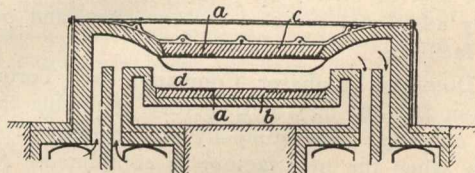


British Houses of Parliament.

## GREAT BRITAIN.

**Electric Furnaces.—T. Parker, London.—14,884; 1905.—**

This invention relates to furnaces, and has for its object to provide a furnace adapted for electrical resistance and inductive heating for the refining of steel and for the smelting of nickel and other metals. Electric conductors *a* of carbon or other suitable conducting material are provided beneath the surface of the bottom *b* of the furnace, and are laid spirally so as to give the maximum induction effect to the charge of molten metal in the furnace. On the passage of

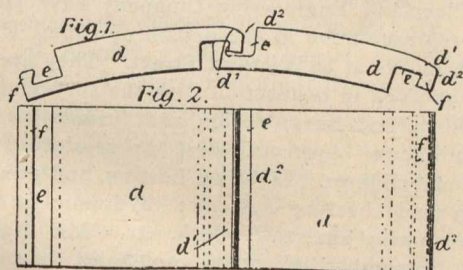


14,884.

an alternating current through the conductors thus provided, the furnace will be heated through the incandescence produced within the conductor on the passage of the current through it, and also through induction producing magnetic and current-heating effects in the molten metal. In its application to the furnace illustrated, it will be understood that the electric heating is designed principally for the final stages of refining, when the heat of the furnace or gas is no longer used. The conductors *a* may also be provided upon the top *c*, or even upon the sides *d*, of the furnace.

**Casting Cylinders.—H. A. Hoy, Manchester.—945; 1906.**

—This invention has reference to means for hardening and toughening the interior surfaces of steam-engine and other cylinders, tubes, and the like. In carrying the invention into effect, in the casting of a cylinder there is employed, as usual, a perforated metallic barrel, having a band or wrapping of hay, straw, or other suitable material, and super-imposed thereon a thickness of loam; but the essentially novel feature of the invention consists in the use of small chills *d*, so constructed that they can be interlocked with each other, and be wound spirally around the periphery of the loam-coated barrel. These chills *d*, shown in Fig. 1, are provided with inter-

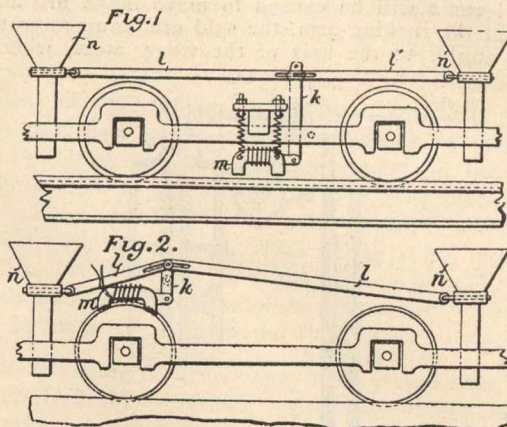


945.

locking recesses *e* and projections *f* at each end, and are preferably rhomboidal in shape and curved to the periphery of the loam-coated barrel. The first of such chills is secured by pegging or otherwise, the remaining chills, owing to their rhomboidal shape, and the interlocking means provided, can be secured to each other and wound spirally round the loam-covered cylinder and the clothing of chills be completed at one operation. The last of the series of chills *d* is secured to the loam barrel by pegging or otherwise. In order that the chills *d* may be used upon a loam-covered barrel of smaller diameter, the part marked *d1* of the chill is curved inwards so that the edge *d2* shall not be proud when the clothing of the chills is contracted in diameter.

**Sanding Gear.—M. Cummins, Manchester.—10,644; 1905.**—This invention relates to means whereby a magnetic device or a solenoid acting as a valve, or attached either directly or indirectly to the sand-valves of the sanding gear

on tramway carriages, can be operated for the purpose of sanding the rails at and from either end of the vehicle by the motor-man using either the front or the rear controller when applying the rheostatic electric or magnetic brakes while the car or vehicle is running either forward or backward. For this purpose, the braking current is used for actuating the magnet which opens the sand-valves. By operating the sand-valves with a magnet energized and regulated to release the sand below the wheels by the current that causes skidding, the sand is allowed to fall on the track, increasing the friction between the wheels and the rails, thereby preventing skidding, and allowing the motors which

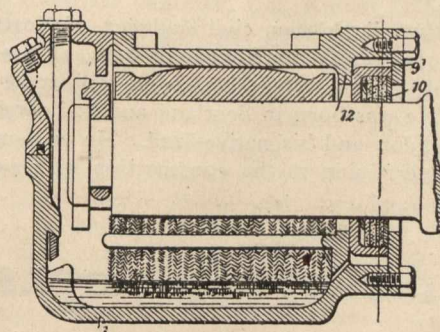


10,644.

are generators to consume the energy in the moving car or vehicle until it is brought to rest or stopped. One or more magnetic appliances *m* are supported by means of springs attached to the truck-frame directly over the rails or over the wheels, and these magnetic appliances are connected to the sanding gear *n* by a lever *k* and rods *l*, *l'*, so that when the magnet or magnets is or are energized by the current from the motors operating as generators they are drawn to the rails or to the wheels, and caused to move a sufficient distance out of their original positions by the progressive or by the retrograde movement of the vehicle to open the sand-valves, so that the rails will be sanded in advance of the wheels irrespective of the direction in which the car or vehicle might be running.

**Axle Journal-Boxes.—E. Peckham, London.—3,696; 1906.**

—The present invention relates to improvements in the construction of journal-boxes for the axles of railway, tramway, and other vehicles, and the object is to construct a journal-box which is effectively closed against the admission of dust or grit, and also to prevent the escape of the oil or lubricant from the box. The invention is an improvement of the type of journal-box having an open back adapted to contain packing for the axle, and to be closed by a disc or plate fastened to flanges of the box-casing. In previously proposed boxes of this type no adequate means are employed for causing the box to be perfectly closed, or to remain so after the bearing becomes worn, without periodical readjustment. The result is that unless the boxes are attended to almost daily, the lubricant will ooze out, causing a waste and annoyance. It is proposed to employ in a journal-box of the



3,696.

above character a stuffing-box or separate receptacle *10* packed with suitable material, and placed within the open chamber or recess *9* formed at the rear end of the journal-box casing *1*. The flat surface of the receptacle *10*, which is brought into contact with a machined flat surface *12* of the casing being given a smooth finish, to correspond with the smooth finish of the surface of the casing, a sliding movement of the stuffing-box is allowed, when the bearing wears without opening a way for the oil to escape. The improved box will, therefore, remain perfectly closed for a considerable time with practically little or no attention. Besides possessing the merit of efficiency, the improved journal-box is simple of construction, and consequently less costly to manufacture.