D. F. LEPLEY.

CLUTCH.

APPLICATION FILED SEPT. 18, 1914.

1,161,393.

Patented Nov. 23, 1915.

2 SHEETS—SHEET 1.

Fig. 1.

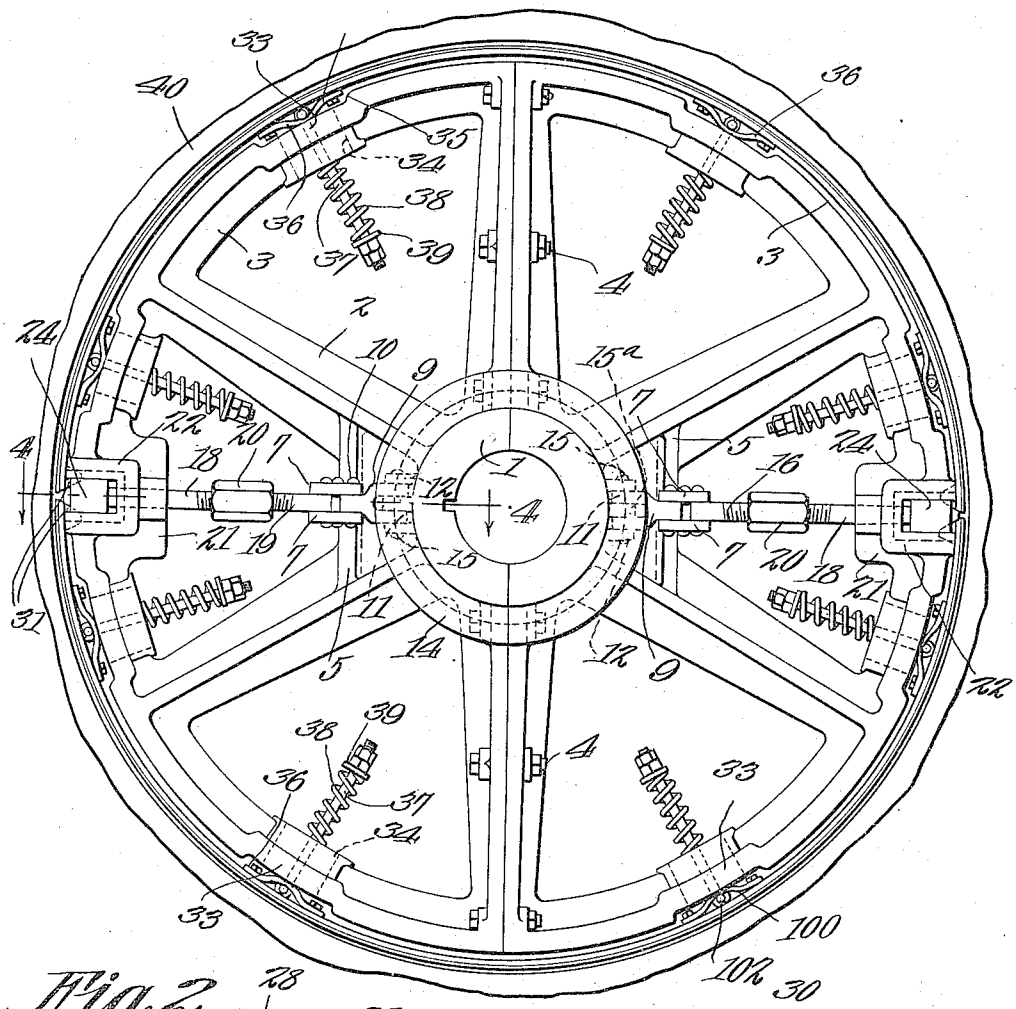
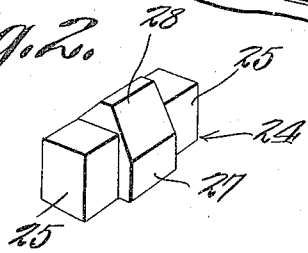



Fig. 2.



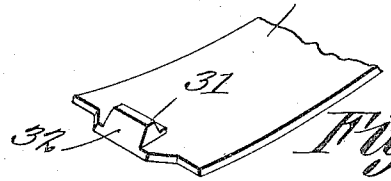




Fig. 3.

Witnesses

J. Tomein

M. C. McCarthy

Daniel F. Lepley Inventor,

by Cashow & Co.

Attorneys.

COLUMBIA PLANOGRAPH CO., WASHINGTON, D. C.

D. F. LEPLEY.

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2 SHEETS—SHEET 2.

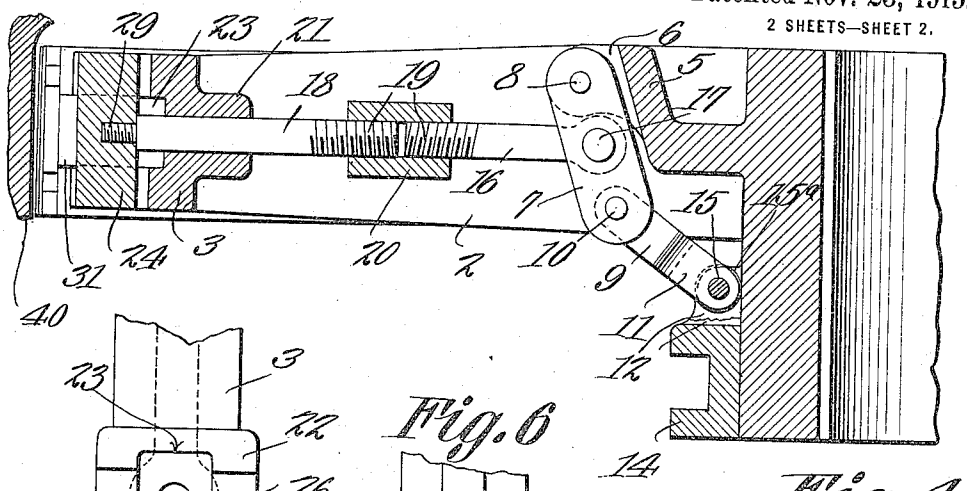



Fig. 4.

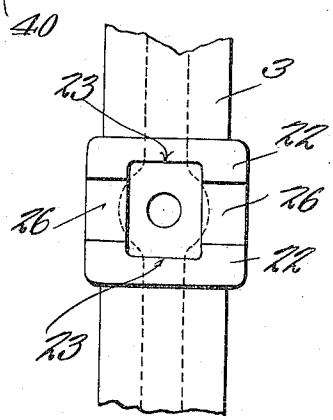



Fig. 5.

Fig. 6

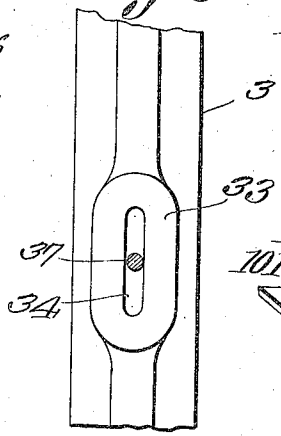






Fig. 10.

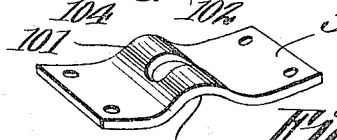
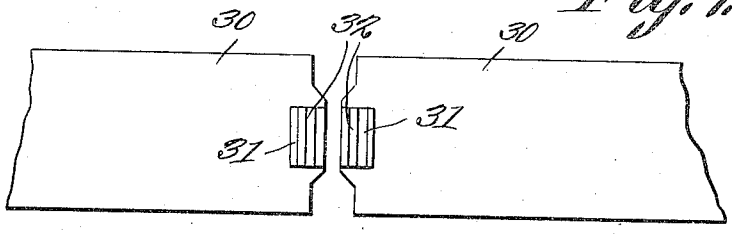



Fig. 9.

Fig. 7.



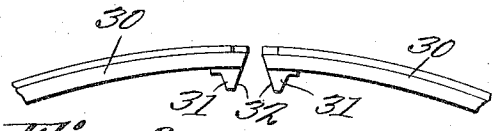




Fig. 8.

Witnesses

J. R. Somers

M. E. McCarthy.

Daniel F. Lepley

Inventor,

by Cashow & Co.

Attorneys.

# UNITED STATES PATENT OFFICE.

DANIEL F. LEPLEY, OF CONNELLSVILLE, PENNSYLVANIA.

## CLUTCH.

1,161,393. Specification of Letters Patent. Patented Nov. 23, 1915.

Application filed September 18, 1914. Serial No. 862,390.

*To all whom it may concern:*

Be it known that I, DANIEL F. LEPLEY, a citizen of the United States, residing at Connellsville, in the county of Fayette and State of Pennsylvania, have invented a new and useful Clutch, of which the following is a specification.

The device forming the subject matter of this application is a clutch, and one object of the invention is to provide novel means for actuating the friction shoes of the clutch.

Another object of the invention is to improve specifically, the means whereby the actuating wedges for the shoes are mounted in the rim.

Another object of the invention is to provide novel means for limiting the movement of the clutch shoes transversely of the rim.

Another object of the invention is to provide a powerful and efficient means whereby the actuating wedges may be forced outwardly to actuate the clutch shoes.

With the above and other objects in view which will appear as the description proceeds, the invention resides in the combination and arrangement of parts and in the details of construction hereinafter described and claimed, it being understood that changes in the precise embodiment of the invention herein disclosed can be made within the scope of what is claimed without departing from the spirit of the invention.

In the accompanying drawings:—Figure 1 shows the invention in side elevation; Fig. 2 is a perspective of one of the wedges; Fig. 3 is a fragmental perspective showing one end of one shoe; Fig. 4 is a fragmental cross section of the complete clutch; Fig. 5 is an elevation showing a portion of the outer face of the rim; Fig. 6 is an elevation showing a portion of the inner face of the rim; Fig. 7 is a plan showing the inner faces of the adjacent ends of the shoes; Fig. 8 is a fragmental elevation showing the coöperating ends of the shoes; Fig. 9 is a perspective showing one of the attaching plates; Fig. 10 is a perspective showing the outer end of one of the spindles.

In carrying out the present invention there is provided a supporting structure in the form of a wheel, the same embodying a tubular hub 1, spokes 2 radiating from the hub and a rim 3 carried by the spokes. If desired, the supporting structure or wheel may be fashioned in two or more parts, these constituent parts being connected by bolts 4 in the common and well known manner.

Between certain of the spokes 2 webs 5 extend. Each web is supplied with a transversely projecting ear 6 to the opposed faces of which links 7 are applied, the links 7 projecting transversely of the wheel and being united with the ear 6 through the instrumentality of a pivot element 8.

Disposed between the outer ends of the primary links 7 is a secondary link 9, united with the primary links by means of a pivot element 10. The secondary link 9 is bifurcated as indicated at 11 and bifurcations are received between lugs 12 constituting a part of a shifting collar 14 mounted to reciprocate on the hub 1, the bifurcations 11 of the secondary link 9 being connected with the lugs 12 by means of a pivot element 15. Located on the pivot element 15 between the bifurcations 11 is a roller $15^a$ which bears on the hub 1 and takes up the thrust.

The invention includes a longitudinally adjustable connection comprising alined rod parts 18 and 16, these parts of the connection being threaded in opposite directions as shown at 19 to receive a sleeve 20, the constituent elements 16 and 18 of the connection, together with the sleeve 20, constituting a turnbuckle, the inner end of which lies between the primary links 7 and is pivoted to the primary links 7, intermediate their ends, as shown at 17.

Projecting inwardly from the rim 3 is a guide boss 21 in which the part 18 of the connection is mounted to slide. Upon its outer face, and upon both sides of the guide boss 21, circumferentially of the wheel, transverse wings 22 are formed, as shown in Fig. 5 the space between the wings being indicated at 26. The inner faces of the wings 22 are recessed, as shown at 23.

The actuating member for controlling the clutch shoes hereinafter described is shown

in Fig. 2 and is in the form of a block 24, the end portions of which lie between the wings 22 in the space indicated at 26. Intermediate its ends, the block 24 is provided with a transverse head 27 received slidably in the recesses 23 of the wings 22. The outer extremity of the transverse head 27 is fashioned into a wedge 28. The outer end of the part 18 of the connection is threaded or otherwise secured to the part 27 of the wedge block, as shown at 29.

Located exteriorly of the rim 3 are friction shoes 30. Two of these shoes are shown, although a greater number may be employed if considered expedient. Since two shoes are shown it is obvious that the mechanism hereinbefore described is duplicated. At their ends, the friction shoes 30 are equipped with lugs 31 having inclined faces 32. The lugs 31 enter the recesses 23 and the inclined faces 32 of the lugs are adapted to be engaged by the wedge 28.

At intervals, the rim 3 is provided with inwardly projecting bosses 33 having, as shown in Fig. 6, slots 34 which are elongated circumferentially of the wheel. Upon its exterior face and adjacent the bosses 33, the rim 3 is provided with recesses 35 adapted to receive attaching members in the form of plates 36 secured to the shoes 30. The plates 36 are provided with transverse seats 100 having slots 101. Lodged in the seats 100 are headed pivot pins 102 held in place by cotter pins 103. The pins 102 pass through eyes 104 on the ends of spindles 37 which pass through the openings 34 and 101. Surrounding the spindles 37 inwardly of the rim 3 are compression spring 38 abutting at their outer ends against the bosses 33 and abutting at their inner ends against washers or heads 39 on the inner ends of the spindles 37.

The driven element wherewith the shoes 30 coact is indicated at 40, it being obvious that this element 40, indicated generally in the drawings, may be either the driving or the driven part of the clutch.

In operation, when the shifting collar 14 is moved along the hub 1, the links 7 and 9 act as a toggle joint, exerting a strong effort upon the connection 16—18 and moving the same outward. When the connection is moved outwardly, the wedge 28 is moved outwardly, the lugs 31 on the shoes, which lugs enter the recesses 23, being acted upon the wedge 28, to move the shoes outward and to cause the same to coact with the element 40, thereby effecting a clutching operation. The elongated slots 34 and 101 which receive the spindles 37 permit the shoes to have the necessary outward or radial movement without permitting them to move transversely of the rim 3. The springs 38 are put under compression when the shoes are set and when the shoes are released by the retraction of the wedge 28, the springs react to draw the shoes inwardly.

The turnbuckle structure 18—19—16 affords an adjustable connection between the links 7 and the wedge 28. The toggle joint 9—7 gives a powerful pressure and renders the structure peculiarly efficient when used in connection with heavy machinery. Owing to the specific manner in which the wedge block is mounted in the rim, reference being had to Figs. 2 and 5, the mounting of the wedge block is made secure, and the block will at all times exercise its functions properly in holding the clutch members in line when on separate shafts. The wedge blocks, it is to be noted, afford large wearing and supporting areas and a firm and positive lock between the driving and driven elements is afforded.

Having thus described the invention, what is claimed is:—

1. In a clutch, a rim having enlarged openings; shoes on the rim; means for operating the shoes; spindles pivoted to the shoes and movable in the openings circumferentially of the rim; and springs exerting a thrust against the rim and against the spindles.

2. In a clutch, a rim; shoes on the rim; attaching members secured to the shoes and provided with seats and with circumferential slots intersecting the seats; spindles extended through the rim and through the slots; spindle carried means mounted in the seats to permit the spindles to rock in the slots; and springs exerting a thrust against the spindles and against the rim.

3. In a clutch, a support embodying a rim including transverse wings having recesses in their inner faces, a block slidable between the wings and having a transverse head terminally received in the recesses, the outer end of the head being fashioned into a wedge; rim inclosing shoes the ends of which are engaged by the wedge; and means for advancing the block to cause the wedge to coact with the shoes.

4. In a clutch, a support embodying a hub and a rim; a shifting collar movable upon the hub; a secondary link pivoted to the collar; a primary link pivoted to the support and to the secondary link; shoes upon the exterior of the rim; a wedge engaging the ends of the shoes; and a turnbuckle uniting the wedge with the intermediate portion of the primary link, a portion of the turnbuckle being slidably received in the rim.

5. In a clutch, a support comprising a rim including transverse wings having recesses in their inner faces; a block slidable between the wings and having a transverse head terminally received in the recesses, the outer end of the head being fashioned into a

wedge; rim inclosing shoes the ends of which are provided with lugs extended between the wings, the adjacent faces of the lugs being inclined to coact with the wedge; and means for advancing the block to cause the wedge to coact with the inclined faces of the lugs.

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

DANIEL F. LEPLEY.

Witnesses:

IVY E. SIMPSON,

PHILOMENA A. ROCKELLI.

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