

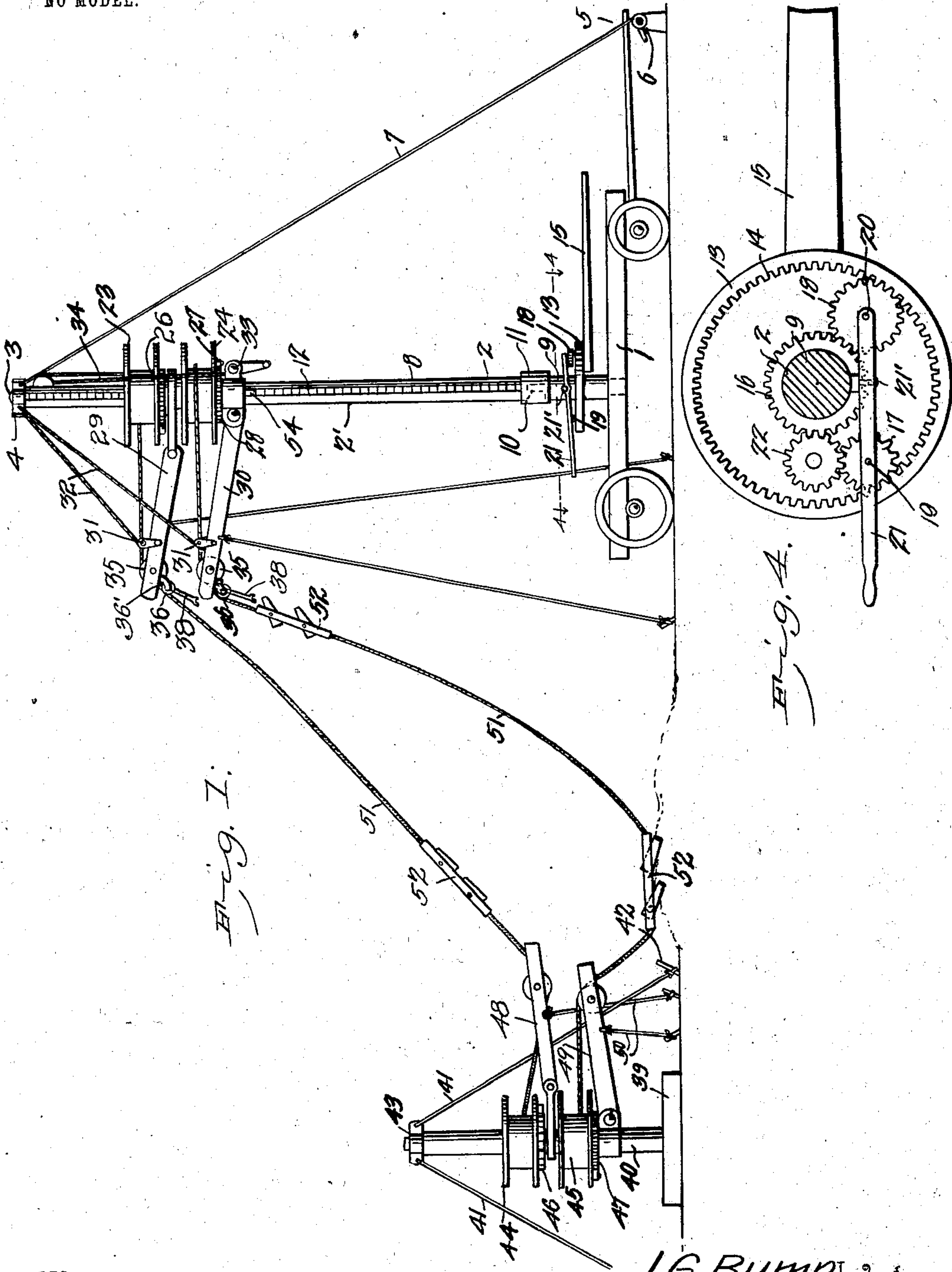
No. 730,228.

PATENTED JUNE 9, 1903.

J. G. BUMP.
EXCAVATING APPARATUS.
APPLICATION FILED AUG. 22, 1902.

NO MODEL.

2 SHEETS—SHEET 1.



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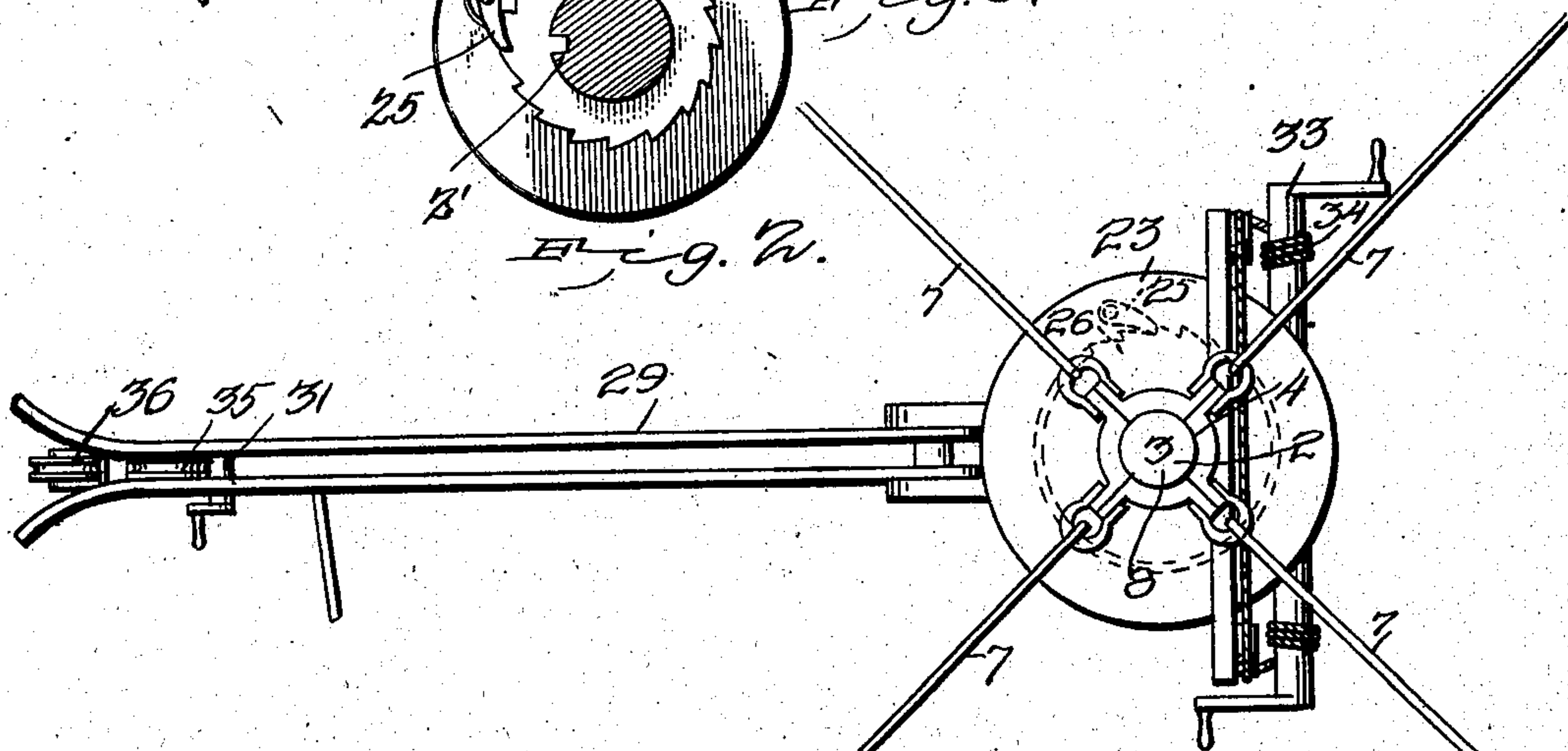
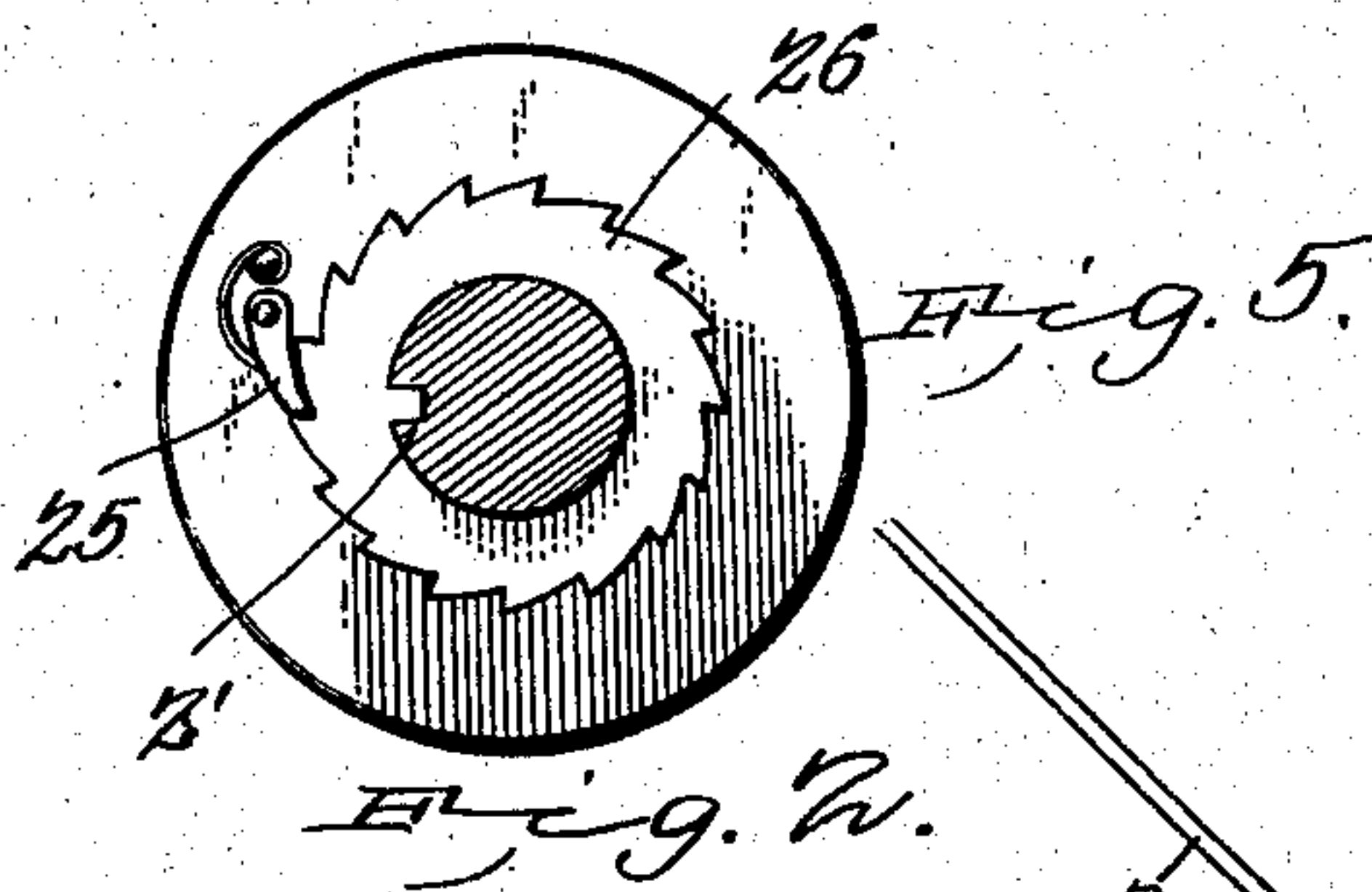
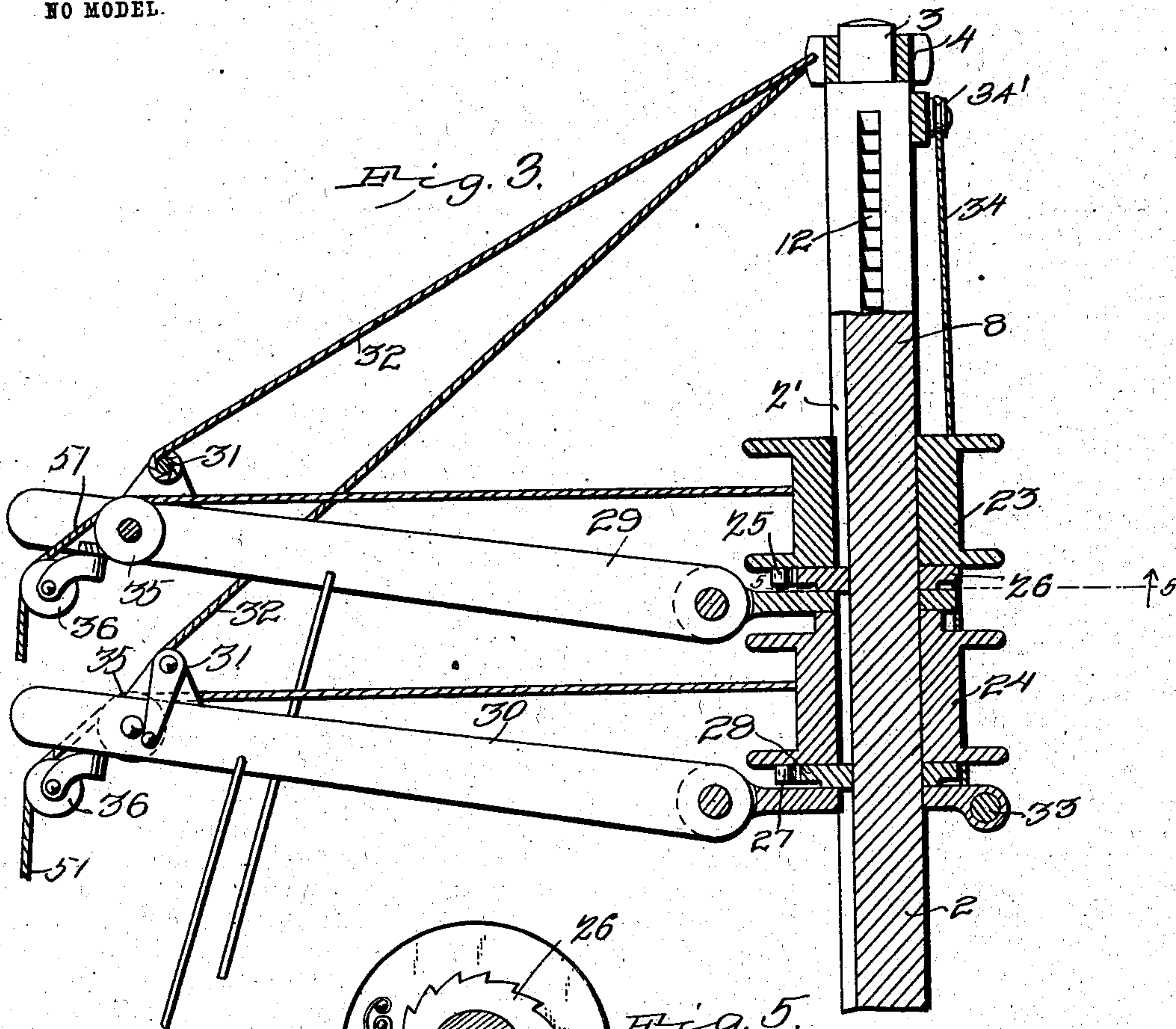
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Witnesses

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UNITED STATES PATENT OFFICE.

JAMES G. BUMP, OF BRAD, TEXAS.

EXCAVATING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 730,228, dated June 9, 1903.

Application filed August 22, 1902. Serial No. 120,662. (No model)

To all whom it may concern:

Be it known that I, JAMES G. BUMP, a citizen of the United States, residing at Brad, in the county of Palo Pinto and State of Texas, have invented a new and useful Excavating Apparatus, of which the following is a specification.

My invention relates to an improved excavating apparatus adapted for use in cleaning out tanks, for excavating cellars, for dredging streams, and for other similar purposes; and it consists in the peculiar construction and combination of devices hereinafter fully set forth and claimed.

In the accompanying drawings, Figure 1 represents a side elevation of an excavating apparatus embodying my improvements. Fig. 2 represents a detail top plan view of a portion thereof, showing the revoluble mast and the devices carried thereby. Fig. 3 represents a detail sectional view showing the revoluble mast or perpendicular shaft and the drums and arms mounted thereon. Fig. 4 represents a section taken on line 4-4 of Fig. 1, showing the mechanism for revolving the mast in elevation. Fig. 5 represents a section taken on line 5-5 of Fig. 3, showing the mechanism for communicating motion from the mast to the drums.

The same reference-numerals indicate corresponding parts in all the figures.

In the embodiment of my invention I provide a suitable supporting-truck 1, on which is stepped the lower end of a revoluble mast or shaft 2, which is adapted to be supported in an upright or inclined position and to be revolved on the truck which forms its supporting-base. At the upper end of the mast is a spindle 3, which turns in a cap 4. Disposed radially with reference to the truck or supporting-base, at suitable distances therefrom, are a series, here shown as four, of anchoring devices 5, each of which includes a winch 6. Guys 7 have their upper ends attached to the cap 4, and the lower portions of the said guys are attached to and coiled upon the winches 6. The said guys serve to support the mast, as will be understood:

The mast 2 comprises the upper section 8 and the lower section 9, which are pivotally jointed together, as at 10, whereby the upper

section may be folded downwardly or extended from and in line with the lower section. A lock-band 11 is placed on the mast and is adapted, when the sections thereof are disposed in line with each other, to be moved to a position surrounding the pivotal joint 10 to secure the said sections rigidly together. Prior to turning the upper section on the pivot 8 to fold the mast the lock-band must be moved from the joint 10, as will be understood. The mast is provided in one side with a series of teeth or stops 12, which extend from the pivotal joint nearly to the upper end of the mast.

I will now describe means whereby the mast may be revolved in either direction without reversing the direction of the horse or team employed to revolve said mast.

The horizontally-disposed master-wheel 13 revolves on the lower section of the mast and is provided with internal spurs 14. A sweep-lever 15, to which the horse or team is attached, is secured to the master-wheel and employed to rotate said wheel. A spur-pinion 16 is fixed to the mast 2 and revolves therewith. A pair of reversing-pinions 17 and 18 are provided with relatively fixed bearings 19 and 20, respectively, by means of which they are attached to a reversing-lever 21. The said reversing-pinions are adapted to engage the internal gear 14 of the master-wheel at different points thereon. The reversing-lever 21 is fulcrumed to the mast 2 at 21' and is so disposed as to be moved on its fulcrum to disengage one of the reversing-gears from the master-wheel while the other gear is engaged therewith, so that only one of the reversing-gears is at any time in engagement with the master-wheel and so that either of the reversing-gears may be engaged with the master-wheel at will by raising or lowering the free end of the lever, as desired. The reversing-gear 18 is adapted to engage the pinion 16 and communicate motion therefrom to the master-wheel. The said pinion 16, fixed to the mast 2, is also engaged by an idler 22, which has a relatively fixed bearing and which is adapted to mesh with the reversing-gear 17 when the latter is engaged with the master-wheel, thereby communicating motion to said wheel and cause it to revolve in the opposite direction.

It will be understood from the foregoing that by properly operating the lever 21 the shaft or mast 2 may be caused to revolve, either in the same direction with the master-wheel 5 and sweep-lever or reversely with reference thereto. This enables the horse or team to be continuously driven in one direction when the apparatus is in operation and obviates the necessity of reversing the horse or team when it is desired or becomes necessary to reverse the rotation of the mast.

A pair of rotatable drums 23 and 24 are loosely mounted on the mast 2 and are adapted to slide vertically thereon, one of said drums 15 being mounted above the other. The drum 23 is provided with a dog 25, which engages a ratchet-wheel 26, that is slidable on and revoluble with the mast 2, said mast having a longitudinally-disposed feather 2' formed thereon, 20 which is engaged by the ratchet-wheel and which serves to lock said wheel against rotation independently of the shaft or mast while permitting it to slide vertically thereon. The drum 24 is provided with a dog 27, which engages a ratchet-wheel 28, mounted on the mast 25 in a manner similar to the wheel 26. The wheel 28 is so disposed on the mast that the teeth thereof are reversed with reference to those of the wheel 26. Hence motion will be 30 imparted to one of the drums, and it will be caused to revolve with the mast when the latter is revolved in either direction.

A pair of arms 29 and 30 are carried by the shaft or mast 2 and are adapted to be swung 35 laterally thereon, so that the arms may be disposed at any desired angle with reference to each other, and the said arms are also adapted to be turned to any desired inclination. Each of the said arms is provided at 40 its outer end with a winch 31, on which is partly coiled a rope 32, that is attached to the mast-head. This enables the arms to be disposed at the desired inclination and also enables them to be moved vertically on the 45 mast with the drums 23 and 24. I provide a winch 33, which is here shown as attached to the band or collar at the heel of the arm 30 and on which is partly coiled the opposite ends of a rope 34, that passes over a pulley 50 34', attached to the head of the mast. By means of this winch the drums, arms, and ratchet-wheels may be raised or lowered on the mast simultaneously to adjust them to any desired height above the ground. The 55 arms 29 and 30 are provided with suitable guys to maintain them at the appropriate angular adjustment with reference to each other, so that their outer ends may be disposed at any desired distance apart. Each 60 of said arms is hollow or slotted throughout its length and is provided with a roller 35, which is adjustable longitudinally in said arm. The outer end of each arm is bifurcated and the members thereof flared outwardly and between which a pulley 36 is 65 mounted and connected thereto by a swivel 36'. Each of the arms 29 and 30 is provided

with a trip 38 to automatically dump the scrapers when the latter are elevated to the outer ends of the arms. 70

On a support or base 39, which is adapted to be placed at a suitable distance from the truck and on the opposite side of the tank or other place where the excavation is to be made therefrom, is stepped the lower end of 75 a shaft 40. The said shaft is maintained in an upright position by guys 41 and anchors 42, the guys being attached to a cap 43, in which the upper end of the shaft 40 has its bearing. On the said shaft are a pair of 80 drums 44 45, one above the other, and the said drums are connected to the said shaft by dogs and ratchet-wheels 46 47, which are similar to those used to secure the drums 23 24 on the mast 2. A pair of arms 48 49, 85 which are similar to the arms 29 30, hereinbefore described, are pivotally mounted on the shaft 40 and are provided with appropriate guys 50 to dispose them at any desired angle apart. A cable 51 connects the drums 90 23 44 together and has its ends reversely coiled thereon. Said cable engages the rollers carried by the arms 30 and 49 and also engages the pulley carried by the arm 30. A similar cable connects the drums 24 45 together, as shown. To each of the cables is 95 attached a dump-scraper 52.

It will be understood that when the apparatus is in operation the dump-scrappers will be simultaneously carried by the cables, so 100 that the loaded scraper will approach the mast 2, while the unloaded scraper will be returned toward the shaft 40. This is accomplished without reversing the team or horse and by properly manipulating the shifting- 105 lever 21. Hence my improved excavating apparatus is adapted to perform its work very expeditiously, as one of the scrapers is almost constantly engaged in carrying earth. The provision of the pawl-and-ratchet con- 110 nections between the drums and the shafts enables the cables to be lengthened out or shortened between the two masts, according to the distance between them.

A dog or key 54 coacts with the teeth or 115 stops in one side of the mast 2 to support the drums 23 24 and the arms 29 30 when adjusted.

By widening the angles between the arms which form the guides for the cables as the 120 work progresses, which may be done by means of the guys provided for the arms, an area of considerable width may be excavated before it is necessary to shift the position of the apparatus.

Having thus described my invention, I 125 claim—

1. In an excavating apparatus, the combination of a revoluble mast, winding-drums carried thereby and revoluble therewith, a 130 master-wheel, and gears including reversing devices, connecting the master-wheel to the mast, so that the latter may be driven in either direction without reversing the direc-

tion of rotation of the master-wheel, substantially as described.

2. In an excavating apparatus, the combination of a revoluble mast, winding-drums 5 carried thereby and revoluble therewith, and means to disengage the drums from the mast, to permit the drums to be turned independently of the mast, to pay out or take up the cables on the drums, substantially as described. 10

3. In an excavating apparatus, the combination of a revoluble mast, winding-drums carried thereby and revoluble therewith, cables on the drums, and arms carried by the 15 mast and having guides for the cables, said drums and arms being vertically adjustable on the mast, substantially as described.

4. In an excavating apparatus, the combination of a revoluble mast, winding-drums 20 carried thereby and revoluble therewith, cables on the drums, arms carried by the mast and having guides for the cables, said drums and arms being vertically adjustable on the mast, and means to raise and lower said drums 25 and arms, substantially as described.

5. In an excavating apparatus, the combination of a revoluble mast, revoluble drums carried thereby, cables connected to the drums, arms, connected to the mast and having 30 guides for the cables, and means to angularly adjust said arms to dispose their outer ends at any desired distance apart, substantially as described.

6. In an excavating apparatus, the combination of a revoluble mast, drums carried and 35 revolved thereby, cables connected to the drums, and pawl-and-ratchet connections between the drums and mast, for the purpose set forth, substantially as described.

40 7. In an excavating apparatus, the combi-

thereby, cables reversely coiled on said respective drums, and guides for the cables, of a counter-shaft having drums to which the cables are connected, and means to rotate the 45 mast in either direction, substantially as described.

8. In an excavating apparatus, the combination of a revoluble mast, drums carried thereby, cables reversely coiled on the drums, 50 means to rotate the mast in either direction, dump-scrapers attached to the cables, anchoring direction elements engaged by the cables, and guide-arms for the latter having trips to automatically dump the scrapers, substantially as described. 55

9. An excavating apparatus having a supporting-base, a revoluble mast having a bearing at its lower end on the base, guys for the mast, means to revolve it in either direction, 60 drums carried by the mast and cables reversely coiled on the said drums, substantially as described.

10. In an excavating apparatus, an ambulant supporting-base, a revoluble mast, comprising a plurality of sections pivotally jointed 65 together and having a bearing at its lower end on the base, means to lock the sections of the mast together when disposed in line with each other, guys for the mast, drums 70 carried by the mast, cables reversely coiled on the drums, and means to rotate the mast, substantially as described.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in 75 the presence of two witnesses.

JAMES G. BUMP.

Witnesses:

J. P. CORRIGAN,
S. A. SMITH.