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W. H. DOUGLAS

1,457,694

POWER TRANSMISSION DEVICE

Filed Oct. 23, 1919

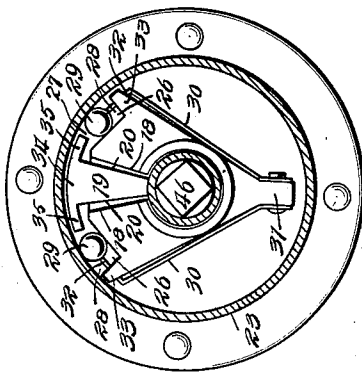


Fig. 3.

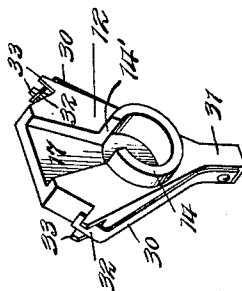


Fig. 4.

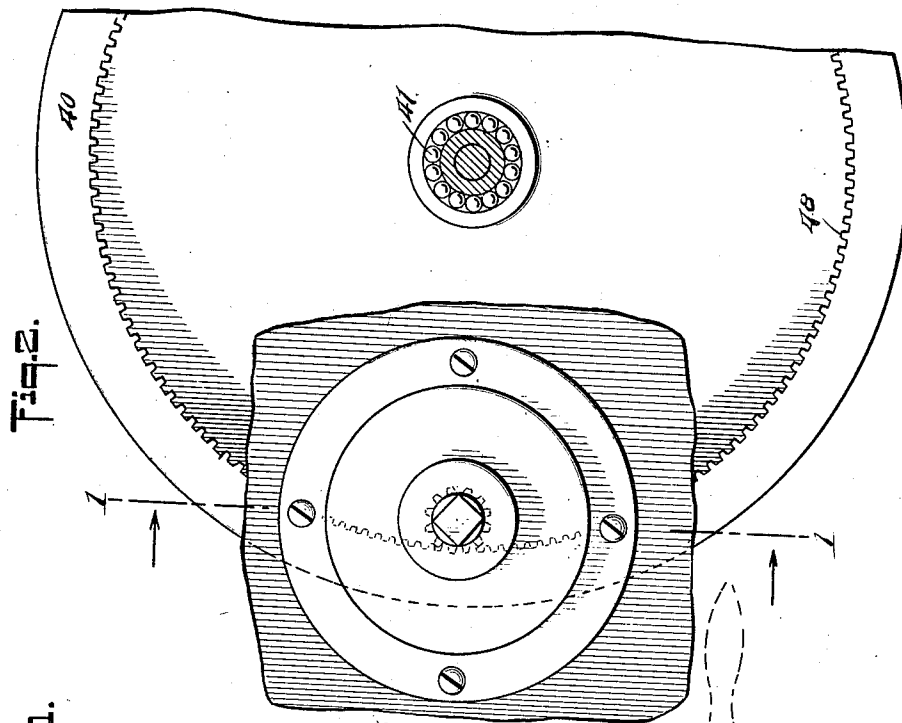


Fig. 2.

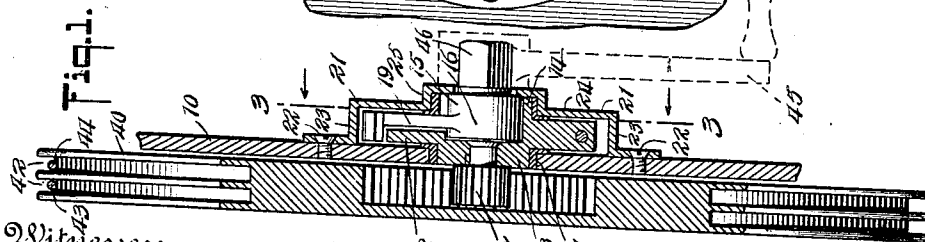


Fig. 1.

2 Witnesses:
[Signature]

Inventor
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By his Attorney
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UNITED STATES PATENT OFFICE.

WILLIAM H. DOUGLAS, OF NEW YORK, N. Y.

POWER-TRANSMISSION DEVICE.

Application filed October 23, 1919. Serial No. 332,650.

To all whom it may concern:

Be it known that I, WILLIAM H. DOUGLAS, a citizen of the United States, and resident of New York city, in the county of New York and State of New York, have invented certain new and useful Improvements in Power-Transmission Devices, of which the following is a specification.

The invention relates to an improvement in power transmission devices of the type which include in their organization a driven member which is intended normally to be locked against rotation in one or both directions and a driving or power member for positively rotating the driven member.

The transmission constituting the subject-matter of this disclosure is of general application in any location where such a device is capable of use, but in the following disclosure the invention will be described in connection with a double acting drum constituting part of a window actuating mechanism, to illustrate the utilization of the device disclosed as a locking mechanism to defeat any attempt to move the driven member by application of power to any part thereof except through the driving member.

One of the objects of the invention is to provide a simple form of device of the type outlined and in which the minimizing of the number of necessary parts has been featured.

Another object of the invention is to provide in such a device an arrangement of parts so proportioned and arranged that relatively, heavy forces are transmitted through relatively, light structural parts.

Incidental to the last general object, the invention has for a further desideratum, the providing of parts which can be readily demounted for repair and substitution for worn parts; in which a relatively light manual effort may be utilized to overcome a high degree of resistance to movement, such as is presented in the shifting of tight fitting windows.

Various other objects and advantages of the invention will be in part obvious from an inspection of the accompanying drawings and in part will be more fully set forth in the following particular description of one

form of mechanism embodying my invention, and the invention also consists in certain new and novel features of construction and combination of parts hereinafter set forth and claimed.

In the accompanying drawings:—

Figure 1 is a sectional view showing a preferred embodiment of my invention, shown in connection with a part of a window actuating device and taken on the line 1—1 of Figure 2, looking in the direction indicated by the arrows;

Figure 2 is a view in side elevation of part of the device shown in Figure 1;

Figure 3 is an enlarged detailed view of the clutch mechanism shown in Figure 1; and taken in section on the line 3—3 of Figure 1, looking in the direction indicated by the arrows; and

Figure 4 is a detailed perspective view of the driven member shown in front elevation in Figure 3.

In the following description and in the claims, parts will be identified by specific names for convenience of expression but they are intended to be as generic in their application to similar parts as the art will permit.

In the drawing there is shown a fixed support 10, such as a wall or the vehicle door, provided with an opening in which is placed a ring bearing 11. A Y-shaped driven member 12 (see Figure 4) is provided on its rear side with a hub 13 rotatably mounted in the bearing 11, and provided on its front side with an extension 14 in the form of a split sleeve 14' in which is rockably mounted the hub 15 of a driving member 16. The front face of the driven member 12 is provided with a radially extending, fish-tail groove 17 opposite sides of which circumferentially considered are defined by radially extending and relatively extensive pawl-receiving faces 18.

The driving member includes a radially extending power applying arm 19 which is positioned in the groove 17 and is free to move circumferentially for a limited distance in a direction in said recess before contacting with the faces 18. The arm 19 is somewhat massive and is provided on oppo-

site sides with broad bearing faces 20 which contact with one or the other faces 18 depending upon the direction of rotation of the driving member to provide therewith broad
 5 power transmitting faces extending radially and designed to transmit powerful forces without breaking the power transmitting parts.

The driving and driven members are coaxially disposed and are inclosed within a drum 21 which is affixed to the support 10 by screws 22. The drum includes a peripheral brake surface 23 and a face plate 24 which has its central portion outset to form
 10 a hub 25 constituting an outer support for the bearing 11. The outer edge of the driven member facing the interior surface of the drum 21 is cut back to provide a pair of roller-receiving-recesses 26 positioned on opposite sides of the groove 17. These recesses
 20 26 each have such an angle to the radius extending centrally through the groove 17 that the inner portion 27 of the recess, measured radially, is of slightly less length than the similarly measured distance at the outer portion 28 of the recess. A wedge member in the form of a roller 29 is positioned in each of the recesses and is so proportioned that
 30 when the roller is in the space 27 there is provided a one-way clutch connection between the driven member and the drum but when the roller is moved towards the relatively wide space 28 the clutching engagement is interrupted and the driven member
 35 is free to rotate in the direction in which the roller is moved as hereinafter more fully described. Each roller is normally held pressed towards the narrow portion of its recess and in clutching position by means of
 40 a leaf spring 30. The springs 30 are fastened to opposite sides of the stem 31 of the Y-shaped driven member and extend along opposite sides of the driven member. The outer ends of each of the springs is intumed
 45 to form a finger 32 and each passed between guiding lugs 33 extending outwardly from opposite sides of the driven member. These lugs also constitute stops for limiting the movement of the roller into its inoperative or unclutching position. The free end of
 50 each spring normally bears against its contacting roller to force the same towards the inner or narrow portion of the containing recess. The two springs coact to hold both
 55 rollers in their operative clutching engagement and thus act to hold the driven member against rotation in either rotary direction.

The arm 19 is of substantial T-shaped form, the head 34 of which constitutes a pair of peripherally extending kicking projections 35. These projections are designed to move into engagement with one or the
 60 other of the rollers depending upon the direction of rotation of the driving member to remove the engaged roller from its wedging

into an inoperative position in the wide part of the recess. The projections are so proportioned relative to the clearance between the sides of the arm 19 and the adjacent walls 18 of the driven member, that the advancing
 70 projection will kick the holding roller into an inoperative position just prior to the inter-engagement of the power transmitting faces of the arm and wall.

By this construction one or the other of the rollers is moved by the driving member positively into an inoperative position so as to permit the rotation of the driven member in the desired direction by the continued
 80 movement of the driving member.

As thus far described the disclosure constitutes a complete invention of an improved means for transmitting power through two
 85 members, identified for convenience of description as a driving and driven member and in which the driven member may be any mechanism which normally is to be locked against the action of turning forces which may originate in the driven member.

For the purpose of showing a practical use to which this mechanical movement may be utilized, and for the purpose of illustrating the possibility of using this mechanical
 90 movement in a situation where a relatively weak muscular movement is to be utilized to move a driven member which is intended to resist powerful leverage forces originating in the same, the disclosure is illustrated in connection with a part of a window actuating device.
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The driven parts include a two channelled drum 40 mounted on the support 10 preferably through some suitable form of anti-friction device 41. The grooves 42 in the periphery of the drum are designed to accommodate window actuating wires 43 and 44, and in their active operation would act on the drum and tend to rotate the same should
 100 an effort be made to raise or lower the window element attached to the cables. It will be appreciated that any such effort would exert a powerful leverage through the large drums and react on the locking device to wreck the same. However, the parts are of rugged construction and can withstand the
 105 wedging action of the rollers.

For the purpose of disclosing the use of the device with manual power there is shown in outline a crank 45 engaging the squared end 46 of the driving member. The driven member is provided with a relatively
 110 small but powerful pinion 47 keyed thereto and which meshes with a gear 48 on the drum to form an internal gear drive between the driven member and the drum.
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Having thus described my invention, I claim:

In a device of the class described, a driven member and a fixed member, means normally locking the driven member against
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rotation in one direction said means comprising wedging surfaces between the two members, and an element movable to and from said wedging surfaces, two spaced projections on the driven member and a flat spring having one arm secured to the driven member, the other arm passing between said projections and engaging the wedging member and normally tending to move it toward the wedging surface. 10

Signed at New York city, in the county of New York and State of New York, this 18th day of Oct. A. D. 1919.

WILLIAM H. DOUGLAS.