(No Model.) 3 Sheets—Sheet 1.

T. S. MILLER.

CONVEYING APPARATUS.

No. 577,192. Patented Feb. 16, 1897.

Fig. 1.

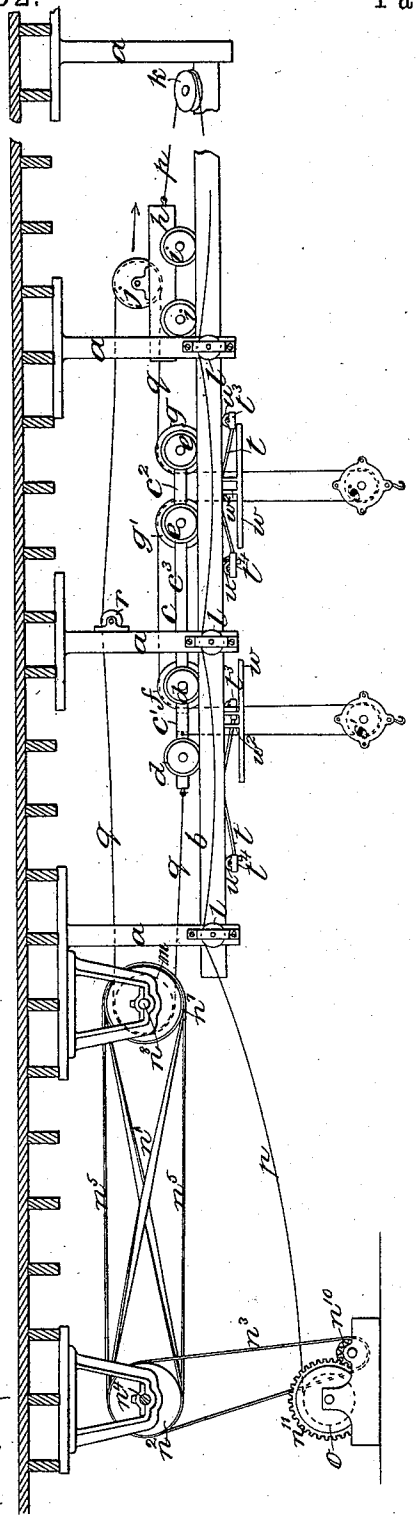
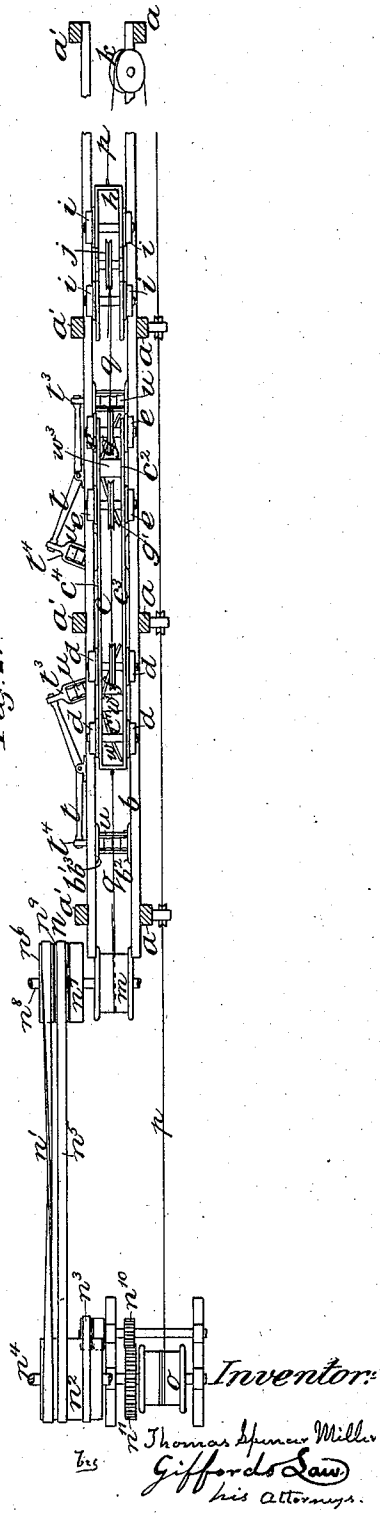


Fig. 2.



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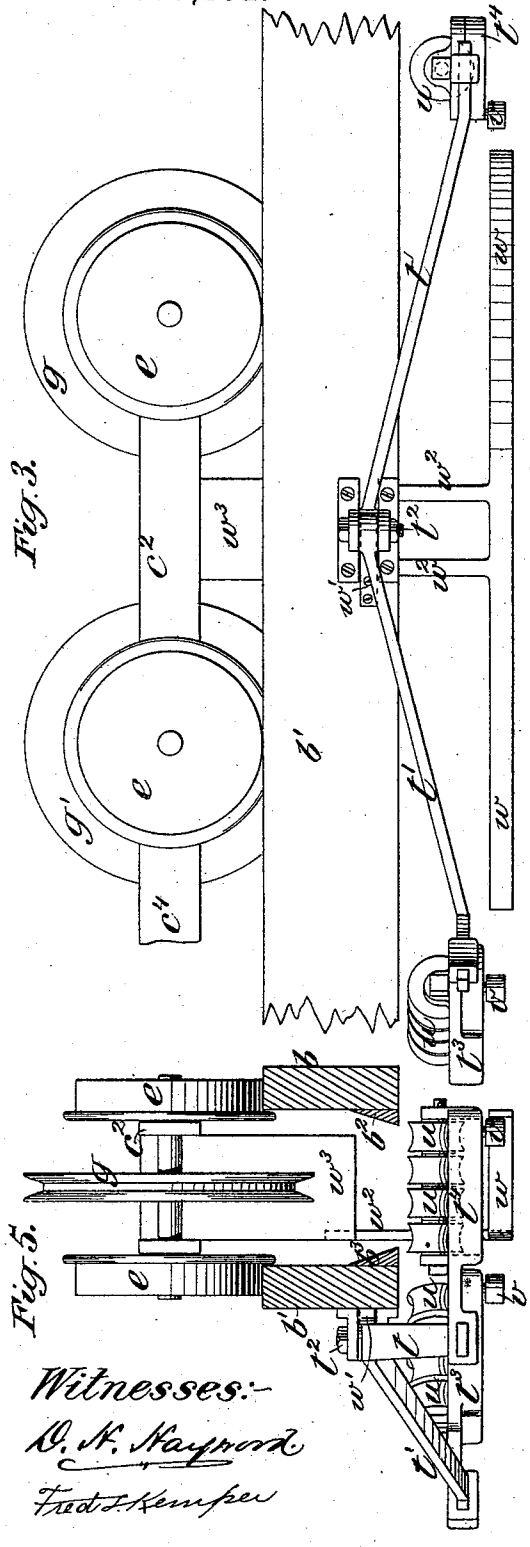

Fig. 3.

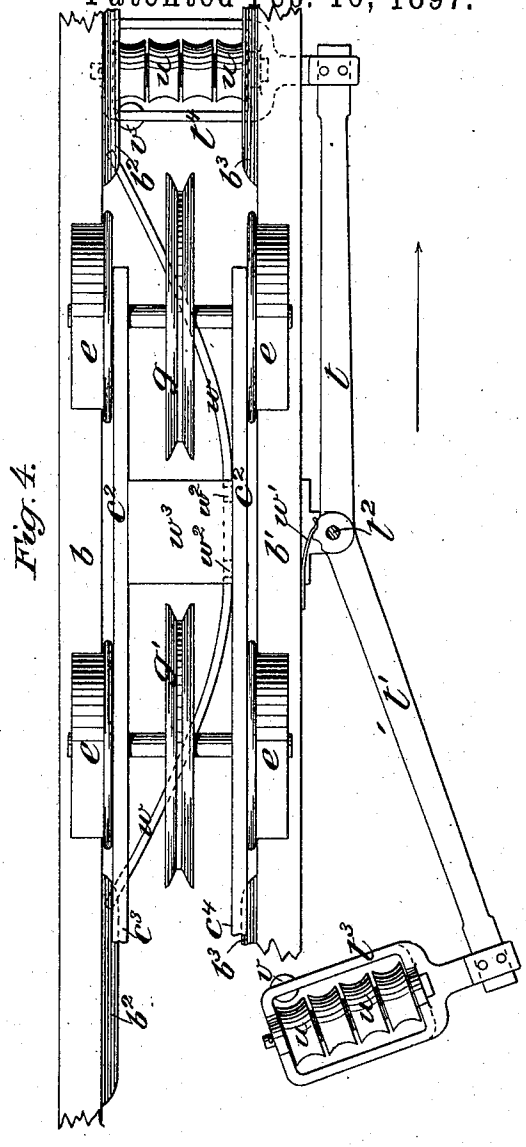

Fig. 4.

Fig. 5.

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3 Sheets—Sheet 3.

T. S. MILLER.

CONVEYING APPARATUS.

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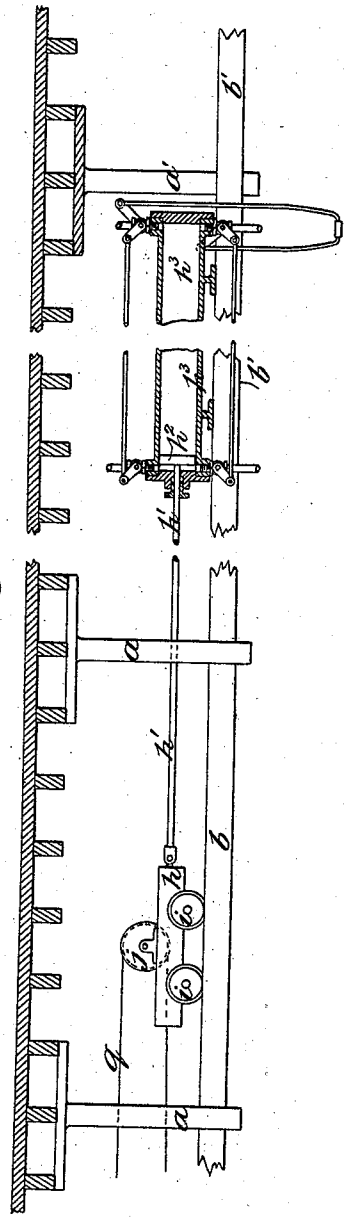
Fig. 6.



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UNITED STATES PATENT OFFICE.

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CONVEYING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 577,192, dated February 16, 1897.

Application filed September 12, 1892. Serial No. 445,643. (No model.)

To all whom it may concern:

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

One feature of my invention is a rope-carrier one member of which will be thrown into supporting position as the other member is thrown out of the carriage-pathway. Another feature is the mounting and actuating of the fall-rope, so that by separating or spreading its supports the fall-block is raised, and in that position the carriage is caused to travel.

Other features are set forth in the claims.

In the accompanying drawings, Figure 1 is a side elevation of one form of the apparatus containing my invention. Fig. 2 is a plan view of same. Fig. 3 is a side elevation of part of the carriage and one fall-rope support. Fig. 4 is a plan view of the same. Fig. 5 is an end elevation, partly in section. Fig. 6 is a modification in detail.

a and a' are hangers supporting the parallel trackways b b'.

c is a load-carriage composed of the two parts c' c^2, connected by the bars or other connections c^3 c^4. The part c' is provided with the four wheels d, and the part c^2 (shown in in Fig. 5) with the four wheels e. The part c' is also provided with a sheave f, and the part c^2 with the sheaves g and g'.

h is a traveler supported on the trackways by the wheels i and supporting the sheave j.

k is a sheave secured at the end of the trackways, and l are guide-rolls mounted upon the outside of the hangers a.

m is a drum fixed upon a shaft n^8 at the end of the space between the trackways.

n is a pulley mounted upon the same shaft with the drum m. The pulley is in three parts, the two outside parts n^6 and n^7 being fast on the shaft n^8 and the central part n^9 being loose on the shaft. The cross-belt n' and straight belt n^5 connect the pulley n with a pulley n^2, mounted on a driven line-shaft n^4.

o is a drum which may be driven from the line-shaft n^4 by the belt n^3 through gears n^{10} n^{11}. These cross and straight belts may be arranged to run side by side on the pulley n^2, which is broad enough for that purpose, and the pulley n, consisting of two fast parts separated by a loose part. By shifting the belts either the straight belt or the cross-belt may be made to drive.

p is an outward-hauling rope extending from the drum o over the friction-rollers l, around the sheave k, and back to the traveler h, to which it is made fast.

q is an endless rope made fast at one end to the carriage c' and extending with one or more turns around the drum m, over friction-rollers r, around the sheave j, over the sheave g, down to a fall-block s, up again and over a sheave g', over the sheave f, down to the fall-block s', and up again to the carriage c', where it is made fast.

t are the rope-carriers, one of which is shown in detail in Figs. 3 and 4. Each of them consists of a rocker t', pivoted at t^2 to one of the tracks and carrying at opposite ends the rope-supports t^3 t^4, each containing a series of independent friction-rollers u. The rope-supports are so secured to the rocker t' that when the rocker is in position shown in Fig. 4 the rollers carried by support t^4 will be in the position shown in Fig. 4, where they occupy a supporting position directly beneath the space between the trackways. At the same time the rope-support t^3 will occupy the position shown in Fig. 4 at one side. When the rocker t' is rocked into its other position, the rollers carried by the rope-support t^3 will be directly beneath the space between the trackways, and the support t^4 will be at one side. Projecting from each of the rope-supports t^3 and t^4 is a friction-roller v, and hanging rigidly from the block w^3 of each carriage by side hangers w^2 is a deflector w, inclined laterally at both ends, as shown in dotted lines, Fig. 4, in position to strike against the roller v of either of the rope-supports t^3 or t^4 that happens to be in supporting position and push it to one side. The rocker t' is long enough so that the distance between the rope-supports t^3 and t^4 is greater than the length of the carriage, so that as the forward end of the deflector on the carriage, moving in the direction of the arrow, Fig. 4, pushes rope-support t^4 to one side the other rope-support t^3 will swing into supporting position immediately behind the carriage. Therefore one or the other of the rope-supports t^3 or t^4 must be in supporting

position. The spring w', operating in the two notches shown on the rocker t', will prevent the rocker from occupying any intermediate position. The inclines b^2 b^3 serve to center the rope onto the supporting-rollers u.

The operation is as follows: Suppose a load is being hoisted on each of the fall-blocks shown in Fig. 1, that on the fall-block s being one ton and that on the fall-block s' being two tons. The rope p is wound in upon the drum o. The first effect will be to haul out the traveler h, so as to haul the fall-block s up till it strikes the block w^3 of carriage-section c^2. The next effect will be to haul the fall-block s', carrying the heavier weight, up till it strikes the block w^3 of carriage-section c'. This is all caused by the movement of the traveler h in the direction of the arrow. The drum o is now stopped and the drum m is started. Thus the traveler h remains stationary and the rope q travels in either direction required, conveying the carriage c correspondingly along the trackway to the point required, when the drum m is stopped again and the rope p paid out until the loads are lowered. The rope-carriers t support the sag of rope q, particularly when the rope p is being paid out for the purpose of lowering the unloaded fall-blocks s and s'.

The sections contained in the carriage c, which I have shown as two, may be reduced to one or may be multiplied to any extent desired, in which latter case the fall-rope will be correspondingly extended to each. In lieu of actuating the traveler h by the drum o through the rope p it may be actuated by a rod h' or other member, Fig. 6, connected with a piston h^2, reciprocated within the cylinder h^3 by any power.

The function of the rocker t' being to throw one of the rope-supports into position as the other is thrown out, other members may be used as equivalents for the same purpose.

The supports t^3 and t^4 are shown as being carried by the rocker t', but they might be carried in guideways fixed to the track or otherwise supported.

I do not wish to confine myself to the double trackway shown and described.

I claim—

1. In a conveying apparatus, in combination, a trackway, a load-carriage traveling thereon, a fall-rope hanging from said load-carriage and extending horizontally to an end of the span, two fall-rope supports below the level of the horizontal portion of said fall-rope, means whereby the same are successively moved out of the way of the vertical part of said fall-rope and a connection between the two whereby the movement of one out of the way throws the other into supporting position below the horizontal portion of said fall-rope, substantially as described.

2. In a conveying apparatus, in combination, a trackway, a load-carriage traveling thereon, a fall-rope hanging from said load-carriage and extending horizontally to an end of the span, two fall-rope supports below the level of the horizontal portion of said fall-rope, means whereby the same are successively moved out of the way of the vertical part of said fall-rope and a connection between the two whereby the movement of one out of the way throws the other into supporting position below the horizontal portion of said fall-rope and a spring in antagonism to which said movement is made substantially as described.

3. In a conveying apparatus, in combination, the two tracks, the load-carriage traveling thereon, a fall-rope hanging from said carriage and extending horizontally to an end of the span, a rocker pivotally supported intermediate its two ends and adapted to rock in a horizontal plane laterally of said tracks, a fall-rope-supporting roller mounted in vertical position upon and moved by each extremity of said rocker below the level of the horizontal portion of said fall-rope and means whereby said rocker is reciprocated as the load-carriage passes, substantially as described.

4. In a conveying apparatus in combination a trackway, a load-carriage traveling thereon, a traveler located at the farther end of said trackway, means whereby said traveler is propelled outwardly, a fall-rope sheave mounted upon said traveler, a sheave at the near end of said trackway, an endless fall-rope supported by said two sheaves and by the load-carriage and forming a loop depending from the load-carriage whereby as the traveler moves out the fall-rope performs the function of hoisting and the fall-block supported by said loop, substantially as described.

5. In a conveying apparatus in combination, a trackway, a load-carriage traveling thereon and provided with the block w^3 secured between the side frames of the load-carriage, a rope-support adapted to be deflected as the carriage passes and a deflector carried by said carriage; the said deflector being suspended upon a hanger secured to the block w^3 of the load-carriage, substantially as described.

6. In a conveying apparatus in combination, a trackway, a load-carriage running upon said trackway, a traveler running upon said trackway continued, a fall-rope sheave mounted upon said traveler, means for propelling said traveler outwardly, a fall-rope extending from said traveler to said load-carriage below which it forms a loop and thence to the near end of said trackway whereby as the traveler moves out the fall-rope performs the function of hoisting, a fall-block suspended by said loop and means whereby said load-carriage is propelled, substantially as described.

7. In a conveying apparatus in combination, a trackway, two load-carriages traveling thereon, a traveler located at the farther end of said trackway, a fall-rope sheave mounted upon said traveler, means whereby said traveler is propelled outwardly, a fall-rope ex-

tending from said traveler to one of said load-carriages below which it forms a loop, thence to the other of said load-carriages below which it forms another loop, thence to the near end of the trackway whereby as the traveler moves out the fall-rope performs the function of hoisting, a fall-block suspended in each of said loops and means whereby said load-carriages are propelled, substantially as described.

8. In a conveying apparatus in combination, a near-by stationary-rope support, a distant traveling-rope support, a fall-rope sheave mounted upon said support, a trackway extending between said rope-supports, a load-carriage mounted upon said trackway, a rope extending between said rope-supports and forming a loop beneath the load-carriage intermediate the two and operating to perform the function of hoisting as the traveling-rope support is moved outward, a fall-block suspended by said loop, means whereby said load-carriage may be propelled and independent means whereby said traveling-rope support may be propelled, substantially as described.

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