When rotation speed of both parts equalize, the servo-thrust mechanism relaxes, the brake band segment is relieved and creases to exert resistance towards the necessary diameter reduction of the synchronizing ring, thus making it possible to push the sliding sleeve over the synchronizing ring with very little effort until the synchronizing ring is caught in the arresting groove inside the sliding sleeve (Ref. Fig. 3). A shift lock in respective gear positions is no longer necessary.

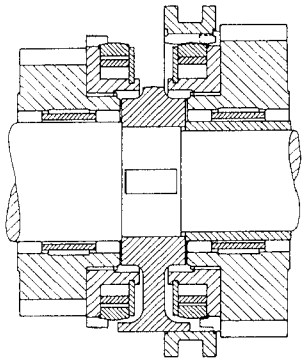

Fig. 3

All forward speeds of the gearbox are equipped with identical synchronization and servo-thrust components, with the exception of the 1st speed which is used for starting. Care was taken to ensure that the frequently shifted 1st speed engages with little effort when the car is not in motion. This has been accomplished by installing in the synchronization mechanism of the 1st gear only one brake band segment and by changing the shape of the slider.

Figure 4 illustrates the synchronization at time of engagement of 1st speed, with engine running and car standing still. Due to the fact that the idle rpm of the engine are low and the clutch plate rpm drop after clutch is disengaged, it is very easy for the synchronization mechanism to slow down the gear for engagement. The slipping synchronizing ring with one end presses the slider which rests with its tab against the clutch carrier. Since the tab is slanted, the slider is raised against the inner surface of the synchronizing ring whose frictional contact is increased just enough to permit a clash-free, effortless engagement of the gear.

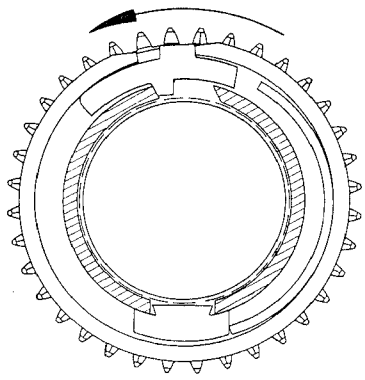

Fig. 4

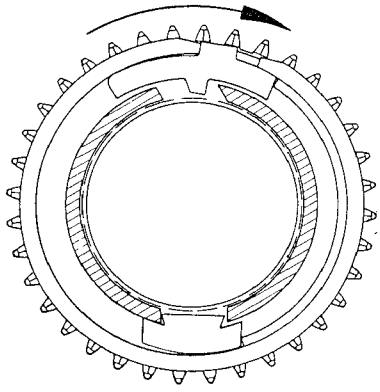

Fig. 5

Figure 5 illustrates the synchronization mechanism at time of engagement of 1st speed with car in motion. Contrary to engagement of 1st speed with car standing still, the gear is not slowed down but has to be accelerated. Therefore, the normal brake band segment has been installed on the side of the servo-thrust mechanism which is to function in this case to ensure the full benefit of the servo-thrust effect obtained in all other gears.