the manner shown, end movement being prevented by the flanges forming part of the housing. It is interesting to note that the oil, before being admitted to the journal, is passed through the hollow shell. Grooves arranged longitudinally, and well chamfered on their edges, are provided in the top half of the bearing surfaced. The surface velocity is about 33 ft. per second.

The kind fitted to a Zoelly steam turbine of 200 h.p. at 3,000 revolutions per minute is of cast iron, lined with white metal. Lubrication is effected by six rings arranged in two chambers containing three rings each. The bearing is water-cooled, water being supplied to and returned from the hollow shell through two unions screwed into the top half of the shell; these are not illustrated. The ringed shaft is provided for expansion purposes, and keeps the shell and shaft always together. This bearing is 60 mm. in diameter by 250 mm. long, the surface speed being 31 ft. per second. Oil, after being carried to the upper surface of the journal by means of the rings, is distributed to the surfaces along grooves in the white mdetal. These grooves or channels "take in" at the top on both sides of the ring chambers and spread away spirally, returning again to the chamber farther round the shaft. By this means an effective method of lubrication is obtained.

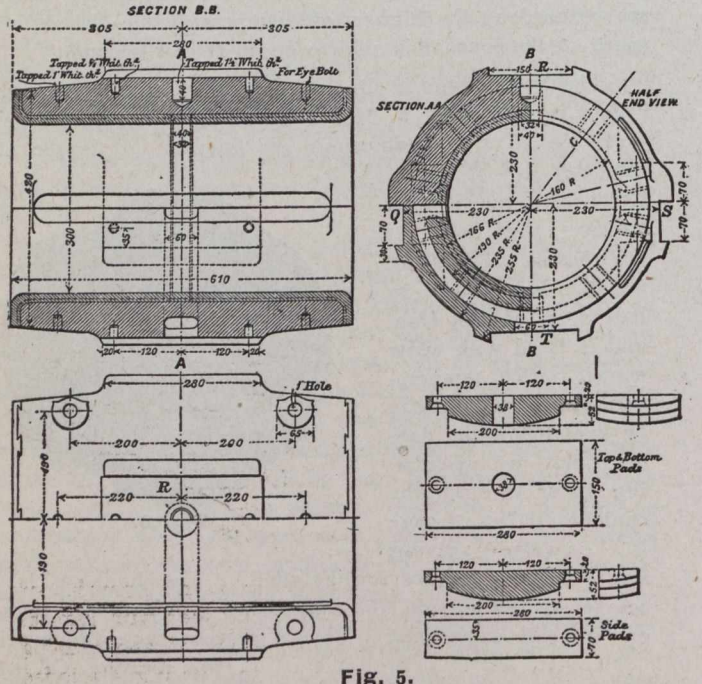

Fig. 5.

Fig. 3 is an illustration of a bearing fitted to steam turbines made by the British Thomson-Houston Company, Limited. It possesses several interesting features, among them being its "clean" finish and simple design. It consists of a cast-iron shell lined with babbitt metal; the shell has spherical seats, and the bearing is made in halves. Oil is delivered into a groove in the white metal and along the horizontal centre line, and is drawn down by the rotating shaft. On the side opposite to the oil inlet a second groove is provided, but it differs from the groove on the inlet side in being open at its ends thus allowing oil that has passed under the shaft and has become heated to pass easily away at the ends of the bearing. Lubrication and cooling of the upper surface of the journal is effected by means of grooves leading from the inlet groove diagonally.

Fig. 4 shows a bearing which has important characteristics. It is fitted to generator shafts at the exciting end of the rotor. When a turbo-generator is passing through a critical speed there is a tendency for the shaft to "whip." In order to destroy this action anl ensure that the shaft will pass through a critical speed with absolute safety, the bearing sleeve is permitted a small amount of radial play between friction collars. This bearing, it will be noticed, is made in halves, and the radial sideplates or collars are bolted in an elastic manner to the shell. It is made by the British Thomson-Houston Company, Limited.

A bearing such as is fitted to turbines of 7,000 kw. capacity when running at 750 revolutions per minute is illustrated, together with its accessories, in Fig. 5. It consists of a cast-iron shell to which is secured at four positions the pads which allow the bearing to swivel about its centre. The swivel pads are shown in the right-hand bottom corner. It will be seen that the shell is made in halves, secured by comparatively small bolts and nuts. The interior is lined with white metal cast by the "Eatonia" process. The oil is conducted from the bottom of the shell along the two oil-ways shown up to the horizontal centre line; there it feeds the two wide channels arranged on each side of the bearing. These channels are well bevelled at their sides, and extend almost the whole length of the lining, and have a sealing piece at each end. These bearings represent a design which Messrs. Willans and Robinson, Limited, have used on both large and small steam turbines.

The Parsons concentric-ring bearing consists of a gun-metal sleeve in which runs the journal. The sleeve is surrounded by two or more gun-metal rings arranged in sets, and separated by an oil or lantern ring. The whole is mounted within a heavy cast-iron outer sleeve, to which the innermost sleeve is lightly secured at one end. This outer sleeve is spigoted to the housing only, and not to the cap, by means of a loose cast-iron half-ring which fits in the groove stem at the bottom.

If it is desired to remove the bearing, the cap is first removed, and the half-ring rotated until it is free of the pedestal and bearing. It is then possible to slide the bearing endways off the shaft. There is a clearance of a few thousandths of an inch between the rings and sleeves. Oil finds its way into these spaces, tnd thus there is a hydraulic cushion which dampens those vibrations which are inseparable from shafts having speeds of rotation.

COAST TO COAST.

Toronto, Ont.—At a meeting of the Hydro-Electric Power Commission held recently an important change in policy was decided. Hereafter the Commission will not acquire easements for right-of-way but will expropriate the necessary strip, 66 feet wide, required for transmission lines. This departure will apply to the extension of the Niagara transmission line from St. Thomas to Windsor as well as other contemplated extensions in the Midlands district and in eastern Ontario.

Montreal, Que.—In the course of the work of the Mount Royal tunnel many interesting speciments of rock have been met with and definite proof of the volcanic origin of Montreal's mountain obtained. The indications, according to the engineers, show that the mountain was at one time either an active volcano or that lava forced its way up a central orifice, bursting and breaking the summit of the mountain, but possibly never actually spouting forth as an eruption. Numerous fossils have been found and also a particularly fine specimen of crystallized calcite. Copper and iron pyrites are also evident in some of the rock.

Montreal, Que.—The experts working on street car congestion of this city have prepared their report for the Mont-