

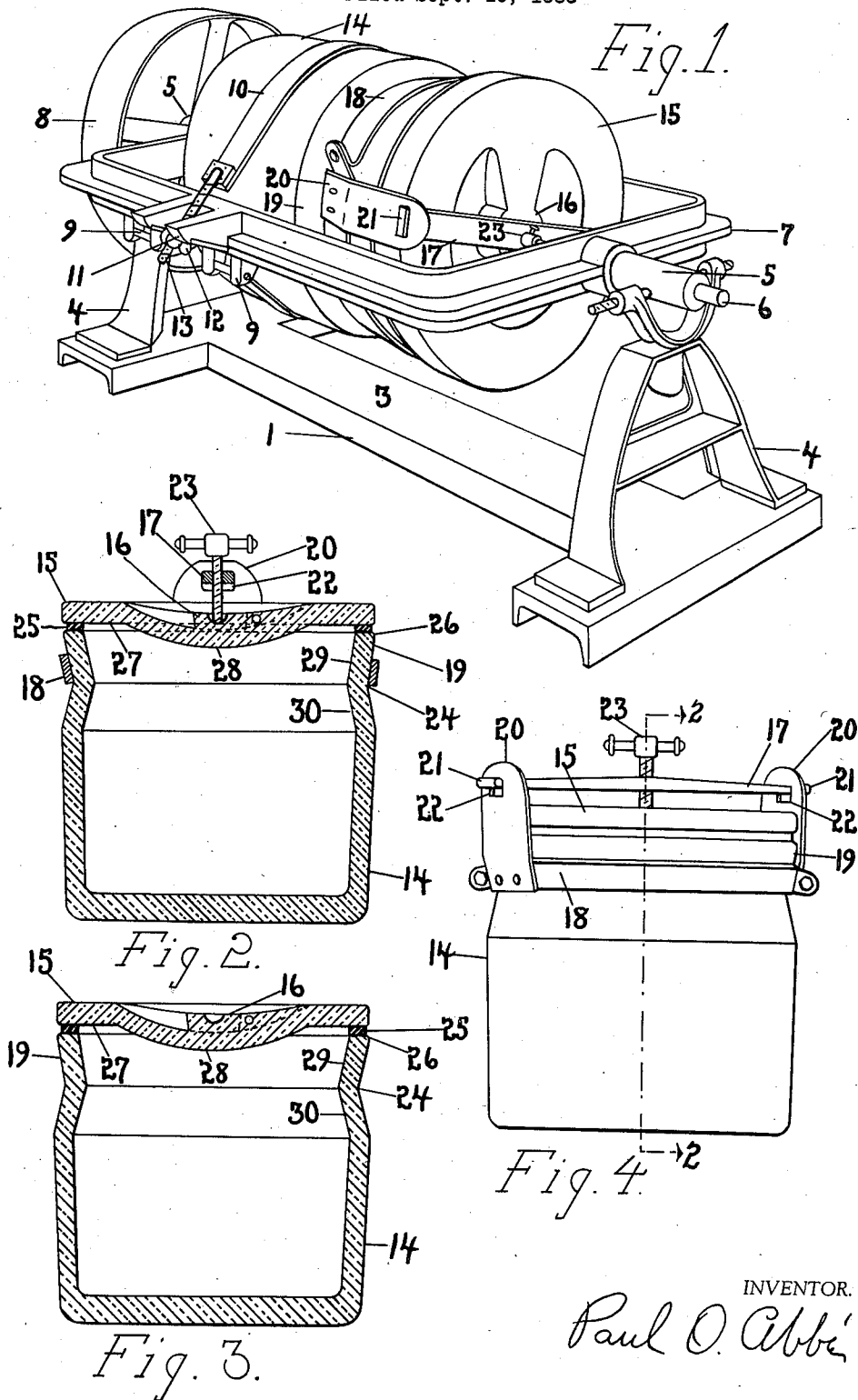
Nov. 5, 1935.

P. O. ABBÉ

2,020,091

JAR MILL

Filed Sept. 19, 1933



UNITED STATES PATENT OFFICE

2,020,091

JAR MILL

Paul O. Abbé, Montclair, N. J.

Application September 19, 1933, Serial No. 690,120

5 Claims. (Cl. 215—88)

This invention relates to jars and covers and means for securing the covers upon the jars, when the latter are used in rotary mills of the type called jar mills.

5 The main object of my invention is to provide a jar mill with a jar of improved form, both as to capacity and ease of insertion and release from the mill.

10 Another object is to provide a mill with such a jar which embodies a design of very great strength, and which has an efficient and extremely simple means for ensuring a positive closure for the cover upon the jar.

15 It is also an object of the invention to provide a jar of the character indicated which may be used in existing jar mills and which may be made in various sizes as well as of any material which is ordinarily considered useful for the jars or drums forming the main element in a ball and pebble mill, particularly of the jar mill type.

20 Other objects and the several advantages inherent in the construction and principles of my invention will appear more fully in detail hereinafter as this specification proceeds.

25 In the accompanying drawing forming part hereof,

Fig. 1 is a perspective view of a ball and pebble mill of the jar mill type which is equipped with a jar and cover with fastening means made according to my invention and embodying the salient features thereof in a practical form.

30 Fig. 2 is a central vertical section of the jar with its cover, intermediate gasket and the fastening means, when the jar is in upright position, as taken on line 2—2 of Fig. 4.

35 Fig. 3 is a similar view, wherein the fastening means are omitted.

40 Fig. 4 is an entire view of the jar and its cover and the fastening means or closing device for the cover.

Throughout the views, the same reference numerals indicate the same or like parts.

45 In ball and pebble mills it is usual to have the interior of the drums forming the main rotative elements thereof lined with porcelain or some other hard material which will endure considerable abrasion, but when the mill involved is of a smaller type, such as a jar mill, a jar replaces the drum and is made of porcelain or
50 other vitreous material and is also preferably removable from the rest of the machine and opened at one end. Of course, when removed from the mill, the jar member is stood upright upon one end so that the other end becomes the top, and it is this upper end or top which is thus opened.

In common with all ball and pebble mills, the jar mill is rotatable and may contain balls of metal or porcelain or else pebbles which are mixed with the material within intended to be crushed or pulverized. On the other hand, the machine must in this case have a cradle or the like for receiving the jar which forms the container, and also means for securing the jar in said cradle during rotation.

Now, in the practise of my invention, a jar mill, generally indicated at 1 is of conventional construction, comprising the base 3, the standards 4, 4, surmounted by bearings 5, 5 in which rest trunnions similar to 6 of a jar frame or cradle 7. Upon one trunnion is mounted the pulley 8 which may receive a drive from a motor or from a power shaft, but it could of course be replaced by a gear or the like.

However, the jar cradle 7 has a carrying strap beneath the jar at 9, and a securing strap 10 which latter may be released from the anchorage 11 on the frame 7 by unscrewing the wing nut 12 a limited distance on screw 13 which forms the end of the securing strap. The jar 14 may therefore in this form of mill be secured in the cradle by means of the mentioned straps, but it is to be noted that instead of the cradle or frame 7, some other structure known in the art may be used, such as a metal shell, for example.

On the other hand, two or more jars may be secured in the same cradle or shell, if desired, such structures also being known in the art, and are then made of the proper size and form to accommodate the intended number of jars.

Nevertheless, the most important feature herein is the jar and its cover, and it is also part of the idea as a whole to include a gasket and a closing device for the cover, which in the present invention is essential to the success as well as the simplicity of operation possible with the same. This is readily seen when it is considered that in known jars for this type of mill, the cover has usually been fitted as a plug into the mouth of the jar, seriously straining the same and necessitating a bulky construction causing loss of interior space, while the present jar 14 has a relatively flat cover 15 which lies upon the plane end or face 26 of the tapered neck 19. A gasket 25 of rubber, leather or any other suitable material is interposed between the cover and the face 26 and in an initial manner forms a closure for the jar.

While the marginal portion of the cover is practically plane upon both sides, the underside within the plane portion 27 is made convex as in-

indicated at 28 to serve as an interior reinforcement so that it will be possible for the cover to receive a considerable pressure from the exterior to hold it in closed position upon the jar. Ex-
 5 teriorly, the cover has a reinforcing portion 16 for the same purpose, whose utility will immediately appear.

The neck portion 19 of the jar is exteriorly tapered or flared outward, and upon this neck is
 10 mounted an anchoring band 18 which has a pair of opposite lugs 20, 20. Each of the lugs has an aperture 22 therein adapted to receive one end of a locking bar 17 through which a manu-
 15 ally operated screw 23 may be screwed. Manifestly, if the band 18 is in position adjacent the lowest or narrowest point 24 of the flared neck 19, and the bar 17 brought into position over the cover with both ends in the apertures of the
 20 lugs on band 18, then if the cover is in proper position upon the jar, with a gasket interposed between the cover and the jar, it will easily be possible to screw down the screw 23 so as to
 25 engage against part 16 of the cover. When the screw is brought down by screwing to press very heavily upon the cover, the band 18 will tend to rise a little until it binds very tightly upon
 30 neck 19, and then the bar 17 will be held in the upper portions of the apertures in both lugs on the locking band 18, with the result that the
 35 parts in engagement have no play whatever, but hold down the cover upon the upper edge or face 26 of the jar with very great force. This makes a gas tight joint which, however, does not strain the jar, due to the slight taper of the flaring
 40 neck 19, for the pressure from the cover is practically exerted down in line with the direction of greatest strength of the wall of said jar, and there is practically no expansive strain on the
 45 neck. The band about the neck materially reinforces the same against any possibility of expansion from within, so that substantially the only strain is end pressure on the jar from the top downward.

If the flared portion of the jar were made as abrupt as at an angle of 45°, there would often
 48 be difficulty encountered in firing the jar, as cracks would tend to appear upon the neck and thus ruin the same, but now, as the neck is almost straight, no such imperfections occur.
 50 Moreover, the interior parts 29 and 30 of the mouth of the jar are but slightly constricted, because of the slight taper or flare of the neck, with the result that introduction and discharge of materials occurs very easily without the slight-
 55 est impediment to such operation, and the interior is so readily accessible from without as to make it easy to clean the jar at all times. The constricted portion is thus very strong, serves a very useful purpose, and renders the jar very
 60 easy to manufacture and use, for the jar is practically straight sided and the constricted portion terminates in a very slightly flaring mouth which has a flat top edge. The latter is easily
 65 finished off plane so as to be adapted to receive a gasket thereon, and there is a complete absence of cutout portions or weak points such as found in jars known heretofore. There is also an exceedingly efficient use of the space in the upper portion of the jar, for the cover does
 70 not extend into the jar but lies upon the top thereof, while there is no necessity for excessive dimensions of any parts nor for having any sharp angles or shoulders in the structure of the jar which, as heretofore have often wasted space

and obstructed operation when removing material from the jar or attempting to clean the same.

Naturally, the form of mill in which the jar is used is of secondary importance, for it may be a grinding mill, a ball and pebble mill, or as
 5 particularly described herein, a jar mill. It is also obvious that variations may be resorted to and parts used without others, within the scope of my invention. Furthermore, the size of apparatus in which the invention is used is also not
 10 an essential feature, nor of what material the jar is made, or what metal or other suitable material enters into the composition of the cross-bar 17, the band 18 or its lugs, or the screw 23, for this is usually iron or steel, or may be a
 15 brass composition, as desired.

Having now fully described my invention, I claim:

1. A jar and closure therefor, adapted for use in a jar mill, comprising in combination, a jar
 20 having a main hollow body portion surmounted by a conically flaring flange serving as an open mouth portion, there being a cover fitting removably upon said flange and a cross bar over-
 25 lying said cover when in closed position, a metal band enveloping a part of the exterior conical portion of said conically flaring flange and having a pair of lugs projecting rigidly from said band and extending past said cover and formed
 30 with individual apertures through which the ends of said cross bar extend for the purpose of retaining the latter in position over said cover, and adjustable means for drawing up said metal
 35 band snugly upon the exterior conical surface of said flange toward the edge of the flange and thereby tightening down the cover upon the top of said flange.

2. A jar and closure therefor according to claim 1, wherein the flange has a flat top and a
 40 gasket is interposed between the same and the cover, and wherein the adjustable means for tightening down said cover on said top includes a screw member extending through the cross bar and bearing upon the top of said cover.

3. A jar and closure therefor according to claim 1, wherein the metal band enveloping the
 45 flange is approximately conical in form to correspond with the exterior shape of the conically flaring flange and allow the same to be drawn up snugly upon said flange toward the edge or
 50 top thereof.

4. A jar and closure therefor according to claim 1, wherein the conically flaring flange connects with the main hollow body portion of the
 55 jar by means of a reduced portion and the metal band enveloping said flange is approximately conical in form to correspond with the exterior shape of the flange and allow said band to be drawn up snugly upon the same toward the edge or top thereof.

5. A jar and closure therefor according to claim 1, wherein the metal band enveloping the
 60 flange is approximately conical in form to correspond with the exterior shape of the conically flaring flange and allow the same to be drawn up snugly upon said flange toward the edge or
 65 top thereof, and the adjustable means for tightening down the cover upon the top of said flange includes a screw member extending through the cross bar and bearing upon said cover, and also wherein the cover has a reinforced portion upon
 70 the exterior thereof to receive the strain imposed upon the cover by said screw member.

PAUL O. ABBÉ.