Keys and driving pins

GEOMETER describes a number of ways of fixing sprockets and similar devices to shafts

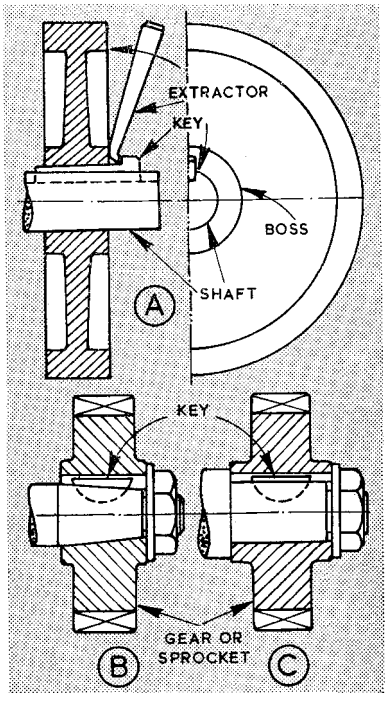
TO TRANSMIT DRIVE to or from a shaft via a pulley, sprocket, gear or hub, means are necessary to take normal turning torque without slip or relative movement. Usually, it is accomplished through keys or driving pins when components cannot be permanently fixed and it is necessary to allow for assembling and dismantling.

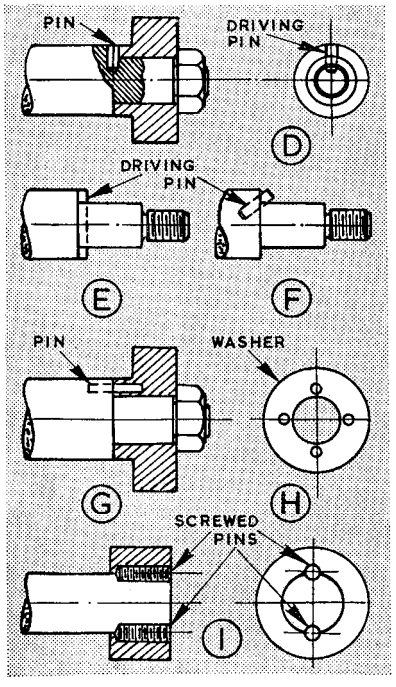
Three common types of keys are employed-the gib or taper key, the parallel key and the Woodruff key.

The gib key A used for industrial and agricultural machinery, has a head for fitting and extracting and while parallel on the sides is tapered top and bottom for driving firmly into the keywayed boss of the pulley or wheel. For this key, a slot or way is cut from the end of the shaft along which it is tapped. The boss of the pulley or wheel may be circular, or to save metal and provide strength may have extra metal in the region of the keyway.

The parallel key is almost exclusively employed where the hub is attached to the shaft by a long taper---of which examples occur on cars on axle shafts. There are rounded ends to the key, which fits in a milled slot in the taper, the hub being tapered and keywayed to suit.

The common key for short taper and parallel fittings for gears, sprockets and pulleys, in all sorts of car and motorcycle applications, is the Woodruff type, B and C. This is in the form of part of a disc of steel fitting in a recess in the shaft which has been milled with a key-seating cutter.





Fitting and removing

To prevent movement, all keys should fit well in shafts and hubs. Gib keys should be a sliding fit in both. Parallel and Woodruff keys should be a light tapping fit in shafts, a sliding fit in hubs. On occasion, gib and parallel keys can be filed from square or flat steel; Woodruff keys made by machining or sawing discs from round bars.

To fit gib keys, pulleys or wheels should be positioned on shafts, then the keys lightly driven, noting there is no butting up of heads. To remove, an extractor as shown can be used. If there is space, pulleys and wheels can be driven along shafts should the keys be tight and refuse to move.

To fit Woodruff keys, they are tapped into shafts with a downward inclination at the front, for mating keyways to engage easily. To remove, they are lifted out with a screwdriver, carefully punched upwards, or drawn with split-pin pliers. Burrs are filed off.

As substitutes for keys in model work and light drives, pins are used in various ways-particularly where shafts have shoulders with hubs pulled tight by nuts.

With the boss up to the shoulder, an undersize hole is drilled down abutting faces and a pin driven or screwed in, D. If necessary, the half-circle in the boss is cleared with a round file.

Alternatively, the pin is fitted right through the shaft, in front of the shoulder, ***E,*** engaging slots being filed in the boss.

A pin may be prevented from coming out by fitting at an angle, ***F,*** and a face fitting arranged as G. For drilling the latter, a washer can be used as a template on the shaft, then located on a rod in the boss for drilling this. A stronger multiple-pin drive can be provided using a washer with more guide holes, four for example, H.

Semi-permanent fittings for collars, etc., on shafts can be arranged by drilling both right through and using a taper pin-or a parallel pin riveted into countersinks each side. Again, if the collars are at the ends of shafts, holes can be drilled and tapped half in one, half in the other, I.