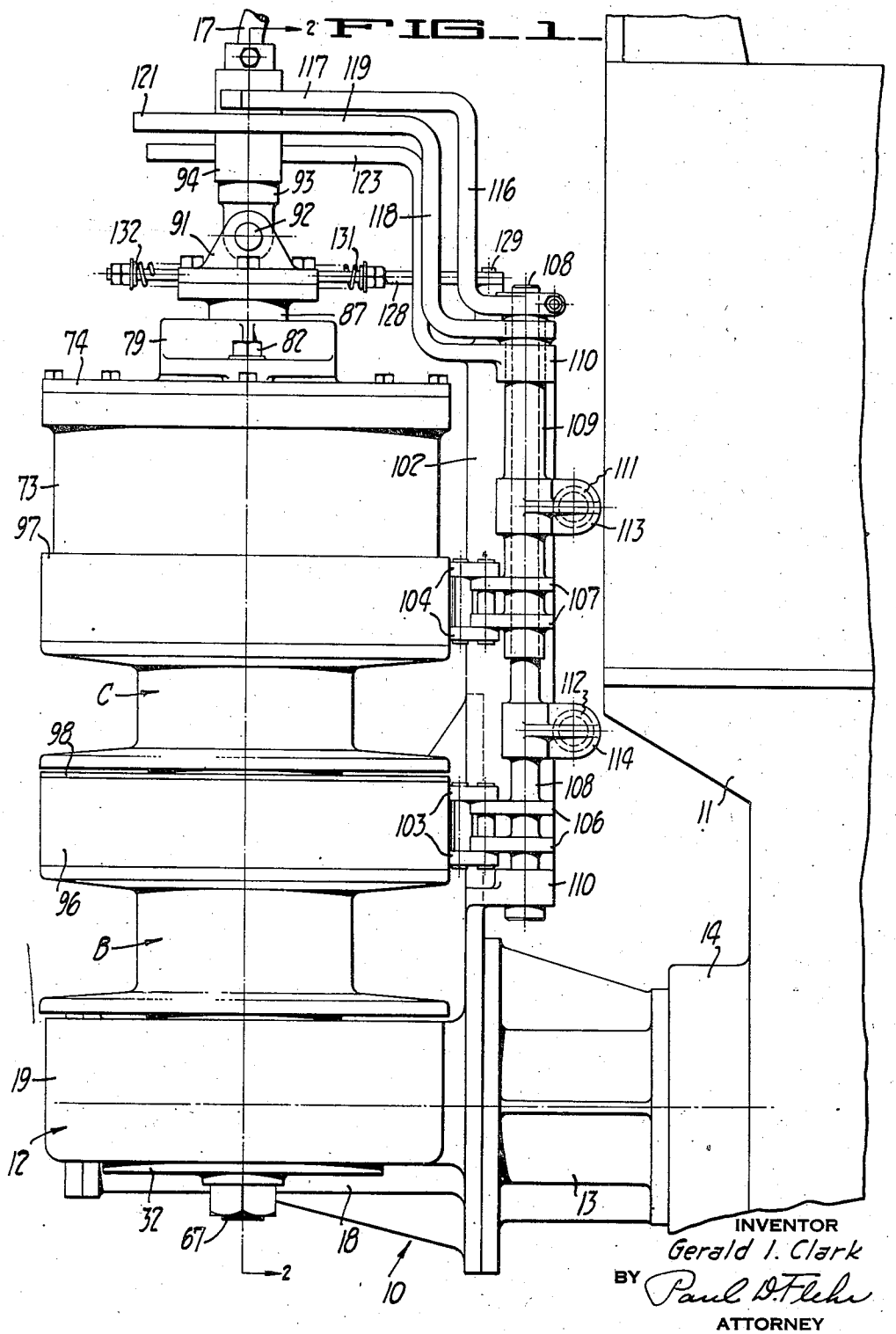
Jan. 20, 1942. G. I. CLARK 2,270,507

WINCH CONSTRUCTION

Filed Nov. 20, 1939 4 Sheets-Sheet 1

FIG. 1



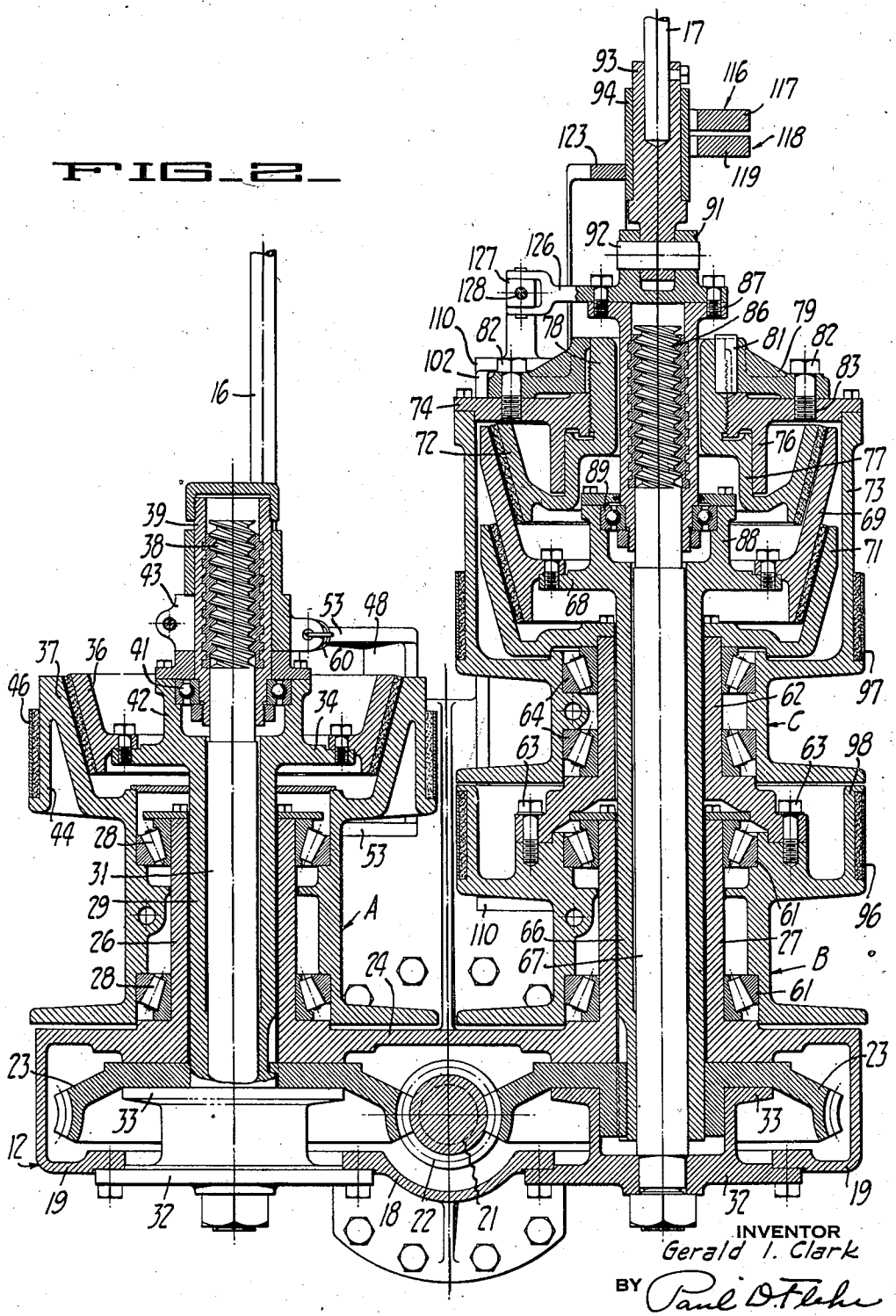
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WINCH CONSTRUCTION

Filed Nov. 20, 1939 4 Sheets-Sheet 2

FIG. 2.



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WINCH CONSTRUCTION

Filed Nov. 20, 1939 4 Sheets-Sheet 3

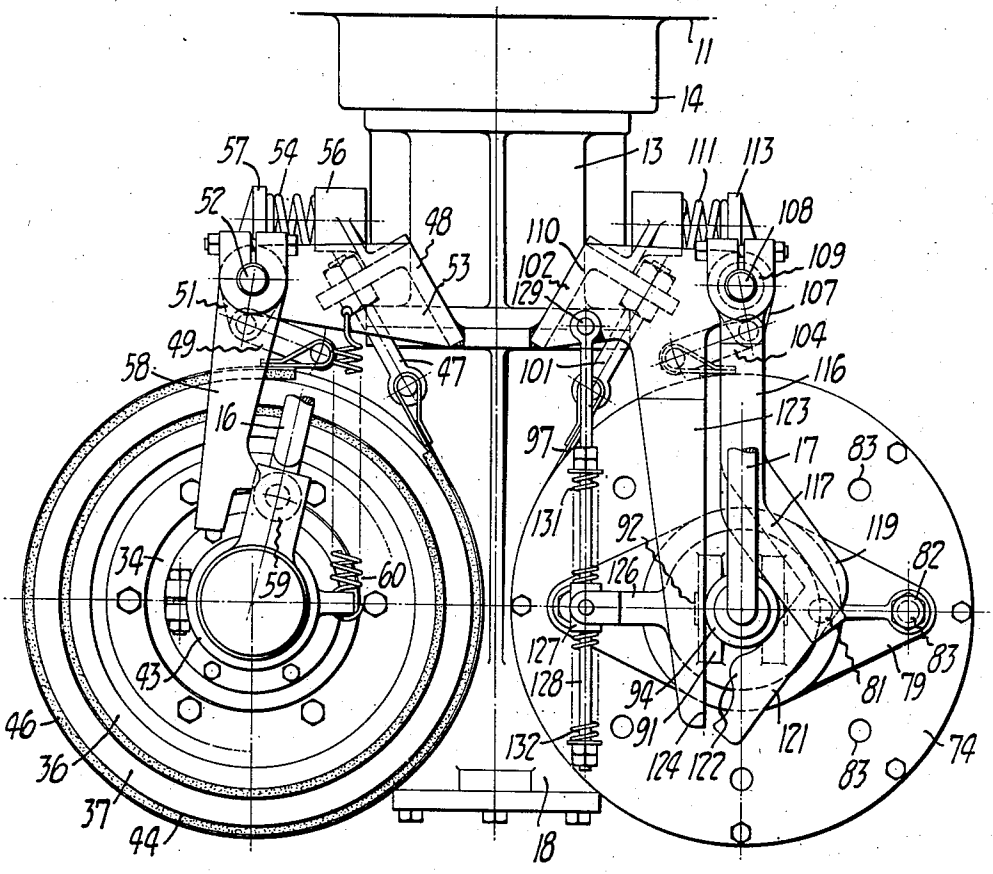


FIG. 3

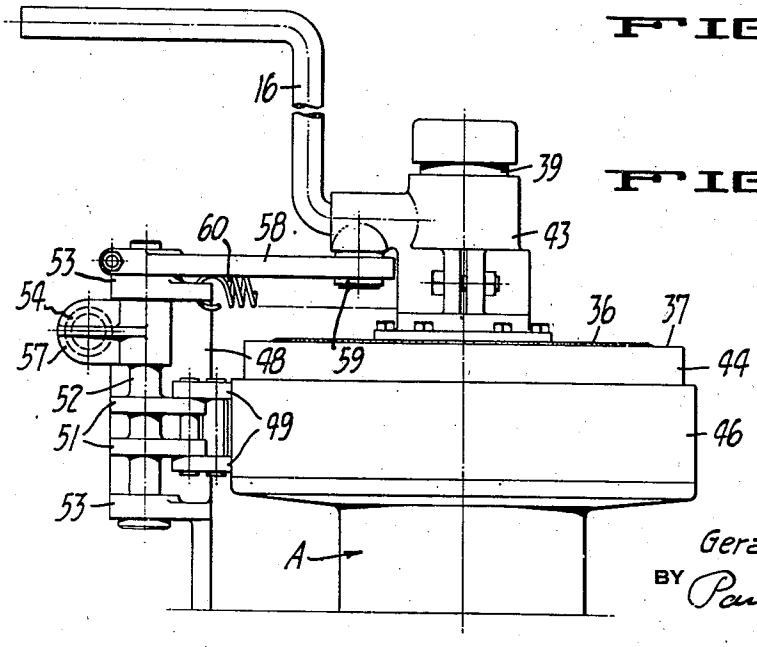


FIG. 4

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Jan. 20, 1942. G. I. CLARK 2,270,507

WINCH CONSTRUCTION

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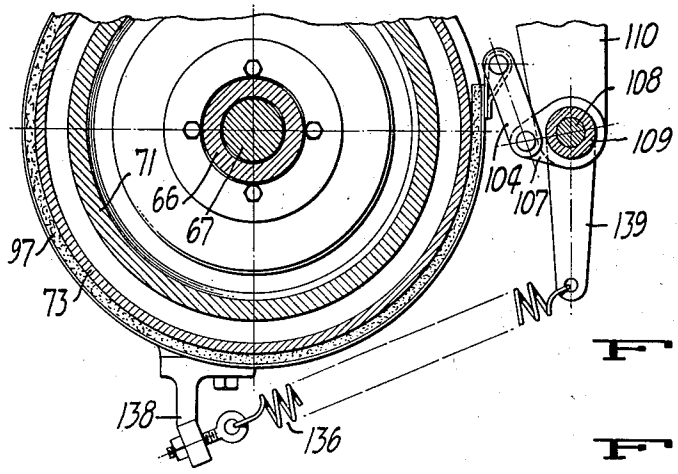
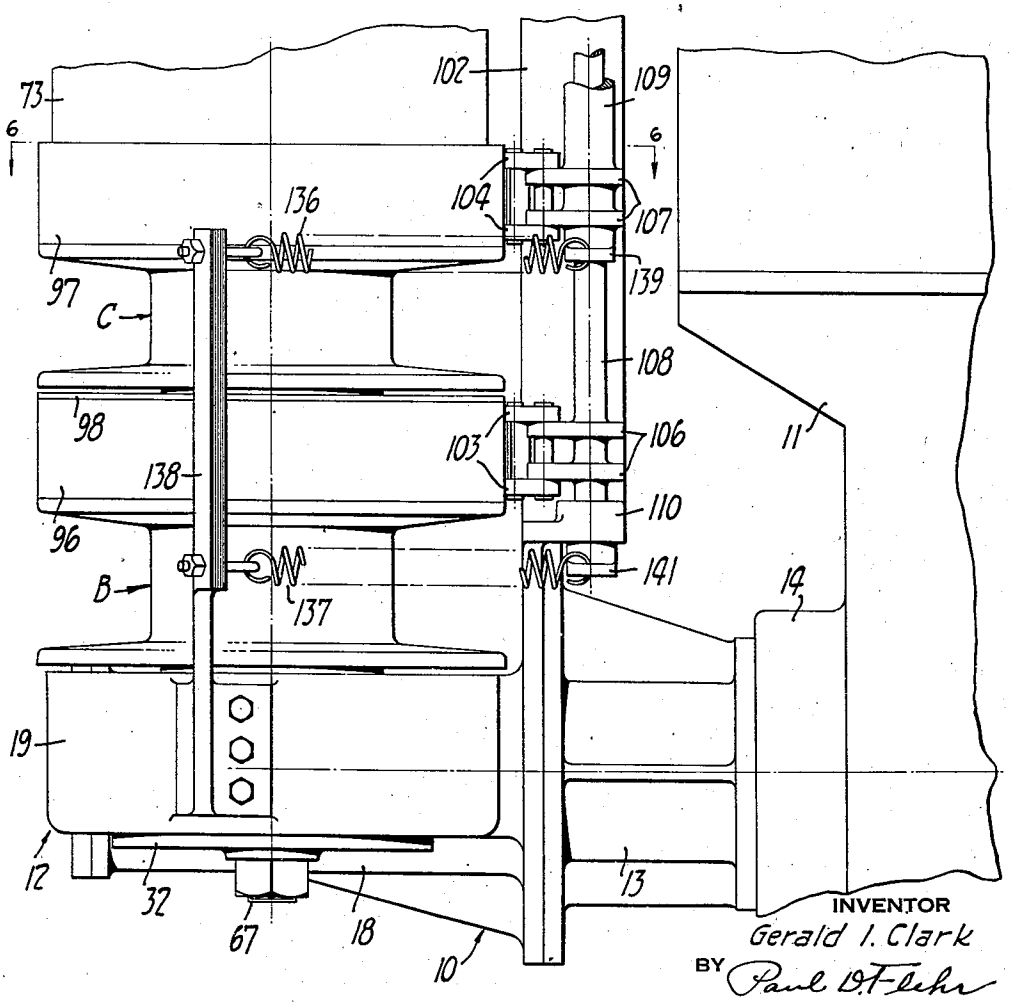


FIG. 6.

FIG. 5.



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Patented Jan. 20, 1942

2,270,507

UNITED STATES PATENT OFFICE

2,270,507

WINCH CONSTRUCTION

Gerald I. Clark, Mountain View, Calif., assignor, by mesne assignments, to Hugh A. Hutchins, Arcadia, Calif.

Application November 20, 1939, Serial No. 305,224

14 Claims. (Cl. 254—185)

This invention relates generally to winch units of the type making use of a plurality of drums for winding up or playing out separate ropes or cables. More particularly, it relates to multiple drum winch units adapted for attachment to present day tractors for operation of various equipment such as road making machines, hoists, scrapers, earth movers, and the like.

It is an object of the invention to provide a winch unit having an improved type of control, thereby making possible selective operation of two or more drums in a simplified manner. In this connection the invention is characterized by use of a control lever having a plurality of operating positions for selective operation of the clutching and braking means for two drums.

Additional objects and improved features of the present invention can be briefly reviewed as follows: To afford improved means for mounting and journaling two or more alined winch drums upon a supporting housing; to afford a novel type of clutching mechanism which can be readily operated to apply power to either one of two alined drums; and to provide an assembly which is capable of severe service without undue wear or deterioration, and which can be adjusted and serviced without undue difficulty.

Additional objects of the invention will appear from the following description in which the preferred embodiment of the invention has been set forth in detail in conjunction with the accompanying drawings.

Referring to the drawings:

Figure 1 is a side elevational view illustrating a winch unit incorporating the present invention;

Figure 2 is a rear elevational view, in cross section, taken along the line 2—2 of Figure 1;

Figure 3 is a plan view of the winch unit;

Figure 4 is a side view of a portion of the winch unit looking towards the opposite side from that viewed in Figure 1;

Figure 5 is a fragmentary side view of a portion of the winch unit, but showing a modified arrangement of springs for tensioning the brake bands; and

Figure 6 is a cross sectional detail taken along the line 6—6 of Figure 5.

The winch unit illustrated in the drawings incorporates features disclosed and claimed in Hutchins Patent No. 2,171,792, granted September 5, 1939, and entitled "Attachment for tractors and the like." The unit disclosed in that instance has drums mounted side by side and independently controlled by two operating levers. The winch disclosed in the present application has two drums controlled from a single lever, and in conjunction with such two drums one or more additional drums can be employed for handling supplemental ropes or cables.

Referring first to Figure 1, the winch unit is designated generally at 10, and is shown applied as an attachment to a tractor 11. The unit itself includes a housing 12 which carries the winch drums A, B and C. The housing 12 is bolted to an adapter 13, which in turn is clamped to the portion 14 of the tractor, from which a drive shaft extends. Drum A is controlled by a lever 16, while drums B and C are controlled by lever 17.

The housing 12 can be made of suitable material such as cast steel, and includes a central portion 18 and side extensions 19. The drive shaft 21 (Figure 2) extends through the intermediate housing portion 18 and carries a driving worm 22. This worm engages the two worm gears 23 which in turn drive the drums as will be presently explained.

To describe the mounting of the drums and the parts associated with the same, the upper wall 24 of the housing carries a pair of rigid tubular extensions 26 and 27, in alignment with the gears 23. These extensions may be integral with the housing as shown, or they may be made as separate parts rigidly bolted or otherwise secured to the housing. Suitable journalling means such as roller bearing assemblies 28 serve to journal the drum A upon the tubular extension 26, whereby all of the lateral forces applied to this drum are transmitted to the extension 26. Extending upwardly through extension 26 there is a tubular drive shaft 29 and also a stationary rod or shaft 31. The lower end of drive shaft 29 is splined to the worm gear 23 so that it may move a limited amount in a vertical direction. The lower end of shaft 31 is rigidly attached to a plate or disc 32 which in turn is rigidly bolted or likewise secured to the lower wall of housing 12. This plate is also shown provided with a thrust flange 33, which engages the lower face of gear 23.

Above the drum A, clutch elements are provided for connecting the drive shaft 29 with the drum. Thus, the upper end of the drive shaft 29 is provided with a flange 34, which in turn serves to carry the conical clutch element 36. Clutch element 36 can engage with the conical clutch element 37 formed upon the upper end of the winch drum.

To actuate clutch element 36, the upper end

of shaft 31 is provided with a threaded portion 38 which is engaged by a nut 39. A ball bearing assembly 41, or other suitable type of journaled means connects the lower portion of nut 39 with a hub 42 formed on the flange 34. Thus, upon turning nut 39 in one direction, clutch element 36 together with shaft 29 is raised to disengaged position, while turning the nut in an opposite direction serves to shift element 36 downwardly to engaged position, whereby the drum A rotates together with shaft 29. The control lever 16 is secured to the nut 39 by means of a clamp 43.

The upper part of the drum A is also provided with a brake drum 44 which is adapted to be engaged by the brake band 46. One end of this brake band is shown anchored to an adjustment tie-bolt 47 (Figure 3) which in turn is secured to the rigid upright 48. The lower end of upright 48 is suitably mounted upon the housing 12. The other end of the brake band is pivotally connected to the links 49, which in turn are pivotally connected to the arms 51, carried by a vertical rock shaft 52. The upright 48 has suitable brackets 53 serving to carry and journal the rock shaft 52. Shaft 52 is normally urged in a counterclockwise direction, as viewed in Figure 3, by a suitable spring, such as a compression spring 54. One end of this spring is seated upon a suitable bracket 56, carried by upright 48, while the other end engages an arm 57, carried by rock shaft 52. Normally the brake band 46 grips the brake drum 44 to prevent rotation of the winch drum A in a clockwise direction as viewed in Figure 3. However, the brake is self releasing when the drum is driven in a counter-clockwise direction. To release the brake band 46 manually, by manipulation of the control lever 16, a lever 58 is secured to the upper end of rock shaft 52 and extends toward the nut 39. Clamp 43 carries a cam roller 59 which engages and moves lever 58 when the nut is rotated in a counterclockwise direction, as viewed in Figure 3. Rotation of lever 58 in a clockwise direction as viewed in Figure 3 serves to effect release of the brake band 46, thus permitting the winch drum A to unwind. Thus, swinging the forward end of control lever 16 horizontally between two extreme positions from a neutral position, serves either to establish a drive connection to the drum A, to wind up the cable or rope, or in the opposite extreme position to release the brake and permit the cable to play out. In the intermediate neutral position, the drum is locked against rotation and remains stationary. A spring 60 serves to retain lever 16 in neutral position. One end of this spring is connected to a lug on clamp 43, while its other end is attached to the bracket 53.

The mounting of drum B is similar to drum A. Roller bearing assemblies 61 serve to journal the drum to the tubular extension 27. The upper end of drum B carries another tubular extension 62, the lower end of which is flanged and secured to the upper end of the drum B as by means of bolts 63. Drum C is suitably journaled to the extension 62, as by means of roller bearing assemblies 64. As will be presently explained, the upper end of extension 62 connects with one of the clutch elements for applying torque to the lower drum B. Therefore, extension 62 serves to transmit lateral thrusts applied to drum C, to the lower drum B, and at the same time serves to transmit torque to the lower drum.

Extending upwardly through the extensions 27 and 62, there is a tubular shaft 66 and also a stationary shaft 67. The lower end of shaft 67 is secured to a plate 32, which in turn is attached to the housing, in the same manner as described for shaft 31. The upper end of tubular shaft 66 is provided with a flange 68 to which is secured the conical clutch element 69. Below clutch element 69 there is a conical clutch element 71, secured to the upper end of extension 62. Above the clutch element 69 there is a conical clutch element 72 which is adjustably mounted upon a cylindrical shell 73, this shell being in turn a part of or secured to the upper end of drum C.

As a convenient and desirable type of mounting for clutch element 72, a plate 74 is shown clamped upon the upper end of shell 73, and the lower face of this plate carries a depending annular flange 76. The clutch element 72 is carried by a cylindrical portion 77 which is slidably fitted in annular flange 76, and portion 77 is secured to a cylindrical portion 78 of smaller diameter, which is externally threaded and which has threaded engagement with the plate 74. A member 79 is bored to accommodate extension 78, and these parts are splined together by means of a pin 81. Member 79 is secured to the plate 74, as by means of screws 82. By removing these screws, member 79 can be turned to rotate the clutch element 72 (and its threaded portion 78) relative to the plate 74, thus raising or lowering the clutch element to a desired position. When a desired adjustment has been obtained, the screws 82 can be re-inserted in threaded holes 83, provided for that purpose in plate 74.

The upper end of stationary shaft 67 has a threaded portion 86 engaged by the internally threaded nut 87. It is desirable to use a double thread in order to increase the travel of the nut for given increments of turning movement. The upper end of shaft 66 has an enlarged hub 88 which is connected to the lower end of nut 87 by means of ball bearing assembly 89. Thus, turning nut 87 between limiting positions moves clutch element 69 together with shaft 66 to either establish driving engagement with clutch element 72 and thereby rotate the upper drum C, or to engage clutch elements 69 and 71 and thereby drive the lower drum B.

A bracket 91 is mounted upon the upper end of nut 87, and this bracket carries a pivot pin 92 extending horizontally and at right angles to the axis of shaft 67. The lower end of lever 17 is secured to a shank 93, which in turn is journaled to pin 92. The shank 93 also serves as a mounting for the cam roller 94, which is for a purpose to be presently explained. The pivotal connection of lever 17 with the nut 87 permits swinging of lever 17 in a vertical plane coincident with the axis of shaft 67 without turning nut 87. Movement of the forwardly extending portion of lever 17 in a horizontal plane in opposite directions to turn the nut 87 establishes drive connection to either drums B or C, as previously described. Intermediate the two extreme operating positions there is an intermediate position in which the clutch element 69 will be disengaged with respect to both elements 71 and 72 so that neither drum is driven.

The winch drums B and C are also provided with brake bands 96 and 97. Band 96 surrounds a cylindrical brake drum 98 carried by the upper end of drum B. Band 97 engages the lower portion of the cylindrical shell 73. Corresponding ends of both the bands 96 and 97 are anchored to tie bolts 101, which in turn are secured to the rigid upright 102. The other ends of the bands 96 and 97 are secured respectively to

the links 103 and 104. These links are pivotally connected to the arms 106 and 107, which in turn are carried by the aligned shafts 108 and 109. Shaft 109 is in the form of a tube, through which shaft 108 extends. Both shafts are suitably carried by brackets 110, which in turn are secured to the upright 102. Compression springs 111 and 112, corresponding to spring 54 for drum A, act upon fingers 113 and 114, to normally urge both shafts 108 and 109 in a clockwise direction as viewed in Figure 3. Thus, both the bands 96 and 97 are tightened upon their respective brake drums to normally lock the drums against rotation.

The mechanism for manual release of drums 96 and 97 is selective, and is actuated by movements of the control lever 17 about the axis of pin 92. Thus, secured to the upper end of shaft 108, there is an arm 116 which has a cam portion 117 normally disposed near the roller 94, and at an angle of substantially 40 degrees with respect to the line of centers between shaft 67 and shafts 108, 109. Below arm 116 there is a second arm 118 secured to the shaft 109. Arm 118 has two cam portions 119 and 121, in the proximity of roller 94, and these portions also extend at angles of approximately 40 degrees with respect to the line of centers previously mentioned, but at opposite inclinations. Portion 121 is provided with a protuberance 122 for a so-called lock out position of the control lever 17, as will be presently explained. Extending along the opposite side of the roller 94, from that occupied by arms 116 and 118, there is a stationary arm 123 which is carried by the stationary upright 102, and which has a straight roller engaging face 124.

It is desirable to provide spring means for retaining lever 17 in a neutral position, with respect to the two positions for driving drums B and C. Simple means for this purpose includes an arm 126 carried by the bracket 91 on nut 87. The outer end of this arm is pivotally connected to a slide 127 on rod 128. One end of this rod has a pivotal connection 129 to the upright 102. Rod 128 carries compression springs 131 and 132 which engage slide 127 and serve to urge the same to an intermediate position corresponding to neutral position of lever 17.

In place of compression springs 111 and 112, I can employ tension springs 136 and 137 as shown in Figures 5 and 6. These springs are anchored to a vertical upright 138 carried by the housing, and are connected to arms 139 and 141 carried by shafts 109 and 108 respectively.

With the arrangement described when the forward end of control lever 17 is swung downwardly, roller 94 is swung forwardly (with respect to the direction of travel of the tractor) thus engaging lever portion 117, and turning lever 116 to rotate rock shaft 108 in a counter-clockwise direction to release the associated brake band 96 and thus permit unwinding rotation of the lower drum B. Conversely, as the forward end of the control lever is raised to swing roller 94 rearwardly, lever portion 121 is placed to the right as viewed in Figure 3, whereby lever 118 and rock shaft 109 are swung in a counter-clockwise direction, to release the upper brake band 97 and its associated winch drum C. Between the two limiting positions just mentioned, there is a neutral position illustrated in Figure 3 in which both brake bands are engaged, although when power is applied to a drum its associated brake band is automatically released. When the forward end of control lever 17 is swung upwardly to its utmost limit, slightly farther than the position required to release drum C, the position of roller 94 is such that it is behind protuberance 122, and the protuberance serves as a detent. While roller 94 is thus engaged, the operator may release his grip upon lever 17, and the lever will stay in this lock-out position until sufficient force is applied to lever 17 to remove roller 94 from notch 122. In this lock-out position, control lever 17 is also in neutral position with respect to establishing drive connection to drums B and C, and it cannot be swung to the right, because of the angularity of the axis of roller 94 with respect to shaft 67.

Operation of the complete winch unit described above can be briefly summarized as follows: It will be presumed that the unit has been mounted upon a tractor, and is being used to operate an earth mover, scraper, or like equipment. Cables such as are required for operation of the earth moving equipment, are applied to the drums of the unit. The number of cables required would depend upon the equipment utilized. The leads of the two cables which require coordinated operation are applied to the drums B and C. The operator now has full selective control over the winding up or playing out of these cables. For neutral position of lever 17, the two drums B and C will be stationary and will be locked against unwinding movement. If it is desired to wind up one of the drums, while the other drum is permitted to remain stationary, the operator swings the forward extension of lever 17 to the right or to the left, from an intermediate neutral position. This raises or lowers the nut 87, to raise the clutch element 69 into engagement with clutch 72, or to lower clutch element 69 into engagement with clutch 71. Assuming that shaft 21 is being driven, one or the other of the two drums B and C are driven, while the other drum remains stationary. Assuming that one desires to selectively release the brake for either drum, whereby the released drum is permitted to unwind its cable while the other drum remains stationary, the forward end of lever 17 is swung upwardly or downwardly, from neutral position. This serves to actuate the levers 116 and 118, as previously described, to selectively release the brake bands 96 and 97. Should one desire to release one of the drums B or C, while the other drum is being driven, this can be accomplished by both swinging the forward end of lever 17 to a limiting position horizontally, and at the same time swinging it about the axis of pivot pin 92. Thus by swinging the forward end of lever 17 downwardly, while at the same time swinging it to the right, lever 116 is operated to release the lower drum B, while at the same time nut 87 is turned to cause engagement between clutch elements 69 and 72, and to drive the upper drum C. By swinging the forward end of lever 17 from neutral position upwardly, and at the same time swinging it to the left, lever 118 is operated to release the upper drum C, thus permitting this drum to unwind, while nut 87 is turned to establish engagement between clutch elements 69 and 71 to drive the lower drum B.

It will be evident from the foregoing that the type of control described for drums B and C enables full selective operation by manipulation of a single control lever. Thus, the cables supplied to drums B and C can be wound up or played out as the operator may desire, thus mak-

ing possible coordination operations in the equipment to which the cables connect. As previously pointed out, lever 16 operates drum A substantially in the same manner as described for the control levers in Hutchins Patent 2,171,792.

In addition to providing a maximum degree of selective control, my winch unit is capable of withstanding relatively severe usage, and it can be readily serviced and adjusted under field conditions. Clutch element 69 is free floating and self-aligning with respect to clutch elements 71 and 72, since it is secured to the upper end of the tubular drive shaft 66, and is journaled to the upper end of the stationary shaft 67. The upper end of stationary shaft 67 may give a certain amount, since it need not be sufficiently rigid to carry any of the side thrust applied to the drums B and C. All of the side thrust applied to the drums B and C is eventually taken by the stationary tubular extension 27 upon the housing.

I claim:

1. A winch unit comprising at least two winch drums disposed in axial alignment, means serving to mount the drums for independent rotation, a rotatable driving member extending through the drums, braking means for each drum, each braking means being self releasing to permit driving of the drum in one direction but gripping automatically to normally prevent unwinding rotation in an opposite direction, means for releasing each of said braking means to permit unwinding rotation of the associated drum, three clutch elements disposed near one end of one of the drums, one element being connected with the driving member, a second element connected to one drum, and a third element connected to the second drum, means for shifting the first clutch element into engagement with either the second or third clutch elements, said means including a single operating member movable from a neutral position into either one of two operating positions, and means for movement of said operating member into either one of two additional operating positions to effect selective release of the said braking means, said last named means including mechanism connecting said operating member with said brake releasing means.

2. In a winch unit, a housing, a rigid tubular extension mounted upon the housing, a winch drum journaled upon the extension, a second rigid tubular extension mounted upon the winch drum, a second winch drum journaled upon said second tubular extension, both said winch drums being in alignment, a tubular drive shaft extending through both said drums and said extensions, a stationary shaft extending through said tubular shaft, clutching means for establishing driving connection between one end of said tubular shaft and either the second drum or said extension from the first drum, said clutching means including one clutching element journaled to the upper end of said stationary shaft and having a driving connection with said tubular shaft.

3. In a winch unit, at least two winch drums, driving means for both drums, means associated with each drum for releasably clutching the same to the driving means, normally engaged braking means for each drum, each braking means being self releasing to permit driving of the drum in one direction, means for releasing each of said braking means to permit unwinding rotation of the associated drum, a single control lever having a plurality of operating positions, mechanism connecting the lever and said brake releasing means for selectively releasing said braking means when the lever is moved to either one of two operating positions, and mechanism connecting the lever to said clutching means for selectively clutching each drum with the driving means by movement of the lever to either one of two additional operating positions.

4. A winch unit comprising at least two winch drums, a rotatable driving member for both of the drums, means associated with each drum for releasably clutching it to the driving member, braking means for each drum, each braking means being self releasing to permit driving of the drum in one direction but gripping automatically to prevent unwinding rotation in an opposite direction, means for releasing each of said braking means thereby permitting unwinding rotation of the associated drum, a single manual control lever having at least four different operating positions, mechanisms connecting said lever to said brake releasing means for causing selective release of the braking means for said drums when the lever is moved to either one of two of its operating positions, and mechanism connecting said lever to said clutching means and serving to selectively clutch either one of said drums with the driving means responsive to movement of said lever to either one of two other operating positions of the same.

5. In a winch unit, at least two winch drums in axial alinement, a rotatable driving member for both said drums, means associated with each drum for releasably clutching the same to the driving member, braking means for each drum, each braking means being self releasing to permit driving of the drum in one direction but gripping automatically to normally prevent unwinding rotation in an opposite direction, means for releasing each of said braking means to permit unwinding rotation of the associated drum, a single operating lever having a neutral position and also being movable to at least four operating positions, mechanism connecting the lever to said brake releasing means to effect selective release of said braking means responsive to movement of the lever to either one of two of its operating positions, and mechanism connecting said lever to said clutching means to effect selective clutching of either one of said drums to said driving means responsive to movement of said lever to either one of two other operating positions.

6. In a winch unit, at least two winch drums, driving means for the drums, means associated with each drum for releasably clutching the same to the driving means, braking means for each drum, each braking means being self releasing to permit driving of the drum in one direction but gripping automatically to normally prevent unwinding rotation in an opposite direction, means for releasing each of said braking means to permit unwinding rotation of the associated drum, a single operating lever having a neutral position and a plurality of operating positions, mechanisms connecting said lever to said brake releasing means to effect selective release of said braking means responsive to movements of the lever to either one of two of its operating positions, additional mechanism connecting the lever to said clutch means to effect selective clutching of said drums to said driving means responsive to movement of said lever to either one of two distinctly different operating positions, both said connecting mechanisms being adapted to permit movement of the oper-

ating lever to two additional operating positions for simultaneous selective clutching of one drum to the driving means while the braking means for the other drum is released, or for clutching of the other drums to the driving means with simultaneous release of the braking means for the other drum.

7. A winch unit comprising at least two winch drums, driving means for said drums, means associated with each drum for releasably clutching it to the driving means, braking means for each drum, each braking means being self releasing to permit driving of the drum in one direction but gripping automatically to normally prevent unwinding rotation in an opposite direction, means for releasing each of said braking means to permit unwinding rotation of the associated drum, and mechanism for the selective operation of said clutching means and said brake releasing means, a single operating member having a neutral position and also a plurality of operating positions, and motion-transmitting mechanisms connecting the lever to the brake releasing means and to the clutching means, said mechanisms being so constructed that when the lever is shifted to one operating position one drum is clutched to the driving means whereby the one drum is driven, while the second drum remains stationary, when the lever is shifted to a second operating position the second drum is clutched to the driving means while the first drum remains stationary, when shifted to a third operating position the braking means for the one drum is released to permit the one drum to unwind, while the second drum remains stationary, when shifted to a fourth operating position the braking means for the second drum is released to permit the second drum to unwind, while the first drum remains stationary, when shifted to a fifth operating position the first drum is clutched to the driving means and simultaneously the braking means for the second drum is released, whereby the first drum is driven and the second drum permitted to unwind, and when shifted to a sixth operating position the braking means for the first drum is released to permit it to unwind, while simultaneously the second drum is clutched with the driving means.

8. A winch unit comprising at least two winch drums disposed in axial alignment, means serving to mount the drums for independent rotation, a rotatable driving member extending through the drums, a cylindrical shell mounted on an outer end of one of the drums and alined with the drums, three annular friction clutching elements disposed within said shell and axially alined within the same, one element having a driving connection with the driving member, the second element having a driving connection with the shell, and the third element having a driving connection with the second drum, and means for shifting the first clutch element into clutching engagement with either the second or third clutch element.

9. In a winch unit, a housing, a rotatable winch drum carried by the housing, a tubular extension mounted upon the winch drum, a second winch drum journaled upon said tubular extension, both said winch drums being in alinement, a driving shaft extending through said drums, clutching means located near one end of the second winch drum and serving to establish driving engagement between the shaft and either the second drum or the tubular extension from the first drum, said clutching means including three annular friction clutch elements disposed concentric with respect to the axis of the drums, one clutch element being directly connected to the tubular extension from the first drum, the second element being directly connected to the second drum, and the third element having a direct driving connection with said shaft, and means for shifting the third clutch element in a direction longitudinally of the axis of said drums to establish clutching engagement with either the first or the second clutch elements.

10. In a winch unit, a housing, a rotatable winch drum carried by the housing, a tubular extension connected to the first winch drum, a second winch drum journaled upon said tubular extension with the two winch drums being in alinement, a tubular drive shaft extending axially through the drums, a stationary shaft extending axially through the tubular drive shaft, clutching means for establishing driving connection between one end of the tubular drive shaft and either the second drum or the tubular extension from the first drum, a clutching element having a direct driving connection with the tubular drive shaft and movable in opposite directions longitudinally of the axis of the drums, a member carried by said stationary shaft and movable longitudinally of said shaft, means serving to journal said clutch element to said member, and clutch elements adapted to be engaged by said first element and connected to the tubular extension and to the second drum.

11. In a winch unit, a pair of winch drums disposed end to end and in alinement, means for journaling the drums, a rotatable drive member extending axially through the drums, at least three annular clutch elements disposed concentrically with respect to the axis of the drums, a drive connection between one of the clutch elements and the rotatable drive member, said connection permitting movement of the element in a direction longitudinally of the axis of the drums, a second clutch element, a driving connection between the second clutch element and the first drum, a driving connection between the third clutch element and the second drum, a rotatable member disposed in alinement with respect to the axis of the drums, means for mounting said member for rotation of the same about the axis of the drums with simultaneous shifting of the member in a direction longitudinally of the axis, means connecting said member and the first named clutch element to cause said first named clutch element to be shifted into clutching engagement with either one of the last two mentioned clutch elements responsive to rotation of said member in opposite directions, a control lever, means serving to pivotally connect one end of the control lever to said member for pivotal movement about an axis at right angles to the axis of the drums and independently of rotation of said member, braking means for each of the drums, each braking means being self releasing to permit driving of the associated drum in one direction but gripping automatically to normally prevent unwinding rotation in an opposite direction, means for releasing said braking means to permit unwinding rotation of the associated drum, and means actuated by pivotal movement of the control lever about the axis of its pivotal connection for selectively actuating said brake releasing means.

12. In a winch unit, a pair of rotatable winch drums disposed end to end and in alinement, a rotatable drive member, clutching means for en-

gaging each drum with said drive member and including a plurality of clutch elements, a nut disposed near one end of one of the drums and rotatable to move the same in opposite directions, a connection between the nut and an element of the clutching means for causing the clutching means to engage either drum with the driving member by rotation of the nut in either direction, a control lever, means serving to pivotally connect one end of the control lever to the nut for pivotal movement about an axis at right angles to the axis of the nut and independent of rotation of the nut, braking means for the drums, and means actuated by pivotal movement of the control lever about said axis for controlling said braking means.

13. In a winch unit, a pair of rotatable winch drums disposed end to end and in alinement, a rotatable drive member, clutching means for engaging each drum with said drive member and including a plurality of clutch elements, a nut disposed near one end of one of the drums and rotatable to move the same in opposite directions, a connection between the nut and an element of the clutching means for causing the clutching means to engage either drum with the driving member by rotation of the nut in either direction, a control lever, means serving to pivotally connect one end of the control lever to the nut for pivotal movement about an axis at right angles to the axis of the nut and independent of rotation of the nut, braking means for each of the drums, each braking means being self releasing to permit driving of the drum in one direction but gripping automatically to normally prevent unwinding rotation in an opposite direction, means for releasing each of said braking means to permit unwinding rotation of the associated drums, and means actuated by pivotal movement of the control lever about said axis for selectively operating said brake releasing means.

14. In a winch unit, a pair of rotatable winch drums disposed end to end and in alinement, a rotatable drive member extending axially through the drums, clutching means including a plurality of friction clutch elements for engaging each drum with said drive member, a nut disposed near one end of one of the drums, a stationary member disposed axially of the drums and with which the nut has threaded engagement, whereby the nut can be shifted in opposite directions by rotation of the same, means operably connecting the nut with an element of the clutching means to cause the clutching means to engage either drum with the drive member responsive to rotation of the nut, a control lever, means serving to pivotally connect one end of the control lever to the nut for pivotal movement about an axis at right angles to the axis of the drums, braking means for the drums, each braking means being self releasing to permit driving of the associated drum in one direction but gripping automatically to normally prevent unwinding rotation in an opposite direction, means for releasing each of said braking means to permit unwinding rotation of the associated drum, and means actuated by pivotal movement of the control lever about said pivotal axis for selectively controlling said brake releasing means.

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