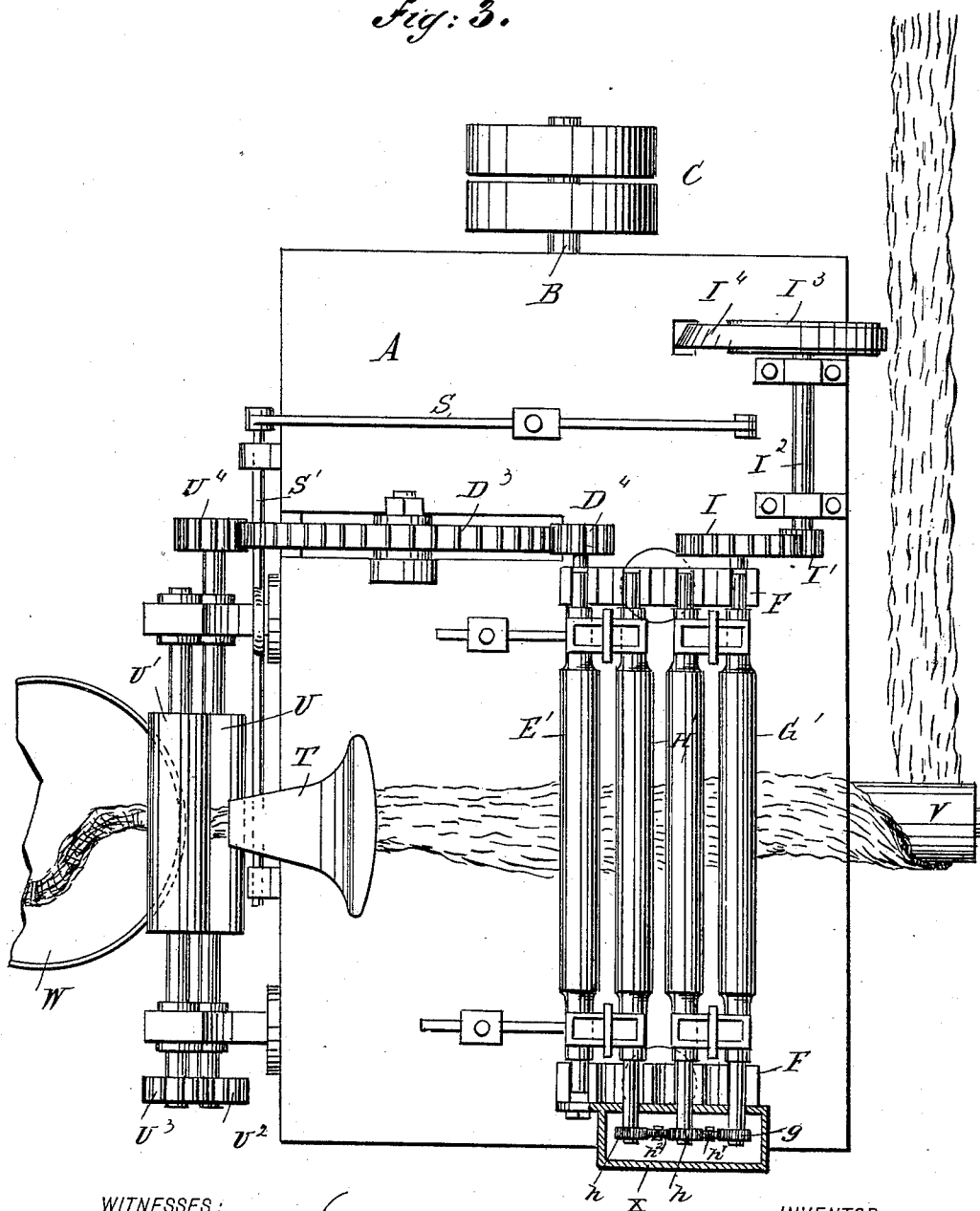
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Fig: 3.



WITNESSES:

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UNITED STATES PATENT OFFICE.

SAMUEL W. HILDRETH, OF VOLUNTOWN, CONNECTICUT, ASSIGNOR TO
HIMSELF AND IRVING F. CHASE, OF SAME PLACE.

RAILWAY DRAWING-HEAD.

SPECIFICATION forming part of Letters Patent No. 449,477, dated March 31, 1891.

Application filed September 12, 1889. Serial No. 323,767. (No model.)

To all whom it may concern:

Be it known that I, SAMUEL W. HILDRETH, of Voluntown, in the county of New London and State of Connecticut, have invented a new and Improved Railway Drawing-Head, of which the following is a full, clear, and exact description.

The invention relates to cotton-working machinery; and its object is to provide a new and improved railway head or evener, which serves to produce an even and uniform sliver and to prevent the cotton from clogging the back and front rolls in case the belt on the cone-pulley slips.

The invention consists of certain parts and in details and combinations of the same, as will be hereinafter fully described, and then pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar letters and numerals of reference indicate corresponding parts in all the figures.

Figure 1 is a front view of a drawing-head with the improvement applied thereto. Fig. 2 is a transverse section of the same on the line *xx* of Fig. 1, and Fig. 3 is a plan view thereof.

The railway head or evener is provided with the usual frame A, in which is mounted the driving-shaft B, carrying on one end fast and loose pulleys C, connected by a belt with suitable machinery for imparting a uniform rotary motion to the said shaft B. The latter is connected by a train of gear-wheels D, D', D², D³, and D⁴ with the lower front roll E, above which is arranged the upper front roll E', both being mounted to turn in suitable bearings in the standards F F, held on the top of the main frame A. In the said standards are also mounted the back rolls G and G' and the intermediate rolls H and H'. The lower back roll G is provided on one outer end with a gear-wheel I, meshing in a pinion I', secured on a shaft I², mounted to turn in suitable bearings on the top of the frame A and carrying a pulley I³, over which passes a crossed belt I⁴, also passing over a pulley I⁵, secured on the lower cone-shaft J, mounted to turn in suitable bearings directly below the shaft B, previously mentioned. The in-

termediate rolls H and H' are herein shown as driven from the lower back roll G by means of the gear-wheels *g h h* on the ends of the rolls G H H and the intermediate gear-wheels *h' h²*, as shown in Figs. 2 and 3.

On the lower cone-shaft J is secured the usual cone K, over which passes the belt L, passing over the upper cone N on the upper cone-shaft B. The belt L is shifted forward and backward on the cones N and K in the usual manner by a belt-shifter O, provided with a nut O', screwing on the screw P, which is operated by devices controlled in their action by the trumpet T. The trumpet T is carried by the shaft S', mounted on the front of the frame A and provided with the weighted arm S, connected by the rod R with the screw-operating mechanism Q, which can be of any well-known mechanism, but is herein shown as consisting of the following parts: On one end of a shaft 10 is mounted a gear-wheel 2, which meshes with a gear-wheel 1 on the end of the screw P, and above the said gear-wheel 2 and pivoted to the vibratory lever 4, mounted on the shaft 10, are the two pawls 5. On the shaft 10, by the side of the gear-wheel 2 and under the pawl, is a disk or escapement wheel 3, which, when turned into a certain position, will keep the pawls out of action on the gear-wheel 2, but when turned out of such position in either direction will allow one of the pawls to descend into engagement with said gear-wheel. A continual oscillatory motion is imparted to the lever 4 by a crank-wheel 7, connected by rod 8 with the lower end of the lever 4. The crank-wheel 7 is mounted on the shaft 9, which is provided with a pulley 92, from which a belt 93 passes to a pulley 94 on the upper cone-pulley shaft B. The escapement-wheel 3 is provided with a crank-pin, to which the rod R, connected with the arm S of the trumpet-shaft, as before described, is connected, so that the vibratory movements of the trumpet will produce corresponding rotary movements of the escapement-wheel 3. When the trumpet is balanced by the friction of the sliver in and against it and by the weight of the arm S, the escapement-wheel 3 will be in such position that neither of the pawls will be in engagement with the gear-wheel. Should, however,

the trumpet be moved forward by reason of an enlargement of the sliver or permitted to move backward by a diminution of the sliver, the escapement-wheel will be turned in one direction or the other, so as to let one of the

5 pawls engage the said gear-wheel, thereby causing the screw to be revolved.

The trumpet T is of the usual construction and is located in front of the calender-rolls 10 U and U', mounted to turn in suitable bearings in brackets projecting from the main frame A. The calender-rolls U and U' are geared with each other by the gear-wheels U² and U³, and the lower calender-roll U carries another gear- 15 wheel U⁴, in mesh with the gear-wheel D³, connected with the front roll E.

The operation is as follows: When the shaft B is rotated at a uniform rate of speed, the front rolls E and E' are also rotated at a uni- 20 form rate of speed on account of being directly connected by the train of gear-wheels D, D', D², D³, and D⁴ with the said shaft B. The rotary motion of the shaft B is imparted by the cones N and K and the belt L to the 25 lower cone-shaft J, which, by its connection with the shaft I² by means of the pulleys I⁵ and I³ and the belt I⁴, rotates said shaft I², and the latter, by the gear-wheels I' and I, turns the back rolls G and G' and the inter- 30 mediate rolls H and H' at a varying rate of speed, according to the position of the belt L on the cone-pulleys N and K. As the belt L is shifted by the forward and backward sway- 35 ing motion of the trumpet T the rate of speed of the said back rolls G and G' varies accordingly. The cotton from the carding-machine passes over the usual roller V, and then up to and between the back rolls G and G', then through the intermediate rolls H and H', from which 40 the cotton passes to the front rolls E and E', then to and through the trumpet T, and through and between the calender-rolls U and U' to be finally discharged into the usual receptacle W, located in front of the machine. 45 The usual speed of the rolls G G', H H', and E E' is such that the cotton passed through the said rolls is drawn down finally by means of a draft between each set of rolls, each set of rolls running somewhat faster than the 50 preceding one. The sliver as it leaves the front rolls E and E' travels at a uniform rate of speed through the trumpet T, so that the swaying back and forth of the trumpet T by an uneven sliver causes the latter to rock, and 55 thereby change the position of the belt L on the cones N and K, whereby the back rolls G and G' are driven faster or slower, so as to admit more or less cotton until the sliver again becomes uniform in passing through 60 the rolls E and E'.

In railway-heads, as heretofore constructed, the back rolls G and G' were driven at a uniform rate of speed from the lower cone-shaft J, which latter was connected by pulleys and 55 a belt or other means with machinery to impart a uniform rotary motion to the said shaft J. The front rolls E and E' and calender-

rolls U and U' were driven at a variable rate of speed from the upper cone-shaft B as the latter was driven from the lower cone-shaft 70 J, and did not, as at present, receive a direct uniform motion. By this arrangement the front rolls E and E' were increased in speed when the carded cotton came in too heavy, as the extra bulk of cotton caused more friction 75 in passing through the trumpet T, so as to draw the trumpet in toward the calender-rolls U and U', whereby the position of the belt L was shifted and the front rolls E and E' traveled faster, thereby drawing down the 80 cotton to its desired size. The shifting mechanism Q, when released, permitted the cone-belt L to remain in the same position until another movement of the screw P took place. If the cotton came in too light, the 85 trumpet T would fall back from the calender-rolls U and U', throwing the mechanism Q into gear, so as to turn the screw P in the opposite direction, thereby retarding the speed of the front rolls E and E' until the cotton 90 again was brought up to its proper heft. By this former arrangement it will be seen that the front rollers and calender-rollers receive the varying speed, which causes the cotton sliver to pass through the trumpet T at a 95 varying velocity, thereby producing an uneven tension on the trumpet, which must give an uneven heft to the cotton sliver in proportion to the varying tension as the cotton sliver passes through the trumpet T. It 100 will further be seen that by this former arrangement the production of cotton sliver will be varied by the heft of the cotton laps on the cards, at times giving more than can well be disposed of, so as to cause inconvenience, 105 besides overcrowding the parts, at other times falling short. This variation of laps is of frequent occurrence and is conducive to poor work. Again, in event of the cone-belt L slipping, which frequently occurs, the front 110 rolls E and E' are stopped, while the back rolls G and G' are kept running, drawing in the cotton and wedging it between the back and front rolls. This frequently causes breaking of the rollers saddles and stirrups and other 115 parts.

With my improvement all these difficulties above mentioned, as in former machines, are overcome, since in case the belt is slipping the front rolls are not affected, as they are 120 driven directly from the shaft B. Clogging between the front and rear rolls is impossible on account of the front rolls running faster and at a more uniform rate of speed than the back rolls G G'. It is understood that by the 125 uniform rate of speed of the front rolls and calender-rolls a uniform tension is given to the trumpet, which must give the same heft of cotton sliver whether the carding comes into the railway-head too light or too heavy, 130 as the variation of speed is now made by the back rolls G G'. A uniform production must be the result, as the front rolls E and E' and calender-rolls U U' deliver the cotton sliver

at a uniform rate of speed. It will further be seen that the cone-belt L is not liable to slip on account of the upper cone receiving the direct motion with the shaft B and the lower cone not being affected by clogging between the back and front rolls.

Having thus fully described my invention, I claim as new and desire to secure by Letters Patent—

10 1. In a railway-head, the combination of a driving-shaft provided with a cone-pulley, a second shaft provided with a cone-pulley, a belt passing over said cone-pulleys, a trumpet, a belt-shifter, means under the control of the
15 trumpet for operating the belt-shifter, the front rolls, a train of gearing connecting the lower front roller with the driving-shaft, the back rolls, the lower one of which is provided with a gear-wheel, a third shaft provided with
20 a gear-wheel meshing with the gear-wheel of the lower back roll, and pulleys and a belt

for operating the third shaft from the lower cone-pulley shaft, substantially as described.

2. In a railway-head, the combination, with the shaft B, provided with the cone-pulley N, 25 the shaft J, provided with the cone-pulley K, the belt L, passing over the cone-pulleys, the trumpet T, the belt-shifter O, and means under the control of the trumpet for operating the belt-shifter, of the front rolls E E', the back rolls G G', the gear-wheels D D' D² D³ 30 D⁴, connecting the shaft B with the lower front roll E, the shaft I², the gear-wheels I I', connecting the shaft I² with the lower back roll G, the pulley I³ on the shaft I², pulley I⁵ 35 on the cone-shaft J, and the crossed belt I⁴, passing around said pulleys I³ I⁵, substantially as herein shown and described.

SAMUEL W. HILDRETH.

Witnesses:

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GEO. W. ROUSE.