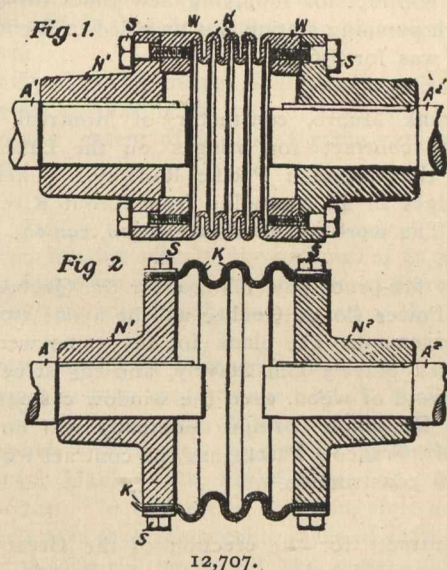


British Houses of Parliament.

## GREAT BRITAIN.

**Shaft-Couplings.**—Aktiengesellschaft Brown, Boveri, and Campagnie, Baden, Switzerland.—12,707.—1906.—This invention relates to improvements in flexible couplings for co-axial shafts. In such couplings it is necessary, and known, to provide a tubular flexible member or members in the coupling, so as to allow for inaccuracies in alignment, whipping, and the like. The object of this invention is to provide an improved form of tubular flexible connecting member in such couplings, which connecting member shall combine strength with elasticity. The invention consists in a coupling comprising as an essential a flexible tubular connecting member in the form of a hollow or tubular element of corrugated, grooved, or like surface, the corrugated or like hollow or tubular member being built up of parts, or arranged in one piece. According to the form shown in Fig. 1,  $A^1$ ,  $A^2$  are the ends of the shafts to be coupled up, and  $N^1$ ,  $N^2$  the coupling flanges keyed to the shafts. The hollow coupling consists of a preferably cylindrical body  $K$ . In the con-

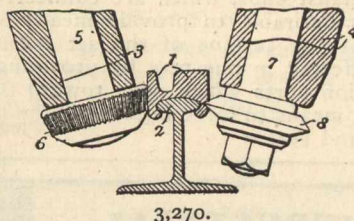


12,707.

struction shown in Fig. 1 it consists of a steel cylinder having a corrugated or undulated shape produced by turning grooves from the material alternately from its interior and exterior. The corrugations may either have rounded-off edges, as shown in Fig. 1, or square edges. There is an annular enlargement  $W$  on both the faces of the cylinder which receives the bolts or studs  $S$ , which serve to connect the cylinder on both sides to the coupling flanges  $N^1$  and  $N^2$ . Fig. 2 shows a modification in which the cylindrical body  $K$  is formed from corrugated steel sheet. The sheet for this purpose may be rolled in several layers on a cylinder, and fastened at both sides to the coupling flanges  $N^1$  and  $N^2$  by means of studs  $S$ , which in this case pass rapidly into the flange. In order to avoid any friction between the individual layers of the metal sheet, the layers may be kept separated from each other by the insertion of an intermediate layer at the points where it is fastened to the flanges at the ends.

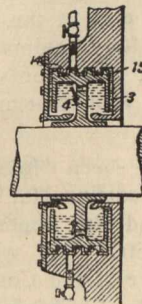
**Compound Tramway Rails.**—E. Rhodes and the Romapac Tramway Company, Limited, Leeds.—3,270.—1906.—This invention has reference to the appliance for fixing the wearing portions of compound tramway rails on to their base portions described in Specification No. 9,175, of 1902, and also to the appliance for cutting off the wearing portions of compound tramway rails described in the Specification of Patent No. 9,176, of 1902; the object of the present invention being to combine the two arrangements in one machine, or, in other words, so to arrange the machine hitherto employed for fixing or rolling on the upper portions of compound tram-

way rails that the same machine may be readily transformed and employed for cutting off the upper portions of compound tramway rails, and vice versa. To this end an appliance of similar construction to that described in Specification of Patent No. 9,175, of 1902, is employed. The said appliance consists of a carrying frame mounted on a guide-roller adapted to run in contact with the upper surface of the top portion of the rail, said frame being provided with two oppositely situated arms which are pivoted at their upper ends, each of which pivoted arms is provided with bearings carrying a shaft, while to the lower end of each shaft is attached a roller, which is serrated or roughened on its periphery, the upper ends of the shafts carrying the serrated rollers being provided with suitable gear-wheels, which are driven by in-



intermediate gearing from the driving-shaft of an engine or motor, while the pivoted arms themselves are connected together by means of toggle-levers attached to a central nut which is actuated by means of a screw. On the engine being put in motion, the serrated rollers are caused to revolve against the depending flanges of the top rail, whereby the said depending flanges are bent inwards and pressed firmly round the head of the base portion of the rail. In order to adapt this machine for cutting-off as well as for rolling-on, the shafts carrying the serrated pressure-rollers are so mounted that they may be removed from their carrying frame at will, while, in combination with the said frame, a shaft carrying a serrated guide-roller is mounted on one side, and on the opposite side of the said frame a second shaft carrying a steel disc-cutter in lieu of the two shafts with their serrated rollers. In this way the appliance hitherto employed for rolling-on is rendered equally applicable for cutting-off, the transforming of the machine by simply removing the two shafts carrying the pressure rollers employed for rolling-on and inserting the two shafts carrying the guide-roller and the disc-cutter employed for cutting-off and vice versa, being easily and quickly performed. The figure is a sectional elevation of a compound tramway-rail and the lower portion of the rolling-on machine arranged as a cutting-off appliance, in which the rail consists of a wearing portion and a base portion 2, while 3, 4 represent the bottom portions of the two oppositely-situated arms of the carrying frame of the rolling-on machine. The pivoted arm 3 is provided with a shaft 5 carrying a serrated guide-roller 6, while the pivoted arm 4 is provided with a shaft 7 carrying a steel disc-cutter 8, in lieu of the two shafts and the serrated pressure-rollers of the rolling-on machine.

**Packing.**—J. Wilkinson, Providence, U.S.A.—25,492.—1906.—This invention relates to liquid packing means for the shafts of rotary motors, such as turbines. The invention consists in a shaft-packing having no mechanical contacts or close clearances between stationary and rotating parts, a liquid being used to seal the joint. In the design illustrated, an element 4, rotatable with the shaft, is disposed within an annular chamber 3, supplied with a body of sealing liquid, and exposed at opposite ends to the different pressures be-



25,492.

tween which the packing takes effect. The rotating element rotates in close proximity to the inner circumferential wall of the chamber 3, leaving a slight radial clearance between said parts for the flow in an axial direction of the circulating body of liquid in the chamber, this flow being induced by the difference in pressures acting upon the liquid, and maintained by the pumping action of the rotating element, the volume flowing being regulated by the cross-sectional area of the circulation openings in the element, or by the