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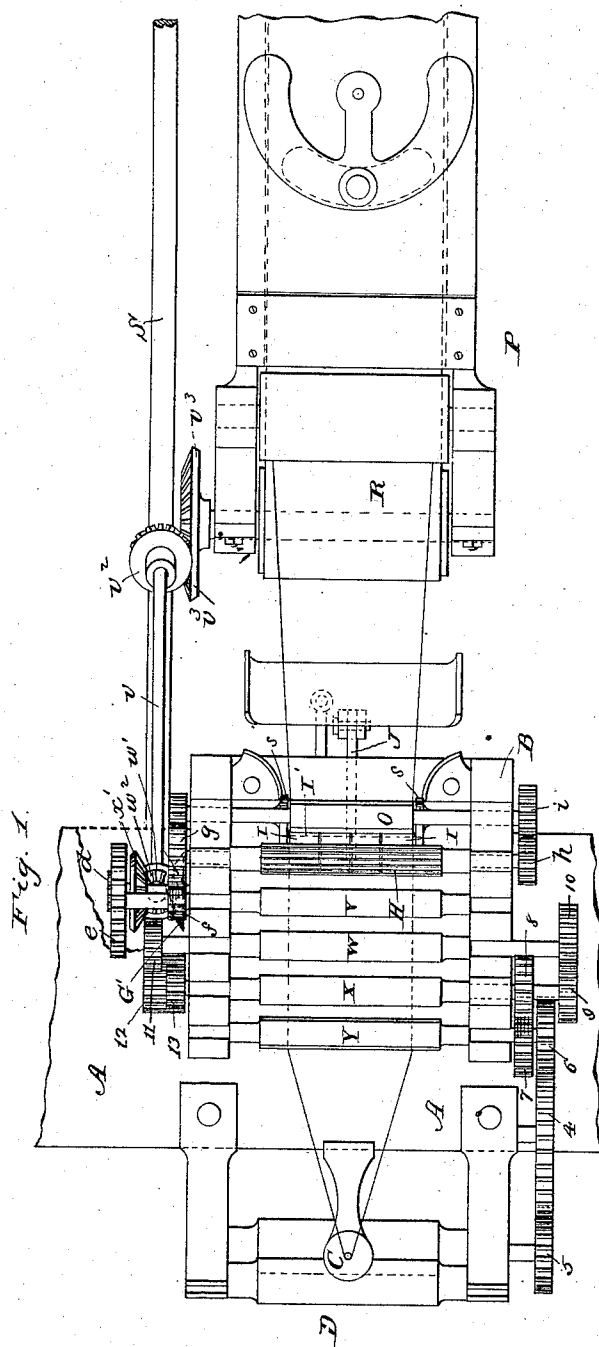
4 Sheets—Sheet 1.

A. T. ATHERTON.

RAILWAY HEAD.

No. 305,654.

Patented Sept. 23, 1884.



Witnesses:

Euclid and
J. Walter Blandford

Inventor:

Hubert P. Atcherson
by Marcelline Bailey, Attorney

(No Model.)

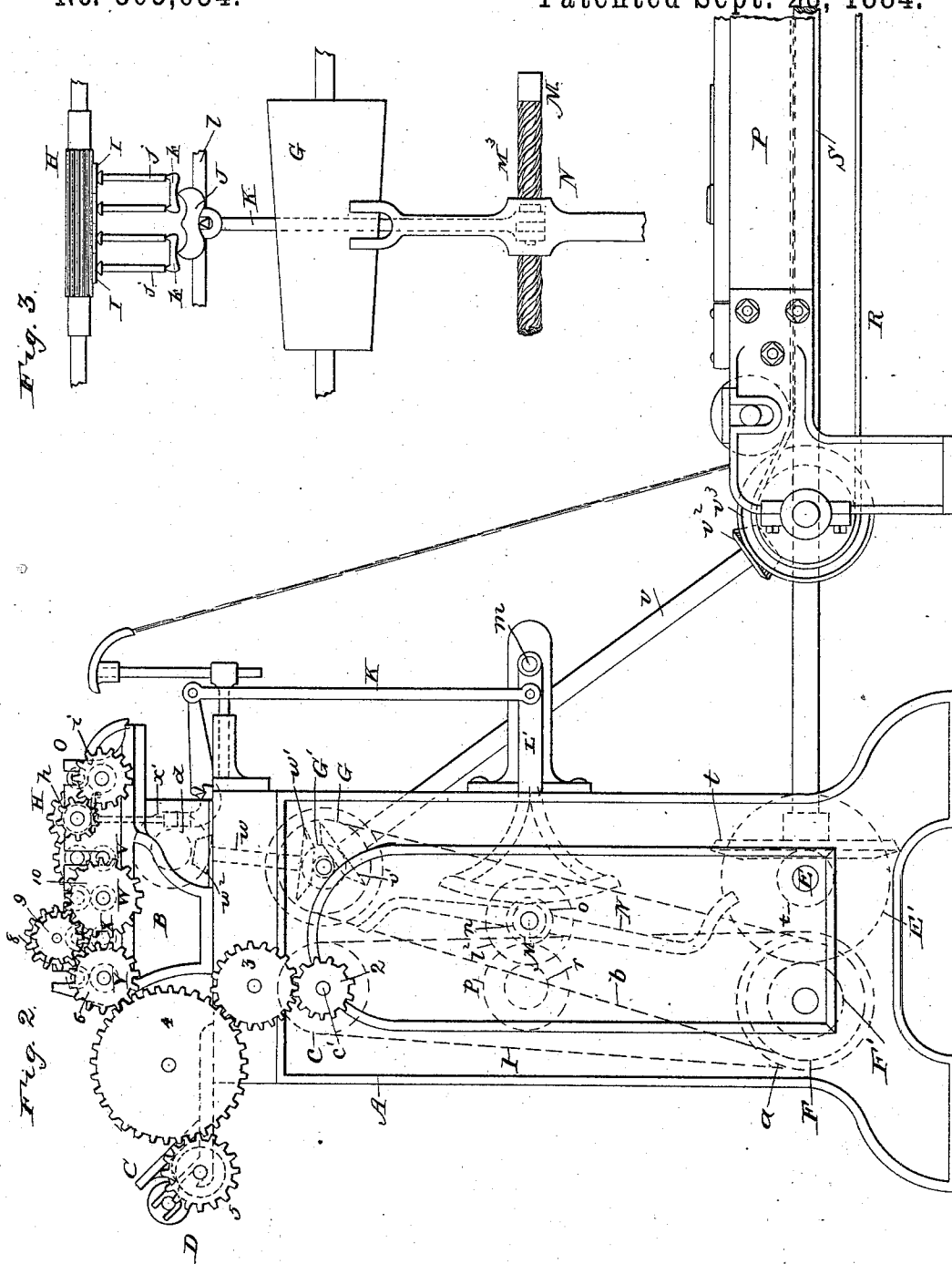
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Abel T. Atherton
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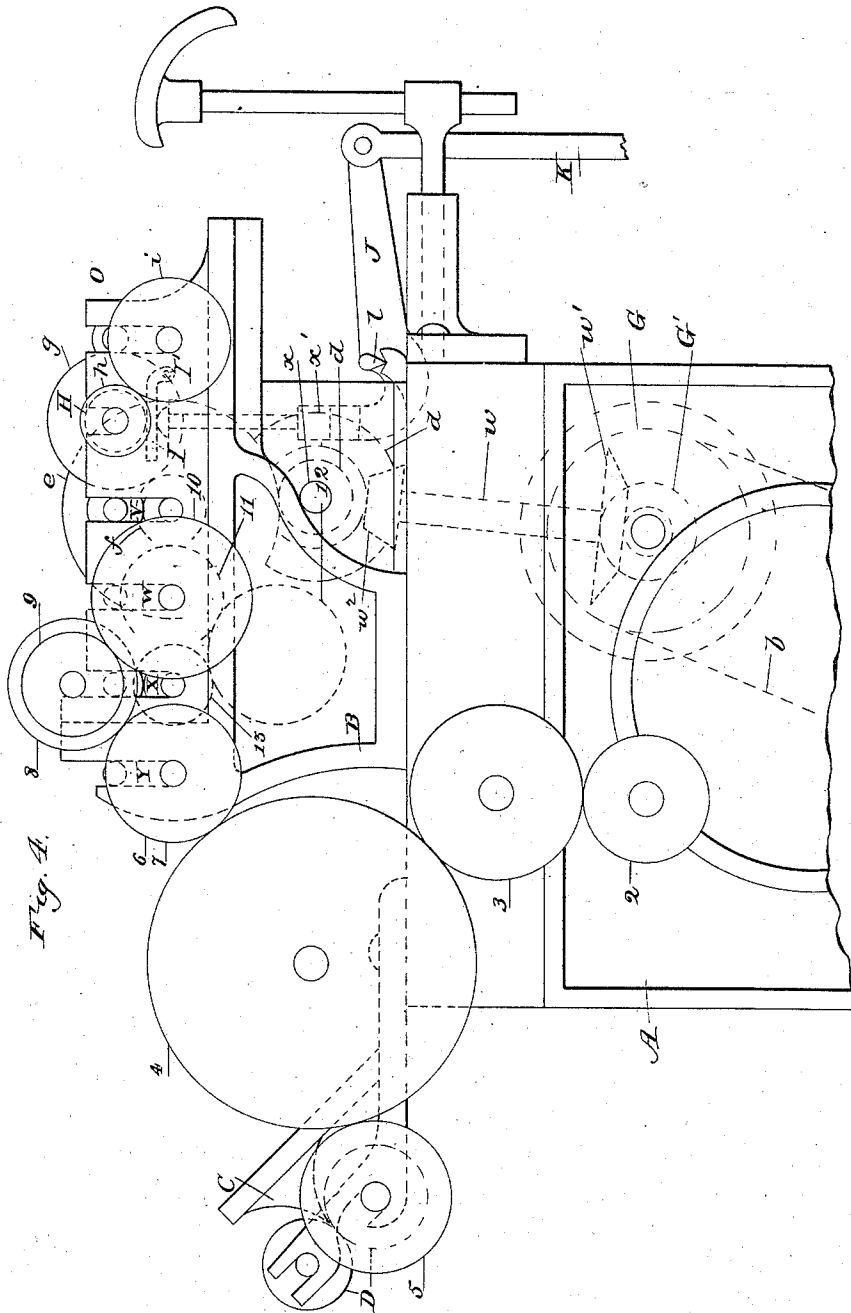
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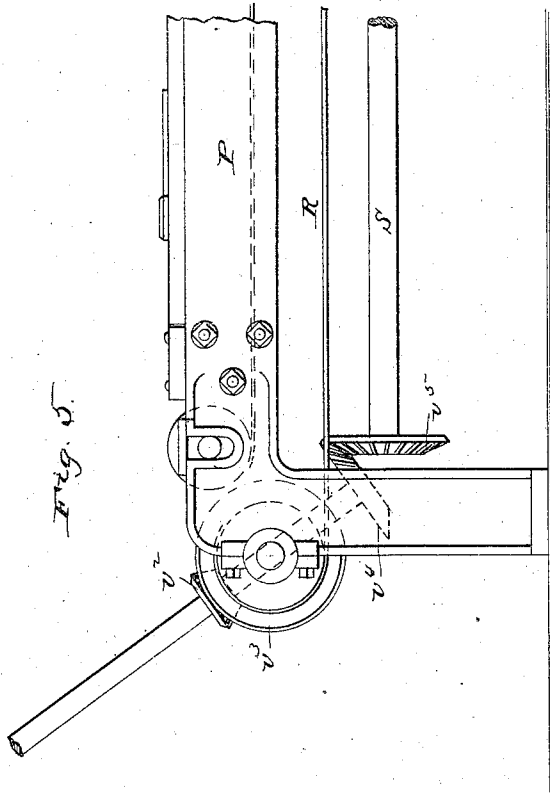
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UNITED STATES PATENT OFFICE.

ABEL T. ATHERTON, OF LOWELL, MASSACHUSETTS.

RAILWAY-HEAD.

SPECIFICATION forming part of Letters Patent No. 305,654, dated September 23, 1884.

Application filed January 29, 1884. (No model.)

To all whom it may concern:

Be it known that I, ABEL T. ATHERTON, of Lowell, Massachusetts, have invented certain new and useful Improvements in Railway-Heads, of which the following is a specification.

My invention has relation to the evener or evening mechanism used in connection with railway-heads.

10 It was for a long time customary to locate on the front of the railway-head, and in advance of the drawing-rolls, that portion of the evener having contact with the sliver, and the trumpet was the instrumentality usually employed to actuate the evener. This arrangement was disadvantageous on several accounts, mainly in that the mischief of uneven work was done before the evener could be influenced to prevent it. To remedy this defect, the evener, adapted, as usual, to vary the speed of the drawing-rollers, has had that portion of it which is acted on by the sliver located in rear of the drawing-rollers, the evener-plate for this purpose being arranged and adapted to coact with the feed-roller, as shown and described in Letters Patent No. 284,585, dated September 4, 1883. The arrangement therein shown, which is entirely effective for the purpose, contemplates drawing-rolls adapted to move at varying speed, a feed-roller moving at constant speed, a carrier or apron for delivering the sliver moving in unison with the feed-roller, and an evener adapted to coact with the feed-roller to vary the speed of the drawing-roller, according to the requirements of the work. I have found that the same result can be obtained by driving the drawing-rollers at constant speeds and by varying through the instrumentality of the evener (of which that portion acted on by the sliver is, as in the patented mechanism above referred to, located in rear of the drawing-rollers) the speed of the feed-roller and also of the carrier or apron, which must at all times move in unison with the feed-roller. And I can, if desired, so arrange the evener that it will vary the speed not only of the feed-roller and the carrier, but also of the doffer-driving shaft or mechanism. Thus in said patented mechanism the feed has constant speed, while that of the drawing-rolls varies; while in mine the drawing-rolls have constant speed, and that of

the feed-roller and of the carrier or apron, as well as of the doffer-actuating mechanism, if desired, will vary, so as to deliver the sliver to the drawing-rollers more or less rapidly, as required. The simultaneous variation of the speed of the feed-roll and carrier is, of course, indispensable, since the two must always move in unison, in order to avoid undue slackening of or undue tension upon that portion of the sliver extending between the apron or carrier and the feed-roller. For the same reason I contemplate also correspondingly varying the speed of the doffers. This, however, is a nicety, not a necessity.

The nature of my improvement and the manner in which the same is or may be carried into effect will be readily understood by reference to the accompanying drawings, in which—

Figure 1 is a plan, and Fig. 2 is a side elevation, of so much of a railway-head as needed for the purpose of explanation. Fig. 3 is a rear elevation of a portion of the evening mechanism. Fig. 4 is a side elevation of a portion of the railway-head on enlarged scale, containing a diagrammatic representation of the gearing. Fig. 5 is a side elevation of a modification, representing the manner in which the speed of the doffer-operating shaft can also be varied.

The railway-head which I have selected for the purpose of illustrating my invention is the same as that shown and described in Letters Patent No. 284,585, hereinbefore referred to, with such modifications as required by the change in the relations of the evening mechanism to the other working parts.

A is the frame. B are the stands. C is the trumpet. D are the calender-rolls. V W X Y are the four pairs of drawing-rolls, consisting each of a fluted roller and a top roller, as usual. E is the driving-shaft having a spur-gear, E', which meshes with gear F' on the shaft of lower cone-pulley, F. G is the upper cone-pulley driven from cone-pulley F by belt b.

Of the drawing-rollers, the pair V (the fluted roller of which is known as the "back fluted roller") revolve in unison with the feed-roller. The three pairs Y X W under my improvement revolve at constant speeds, each pair, as usual in railway-heads, being of

course so driven as to revolve at a speed greater than that of pair which precedes it.

The fluted rollers of the three pairs of drawing-rollers last named and the calender-rolls 5 are driven from a pulley, *a*, on the lower cone-pulley shaft, *F*, in the following way: From pulley *a* a belt, 1, passes around a pulley, *c*, on a shaft, *c'*, provided with a gear, 2, which engages gear 3, which in turn meshes with 10 spur-wheel 4. The latter engages gear 5 on the arbor of the lower calender-roll, and also meshes with gear 6 on the arbor of the fluted roller of pair *Y*. On the same arbor with 6 is a pinion, 7, meshing with an intermediate gear, 8, 15 on whose arbor is a gear, 9, which engages gear 10 on the arbor of the fluted roller of pair *W*. On the opposite end of the arbor of this roller is a gear, 11, which meshes with an intermediate gear, 12, which in turn engages gear 13 20 on the arbor of the fluted roller of pair *X*. The rollers *V*, as before said, move in unison with the fluted feed-roller *H*, as do also the consolidating-rollers *O*, and the apron or carrier *R*. The speed of all these parts is varied 25 by the evening mechanism to accord with the requirements of the work, and the manner in which I attain this result in the present instance is as follows: The fluted roller of pair *V* (which, as before said, is known as the "back 30 fluted roller,") is driven at a variable speed from the upper cone-pulley shaft, *G*, by a beveled gear, *G'*, on said shaft, which meshes with a beveled pinion, *w'*, on the lower end of an upright shaft, *w*, supported in suitable bearings, and having at its upper end a second beveled 35 pinion, *w''*, which meshes with a beveled gear, *x'*, on a shaft or arbor, *x*. On shaft *x* is a gear, *d*, which engages a spur-wheel, *e*, on the arbor of the back fluted roller. The roller 40 *H*, which is termed the "feed-roller," although it need not necessarily have a feeding action, is driven from the back fluted roller by a pinion, *f*, on the arbor of the last-named roller, which engages a gear, *g*, on the arbor of roller 45 *H*. Beneath this roller *H* extends the free ends of a series of vibratory flat horizontal plates, *I*, hung on a cross-rod, *I'*, Fig. 4, said plates being pressed up against the roller by pins *j*, which rest upon and are upheld by 50 scale-beams *k*, the lower one of which rests upon the knife-edge or point of a vibratory lever, *J*, having a knife-edge fulcrum, *l*, where it is supported in the frame *A*. The rear end of the lever is connected by a connecting-rod, 55 *K*, to a quadrant-lever, *L*, fulcrumed at *m* in a bracket-extension of frame *A*, and through this lever the belt-shifting device is operated. This evening mechanism, which resembles in a general way the well known Lord eveners, (Letters 60 Patent No. 52,008,) is fully described and illustrated in Reissued Letters Patent No. 4,722, of January 23, 1872, and therefore requires no particular description here. It will suffice to say that when the slivers—one for each 65 plate—are passing between these plates and the feed-roller on their way to the drawing-

rollers, any unevenness in any one or more of them will effect a corresponding elevation or depression, as the case may be, of one or more of the plates, which movement, through the 70 scale-beams, lever, &c., is transmitted to the shifting mechanism, with the result of correspondingly increasing or decreasing the speed of the rolls *V H*.

The particular means through which the 75 quadrant-lever operates the cone-drum belt-shipper are shown in Fig. 2. The toothed quadrant engages a pinion, *n*, loosely mounted on a rotatable shaft, *M*. Fast on the hub of pinion *n* is a gear, *l'*, which meshes with a pin- 80 ion, *r*, having its arbor supported in suitable bearings in the frame *A*; and fast on the arbor of pinion *x* is a toothed wheel, *p*, which meshes with a gear, *o*, keyed upon shaft *M*. This shaft has a screw-threaded portion, (in- 85 dicated at *M'*, Fig. 3,) on which is mounted the screw-threaded nut-like hub of the belt-shipper *N*, said shipper being restrained by any suitable known means from following the 90 rotary movement of the shaft. By reason of this arrangement it will be seen that when the shaft is rotated, the direction of its rotation depending upon the direction in which the quadrant-lever *L'* moves, the shipper will be 95 caused to move lengthwise of the shaft in one direction or the other, and will thus effect a corresponding shifting of the belt *b*.

In rear of the feed-roller and eveners-plates are the consolidating-rollers *O*, supported in 100 suitable bearings in the frame. The lower roller of this pair (which is provided with end flanges, *s*, between which the upper roller works) is driven from the feed-roller *H* by means of a gear, *h*, on the arbor of roller *H*, 105 which engages a gear, *i*, on the arbor of said lower roller of pair *O*. The object of these consolidating-rollers is to compress and compact the slivers, which in this condition will act with greater certainty upon the plates. The endless power-driven sliver-carrying apron *R* 110 is arranged in the railway-trough *P* in the usual way. This apron, as above explained, must move at all times in unison with the feed-roller; and it becomes necessary, therefore, to automatically vary its speed with that 115 of said roller. To this end I drive it from the upper cone-pulley shaft, *G*, through the intermediary in this instance of an inclined shaft, *v*, supported in suitable bearings, having at its upper end a beveled pinion, *v'*, which en- 120 gages the beveled gear *G'* on the arbor of shaft *G*, and on its lower end a beveled pinion, *v''*, which engages a beveled gear, *v'''*, on the arbor of the driving-drum of the endless carrier-apron. Thus both the feed-roller and the car- 125 rier or apron are driven from the upper cone-pulley shaft, *G*, and will move at all times in unison, the apron delivering at all times the sliver neither faster nor slower than it can be taken by the feed-roller, no matter how exten- 130 sive or frequent may be the variations of speed.

The power to drive the doffers of the cards

used in connection with the railway head and carrier is usually taken from the shaft E through the intermediary of a shaft, S, which, by beveled gearing *tt*, engages shaft E directly, as indicated in Fig. 2. If it be desired to vary the speed of the doffers with that of the feed-roller and the carrier, this can be done, as indicated in Fig. 5, by driving-shaft S, not from shaft E directly, but from the upper cone-pulley shaft, G, for which purpose the carrier-driving shaft *v* would be prolonged, and would be provided with still another beveled pinion, *v*⁴, meshing with a pinion, *v*⁵, on shaft S.

I do not restrict myself to the special evening mechanism herein described, nor to the particular form and arrangement of the gearing or motion-transmitting devices.

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

1. The combination, with the feed roller or rollers, the carrier or apron moving in unison with and delivering the sliver to said feed-rollers and the drawing-rollers, of evening mechanism adapted and arranged to simultaneously vary the speed of both feed-roller and carrier, substantially as and for the purposes hereinbefore set forth.

2. The combination, with drawing-rollers and evening mechanism, having that portion of it which is acted on by the sliver located in rear of said drawing-rollers, of the feed-roller, the carrier or apron moving in unison therewith and delivering sliver thereto, and means whereby the evener is caused to simultaneously affect or vary the speed of both carrier and feed-roller, substantially as and for the purposes hereinbefore set forth.

3. The combination, substantially as hereinbefore set forth, of the drawing-rollers, the feed-roller, the sliver-carrier or apron moving in unison therewith, the shaft for transmitting movement to the doffers, and evening mechanism arranged and operating to simultaneously affect or vary the speed of both the feed-roller, the carrier, and the doffer-actuating shaft.

In testimony whereof I have hereunto set my hand this 21st day of January, 1884.

ABEL T. ATHERTON.

Witnesses:

FRANK COBURN,
GEORGE W. COBURN.