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BOWL MANIPULATING CRANE FOR CENTRIFUGAL MACHINES

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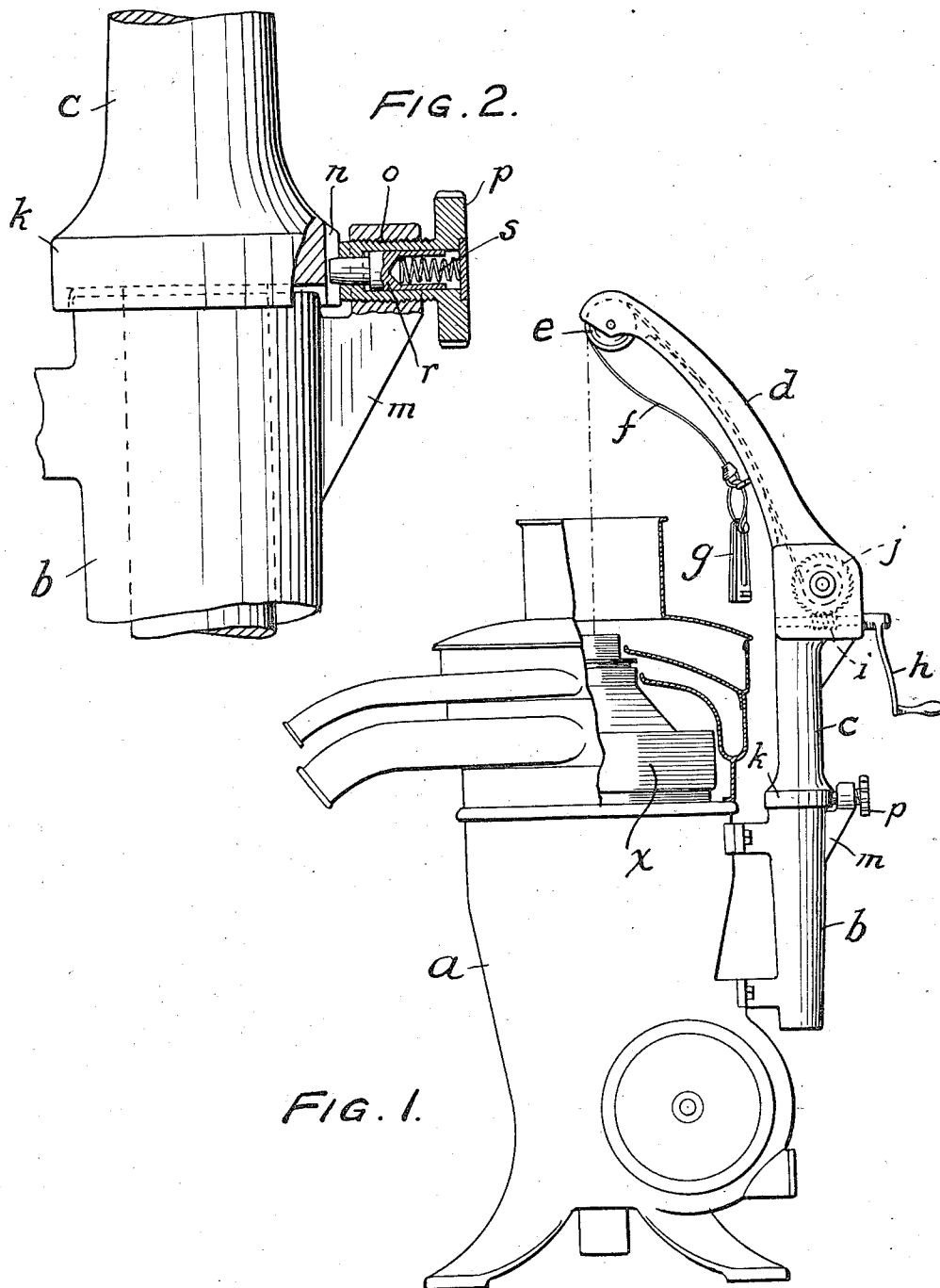


FIG. 1.

FIG. 2.

WITNESS:

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UNITED STATES PATENT OFFICE

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BOWL-MANIPULATING CRANE FOR
CENTRIFUGAL MACHINES

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6 Claims. (Cl. 212-61)

Certain centrifugal machines are provided with cranes for lifting the bowl into and out of the bowl casing. These cranes, in order to handle the bowl conveniently, are made rotatable about a center at one side of the frame.

The object of the invention is to provide means to automatically and positively lock the crane when it is moved into the central position required to hold the bowl exactly above the center of the frame and to provide means to hold the crane in any other position to which it is moved for lifting the bowl from, or lowering it onto, the floor or a truck.

In the accompanying drawing, which shows one preferred embodiment of the invention:

Fig. 1 is a side elevation, partly broken away, of a centrifugal machine equipped with a bowl lifting crane.

Fig. 2 is a side view, partly in section, of my improved locking device.

To the side of the frame *a* of the centrifugal machine is secured a socket *b* in which rotates a mast *c* provided with an upwardly extending arm *d* of such length and degree of inclination that its upper end, during its rotation, must pass above the center of the machine. The upper end of arm *d* carries a pulley *e*, around which extends a hoisting cable *f* carrying a wedge lifter *g* adapted to fit into the neck of the bowl *x* and expand to lock itself securely in place. The cable extends down to and around a drum operable, from a handle *h*, through a worm *i* and worm wheel *j*. Around the mast *c*, immediately above the socket *b*, is a circular enlargement *k* with a notch *n*. An arm *m* projects outward and upward from the socket *b* and is threaded to receive a screw *o* with a hand wheel *p*. Within the screw is a plunger *r* actuable by a spring *s* to force it toward the mast and into the notch *n*.

When the screw *o* is backed out far enough to cause the end of the plunger *r* to clear the circular enlargement *k*, the crane may be rotated to any desired position.

If the screw *o* is then turned in, the end of the plunger *r* will first come into contact with the enlargement. Further movement of the screw *o* will compress the spring *s* until the end of the screw is forced against the enlargement *k* and, by friction on it, holds the crane in the desired position for lowering a bowl to or raising it from the floor. When a bowl is ready to be put in the frame and is raised high enough to clear it, slightly backing off the screw *o* will release the frictional engagement between it and the enlargement *k* and permit the crane to be turned to the

position that holds the bowl above the center of the frame. The spring *s* will then force the plunger *r* into the notch *n* and automatically positively lock the crane in proper position for lowering the bowl onto the spindle.

What I claim and desire to protect by Letters Patent is:

1. In a bowl manipulating crane for centrifugal machines, the combination of a frame comprising a crane-supporting socket, a crane turnable in said socket and comprising an arm adapted to be swung into position to bring its upper end into a definite overhanging central position relative to the frame, locking members respectively carried by the frame and turnable with the crane and adapted, when the crane is swung into said definite central position, to positively interlock, and means other than said locking members to frictionally lock the crane when it is swung into other positions.

2. In a bowl manipulating crane for centrifugal machines, the combination of a frame comprising a crane-supporting socket, a crane turnable in said socket and comprising an arm adapted to be swung into position to bring its upper end into a definite overhanging central position relative to the frame, locking members respectively carried by the frame and turnable with the crane, a spring adapted, when the crane is swung into said definite central position, to move one of said members into positive locking relation with the other of said members, and means other than said locking members and spring to frictionally lock the crane when it is swung into other positions.

3. In a bowl manipulating crane for centrifugal machines, the combination of a frame comprising a crane-supporting socket, a crane turnable in said socket and comprising an arcuate frictional locking surface and an arm adapted to be swung into position to bring its upper end into a definite overhanging central position relative to the frame, said crane having a notch, a stationary sleeve carried by said socket, a screw threaded in said sleeve and turnable to frictionally engage said locking surface and thereby lock it in other positions, a plunger carried by the screw, and a spring adapted, when the crane is swung into said definite central position, to move the plunger into locking engagement with said notch, thereby automatically positively locking the crane in said position, the screw being turnable to withdraw the plunger from engagement with the notch.

4. In a bowl manipulating crane for centrifugal

machines, the combination of a frame comprising a crane-supporting socket, a crane turnable in said socket and comprising an arm adapted to be swung into position to bring its upper end into a definite overhanging central position relative to the frame, locking members respectively carried by the frame and turnable with the crane, said crane having a locking member turnable therewith and a frictional locking surface, and two non-turnable locking members supported on the frame, one of said non-turnable locking members adapted to positively interlock with the turnable locking member when the crane is turned to said central position, the other of said non-turnable locking members being manually movable to cause it to engage said frictional locking surface when the crane is turned to other positions and also manually movable to withdraw the first named non-turnable locking member from locking engagement with the turnable locking member.

5. In a bowl manipulating crane for centrifugal machines, the combination of a frame comprising a crane-supporting socket, a crane turnable in said socket and comprising an arm adapted to be swung into position to bring its upper end into a definite overhanging central position relative to the frame, fixed locking members carried by the frame and turnable locking members turnable with the crane, one of the turnable locking members being adapted, when the crane is swung into said definite central position, to positively interlock with one of the fixed locking members and the other turnable locking member being adapted, when the crane is swung into other posi-

tions, to be frictionally engaged with the other fixed locking member to thereby frictionally lock the crane.

6. In a bowl manipulating crane for centrifugal machines, the combination of a frame comprising a crane-supporting socket, a crane turnable in said socket and comprising an arm adapted to be swung into position to bring its upper end into a definite overhanging central position relative to the frame, said crane having an arcuately extending frictionally locking surface, a stationary sleeve carried by said socket, a screw threaded in said sleeve opposite said surface, a plunger carried by the screw and retractible thereby, said crane having also a notch positioned opposite said screw and plunger when the crane is in said central position, a spring carried by the screw and adapted to project the plunger into said notch when the crane is in its central position, said screw being turnable to effect its recession from said surface a distance sufficient to withdraw the screw from the notch and thereby allow the crane to be turned away from its central position, said screw being also turnable to effect its advance into frictional locking engagement with said surface to thereby lock the crane in any other than its central position, said screw being also turnable to effect its recession from said surface a distance sufficient to allow the crane to be turned but not sufficient to prevent the automatic engagement of the plunger with the notch when the crane is turned to its central position.

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