

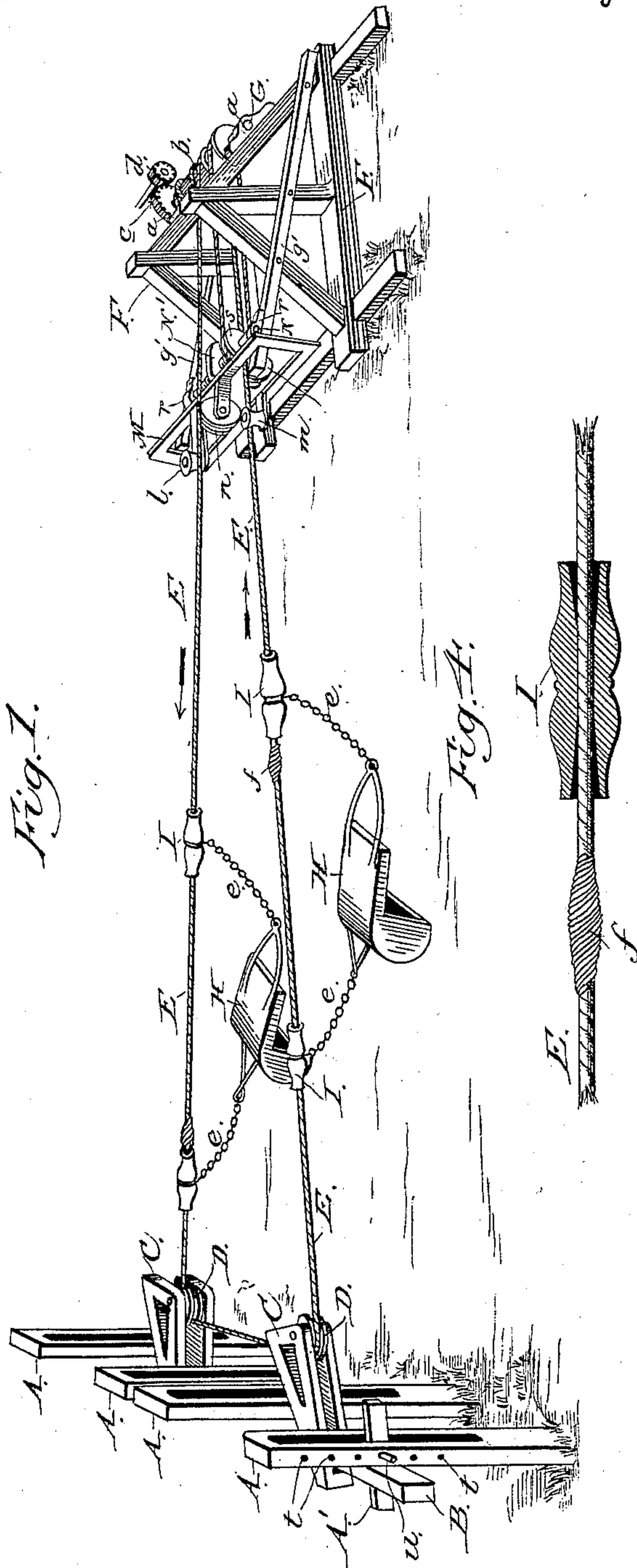
(No Model.)

2 Sheets—Sheet 1.

H. CASEBOLT.
EXCAVATING APPARATUS.

No. 432,116.

Patented July 15, 1890.



WITNESSES

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INVENTOR

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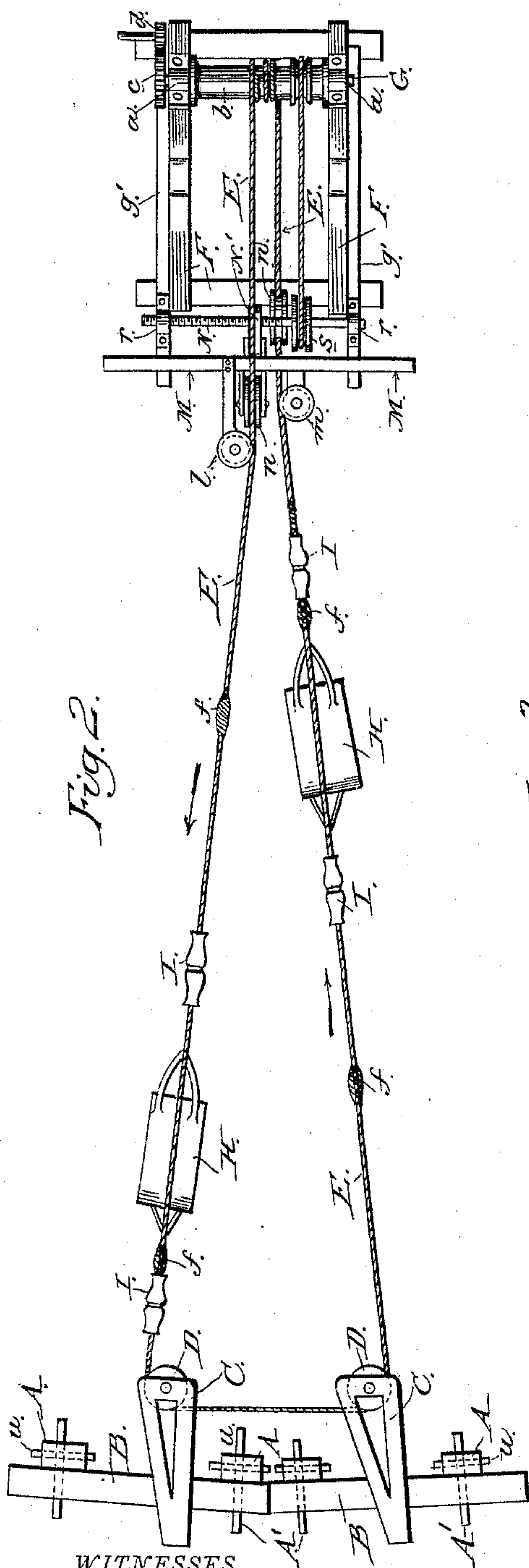
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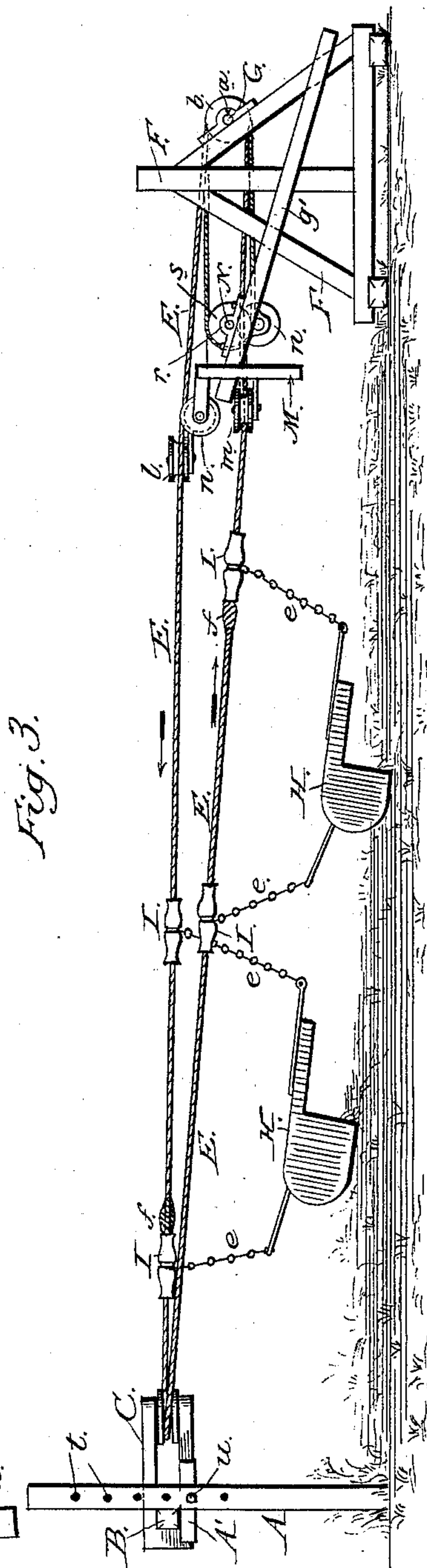
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UNITED STATES PATENT OFFICE.

HENRY CASEBOLT, OF SAN FRANCISCO, CALIFORNIA.

EXCAVATING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 432,116, dated July 15, 1890.

Application filed February 14, 1890. Serial No. 340,436. (No model.)

To all whom it may concern:

Be it known that I, HENRY CASEBOLT, a citizen of the United States, residing at San Francisco, in the county of San Francisco and State of California, have invented certain new and useful Improvements in Excavating Apparatus, of which the following is a full and clear description, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a perspective view of my improved apparatus. Fig. 2 is a plan view thereof. Fig. 3 is a side elevation. Fig. 4 is a detail to be referred to.

My invention relates to new and useful apparatus for excavating earth; and it consists in the constructions and combinations of devices which I shall hereinafter fully describe and claim.

To enable others skilled in the art to make and use my invention, I will now describe its construction and indicate the manner in which the operation is carried out.

Referring to the drawings for a more complete explanation of my apparatus, A represent suitable posts, here shown as four in number, which are placed in the road or place to be excavated at a suitable distance apart—say about twenty-five feet. These posts carry, by means of arms A', horizontal beams B, which project laterally and receive pulley-blocks C, which are slotted on the beams, whereby they may be adjusted laterally for a purpose hereinafter specified, and in the front ends of said blocks are mounted pulleys D, around which the cable or rope E passes. At any desired distance from the posts A is placed a frame F, of suitable construction and strength, having journal-boxes *a*, in which the ends of the main driving-shaft G are mounted, the said shaft carrying a drum *b*, to which the ends of the cable or rope are secured, while on one of its ends is a gear-wheel *c*, which is engaged and driven by a pinion *d* on the driving-shaft of an engine or other motor. (Not necessary to be shown.) The cable or rope E, as before stated, has one of its ends secured to the drum *b*, and thence extends rearwardly to one of the pulley-blocks, and after being passed around the pulley therein extends laterally to the other pulley-block and around

its pulley, thence back to the drum *b*, and is wound thereon in a reverse direction.

From the description of the parts now described it will be seen that when the engine or motor is started the drum *b* causes one end of the cable or rope to be wound thereon, and at the same time “pays out” or unwinds the other end, thereby moving the scrapers with which the cable is provided in opposite directions. These scrapers H are scoop-shaped and lie approximately horizontal, and have their front and rear ends secured to spools I on the cable or rope by means of flexible connections *e*. The spools I are small castings, having a hole made longitudinally through them large enough to permit them to slip loosely on the cable, and said cable is formed at suitable or desired points with stops or enlargements *f*, formed by a wrapping of light rope or other means, whereby when said cable is moved by the means previously described these enlargements strike the spools and carry them in the direction in which the cable is moving.

To prevent the cable or rope “lapping” on itself when being wound on the drum *b*, I employ a movable frame carrying guide-pulleys for directing the course of the cable. This frame M is mounted transversely on the ends of bars or supports *g'*, projecting from the frame F, and is slotted longitudinally to permit the unobstructed passage of the left-hand side of the cable, which at the front of the apparatus is lower than the upper or right-hand side of said cable in order that it may pass under the drum *b*, and be secured so that when the drum is rotated the two sides of the cable partake of a reverse movement, one end being wound on the drum and the other unwound therefrom. The frame M carries an upper guide-pulley *l* for the right-hand side of the cable and a lower guide-pulley *m* for the left-hand side of the cable, and said frame also carries at its upper and lower sides vertically-placed pulleys *n*, which assist in directing the course of the cable and prevent the same from lapping on itself, thereby enabling said cable to wind evenly on its drum.

The means for moving the frame M and its pulleys while the cable is in motion consists of a screw-shaft N, mounted in boxes *r* on

the extensions or supports g' , and having a fixed pulley s , from which an endless rope or band leads to the drum b . The frame M carries also a block N' , provided with a threaded socket in which the screw-shaft works, and through which it passes, whereby when the drum b is rotated to move the main cable the screw-shaft is also rotated by means of its pulley s and rope or band, and causes the frame M with its guide-pulleys to move laterally to insure said guide-pulleys directing the ends of the main cable, so that they will wind evenly on the drum, and not wind irregularly, which would result if the guide-pulleys were in a fixed frame.

The posts A may be slotted vertically to receive the arms A' , and may also be provided with holes t and pins u , so that said arms, which carry the pulley-blocks C , may be adjusted vertically to regulate the depth of cut of the scrapers, and the pulley-blocks may have a rope or chain secured to them and leading to a block and tackle (not shown) for assisting in moving these blocks laterally into a new position, thereby causing the scrapers to move in a path at one side of the cut last made.

The operation of the apparatus is substantially as follows: The engine or motor (not shown) being started, its pinion d engages and drives the gear c on the main shaft G , which carries the drum b , and as said drum is rotated the cable, whose opposite ends are oppositely wound on the drum, is caused to move, one portion moving in an opposite direction to the other. This being so, it is manifest that the scrapers or scraper on one side of the cable will move forward with its load, while the empty scraper on the other side will be moved rearwardly into position to receive its load. When the loaded scraper reaches the place to dump its load, the engine or motor is stopped and its action reversed, thereby causing the loaded scraper to move away from its load, discharging the same. This change of motion of the engine reverses the travel of the cable and causes the rear empty scraper to move forward and collect its load, while the forward scraper, which has just unloaded, moves backward into its first position to receive a new load.

The cable or rope may carry any desired number of scrapers; but all of those on one side will move oppositely to those on the other side. While the scrapers are being moved back and forth the movable frame M is also moved to cause the cable to be directed and evenly wound on the drum b .

The apparatus described is simple in construction, effective in operation, and very desirable in grading roads and excavating and filling at any point where desired.

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

1. In an excavating apparatus, a winding-drum and means for rotating the same, in combination with a cable or rope having enlargements or stops, and having its ends secured to said drum so that one end may be wound and the other unwound simultaneously, spools upon the cable engaged by the enlargements thereof, scrapers loosely hung from said spools and moving with the two sides of the cable in opposite directions, and pulleys around which the cable passes, substantially as described.

2. In an excavating apparatus, the combination of the cable having enlargements or stops, a support for said cable, the scrapers, spools on the cable, adapted to be engaged by the enlargements or stops, and flexible connections between said spools and scrapers, substantially as described.

3. In an excavating apparatus, the combination of the fixed posts and adjustable pulley-blocks carried thereby, a winding-drum and support therefor, a cable horizontally placed and secured to said drum and pulley-blocks, so that its two sides move in reverse directions, scrapers suspended from the cable, a movable frame M , having pulleys for directing the cable to the drum, a screw-shaft on the drum-support, engaging an arm of the movable frame and provided with a pulley, and a band or rope leading from said pulley to the winding-drum, substantially as described.

HENRY CASEBOLT.

Witnesses:

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