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input shaft torque. Either clutch **101** or dog clutch **106** connects gear **64** to shaft **14** and sprocket **24**. These actions cause OWC **66** to overrun. Shaft **14** drives the rear wheels, and sprocket **24** drives the front wheels through the fixed ratio mechanism **18**, intermediate shaft **26**, TOD clutch **104**, and front output shaft **15**.

Although the form of the invention shown and described here constitutes the preferred embodiment of the invention, it is not intended to illustrate all possible forms of the invention. Words used here are words of description rather than of limitation. Various changes in the form of the invention may be made without departing from the spirit and scope of the invention as disclosed.

We claim:

**1.** An automatic continuously variable transmission, comprising:

an input shaft;

an intermediate shaft;

an output shaft;

a variable ratio drive mechanism having an input, an output driveably connected to said input and intermediate shaft, and an endless belt driveably engaged with the input and output for producing a continuously variable ratio of the input speed to the output speed;

fixed ratio drive mechanism having a first element driveably connected to the output shaft drive and a second element driveably connected to the intermediate shaft;

a first gearset having an input driveably connected to the input shaft and an output, for driving the output at a slower speed than the speed of the input;

a second gearset having an input driveably connected to the output of the first gearset and an output driveably engaged with said input, for producing a slower speed and opposite direction of rotation of the output relative to the speed and direction of the input;

a transfer clutch for alternately driveably connecting and disconnecting the input of the variable ratio drive mechanism and input shaft;

an overrunning clutch producing a one-way drive connection of the output of the second gearset and the output shaft; and

a low brake for alternately driveably holding fixed against rotation and releasing an element of the first gearset whereby the output of the first gearset is driven at a slower speed than the speed of the input shaft.

**2.** The transmission of claim **1** further comprising:

a second output shaft; and

a clutch for alternately driveably connecting and disconnecting the intermediate shaft and second output shaft.

**3.** The transmission of claim **1** further comprising:

a first reverse clutch for alternately driveably connecting and releasing the input shaft, output of the first gearset and the input of the second gearset; and

a second reverse clutch for alternately driveably connecting and disconnecting the gear of the second gearset and the output shaft.

**4.** The transmission of claim **1** further comprising:

a torque converter having an impeller adapted for a driveable connection to a power source, a turbine adapted for a hydrokinetic drive connection to the impeller and driveably connected to the input shaft.

**5.** The transmission of claim **1**, wherein

the fixed ratio drive mechanism includes a first sprocket driveably fixed to the output shaft, a second sprocket

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driveably fixed to the intermediate shaft, and a flexible continuous element driveably engaging the first and second sprockets; and

the variable ratio drive includes a first sheave, a second sheave driveably fixed to the intermediate shaft, and a flexible continuous element driveably engaging the first and second sheaves at steplessly variable radial positions.

**6.** A continuously variable transmission comprising:

an input shaft;

an intermediate shaft;

an output shaft;

a variable ratio drive mechanism having an input, an output driveably connected to said input and intermediate shaft, and an endless belt driveably engaged with the input and output for producing a continuously variable ratio of the input speed to the output speed;

fixed ratio drive mechanism having a first element driveably connected to the output shaft drive and a second element driveably connected to the intermediate shaft;

the first gearset having a sun gear driveably connected to the input shaft, a ring gear surrounding the sun gear, a carrier, a first set of planet pinions rotatably supported on the carrier and driveably engaged with the ring gear, a second set of pinions rotatably supported on the carrier and driveably engaged with sun gear and first set of pinions;

the second gearset having a pinion driveably connected to the carrier, a gear meshing with the pinion; a first gearset driveably connected to the input shaft and output shaft, for driving the output shaft at a slower speed than the speed of the input shaft;

a transfer clutch for alternately driveably connecting and disconnecting the input of the variable ratio drive mechanism and input shaft; and

an overrunning clutch producing a one-way drive connection of the gear of the second gearset and the output shaft; and

a low brake for alternately driveably holding fixed against rotation and releasing the ring gear and input shaft.

**7.** The transmission of claim **6** further comprising:

a second output shaft; and

a clutch for alternately driveably connecting and disconnecting the intermediate shaft and second output shaft.

**8.** The transmission of claim **6** further comprising:

a first reverse clutch for alternately driveably connecting and releasing the input shaft, output of the first gearset and the input of the second gearset; and

a second reverse clutch for alternately driveably connecting and disconnecting the gear of the second gearset and the output shaft.

**9.** The transmission of claim **6** further comprising:

a torque converter having an impeller adapted for a driveable connection to a power source, a turbine adapted for a hydrokinetic drive connection to the impeller and driveably connected to the input shaft.

**10.** The transmission of claim **6**, wherein

the fixed ratio drive mechanism includes a first sprocket driveably fixed to the output shaft, a second sprocket driveably fixed to the intermediate shaft, and a flexible continuous element driveably engaging the first and second sprockets; and

the variable ratio drive includes a first sheave, a second sheave driveably fixed to the intermediate shaft, and a