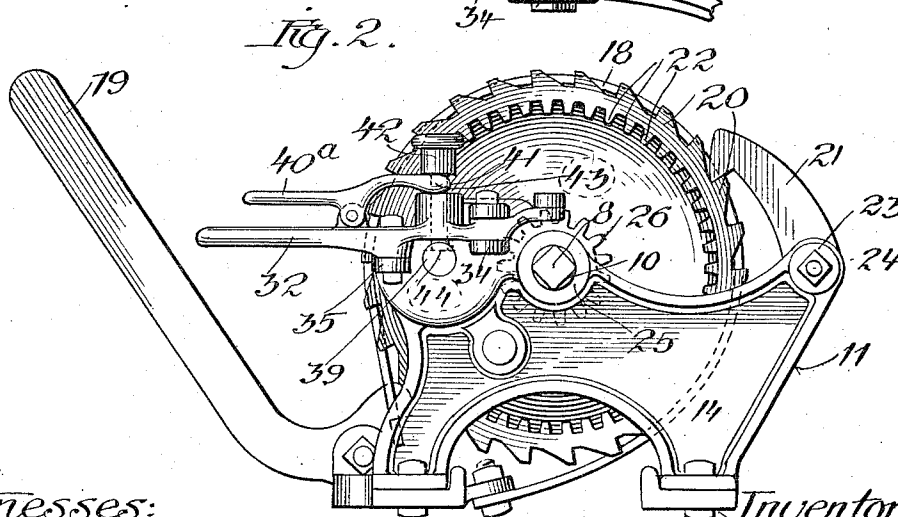
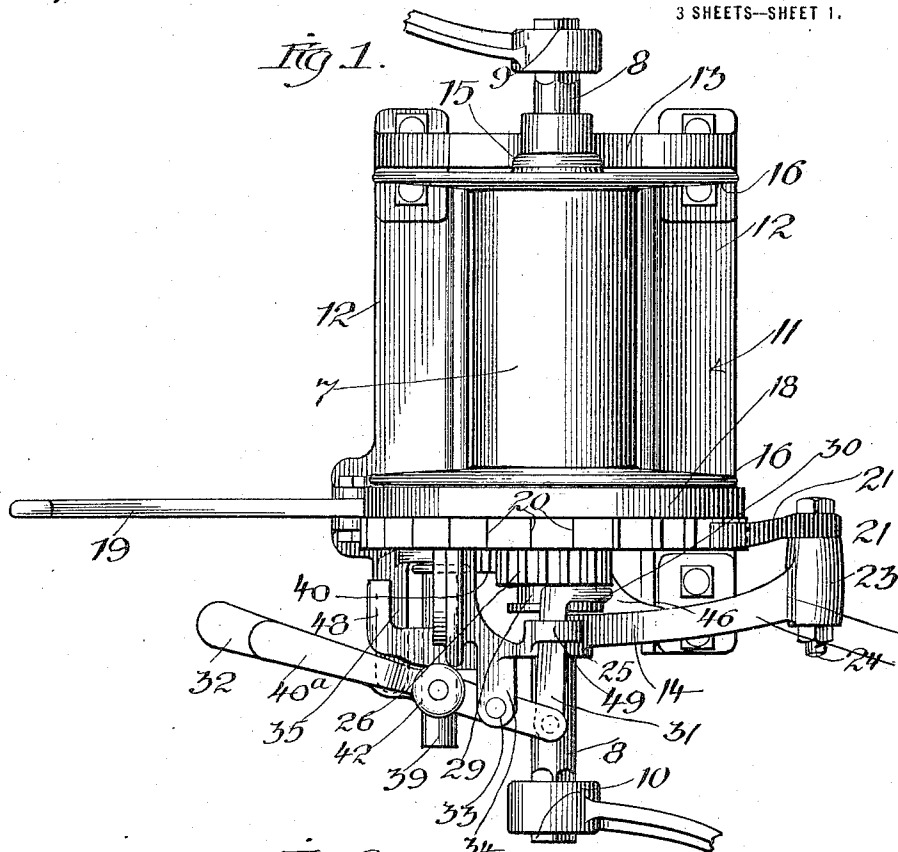


M. J. SASGEN & A. GLOOR.  
 WINDLASS DRIVING MECHANISM.  
 APPLICATION FILED MAR. 5, 1915.

1,228,828.

Patented June 5, 1917.  
 3 SHEETS—SHEET 1.



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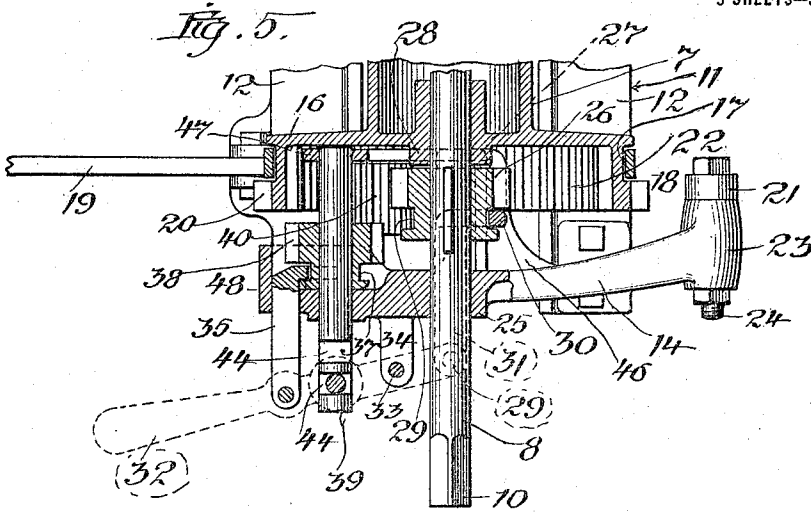
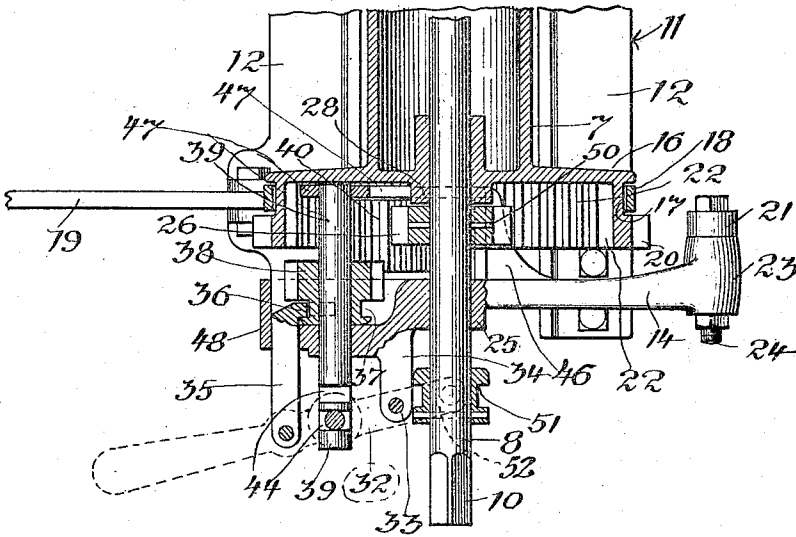


Fig. 6.



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# UNITED STATES PATENT OFFICE.

MICHAEL J. SASGEN AND ALBERT GLOOR, OF CHICAGO, ILLINOIS, ASSIGNORS TO SASGEN DERRICK CO., OF CHICAGO, ILLINOIS, A CORPORATION OF ILLINOIS.

WINDLASS DRIVING MECHANISM.

1,228,828.

Specification of Letters Patent.

Patented June 5, 1917.

Application filed March 5, 1915. Serial No. 12,447.

*To all whom it may concern:*

Be it known that we, MICHAEL J. SASGEN and ALBERT GLOOR, both citizens of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Windlass Driving Mechanisms, of which the following is a specification.

The present invention relates to a windlass mechanism more particularly adapted and intended for use in connection with hoisting devices as derricks.

The object of the invention is to provide a windlass mechanism which is so arranged as to permit a high speed or low speed of rotation to be imparted to the windlass drum without any reverse movement of the operating crank.

A further object of the invention is to provide a controlling member for shifting the speed changing mechanism, so that a fast or slow feed of rotation is imparted to the drum and to lock said controlling member in its thrown position.

A further object of the invention is to arrange the controlling member for this speed changing mechanism so as to place it in close proximity to the operating handles or cranks where it can be easily and quickly grasped and manipulated by the operator.

The invention further consists in the features of construction and combinations of parts hereinafter described and claimed.

In the drawings:

Figure 1 is a plan view of a windlass mechanism equipped with the devices of the present invention;

Fig. 2 is an end view of the parts shown in Fig. 1;

Fig. 3 is a sectional plan view of the windlass mechanism of Fig. 1 equipped with the devices of the present invention and showing the speed changing mechanism arranged to impart a slow rotative movement to the drum;

Fig. 4 is an end view partly in section showing the gearing of the speed changing mechanism;

Fig. 5 is a view similar to Fig. 3 showing one end of the drum and showing the parts of the speed changing mechanism in position to transmit a direct drive to the drum; and

Fig. 6 is a view similar to Fig. 5 showing a

somewhat modified form of speed changing mechanism.

In the art to which the present invention relates, namely, windlass driving mechanism, used in conjunction with hoisting devices, as for instance, derricks, it is desirable that when the load is lifted the drum be rotated at a relatively low speed if the load be heavy, and when the load is light or the cable and tackle is lowered after the load has been delivered, it is desirable to rotate the drum at a high rate of speed. So far as I am aware, the mechanisms for carrying out this rotative speed changing proposition have been so arranged and constructed as to require a movement of the drum handle, operating member, or crank in one direction when a low speed is imparted and in an opposite direction when a high speed is imparted, and it has also been necessary in these prior devices to transfer the operating handle or crank from one shaft to another in order to change from high speed to low speed or vice versa.

In the present invention by a simple arrangement of transmission devices, I am enabled to get a high speed or a low speed of rotation of the drum and continue the movement of the operating handle in the same direction no matter what speed of rotation is being imparted to the drum, and it is furthermore not necessary to reafix or transfer the operating crank from one shaft to another.

Referring to the drawings, and particularly to Fig. 1, a drum 7 is shown which is mounted upon an operating shaft 8 which terminates in squared ends 9 and 10. The operating shaft is not fixedly connected to the drum; that is to say, the drum revolves loose on the shaft so that the drum and shaft may have different speeds of rotations at the same time. A frame 11 is provided consisting of side rails 12 and end rails 13 and 14. The end rail 13 is provided with a hub or boss 15 in which one end of the shaft 8 finds a bearing and the drum is provided with the usual end plates or flanges 16. The drum is further formed beyond one of the flanges 16 with a groove 17, in which lies a band brake 18 operated by a suitable handle 19, and beyond the band brake groove is arranged peripheral ratchet teeth 20 with which engage a dog 21 that acts in the usual

manner to prevent an escapement of the drum while the load is being hoisted, in case the operator should lose control. The ratchet teeth 20 are formed on a portion which is of ring like formation, as will be apparent from Figs. 3, 5 and 6. The interior surface of this ring-like member is formed with gear teeth 22 which constitute an internal gear and this forms a portion of the drum speed changing mechanism as will hereinafter appear.

The end piece 14 is formed with a hub or bearing 23 which receives the bolt or pivot member 24 upon which is mounted the dog 21, and is formed with a bearing 25 for an end of the shaft 8. Mounted to slide upon the shaft 8 and arranged between the bearing 25 and the end of the drum is a gear 26. This gear is provided at its inner face with projections forming a clutch surface 27 which is adapted to mesh with a clutch surface 28 consisting of projections cast with or formed integral with the end wall of the drum structure. The gear is splined to the shaft so that it can move longitudinally thereof but cannot have an independent rotative movement about the shaft. At the opposite end of the gear from that in which the clutch surface 27 is formed, is a groove 29 which receives the forked end 30 of an arm 31 which is connected to a pivoted controlling member 32, pivoted at 33 to a lug 34 extending from the end piece 14. This piece is termed the controlling member by reason of the fact that the position into which it is moved controls or determines the speed of rotation of the drum.

Attached to this controlling member 32 is a link 35, provided with a forked end 36, which engages in a groove 37 of a gear 38, which gear is slidably and rotatably mounted on a fixed stub shaft 39, and connecting the gears 38 and 26 is an intermediate gear 40. This gear 40 is of sufficient size so that the gears 26 and 38 whether they be moved in or out constantly remain in mesh with this intermediate gear.

As stated, the controlling member 32 is pivoted at 33, and as will be seen from the drawings, the link 31 is on one side of the pivotal center of this member, and the link 35 on the opposite side; hence when the controlling member is swung in a given direction, it will move one of the links one way and the other link the opposite way, hence moving the gear 26 in one direction and the gear 38 in an opposite direction.

In order to lock the controlling member and gears in thrown position I provide a pivoted member 40<sup>a</sup> which is mounted upon and carried by the controlling member 32, as will be apparent from Fig. 2, and this member 40<sup>a</sup> is formed with a forked end 41 which engages with the head 42 of a spring pressed pin 43, the end of which pin is adapted to

engage and rest within grooves 44 in the fixed stub shaft 39, and when dropped into these grooves, the operating member 32 is obviously held against movement, thus locking the gears 26 and 38 in their thrown position.

When it is desired to rotate the drum at a low rate of speed the parts are thrown into the position shown in Fig. 3, wherein the gear 26 is thrown rearward or away from the drum, and the gear 38 thrown forward or toward the drum and into mesh with the internal gear 22. Power from the shaft 8 is then transmitted through the gear 26 and the gear 40 to the gear 38, thence to the internal gear 22, and the drum is thus rotated, and as will be readily understood from the drawings the ratio of the meshing gears is such as to impart a low speed of rotation to the drum.

When it is desired to rotate the drum at a high rate of speed, the controlling member 32 is swung from the position shown in Fig. 3 to the position shown in Fig. 5. This forces the gear 26 inward, and brings the clutch surface 27 thereof into engagement with the clutch surface 28 on the drum. The gear 38 will be moved outward, bringing it out of mesh with the internal gear 22. With the gears in this position, when the shaft 8 is rotated, it rotates the gear 26, and through the clutch connection between this gear and the drum imparts a direct rotative movement to the drum, rotating it at a relatively high rate of speed.

It is to be observed that in changing from the low speed of drum rotation to the high speed of rotation, the main operating shaft 8 continues to move in one direction and it is not necessary to in any way change the direction of movement of this shaft or the position of the cranks in order to change the speed.

All that is necessary is the shifting of the controlling member from one position to another, and this can be readily and quickly accomplished owing to the convenient location of the controlling member with respect to the operating handles or cranks. Webs 45 and 46 extend from the end piece 14 and are joined to a rear plate 47 which acts as a support for the rear end of the stub shaft 39. A guide member 48 extends from the end piece and serves as a guide for the link 35 while a loop 49 is provided on the top of the end piece 14 which serves as a guide for the link 31.

It is to be noted that the intermediate gear 40 is of sufficient width so that the gear 26 and gear 38 are at all times in mesh therewith. This is of importance since it eliminates any danger of a misaligning of the gears in the gear shifting operation with a consequent stripping of the teeth. The mechanism as a whole is extremely compact

and strong, is easy and quick of operation, and does not complicate or impair or in any way affect the efficiency of the windlass mechanism in carrying out its functions.

5 In the structure shown in Fig. 6, the entire device is identical with that heretofore described, except that a gear 50 is employed which is keyed or otherwise locked to the main operating shaft 8, and a grooved collar 51 is secured to said operating shaft with which connects a forked end 52 of the controlling member 32. In this construction, the gear 50 is moved in and out to effect a direct drive with the drum, and the gear 10 drive with the drum, the same as in the other constructions, the sole difference being that in this construction the shaft 8 is moved bodily to shift the gear, while in the previously described construction, the gear 15 is shifted bodily and the shaft remains stationary.

We claim:

1. In a windlass driving mechanism, the combination of a drum, a shaft upon which the drum is loosely mounted, an internal gear on one end of the drum, a shiftable gear meshing with the internal gear, an intermediate gear, a gear on said shaft, said shiftable and shaft gears meshing with the intermediate gear, a web-like support extending from in front of the internal gear to adjacent the rear of said gear, a stub shaft mounted in said web-like support on which said intermediate gear is mounted, means 25 for moving said shiftable and shaft gears simultaneously and in opposite directions, and clutch members mounted upon said shaft gear and drum, said shiftable and shaft gears when moved into one position 30 bringing said shiftable and internal gears into mesh and breaking the clutch connection between said drum and shaft gear, and the moving of said shiftable and shaft gears into another position bringing said shiftable and internal gears out of mesh and establishing a clutch connection between said shaft gear and drum, said stub shaft having a series of notches thereon, and a locking member on the means for moving said shiftable and shaft gears, adapted to rest 35 within a selected one of said notches to lock said gears in shifted position, substantially as described.

2. In a windlass driving mechanism, the combination of a drum having one end recessed, an internal gear in said recessed end, a shaft on which the drum is loosely mounted, a gear on the shaft, cooperating clutch members on the shaft gear and drum, a shiftable gear adapted to mesh with the internal gear, an intermediate gear connecting the shaft and shiftable gears, and with which said gears are constantly in mesh, a

stub shaft for the shiftable gear, a stub shaft for the intermediate gear, a mounting lying 65 at the recessed end of the drum and comprising a front and a rear section, said stub shafts being held by both the front and rear sections of said mounting, and the front section of said mounting serving to hold one 70 end of the drum shaft, and means for simultaneously moving in opposite directions the shaft and shiftable gears, substantially as described.

3. In a windlass driving mechanism, the combination of a drum having one end recessed, an internal gear in said recessed end, a shaft on which the drum is loosely mounted, a gear on the drum shaft, cooperating clutch members on the shaft gear and drum, a shiftable gear adapted to mesh with the internal gear, an intermediate gear connecting the shaft gear and shiftable gear, a stub shaft for the intermediate gear, a stub shaft for the shiftable gear, a mounting arranged 85 at the recessed end of the drum, and comprising a plate-like front portion joined to a plate-like rear portion, said stub shafts being held by said front and rear portions, and one end of the drum shaft being held by said 90 front portion, and means for simultaneously moving the shiftable and drum shaft gears in opposite directions, substantially as described.

4. In a windlass driving mechanism, the combination of a drum having one end recessed, an internal gear in said recessed end, a shaft on which the drum is loosely mounted, a gear on the shaft, cooperating clutch members on the shaft gear and drum, a shiftable gear adapted to mesh with the internal gear, an intermediate gear connecting the shaft and shiftable gears, and with which said gears are constantly in mesh, a stub shaft for the shiftable gear, a stub shaft 105 for the intermediate gear; a mounting lying at the recessed end of the drum and comprising a front and a rear section, said stub shafts being held by both the front and rear sections of said mounting, and the front section of said mounting serving to hold one end of the drum shaft, the front portion of the mounting having an ear intermediate the drum shaft and stub shaft of the intermediate gear, a member pivoted to said ear, 110 a connection between said member and the drum shaft gear, and a connection between the member and shiftable gear, said connections being on opposite sides of the pivot point of said member, substantially as described. 120

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