Sept. 4, 1928. 1,683,267

C. P. SHOUDY

CENTRIFUGAL CASTING MACHINE

Filed Aug. 1, 1927

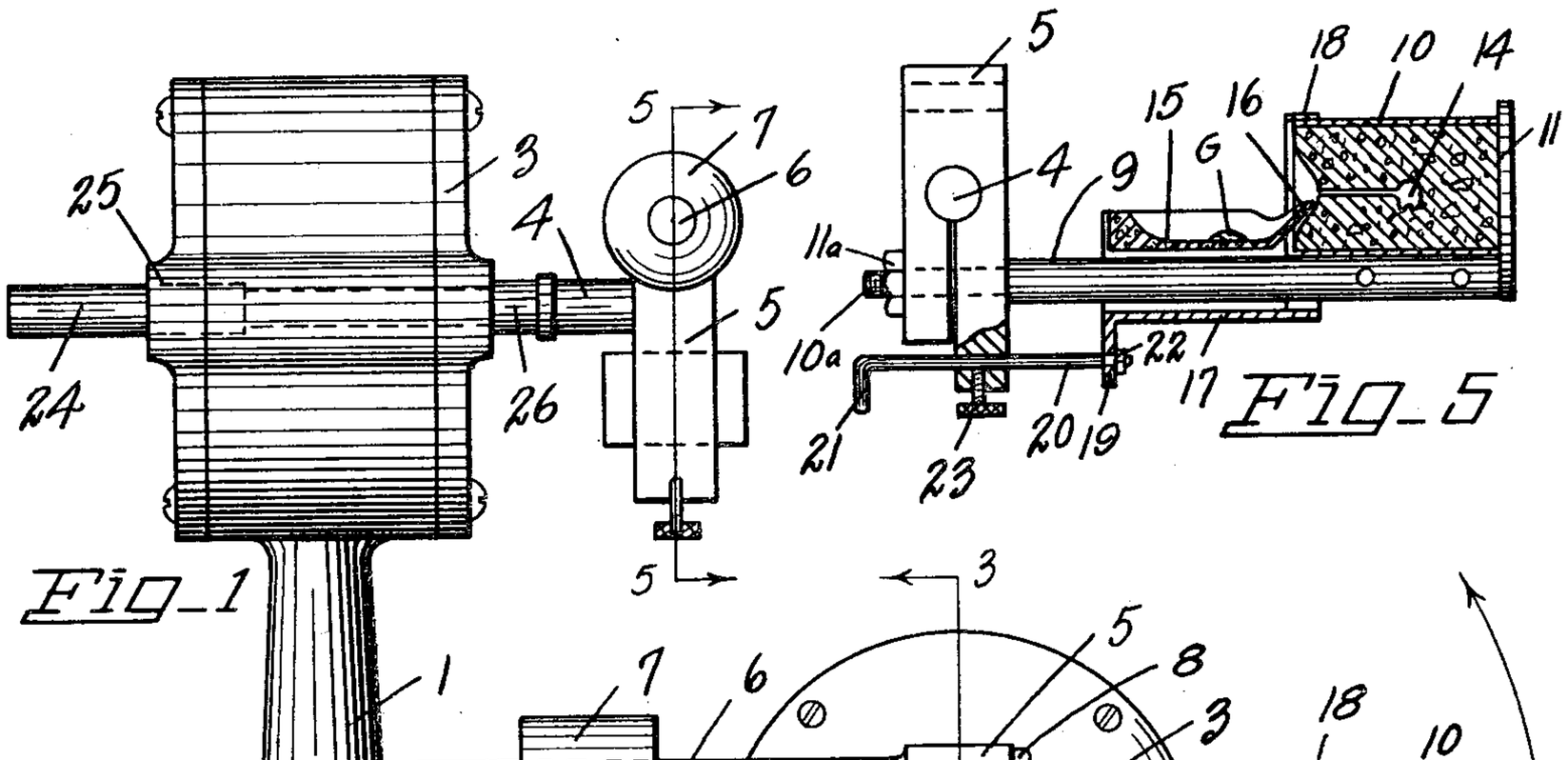

Fig. 5

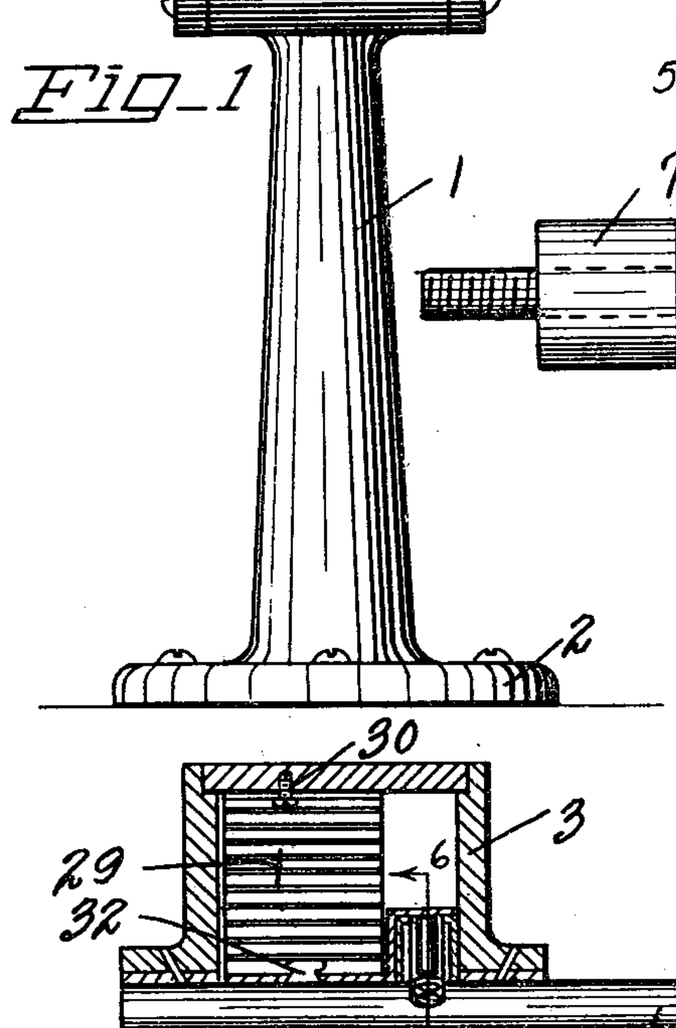

Fig. 1

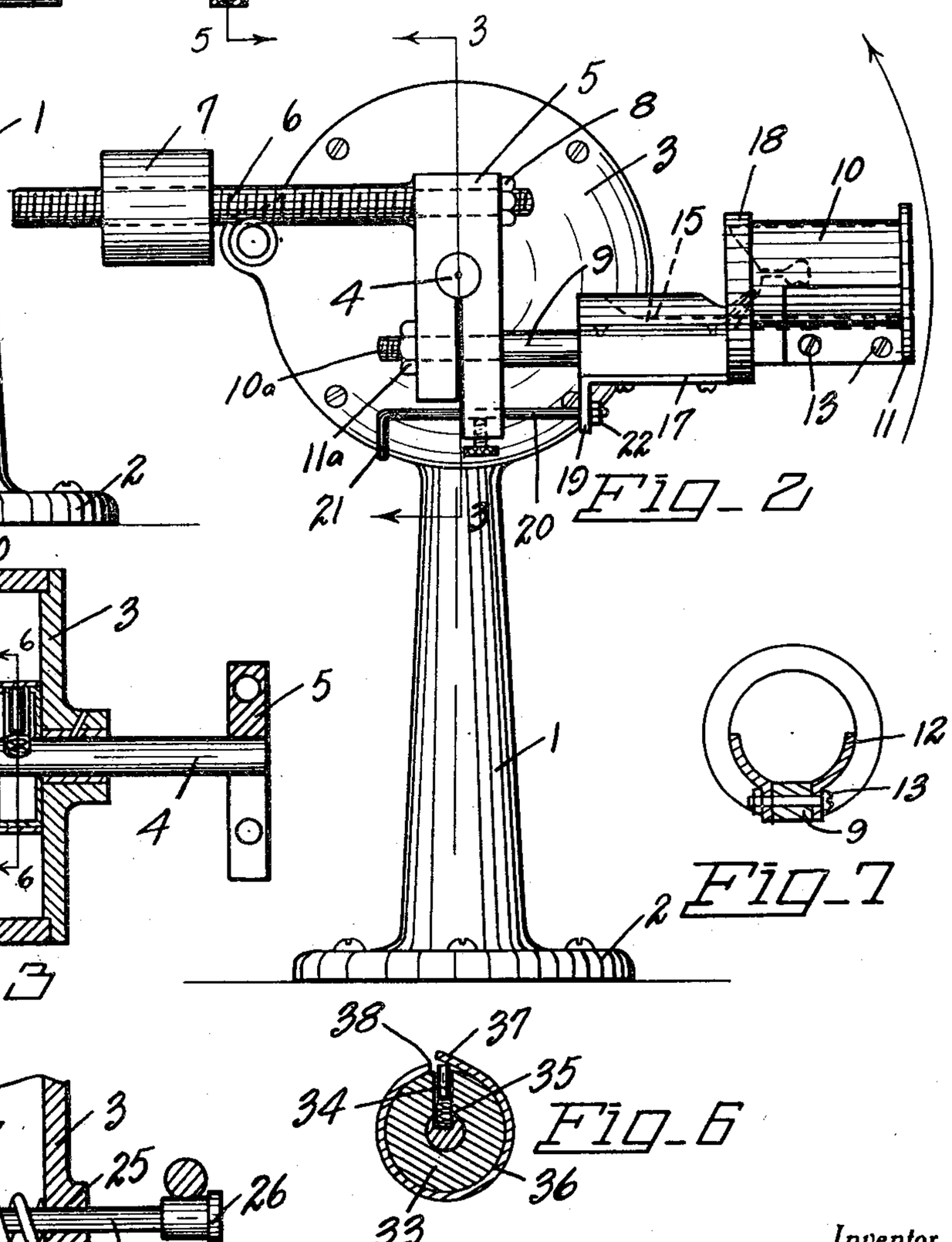

Fig. 2

Fig. 3

Fig. 7

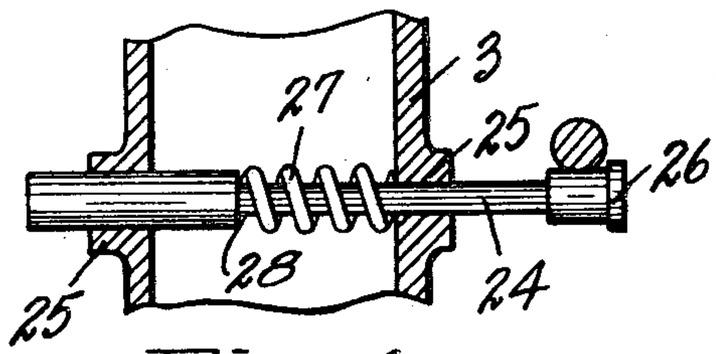

Fig. 4

Fig. 6

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UNITED STATES PATENT OFFICE.

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CENTRIFUGAL CASTING MACHINE.

Application filed August 1, 1927. Serial No. 209,683.

My present invention relates to improvements in centrifugal casting machines which while adapted for various uses, are especially designed for the purpose of casting dental inlays, and similar articles.

The primary object of the invention is the provision of a casting machine of this character by means of which the casting may quickly and accurately be made and in which the molten metal is compactly arranged.

A spring motor is combined for use with the rotating parts of the casting machine, and means are provided for insuring facility in the manipulation of the device in order that efficiency and accuracy may be secured.

The invention consists in certain novel combinations and arrangements of parts wherein the above objects are accomplished, as hereinafter more specifically set forth and claimed.

In the accompanying drawings, I have illustrated one complete example of the physical embodiment of my invention wherein the parts are combined and arranged according to the best mode I have so far devised for the practical application of the principles of my invention.

Figure 1 is a view in side elevation of a dental casting machine constructed according to my invention;

Fig. 2 is a view in elevation at the front of the machine;

Fig. 3 is a detail sectional view of the spring motor at line 3—3 of Fig. 2;

Fig. 4 is a detail sectional view showing the detent for holding the rotary part of the machine;

Fig. 5 is a longitudinal sectional view at line 5—5 of Fig. 1;

Fig 6 is a detail sectional view of the ratchet device used in connection with the spring winding mechanism; and

Fig. 7 is a transverse sectional view through the mold, at line 7—7 of Fig. 2.

In carrying out my invention, I preferably utilize a stand as 1 having a base 2 upon which is supported the motor casing 3 and the motor shaft 4 is journaled in this casing. On the motor shaft outside of the casing is clamped a split block 5 in which a screw bar 6 is threaded, and a counter-weight 7 is threaded on the screw bar. A clamp nut 8 is used to rigidly connect the screw bar with the block, and it will be apparent that the counterweight is employed on the shaft for counterbalancing the rotary parts of the invention.

The block 5 also has an arm 9 secured thereto by means of a reduced threaded extension 10^a, and clamp nut 11^a. The arm 9 is arranged at the opposite side of the shaft 4 from the screw bar 6, and the arm and screw bar are arranged in parallel planes as shown in Fig. 2.

At the free end of the arm 9, which is squared, is carried the mold 10 which is fashioned with an outer end plate 11 and a yoke 12, the latter secured to the arm 9 by screws or bolts as 13. The investment material in the mold is provided with the usual cavity 14 for the reception of the molten metal as gold indicated by the latter G in Fig. 5, and this cavity is fashioned in usual manner with wax that is subsequently melted prior to the casting operation.

The crucible 15 upon which the gold 9 is melted, as by a torch, is provided with a spout 16 that is adapted to be pushed into the sprue of the mold when the pouring operation is to be carried out.

The crucible is supported upon a slidable carrier 17, and the carrier is slidably supported upon the arm 9. The crucible is adapted to be moved toward and from the mold, and when it is moved into pouring position, as indicated in Fig. 5, a guide band 18 on the carrier fits over the end of the mold and retains the mold and carrier in proper relative position.

The slidable carrier is provided with a flange 19 which is perforated for the reception of an adjusting bar 20. This bar is provided with a handle 21 and is secured to the flange 19 by a nut 22. It will be apparent that by manipulating the handle 21 and slide bar 20, the crucible may be moved toward or away from the mold, and the crucible is held in adjusted position by means of a set screw 23 in one leg of the block 5, which screw engages the slide bar 20 as shown in Fig. 5.

The arm 9 with its carrier and mold is used to turn the shaft 4 and wind up the operating motor, and after the motor has been wound, the rotating parts are retained against rotary movement by means of a plunger 24 which is slidable in bearings 25 of the motor casing 3. This plunger has a flanged head

26 which projects outwardly from the casing in the path of the screw bar 6, as indicated in Fig. 4, and the flanged head prevents the rotation of the mold and crucible carrier when these parts are engaged. To release the rotating parts of the casting machine, the plunger 24 is pushed to the left in Fig. 4 against the tension of a spring 27 that is interposed between a shoulder 28 on the plunger 24 and the inner face of a wall of the casing 3. The plunger is thus pressed out of the path of movement of the arm 6 and held in that position, while the arm 9 with its load is rotating with the shaft 4 and block 5.

Thus it will be apparent that after the torch has been applied to the metal or gold G in the crucible and the metal has been melted, the rotary parts are released and the rotation of the mold and crucible, through centrifugal action, causes the molten metal to be poured from the spout 16 through the sprue and into the cavity 14 of the mold. In Fig. 5, it will be seen that the metal from the spout 16 enters the mold in a line which radiates directly from the center of the shaft 4, thus insuring the flow and maximum effect of the centrifugal action which results in a compact casting in the cavity 14.

The motor for operating the machine is illustrated as a spring 29 which is secured at its outer end by a screw 30 to the casing 3, and at its inner end the spring is secured to a sleeve 31 by means of a knob 32 on the sleeve. The ratchet device for the shaft 4 is enclosed within the housing 3 and includes a disk 33 in the form of a winding head secured on the shaft 4, and the head is recessed to accommodate a spring pressed plunger 34 which is urged outwardly by spring 35. The head is encased by a hollow head 36 forming part of the sleeve 31, and this hollow head is fashioned with a cam edge 37 and an abrupt shoulder 38, these parts being fashioned at the opening for the plunger 34. In Fig. 6, it will be apparent that as the shaft 4 and head 33 turn clockwise, the plunger 34 will be retracted, and the head and shaft will turn in the hollow head 36, for the purpose of winding up the motor spring 29. When the motor is to be operated for the purpose of rotating the casting machine, the shoulder 38 engages the tip end of the plunger 34 to cause rotary movement of the hollow head 36 and the disk head 33.

After each rotary operation of the casting machine, of course the spring motor is rewound, and when the motor is released, the casting operation is repeated. The parts may readily be adjusted and manipulated for the proper performance of their functions, and due to the simplicity in construction and operation of the machine the parts may be adjusted and operated with convenience and accuracy.

Having thus fully described my invention, what I claim as new and desire to secure by Letters Patent is—

1. The combination with a motor shaft and operating means therefor, of a block secured on the shaft and a counterbalance for the shaft, an arm carried by the block and a mold fixed at the free end of the arm, an adjustable carrier on the arm, and a crucible supported on said carrier.

2. The combination in a centrifugal casting machine with a rotary shaft and block, and an arm secured to the block, of a mold fixed at the free end of the arm, a carrier slidable on the arm, means for securing the carrier in adjusted position on the arm, and a crucible supported in the carrier.

3. The combination in a rotary casting machine with its shaft, a block, and supporting arm, of a mold secured at the end of the arm, a carrier slidable on the arm and a guide band on the carrier adapted to engage the mold, a crucible in the carrier, and means connecting the carrier and block whereby the carrier may be secured in adjusted position.

4. In a centrifugal casting machine, the combination with a motor shaft, a block thereon, and an arm secured to the block, of a mold secured on the arm, a carrier slidable on the arm, a crucible supported in the carrier having a spout adapted for insertion in the sprue of the mold, a joint band on the carrier for engagement with the mold, a slide bar secured to the carrier and supported in the block, and a set screw in the block for securing said slide bar.

In testimony whereof I affix my signature

CHESTER P. SHOUDY.