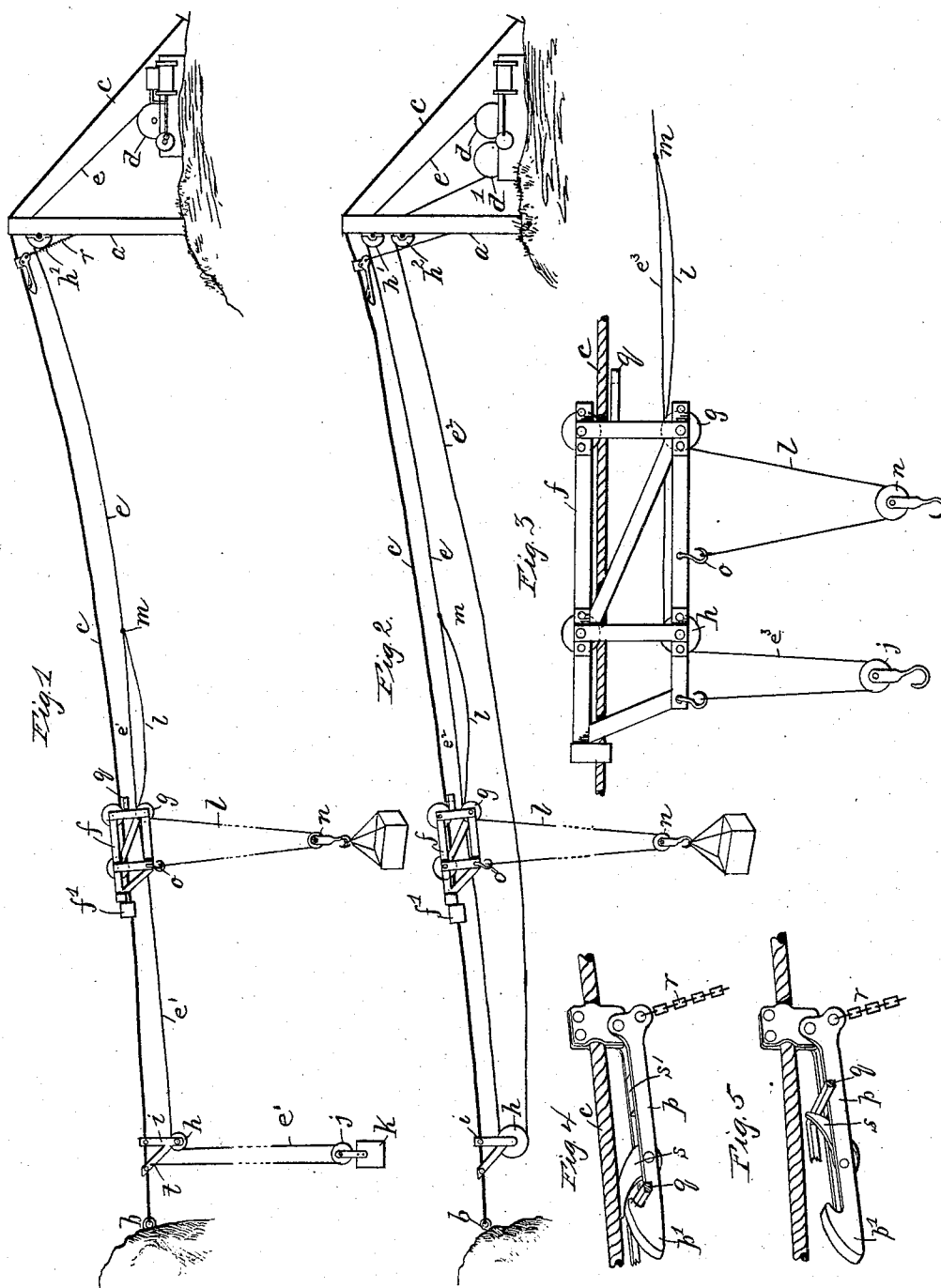


(No Model.)

T. S. MILLER.
CONVEYING APPARATUS.

No. 478,348.

Patented July 5, 1892.



Witnesses
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UNITED STATES PATENT OFFICE.

THOMAS SPENCER MILLER, OF NEW YORK, N. Y.

CONVEYING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 478,348, dated July 5, 1892.

Application filed May 16, 1891. Serial No. 392,972. (No model.)

To all whom it may concern:

Be it known that I, THOMAS SPENCER MILLER, of New York city, New York, have invented a new and useful Improvement in Conveying Apparatus, of which the following is a specification.

In Letters Patent No. 447,892, granted to me March 10, 1891, I have described a means for supporting a fall or inward-hauling rope to prevent its sagging, so as to interfere with the proper manipulation of the load. My present invention is designed to accomplish the same general object by means of a tension applied at the end of a branch rope moving in unison with the fall or inward-hauling rope.

My invention also relates to a detaining device whereby the carriage may be held at the upper end of an inclined cable or track while the load is lowered.

Figures 1, 2, and 3 of the drawings show, respectively, three different forms in which my invention may be used. Figs. 4 and 5 are details of the detaining device.

a and *b* are supports at opposite ends of the inclined cable or track *c*.

d is a rope-drum propelled by a suitable engine, upon which is coiled an end of the fall-rope *e l*. The rope *e l* in the example shown performs the double function of a fall-rope and an inward-hauling rope, though its operation may be confined to the latter function.

f is the carriage running on the cable or track *c* and provided with a sheave *g*. The downward course of this carriage may be limited by a stop *f'*, secured to the cable.

h is a sheave, which may be mounted in a frame *i*, secured to the cable or track toward its distant end, as shown in Figs. 1 and 2, or may be mounted in the carriage itself or a part moving with it, as shown in Fig. 3.

In each construction the fall-rope *e l* is supported at a point *m* between the carriage and the tower *a* by a connected rope *e'* in Fig. 1, *e²* in Fig. 2, or *e³* in Fig. 3, which for convenience I will call the "sag-support." This sag-support rope operates to prevent the sagging of the rope *e l* when the conveyer is not loaded, and the sag-support rope requires some contrivance whereby it may be kept under a continuous tension as the carriage runs down the trackway. Such tension device may take

various forms. For example, in Fig. 1 the sag-support rope *e'* extends over the sheave *h*, thence down around the weighted sheave *j* and up again to a fixed attachment at *t*; or in Fig. 2 the sag-support rope *e²* extends over the sheave *h*, thence back to the sheave *h²* on tower *a*, and thence around the winding-drum *d'* at the engine, which hauls in as drum *d* pays out, and vice versa, in which case the rope *e²*, together with the part *e* of the hoisting-rope, has the same mode of operation as an endless rope and the weight of its return portion acts as the tension device in lieu of the weight *k* of Fig. 1; or in Fig. 3 the sag-support rope *e³* extends around the sheave *h*, mounted on the carriage, thence down around a weighted sheave *j* and upward to a point of attachment on the carriage. Now it is evident that when the rope *e* is paid out by the drum *d* the carriage *f* will run down the track or cable *c*, and when the rope *e l* is hauled in it will haul the fall-block up to the carriage and then haul the carriage to the upper end of the track or cable *c*, and that during all of these operations the weight attached to the sheave *j* in Figs. 1 and 3 and the weight of the return branch of rope *e²* in Fig. 2, assisted by the rope *e²* being wound up by the drum *d'*, will keep the rope *e* approximately taut.

By the term "sag-support rope" is intended one distinctively for supporting the sag in contradistinction to a rope employed, as in the Patent to Carson, No. 228,980, dated June 22, 1880, to acts as a fall-rope for a portion of the load conveyed by the apparatus.

When the carriage reaches the upper end of the track or cable, it must be held or detained by some device while the load is lowered, and I have constructed the automatic device shown in the drawings for that purpose. It consists of a latch *p*, provided with an inclined head *p'*, as shown, the machine being so arranged that when the end of the latch is held up near the cable, as shown in Fig. 4, a cross-piece *q* on the carriage will strike the incline and depress the latch until the cross-piece has passed over the head and under the deflector *s* and been engaged by its hook, as shown in Fig. 4. The latch being secured to the cable or other stationary support will thus hold the carriage in place, and the weight of the chain *r*, connected with the rear

of the latch, will constantly press its head upward. To unlatch the bar *q*, I provide a deflector *s*, pivoted, as shown, to the latch and when in the position of Fig. 4 having its free end resting on the hook of the latch. This deflector, however, is free to swing over to the position shown in Fig. 5, and is compelled to do so by hauling in on the hoisting-rope until bar *q* moves from the position of Fig. 4 to the position of Fig. 5. In the latter position, however, the bar has slid over the point of the deflector and occupies a position behind it, so that when the rope *e* is again paid out the bar *q* will automatically throw the deflector back into its first position, where it acts to deflect the bar over the point of the hook and effects its free escape from the latch. A cross-piece *s'* on the latch serves to limit the backward movement of the deflector and hold its point always above the surface of the latch, and therefore in position to be struck by the cross-piece *q*.

In practice I prefer to make all the rope (including *l* and *e*) which is concerned in supporting the load of a continuous piece and larger than the sag-support rope, which is concerned in securing the described tension; but it is immaterial to my invention or any of my claims whether the rope *l* extends continuously to the drum or be spliced onto *e*.

I claim—

1. In a conveying apparatus having a cable

or trackway, a carriage to travel thereon, and a hoisting-rope, the combination, with said parts, of a sheave, a sag-support rope branching from said hoisting-rope at a point of said hoisting-rope intermediate the carriage and hoisting-motor and extending around said sheave, and means connected with said sag-support rope beyond said sheave whereby the tension of said sag-support rope is maintained when the apparatus is unloaded, substantially as described.

2. In a conveying apparatus having a cable or trackway, a carriage to travel thereon, and a hoisting-rope, the combination, with said parts, of a sheave and a sag-support rope branching from said hoisting-rope at a point of said hoisting-rope intermediate the carriage and hoisting-motor and extending around said sheave and back again to the hoisting-engine, substantially as described.

3. In a conveying apparatus, a cable or track, a carriage to travel thereon, a latch adapted to engage with a projection on the carriage, and a pivoted deflector *s*, the point of which in its forward position overlaps and extends above the point of the hook and in its backward position extends above the shank of the hook, substantially as described.

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