(No Model.)

C. VIVIAN.

SCRAPING OR DIGGING APPARATUS.

No. 522,443. Patented July 3, 1894.

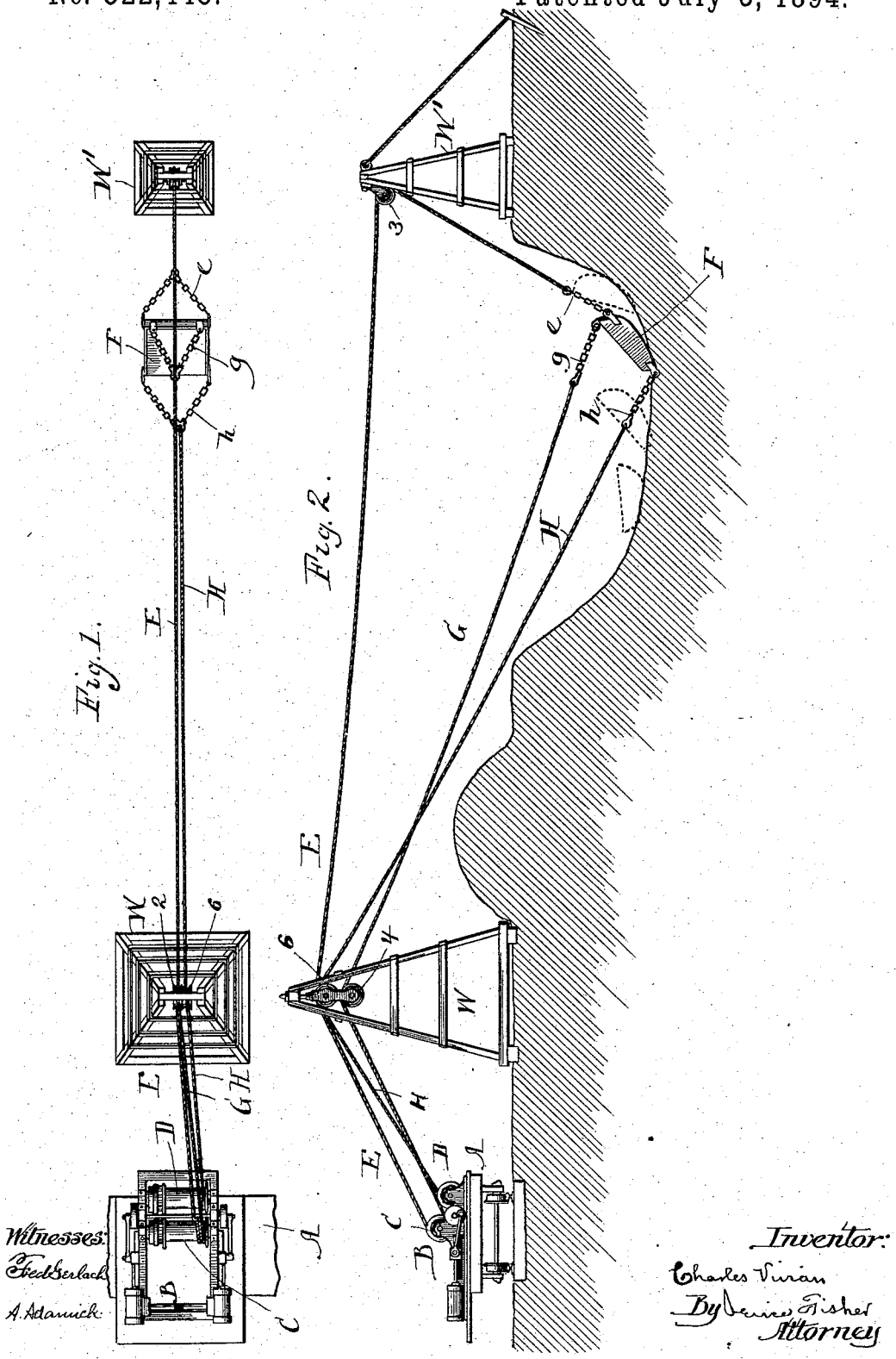

Fig. 1.

Fig. 2.

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SCRAPING OR DIGGING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 522,443, dated July 3, 1894.

Application filed August 30, 1893. Serial No. 484,359. (No model.)

To all whom it may concern:

Be it known that I, CHARLES VIVIAN, a citizen of the United States, residing at Lemont, State of Illinois, have invented certain new and useful Improvements in Scraping or Digging Apparatus, of which I do declare the following to be a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification.

The invention relates to apparatus for digging or excavating trenches, canals or the like and for making embankments or dikes and consists of certain improvements in scrapers actuated by suitable power and designed to quickly scoop the earth from one place and to transport it to another.

My power scraper is effectively controlled for prompt and easy action and is especially useful in excavating ditches or canals at points which are submerged.

My invention consists in the novel apparatus hereinafter described, illustrated in the accompanying drawings and particularly pointed out by claims at the end of this specification.

Figure 1 is a view illustrating my invention. Fig. 2 is a view in side elevation, the apparatus being shown as applied to the digging of a ditch or canal.

Upon a car or other support A is mounted a suitable engine B that is provided with winding drums C and D, these drums being driven in manner well understood in the art by means of a friction clutch gear from the engine. The engine may be of the kind commonly known as a "double friction drum reversible hoisting engine" but inasmuch as the engine forms no part of my invention I have not deemed it necessary to illustrate or describe the same in detail. Around the drum C is wound, with several turns, a rope or cable, one section of which E designated for convenience as the out-hauling rope is passed preferably over an elevated guide or sheave 2 sustained by the tower W nearest the engine, and thence over a guide or sheave 3 sustained by a similar tower W′ suitably anchored at a point opposite that at which the excavation is to be done, this out-haul rope being connected by a bridle chain *e* to the rear end of the scoop or scraper F. The opposite section G of the rope which passes around the drum C I designate for convenience the dumping-rope, and this rope passes over a sheave 4 sustained by the tower W and is connected by a bridle chain *g* with the rear of the scoop or scraper F. The winding drum D has connected thereto the draft rope or cable H that passes from the drum over a guide or sheave 6 sustained by the tower W and is connected by a bridle chain *h* with the front end of the scraper. The engine B will be fitted with hand levers, as well understood in the art by which the operator can throw either of the drums C and D into and out of gear, can reverse their motion or permit them to run idly.

From the foregoing description the mode of operation of my improved apparatus will be seen to be as follows: The drum C will be thrown in gear by its friction clutch so as to cause the out-haul rope E to drag the scraper F to the point at which it is to receive its load, the ropes G and H at such time simply running free to permit such backward movement of the scraper. When the scraper has been brought to the proper point the rotation of the drum C will be reversed so as to pull upon the dumping-rope G until the scraper has been brought to the proper angle for entering the soil. The drum D will then be thrown into gear so as to wind the draft rope H upon its periphery, and at the same time the dumping-rope G will be drawn in by the rotation of the drum C, thereby causing the scraper to be drawn forward with its front edge presented at the proper angle for receiving its load. When the scraper has thus been forced into the earth a sufficient distance to receive a load, the drum C will be thrown out of friction gear while the drum D continues to wind the draft rope H and drag the scraper F to the point at which the load of the scraper is to be dumped. The drum D will then be thrown out of friction gear and the drum C will be thrown into gear so as to cause the dumping-rope G to bring forward the rear end of the scraper thereby turning the scraper bottom upward and discharging its load, after which the operation will be repeated in order to return the scraper to the proper point for receiving a new load. In practice, any desired number of engines may be mounted upon a car, with corresponding towers, ropes and

scrapers. It will thus be seen that by my improved apparatus I am enabled to quickly and effectively operate the scraper or scoop so that it may readily be loaded and speedily drawn forward to deposit its load at the desired point, and thereafter return to position to receive a new load, and it is obvious that by means of the dumping-rope the angle of the scraper may be varied according to the character of the soil in which it is operated.

The precise details of construction above set out may be varied by the skilled mechanic without departing from the spirit of the invention.

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

1. A digging or scraping apparatus comprising a suitable scraper, a draft rope and an out-haul rope connected to said scraper, a dumping rope also connected to said scraper, suitable winding drums for said ropes and suitable elevated sheaves adjacent said winding drum over which said several ropes pass, and an elevated guide or sheave located at the opposite side of the work over which said out-haul rope passes, whereby said dump rope may serve to impart the desired angle to the scraper in order to cause it to discharge the load after the scraper has been withdrawn to the dumping point, substantially as described.

2. The combination with the scoop or scraper of the draft rope connected at its front, a dumping-rope and out-haul rope connected at its rear, a winding drum for said draft rope and an independent winding drum for both the dumping-rope and the out-haul-rope, substantially as described.

3. A digging or scraping apparatus comprising a scraper or scoop, a draft rope connected to the front thereof, an out-haul rope and a dumping-rope connected to the rear thereof, a winding drum for both the out-haul rope and the dumping-rope and an independent winding drum for the draft rope, and suitably sustained direction guides or sheaves for said ropes located at opposite sides of the work, substantially as described.

4. A digging or scraping apparatus comprising a scoop or scraper, a draft rope connected to the front of said scoop or scraper, an elevated guide or sheave and an independent winding drum for said draft rope, an out-haul rope connected to the rear of said scoop or scraper and elevated guides or sheaves for said out-haul rope, a dumping-rope also connected to the rear of said scraper, an elevated guide or sheave for said dumping-rope and a suitable winding drum for said out-haul and dumping-ropes, substantially as described.

In testimony whereof I have hereunto set my hand, at Lemont, Illinois, this 28th day of February, A. D. 1893.

CHARLES VIVIAN.

Witnesses:
MALCOLM D. BOYD,
HERMAN WELK.