spherical, to fit the spherical face on the bottom of the stator ring "B". The top face of the stator ring in this particular bearing has six radial grooves and six wedge faces. The ports "H" in this ring allow the oil from the outer chamber "T" to pass into the inner chamber "K" formed by the retaining ring "F" and the inside of the stator and rotor rings "B" and "C".

The circulation of the oil is toward the shaft "E" from the outside chamber "J" to the chamber "K", and then outward through the radial grooves in the top face of the stator ring "B".

The rotor ring or step "C" has a sliding fit on the shaft "E" and is held by a feather key. The bottom face of the rotor ring "C" is of genuine babbitt metal and runs on the top face of the stator ring "B". The nut "D" is used for adjusting the shaft to take up any deflection that may arise in the support or foundation of the machine.

When the average pressure per square inch exceeds 200 pounds, the oil in chamber "J" is circulated through outside cooling coils by means of a low pressure pump. With average pressure below 200 pounds per square inch, cooling coils can be placed in chamber "J" and no exterior circulation of the oil is required; the circulation of the oil within the bearing itself being sufficient.

Horizontal Shaft Bearing

The horizontal shaft bearing consists of two separate bearings, namely, a journal bearing and a thrust bearing.

The journal bearing is used as a steady bearing to support the shaft and maintain its proper alignment. It is of the standard ring oiling type with removable shells in an outer casing. The casing is supported by a hollow base which is filled with oil. Coils, through which water circulates, are placed in the hollow base for cooling the oil after it passes through the thrust bearing.

The thrust bearing proper consists of two principal elements, namely, a rotor ring and a stator ring. The rotor is a cast iron ring keyed to the shaft, and rests against a shoulder on the shaft so that it cannot move endwise along the shaft. It has a babbitt metal face.

The stator is a cast iron ring, and the wearing surface consists of four to twelve sectors, depending on the diameter of the ring, produced by as many radial grooves across the bearing face.

Each segmental face is part flat and part tapered or inclined like a wedge, so that when the rotor is revolving on the stator, in oil, it draws or forces the oil across the inclined surface and consequently builds up a pressure between the rotor and stator; this pressure being in equilibrium with the load on the rotor. The back face of the stator is spherical and fits into the spherical seat of the case head. This allows for a small alignment with the rotor. The stator is prevented from rotating by means of a dowel pin in the case head.

Lubricated Automatically

The thrust bearing is lubricated automatically by the rotor, which is partly submerged in oil, as the oil is a little below the bottom of the shaft.

The rotor and stator rings are enclosed in a casing or thrust chamber which is connected by proper opening to the oil chamber under the journal or steady bearing, to which the oil passes from the reservoir or the tank beneath.

When the rotor revolves, owing to its being partly submerged, it carries up oil with it and fills the thrust chamber surrounding the thrust rings. The only exit for the oil to escape is through the radial grooves in the stator to the centre of the stator, where it discharges into the discharge pipe which carries it back to the oil tank below, completing the circulation. The oil, in passing through the radial grooves in the stator, passes across the bearing faces, consequently the bearing is continually flooded with oil. There is also tapped into the top of the thrust chamber a small pipe in which is placed an oil sight gauge and a small discharge pipe. This enables one to see when the bearing is properly supplied with oil, and the small discharge pipe is used to carry off the excess oil so that it will not flow or spill out of the top of the oil sight. This connection varies in design, depending upon conditions.

There are over one hundred "Gibbs Thrust Bearings" in operation on horizontal and vertical shafts, operating under most trying conditions. They are installed on centrifugal pumps, hydraulic turbines, electric generators, bevel mortise gears, and even Ford automobiles. Propositions are now under consideration to install them on steam turbines and steamships. On account of the simplicity of the bearing its cost is moderate.

This bearing can be used where there is a thrust on a revolving shaft, no matter what the load or speed. Horizontal bearings carrying loads as high as 100,000 pounds, and vertical bearings carrying loads as high as 220,000 pounds, have been in continuous operation for more than two years.

MASTER BRICKLAYERS PLAN TO ELIMINATE "RUINOUS" COMPETITION

HARRY HAYMAN, of London, Ont., presided at the convention of master bricklayers held this month at St. Louis, Mo. Walter W. Wise, of Indianapolis, succeeds Mr. Hayman as president of the International Boss Masons' Association, which organization represents 500 master bricklayers in Canada and the United States.

The chief topic at the St. Louis meeting was the elimination of ruinous competition. A committee of four was appointed to arrange for systematic co-operation in bidding, instead of the "destructive competition" which, according to R. M. Gillespie, of St. Louis, has become "economically impossible with labor united and organized for collective bargaining."

"Collective bargaining must work both ways," declared Mr. Gillespie. "Our bricklayers and hod-carriers are thoroughly organized, and in order to cope with the situation we must get together ourselves and eliminate cut-throat competition.

"One of the first things we are going to do away with is the famous old slogan, 'Estimates cheerfully given gratis'. In the future the master bricklayers will charge for furnishing estimates. Our overhead expense has become too large to continue this practice.

"Big business is getting together all along the line and the master bricklayers recognize that in union there is strength. Ours will be co-operative effort for the introduction of systematic and uniform methods of doing business. You might call it a trust, but it will be a good trust—one that will profit the public."

Among the Canadians present were H. Elgie, of Toronto; H. Hayman, of London; and J. Nuttein, of London.

The Civil Service Commissioners of Canada will receive applications for position of hydrometric engineer in the Irrigation Branch at Calgary, salary, $1,500; as engineer on the staff of the Manitoba Hydrometric Survey, salary, $1,500; as agricultural engineer for Irrigation Branch, Calgary, salary, $1,600 (two appointments to be made). Further information can be obtained from William Foran, Secretary, Ottawa. Applications for the first-mentioned position will be received to January 10th and for the other positions not later than January 4th.

No less than 8,370 men are required to-day by the railways of Canada, according to a statement issued by the Repatriation and Employment Committee at Ottawa. This is not counting the 15,200 railroaders who enlisted and who will be replaced in their former positions when discharged from the army. Furthermore it is stated that next spring the C.P.R. will require 10,000 to 15,000 men, the Grand Trunk 3,000 and the Canadian Northern 5,000, and that the Canadian Government Railways will also require 11,500 men for railway extension work.