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J. W. LUNDGREN.

POWER TRANSMISSION DEVICE.

APPLICATION FILED AUG. 17, 1906. RENEWED NOV. 30, 1907.

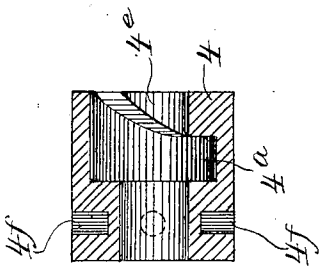


Fig. 3.

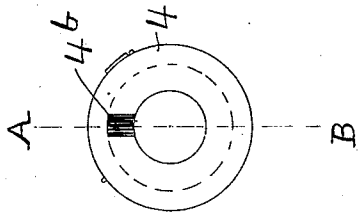


Fig. 4.

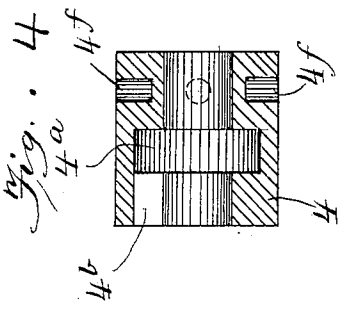


Fig. 1.

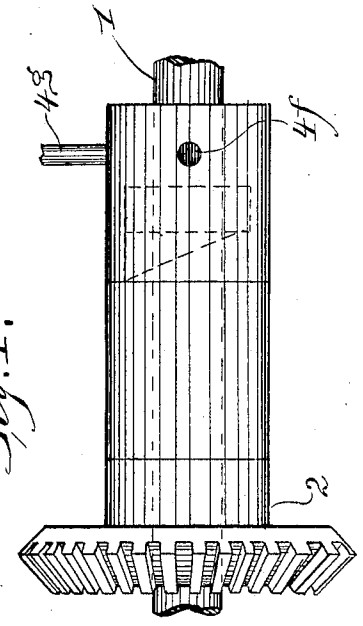
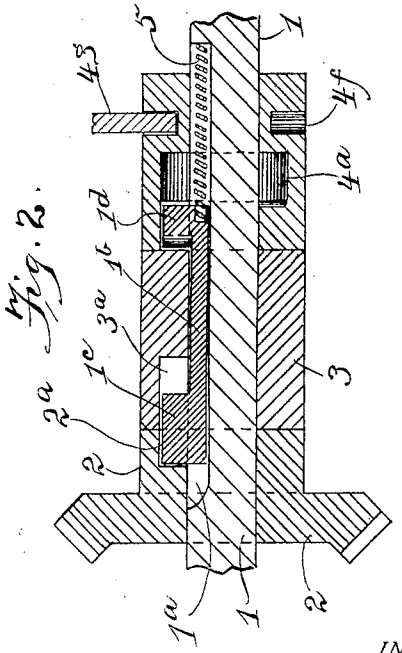


Fig. 2.



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POWER-TRANSMISSION DEVICE.

No. 882,643. Specification of Letters Patent. Patented March 24, 1908.

Application filed August 17, 1906, Serial No. 330,976. Renewed November 30, 1907. Serial No. 404,580.

To all whom it may concern:

Be it known that I, JOHN W. LUNDGREN, a citizen of the United States, residing at Duluth, in the county of St. Louis and State of Minnesota, have invented certain new and useful Improvements in Power-Transmission Devices; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to power shaft, sleeves and key construction and means for operating and retracting said key, and has for its object the provision of suitable constructions and means by which a sleeve or gear may be connected to a power shaft so as to rotate therewith, or may be disconnected therefrom in such manner as to permit the gear or shaft to rotate independently of each other.

It consists of the constructions, combinations and arrangements of parts hereinafter described and claimed.

In the accompanying drawings, Figure 1 is a side elevation of my said invention. Fig. 2, is a central longitudinal vertical section of the same. Fig. 3, is a front end view of the cam sleeve 4, forming part of my said invention. Fig. 4, is a section of said sleeve 4, on the line A—B of Fig. 3, and shows both halves laid back from each other similarly to the open plates of a hinge.

In the drawing, 1 is a portion of a power shaft, in which is formed a longitudinally extending key-way 1^a for the reception of a sliding key 1^b which is provided at one end with a tongue 1^c, and is provided at the opposite end with the tongue 1^d. Upon said shaft is mounted a sleeve or gear 2 which is provided with a key-way 2^a adapted when said sleeve or gear is in operation, to receive a portion of the key-tongue 1^c, whereby said sleeve or gear is then locked or keyed to said shaft so as to rotate therewith. Mounted upon said shaft, adjacent to said sleeve or gear 1, and secured to said shaft by said key is a collar 3, the key-way in which collar is enlarged or extended as at 3^a, whereby said collar is adapted to receive, when desired, the whole of said tongue 1^c of said key. Adjoining said collar at its opposite end, there is mounted on said shaft a sleeve 4, said sleeve 4 is provided with an interior annular groove 4^a, the front wall of which is slotted as at 4^b for the passage of the adjacent end tongue 1^d of the key 1^b. A segment of the said front wall of the groove 4^a is cut away gradually from the groove toward the outer end of said slot so as to form a cam-face or wedge 4^e. In rear of said key, a spring 5 is interposed between the end of the key and the end of the key-way 1^a, which spring tends to drive said key forward so that it will enter the key-way in the sleeve or gear 2 and cause said gear to rotate with the shaft. In the sleeve 4, I preferably form a series of peripheral recesses 4^f, into one or another of which a pawl or suitable lever 4^g may be inserted by means of which said sleeve may be arbitrarily rotated, or partly rotated on said shaft. But I do not wish to be restricted to such recesses or pawl, since it is obvious that many equivalent or substitute means or methods may be used for arbitrarily rotating said sleeve 4, all within the scope and spirit of my said invention.

In operation, if it be desired to lock said gear 2 rigidly to said shaft, so as to operate other mechanism (not shown) engaged by said gear, the collar 4 is arbitrarily rotated, until the slot 4^b is presented to the key-tongue 1^d, the rotation of the power shaft will then presently bring the key-tongue 1^c into alinement with the key-way 2^a, whereupon the spring will thrust the key forward into said gear. The gear will then be keyed to the shaft by means of said key, or by means of said collar 3 and said key. In order to retract said key in order to free it from the gear, the sleeve 4 is arbitrarily rotated, as by manual power applied to the pawl 4^g (which pawl is preferably removable), so as to cause the outer or knife edge of the wedge 4^e to engage the forward end of the key-tongue 1^d and wedge said key backward so as to withdraw it from the gear 2.

My invention may be applied to various forms of machinery, but I especially have in mind its practicability for use in match making machines, such, for example, of the type disclosed in United States Letters Patent No. 797697, granted August 22, 1905 to John W. Lundgren and Alfred J. Bell; the shaft 1 of my present invention in such case taking the place of the shaft 34 of said patent, and the gear 2 of my present invention taking the place of the gear 36 of said patent.

What I claim is—

1. In constructions and means for the purposes described, the combination of a

power shaft having a sliding key positioned therein, said key being provided at each end with a tongue, a sleeve or gear mounted on said shaft and adapted to receive a portion of said key, a collar mounted on said shaft adjacent to said gear and adapted to receive a portion of said key, a sleeve mounted on said shaft adjacent to said collar and provided with an interior annular groove, the forward wall of said groove having a slot formed therethrough, a segment of said forward wall of said groove being adapted to form a cam or wedge beginning at the outer end of said slot and extending inwardly the full thickness of said forward wall, said groove being adapted to receive one of the tongues formed on said key, and said slot being adapted to receive said tongue, and said wedge being adapted to engage said tongue and retract it, and elastic means adapted to thrust said key forward into said gear.

2. In constructions and means for the purposes described, the combination of a power shaft a longitudinally sliding key engaging said shaft, a sleeve or gear carried by said shaft and adapted to receive a portion of said key, a collar carried by said shaft and adapted to receive the portion of the key receivable by said sleeve or gear, a second sleeve carried by said shaft, said second sleeve being provided with an interior cam or wedge, adapted in operation to engage said key and retract the same, and means for thrusting said key forward into operative position with relation to the first said sleeve or gear.

3. In constructions and means for the purposes described, the combination of a power shaft, a longitudinally sliding key engaging said shaft, a sleeve or gear mounted on said shaft and adapted to engage said key, a second sleeve mounted on said shaft and provided with an interior cam or wedge adapted in operation to engage said key and retract the same from engagement with the first said sleeve, and means for thrusting said key forward into operative relation with the first said sleeve.

In testimony whereof I hereunto affix my signature, in presence of two witnesses.

JOHN W. LUNDGREN.

Witnesses:

JAMES T. WATSON,

WILLIAM J. STEVENSON.