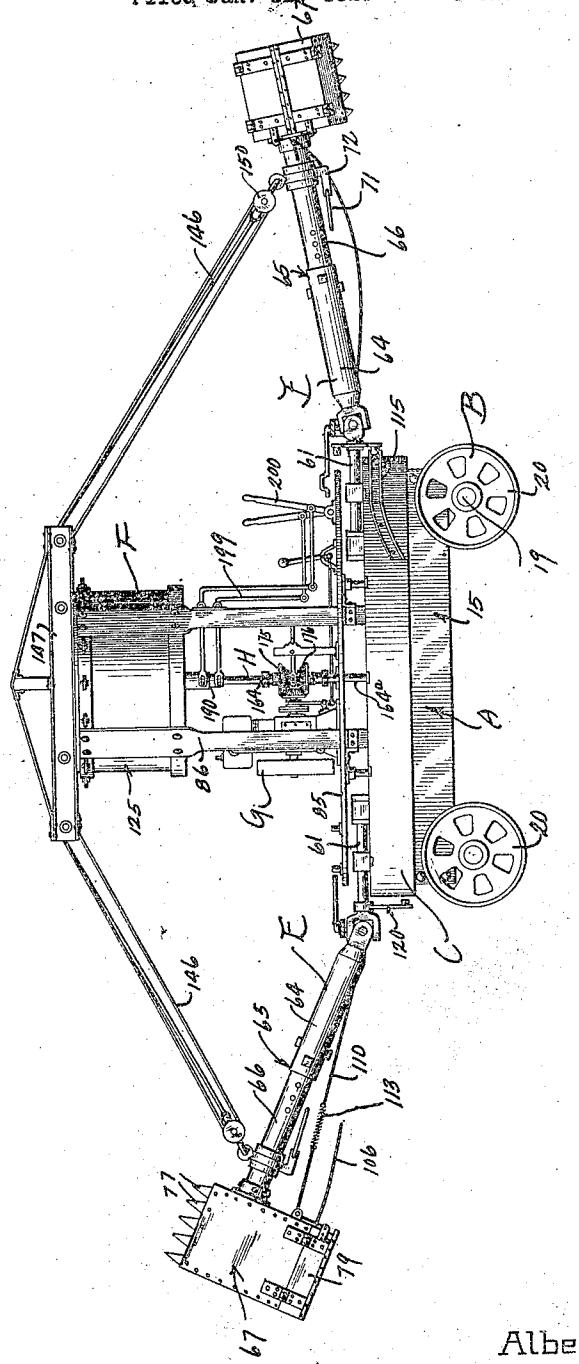
April 29, 1924. 1,491,850

A. M. DOLL

EXCAVATING MACHINE

Filed Jan. 11, 1923 6 Sheets-Sheet 1

Fig. 1.



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EXCAVATING MACHINE

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Fig. 11.

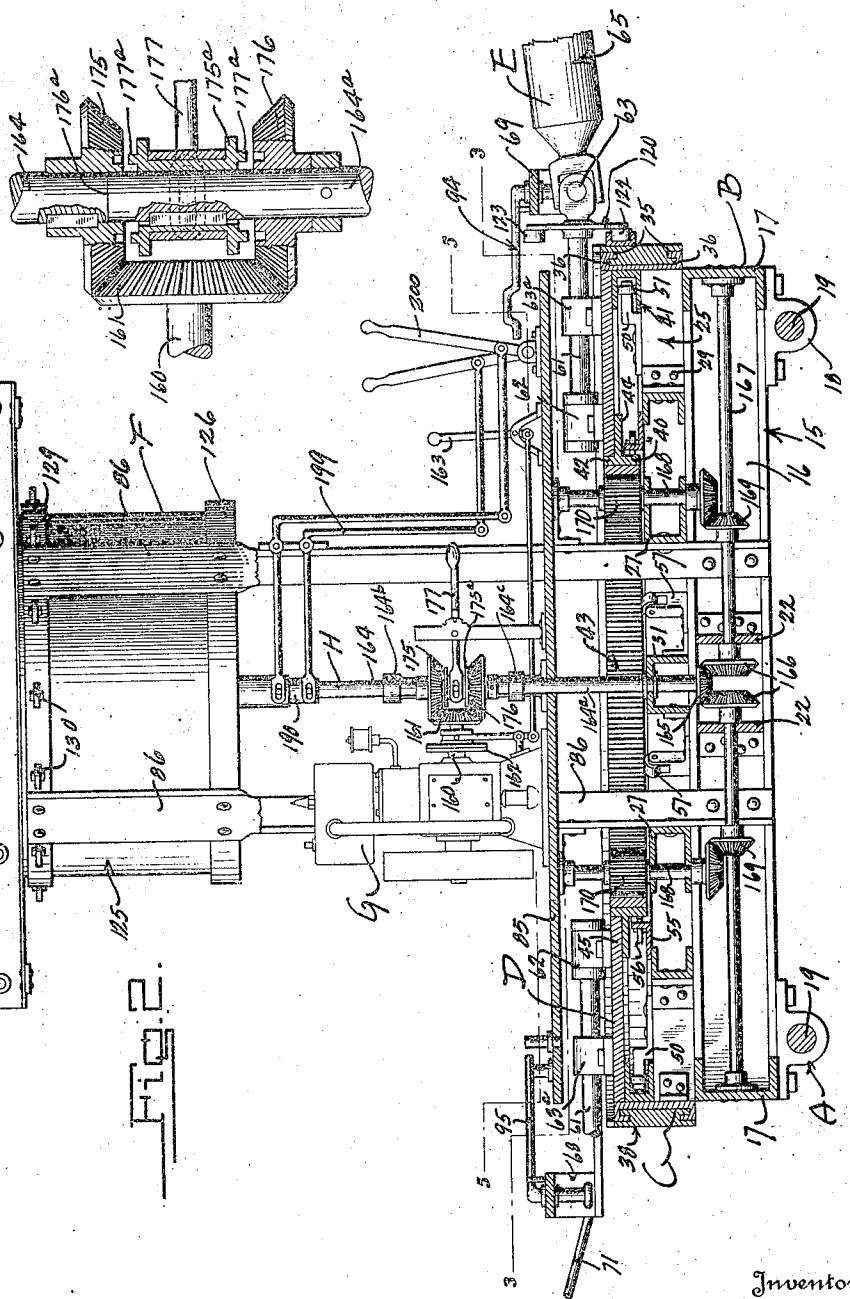


Fig. 2.

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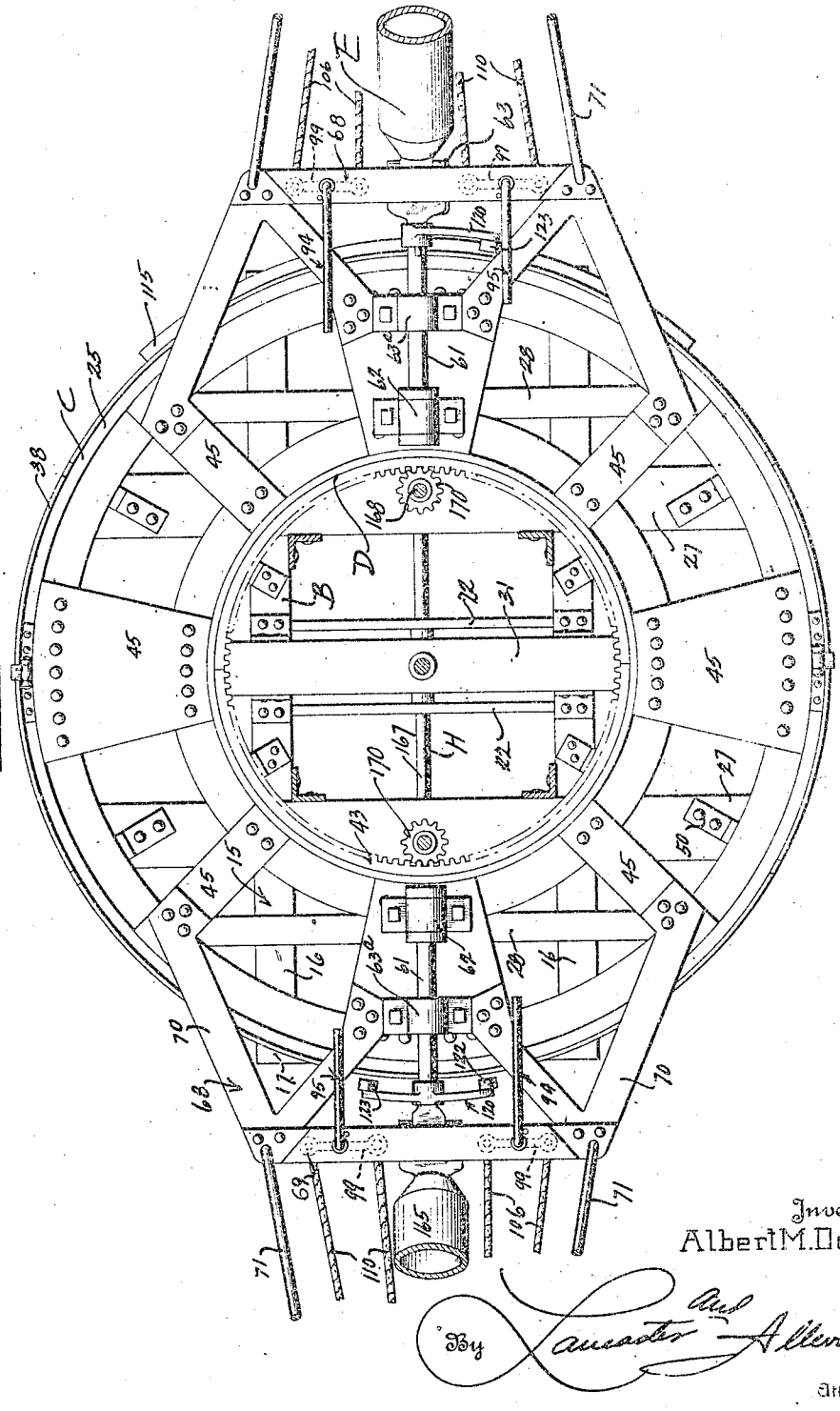
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EXCAVATING MACHINE

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Fig. 2.



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EXCAVATING MACHINE

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Fig. 4.

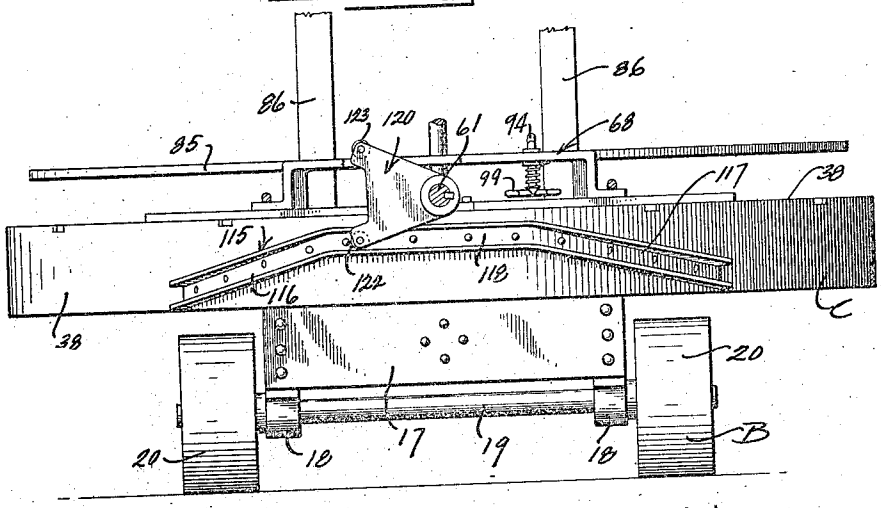


Fig. 9.

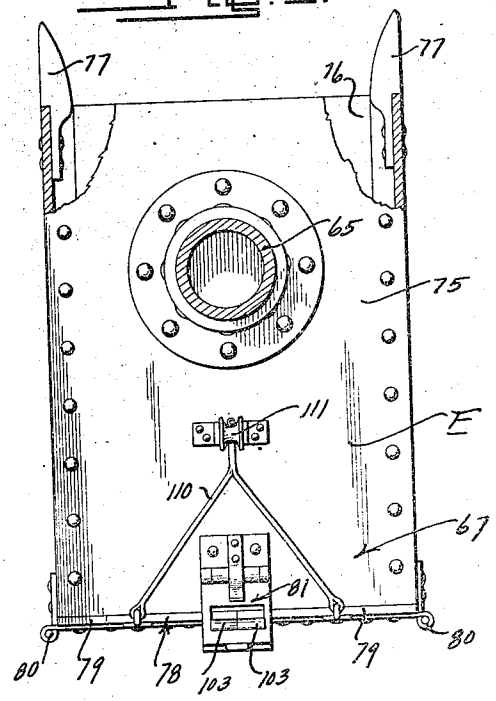


Fig. 8.

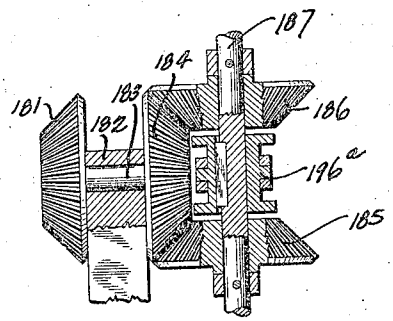
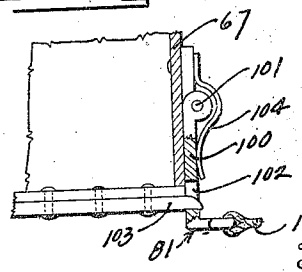


Fig. 10.



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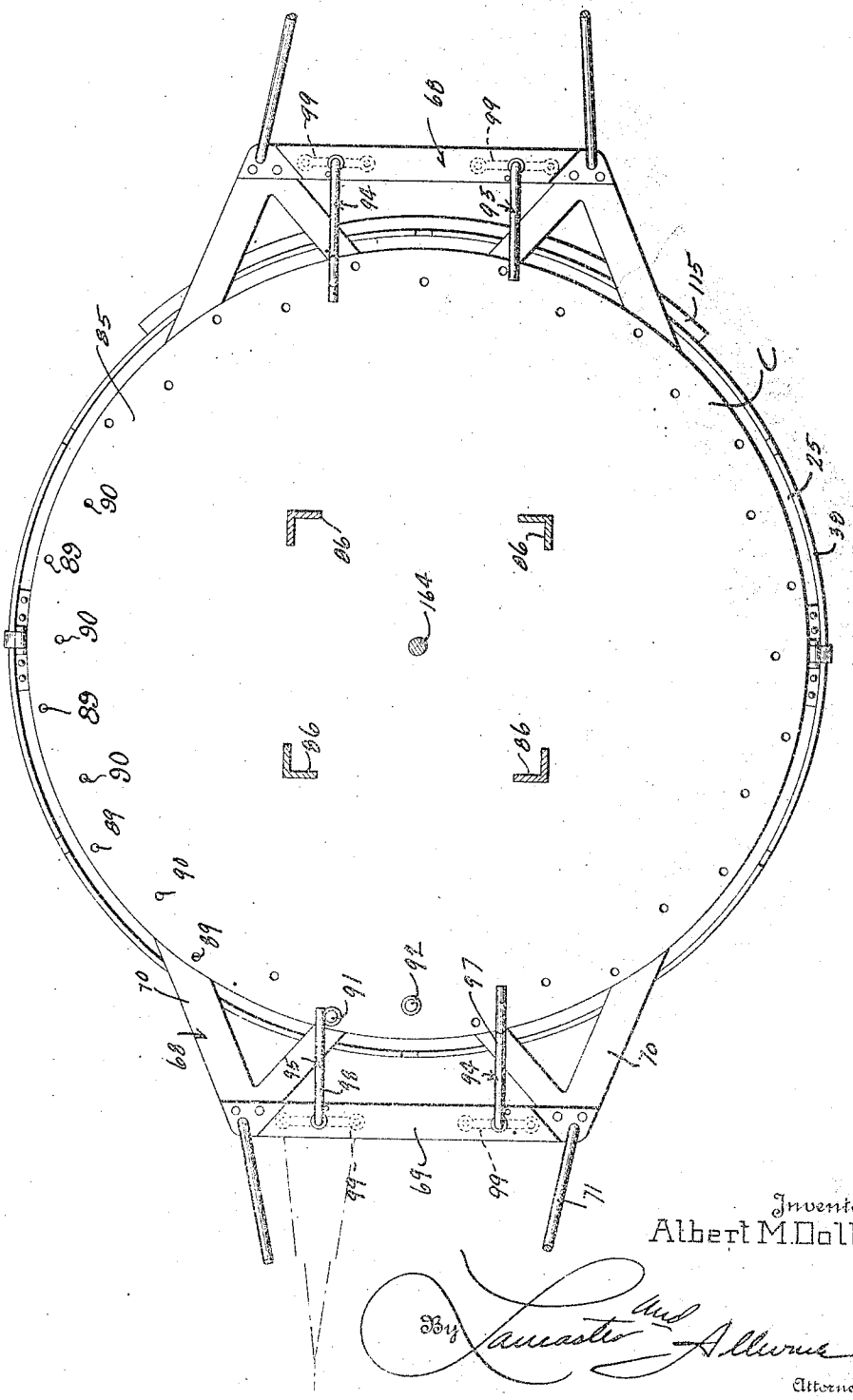
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6 Sheets-Sheet 5

Fig. 5.



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EXCAVATING MACHINE

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Fig. 6.

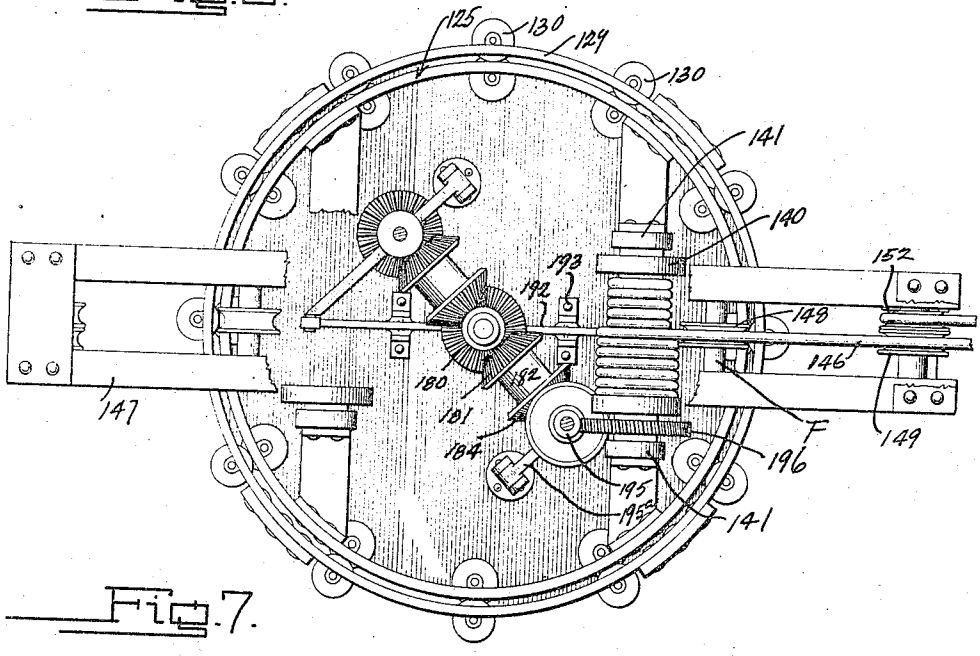
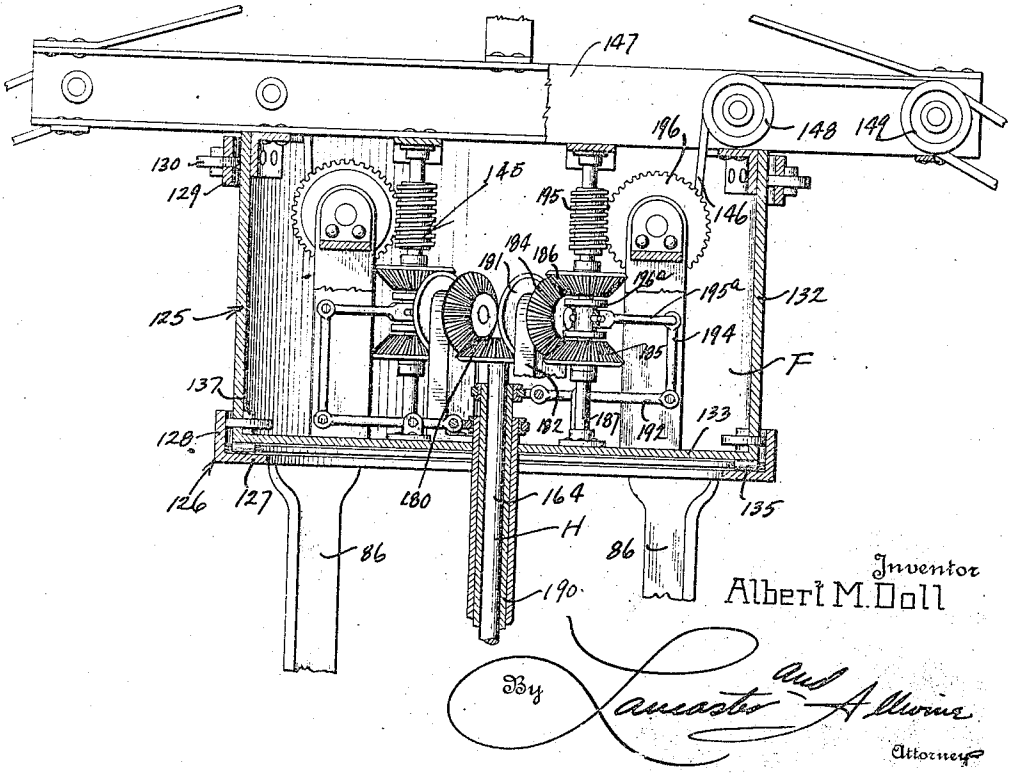


Fig. 7.



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UNITED STATES PATENT OFFICE.

ALBERT MAGNUS DOLL, OF WAUZEKA, WISCONSIN.

EXCAVATING MACHINE.

Application filed January 11, 1923. Serial No. 612,030.

To all whom it may concern:

Be it known that I, ALBERT M. DOLL, a citizen of the United States, residing at Wauzeka, in the county of Crawford and State of Wisconsin, have invented certain new and useful Improvements in Excavating Machines, of which the following is a specification.

This invention relates to excavating machines.

The primary object of this invention is the provision of an excavating machine which is relatively simple in construction, compactly built, and which may be used in universal manner to effect an excavating or earth carrying operation in facile manner, in a minimum of time, and with certain automatic dispatch as will enable an operator to easily control the same without assistance.

A further object of this invention is the provision of an excavating machine which will automatically load and carry a quantity of material to a desired point where it will automatically dump the same.

A further object of this invention is the provision of an excavating machine embodying a novel shovel or scooping arrangement, which may be operated through an entire circumference, to automatically load or unload material.

A further object of this invention is the provision of an excavating machine embodying a novel shovel operating winch mechanism.

A further object of this invention is the provision of a compactly arranged excavating machine adapted for supporting a plurality of scooping or shovelling devices which are automatic in operation.

Other objects and advantages of this invention will be apparent during the course of the following detailed description.

In the accompanying drawings, forming a part of this specification, and wherein similar reference characters designate corresponding parts throughout the several views,

Figure 1 is a side elevation of the improved excavating machine showing a pair of shovel devices carried thereby, one of them in excavating position and the other in load releasing position.

Figure 2 is a fragmentary cross sectional view, taken through the improved excavating machine, showing essential details thereof.

Figure 3 is a fragmentary plan view of certain frame details of this invention.

Figure 4 is a rear elevation of the improved excavating machine, showing more particularly the means for automatically controlling a shovel device.

Figure 5 is a plan view of the improved frame details of this invention.

Figure 6 is a fragmentary plan view of a winch mechanism embodied in this invention

Figure 7 is a fragmentary transverse cross sectional view, showing details of the winch mechanism.

Figure 8 is a fragmentary view, partly in section, showing a portion of the winch drive or control means.

Figure 9 is an elevation, partly in section, of a shovel or scoop device used in connection with this invention, showing the same in load carrying position.

Figure 10 is a fragmentary view, partly in cross section, showing the closure control latch of a shovel member illustrated in Figure 9.

Figure 11 is a fragmentary cross sectional view, showing a clutch mechanism used for selectively operating different parts of the excavating machine.

In the drawings, wherein for the purpose of illustration is shown but the preferred embodiment of this invention, the letter A generally designates the improved excavating machine, which includes the chassis B; stationary supporting frame C; rotatable supporting frame D; shovel arrangement E carried by the rotatable supporting frame D; winch mechanism F; prime mover G supported by the stationary frame C; and drive means H operated by the prime mover for controlling the various mechanisms of this invention, as will be hereinafter more fully described.

Referring to the chassis frame B, the same may be of any approved construction, and may include the frame 15, comprising side channels 16 and end cross channels 17. Bearings 18 may be suitably carried below the frame 15 for rotatably receiving axles 19 upon the outer ends of which the supporting wheels 20 are rotatably carried. Cross bars or plates 22 may be provided intermediate the ends of the frame, having their ends attached to the side channels 16.

Referring to the stationary supporting frame C, which is carried by the chassis

frame 15, the same principally includes an annular supporting band 25, which is C-shaped in cross section and attached to the chassis frame 15 by means of the transverse channels 27, and relatively smaller transverse channels 28. These channels 27 and 28 are arranged in substantially parallel relation and are directly connected as by angle clips 29 to the inner circumference of the stationary band 25. A transverse central channel 31 may also be provided for connection upwardly to the chassis frame 16 and suitably connected to the band 25, if desired. This transverse member 31 is inverted U-shape in cross section, and aids in the support of certain details of the rotatable frame D, and drive means H.

As above mentioned, the stationary frame band 25 is C-shaped in cross section and provides the annular upper and lower outer flanges 35, which provide pockets to rotatably receive the reduced annular upper and lower portions 36 of an adjustable band or ring member 38, which plays an important part in regulating the automatic control of the shovel devices E, as will be subsequently set forth.

The rotatable supporting frame D is of novel construction, and is compactly assembled for rotation upon and within the stationary supporting frame C. The same includes an inner frame ring 40, which is T-shaped in cross section, and an outer frame ring 41, concentrically arranged with the ring 40, which is channel shaped in cross section. The inner ring 40 includes the annular band portion 42 providing an inner smooth circumference, within which the large ring gear 43 is positioned, which meshes with certain details of the drive mechanism H, as will be subsequently described, to effect rotation of the supporting frame D. The horizontal outwardly extending flange 44 of the inner ring 40 is adapted to support a plurality of radial connecting plates 45, which may be suitably riveted to said flange 44, and upwardly connected as by riveting to a horizontal leg portion of the channel ring 41. The rotatable supporting frame D is carried by roller bearings upon the stationary frame portion C. These roller bearings consist of brackets 50 carried outwardly at the ends of the cross braces 27, upon the ends of which vertical roller bearings 51 are supported, for rolling within the pocket of the outer ring member 41 of the movable frame D. To prevent the lateral shift or binding action of the rotatable frame D with respect to the stationary frame C, it is preferred to provide an auxiliary annular member 55, angle shaped in cross section, supporting a plurality of rollers 56 in substantially horizontal plane, which engage the outer circumference of the T-shaped frame ring 40, substantially as is illustrated in Figure 2 of the drawings. In this manner, the movable frame D is rotatably supported within the stationary supporting frame details above described. If preferred, additional roller bearing devices 57 may be carried by stationary details of this invention for engagement with the lower circumferential marginal edges of the ring 40 and ring gear 43, substantially as is illustrated in Figure 2 of the drawings.

Referring to one of the shovel arrangements E, the same includes a relatively short shaft 61, which is rotatably supported by bearings 62 and 63a upon a radial plate 45, of the rotatable frame D. This shaft 61 extends outwardly beyond the circumferential surface of the adjusting frame ring 38, and is connected by means of a universal joint structure 63 to a sleeve 64 of the adjustable shovel beam 65. A portion 66 of the beam 65 is telescopically disposed within the sleeve beam portion 64, and has the shovel or scoop member 67 carried at the free end thereof. The beam 65 is extensible and may be adjusted in any approved manner. A frame 68 is provided for each of the shovel arrangements E, which includes the front cross bar 69 carried by the diagonal brace or supporting bars 70 attached at their inner ends to the movable frame D, substantially as is illustrated in Figure 3 of the drawings. Lateral cables 71 are connected at their ends to the frame 68 and diagonally extend in converging relation for attachment to a swivel member 72 connected outwardly of the adjustable shovel beam 65. It is of course understood that the cables 71 prevent lateral sway of the shovel beam, after having been adjusted as to length.

Referring to the construction of a scoop or shovel member 67, the same is preferably polygonal in formation, including side plates 75 suitably riveted along their longitudinal edges. One end of the shovel 67 is open entirely to provide for entrance of material to the compartment 76 of the scoop or shovel, and upon opposite sides of the open end of the shovel, a series of picks or digging blades 77 are carried, which extend outwardly of the plane of the opening of the shovel member. At the opposite end of the scoop or shovel 67 a closure arrangement 78 is provided, which includes a pair of lids 79, hingedly connected at opposite supporting walls, as at 80. A novel latch mechanism 81 is provided, which will be subsequently described. A stationary supporting platform 85 for the operator of the improved excavating machine is provided, which is supported upwardly of the movable frame D. This platform 85 will be flat and circular in outline, and suitably supported by standards or angle posts 86, which extend upwardly from the plane of the chassis and movable supporting frame

of this invention; the lower ends of said posts or standards 86 being suitably attached to details of the chassis and stationary frame, as is well illustrated in Figures 2 and 3 of the drawings. These supporting posts 86 extend upwardly above the operating platform 85, and are adapted to support certain details of the winch mechanism F. The platform 85 is provided with an outer annular series of openings 89, and an inner annular series of openings 90 preferably disposed in staggered relation intermediate the spaced outer openings 89. The openings 89 are adapted to receive detachable pins 91, while the openings 90 preferably receive detachable pins 92; said pins 91 and 92 being provided as trip pins for automatic control of the closure lids 79 of the scoop or shovel 67. To this end, levers 94 and 95 are oscillatively carried by the cross beam 69 of the excavator shovel frame 68; said levers 94 and 95 including upper relatively long and relatively short arms 97 and 98 respectively, and lower cross arms 99, extending to each side of the pivot points of the levers, and the run of which are substantially at right angles to the run of the upper arms of said levers.

Referring to the latch mechanism 81, the same includes a latch arm 100, pivoted as at 101 to a wall 75 of the scoop or shovel 67, and having an opening 102 therein within which extension lugs 103 of the closure lids 79 are adapted to seat when the lids are closed, in order to hold them in locked relation. A spring 104 normally urges the latch member into locked position, substantially as is illustrated in Figures 9 and 10 of the drawings. The oscillating lever 94 may appropriately be termed the dumping lever of the excavator shovel device E, and has the ends of its cross arm 99 connected to the latch member 100 by means of a double length cable 106. Upon movement of the rotatable supporting frame D about the stationary supporting frame, the excavator shovel device E will of course be moved, and after the shovel has been filled with ground or the material to be excavated, and carried to a designated point, the lever portion 97 will engage a pin 92 positioned in a desired aperture 90, and upon further relative rotation of the excavator shovel arrangement E, the lever 94 will be rocked to release the scoop lids 79 to dump the material in the scoop. By movement of the lever 94 past pin 92, through rotation of frame D in either direction, the cables 106 will actuate the lids 79 to open the same. Immediately after the material has been dumped and while the excavator shovel is still rotating, the arm 98 of the lever 95 will engage a pin 91, and which will pull upon a cable 110 trained over a pulley 111 at the excavator shovel 67, for drawing the lids 79 of the shovel into latched position. This cable 110 is of double length, being connected at the ends of the cross arm 99 of lever 95, and having a yieldable spring or analogous element 113 connected therein to permit of some extension of the cable after the scoop lids have closed, which will positively insure the closing of the scoop closure members at all times. As is the case with lever 94, lever 95 may perform its operation when passing the pin 91 from either side. It is to be noted that the top arm 97 of the dumping lever 94 is crimped, as to not hit any of the pins 91.

This invention includes a novel arrangement to oscillate the shovel beam 65 at the proper time, to permit the righting of the same into excavating position, and after having excavated a desired quantity of earth to position the shovel for carrying the load to a desired point for dumping. This arrangement includes a cam trackway 115 which is attached to the outer circumference of the adjusting ring 38. The cam trackway 115 is of novel formation, including the upwardly inclined end portions 116 and 117, and the intermediate straight or horizontal runway portion 118 toward which the end portions 116 and 117 converge. The trackway is channel shaped and provides a groove or pocket extending longitudinally through the portions 116, 117 and 118. A novel type of lever 120 is carried by the scoop shaft 61, rigid or keyed thereto, and at its free end providing a pair of spaced rollers 122 and 123. Assuming the shovel device or apparatus to have disposed of its load, and after the closure arrangement 78 is latched as hereinbefore described, the moving frame D will carry the shovel apparatus with the shovel 67 in its vertical position, substantially as is illustrated in Figure 9 of the drawings. In this position, the lower rollers 122 and 123 will be in horizontal alignment, and the roller 122 will enter the trackway portion 116, and upon further movement of the shovel apparatus the lever 120 will be rocked to slowly oscillate the shovel shaft 61. This will slowly turn the shovel member 75 into excavating position. When the roller 122 enters the groove of the cam trackway portion 118, the lever 120 will then be positioned substantially as is illustrated in Figure 4 of the drawings, and the shovel 67 will be in its excavating position substantially as is illustrated in Figure 1 of the drawings at the right hand shovel apparatus E. At this point, the operator releases the winch mechanism, to effect the excavating operation, and after the shovel or scoop is filled with material, the roller 122 will enter the trackway portion 117, and the lever 120 will be slowly rocked to oscillate the scoop shaft 61 to position the shovel 67 in its vertical

carrying position, substantially as is illustrated in Figure 9 of the drawings. The dumping of the material at any desired point is effected as above described. The excavating operation may be effected by rotary movement of the frame in either direction, in the one case roller 122 will enter the cam trackway 115, as above described, and for rotation of the frame in opposite direction roller 123 will enter the trackway to perform the excavating action.

Referring to the winch mechanism F for vertical control of the shovel apparatus E, a housing 125 is carried upon an annular trackway 126 for rotation. The trackway 126 is angle shaped in formation and supported in a horizontal plane by the upper ends of the supporting posts 86, providing a horizontal runway flange 127 and an annular vertical flange 128. The extreme upper ends of the posts 86 support the annular band 129 having a series of horizontal roller elements 130 rotatably carried thereby for lateral stability of the housing 126 during rotation thereof. The housing 125 may include the annular side wall 132, and the floor 133. Roller bearing elements 135 may be positioned upon the runway flange 127 for supporting the housing 125 in antifriction manner, while bearings 137 may be carried by the housing for engagement with the flange 128 of the trackway 126. In this manner, the housing 125 may be rotated at the upper ends of the supporting posts 86 in stable manner to support operating details of the winch mechanism.

Any number of shovel devices E may be provided as above mentioned, and in connection with each shovel device, a winch drum 140 is rotatably supported by bearings 141 within the compartment of the winch housing 125 for rotation on a horizontal axis. The drum or winch 140 is operated by a mechanism 145 as a part of the drive means H, and has a cable 146 trained thereover for control of the shovel beam 65 for swinging upon its universal joint 63. A super structure 147 is preferably carried by the winch housing 125, rotatably supporting a pulley 148 over which the cable 146 is trained directly from the winch 140. A second pulley 149 is rotatably carried at the extreme end of the superstructure 147, over which the cable 146 is trained from the pulley 148 and extends downwardly and is trained about a pulley structure 150 swivelly carried by the swivel piece 72 at the outer end of the shovel beam 65. The cable from this point is trained rearwardly toward the superstructure 147 and is again trained over a pulley 152 rotatably carried adjacent the pulley 149. From this pulley 152 the cable is trained again toward the pulley structure 150 and is rigidly affixed thereto in the well known manner. By this arrangement, upon operation of the winch or drum 140, the cable 146 may be played out or wound, with respect to the winch 140 to lower or elevate the beam 65 of the shovel apparatus E.

The prime mover G is carried upon the operating platform 85 and may be of any of the well known types, including the drive shaft 160 having the bevelled gear 161 on the free end thereof. Intermediate the bevelled gear 161 and the engine or motor G, a clutch mechanism 162 is provided, which may be suitably controlled by an operating lever 163. A vertical shaft arrangement is provided, including an upper section 164 and a lower section 164^a. At the point of juncture of the aligning shaft sections 164 and 164^a, a selective clutch mechanism is positioned for drive of the shaft sections. Upwardly of this clutch mechanism, a bear- 164^b supports the shaft 164 upon the platform 85, so that the shaft 164 may extend into the winch housing 125 for connection to winch mechanism, as will be subsequently described. The lower shaft section 164^a is rotatably supported at its upper end by a bearing 164^c upon the platform 85, and has a bevelled gear 165 carried at its lower end in meshing relation with the gears 166 of a transverse shaft 167. The transverse shaft 167 is preferably in sections, carrying the gears 166, and drives the vertical relatively short shaft 168 through bevelled gear connections 169. Upon the shafts 168 spur gears 170 are carried in meshing relation with the ring gear 43 of the rotatable supporting frame D. The shafts 167 and 168 may be suitably journalled in any appropriate bearings in the stationary and movable supporting frames C and D, to properly stabilize the same.

Referring to the clutch mechanism at the junctures of the upper and lower shaft sections 164 and 164^a respectively, the same preferably includes bevelled gears 175 and 176 which are respectively keyed and loosely mounted for rotation upon the shaft sections 164 and 164^a; said bevelled gears being normally in meshing relation with the bevelled gear 161 of the engine drive shaft 160. A sleeve 175^a is splined or feathered upon the lower shaft section 164^a, and operating intermediate the bevelled gears 175 and 176, as by a control mechanism 177. The juncture point 176^a of the shaft sections 164 and 164^a is preferably at a point proximate the gear 175. The upper and lower surfaces of the splined sleeve 175^a are preferably provided with projections 177^a, adapted for engagement in the bevelled gears 175 and 176, for connection of said gears to the splined sleeve. It is obvious that the winch shaft 164 is always driven upon operation of the engine drive 160, and when the clutch 162 is in engagement to effect rotation of the gear 161. Due to the

rotatable mounting of the bevelled gear 176 on the lower shaft section 164ᵃ, said section is normally stationary when the splined sleeve 175ᵃ is in neutral position with respect to the gears 175 and 176. However, if it is desired to rotate the shaft 164ᵃ in one direction, it is merely necessary to shift the splined sleeve 175ᵃ, by the control mechanism 117, to engage the bevelled gear 175 and the shaft section 164ᵃ will be connected for rotation with the shaft section 164. If it is desired to rotate the shaft 164ᵃ in an opposite direction, it is merely necessary to shift the spline sleeve 175ᵃ into driving engagement with the bevelled gear 176, and the shaft 164ᵃ will be connected for rotation with the bevelled gear 176, as is obvious. By means of this structure, the winch mechanism may be operated independent of movement of the supporting frame D, and as the winch mechanism embodies a clutch device of its own, the converse is true.

At its upper end within the compartment of the winch housing 125, the drive shaft section 164 carries a bevelled gear 180, which is adapted for meshing with a bevelled gear 181, carried by a bearing 182 within the housing 125 and upon a shaft 183. Upon the opposite side of the bearing 182 and upon the shaft 183, a bevelled gear 184 is carried for meshing with bevelled gears 185 and 186 splined in any approved manner upon a vertical shaft 187 within the winch housing.

A tubular member or sleeve 190 is reciprocably carried by the shaft section 164, having the upper end thereof pivotally attached to an end of a lever 192 within the winch housing. The lever 192 is pivotally connected intermediate its ends, as by a bearing 193, to the floor of the housing 125 and is connected by levers 194 and 195ᵃ to a clutch mechanism 196ᵃ which may be selectively operated to key either of the gears 185 or 186 to the shaft 187 for the drive of the latter in either direction about its axis. A worm 195 is carried by the vertical shaft 187 in meshing relation with a worm gear 196 carried by the winch.

At its lower end exteriorly of the winch housing, the slidable sleeve 190 is engaged by a system of operating levers 199 which lead to a control lever 200 pivoted upon the operating platform 85, and by means of which the operator may slide the sleeve 190 upon the driven shaft 194 for winding or unwinding of the cable 147 upon the winch 140, as can be readily understood. Other winch mechanisms may be provided within the winch housing 145 for operation of any number of shovel devices E desired, it merely being necessary to duplicate the parts herein described, and substantially as is illustrated in Figures 2, 6, and 7 of the drawings.

From the foregoing description of this invention, it is obvious that an excavating machine has been provided, which while relatively simple and compact in arrangement is yet automatic in operation, and will necessitate a minimum of attention upon the part of an operator to effect the various control actions thereof. The scoop apparatus E is substantially automatic in operation and it is merely necessary for the operator to rotate the supporting frame D from the excavating position or location, and the load will be automatically righted for carrying purposes and automatically dumped at the desired position without action on the part of the operator. An important feature of this invention is the provision of the adjustable cam supporting ring 38 which may be manually adjusted to a desired place of excavation, and the shovel apparatus will be automatically controlled from its vertical carrying position to an excavating position at the desired point, necessitating but the attention of the operator in lowering the scoop beam to effect the disposition of the dirt or other material in the scoop or shovel.

Any suitable type of vehicle propelling mechanism may be provided, and in fact it is contemplated to drive the vehicle from the prime mover D. The improved machine will find universal use in connection with highway construction and building construction, as the same readily adapts itself for working in very close quarters.

Various changes in the shape, size and arrangement of parts may be made to the form of invention herein shown and described without departing from the spirit of the invention or the scope of the claims.

I claim:

1. An excavating machine comprising a frame including a stationary portion and a turntable portion, means providing a cam way upon said stationary frame portion, a shaft rotatably bearing on said turn table portion extending laterally thereof, an excavating shovel connected for universal movement to the outer end of said shaft, and a lever carried by said shaft including members adapted to engage in the cam way whereby the shaft may be axially moved for oscillation of said shovel into loading and carrying positions.

2. An excavating machine comprising a frame including a stationary portion and a turntable portion, a member carried exteriorly of the stationary portion providing a cam way including outer upwardly inclined guideways and an intermediate horizontal guide way, a shaft rotatably supported by the turn table upwardly thereon extending laterally thereof, a shovel, a shovel beam connected by a universal joint to said shaft, and a lever rigid with said

shaft including spaced roller portions adapted for riding in the cam way whereby upon movement of the shovel on the turn table with respect to the stationary frame portion, said rollers may engage in said cam way for moving the shovel nto loading and load carrying positions.

3. In a machine of the class described, the combination of a supporting chassis, an annular band carried by said supporting chassis rigid therewith, an outer annular band adjustably carried by said first mentioned annular band, a turn table, anti-friction means supporting said turn table with respect to said chassis and first mentioned annular band, a ring gear carried by said turn table axially thereof, drive means for said ring gear, a shovel apparatus carried by said turn table extending laterally thereof for rotation on its axis, and means carried by said shovel apparatus and said second mentioned adjustable annular band for selective positioning of the shovel apparatus in loading and load carrying positions.

4. An excavating machine comprising a stationary frame, a movable frame rotatably carried by the stationary frame, a shovel device including a beam and shovel member, a stub shaft rotatably bearing on the movable frame universally jointed at an end to said shovel beam, a winch mechanism upwardly of the movable frame including a cable extending for connection to the shovel end of the shovel beam, a prime mover carried by the stationary frame, and means connecting the movable frame and winch for drive by said prime mover.

5. An excavating machine comprising a stationary frame including a supporting platform, posts carried by the supporting platform extending upwardly thereof, a trackway carried by said post upwardly of the platform, a rotatable frame upon said stationary frame, a shovel device carried by the rotatable frame, a housing rotatably carried by the trackway of the stationary frame upwardly of the supporting platform, a winch mechanism disposed within said housing including a cable for supporting the free end of the shovel device, a prime mover on the stationary platform, and means for connecting the prime mover and winch member and rotatable platform for operation.

6. An excavating machine comprising a stationary frame portion, a movable frame portion, a shovel apparatus carried by said movable frame portion, supporting posts carried by the stationary frame portion extending upwardly above the movable frame portion, a housing rotatably carried upwardly of said supporting posts, a winch rotatably disposed within said housing, cable means extending from said winch to support said shovel device at the free end of the latter, a prime mover carried by the stationary frame, and drive means for drive of said winch from said prime mover including a reversing mechanism.

7. An excavating machine comprising a frame including a stationary portion, and a turntable portion, a shovel apparatus carried by the rotatable frame portion including means whereby the same may be axially rotated, means carried by said shovel apparatus and the stationary frame portion for automatically operating the shovel apparatus into loading and carrying positions at designated points in the movement of the shovel with respect to the frame, a winch mechanism upwardly carried by said stationary frame portion and connecting the free end of the shovel apparatus for movement of the latter, and means for automatically releasing the load of the shovel apparatus at a designated point during movement of the shovel about the stationary frame portion.

8. A winch mechanism comprising a stationary frame portion, a movable frame portion, a shovel apparatus carried by the movable frame portion including a closure arrangement, levers carried by the shovel apparatus, a cable trained from one of said levers to the closure arrangement, a latch mechanism for the closure arrangement, a cable trained from the second of said levers to said latch mechanism, and adjustable pins carried by the stationary frame portion adapted to be positioned whereby said levers may be selectively operated for releasing and closing the closure arrangement of said shovel apparatus.

9. An excavating mechanism comprising a stationary frame, a rotatable frame carried by said stationary frame, an adjustable band carried by said stationary frame outwardly thereof, a cam way carried by said adjustable band including a continuous way providing end upwardly inclined portions and an intermediate substantially horizontal portion, a shaft rotatably carried upwardly of the rotatable frame extending laterally of the adjustable band, a shovel element including closure lids, a shovel beam, a universal joint connecting the shovel beam to the shaft rotatably carried by said rotatable frame, a lever rigid with said shaft including spaced rollers at the free end thereof, adapted for selective riding in the cam way outwardly of said adjustable band whereby the shovel beam may be axially moved to position the shovel in loading and load carrying positions, a winch mechanism for vertical control of the shovel beam, levers oscillatively carried by the rotatable frame, a cable trained from one of said levers to the closure lids of said shovel, a latch mechanism for the closure lids of said shovel, a second cable trained from the second of said levers to said latch mechanism, and detachable pins carried by said stationary frame for selective engage-

ment with said levers to automatically control the closure lid of said shovel for releasing and closing of the same at predetermined points during rotation of the shovel.

10. An excavating machine comprising a stationary supporting frame, a movable supporting frame rotatably carried on the stationary supporting frame, means providing a cam way on said stationary frame, a shovel device including a radially disposed arm oscillatively bearing on the movable supporting frame, and an operating lever fixed on said arm extending laterally thereof and including portions adapted to engage in the cam way during rotation of the movable frame on the stationary frame whereby to laterally tip the shovel for automatically positioning the same in loading and load carrying positions.

11. An excavating machine comprising a stationary frame, a turn table carried by the stationary frame, shovel means pivoted on the turn table, a prime mover mounted on the stationary frame, a winch mechanism for pivotally moving said shovel means, means for connecting the winch mechanism for drive by said prime mover, and means rotatably connecting the turn table to said prime mover for rotation thereby in either direction about its axis.

12. An excavating machine comprising a stationary frame, a turn table, shovel means pivoted upon the turn table, a prime mover on the stationary frame, winch mechanism for pivotally moving the shovel means including a shaft, a gear fixed for rotation with said prime mover, a gear carried by said winch shaft in meshing relation with the prime mover gear, a shaft rotatably supported by the stationary frame on the axis of rotation of said turn table, means connecting said shaft to said turn table so that upon rotation of said shaft, motion will be imparted to the turn table, a gear idling on said shaft in meshing relation with the prime mover gear, and clutch means feathered on said last mentioned shaft adapted to be selectively keyed to the idler gear of said shaft and the shaft of said winch mechanism to effect rotation of the turn table in either direction about its axis.

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