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W. J. NEWMAN.

POWER TRANSMISSION FOR EXCAVATING APPARATUS.

APPLICATION FILED OCT. 26, 1906.

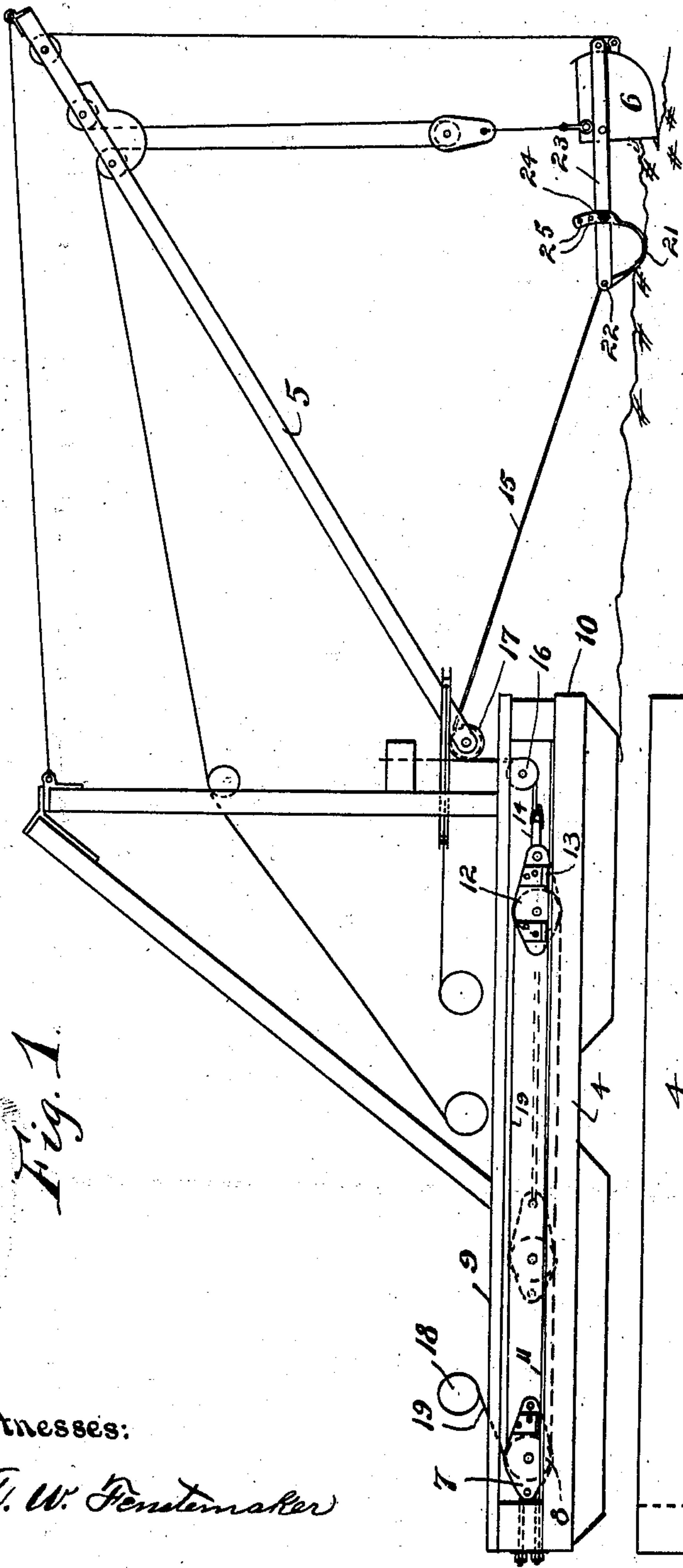


Fig. 1.

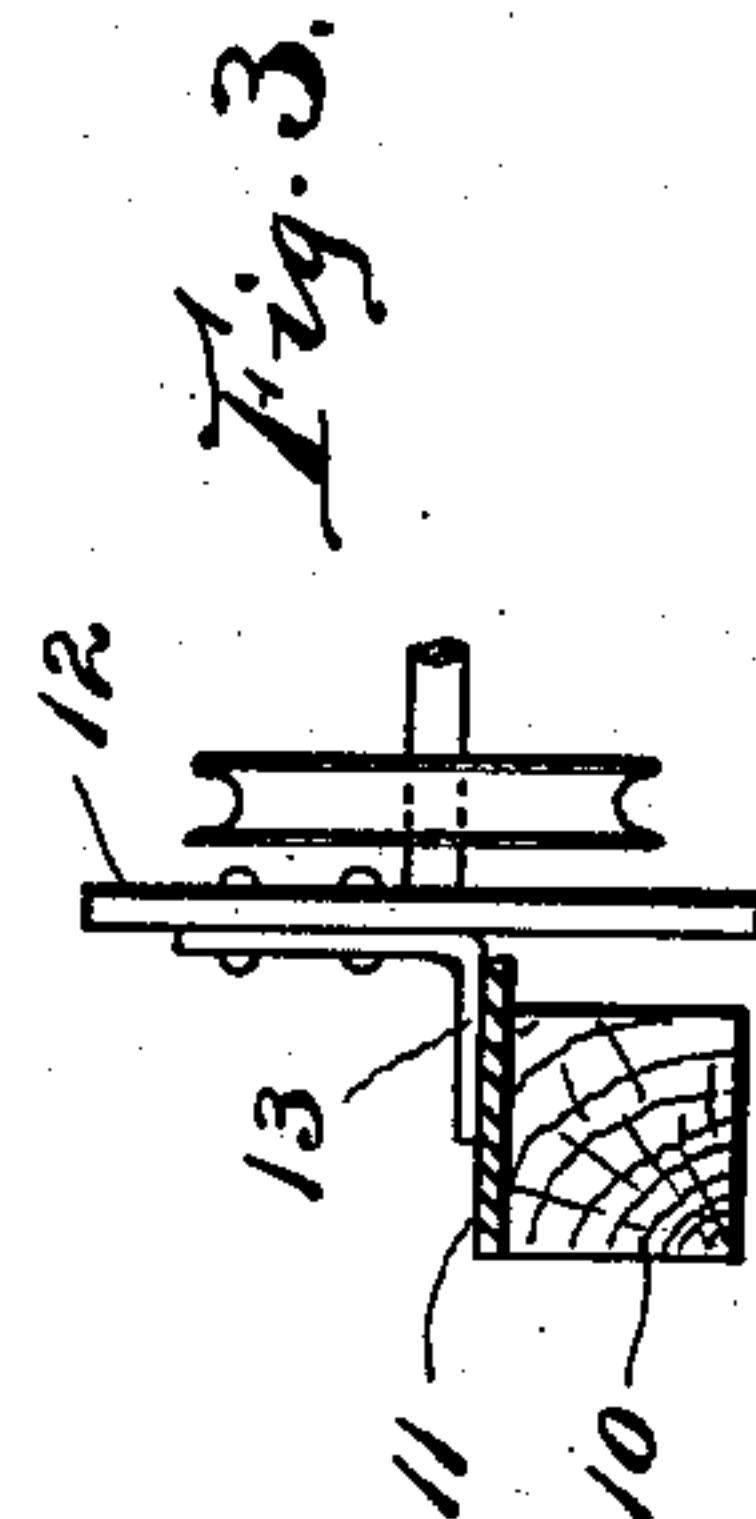


Fig. 3.

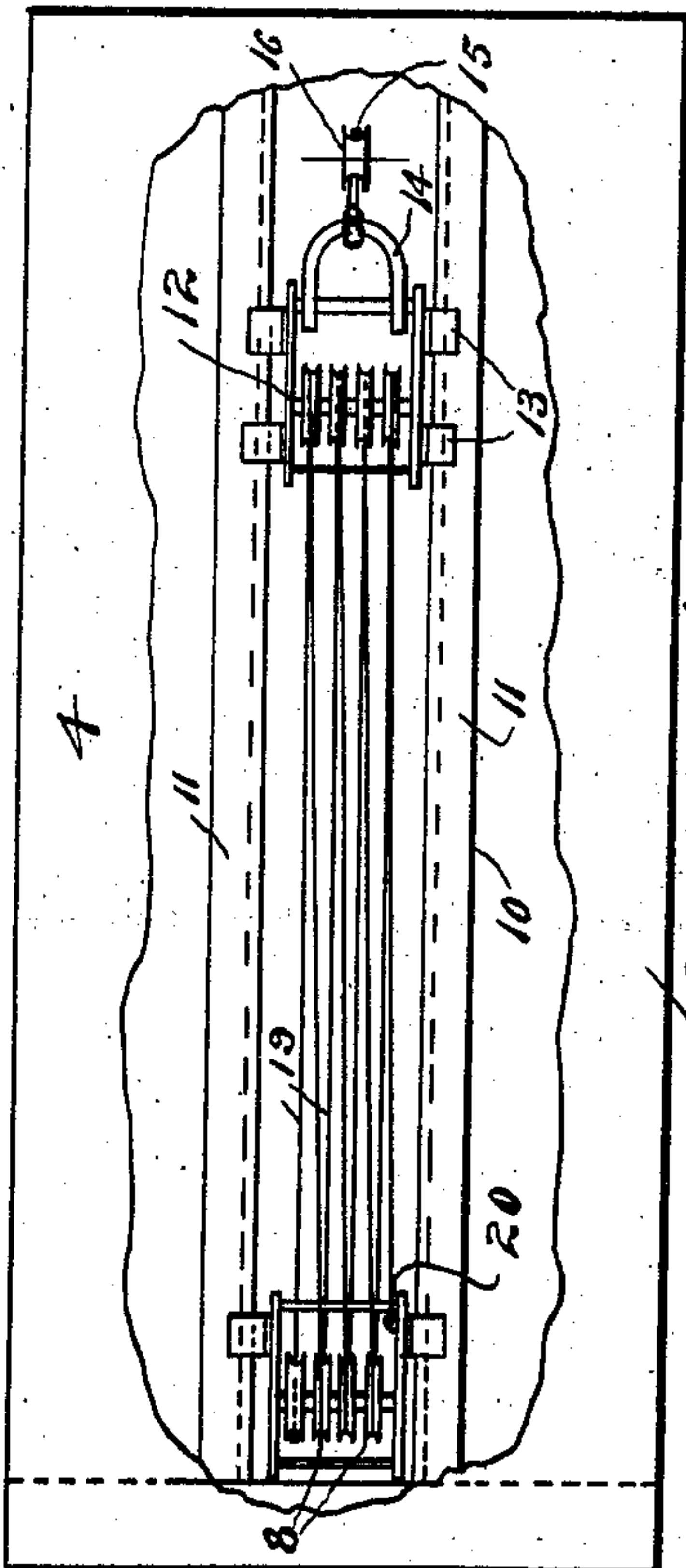


Fig. 2.

Witnesses:

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POWER TRANSMISSION FOR EXCAVATING APPARATUS.

No. 860,103.

Specification of Letters Patent.

Patented July 16, 1907.

Application filed October 26, 1906. Serial No. 340,625.

To all whom it may concern:

Be it known that I, WILLIAM J. NEWMAN, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Power Transmission for Excavating Apparatus, of which the following is a specification.

This invention relates more particularly to the drag-rope or cable apparatus used in connection with excavating shovels, to drag the shovel forward for filling the same, and to such other details of construction and arrangement of parts as will be fully described and claimed hereinafter.

If a block and tackle is used with an excavating apparatus, and connected directly to the shovel, the tackle ropes and one or both of the blocks are subject to being dragged in the earth or dirt which is being excavated, and will soon become abraded and worn and consequently are apt to give considerable trouble. They are also inconvenient in operation.

In order to provide an efficient transmission device for operating the shovel, I have provided the mechanism shown in the accompanying drawings in which

Figure 1 is a side elevation of an excavating apparatus provided with my improved transmission mechanism, the shovel also being shown provided with adjustable guide-shoes; Fig. 2 is a top-plan view of the same, parts being broken away to show the transmission apparatus; and Fig. 3 is a detail view showing one of the block-guides.

As shown in the drawings, 4 represents suitable skids or frame-work for supporting the hoisting apparatus, this apparatus consisting in general, of a boom 5 and a shovel 6, with suitable means for operating the shovel to fill, raise and discharge the same. At one end of the frame-work is a block 7 provided with one or more sheaves 8, this block being rigidly supported in the frame in any suitable manner; or if desired, the sheaves may be mounted upon a suitable shaft supported on the frame. This block is preferably arranged beneath the floor 9 of the frame-work so that it, and its cooperating devices, will be protected. This block is arranged at one end of a suitable guideway which consists of beams 10 having plates 11 secured thereto. A second block 12 is provided, on either side, with shoes or guides 13 which rest upon the plates 11. The shackle 14 is connected with a cable 15 which leads under a guide-sheave or pulley 16 in the frame, and then up over a second sheave 17, mounted with the boom 5 so that it is free to swing therewith, and then directly to a suitable fastening on the shovel 6. The boom, with its swinging apparatus, is so mounted that the vertical portion of the cable 15, between the sheaves 16 and 17, is along the axis of rotation of the boom.

The shovel 6 is operated for filling by means of any ordinary or preferred form of winding drum, such as used with hoisting apparatus, and which is indicated on the drawings at 18. A cable or line 19 leads from the winding drum 18 around the various sheaves or pulleys in the blocks 7 and 12, in the manner commonly known, the extreme end of the cable finally being fastened, as at 20 where it is shown secured to the block 7. The operation of the transmission mechanism will be readily understood from the drawings and the above description. When the shovel 6 has been lowered for filling, the winding drum 18 is turned to wind up the cable 19. As the cable is wound up, the block 12 travels along on the guide-plates 11 toward the block 7, as indicated in dotted lines in Fig. 1. This causes the drag-cable 15 to be drawn in, and the shovel 6 to be drawn forward for filling. By means of this novel arrangement of transmission apparatus, a great mechanical advantage is gained and a small hoisting engine may be used for exerting an extremely heavy pull on the drag-cable 15. At the same time, a light line may be used for the block and tackle portion of the apparatus, and a very heavy line can be used for the connection to the shovel, the latter line being exposed to comparatively rough usage and being subjected to a great strain, while the line on the block and tackle is protected and being multiplied a number of times, does not receive as great a strain.

The shovel 6 is preferably provided with guide-shoes 21, of the same general character as shown in my prior application, Serial No. 281,140, filed October 3, 1905; but in this instance, the shoes 21 are pivoted at 22 to the arms or frame 23, and at the rear end, the shoes are adjustably connected to the arms 23, as for instance, by means of bolts 24, which pass through holes in the arms 23 and may engage one or the other of a series of holes 25 in the ends of the shoes 21. By means of this arrangement, the shoes may be readily adjusted as for digging in different kinds of earth.

Having thus described my invention, what I claim is:

1. In an excavating apparatus, the combination of a frame-work, a block and tackle in said frame work, a winding drum connected with said block and tackle, and a drag-line leading from one of said blocks to an excavating shovel or the like.

2. The combination of a frame work, a block rigidly secured in said frame work, a guideway in said frame-work, a second block movably mounted in said guideway, a line rove around the sheaves in said blocks and leading to a winding drum, and a second line connected with the movable block and leading to a shovel or other apparatus to be moved.

3. The combination of a frame work, one or more sheaves or pulleys mounted in said frame work, a guideway in said frame work, one or more sheaves slidably mounted to move along said guideway, a cable or line wound from the stationary sheaves around the movable

sheaves, one end thereof being rigidly secured and the other end thereof leading to a winding drum, a second line or cable secured to the support for the movable sheaves and leading to an excavating shovel or the like.

5 4. In an excavating apparatus, the combination of a suitable frame work, a block and tackle arranged within said frame work in a protected position, a winding drum for winding up the line of said block and tackle, a drag-line connected with one of the blocks, an excavating shovel
10 with which said drag-line is connected, and guide-sheaves for said drag-line.

5. In an excavating apparatus, the combination of a suitable frame work, a boom pivotally mounted on said

frame work, an excavating shovel, means connected with said boom for raising and dumping said shovel, a guide- 15 sheave tangent to the pivotal axis of said boom, a second guide-sheave below said first-named guide-sheave, a drag-line from said shovel leading over said sheaves, a block and tackle arrangement in said frame work with which said drag-cable is connected, and a winding drum for winding 20 up the line of said block and tackle.

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Witnesses:

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