

N. C. MILLER.
CLUTCH.

APPLICATION FILED JAN. 31, 1911.

Patented June 4, 1912.

2 SHEETS—SHEET 1.

1,028,764.

Fig. 2.

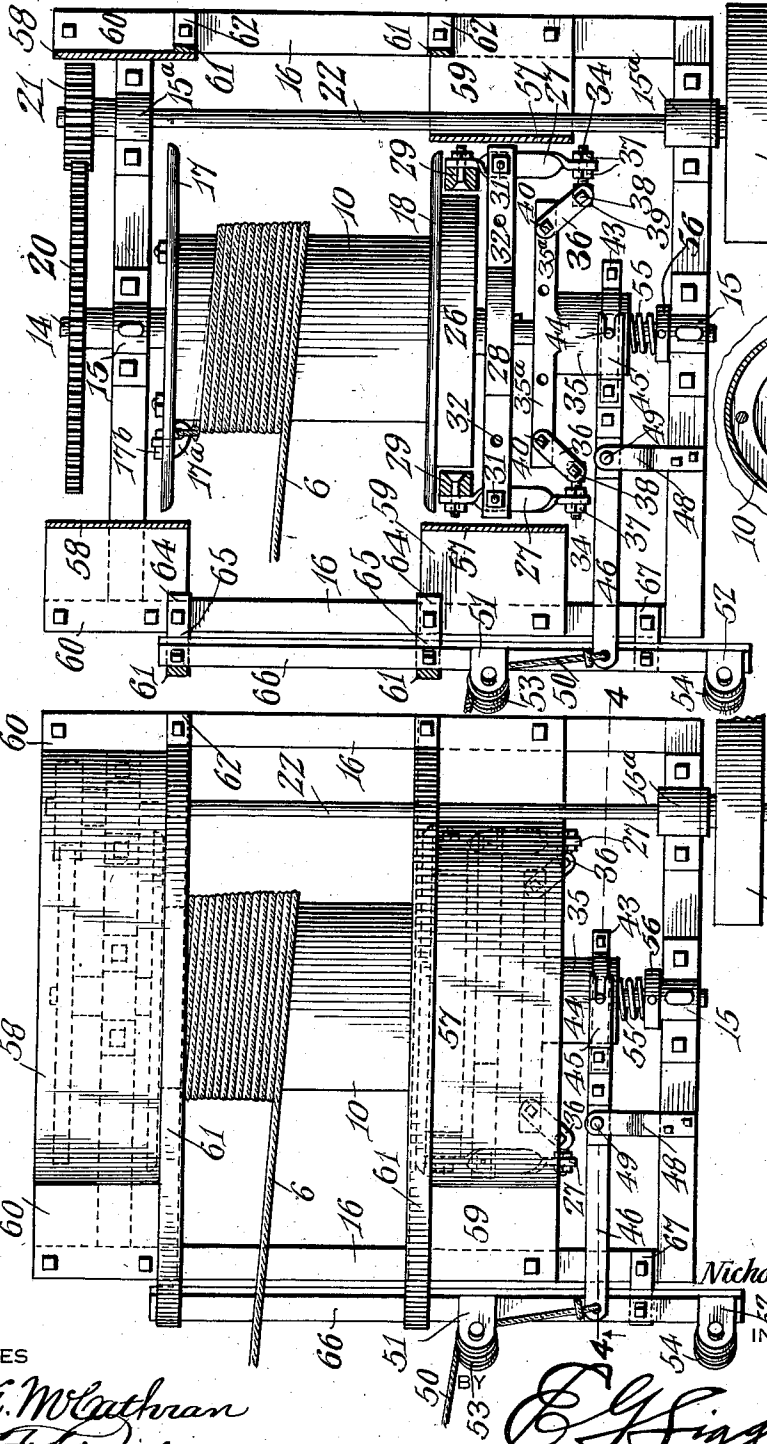


Fig. 1.

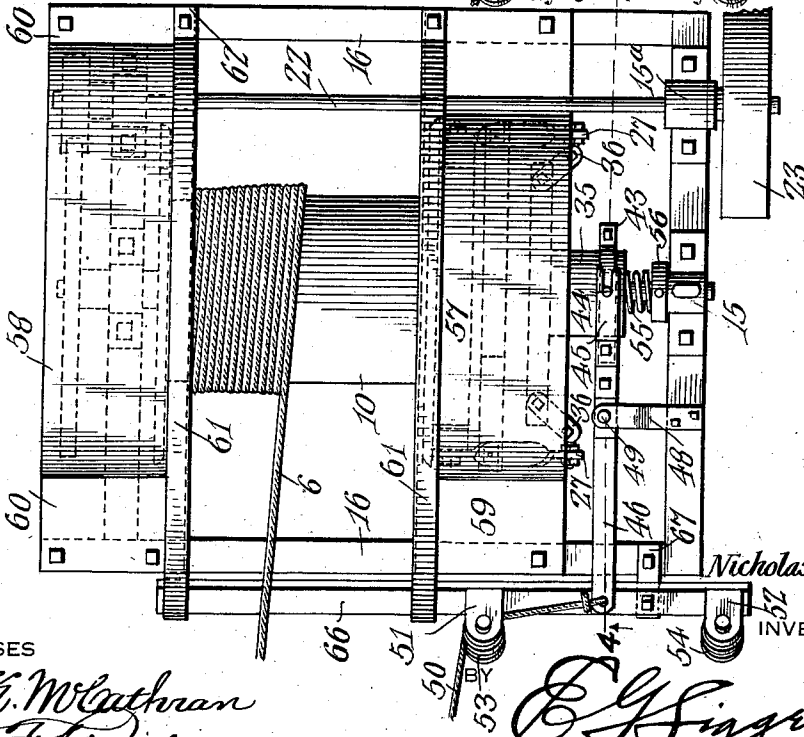
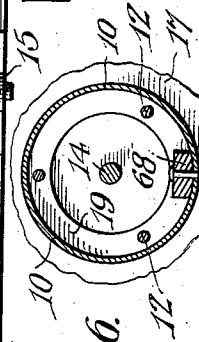


Fig. 6.



WITNESSES

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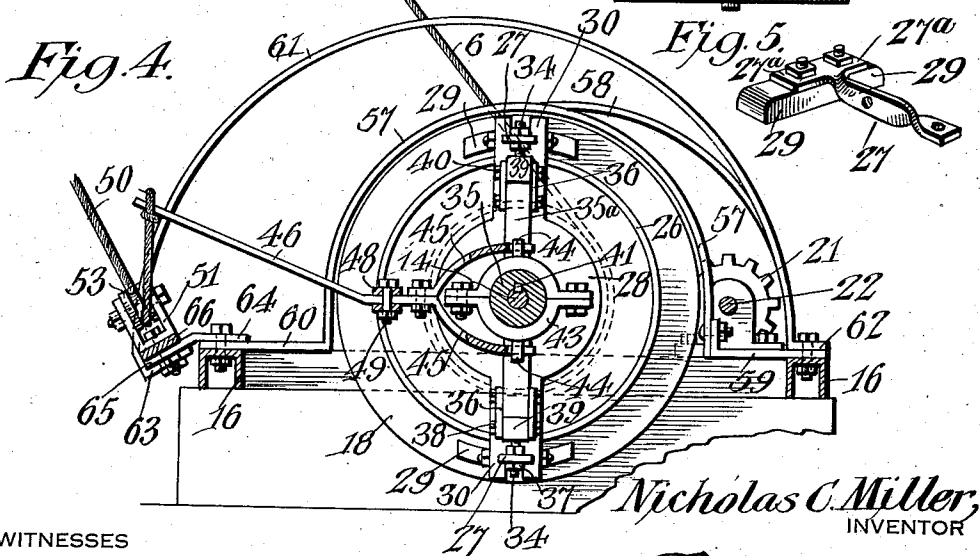
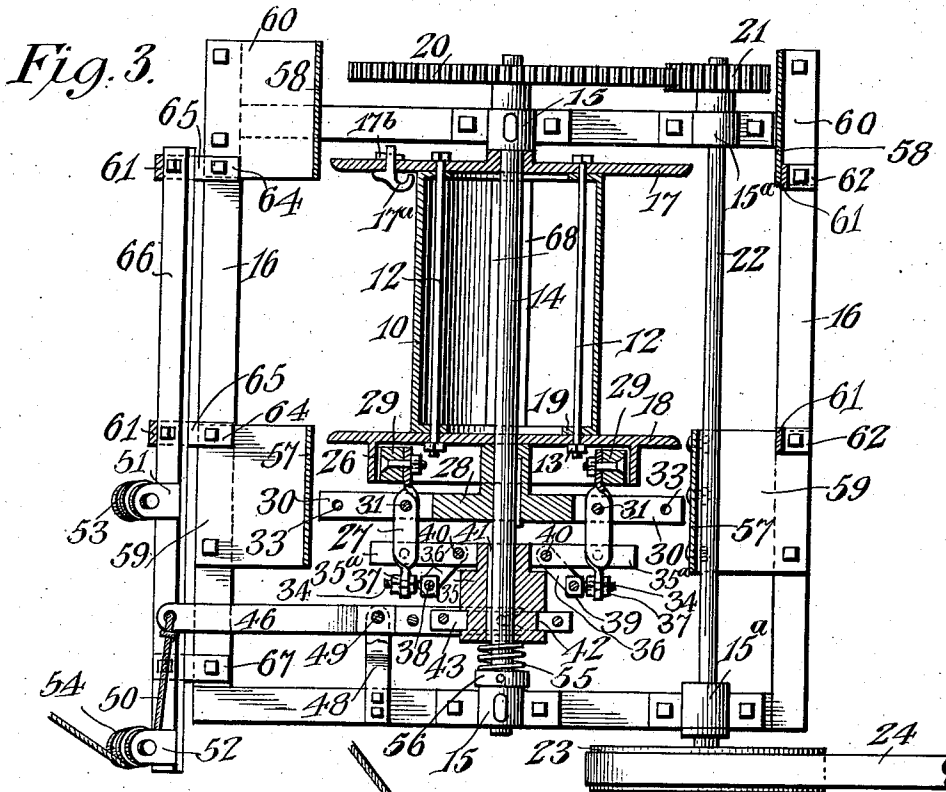
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NICHOLAS C. MILLER, OF DODGEVILLE, WISCONSIN.

CLUTCH.

1,028,764.

Specification of Letters Patent.

Patented June 4, 1912.

Application filed January 31, 1911. Serial No. 605,824.

To all whom it may concern:

Be it known that I, NICHOLAS C. MILLER, a citizen of the United States, residing at Dodgeville, in the county of Iowa and State of Wisconsin, have invented a new and useful Clutch, of which the following is a specification.

The invention relates to improvements in clutches, and in part is a division of an application, filed by me on or about June 29, 1910, Serial No. 569,565, for an apparatus for unloading hay and other material.

The object of the present invention is to improve the construction of clutches, and to provide a simple, efficient and comparatively inexpensive clutch adapted to be operated at a distance from it for controlling the rotation of a hoisting drum through a continuously operating motor.

With these and other objects in view, the invention consists in the construction and novel combination of parts hereinafter fully described, illustrated in the accompanying drawings, and pointed out in the claims hereto appended; it being understood that various changes in the form, proportion, size and minor details of construction, within the scope of the claims, may be resorted to without departing from the spirit or sacrificing any of the advantages of the invention.

In the drawings:—Figure 1 is a plan view of a friction clutch, constructed in accordance with this invention. Fig. 2 is a horizontal sectional view, the drum being shown in plan, and the clutch being arranged to engage the rim of the same exteriorly. Fig. 3 is a horizontal sectional view, the clutch being arranged to engage the inner face of the rim of the drum interiorly. Fig. 4 is a vertical sectional view on the line 4—4 of Fig. 1. Fig. 5 is a detail perspective view of one of the clutch levers. Fig. 6 is a detail sectional view, taken transversely of the drum and illustrating the arrangement of the eccentric weight thereof.

Like numerals of reference designate corresponding parts in all the figures of the drawings.

In the accompanying drawings illustrating the preferred embodiment of the invention, 6 designates a hoisting rope, extending from a hoisting drum 10, which is actuated by a gasoline engine, or other suitable motor (not shown). The hoisting drum, which is preferably constructed of steel, is mounted

on a transverse shaft 14, journaled in suitable bearings 15 of a supporting frame 16. The supporting frame 16, which is rectangular, may be constructed of any suitable material, and the hoisting drum consists of a cylinder and terminal heads 17 and 18. The cylinder is provided at its ends with inwardly extending annular flanges 19, fitted against the inner faces of the heads 17 and 18 and preferably secured to the same by rods 12, extending from one end of the drum to the other and piercing the heads 17 and 18 and the flanges 19. The rods 12 are provided at one end with suitable heads, and they are threaded at the other end and equipped with nuts 13. The drum may be of any other preferred construction, and the heads are provided with alined bearing openings to receive the transverse shaft 14. The head 17 of the drum is equipped with a hook 17^a for attaching one end of the hoisting rope to the drum. The hook 17^a, which is detachable, has its shank extended through the head 17 of the drum and secured to the same by a key 17^b, or other suitable fastening means.

One end of the transverse shaft 14 has keyed or otherwise secured to it a spur gear 20, which meshes with a spur pinion 21 of a counter shaft 22, journaled in suitable bearings 15^a of the frame 16 and equipped at the opposite side thereof with a pulley 23. The pulley 23 is connected by a belt 24 with the driving pulley of the said engine or motor. When the engine or motor is in operation, the transverse shaft 14 is continuously rotated, and motion is communicated to the drum 10 by a clutch engaging an annular rim or flange 26, which projects from the outer face of the head 18 of the drum 10.

The clutch comprises a pair of clutch levers 27, preferably constructed of metal and fulcrumed at an intermediate point on a supporting cross head 28 to form inner and outer arms. The rim or flange 26 is preferably formed integral with the head 18 of the drum, and the inner arms of the clutch levers 27 are provided with quarter bends to arrange them at right angles to the planes of the body portion of the outer arms, and are equipped with shoes 29, preferably consisting of wooden blocks, bolted or otherwise secured to the inner arms of the clutch levers 27 and arranged to engage the rim or flange 26 of the drum. The inner ends of the clutch levers are enlarged to form

lateral extensions 27^a to receive the bolts of the shoes 29.

The cross head 28, which is keyed or otherwise fixed to the shaft 14, consists of a central hub and opposite arms, extending radially from the shaft 14 and provided in their outer portions with slots or bifurcations 30, in which the clutch levers are pivoted by bolts 31. The cross head is provided with inner and outer perforations 32 and 33 to enable the clutch levers to be arranged for engagement with the inner face of the flange or rim 26, as illustrated in Fig. 3 of the drawings, or the outer face of the rim or flange, as shown in Fig. 2, the clutch levers being reversed in adjusting them from one position to the other. When the clutch levers are arranged to engage the inner face of the rim or flange 26, the brake shoes are protected by the said rim or flange and less power is required to operate the hoisting or winding drum.

The outer arms of the clutch levers are provided adjacent to their outer ends with quarter bends to arrange their outer terminals in planes at right angles to the bottom portion of the outer arms of the levers, and the said outer ends of the clutch levers are provided with openings for the reception of adjusting screws 34, connected at their inner ends with a sliding sleeve or member 35 by links 36 and adjustably secured to the clutch levers by nuts 37, arranged at opposite faces of the angularly bent outer ends of the clutch levers and clamping the same. The links 36 are arranged in pairs and are pivoted at their outer ends by bolts 38 to the opposite faces of flattened heads 39 of the adjusting screws 34. The inner ends of the links are pivoted by bolts 40 to operating lugs or arms 35^a of the sleeve 35. The particular arrangement of the lugs of arms of the sleeves, the links and the clutch levers enable the necessary pressure to be applied to the rim of the drum to securely grip the same.

While one pair of clutch levers is illustrated in the accompanying drawings, a greater number may, if desired, be employed for engaging the rim or flange 26 of the drum 10. By adjusting the clutch levers through the medium of the screws 34 and the nuts 37, any wear of the parts may be readily taken up, and the shoes caused to properly engage the flange or rim of the drum.

The sleeve or member 35, which is slidably interlocked with the shaft by means of a key or feather 41, is provided adjacent to its outer end with an annular groove 42 for the reception of a sectional band 43, provided with opposite pivots 44 and connected by the same to arms 45 of a forked shifting lever 46. The forked shifting lever, which extends from the sliding sleeve 35 to one

side of the frame 16, is pivotally mounted in a suitable support 48 by a bolt 49. The support extends inwardly from one side of the frame and may consist of a strap of iron, or be constructed in any other desired manner. The pivot 49 is located at a point intermediate of the ends of the shifting lever, and the outer arm thereof is connected with one end of a friction clutch rope 50, and is arranged between spaced inner and outer guide pulleys 53 and 54, which are mounted in brackets or casings 51 52. The inner guide pulley receives the friction clutch rope 50, when the shoes 29 of the clutch levers engage the outer face of the rim or flange 26 of the drum, as illustrated in Fig. 2 of the drawings, and the friction clutch rope is guided by the outer pulley 54, when the clutch levers are arranged at the inner face of the rim or flange 26 of the drum, as shown in Fig. 3. The opposite guide pulleys 53 and 54 are adapted to change the direction of the pull on the clutch levers in order that the friction clutch rope may, when pulled, cause the clutch levers to grip the flange or rim 26 of the drum when the said clutch levers are in either position. The drum is automatically released by a relatively light coiled spring 55, disposed on the shaft 14 and interposed between the sliding sleeve or member 35 and an adjustable set collar 56, secured to the shaft 14 and arranged at the outer end of the spring 55. The spring and the collar also limit the outward movement of the sliding sleeve and prevent the links from getting in alinement with the projecting lugs or arms of the sliding sleeve, or on a dead center. As the spring is relatively light it offers but little resistance to the movement of the shifting lever in operating the clutch.

When the clutch levers are arranged to engage the rim exteriorly thereof, as illustrated in Figs. 1 and 2, a compression spring is employed for moving the clutch levers out of engagement with the rim when the rope is released, but when the clutch levers are arranged interiorly of the rim, as illustrated in Fig. 3, it is obvious that a tension spring must be employed for moving the clutch levers out of engagement with the rim when the operating rope is slackened.

The clutch mechanism and the gearing are protected by curved guards 57 and 58 of approximately semi-cylindrical form, constructed of sheet metal or other suitable material and extending across the frame 16 and having angularly bent terminals 59 and 60, bolted or otherwise secured to the opposite sides of the frame 16. The guards protect the parts from dust and the weather and prevent the wooden blocks of the clutch levers from getting wet, and they also eliminate all danger and prevent the accidents, which frequently result from unprotected gearing and other moving parts.

The hoisting rope 6 is arranged between curved fenders 61, arching the drum adjacent to the heads 17 and 18 and secured at their terminals 62 and 63, respectively, to the guards or shields 57 and 58 at one side of the frame and to projecting bars 64 at the opposite side of the frame. The ends 62 of the fenders are fitted against the upper faces of the adjacent terminals of the guards or shields, and the other ends 63 are bent inwardly and are secured to the lower faces of outer inclined portions 65 of the bars 64. The inclined portions 65 of the bars 64 are connected by a bar or brace 66, which is extended to form a support for the brackets or casings 51 and 52 of the inner and outer guide pulleys 53 and 54. The outer inclined portions 65 of the bars 64 extend downwardly and outwardly from the frame, and they set the guide pulleys at an inclination to center the friction clutch rope. The guide pulleys 53 and 54 are grooved, as shown, to receive the rope 50. The extended portion of the bar 66 is preferably supported by a bar 67, secured to the frame and having an inclined portion similar to the bars 64 and arranged in parallelism with the same.

The drum 10 is equipped with an interior eccentrically arranged weight 68, preferably consisting of a bar of metal, extending longitudinally of the cylindrical portion of the drum and suitably secured to the inner face of the same and terminating short of the heads of the drum. The eccentrically arranged weight is adapted when the drum is released by the clutch to prevent the said drum from rapidly rotating and unwinding an excessive amount of slack. The weight 68 will permit the drum to rotate freely when there is a pulling strain on the hoisting rope.

No claim is made in the present case to the fenders, the shields, or the particular construction of the drum.

Having thus fully described my invention, what I claim as new and desire to secure by Letters Patent, is:—

1. A clutch of the class described including a driven rim, a rotating shaft, clutch levers carried by the shaft and having means for engaging the rim, means for permitting the reversal of the levers to arrange them for engagement with either the inner or outer faces of the rim, a shifting lever connected with the clutch levers, means for urging the shifting lever in one direction, a rope connected with the shifting lever for moving the same in the opposite direction, and spaced guiding means for the rope located at opposite sides of the shifting lever, whereby the shifting lever may be moved in either direction.

2. A clutch of the class described including a driven rim, a rotating shaft, clutch levers carried by the shaft and having means

for engaging the rim, means for permitting the reversal of the levers so as to arrange them for engagement with either the inner or outer faces of the rim, a spring for urging the clutch levers in one direction, a shifting lever connected with the clutch levers, a rope connected with the shifting lever, brackets or casings located at opposite sides of the shifting lever, and guiding pulleys mounted in the brackets or casings and arranged to receive the rope, whereby the rope may be operated to move the shifting lever in either direction.

3. A clutch of the class described including a driven rim, a rotating support, clutch levers fulcrumed on the support and having means for engaging the rim, a slidable sleeve, links connected with the sleeve, screws adjustably mounted on the clutch levers and pivoted to the links, a spring for urging the sleeve in one direction, a shifting lever for moving the sleeve in the opposite direction, and a rope connected with the shifting lever for moving the same.

4. A clutch of the class described including a rotating shaft, a driven rim, a cross head fixed to the shaft, clutch levers pivoted at an intermediate point of their length to the cross head and provided with shoes for engaging the said rim, screws piercing the clutch levers and provided with clamping nuts located at opposite sides of the clutch levers, and adjustably connecting the screws with the same, a sleeve slidably mounted on the said shaft, links pivotally connecting the sleeve with the screws, a shiftable lever connected with the sleeve, a spring for urging the sleeve in one direction, and an operating rope connected with the shifting lever for moving the sleeve in the opposite direction.

5. In a clutch of the class described, the combination with a rotating shaft and a driven rim, of a cross head fixed to the shaft, clutch levers fulcrumed at an intermediate point of their length on the end portions of the cross head and provided with means for engaging the rim, means for permitting the reversal of the levers so as to arrange them to engage with either the inner or outer faces of the rim, a sleeve slidable on the shaft, means for urging the sleeve in one direction, a shifting lever connected with the sleeve for moving the same in the opposite direction, spaced guide pulleys located at opposite sides of the shifting lever, and an operating rope connected with the shifting lever and adapted to be arranged on either of the guide pulleys to enable the rope to be operated for moving the shifting lever in either direction.

6. In a clutch of the class described, the combination with a rotating shaft and a rotary driven member having an annular projecting rim, of clutch levers carried by the

shaft and having means for engaging the rim, means for permitting a reversal of the levers so as to arrange them for engagement with either the inner or outer faces of the rim, means for urging the levers in one direction, a shifting lever connected with the clutch levers for moving the same in the opposite direction, and means for operating the shifting lever when the clutch

levers are arranged to engage either the inner or outer faces of the rim. 10

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

NICHOLAS C. MILLER.

Witnesses:

D. H. WILLIAMS,
T. N. WILLIAMS.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."