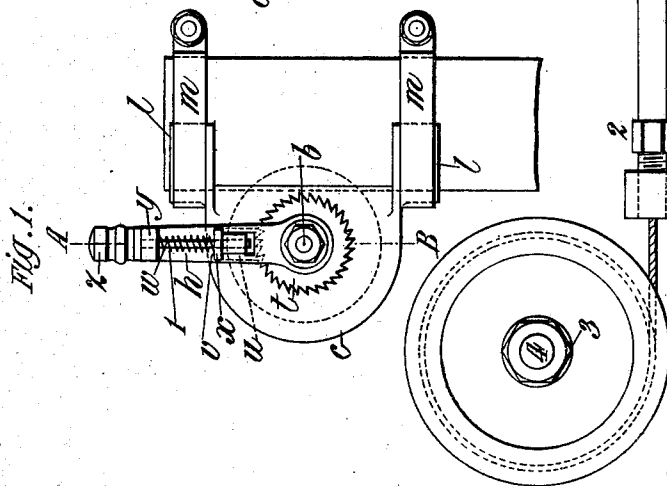
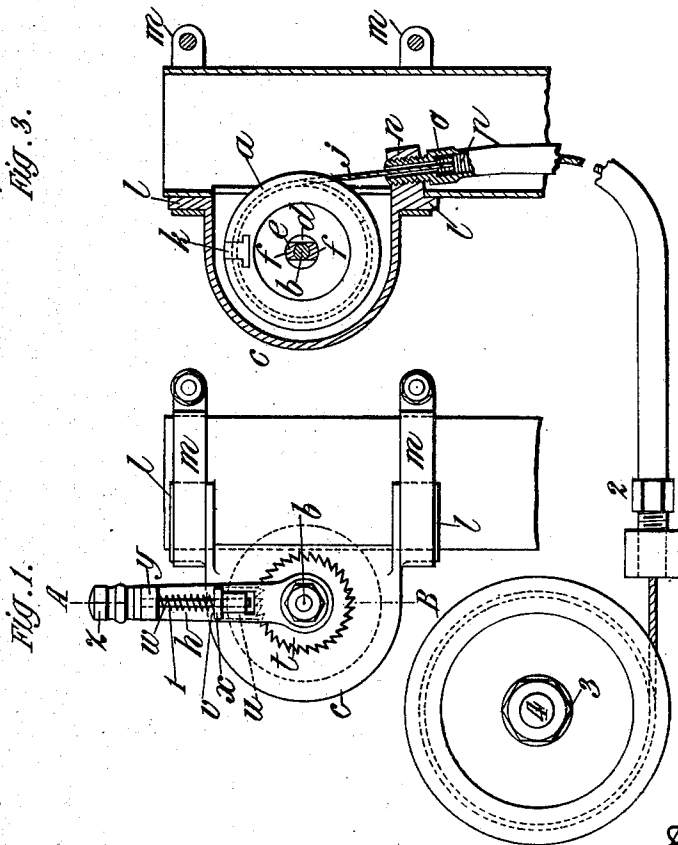
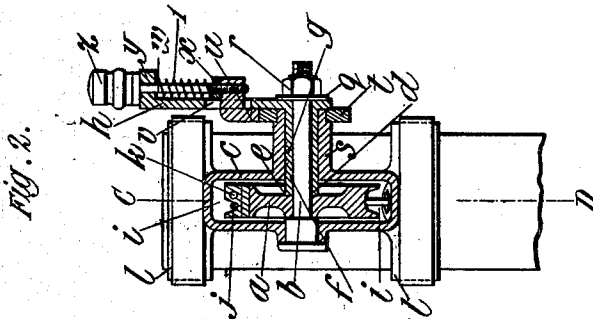


J. DRING.
MECHANISM FOR TRANSMISSION OF POWER.

APPLICATION FILED JUNE 17, 1901.

NO MODEL.

2 SHEETS—SHEET 1.



Witnesses:
A. M. Perkins.
J. A. Macdonald.

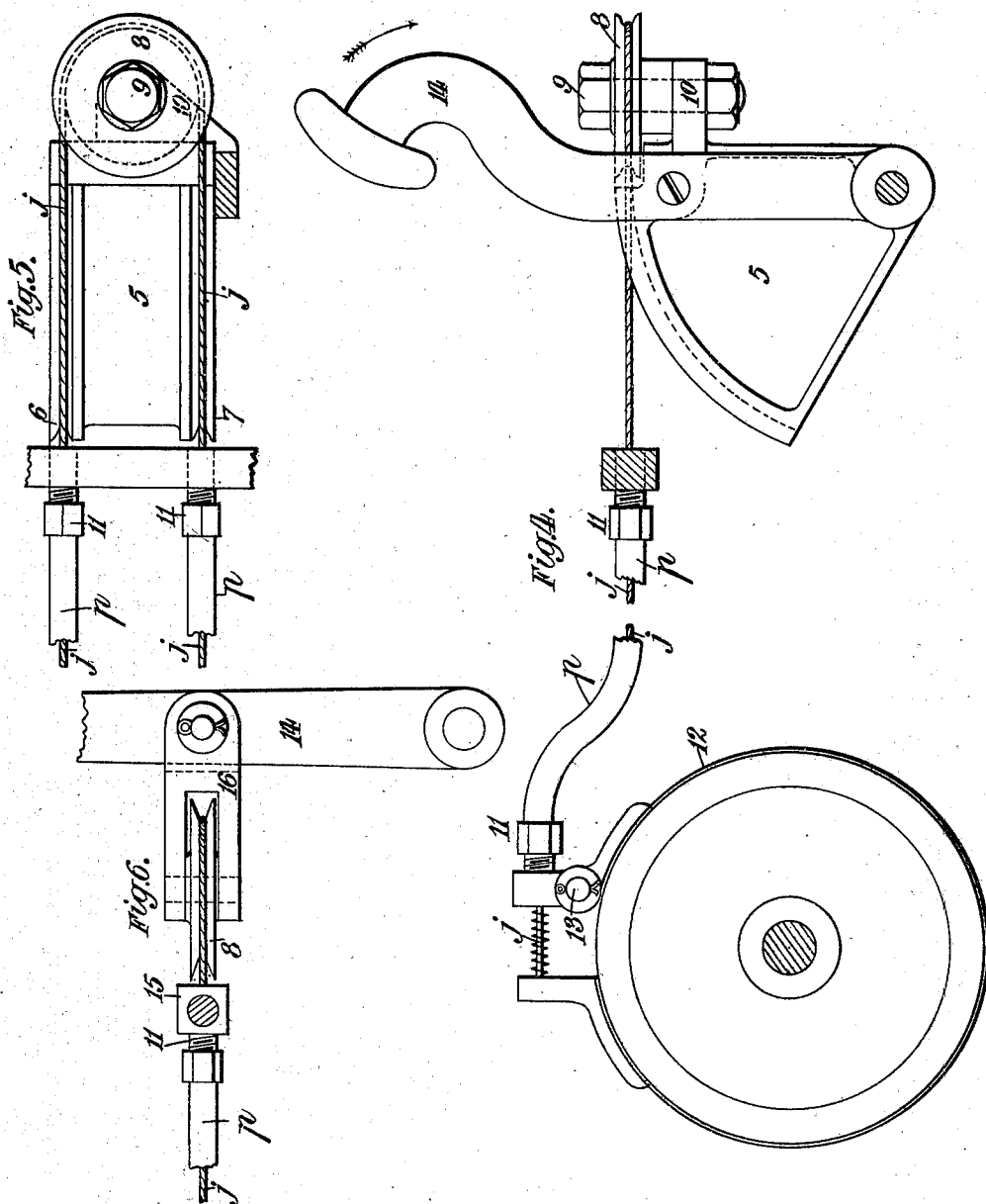
Inventor,
John Dring,
By his Attorneys,
Baldwin, Davidson & Wright.

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UNITED STATES PATENT OFFICE.

JOHN DRING, OF LONDON, ENGLAND.

MECHANISM FOR TRANSMISSION OF POWER.

SPECIFICATION forming part of Letters Patent No. 731,671, dated June 23, 1903.

Application filed June 17, 1901. Serial No. 64,911. (No model.)

To all whom it may concern:

Be it known that I, JOHN DRING, a subject of His Majesty King of Great Britain, residing at London, in the county of Middlesex, England, have invented certain new and useful Improvements in Mechanism for Transmission of Power, of which the following is a specification.

My invention, which relates to mechanism for the transmission of power, is designed more especially for use in connection with the mechanism shown in United States Patent No. 609,570, granted to Ernest M. Bowden August 23, 1898.

The Bowden patent describes mechanism in which power is transmitted from a lever to a bicycle-brake by means of a wire or cable which while flexible is inextensible, and it is arranged within a tortuous guide-tube formed of spirally-coiled wire, which while flexible laterally is incompressible longitudinally. By this arrangement a slight movement given to the lever is transmitted to the brake no matter to what extent the transmitting-wire and its guide-tube may be coiled or bent.

In United States Patent No. 659,138, granted to myself and Thomas Leigh Mitchelmore, we have shown certain improvements on the Bowden patent by means of which the parts may be conveniently adjusted.

The primary object of my present invention is to provide improved mechanism by means of which the length of pull in the prior constructions may be increased. Another object is to provide means whereby the wire or other transmitting means may be moved longitudinally within the guide member in such manner that the centralization of the inner member relatively to the guide member at the inner end of the guide member is preserved, thereby preventing frictional contact and consequent wear.

Another object is to provide mechanism whereby the actuation of one lever actuates uniformly two independent parts. My object also is to improve the general construction and operation of the mechanism.

In the accompanying drawings, Figure 1 shows a side elevation of a portion of one

form of my improved mechanism whereby a long pull may be given to the transmitting device, while the centralization of the inner member within the guide member at the inner end of the latter is maintained. Fig. 2 shows a vertical central section on the line A B of Fig. 1. Fig. 3 is a view in vertical central section of the same on the line C D of Fig. 2, and this figure shows also the manner in which the mechanism is connected to the part to be operated. Fig. 4 shows a side elevation of a modified construction adapted to uniformly operate two independent parts. Fig. 5 shows a top plan of a portion of the mechanism shown in Fig. 4. Fig. 6 shows a top plan of a further modification.

Referring first to Figs. 1 to 3, *a* indicates a drum or pulley loosely mounted upon a bearing-shaft *b* within a cover *c*. The boss *d* of the drum *a* is recessed at *e* to receive a clutch-tooth *f*, formed upon the hub *g* of a hand-lever *h*, by which said drum is operated. The drum *a* is provided with a groove *i*, in which one end of a wire cable or other inextensible inner member *j* is wound, the extremity of the inner member *j* being made secure by soldering or otherwise to a T-shaped block *k*, located in a transverse groove of similar form, which it enters laterally, so as to be retained in position by the engagement of the said inner member with the groove *i*. The cover *c* is provided with suitable feet or brackets *l*, which are adapted to be secured by clamps *m* or otherwise to any convenient support, such as the steering-post of a motor-car. The cover is also provided with a lug *n*, into which is fitted the adjustable stop or abutment *o* for the outer incompressible member or guide-tube *p*. This guide-tube is of the construction shown in the Bowden patent before referred to, being flexible laterally, but incompressible longitudinally. It may be made of a wire coil covered with any suitable material. The lever *h* has a long hub *g* and is fulcrumed upon the bearing-shaft *b* and retained thereon by the washer *q* and nut *r*. The cover *c* has a long boss *s*, through which the hub *g* passes to engage the boss *d* of the drum. Upon this boss *s* is secured a

circular rack *t*, adapted to be engaged by the pawl *u* of the hand-lever in order to retain it in any desired position. The pawl *u* travels in a slot *v*, formed in the hand-lever *h*, and is provided with a stem *w*, which passes through the plate *x* and a lug *y* at the end of the lever *h* and terminates in a knob *z*, by which said pawl may be lifted out of engagement with the rack *t* against the resistance of the spring *l*.

It will be observed by reference to Fig. 3 that the bore of the stop *o* is tangential to the periphery of the drum or pulley *a*, the arrangement being such that the inner member *j* may be wound to any desired extent around the drum or pulley; but the portion of the member *j* between the point of contact with the pulley and the bore of the stop *o* is always tangential to the pulley and always maintains a central position in the bore of the stop. This is an important feature, since the life of the inner member would be considerably shortened if it were drawn over the edge of the stop.

Of course it is not essential that the drum or pulley should be complete or circular, as a segment or sector only of the drum need be employed, as indicated in Fig. 4.

The outer end of the outer or guide member *p* bears against an adjustable stop or abutment 2, similar to that at *o*, while the outer end of the inner member *j* is wound around a drum 3, mounted upon a spindle 4, which may be a valve, spindle, or other part which it is desired to operate. The inner member *j* is arranged tangentially to the periphery of the drum 3 and maintains at all times a central position in the bore of the stop in order to prevent frictional contact and consequent wear.

In operating the mechanism shown in Figs. 1, 2, and 3 the knob *z* is first lifted to disengage the pawl *u* from the rack *t* and the hand-lever *h* is turned until a sufficient amount of the inner member *j* has been wound upon the drum *a* to impart the desired amount of motion to the part 4 to be operated. In this way a long pull may be given to the inner member no matter to what extent it may be bent or coiled with its guide around parts of the motor-car or the like on which it is used.

Referring now to Figs. 4 and 5, 5 indicates a sector or part of the drum or pulley provided on its periphery with two grooves 6 and 7 and carrying the pulley 8, which is journaled upon a suitable bearing 9, supported by a lug 10, attached to or forming part of the sector. This pulley is located adjacent to the grooves 6 and 7. The inner member *j* passes around the pulley 8, as indicated in Figs. 4 and 5, and also in contact with the sector in the grooves 6 and 7. Each end of the inner member passes through an outer member *p* of the construction before referred to and whose ends bear against stops or abutments 11, through

which the extremities of the inner members *j* are led to the parts to be operated, such as a pair of band-brakes, one of which is shown at 12 in Fig. 4. In this case one end of each band is made fast to a stud 13, which supports one of the stops 11, while the other end of the inner member is secured to the opposite end of the band. In operation force is applied to the lever 14 in the direction of the arrow, the effect being to apply an equal tension to the portions of the inner member on each side of the pulley 8, which is free to turn, so as to take up slack on either side, both ends of the inner member are uniformly pulled, and the mechanisms at the opposite ends are simultaneously operated. During the pull the direction of the ends of the inner member is preserved by the curved form of the grooves 6 and 7, which the two branches of the inner member leave at a tangent, so as to in all cases enter the stops 11 centrally. The general arrangement is similar to that shown in Fig. 3, and the purpose of the construction is the same.

In Fig. 6 the stops 11 are so supported as to adapt themselves to the direction of the inner member. This result is obtained by supporting the stops 11 in swiveling blocks 15, which are turned by the inner member as its direction changes. In this case the pulley 8 is journaled in bearings 16, which is pivoted to the lever 14.

Obviously the mechanism may be changed in many ways without departing from my invention. The mechanism shown, however, illustrates what are considered by me the best forms of my invention.

I claim—

1. The combination of a laterally-flexible tubular guide member incompressible in the direction of its length, a flexible member extending through the guide member, extending beyond the ends thereof and which is inextensible in the direction of its length, means for moving the inner member longitudinally within the guide member, and for preserving the centralization of the inner member relatively to the guide member at one end of the latter to prevent frictional contact and consequent wear, substantially as described.

2. The combination of a laterally-flexible tubular guide member incompressible in the direction of its length, a flexible member extending through the guide member and which is inextensible in the direction of its length, a drum around which the inner member passes and which it leaves tangentially when entering the guide member, and means for moving the drum to put the inner member under tension and move it longitudinally within the guide member.

3. The combination of an operating-lever, a grooved sector connected therewith, an equalizing-pulley carried by the sector, an inextensible wire or cable which enters the

grooves in the sector and passes around the pulley, two laterally-flexible tubular guide members incompressible in the direction of their length through which the two parts of
5 the wire or cable extend and the bore of which at their ends next the sector are tangential thereto for the purpose specified.

In testimony whereof I have hereunto subscribed my name.

JOHN DRING.

Witnesses:

J. S. WITHERS,

WALTER J. SKERTEN.