M. M. DEFREES.

EXCAVATING APPARATUS.

APPLICATION FILED NOV. 13, 1907.

905,153.

Patented Dec. 1, 1908.

2 SHEETS—SHEET 1.

Fig. 1

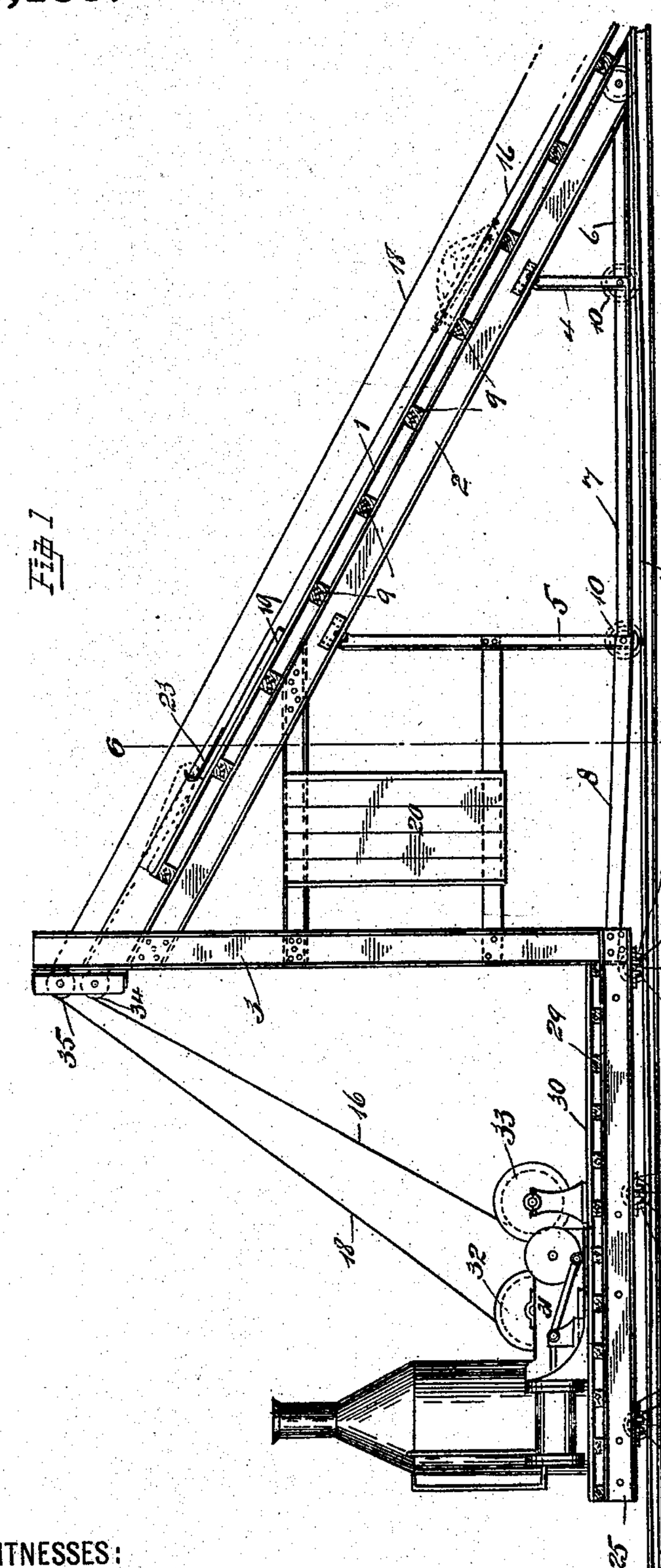

Fig. 2

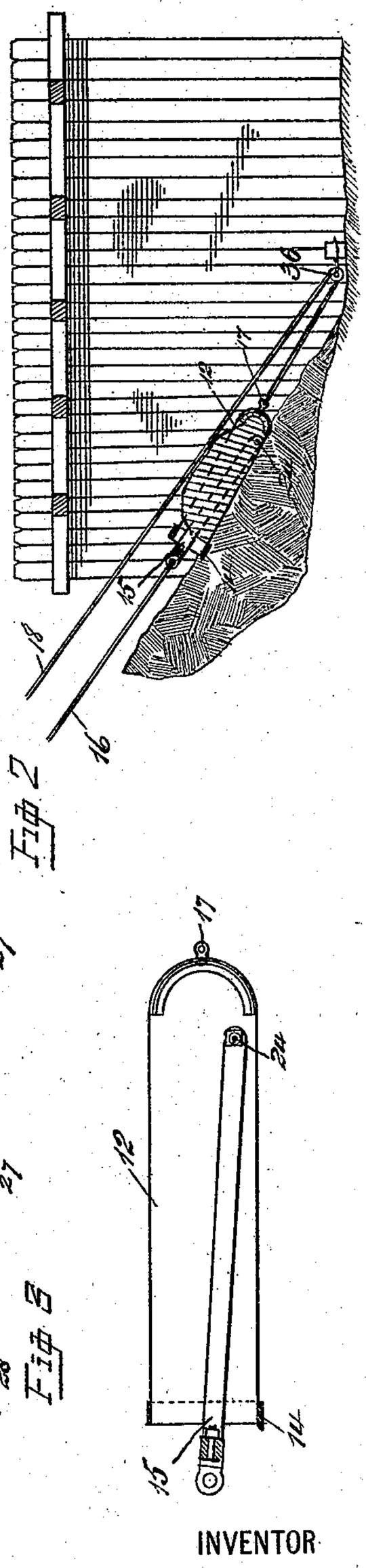

Fig. 3

WITNESSES:

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Fig 4

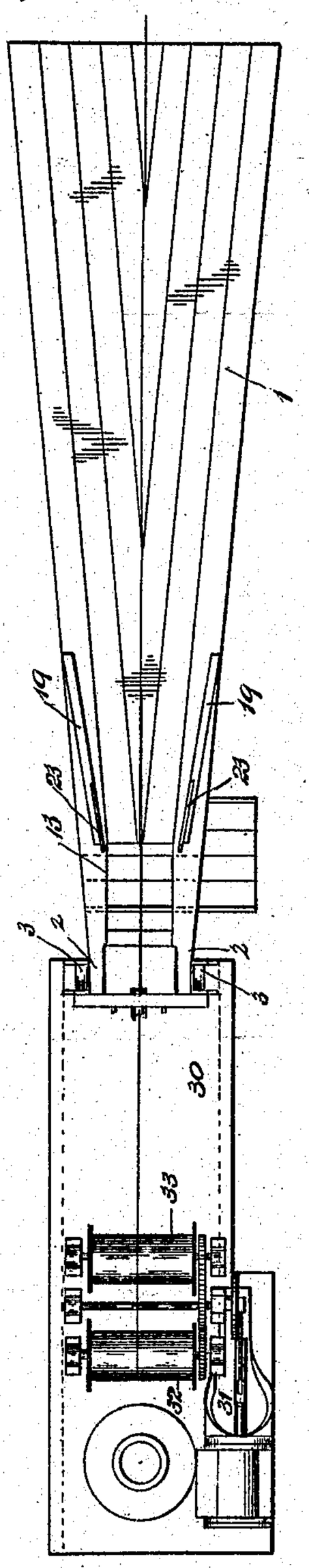

Fig 5

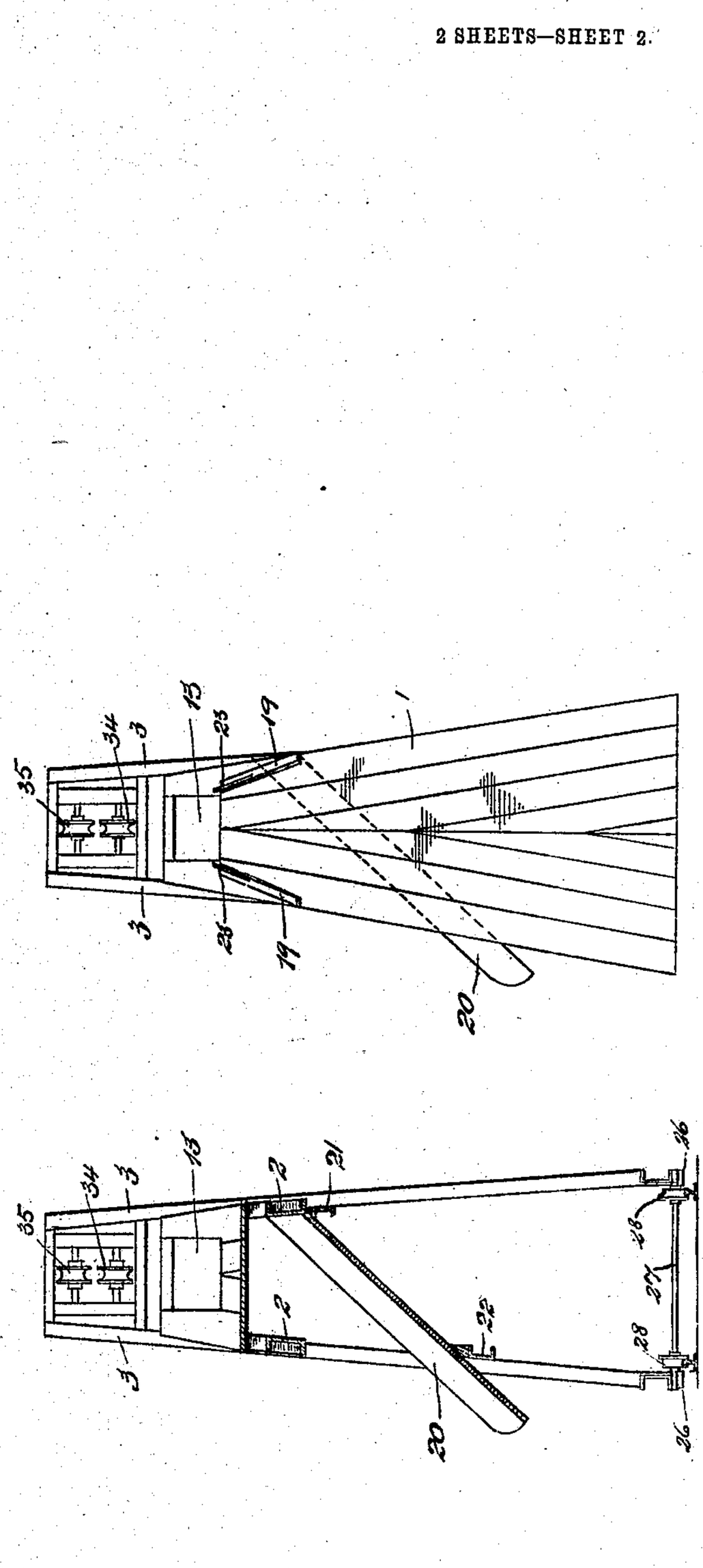

Fig 6

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MORRIS M. DEFREES, OF INDIANAPOLIS, INDIANA.

EXCAVATING APPARATUS.

No. 905,153. Specification of Letters Patent. Patented Dec. 1, 1908.

Application filed November 13, 1907. Serial No. 402,023.

To all whom it may concern:

Be it known that I, MORRIS M. DEFREES, citizen of the United States, residing at Indianapolis, in the county of Marion and State of Indiana, have invented certain new and useful Improvements in Excavating Apparatus, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to an improved apparatus for excavating trenches and loading the dirt excavated therefrom as it is excavated, as will be hereinafter more fully described and particularly pointed out in the claims.

The object of this invention is to provide a means whereby a trench may be quickly excavated and the dirt therefrom be directly discharged into wagons to be transported to some convenient place. I attain these objects by means of the apparatus illustrated in the accompanying drawings in which like numerals of reference designate like parts throughout the several views.

Figure 1 is a longitudinal elevational view of the apparatus; Fig. 2 is a longitudinal sectional view of a portion of a trench showing the excavating scoop of the apparatus in operation. Fig. 3 is a detail longitudinal sectional elevation of the excavating scoop used in connection with this apparatus; Fig. 4 is a top view of the apparatus; Fig. 5 is a front elevational view of the apparatus; and, Fig. 6 is a sectional elevational view of the apparatus taken along the line 6—6 in Fig. 1.

This apparatus consists of an excavating scoop and an inclined loading plane upon which said scoop is traversed into position to directly discharge its load into a wagon to be transported to some convenient place.

The framework whereby the inclined floorway 1 of the apparatus is supported is composed of the inclined side beams 2 which are secured at their upper ends to the upright side-posts 3 and extend therefrom at an angle to the horizon, the intermediate supporting posts 4 and 5, and the lower tie-beams 6, 7, and 8 which are secured to the bottom ends of the intermediate posts 4 and 5 and the upright side posts 3 by which the latter are rigidly held in position.

The floor-joists 9 extend across the top sides of the inclined beams 2 to which they are secured and situated at suitable intervals apart along said side inclined beams, and on said joists the floor 1 is laid and secured to form a floorway upon which the excavating scoop 12 is traversed. At the bottom ends of the inclined side beams 2 and the intermediate posts 4 and 5 are journaled the carrying wheels 10 which are adapted to run on the guiding rails 11 which rails are moved as the excavating of a trench proceeds to permit the framework of the apparatus and the inclined floor 1 carried thereby to be moved into the proper position relatively to the excavation.

The inclined floor way 1 extends from near the surface of the ground to permit the excavating scoop 12 to readily mount and slide upon the said floor without catching to and over the dumping hole 13.

The excavating scoop 12, which will form the subject matter of another application, is of the open bottom type and is provided with, at its forward or leading end, a digging or cutting knife 14 whereby the soil is severed and broken up, the bail 15 which is attached to the end of the hauling cable 16 and an eye-bolt 17 secured to the back plate of the scoop to which is secured the end of the returning cable 18 whereby said scoop 12 is returned to the bottom or initial point of the excavation.

Situated at the top portion of the inclination of the floor way 1 and firmly secured thereto are the centering bars 19 which bars are situated further apart at their bottom ends and converge at their top ends or those ends situated adjacent the dumping hole 13 to a width slightly larger than the outer width of the excavating scoop 12 thereby operating as a guiding and centering means to center said scoop in its passage between them over said dumping hole 13.

A chute 20 is situated directly under the dumping hole 13 and is composed of suitable planks which are secured at their higher ends to the beam 21 and at or near their lower ends to the beam 22 so as to obtain the desired inclination to permit the excavated dirt delivered by the scoop 12 and deposited thereon to slide thereon to be delivered to and into a wagon situated at and under the lower end of said chute. Engaging hooks 23 are secured on the top sides of the centering bars 19 with their hooked ends projecting over the top ends of said centering bars and situated so as to engage the outer projecting ends of the bolts 24 of the

excavating scoop 12 when the latter has been drawn over the dumping hole 13 to prevent a further upward movement of said scoop.

The engine platform supporting beams 25 are secured at their rear ends to the bottom ends of the side posts 3 and extend forwardly and horizontally therefrom, and journaled between suitable jaws 26 secured to said beams are the axles 27 upon which the carrying wheels 28 are secured whereby the overhanging portions of said beams are supported. The platform floor joists 29 are secured at suitable intervals apart to the top sides of said beams upon which joists a suitable flooring 30 is laid and secured. On the floor 30 is secured a suitable winding engine 31 which is provided to drive the winding drums 32 and 33 which latter are arranged so that when the drum 32 is unwinding or playing out the cable 18 the drum 33 is winding the cable 16.

The hauling cable 16 extends from the drum 33 over the guide pulley 34 to be secured at its end to the bail 15 of the excavating scoop 12, and the cable 18 extends from the drum 32 over the guide pulley 35 to and around the sheave pulley 36 situated at the bottom of the excavation, to the eye bolt 17 to which it is secured.

The operation of the apparatus is as follows:—Suppose that in the operation of making or excavating a trench the excavating scoop to be situated in the trench as shown in Fig. 2, then the engine is operated so that the drum 33 winds the cable 16 to drag the scoop 12 along the ground to cause the knife 14 thereof to cut a slice of the earth as the scoop is traversed along the bottom of the trench till said scoop reaches the inclined floor way 1 along which latter said scoop is drawn till it arrives at and in position over the dumping hole or opening 13 at which position the dirt collected by said scoop is dumped upon the chute 20 by which it is discharged into a wagon. The inclined floor way 1 forms the closure for the open under side of the scoop 12 which latter, when it is dragged into position over the dumping hole or opening 13, the open under side of which being no longer closed by the floor way 1, the dirt carried by said scoop is discharged through said dumping hole or opening 13 to and upon the chute 20. The scoop 12 is prevented from moving further up the inclined floor way 1 by means of the engaging hooks 23 which are adadpted to engage the ends of the bolts 24 which project from the outer sides of the scoop 12. The engine 31 is now reversed to cause the pulley 32 to wind the cable 18 and the pulley 33 to unwind the cable the cable 16 thereby returning the scoop 12 to its former position occupied in the trench and the operation is again repeated, and this process is continued till the required excavation is completed. The apparatus is moved on the rails 11 as the trench is extended.

I claim:—

1. In an excavating apparatus, the combination with an inclined floorway having a dumping opening situated at its upper end, a chute situated under said opening, a frame for supporting said inclined floorway, and supporting wheels upon which said frame is mounted to be portable, of an excavating scoop having its under side open adapted to be closed by said floor, centering guides situated at the upper terminal portion of said floorway, each of which is situated to extend along each side of and below said dumping opening whereby said scoop is directed centrally over said dumping opening, a draft rope connected to the rear of said scoop for returning said scoop into the excavation.

2. In an excavating apparatus, the combination with an inclined floorway having a dumping opening situated at or near its upper end, a chute situated under said opening, a frame for supporting said floorway, and supporting wheels upon which said supporting frame is mounted to be portable, of an excavation scoop having its contacting under side open, centering guides situated at the upper terminal portion of said floorway each of which is situated to extend along each side of and below said dumping opening whereby said scoop is directed centrally over said dumping opening, engaging hooks secured at the top ends of said guides, a draft rope for drawing said scoop up said inclined floor, a rope sheave situated in the excavation and a draft rope connected to the rear of said scoop extending round said sheave for returning said scoop into said excavation.

3. In an excavating apparatus, the combination with an inclined floor way having a dumping opening situated at or near its upper end, a chute situated under said opening, a frame for supporting said floor way, and supporting wheels upon which said supporting frame is mounted to be portable, of an excavating scoop having its contacting under side open, means situated at the upper terminal end of said inclined floor way whereby said scoop is centered in its passage between said means to and over said dumping opening, means for engaging said scoop at the end of its course over said dumping opening to prevent its further upward movement, means for drawing said scoop on said inclined floor way to and over said dumping opening and means for returning said scoop to and into the excavation.

4. In an excavating apparatus, the combination with an inclined floor way having a dumping opening situated at or near its upper end, a chute situated under said opening, a frame for supporting said inclined floor way, and supporting wheels upon

which said frame is mounted to be portable, of an excavating scoop having its contacting under side open, means situated at or near the upper terminal end of said inclined floor way whereby said scoop is centered in its passage between said means to and over said dumping opening, engaging hooks for engaging said scoop at the end of its course over said dumping opening to prevent its further upward movement, and suitable winding mechanism so constructed and arranged that when one drum is winding the other drum is unwinding, a cable connected to the bail of said scoop for drawing the same up and along said inclined floor way and a cable connected to the rear end of said scoop for returning the latter to and into the excavation.

In testimony whereof I affix my signature in presence of two witnesses.

MORRIS M. DEFREES.

Witnesses:

THOMPSON R. BELL,

FRANCIS M. SPRINGER.