(No Model.)

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W. E. WHITEHEAD.

RAILWAY HEAD.

No. 284,585.

Patented Sept. 4, 1883.

Fig. 5.

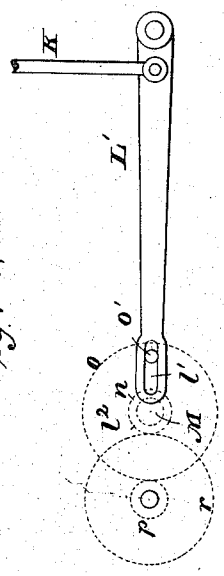
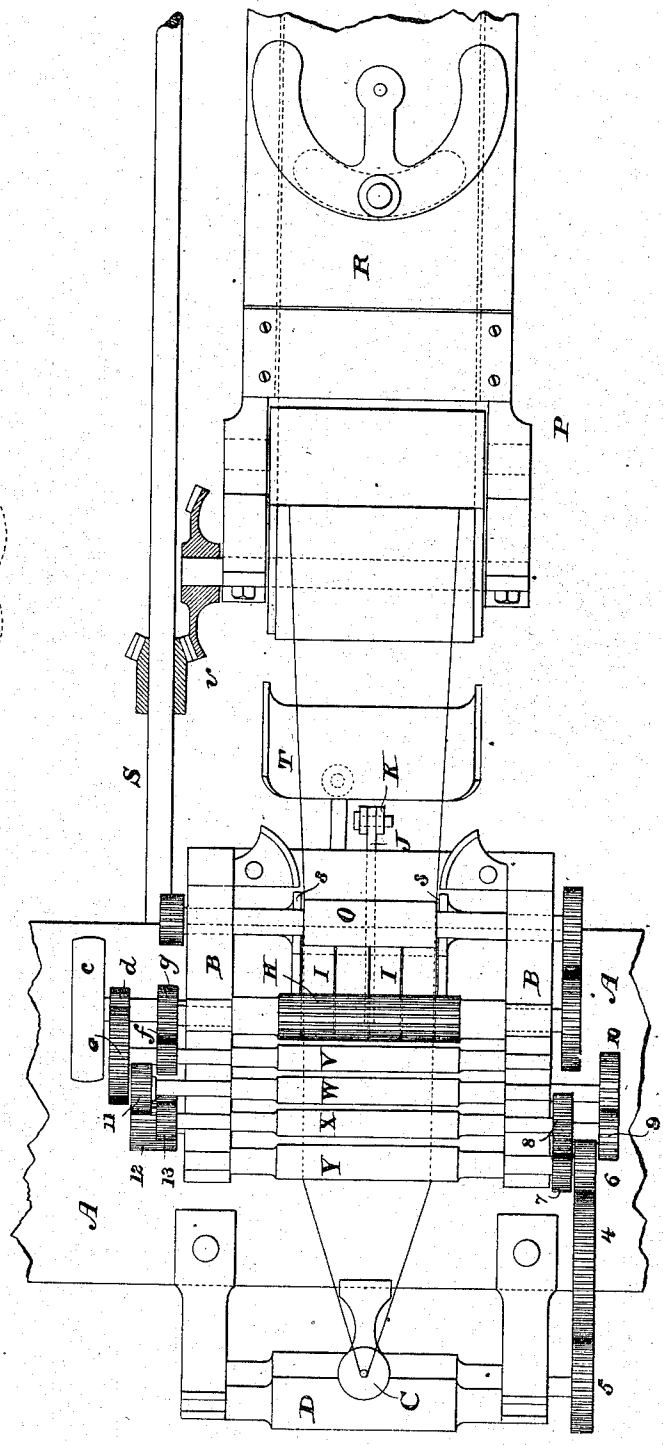


Fig. 1.



WITNESSES

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(No Model.)

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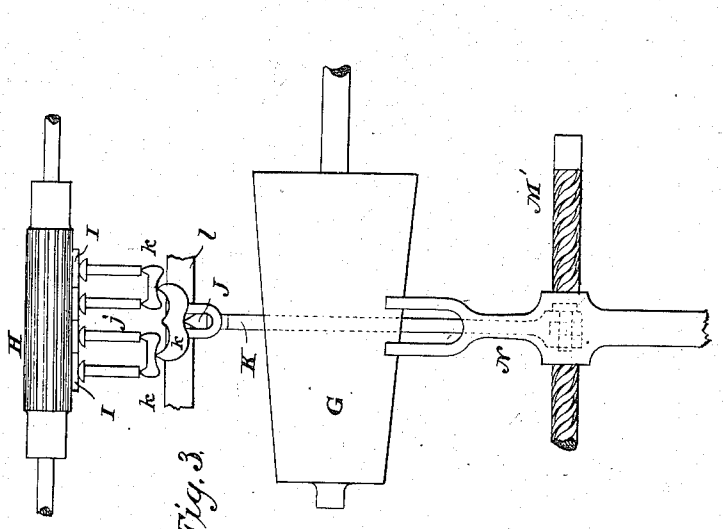


Fig. 3.

Fig. 2.

WITNESSES

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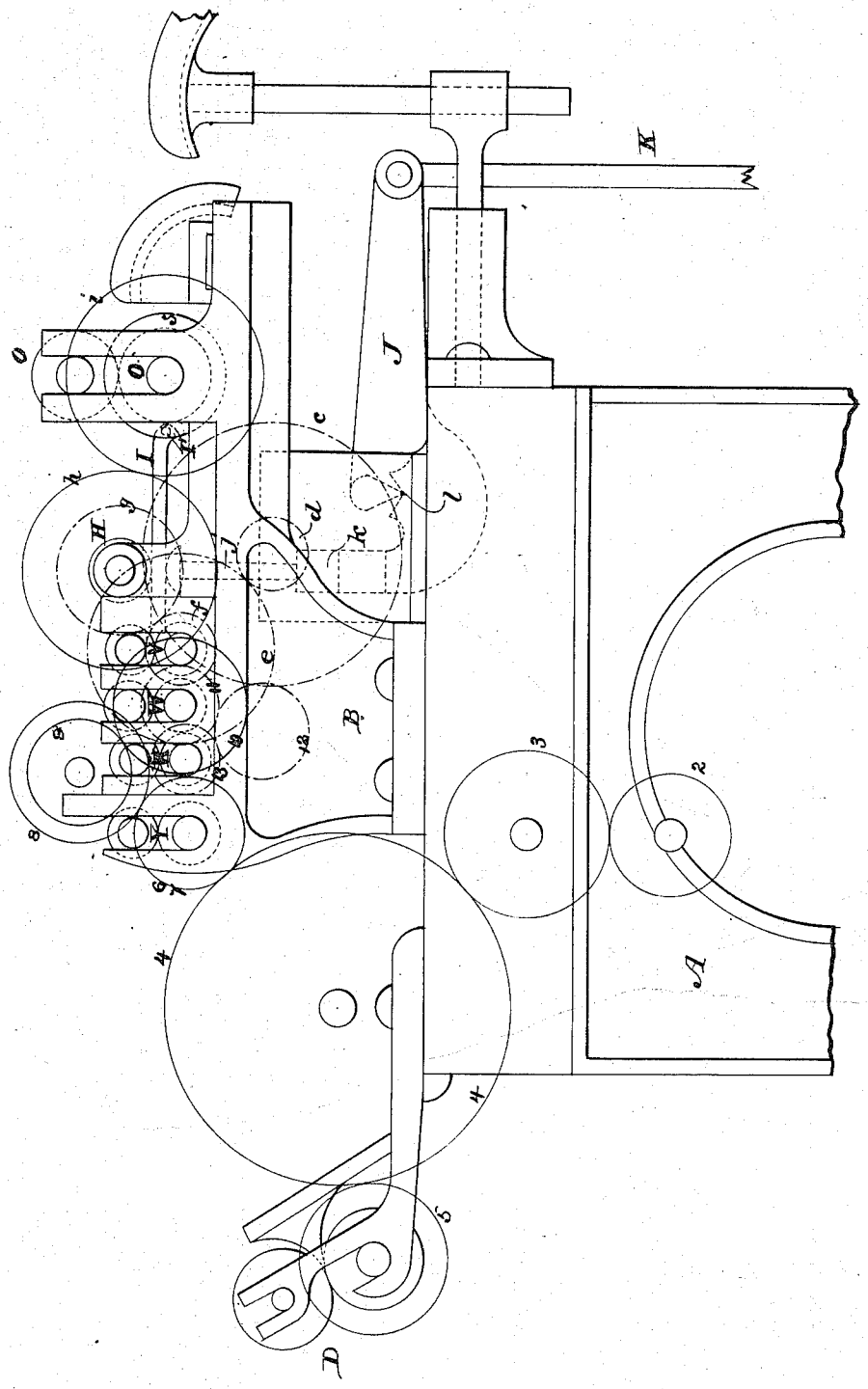


Fig. 4.

WITNESSES

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UNITED STATES PATENT OFFICE.

WILLIAM E. WHITEHEAD, OF LOWELL, MASSACHUSETTS, ASSIGNOR TO THE WHITEHEAD & ATHERTON MACHINE COMPANY, OF SAME PLACE.

RAILWAY-HEAD.

SPECIFICATION forming part of Letters Patent No. 284,585, dated September 4, 1883.

Application filed February 19, 1883. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM E. WHITEHEAD, 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.

It has heretofore been customary in railway-heads to place that part of the evener or evening mechanism which has contact with the cotton sliver at some point in front of the drawing-rolls, (relatively to the movement of the sliver through the machine,) the usual arrangement being to employ the trumpet through which the sliver passes as the instrumentality for operating the evening mechanism. The disadvantages attending this arrangement are that as the sliver passes from the drawing-rolls and out through the trumpet at a high speed, moving about six times as fast as it does at the point where it enters the drawing-rolls, the mischief of uneven work is done before the evener has the opportunity to prevent it, and, besides, the sliver is drawn down so very light that a very great difference in it must exist before the evener will work.

My improvement in railway-heads consists in combining with the drawing-rolls, the feed roller or rollers, and the apron or carrier for conveying the sliver to the feed roller or rollers, an evener for varying the speed of the drawing-rollers according to the exigencies of the work, which is located in rear of the drawing-rollers relatively to the direction of movement of the sliver, so that the sliver must meet and pass the evener before entering between the drawing-rollers. In other words, I put the evener on the back instead of on the front of the railway-head. Marked advantages attend this arrangement. The sliver is fed, as usual, by the carrier to the feed roller or rollers, said carrier and roller moving in unison, so that the roller will take the sliver as fast as it is delivered by the carrier, and as the sliver at this point in the machine moves slowly, ample time is given for the action of the evener, and the different parts of the evening mechanism are afforded opportunity to perform their office before the uneven part of the sliver has passed the railway-head. In one instance heretofore it has been suggested in a drawing-frame to place the evener in the same position in which I locate it in the railway-head; but in this case the evener varied the rate of movement of the feed-rolls, while the movements of the drawing-rolls remain constant, the consequence being that the feed-rolls would take more or less sliver, according to the exigencies of the work. This arrangement, while perhaps effective in a measure in a drawing-frame, would not answer in a railway-head, for the carrier in the latter travels at a constant definite speed, and consequently, if the feed-rolls have a variable speed, the result will be that the sliver, being delivered at times faster than it can be taken by the feed-rolls, will accumulate and finally choke up the railway-head. In my machine the carrier and feed-rolls move in unison at all times and with constant speed, so that the sliver between the two can never become unduly slack, and the evener acts not upon the feed-rolls, but upon the drawing-rolls.

The nature of my invention 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 is 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 an enlarged scale, with the gearing represented by dotted lines. Fig. 5 is a side elevation of a modified form of mechanism for operating the belt-shifting instrumentality.

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-rollers, 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 the lower cone-pulley, F. G is the upper cone-pulley, driven from cone-pulley F by belt 1. Rollers V revolve at a con-

stant speed, the other pairs, Y W X, at a variable speed, determined by the action of the evening mechanism.

The parts thus far described operate together in substantially the same way as the like parts of other railway-heads, and I shall briefly indicate the mechanism by which they are respectively driven.

The fluted roller of pair V, which is termed the "back fluted roller," is driven at a constant speed from the lower cone-pulley shaft. For this purpose said shaft has a pulley, *a*, connected by cross-belt *b* to an upper pulley, *c*, on whose axle is a pinion, *d*, meshing with gear *e* on the arbor of the back fluted roller. The fluted rollers of pairs Y W X and the calender-rolls D are driven from the upper cone-pulley shaft in the following way: On the said upper cone-pulley shaft is gear 2, which engages gear 3, which in turn meshes with 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, 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 on the arbor of the fluted roller of pair X. Each pair, of course, is so driven as to revolve at a speed greater than that of the pair which precedes it, as usual in drawing-frames, and according to variations in the position of belt 1 on the cone-pulley the speed of the three pairs Y W X will be correspondingly varied.

I come now to that portion of the machine in which my improvement is more particularly found. In rear of the first or back pair of rollers, V, is a fluted roller, H, which may be termed, for distinction's sake, "the feed-roller," although it need not necessarily have a feeding action, revolving in stationary bearings, and driven from the back fluted roller by means of a pinion, *f*, on the arbor of said roller, which engages a gear, *g*, on the arbor of feed-roller 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 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, 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 evener, (Letters Patent No. 52,008,) is fully described and illustrated in my Reissued Letters 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 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 scale-beams, lever, &c., is transmitted to the shifting mechanism, with the result of correspondingly increasing or decreasing the speed of the pairs Y W X.

The particular means through which the 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, *o*, which meshes with a gear, *p*, having its arbor supported in suitable bearings in the frame A, and fast on the arbor of gear *p* is a toothed wheel, *r*, which meshes with a gear, *r'*, keyed upon shaft M. This shaft has a screw-threaded portion, (indicated 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 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 caused to move lengthwise of the shaft in one direction or the other, and will thus effect a corresponding shifting of the belt 1.

In rear of the feed-roller and evener-plates is a pair of consolidating-rollers, O, supported in 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, 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 sliver may be fed to the machine from cans, or from the usual railway-trough. The latter arrangement is shown in the drawings.

P is the ordinary railway-trough, and R the endless power-driven sliver-carrying apron therein. Shaft E engages shaft S through bevel-gearing *t*, and the driving-drum of the endless apron R is actuated from shaft S through bevel-gearing *v*. Thus both the feed-roller and the carrier or apron are driven from the driving-shaft E, and their actuating-gearing is so arranged and proportioned that the apron and feed-roll move in unison, the apron delivering the sliver no faster than it can be taken by the feed-roller. The sliver passes up from the trough over a curved bed-plate, T. It thence passes first between the consolidating-rollers, next between the evener-plates and feed-roller H, and then enters between the

back drawing-rollers, V, and so on through the drawing-rolls. Rollers V, H, and O revolve at a constant speed, V being driven at the speed required to take the sliver as delivered from the railway-trough, and H and O revolving at a corresponding rate. In this machine the sliver, at the point where it leaves the drawing-rolls, travels six times faster than it does at the point where it enters the drawing-rolls. Consequently, by locating the evener at this latter point, where the movement is comparatively slow, ample opportunity is afforded for the timely action of the evening mechanism, and this action takes place not after, but before, the uneven part has passed the railway-head or drawing-rolls.

I have shown and described that form of evening mechanism which I prefer; but I desire it to be understood that I do not restrict myself thereto, for it is manifest that other known forms of evening mechanism can be substituted therefor, so long as the location of that portion of the evener which is acted on by the sliver remains unchanged—that is to say, so long as said portion is in rear of the drawing-rolls, so that it will be acted on by the sliver which is on its way to the drawing-rolls.

I would also remark that I can substitute for the quadrant-lever L and pinion *n* a lever, L′, such as shown in Fig. 5, having in its free end a slot, *l*′, which is entered by a crank-pin, *o*′, on gear *o*. The lettered parts in this figure correspond to like lettered parts in Fig. 2.

What I claim as new and of my invention is as follows:

1. The combination, with the feed roller or rollers, the carrier or apron moving in unison with and delivering the sliver to the feed-roller and the drawing-rollers, of evening mechanism adapted and arranged to vary the speed of the drawing-rollers, having that portion of it which is acted on by the sliver located in rear of the drawing-rollers, substantially as and for the purposes set forth.

2. The combination, with the drawing-rollers, of the feed-roller placed in rear of said drawing-rollers, the evener-plate arranged and adapted to coact with the feed-roller to vary the speed of the drawing-rollers, and the carrier or apron traveling in unison with the feed-roller, substantially as and for the purposes set forth.

3. The combination of the drawing-rollers, the evener-plates and feed-roller placed in rear of said drawing-rollers, and the consolidating-rollers placed in rear of the evener-plates, substantially as and for the purposes hereinbefore set forth.

In testimony whereof I have hereunto set my hand this 24th day of January, 1883.

WILLIAM E. WHITEHEAD.

Witnesses:
A. T. ATHERTON,
CHAS. T. ATHERTON.