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A. A. LAINER

HOLDING AND CLAMPING DEVICE

Filed June 20, 1927

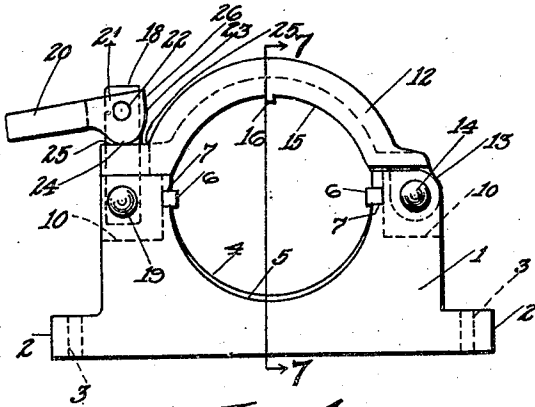


Fig. 1.

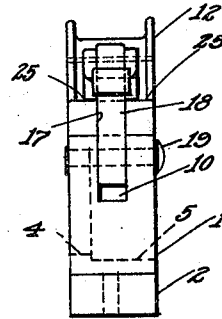


Fig. 2.

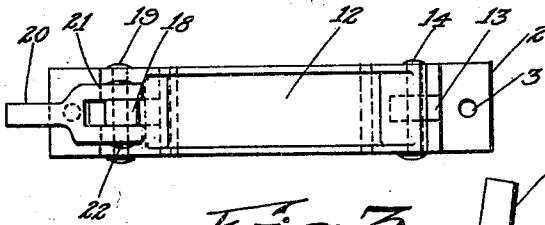


Fig. 3.

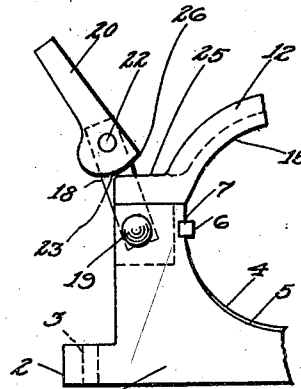


Fig. 4.

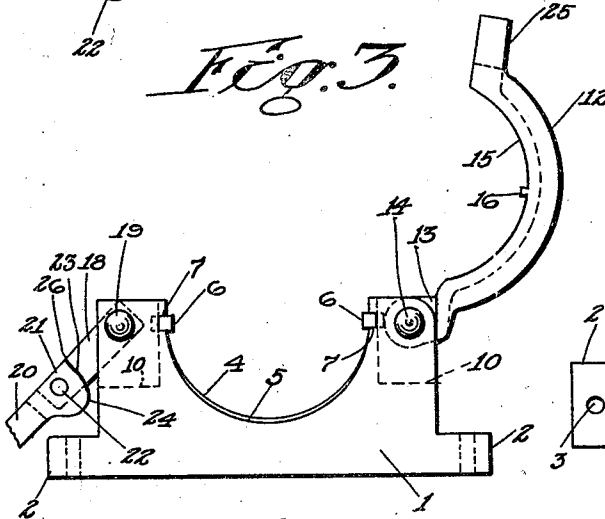


Fig. 5.

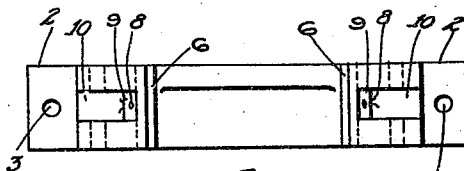


Fig. 6.

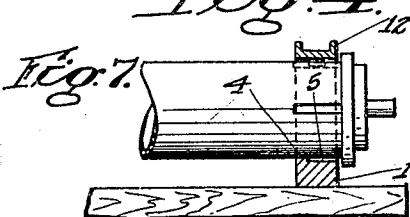


Fig. 7.

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HOLDING AND CLAMPING DEVICE.

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The invention relates to means for holding the cylinders of centrifugal machines, while the blades thereof are being removed. Certain types of centrifugal machines, used for the removal of dirt and sediment from gasoline and other cleaning fluids, provide a cylinder inside of which are a plurality of blades fitting with a tight fit. These blades or wings, as they are sometimes called, have to be removed quite frequently, often several times a day, in order that the interior of the cylinder may be cleaned. The operation of removal is a dangerous one, due to the fact that the blades have very sharp edges and have a tendency to stick in the cylinder. Heretofore the cylinders have been placed on a bench in a sort of anvil, which prevents them from turning provided the operator holds them down on the anvil; the operator must then hold the cylinder in question from moving longitudinally and pull out the blades with a hook. This operation is dangerous because the operator has to hold the cylinder as well as draw the blades.

By the use of my invention, the cylinders are firmly clamped on the bench, and the operator can devote his entire attention to drawing the blades, and keep his hands away from them as he uses the hook. He does not have to steady the cylinders at all. My invention comprises a clamping device and means to exert considerable pressure on the cylinders so that they cannot move. It contemplates also the use of lugs, preferably detachable, that fit into the slots provided in the sides of the cylinders. The lugs will wear out fastest, and by making them detachable, they alone will have to be replaced.

The above and other advantageous features of the invention will hereinafter more fully appear in the following detailed description, taken in connection with the accompanying drawings, in which:—

Fig. 1 is a front elevation of a holding and clamping device made in accordance with the invention.

Fig. 2 is a side elevation.

Fig. 3 is a plan view.

Fig. 4 is a view similar to Fig. 1, but showing the clamp opened.

Fig. 5 is a fragmentary view of the device, illustrating the operation of closing the locking device.

Fig. 6 is a plan view with the clamp opened, in order to show the detachable lugs.

Fig. 7 is a sectional view on the line 7—7

of Fig. 1, showing a cylinder clamped in position, this figure being on a reduced scale.

Like reference characters refer to like parts throughout the drawings.

Referring particularly to Figs. 1, 2, and 4, the device comprises a base or supporting element 1, which provides side extensions 2, 2 having holes 3, 3 therethrough by means of which said base may be fastened to a workbench or other support. The base is formed with a substantially semicircular cut out portion 4 in which the cylinder from which the blades or wings are to be removed is located; said portion 4 providing a depression 5. See Fig. 7. The cylinders for which the device of the invention is made weigh considerable, and are most conveniently placed in the portion 4 of the base 1 by sliding them in; the depression 5 provides a double support for the cylinder as it is slid into the portion 4 as on an inclined plane, and prevents binding.

As aforesaid, the cylinders all provide slots in the walls thereof, said slots being spaced ninety degrees apart, and therefore, in order that the cylinders may be clamped in position without possibility of turning, lugs 6, 6 are provided by the base 1. Referring to Figs. 1, 4 and 6, these lugs are separate members and consequently detachable; they fit in slots 7, 7 provided in the surface of the portion 4 and are held in place by cotter pins 8, 8 through extensions 9, 9 of the lugs, the lugs together with their extensions having the shape of a T as shown in Fig. 6.

The extensions 9, 9 pass into slots 10, 10 cut in the sides of the base 1; the primary purpose of these slots 10, 10 is for the pivotal attachment of the clamping member 12 at one side of the base, and the similar attachment of the locking device at the other side. To that end the clamping member 12 provides a slabbled off portion 13 which fits within the walls of the right hand slot 10. A pin or rivet 14 passes through the walls of the slot and through the portion 13, thus providing a pivotal mounting for the clamping member, which is held from side play by reason of the fact that the portion 13 fits closely in the slot.

The clamping member 12 provides a curved surface 15 which, together with the cut out portion 4, constitutes a completely circular holding means, when the clamp 12 is closed. The clamping member preferably provides a lug 16, spaced ninety degrees from the lugs 6, 6; however this lug, although it fulfills

the same purpose as the other lugs, and fits into a spaced slot in the side of the cylinder that is to be held, need not be removable, as the lugs 6, 6 will suffice to hold the cylinder at all events, even if the lug 16 wears out.

At the left hand side thereof, the clamping member is slotted. This slot 17 (see Fig. 2) has the same width as the left hand slot 10 in the base 1, and a member 18, which is pivotally held in the slot 10 by means of a pin or rivet 19, is adapted to be swung upwardly into the slot 17. Pivotaly attached to the member 18, which is in effect a link, is a lever 20. The lever 20 provides a forked portion 21 (see Fig. 3) which receives the link 18 and is pivotally attached thereto by means of a pin 22. The bottom of the forked portion 21 constitutes a cam surface 23. The parts are shown in open position in Fig. 4, and in closed position in Fig. 1, the portion of greatest eccentricity 24 of the cam surface being shown in engagement with the surface 25 of the clamping member that extends over the base 1; in this position of the lever 20 the clamp is securely locked down when a cylinder is in position.

Assuming that the device is open as shown in Fig. 4, and that it is desired to clamp a cylinder firmly in place, the cylinder will be placed in the cut out portion 4 and rotated until the lugs 6, 6 enter the slots provided in the cylinder. The clamping member 12 can then be swung downwardly into place, and the lug 16 will enter another slot in the cylinder by reason of the ninety degree spacing of both the slots and the lugs. The device is made so that when the cylinder is clamped in position, there will be no play allowed; consequently some force must be used to fasten the clamp down. This is taken care of by my novel lever locking device. As shown in Fig. 5, the lever 20 together with the link 18 should be swung clockwise until the central portion of the cam surface 23 engages the corner of the portion 25, as well illustrated in the said figure. Thereupon, clockwise rotation of the lever 20 will have two effects;—it will exert a powerful com-

pressing action upon the clamp 12, and it will cause the link 18 to be further moved clockwise. When the part 26 of the cam surface 23 is directly over the center of the surface 25, and the link 18 is substantially vertical, the lever 20 can be turned counter clockwise to the position of Fig. 1, without any liability of this action forcing the link 18 to move in a counterclockwise direction, and the device is then in a locked position.

I claim:

1. In a device of the class described, a base providing a substantially semi-circular cut out portion, lugs provided by said portion for the non-rotatable holding of a cylinder, a complementary clamping member pivotally attached to said base, a link pivotally connected to said base opposite the pivotal attachment of said clamping member, and a cam lever pivotally attached to said link, whereby to lock said clamping member firmly in place on said base and hold a cylinder from any movement.

2. In a device of the class described, a base providing a substantially semi-circular cut out portion, a complementary clamping member pivotally attached to said base, a link pivotally connected to said base opposite the pivotal attachment of said clamping member, a cam lever pivotally attached to said link, whereby to lock said clamping member firmly in place and hold a cylinder from longitudinal movement, and detachable lugs located in the said cut out portion, whereby to hold said cylinder from rotation when it is clamped in position, and whereby said lugs can be readily replaced when worn.

3. In a device of the class described, a base providing a substantially semi-circular cut out portion, lugs provided by said portion for the non-rotatable holding of a cylinder, a complementary clamping member pivotally attached to said base, means for locking the clamping member to the base to hold a cylinder, and there being a depression in said base whereby a cylinder may be slid upwardly into place without binding.

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