

(No Model.)

A. S. HALLIDIE.  
COLLECTING AND TRANSPORTING EARTH, &c.

No. 558,645.

Patented Apr. 21, 1896.

Fig. 1.

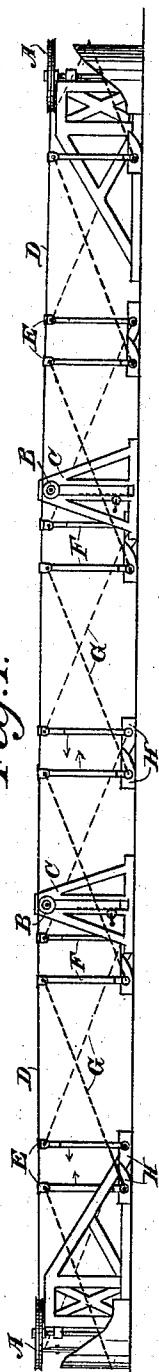


Fig. 3.

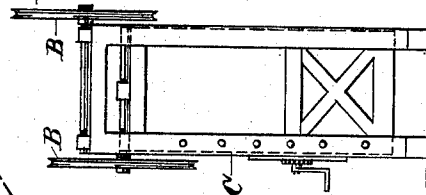


Fig. 4.

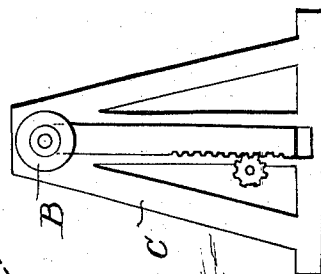
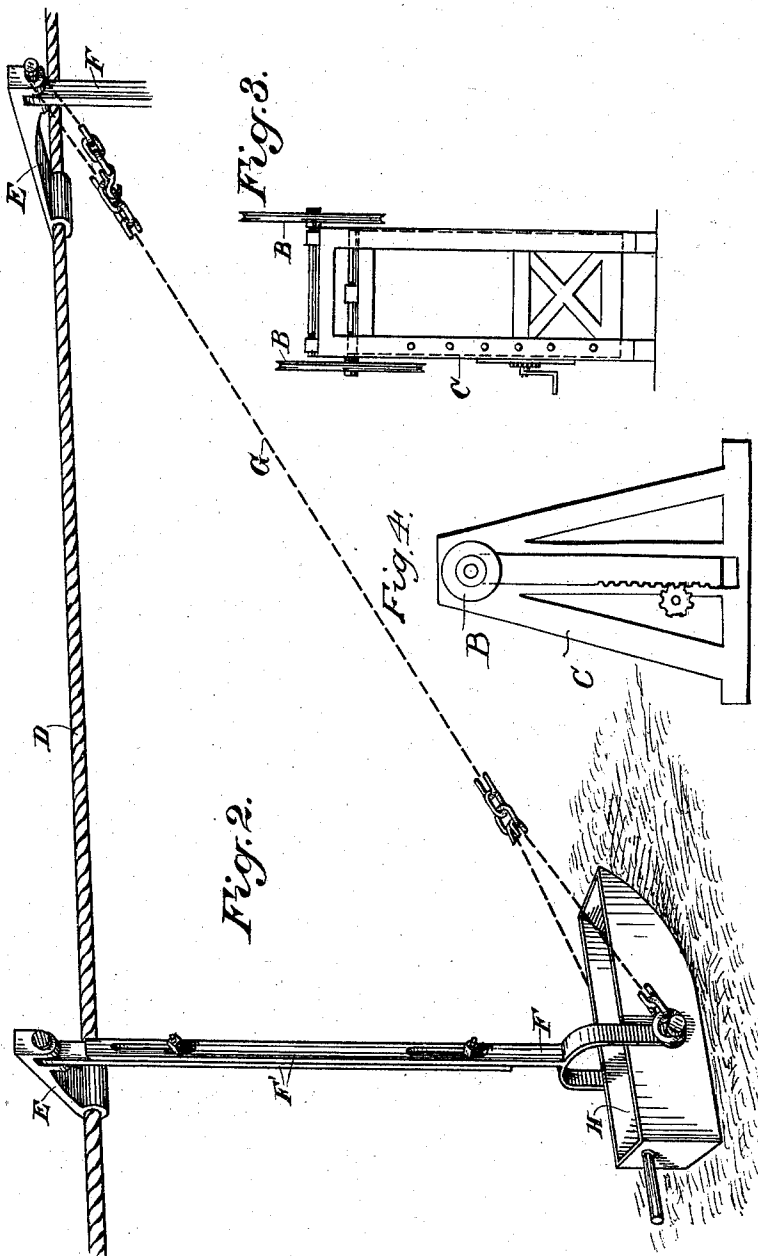


Fig. 2.



Witnesses,

J. H. Morse  
J. F. Aschbeck

Inventor,

Andrew S. Hallidie  
By Dewey & Co.

attys

# UNITED STATES PATENT OFFICE.

ANDREW S. HALLIDIE, OF SAN FRANCISCO, CALIFORNIA.

## COLLECTING AND TRANSPORTING EARTH, &c.

SPECIFICATION forming part of Letters Patent No. 558,645, dated April 21, 1896.

Application filed February 10, 1896. Serial No. 578,755. (No model.)

*To all whom it may concern:*

Be it known that I, ANDREW S. HALLIDIE, a citizen of the United States, residing in the city and county of San Francisco, State of California, have invented an Improvement in Collecting and Transporting Earth and other Material; and I hereby declare the following to be a full, clear, and exact description of the same.

10 My invention relates to a means for collecting and transporting loose material, such as sand, gravel, earth, &c., by means of an endless moving wire rope, commonly called a "wire ropeway" or "wire tramway," in con-  
15 junction with scrapers or excavators, which are hauled by the moving rope.

In order to more fully explain my invention, reference is had to the accompanying drawings, in which—

20 Figure 1 is a view showing the general arrangement of the ropeway. Fig. 2 is an enlargement of a portion of the rope, showing the buckets or scrapers and their attachment. Fig. 3 is an end view of one of the adjustable  
25 stations. Fig. 4 is an enlarged detail showing a means for vertically adjusting the supporting-sheaves.

The object of my invention is to provide an apparatus by which any loose material, such  
30 as sand, gravel, earth, &c., may be scooped up and transported from the point where it is taken to any other desired point. To effect this, I employ an endless moving wire rope, which passes around horizontally-disposed  
35 grip or other suitable pulleys A, situated at opposite ends of its travel. Intermediate between these pulleys, one or both of which are driven by any suitable power, are situated stations C at suitable distances apart, and hav-  
40 ing journaled upon them rope-carrying pulleys or sheaves B, so disposed that the rope D passes over them and is kept from sagging too low. To this rope D, at suitable distances from each other, are fixed clips E, which extend horizontally outward from the rope, and  
45 these clips are so formed that hangers F can be pivoted to them extending downwardly and having the lower end forked or formed into bails, between the lower ends of which the  
50 buckets or scrapers H are pivoted or fulcrumed. The scrapers thus pivoted or fulcrumed can be tilted about their fulcrum-pins,

and their front edges are so constructed that when directed in the usual manner they will dig into the earth or material when the  
55 scrapers are hauled over the ground and take it up until the scrapers are full, after which the scrapers may be allowed to resume their normal position and convey their contents to their destination.

60 G are draft-ropes, which are bifurcated or separated at the lower ends and connect with the trunnions of the scrapers H upon each side, uniting at a sufficient distance away from the scraper, and thence extending up to the clips  
65 E, which are next in advance of the one to which the bucket is attached. These draft-ropes are of such length that when the hangers F are approximately in a vertical position the ropes G will be fully extended, so that any re-  
70 sistance or pull upon the bucket when digging up the material with which it is to be filled, or in drawing it along afterward, is transmitted to the clip in advance of the bucket to which the rope is attached. Each  
75 bucket is in a similar way connected with the clip in front, and the whole series is thus attached.

In order to adjust the length of the hang-  
80 ers so that the buckets or scrapers will continue to be efficient as the surface is scraped away, I have shown the hangers made in two parts, as at F', Fig. 2, with suitable slotted connections, bolts, and nuts, so that they may be extended to any desired degree. The draft-  
85 rope will also be so arranged as to be extended by carrying it over the draft-pin of the hanger, and thence back to a point where the end may be secured to the body of the rope in any suitable manner. This can then be let out to  
90 correspond with any extension of the hanger F.

In some cases it may be desired to depress the supporting-sheaves B, and this is done by mounting them upon vertically-movable car-  
95 riages, which are adjustable in guides upon the stations or supports C. This adjustment may be effected by rack and pinion or by a winch and rope, by which the pulleys and their carriage can be let down, and suitable  
100 holding pins or stops are so arranged as to arrest the carriages at any desired point. In order to properly pass the buckets or scrapers and their draft-ropes around the ends when they arrive at those points, I employ circular

guards or shields corresponding in diameter or curvature with the driving-sheaves. By reason of the flexibility of the draft-ropes G they will follow the main driving-rope D as it passes around the sheaves, and the buckets will be guided by the curved guards, so as to properly follow around the ends.

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

1. In a wire ropeway, an endless traveling rope, a clip attached thereto, a hanger suspended from the clip, a bucket or scraper journaled or suspended from the lower end of the hanger and a draft rope or connections between said bucket and hanger and the rope-clip next in advance thereof.

2. In a wire ropeway, an endless traveling rope, a clip attached thereto, an arm or hanger secured to the rope having the lower end bifurcated, a bucket or scraper fulcrumed between the bifurcations of the hanger and a draft rope or chain connecting the bucket or hanger with the clip next in advance thereof.

3. In a wire ropeway, an endless traveling rope, a scraper or excavator having trunnions upon opposite sides, a bifurcated hanger within the lower ends of which the trunnions are journaled, a clip attached to the rope pro-

jecting to one side thereof, a means for attaching the upper end of the hanger to the clip and a draft-rope extending from the clip to which it is attached downwardly and rearwardly having the rear end attached to the lower end of the hanger and the bucket.

4. In a wire ropeway, an endless traveling rope, a two-part hanger, a clip by which it is suspended from the rope, means whereby the hanger may be shortened or extended and a bucket or scraper fulcrumed to the lower part of the hanger, and a draft-rope connecting it with the clip or attachment to the main traveling rope next in advance of the bucket.

5. In a wire ropeway, an endless traveling rope, hangers and buckets suspended therefrom, clips by which the hangers are connected with the rope, draft-ropes extending from each clip to the bucket or hanger next in the rear thereof, stations with pulleys over which the endless traveling rope is carried, and mechanism whereby the pulleys may be adjusted up or down.

In witness whereof I have hereunto set my hand.

ANDREW S. HALLIDIE.

Witnesses:

S. H. NOURSE,

JESSIE C. BRODIE.