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P. W. DEMPSEY

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MOLD FOR PISTON PACKING

Original Filed Oct. 28, 1933

Fig. 2.

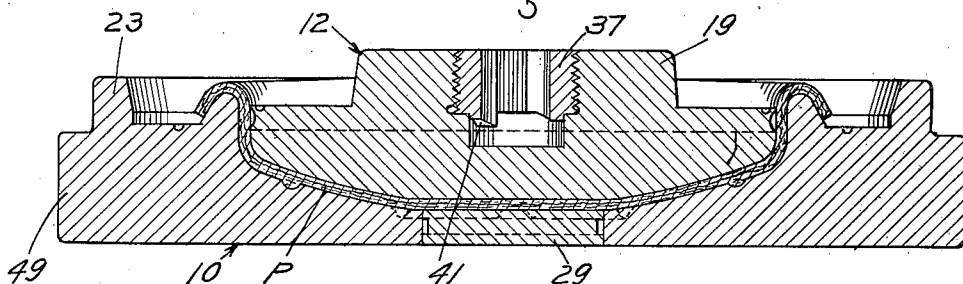


Fig. 1.

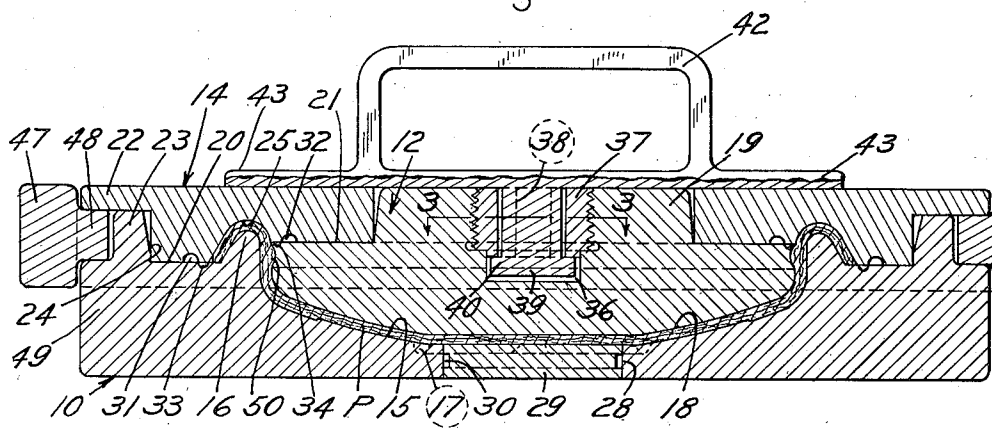


Fig. 4.

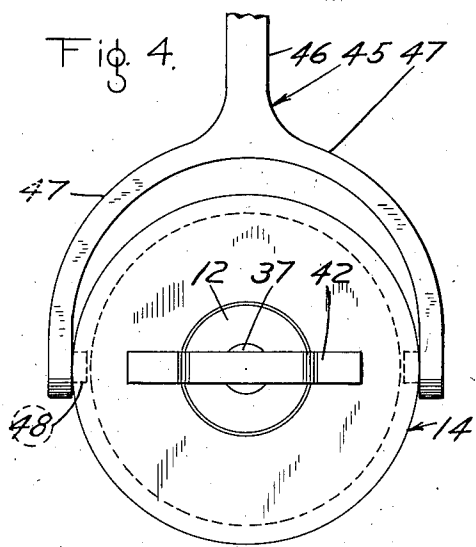
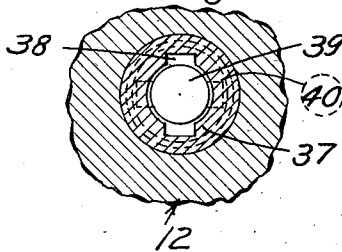


Fig. 3.



INVENTOR
PHILIP W. DEMPSEY
BY *Wm. M. Leady*
ATTORNEY

UNITED STATES PATENT OFFICE

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MOLD FOR PISTON PACKING

Philip W. Dempsey, Pittsburgh, Pa., assignor to
The Westinghouse Air Brake Company, Wil-
merding, Pa., a corporation of Pennsylvania

Original application October 28, 1933, Serial No.
695,638. Divided and this application Febru-
ary 19, 1935, Serial No. 7,173

3 Claims. (Cl. 18—35)

This invention relates to molds for making piston packings, and this application is a division of my copending application Serial No. 695,638, filed October 28, 1933, for a Process of making cylinder packing.

A principal object of the present invention is to provide an improved mold for carrying out the process for making piston packing as described in my aforesaid application.

More detailed objects and advantages of the present invention will be apparent from the following description, which is illustrated in connection with the attached drawing, wherein,

Figure 1 is a cross sectional view of the mold showing the component parts in assembled relation.

Figure 2 is a partial cross sectional view showing the top part of the mold removed.

Figure 3 is a fragmentary detail view along the line 3—3 of Figure 1.

Figure 4 is a view depicting a manner of opening the mold assembly.

As shown in the drawing, the mold comprises three sections, a bottom or base section 10, an inner or plug section 12, and an upper or ring section 14. These three sections cooperate in molding under heat and pressure a suitable substance placed therein to form a circular, impermeate, flexible, piston packing as is indicated in Figures 1 and 2 at P.

The bottom or base section 10 has a concave mold surface 15 surrounded by an annular ridge 16. At the bottom of the concavity 15 are a plurality of arcuate grooves 17 for forming arcuate bosses on the finished packing P.

The inner or plug section 12 has a convex mold surface 18 which is complementary to the concavity 15 in the base section 10. This section is also provided with a frusto-conical boss 19 which serves as a centering guide for the upper or ring section 14.

The upper or ring section 14 is of annular configuration and is adapted to make metal to metal contact with the lower or base section 10 at 20 and with the inner or plug section 12 at 21. The ring section 14 is provided with an annular overhanging portion 22 adapted to bear upon an annular, upwardly projecting, flange 23 integral with the lower or base section 10. The annular flange 23 also serves to assist in centering the upper or ring section 14 at contacting surfaces 24. A recess 25 in the upper section is formed complementary to the annular ridge 16, as shown in the drawing. When the three mold sections 10, 12 and 14 are assembled as shown in Figure

1, a space is defined between the three sections having the exact contour of the finished packing P.

Because of the presence of the annular ridge 16 for forming the corrugation of the packing P, gases generated in the central portion of the packing P during the molding operation do not readily flow toward the peripheral edge of the packing. It is therefore necessary to provide means through which the gases may be vented from the central portion of the packing. The base section 10 is therefore provided with a central bore 28 in which is inserted a plug 29 tight enough to be retained therein but having sufficient clearance between itself and the bore to permit gases to escape to the atmosphere thereby. The plug 29 is provided with an annular groove 30 for receiving any excess material flowing through this clearance space.

The upper or ring section 14 is provided with annular grooves 31 and 32, which cooperate respectively with annular groove 33 in the base section 10 and annular groove 34 in the inner section 12. These grooves function to carry away the excess material due to overflow and function in the manner disclosed in my Patent 1,910,525, issued May 23, 1933. Gases generated within the mold during operation may also escape to the atmosphere through these grooves.

The inner or plug section 12 is provided with a recess or bore 36, which is threaded for receiving a screw plug 37 having a key hole slot 38 therein for receiving a key lug 39 with wings 40 thereon adapted to engage arcuate cams 41 provided with inclined cam surfaces. The key lug 39 is secured to or formed integral with a handle 42 and when the key lug is inserted in the slot 38 and the handle 42 turned approximately 45 degrees, the wings 40 engage and frictionally lock with the inclined surfaces of the cams 41.

The handle 42 is provided with extensions 43 overlying the upper or ring section 14, so that when the key lug 39 is locked in the key hole slot 38, as just described, the inner or plug section 12 is drawn into close engagement with the upper section 14. This permits the plug and upper sections to be handled as a unit when it is desired to separate these two mold sections from the lower or base section 10. The operating handle 42 may be readily detached from the two mold sections 12 and 14 by turning the handle so that the lug wings 40 register with the key hole slot 38, at which time the handle may be withdrawn without disturbing the two mold sections.

In carrying out a molding operation with the
aforesaid mold, the operating handle 42 is
attached to the plug section 12 and upper section
14, as just described, and these two sections re-
5 moved from contact with the base section 10.
The uncured packing blank is inserted in the
lower section 10 and the two removed sections
then reassembled with the lower section. The
assembled mold sections with the enclosed un-
10 cured blank are then placed in an hydraulic press,
suitable pressure applied to press the mold sec-
tions firmly together, and then subjected to the
desired temperature, as is more fully described in
my copending process application Serial No. 695,-
15 638, hereinbefore mentioned.

After the curing operation has been completed,
the hydraulic pressure is released and the mold
is withdrawn from the press and suitably placed
for opening. In order that the mold may be
20 opened with safety to the operator, a forked
tool, as shown at 45, may be employed. Such a
tool may comprise a handle 46 having forked
elements 47, each of which is provided with an
inwardly extending lug 48 adapted to interfit the
25 annular slot formed between the overhanging
portion 22 of the upper section 14 and a similar
overhanging portion 49 of the lower section 10,
as is clearly depicted in Figure 1. By suitably
manipulating the forked tool 45 the upper mold
30 sections may be pried loose from the lower mold
section, and then the upper sections removed by
gripping the handle 42. The finished packing P
will adhere to the upper mold sections because
of an annular bead 50 on the packing.

35 After the upper two mold sections have been
removed from the lower mold section, the handle
42 may be turned to the position where it is re-
movable from the two upper mold sections, and
these two sections may then be separated. The
40 corrugated portion of the packing will then pro-
ject above the inner or plug section 12, and the
packing may thus be readily removed from the
inner section by gripping this corrugation.

While I have described one detailed form that
45 my improved mold may take, it will be obvious to
those skilled in the art that a number of modifi-
cations and changes therein may be made with-
out departing from the spirit and scope of the
invention as defined in the appended claims.

50 Having now described my invention, what I
claim as new and desire to secure by Letters
Patent, is:

1. A mold for molding a piston packing having
a peripheral corrugation, comprising in combina-
55 tion, a base section having a concave surface
circumscribed by an annular ridge, an inner sec-
tion having a convex surface complementary to
said concave surface and coacting therewith for
forming a body portion of the packing, an upper
60 section having an annular recess complementary
to said annular ridge on said base section and

coacting therewith for forming the peripheral
corrugation of said packing, and being adapted
to overlie said inner section when said three sec-
tions are assembled together, said three sections
5 being separably removable, and means associated
with said inner section for causing the packing
to adhere to this section when said base and upper
sections are removed from the packing following
a molding operation, whereby the peripheral
10 corrugation of the packing is exposed and may
be gripped to remove the packing from the inner
section.

2. A mold for molding a piston packing having
a peripheral corrugation, comprising in combina-
15 tion, a base section having a concave surface cir-
cumscribed by an annular ridge, an inner sec-
tion having a convex surface complementary to
said concave surface and coacting therewith for
forming a body portion of the packing, an upper
20 section having an annular recess complementary
to said annular ridge on said base section and co-
acting therewith for forming the peripheral cor-
rugation of said packing, and being adapted to
overlie said inner section when said three sec-
25 tions are assembled together, said three sec-
tions being separably removable, means asso-
ciated with said inner section for causing the
packing to adhere to this section when said base
and upper sections are removed from the pack-
30 ing following a molding operation, whereby the
peripheral corrugation of the packing is exposed
and may be gripped to remove the packing from
the inner section, and detachable means for lock-
ing said inner and upper sections together dur-
35 ing a molding operation.

3. A mold for molding a piston packing hav-
ing a peripheral corrugation, comprising in com-
bination, a base section having a concave sur-
40 face circumscribed by an annular ridge, an inner
section having a convex surface complementary
to said concave surface for forming a body por-
tion of the packing, an upper section having an
annular recess complementary to said annular
ridge on said base section for forming the periph-
45 eral corrugation of the packing, and being adapt-
ed to overlie said inner section when said three
sections are assembled together, said three sec-
tions being separably removable, said inner sec-
tion having a recess for causing the packing to
50 adhere to this section when said base and upper
sections are removed from the packing following
a molding operation, whereby the peripheral cor-
rugation of the packing is exposed and may be
gripped to remove the packing from the inner
55 section, and a handle device having a key for en-
gaging a slot in the inner section for locking the
inner and upper sections together during a mold-
ing operation, and being adapted to be rotated to
disengage said key from said slot to unlock said
60 two sections.

PHILIP W. DEMPSEY.