





pressure plate and at least two clutch plates, at least one of which engages said housing or means substantially stationary with respect to said housing and at least one of which engages said first substantially cylindrical extension of said drive drum, and

second compression means for compressing said clutch plates of said brake.

2. The invention of claim 1, including a first shaft connected to said planetary gear carrier and a second shaft connected to said ring gear.

3. The invention of claim 1, wherein:

said first compression means consists substantially of a first cylinder, a first hydraulically operated piston inside said first cylinder and means for supplying pressurized fluid to said first cylinder to operate said first hydraulically operated piston, thereby compressing said clutch plates of said clutch pack, and

said second compression means consists substantially of a second cylinder, a second hydraulically operated piston inside said second cylinder and means for supplying pressurized fluid to said second cylinder to operate said second hydraulically operated piston, thereby compressing said clutch plates of said brake.

4. The invention of claim 3, wherein said housing has a substantially cylindrical bore for accepting a valve, a first hole for routing fluid to said bore, a second hole for routing fluid from said bore to said first cylinder and a third hole for routing fluid from said bore to said second cylinder, and including a multi-position valve placed in said bore whereby fluid is routed from said first hole to said second hole when said multi-position valve is in a first position and from said first hole to said third hole when said multi-position valve is in a second position.

5. The invention of claim 4, including activating means for changing the position of said multi-position valve from a remote location.

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### *Description*

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## BACKGROUND OF THE INVENTION

### 1. Field of the Invention.

The present invention relates generally to overdrive units for use with automobiles with standard or automatic transmissions and, more specifically, to overdrive transmission units of small size which utilize a planetary gear mechanism in conjunction with clutch packs in order to produce an overdrive transmission unit providing an additional gear ratio for purposes of increasing fuel economy and, in some cases, top speeds of a vehicle. In the past, the use of multiple clutch packs to accomplish the control of the planetary transmission mechanism required a significant amount of axial space within the transmission, as well as a large diameter which, in some circumstances, limited the use of the overdrive transmission unit to specific automobiles, or required modification of an automobile prior to installation.

### 2. Description of the Prior Art.

In attempts to build a satisfactory overdrive transmission unit, inventors in the past have addressed their efforts to techniques of reducing the amount of space required, techniques to ensure smooth engagement of the gearing, and techniques of timing the change from direct drive to overdrive. While control systems for use with overdrive units have been proposed, most of these systems, have required manual shifting of a lever which either physically controlled an overdrive valve or controlled an electronic circuit which controlled the overdrive valve. Other automatic overdrive units have taught installation of the automatic overdrive unit by rigid connection of its body to the frame of an automobile and installation of the unit mid-range in the drive shaft of the automobile or attachment of the unit to the differential.

None of the prior art of which applicant is aware has taught an automatic overdrive transmission unit which





