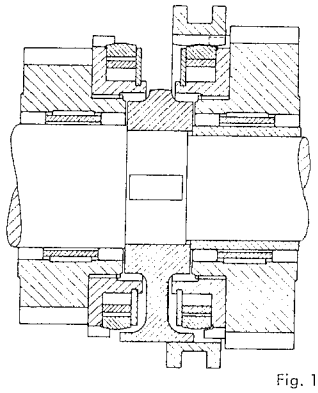

Fig. 1

When the sliding sleeve is moved in this way it must be pushed over the expanded synchronizing ring. The only resistance encountered is the pressure required to compress the ring and of course the sliding friction of the sliding sleeve over the ring. The brake bands, slider, and stop are not involved in such an engagement.

A considerably different process occurs when a gear is engaged while the car is in motion. In this case the synchronizing mechanism must match the speed of the floating gear on the pinion shaft to the speed of the shaft. This is done by employing a friction clutch effect to reduce the difference in speed between the two rotating members to be engaged, while at the same time preventing the sliding sleeve from engaging the gear until their speeds are equal.

During this process the clutch must be completely disengaged, since the torque exerted by the synchronizing clutch will cause the gearbox main shaft, and hence the clutch plate, to increase or decrease speed.

When a gear is changed with the car in motion the selector fork pulls the sliding sleeve away from the synchronizing ring of the previously engaged gear and continues toward the ring of the adjacent gear. As the sliding sleeve (rotating at the speed of the pinion shaft) engages the synchronizing ring of the next gear; the friction between the rotating ring and the sleeve exerts a torque on the ring which is transmitted by the brake band to the stop. The brake band is thus expanded preventing the synchronizing ring from contracting to allow the sliding sleeve to pass over it.

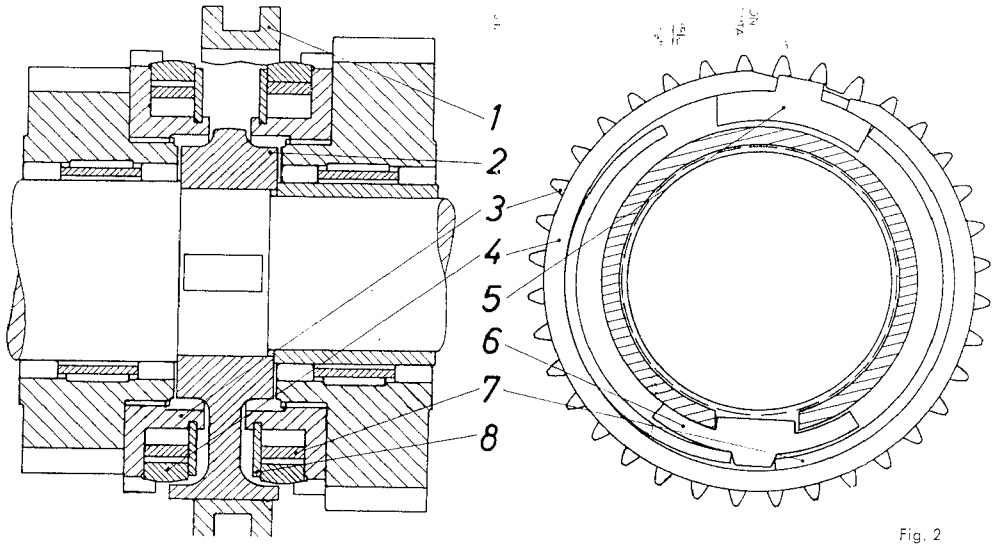

Fig. 2

1 **Sliding sleeve**
2 **Spider**
3 **Toothed ring on gear**
4 **Synchronizing ring**
5 **Slider**
6 **Stop**
7 **Brake band**
8 **Lock ring**