J. F. SPERRY & J. H. EBY.

POWER APPARATUS.

APPLICATION FILED APR. 21, 1908.

911,625.

Patented Feb. 9, 1909.

2 SHEETS—SHEET 1.

Fig 1

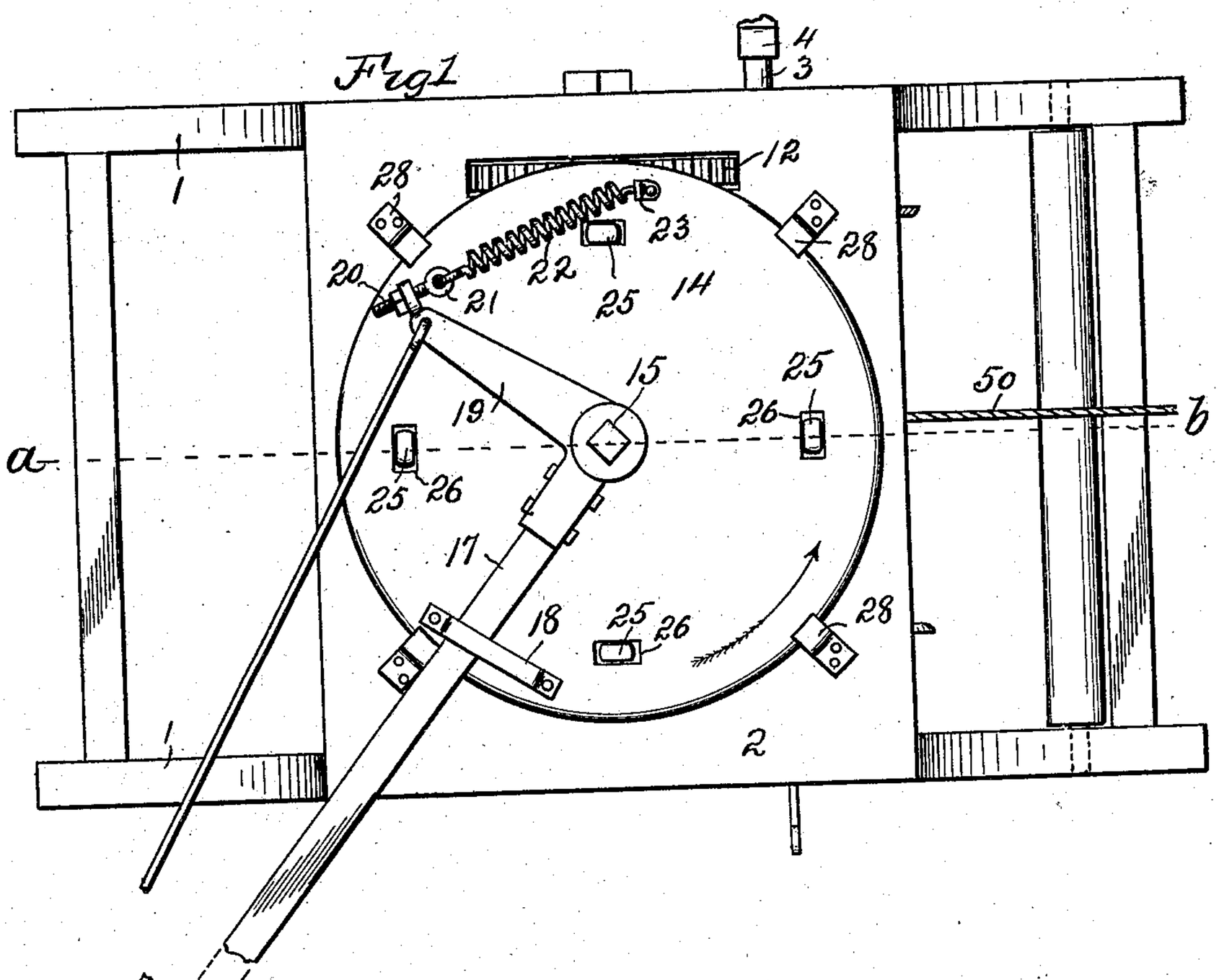
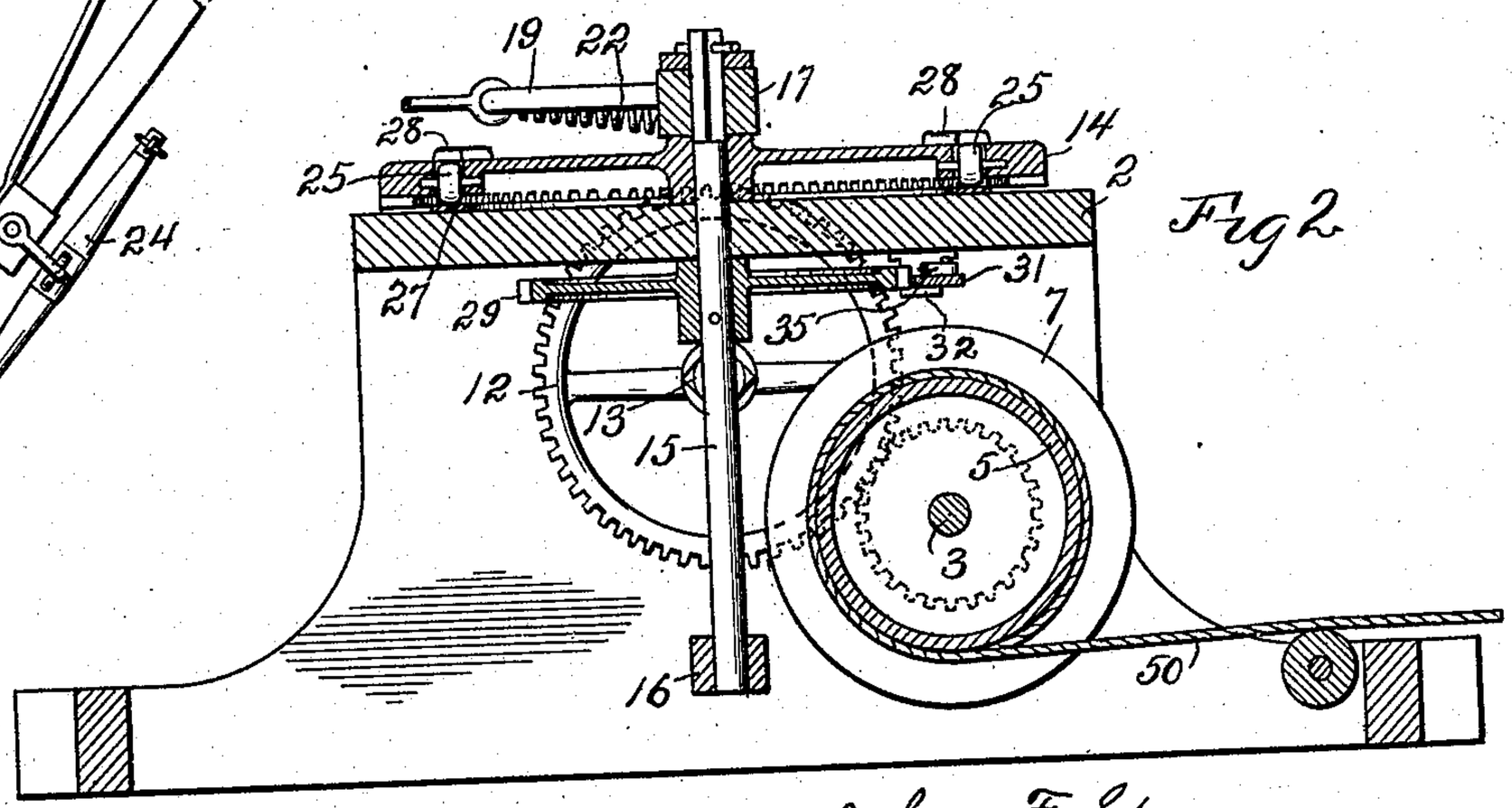


Fig 2



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2 SHEETS—SHEET 2.

Fig 3

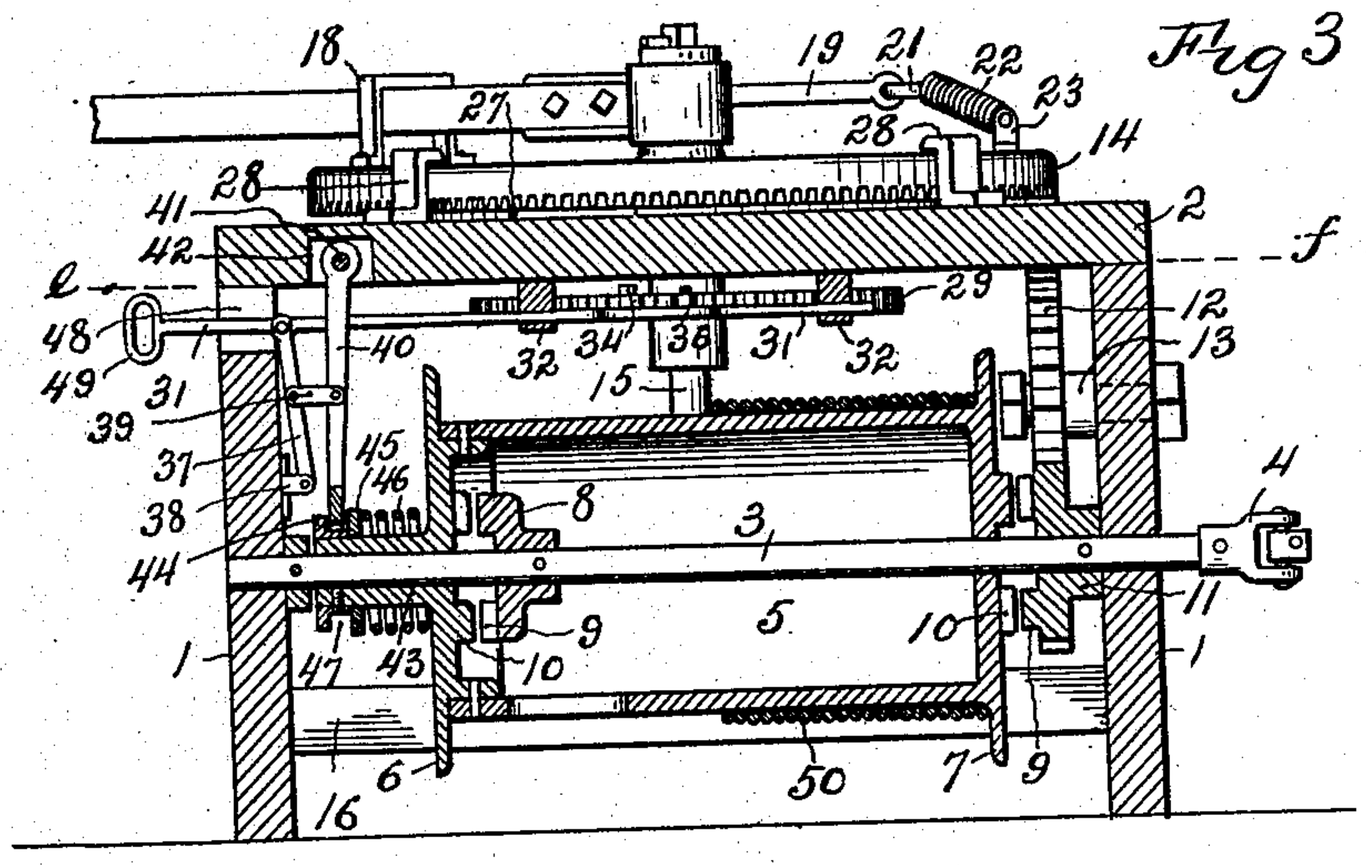


Fig 4

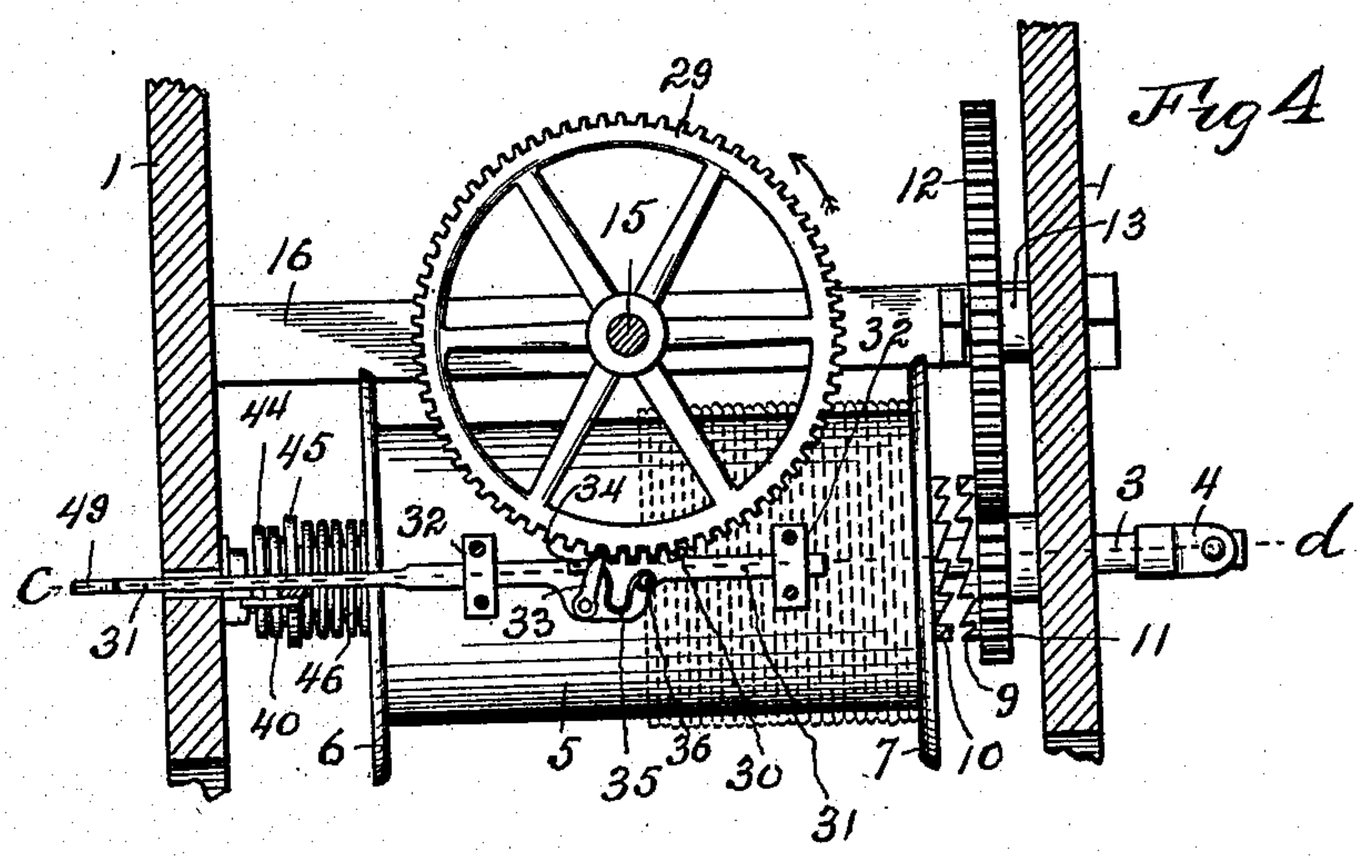
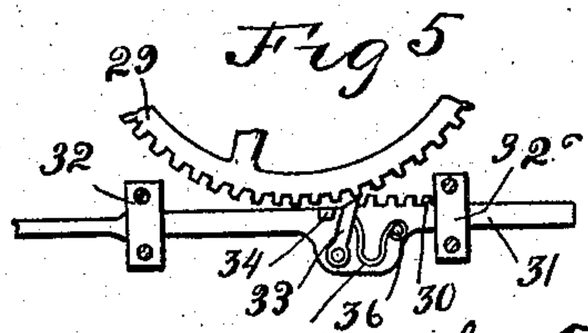


Fig 5



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UNITED STATES PATENT OFFICE.

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POWER APPARATUS.

No. 911,625. Specification of Letters Patent. Patented Feb. 9, 1909.

Application filed April 21, 1908. Serial No. 428,472.

To all whom it may concern:

Be it known that we, JOHN F. SPERRY and JOHN H. EBY, citizens of the United States, residing, respectively, at Kaw city, in the county of Kay and State of Oklahoma, and at Carrington, in the county of Wells and State of North Dakota, have invented certain new and useful Improvements in Power Apparatus, of which the following is a specification.

Our invention relates to improvements in power apparatus.

The object of our invention is to provide a power apparatus which may be readily adapted to a variety of uses.

Our invention is particularly well adapted for farm use for such purposes as running corn shellers, grinding machines, or for drawing the rope of hoisting devices, such as hay hoisting machines.

The novel features of our invention are hereinafter particularly described and claimed.

In the accompanying drawings which illustrate the preferred form of our invention.—Figure 1 is a plan view, a portion of the power lever being broken away. Fig. 2 is a vertical sectional view taken on the dotted line *a—b* of Fig. 1. Fig. 3 is a vertical sectional view taken on the dotted line *c—d* of Fig. 4. Fig. 4 is a horizontal section taken on the dotted line *e—f* of Fig. 3. Fig. 5 is a plan view of a portion of the reciprocative rack and some of the parts connected therewith, the rack being shown disengaged from the gear wheel which operates it.

Similar characters of reference denote similar parts.

The framework of the machine comprises two vertical side members 1, upon the upper edges of which is secured a horizontal platform 2. Rotatively mounted in the side walls 1 is a horizontal rotary driving shaft 3, one end of which has secured to it any suitable type of coupling device 4, by which the shaft may be connected to the driving shaft of a corn sheller, grinding machine, or any other machine, not shown. Rotatively mounted on the driving shaft 3 is a drum 5, provided at its ends with the heads 6 and 7. Rigidly secured upon the shaft within the drum 5, is a clutch member 8, provided at one end with a circular row of ratchet teeth 9, adapted to engage with corresponding teeth 10, disposed concentrically on the inner end of the head 6. The outer end of the head 7 is also provided with a circular row of ratchet teeth 10, adapted to engage a corresponding row of teeth 9, provided on the adjacent end of a spur gear wheel 11, which is rigidly secured upon the shaft 3 and meshes with a spur gear wheel 12 rotatively mounted upon a stud 13 secured horizontally to the adjacent side member 1 of the frame. The gear 12 meshes with a horizontal crown gear wheel 14 which is rotatively mounted upon a vertical, rotary controlling shaft 15, which is rotatively mounted in the platform 2 and in a horizontal bar 16, the ends of which are secured to the two side members 1.

A right angled power lever 17, is rigidly secured to the upper end of the shaft 15 and has its longer arm extending horizontally through an inverted U-shaped yoke 18, in which the lever 17 is horizontally oscillated relative to the rotary member or crown gear wheel 14. The yoke 18 serves as an abutment against which the power lever 17 has a bearing when said power lever is revolved in the direction indicated by the arrow in Fig. 1. To the outer end of the shorter arm 19 of the power lever, is secured a bolt 20 provided at one end with an eye 21 to which is secured one end of a coil spring 22, the other end of which is secured to a bracket 23 which in turn is secured to the upper side of the rotary member or crown gear wheel 14. The function of the spring 22 is to normally retract the power lever 17 in a direction opposite that indicated by the arrow in Fig. 1. To the outer end of the power lever 17 may be secured a doubletree 24, as shown in Fig. 1. A plurality of supporting rollers 25 are rotatively mounted in recesses provided vertically in the rotary member 14. These rollers rest upon a circular track 27, secured to the upper side of the platform 2, as shown in Fig. 2. Brackets 28 are secured to the upper side of the platform 2, around the periphery of the rotary member 14 and have their inner ends projecting over the upper side of said rotary member. These brackets serve to prevent the upward tilting of said rotary member.

Rigidly secured upon the shaft 15, below the platform 2, is a horizontal spur gear wheel 29, adapted to engage teeth 30 on the adjacent edge of a horizontal rack 31, which is reciprocatively mounted in downwardly extending bearings 32, which are secured to

the underside of the platform 2. Pivoted to the upper side of the rack 31, is a pawl 33, which is normally forced against a projection 34 on the upper side of the rack, by means of a spring 35, which is secured at one end to a vertical pin 36, secured to the upper side of the rack 31. The disposition of the teeth 30 on the rack 31 is such that when the gear wheel 29 is rotated in the direction indicated by the arrows in Figs. 1 and 4, the rack 31 will be forced out of engagement with the gear wheel 29, as shown in Fig. 5. When in this position, however, the spring 35 will retain the pawl 33 in engagement with the gear wheel 29, so that if that gear wheel is retracted in the opposite direction the pawl will be forced against the projection 34 and the rack will thereby be retracted to the position shown in Fig. 4.

The object of reciprocating the rack 31 is to cause the drum 5 to alternately be locked with and unlocked from the driving shaft 3. To accomplish this result the following described mechanism is preferably employed:—A nearly vertical bar 37 has its upper end pivoted to the rack bar 31 and its lower end pivoted to a bracket 38, secured to the inner side of the adjacent side member 1. A horizontal link 39 has one end pivoted to the bar 37 and its other end pivoted to a vertical lever 40, the upper end of which is pivoted to a horizontal pin 41 which extends transversely across a recess 42, provided in the underside of the platform 2. The head 6 of the drum 5 is provided on its outer end with a cylindrical, axial hub 43, to which is secured a collar 44. Encircling the hub 43 and slidable lengthwise thereon, is a ring 45, best shown in Fig. 3. This ring is normally held against the inner end of the collar 44 by a coil spring 46, which encircles the hub 43 and at its inner end bears against the head 6. The collar 44 and the ring 45 form between them an annular groove 47, in which is located the lower end of the lever 40. The outer end of the rack bar 31 extends through a slot 48 provided in the adjacent side member 1 and at its outer end is preferably provided with a hand hold 49, by means of which the rack bar 31 may, when desired, be manually held in a position disengaged from the gear wheel 29, as shown in Fig. 5.

50 denotes a rope, one end of which is secured to the periphery of the drum 5. This rope is adapted to be wound upon the drum 5 when the power lever 17 is revolved in the direction indicated by the arrow in Fig. 1. In devices such as hay hoisting devices, it is desirable to wind the rope 50 upon the drum so as to hoist the hay in the manner common with such devices. It is also desirable, when the load has been raised to the proper height, to quickly release the drum 5 from the shaft 3 so that the drum may be freely revolved and the rope withdrawn therefrom. To effect this result the following described method of procedure is employed: The horse or horses which are attached to the doubletree 24 are driven so as to revolve the power lever 17 in the direction denoted by the arrow in Fig. 1. The power lever in its forward movement will strike the abutment or yoke 18 and its continued movement will cause rotation of the crown gear wheel or rotary member 14 in a like direction. Rotation of the rotary member 14 will be transmitted to the driving shaft 3 by the gear wheels 12 and 11. As soon as the power lever 17 is started to revolve rotation in a like direction will be imparted to the controlling shaft 15 and the spur gear wheel 29. Such rotation of the gear wheel 29 will force the rack bar 31 out of engagement with the spur gear wheel and into the position shown in Fig. 5. Movement of the rack bar 31 in this direction will cause the lower end of the lever 40 to be swung, through the intermediacy of the bar 37 and link 39, toward the head 6 of the drum 5. The lever 40 in so moving will bear against the ring 45 which in turn will press against the spring 46 which is of sufficient rigidity to cause it to move the drum 5 lengthwise on the driving shaft 3, into a position in which the teeth 10 on the heads 6 and 7 will lockingly engage the teeth 9 of the clutch member 8 and spur gear wheel 11 respectively. The drum 5 will thereby be in locked engagement and will rotate with the driving shaft 3, thus causing the rope 50 to be wound upon the drum.

The function of the spring 46 is to provide a resilient bearing for the lever 40 so that in case the drum should be in position such that the teeth 10 would strike the outer ends of the teeth 9 the spring 46 would yield and thereby prevent any breakage of the parts.

When it is desired to free the drum 5 from the driving shaft 3, the horses attached to the doubletree 24 are stopped so as to relieve the pulling strain upon the power lever 17. The power lever 17 being free to oscillate will be retracted by the spring 22 to the position shown in Fig. 1. Such retraction of the power lever will be communicated to the shaft 15 and gear wheel 29. Retraction of the gear wheel 29 will cause it to engage the pawl 33, as hereinbefore described, thereby retracting the rack bar 31 to the position shown in Fig. 4. Such retraction of the draw bar 31 will, through the intermediacy of the bar 37 and link 39, cause the lever 40 to swing outwardly against the collar 44, thereby sliding the drum 5 lengthwise on the shaft 3 to the position shown in Fig. 3, in which position it will be disengaged from the clutch member 8 and gear wheel 9, and will be free to rotate on the shaft 3. In case that the horses should be stopped and it is not desired to release the drum 5 from the shaft

3, pressure sufficient to overcome the strength of the spring 22 is manually applied to the outer end of the rack bar 31 in a direction such as will prevent the outward forcing of said bar.

Our invention may be modified in many ways within the scope of the appended claims without departing from its spirit.

Having thus described our invention, what we claim and desire to secure by Letters Patent, is:—

1. In a power apparatus, the combination with a rotary driving shaft, of a drum rotative on said shaft, releasable means for locking the drum to the shaft, a rotary controlling shaft, a lever secured to the controlling shaft for rotating the said controlling shaft, means controlled by said controlling shaft for actuating said locking means, and means by which when the said lever is revolved in one direction the driving shaft will be rotated.

2. In a power apparatus, the combination with a rotary driving shaft, of a drum rotative on said shaft, a rotary controlling shaft, a power lever secured to said controlling shaft, means by which, when said controlling shaft is rotated in one direction, the drum will be locked to said driving shaft and when the controlling shaft is rotated in the other direction the drum will be released from said driving shaft, and means by which, when the power lever is revolved in one direction the driving shaft will be rotated.

3. In a power apparatus, the combination with a rotary driving shaft, of a drum rotative and longitudinally movable on said shaft, a rotary controlling shaft, a power lever secured to said controlling shaft, a clutch member secured to said driving shaft, means by which, when the controlling shaft is rotated in one direction the drum will be moved lengthwise on the driving shaft into locked engagement with said clutch member, and when rotated in the opposite direction the drum will be disengaged from said clutch member, and means by which, when the power lever is revolved in one direction, the driving shaft will be rotated.

4. In a power apparatus, the combination with a rotary driving shaft, of a drum rotative and longitudinally movable on said shaft, means by which, when the drum is reciprocated longitudinally, it will alternately become locked and unlocked from said driving shaft, a revoluble power lever, means by which, when the power lever is revolved in one direction, the drum will be moved lengthwise into locked engagement with said driving shaft, and when the power lever is revolved in the opposite direction, the drum will be released from locked engagement with said driving shaft, and means by which, when the power lever is revolved in a direction in which the drum will be locked to said driving shaft, the driving shaft will be rotated.

5. In a power apparatus, the combination with a rotary driving shaft, of a drum rotative on said shaft, a rotary member, means connected with said rotary member for rotating the driving shaft, a revoluble power lever, means by which said power lever may engage and rotate said rotary member, said engaging means providing for the free oscillation between predetermined limits of the power lever relative to said rotary member, means for retracting said power lever relative to said rotary member, and means by which, when the power lever is revolved in one direction, said drum will be locked to the driving shaft, and when the power lever is revolved in the opposite direction, the drum will be released from locked engagement with said driving shaft.

6. In a power apparatus, the combination with a rotary driving shaft, of a drum rotative and longitudinally movable on said shaft, a rotary member, means connected with said rotary member for transmitting rotation therefrom to said driving shaft, a revoluble power lever, means by which said power lever engages and rotates said rotary member, said engaging means providing for the oscillation between predetermined limits of the power lever relative to said rotary member, means for retracting said power lever relative to said rotary member, means by which, when the power lever is revolved in a direction for engaging and rotating said rotary member, the drum will be moved lengthwise in one direction on the driving shaft, and when the power lever is revolved in the opposite direction, the drum will be moved lengthwise in the opposite direction, and means by which, when the drum is reciprocated lengthwise on the driving shaft, it will alternately be locked to and unlocked from said driving shaft.

7. In a power apparatus, the combination with a rotary driving shaft, of a drum rotative on said shaft, a rotary controlling shaft, a rotary member rotatively mounted on said controlling shaft and provided with an abutment, means connected with said rotary member for rotating said driving shaft, a power lever secured to said controlling shaft and movable against and away from said abutment on said rotary member, means for normally retracting the power lever away from said abutment, and means by which, when said power lever is revolved in a direction for engaging said abutment, the drum will be locked to said driving shaft, and when the power lever is retracted in the opposite direction, the drum will be released from locked engagement with said driving shaft.

8. In a power apparatus, the combination with a rotary driving shaft, of a drum rota-

tive and longitudinally movable on said shaft, means by which, when the drum is longitudinally reciprocated on said shaft, it will alternately be locked to and released from locked engagement with said shaft, a rotary controlling shaft, a rotary member rotatively mounted on said controlling shaft and having an abutment, means connected with said rotary member for transmitting rotation therefrom to said driving shaft, a power lever secured to said controlling shaft and oscillative against and away from said abutment, means for normally retracting said power lever away from said abutment, and means by which, when said power lever is oscillated, said drum will be reciprocated lengthwise.

9. In a power apparatus, the combination with a rotary driving shaft, of a drum rotative on said shaft, a rotary controlling shaft, a power lever secured to said controlling shaft, means connected with the power lever for rotating said driving shaft when the power lever is revolved, a reciprocative member, means for reciprocating the reciprocative member when the controlling shaft is oscillated, and means by which, when said reciprocative member is reciprocated, said drum will be alternately locked to and unlocked from said driving shaft.

10. In a power apparatus, the combination with a rotary driving shaft, of a drum rotative and longitudinally movable on said shaft, means by which, when the drum is longitudinally reciprocated, it will alternately be locked to and unlocked from said shaft, a rotary controlling shaft, a power lever secured to said controlling shaft, means by which, when the power lever is revolved, the driving shaft will be rotated, a reciprocative member, means for reciprocating the reciprocative member when the controlling shaft is oscillated, and means by which, when said reciprocative member is reciprocated, said drum will be reciprocated lengthwise on said driving shaft.

11. In a power apparatus, the combination with a rotary driving shaft, of a drum rotative on said shaft, a rotary controlling shaft, a power lever secured to said controlling shaft, means for rotating the driving shaft when the power lever is revolved, a reciprocative rack, a gear wheel secured to said controlling shaft and engaging said rack, and means by which, when said rack is reciprocated, said drum will be alternately locked to and unlocked from said driving shaft.

12. In a power apparatus, the combination with a rotary shaft, of a gear wheel secured to said shaft, a reciprocative rack engaged by said gear wheel and movable lengthwise in one direction out of engagement with said gear wheel when the gear wheel is rotated in one direction, means by which, when the gear wheel is rotated in the other direction, said rack will be moved in the opposite direction into engagement with said gear wheel, a rotary driving shaft, a drum rotative on said driving shaft, and means for alternately locking said drum to and unlocking it from said driving shaft when said rack is reciprocated.

13. In a power apparatus, the combination with a rotary driving shaft, of a drum rotative and longitudinally movable on said shaft, means by which, when the drum is longitudinally reciprocated, it will alternately be locked to and unlocked from said shaft, a rotary controlling shaft, a power lever secured to said controlling shaft, means for rotating the driving shaft when the power lever is revolved, a gear wheel secured to said controlling shaft, a reciprocative rack engaged by said gear wheel and movable in one direction out of engagement with said gear wheel when the gear wheel is rotated in one direction, means by which, when the gear wheel is rotated in the other direction, the rack will be moved into engagement with said gear wheel, and means for reciprocating said drum lengthwise on said driving shaft when said rack is reciprocated.

14. In a power apparatus, the combination with a rotary driving shaft, of a drum rotative on said driving shaft, a rotary controlling shaft, a rotary member rotatively mounted on said controlling shaft and provided with an abutment, means for transmitting rotation from said rotary member to said driving shaft, a power lever secured to said controlling shaft and movable against and away from said abutment, a spring for normally retracting the power lever away from said abutment, a gear secured to said controlling shaft, a reciprocative rack engaging said gear and movable in one direction out of engagement with said gear when the gear is rotated in one direction, means by which, when the gear is rotated in the other direction, the rack will be retracted into engagement with said gear wheel, and means for alternately locking said drum to and unlocking it from said driving shaft when said rack is reciprocated.

15. In a power apparatus, the combination with a rotary driving shaft, of a clutch member secured thereto, a drum rotative on said shaft and reciprocative lengthwise thereon into and out of engagement with said clutch member, a rotary controlling shaft, a rotary member rotative on said controlling shaft and having an abutment, means for transmitting rotation from the rotary member to said driving shaft, a power lever secured to said controlling shaft and adapted to engage said abutment for rotating said rotary member, a spring for normally retracting the power lever away from said abutment, a gear secured to said controlling shaft, a reciprocative rack for engaging said gear and movable thereby in one direction

out of engagement with said gear when the gear is rotated in one direction, means by which, when the gear is rotated in the other direction, the rack will be retracted into engagement with said gear wheel, and means for reciprocating said drum longitudinally on the driving shaft when said rack is reciprocated.

16. In a power apparatus, the combination with a rotary driving shaft, of a clutch member secured thereto, a drum rotative on said driving shaft and reciprocative lengthwise thereon into and out of engagement with said clutch member, said drum having an axial hub, a collar secured to said hub, a ring encircling said hub and movable lengthwise thereof, a coil spring encircling said hub for forcing said ring toward said collar, an oscillative lever disposed intermediate said ring and said collar for moving said drum lengthwise, a rotary controlling shaft, a power lever secured to said controlling shaft, means for oscillating the first named lever when said controlling shaft is oscillated, and means for rotating said driving shaft when the power lever is revolved.

In testimony whereof we have signed our names to this specification in presence of the subscribing witnesses.

JOHN F. SPERRY.
JOHN H. EBY.

Witnesses for John F. Sperry:
O. G. Bognock,
R. T. Harris.
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