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CENTRIFUGAL CASTING APPARATUS FOR DENTAL PURPOSES

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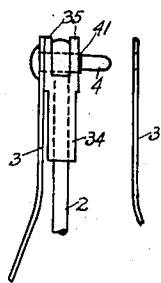


Fig. 5

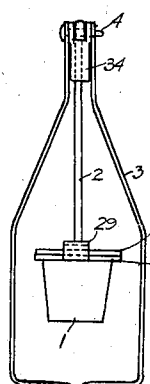


Fig. 6

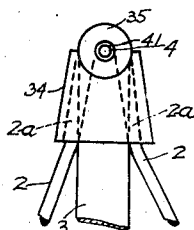


Fig. 7

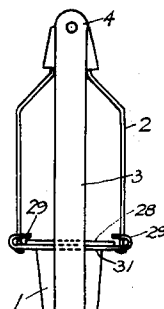


Fig. 8

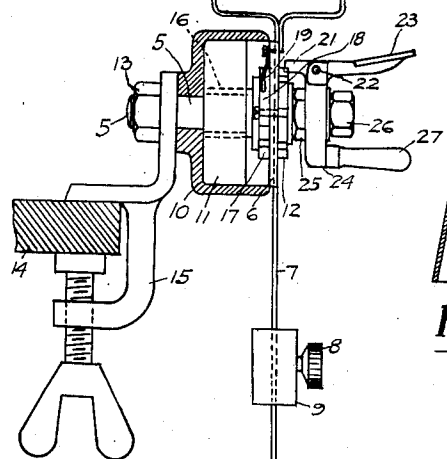


Fig. 9

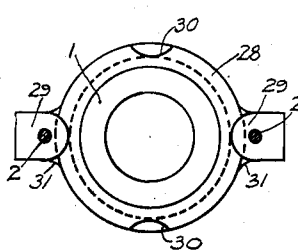


Fig. 10

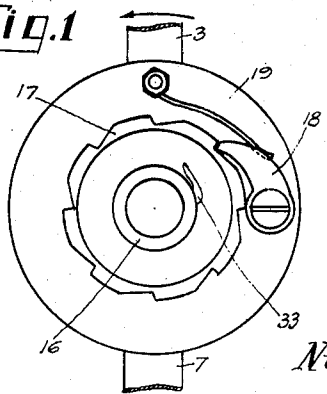


Fig. 11

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CENTRIFUGAL CASTING APPARATUS FOR
DENTAL PURPOSES

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3 Claims. (Cl. 22—65.1)

The present invention relates to centrifugal casting apparatus for dental purposes, and has for its object to create an apparatus of this kind which is handy and practical in use and simple in construction.

An embodiment of the invention is shown in the accompanying drawing in which Fig. 1 shows a side elevation of the centrifugal casting apparatus seen in a direction perpendicular to the axis thereof, a detail of the apparatus being shown in section. Fig. 2 illustrates the apparatus from another side, viz. in the direction of said axis. Fig. 3 is a view of a coupling between the driving spring and an arm carrying the casting-box. Fig. 4 is a view of a holder for the casting-box. Figs. 5 and 6 are views showing the connection between the holder for the casting-box and said arm. Fig. 7 is a section of a detail. Figs. 3 to 7 are drawn on a larger scale than that of Figs. 1 and 2.

In the drawing, 1 indicates the casting-box which by means of a holder is suspended between the shanks of a guard-shaped arm 3, a pin or pivot 4 connecting the holder with the extreme end of the arm. Said holder consists of a substantially guard-shaped member 2 positioned in a plane substantially perpendicular to the plane of the guard 3, and an annular member 31 attached to the ends of the guard 2. Upon this annular member the casting-box rests by means of its flange 28. The holder 2, 31 with the casting-box 1 is movable about the pin 4 substantially in the plane of symmetry between the shanks 3 so that in each position of rest of the arm 3, the holder 2, 31 with the casting-box can obtain a vertical position. The arm 3 is attached to a disc 6 rotatable about the shaft 5, and is prolonged by an arm or extension 7 with a movable weight 9 which by a screw 8 can be secured in its position upon the arm 7. By the weight 9 the weight of the casting-box 1, the holder 2, 31 and the arm 3 may be counterbalanced. The disc 6 covers the opening of a cylindrical housing 10 enclosing a spiral spring 11 and passed through by the shaft 5. Both ends of this shaft are screw-threaded, and one of these threads receives a nut 13 which rigidly connects the housing 10 and a holder 15 to the shaft so that the housing 10 and the holder 15 are not capable of any movement in relation to the shaft. By means of the holder 15 the apparatus may be secured to the edge 14 of a table or the like as shown. The outer end of the spiral spring 11 is connected to the housing 10 whereas the inner end of said spring is connected to a sleeve 16

rotatable about the shaft 5. This sleeve is furnished with a hook 33 (Fig. 3) adapted to engage with a hole through the inner end of the spiral spring 11. The sleeve 16 is connected with a ratchet-wheel 17 engaging with a pawl 18 which is pivotally connected to the disc 6, and by means of a spring 19 is kept in contact with the ratchet-wheel. The parts 11, 16, 17, 18 and 19 are arranged within the housing 10. To the outer side of the disc 6 there is attached a disc-shaped ratchet member with a number of circularly arranged recesses 20 or the like designed to engage with a ratchet member in the shape of a double-armed lever 21, 23 pivoted upon a pin 22. One end 21 of this lever is adapted to engage with any of the recesses 20 while the opposite end is formed as a pressure or thumb plate 23 by means of which the lever 21, 23 is depressed in order to disengage the disc 12. The lever 21, 23 is carried by means of the pin 22 on a disc-shaped holder 24 which by means of two nuts 25 and 26 is rigidly fixed to the shaft 5.

The apparatus is used and operated in the following manner.

Before the metal is poured into the mould formed in the mass in the casting-box 1, the arm 3 is rotated in the direction of the arrow of Fig. 3 whereby the same by means of the coupling formed by the parts 17, 18 brings along the sleeve 16 in the direction of the rotation thus setting the driving spring 11 connected to the sleeve. The spring is sufficiently set after a few rotations of the arm 3 and thereafter this arm will be secured in a suitable position by means of the parts 12 and 21, 23. As soon as the metal has been poured into the mould, the thumb plate 23 is depressed; to facilitate this operation there is arranged a supporting pin 27 on the holder 24. After thus releasing the force of the spring 11 the balanced arm 3 is rotated about the shaft 5 with great speed whereby the holder 2, 31 with the casting-box 1 by the centrifugal force is swung out from the arm 3. After the spring has spent its force, the arm 3, together with the parts connected to the same, continues to make a number of revolutions on account of its inertia. Due to the arrangement of the coupling 17, 18, the spring 11 does not prevent this movement of the arm. After the force of the spring has been released the pawl 18 during the revolution of the arm slides along the ratchet-wheel 17 in a direction opposite to the direction given by the arrow of Fig. 3, until the movement of the arm has ceased. The casting is now finished, and the

casting-box can be taken out of its holder for the removal of the plug or the cast object.

In order to make the holder with the casting-box easily removable from the guard-shaped arm 3, the shanks of this arm or at least one of them can be made resilient in the axial direction of the pin as shown in Fig. 5 where one shank of the guard has been moved to the side against its own elastic force so that the guard-shaped holder 2 can be moved away from the pin 4 fastened to the other shank of the guard-shaped arm 3. Said pin has an offset 41 against which that shank 3 which is movable relatively the pin is pressed by the elastic force of said shank. On the wider part of the pin 4 the guard-shaped holder 2 is suspended between the shanks of the arm 3. The shape of the guard 2 is known. The special locking device to prevent the movement of the guard 2 away from the pin 4 is, however, new and characteristic of this invention. This locking device consists of a flat sleeve 34 which has two hub portions 35 at one end, the holes 36 through these hub portions receiving the pin 4 and the outer flat surfaces of the hub portions adapted to slide against the inside surfaces of the shanks 3 when the holder 2, 31 is swung.

Furthermore, the sleeve 34 is so shaped that the narrower side surfaces thereof taper against the hub portions 35 corresponding to the shape of the portions 2a of the guard 2 so that the sleeve can be moved over these portions only so far as is required to bring the holes of the hub portions 35 co-axially with the middle bend of the guard so that when the pin 4 passes through the holes 36 and the middle bend of the guard 2, this guard cannot move relatively the sleeve 34, and as said sleeve, of course, cannot move in the radial direction of the pin the movement of the holder 2, 31 in said direction of the pin is also prevented, while the holder is free to swing or rotate about said pin.

The reason why a special lock 34 has been arranged for the guard 2 instead of constructing said guard such that it fills the same purpose is, that guards 2 of the kind shown in the drawing are obtainable on the market and therefore it is more convenient to arrange a special lock for the guard as described above.

In order to prevent the casting-box from working loose from the holder, a special arrangement has been provided. The annular part 31 of the holder 2, 31 on which the casting-box rests with its flange 28 has on two opposite points bent ears 29 which project a short distance over flange 28. This flange has on two diametrically opposite points recesses 30 (Fig. 4), and in order to lift the casting-box from the annular member 31 without interfering with the flange 28 and the ears 29 said casting-box must be turned so that

the recesses 30 will be placed opposite the ears 29. In this position the ears can pass through the recesses 30 when the casting-box is lifted from the annular member 31.

When placing the casting-box on said annular member the recesses 30 must be placed opposite the ears 29. After the flange has passed the ears, and the flange rests on the annular member 31, the casting-box is turned say ninety degrees. In this position said ears together with the flange will prevent the casting-box to be thrown out from the holder 2, 31.

I do not desire to restrict my invention to the embodiment above described and shown in the drawing but want to be free to vary the details thereof without departing from the spirit of my invention.

What I claim is:

1. A centrifugal casting apparatus for dental purposes comprising, a shaft fixed in substantially horizontal position, an arm rotatably mounted upon said shaft, a casting box holder carried by said arm, a spring motor associated with said arm and adapted by rotating the latter in one of its directions to be wound and set for imparting a powered rotation to said arm and holder in the opposite direction, a disk rigid with said arm and rotating therewith about said shaft, a lever pivotally supported upon the shaft and stationarily held thereon, and a plurality of engaging means formed about the circumferential portion of said disk and engageable with said lever whereby the arm may be locked in a plurality of different positions with relation to said shaft and against the tension of said spring motor.

2. A centrifugal casting apparatus for dental purposes comprising, a shaft fixed in substantially horizontal position, a fork-shaped arm rotatably mounted upon said shaft, a pin carried by the outer end of one shank of the fork-shaped arm and extending therefrom, a casting box holder suspended from said pin and supported therefrom between the fork-shaped arm, and the extended extremity of said pin having free engagement with the remaining shank of said arm whereby the same may be moved for placement and removal of the latter.

3. A centrifugal casting apparatus for dental purposes comprising, a shaft fixed in substantially horizontal position, a fork-shaped arm rotatably mounted upon said shaft, a pin carried by said arm, a fork-shaped casting box holder suspended from said pin, a flattened sleeve engaged on said pin and enclosing the adjacent portion of said holder whereby the same is prevented by said sleeve from moving radially of the pin but capable of swinging about the same.

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