

Nov. 22, 1932.

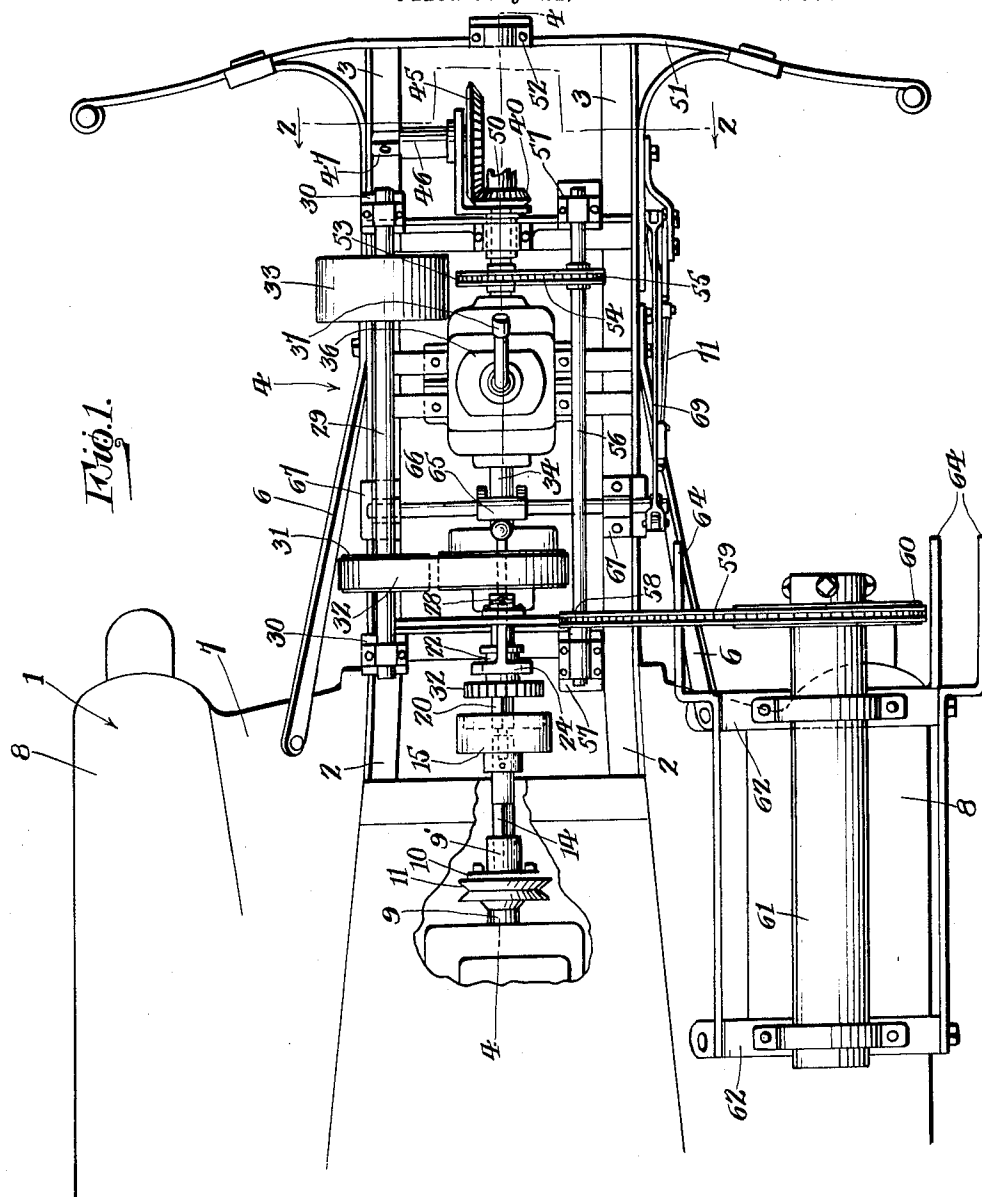
E. W. HOLLAND

1,888,951

POWER TAKE-OFF

Filed July 21, 1931

4 Sheets-Sheet 1



INVENTOR.

Edgar W. Holland

BY

Geo. P. Kimmel

ATTORNEY.

Nov. 22, 1932.

E. W. HOLLAND

1,888,951

POWER TAKE-OFF

Filed July 21, 1931

4 Sheets-Sheet 2

Fig. 2.

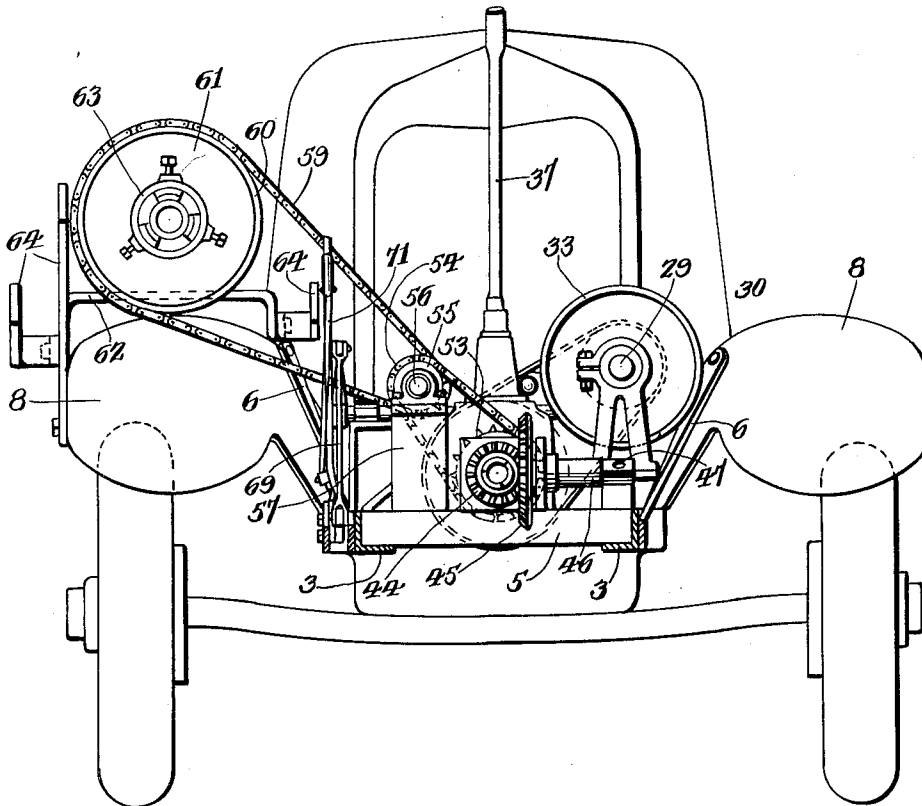
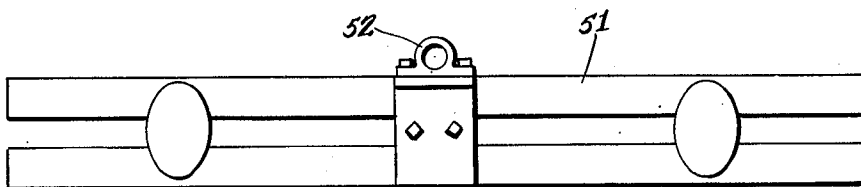


Fig. 3.



INVENTOR.

Edgar W. Holland

BY

Geo. P. Kimmel

ATTORNEY.

Nov. 22, 1932.

E. W. HOLLAND

1,888,951

POWER TAKE-OFF

Filed July 21, 1931

4 Sheets-Sheet 3

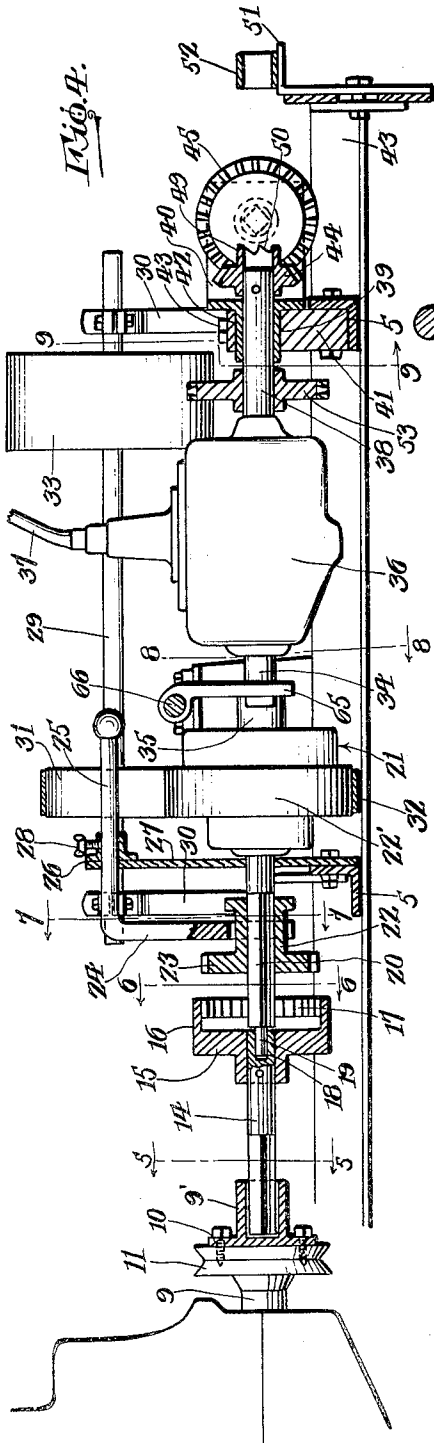


Fig. 1.

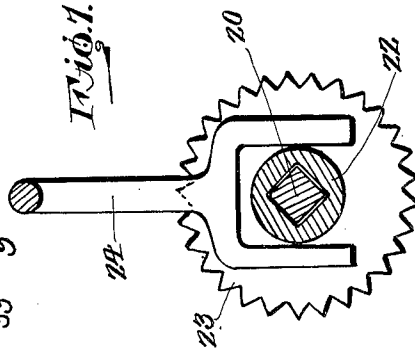


Fig. 6.

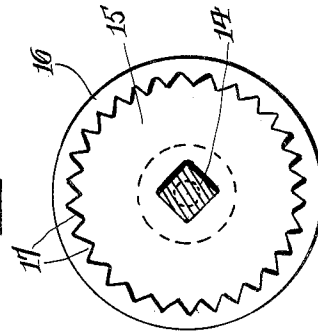
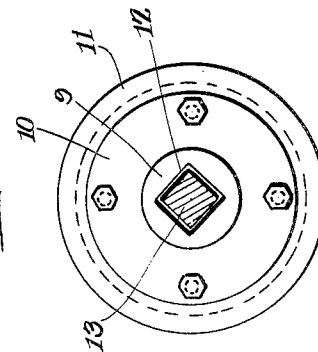


Fig. 5.



INVENTOR.

Edgar W. Holland

BY

Geo. P. Kimmel

ATTORNEY.

Nov. 22, 1932.

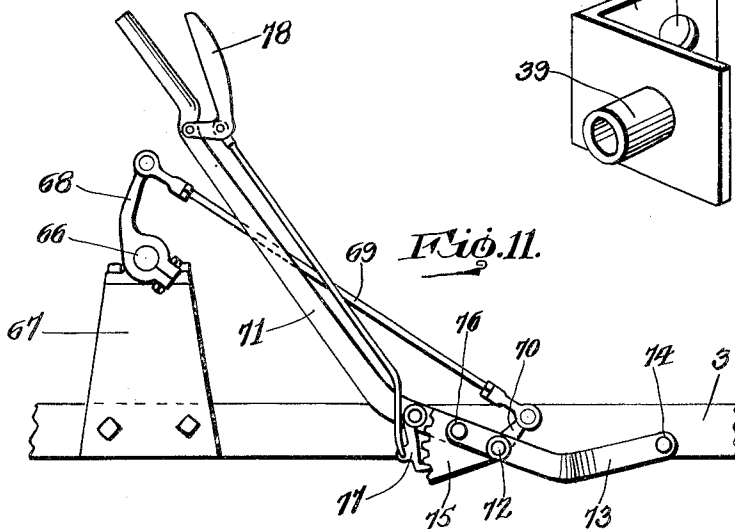
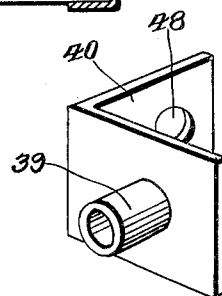
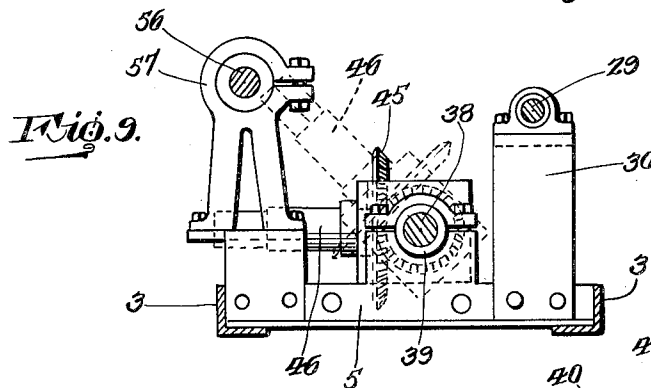
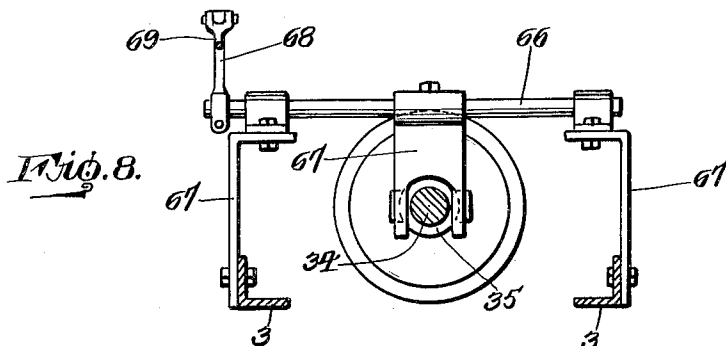
E. W. HOLLAND

1,888,951

POWER TAKE-OFF

Filed July 21, 1931

4 Sheets-Sheet 4



INVENTOR.

Edgar W. Holland

BY

Geo. P. Kimmel
ATTORNEY.

UNITED STATES PATENT OFFICE

EDGAR W. HOLLAND, OF WACO, TEXAS

POWER TAKE-OFF

Application filed July 21, 1931. Serial No. 552,286.

This invention relates to a power take-off adapted for connection with a motor vehicle and has for its primary object to provide in a manner as hereinafter set forth, a device of such character which is capable of performing a number of operations selectively or simultaneously.

A further object of the invention is to provide a device of the character aforesaid including a power shaft which may be driven at a variety of speeds and further which may be driven in opposite directions.

A further object of the invention is to provide a device of the character aforesaid which is of simple and sturdy construction, and comparatively inexpensive to manufacture and install with respect to a motor vehicle.

With the foregoing and other objects in view, the invention consists of the novel construction, combination and arrangement of parts as hereinafter more particularly described, and shown in the accompanying drawings, but it is to be understood that the description and drawings are to be considered as illustrative rather than limitative.

In the accompanying drawings in which like numerals are employed to designate like parts throughout the several views:

Figure 1 is a top plan of a power take-off in accordance with this invention showing the same in association with a motor vehicle.

Figure 2 is a sectional front elevation thereof taken on the line 2—2 of Figure 1.

Figure 3 is an elevation of the bumper carried at the front of the device.

Figure 4 is a longitudinal section taken on the line 4—4 of Figure 1.

Figure 5 is an enlarged sectional elevation taken at a point indicated by the line 5—5 of Figure 4.

Figure 6 is an enlarged sectional elevation taken at a point indicated by the line 6—6 of Figure 4.

Figure 7 is an enlarged sectional elevation taken at a point indicated by the line 7—7 of Figure 4.

Figure 8 is an enlarged sectional elevation taken at a point indicated by the line 8—8 of Figure 4.

Figure 9 is an enlarged sectional elevation

taken at a point indicated by the line 9—9 of Figure 4.

Figure 10 is an enlarged perspective view of the adjustable brackets for mounting the drill operating shaft.

Figure 11 is an enlarged perspective view showing the lever mechanism for operating the transmission shaft clutch.

Referring to the drawings in detail, the numeral 1 indicates generally a motor vehicle including a pair of frame members 2 to which are secured a similar pair of frame members 3 for the power take-off indicated generally at 4. The frame members 2 are secured together by means of suitable cross braces 5 and are further secured by means of braces 6 to the webs 7 connecting the fenders 8 of the vehicle with the frame members 2 thereof.

The power take-off is operated from the crank shaft 9 of the vehicle and is connected therewith by means of a flange 10 on the sleeve 9', the flange 10 being secured by suitable bolts to the fan belt pulley 11 mounted on the crank shaft 9. The sleeve 9' provides a socket 12 of polygonal contour within which is slidably secured the squared end portion 13 of a relatively short shaft 14. Fixedly secured to the forward end of the shaft 14 is a coupling element 15 including an annular flange 16 formed in its inner peripheral face with a series of teeth 17. The forward end of the shaft 14 is formed with a socket 18 circular in cross section within which is rotatably mounted a reduced end portion 19 of a shaft 20, the opposite end of which is connected with a clutch shown conventionally at 21 and including a fly wheel 22'. A forward portion of the shaft 20 is of polygonal shape in cross section, and slidably mounted thereon is a collar 22 formed with a gear 23 adapted to mesh with the teeth 17 in the flange 16. The gear 23 is shifted into and out of meshing position with respect to the flange 16 by means of a shifting yoke 24 having a handle portion 25 slidably extending through a bearing 26 carried by a bracket 27. Extending through the bearing 26 is an adjusting screw 28, by means of which the gear 23 may be secured in active or inactive position as desired.

When the gear 23 is in inactive position, the coupling element 15 rotates about the reduced end portion 19 of the shaft 20, the shafts 14 and 20 being maintained in alignment by the portion 19.

Extending in parallel relation to the shafts 14 and 20 is a power shaft 29 which is journaled in suitable bearings 30 carried by the frame members 3. Fixedly mounted on the shaft 29 is a pulley 31 which is connected by means of an endless belt 32 with the fly wheel 22' the outer peripheral face of which is of flat formation in order that the fly wheel may serve as a pulley. Fixedly mounted on the shaft 29 is a pulley 33 for engagement by a suitable belt, not shown, for the purpose of operating a belt, pump, mill or the like.

Extending forwardly from the clutch element 21 is a transmission shaft 34 which is provided at one end with a slidable clutch sleeve 35, and the other end of which extends into the housing 36 of a transmission mechanism which may be of any well known type for changing speed or reversing by the manipulation of a shift lever 37. Projecting forwardly from the transmission housing 36 is a power shaft 38 which rotatably extends through a sleeve 39 on an angular bracket 40 mounted on a suitable base 41 and held in position thereon by means of a cap 42 provided with suitable holdfast devices 43. Fixedly mounted on the forward end of the shaft 38 is a pinion 44 which is in mesh with a ring gear 45 fixedly mounted on a shaft 46 for operating a drill or the like. The shaft 46 is provided with a squared outer end portion 47 in order that a suitable chuck, not shown, may be secured thereto. The bracket 40 may be rotated about the shaft 38 to alter the extending direction of the shaft 46 by loosening the holdfast devices 43 and rotating the sleeve 39 within the seat therefor in the base 41. The shaft 46 extends through a suitable opening 48 in the bracket 40. Formed integrally with the pinion 44 is a sleeve 49 having a ratchet face 50 for engagement by a crank, not shown, if it is desired to start the motor of the vehicle 1 from the ground. A bumper 51 is carried by the forward ends of the frame members 3, the bumper being provided with a retaining collar 52 through which the crank may be rotatably extended.

Fixedly mounted on the shaft 38 is a sprocket 53 which is operatively connected by means of a chain 54 with a sprocket 55 on a power shaft 56 extending in parallel relation to the shaft 38 and journaled in suitable bearings 57 carried by one of the frame members 3. Fixedly mounted on the power shaft 56 is a second sprocket 58 which is operatively connected by means of a chain 59 with a sprocket 60 on a cylindrical drum 61 rotatably mounted in bearing members 62 mounted on one of the fenders 8. The drum

61 is provided at its forward end with a pipe vise 63, and arranged in spaced relation to the pipe vise 63 are a plurality of tool holding members 64 which are rigidly connected with the bearings 62. Suitable pipe or thread cutting dies may be secured by the members 64, and a pipe which it is desired to thread or cut is secured within the vise 63 and rotated with respect to the tools carried by the members 64.

The clutch collar 35 may be shifted into and out of operative position by means of a yoke 65 which is in engagement with the clutch collar and which is fixedly connected with a rotatable rod 66 extending transversely of the device and journaled in suitable bearings 67 carried by the frame members 3. Rotation of the rod 66 swings the yoke 65 in an arc to move the clutch collar 35. The rod 66 is operated by means of a crank 68 fixedly secured thereto and connected by means of a pull rod 69 with the upturned end 70 of a lever 71 pivoted adjacent its upturned end as indicated at 72. The pivot pin 72 extends through a rigid strap 73 and coacts with a suitable bolt 74 for securing the strap 73 to one of the frame members 3. The pivot pin 72 further extends through a segmental ratchet 75 which is fixedly secured to the strap 73 by means of a suitable bolt 76. A pawl 77 is pivotally connected with the lever 71, the pawl being operated by a handle member 78.

It is thought that the many advantages of a power take-off in accordance with this invention will be readily apparent, and although the preferred embodiment of the invention is as illustrated and described, it is to be understood that changes in the size, shape and arrangement of parts may be resorted to, so long as such changes fall within the scope of the invention as defined in the appended claims.

What I claim is:—

1. In a power take-off, a forwardly extending supporting structure, means for connecting the rear of said structure to the front of a motor vehicle, a set of lengthwise aligned shafts including a front, a rear and a pair of intermediate shafts rotatably supported upon said structure, means for connecting the rear shaft with the forward end of the crank shaft of the vehicle, clutching means detachably connecting the rear shaft with one of the intermediate shafts, means for clutching said intermediate shafts together and having as a part thereof a fly wheel constituting a power transmitting means, and a transmission mechanism connecting the other of said intermediate shafts with the front shaft.

2. In a power take-off, a forwardly extending supporting structure, means for connecting the rear of said structure to the front of a motor vehicle, a set of lengthwise aligned

shafts including a front, a rear and a pair of intermediate shafts rotatably supported upon said structure, means for connecting the rear shaft with the forward end of the crank shaft of the vehicle, clutching means detachably connecting the rear shaft with one of the intermediate shafts; means for clutching said intermediate shafts together and having as a part thereof a fly wheel constituting a power transmitting means, a transmission mechanism connecting the other of said intermediate shafts with the front shaft, and a pair of spaced power transmitting means on said front shaft.

3. In a power take-off, a forwardly extending supporting structure, means for connecting the rear of said structure to the front of a motor vehicle, a set of lengthwise aligned shafts including a front, a rear and a pair of intermediate shafts rotatably supported upon said structure, means for connecting the rear shaft with the forward end of the crank shaft of the vehicle, clutching means detachably connecting the rear shaft with one of the intermediate shafts, means for clutching said intermediate shafts together and having as a part thereof a fly wheel constituting a power transmitting means, a transmission mechanism connecting the other of said intermediate shafts with the front shaft, a slidable clutch collar forming a part of said clutching means, a rotatable rod having a yoke fixedly secured thereto to swing in an arc for operating the clutch collar upon rotation of said rod, a crank formed on said rod, and a lever operatively connected with said crank.

4. In a power take-off, a forwardly extending supporting structure, means for connecting the rear of said structure to the front of a motor vehicle, a set of lengthwise aligned shafts including a front, a rear and a pair of intermediate shafts rotatably supported upon said structure, means for connecting the rear shaft with the forward end of the crank shaft of the vehicle, clutching means detachably connecting the rear shaft with one of the intermediate shafts, means for clutching said intermediate shafts together and having as a part thereof a fly wheel constituting a power transmitting means, a transmission mechanism connecting the other of said intermediate shafts with the front shaft, a pinion on said front shaft, a bracket rotatably mounted with respect to the front shaft, a power transmitting shaft carried by said bracket, and a ring gear on said power transmitting shaft and meshing with said pinion.

5. In a power take-off, a forwardly extending supporting structure, means for connecting the rear of said structure to the front of a motor vehicle, a set of lengthwise aligned shafts including a front, a rear and a pair of intermediate shafts rotatably supported

upon said structure, means for connecting the rear shaft with the forward end of the crank shaft of the vehicle, clutching means detachably connecting the rear shaft with one of the intermediate shafts, means for clutching said intermediate shafts together and having as a part thereof a fly wheel constituting a power transmitting means, a transmission mechanism connecting the other of said intermediate shafts with the front shaft, a power shaft extending in parallel relation to the front shaft, means for driving the power shaft from the front shaft, a drum, means for rotatably supporting the drum from a fender of the vehicle and parallel to said power shaft, and means for rotating the drum upon the rotation of the power shaft.

6. In a power take-off, a forwardly extending supporting structure adapted for connection at its rear with the front of a motor vehicle, a pair of lengthwise aligned shafts rotatably mounted on said structure, means for detachably coupling said shafts together, one of said shafts being adapted for connection with the forward end of the crank shaft of the vehicle, a fly wheel carried by the other of said shafts, a power shaft extending in parallel relation to said aligned shafts and rotatably mounted on said structure, a driven pulley on said power shaft, a drive pulley on said power shaft, and an endless belt extending around said drive pulley and fly wheel.

7. In a power take-off, a forwardly extending supporting structure adapted for connection at its rear end to the front of a motor vehicle, a set of lengthwise aligned shafts rotatably supported by and centrally of said structure, said set including a front, a rear and a pair of intermediate shafts, means for connecting the rear shaft to the front of the crank shaft of the motor of the vehicle, means for detachably clutching one of said intermediate shafts to said rear shaft, means for clutching said intermediate shafts together and including a fly wheel constituting a power transmitting means, a transmission mechanism for connecting the other intermediate shaft to the front shaft, and said front shaft including means to provide for the cranking of the motor of the vehicle.

8. In a power take-off, a forwardly extending supporting structure adapted for connection at its rear end to the front of a motor vehicle, a set of lengthwise aligned shafts rotatably supported by and centrally of said structure, said set including a front, a rear and a pair of intermediate shafts, means for connecting the rear shaft to the front of the crank shaft of the motor of the vehicle, means for detachably clutching one of said intermediate shafts to said rear shaft, means for clutching said intermediate shafts together and including a fly wheel constituting a

power transmitting means, a transmission mechanism for connecting the other intermediate shafts to the front shaft, a pair of spaced parallel power shafts rotatably mounted on said structure and disposed parallel to said intermediate and front shafts, and means for driving one of the power shafts from said fly wheel, and means for driving the other of said power shafts from said front shaft.

9. In a power take-off, a forwardly extending supporting structure adapted for connection at its rear end to the front of a motor vehicle, a set of lengthwise aligned shafts rotatably supported by and centrally of said structure, said set including a front, a rear and a pair of intermediate shafts, means for connecting the rear shaft to the front of the crank shaft of the motor of the vehicle, means for detachably clutching one of said intermediate shafts to said rear shaft, means for clutching said intermediate shafts together and including a fly wheel constituting a power transmitting means, a transmission mechanism for connecting the other intermediate shaft to the front shaft, a power transmitting means on said front shaft, and an adjustable driven element operated from said power transmitting means and having a part thereof encompassing such shaft.

10. In a power take-off, a forwardly extending supporting structure adapted for connection at its rear end to the front of a motor vehicle, a set of lengthwise aligned shafts rotatably supported by and centrally of said structure, said set including a front, a rear and a pair of intermediate shafts, means for connecting the rear shaft to the front of the crank shaft of the motor of the vehicle, the rear one of said intermediate shafts having a reduced cylindrical rear end seated in the forward end of said rear shaft, a threaded member fixed to the forward end of said rear shaft, a shiftable toothed element slidably mounted on said rear intermediate shaft for engagement with said member for detachably connecting such shaft to the rear shaft, shifting means for said element including an angularly disposed portion, a bearing for said portion, means for clutching said intermediate shaft together and including a power transmitting element, a transmission mechanism for connecting the forward intermediate shaft to the front shaft, and power transmitting means carried by the front shaft.

In testimony whereof, I affix my signature hereto.

EDGAR W. HOLLAND.