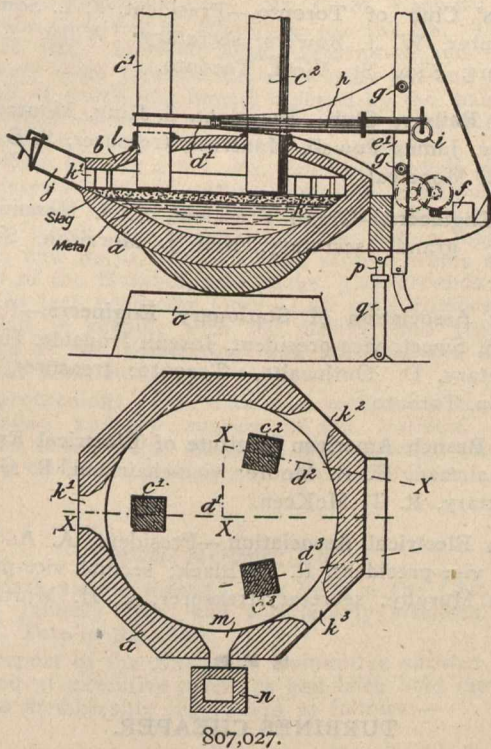
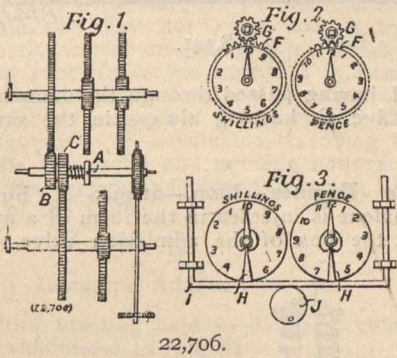


or nearly sufficient for tapping. A 100-ton furnace, capable of reheating through 100 deg. twenty-five tons for an hour, or of reheating through 50 deg. fifty tons for an hour fed by a 2,500-h.p. generator, should preferably have about the following dimensions; surface of the bath, twenty-six square meters; depth, one meter. The electrodes using a single-phase current, may be about 95 centimeters square in cross section by five meters high, so as to assure their lasting six or seven weeks. With a three-phase current using three electrodes, the cross-section should be proportionally reduced. Referring to Fig. 1, a crucible *a* is closed by a cover *b*, through which pass three electrodes *c*¹*c*²*c*³. Each of these electrodes is carried by an arm, such as *d*¹ (or *d*² or *d*³), of which the support *e*¹ is in engagement with, and may be raised or lowered by, a system of pinions and an endless worm, controlled by an electric motor *f*. Each vertical support *e*¹ is guided by rolls *g* between U-shaped members fixed upon the head of the crucible with interposed insulating material. Each carbon or electrode is embraced by a

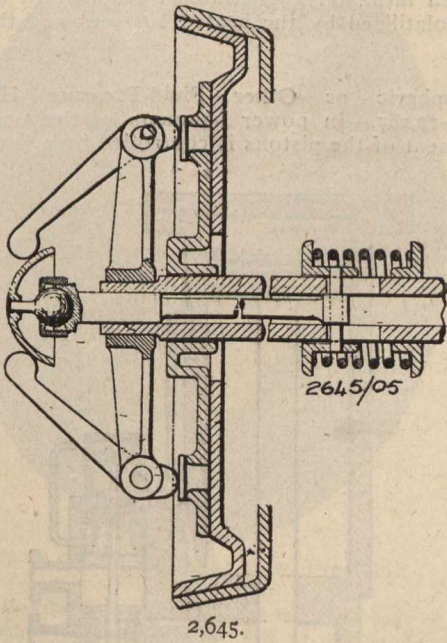


wheels of this train to be turned backwards by means of a key inserted through an opening in the case. The friction of the wheel C upon the spindle A is, however, sufficient to enable the former to drive the train of wheels. If a ratchet and pawl arrangement is used instead of trusting to friction to drive the wheel C, the pawl must be raised when it is desired to set the hands backwards, or obviously they may be also set to zero by moving them forwards a sufficient number of turns. Fig. 2 shows an arrangement for setting the dials to zero. In this case after a certain registration has been made upon the value-dials and the corresponding amount of payment has been made, the dials are rotated so as to bring the zero of each dial up to the hand in whatever position that is. The hands in this counter are driven in the ordinary way by the wheel train, but each circle of the value-dials is separate and is mounted loosely upon a short tube, through which the hand passes. A toothed wheel F is at-



tached to the back of the dial, and this may be turned round by means of a key fitting upon the square end of a pinion G which gears with it. Fig. 3 shows an arrangement whereby each hand may be set direct to zero without affecting the gearing. In this case the hands are friction-tight upon the pinions, and each carries or forms part of a heart-shaped cam. By pressing a point H against the edge of such a cam it is brought back to zero, the point may then be removed and the hand is ready to commence registering again. Two such points are shown mounted upon a common moving frame I. When it is desired to set the hands to zero, this frame is moved towards the hands by means of an eccentric J. This device is commonly employed in chronographs for resetting the hands after use.

Clutches, Brakes, or the Like.—Noble.—2,645.—This clutch is operated by a number of toggle levers, the effort being applied to these levers through a pivoted ball-ended



rod. In applying the effort to the toggle levers the ball-ended rod is pushed longitudinally, so that the ball end bears against the toggle levers, which force the male cone into the female cone.

Gas and Air-Reversing Valves as Applied to Gas-Fired Furnaces.—Gaunt.—8,141.—The gas from the producer main enters through the regulating valve A and passes alternately through the valves H and B. On opening the valve A the gas passes through the valve B, and, being stopped by the dampers D D, it passes through flue C to the regenerative

collar of metal sheets which is compressed or slackened by means of a screw h, operated by a wheel i through a suitable intermediate system of gearing. The crucible carries a spout j, through which the metal may be poured out when the furnace is inclined. There are three doors *k*¹*k*²*k*³, corresponding respectively, in position with the electrodes. The slag is ordinarily poured out of the rear doors *k*² and *k*³, and the metal out of the front door *k*¹. The electrodes are surrounded by cooled pressure-gaskets l. The crucible *a* is also provided with a passage m in communication with a gas producer n, from which the gases are led into the crucible *a*, which in operation is entirely closed. The metal and slag ordinarily occupy the positions indicated in Fig. 1. The crucible carries curved tracks, which rest upon a suitable pedestal o, and has its other point of support on the articulated piston of a hydraulic cylinder q, which is also articulated, and which serves to determine the angle at which the crucible is tipped.

GREAT BRITAIN.

Electricity Meters.—Chamberlain and Hookman, Limited, and S. H. Holden, Birmingham.—22,706.—The improvements relate to electricity meters which have two connecting trains or dials, one registering the current consumed, and the other the money value of that current. The invention consists in so arranging the second dial train that the hands may be readily set to zero by one movement and without opening the meter-case. Fig. 1 shows two sets of wheel trains—one for units and one for values, driven off the same spindle A by means of two wheels B and C. The wheel B, which drives the upper set of hands, which indicate units, is soldered upon the spindle A, while the wheel C, which drives the lower set of hands, is fixed tightly, but only held by friction. A square is filed upon one of the spindles of the lower train of wheels, thus enabling the