

No. 707,043.

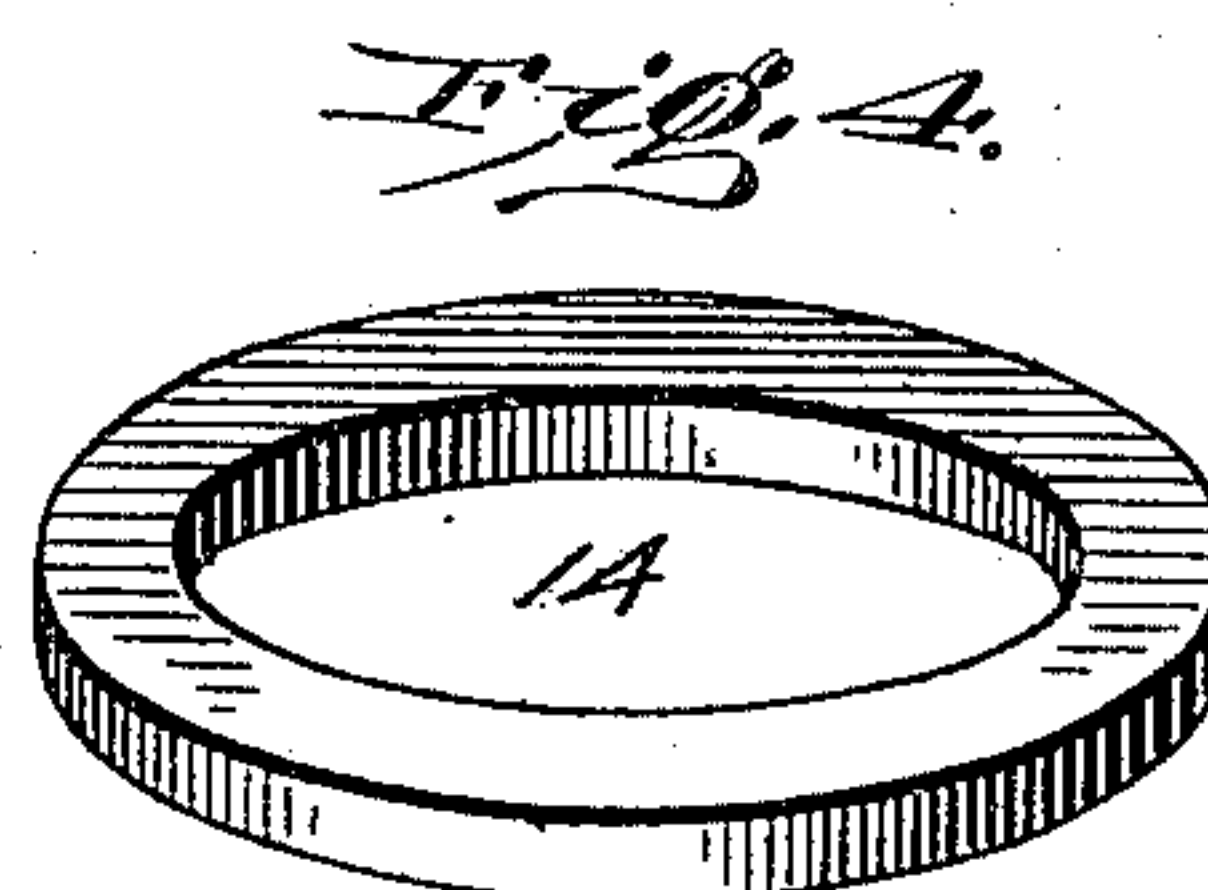
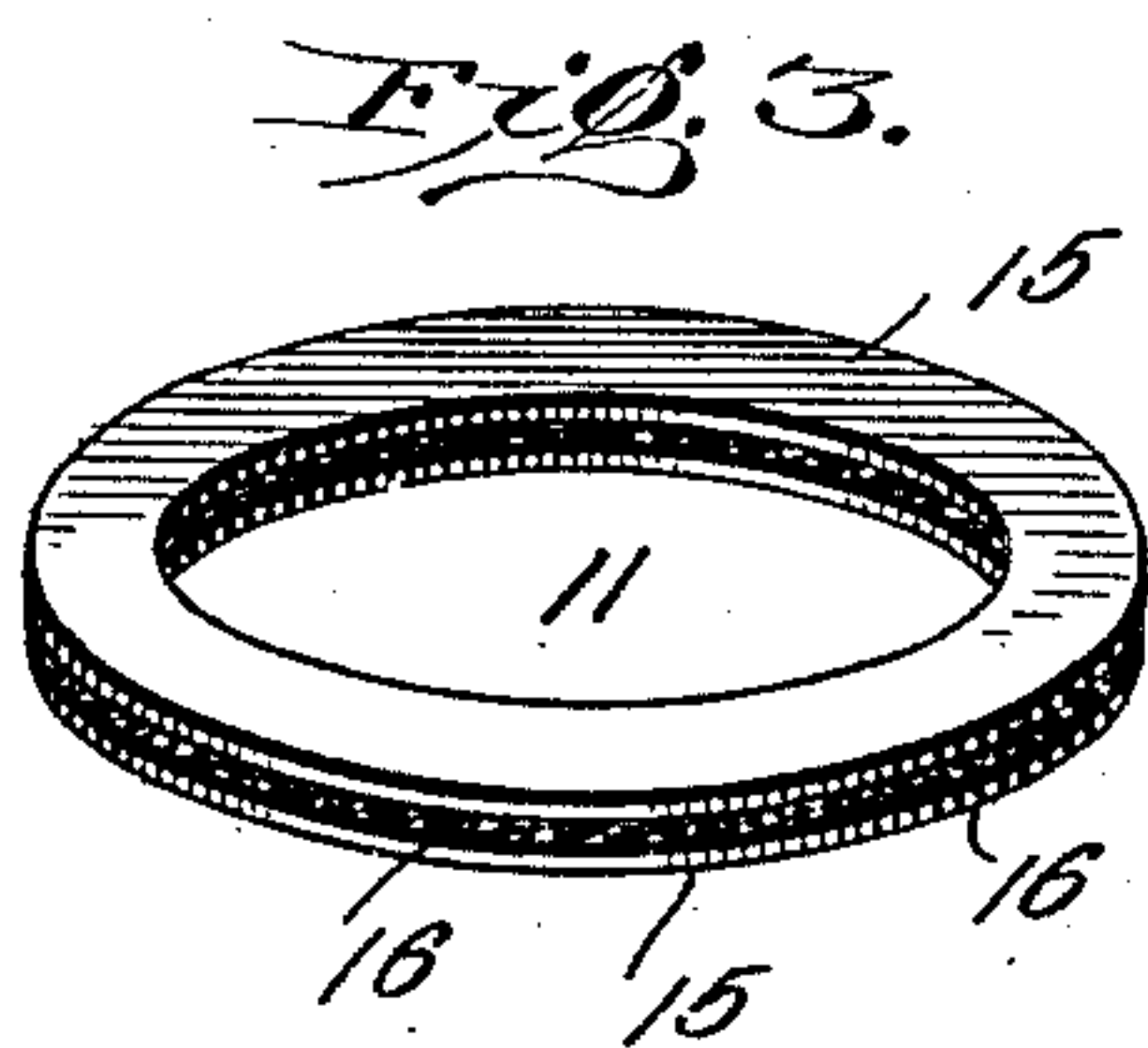
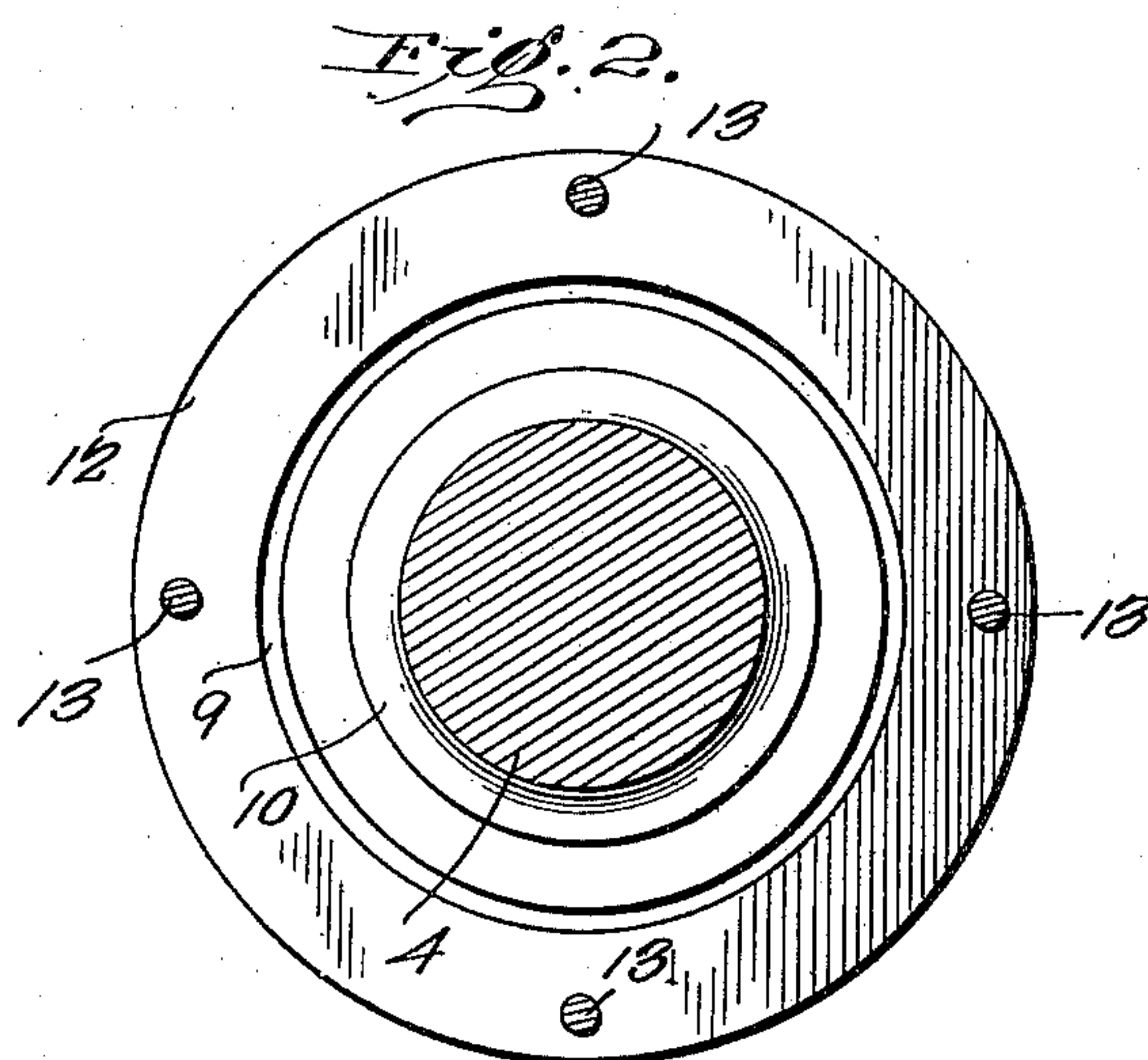
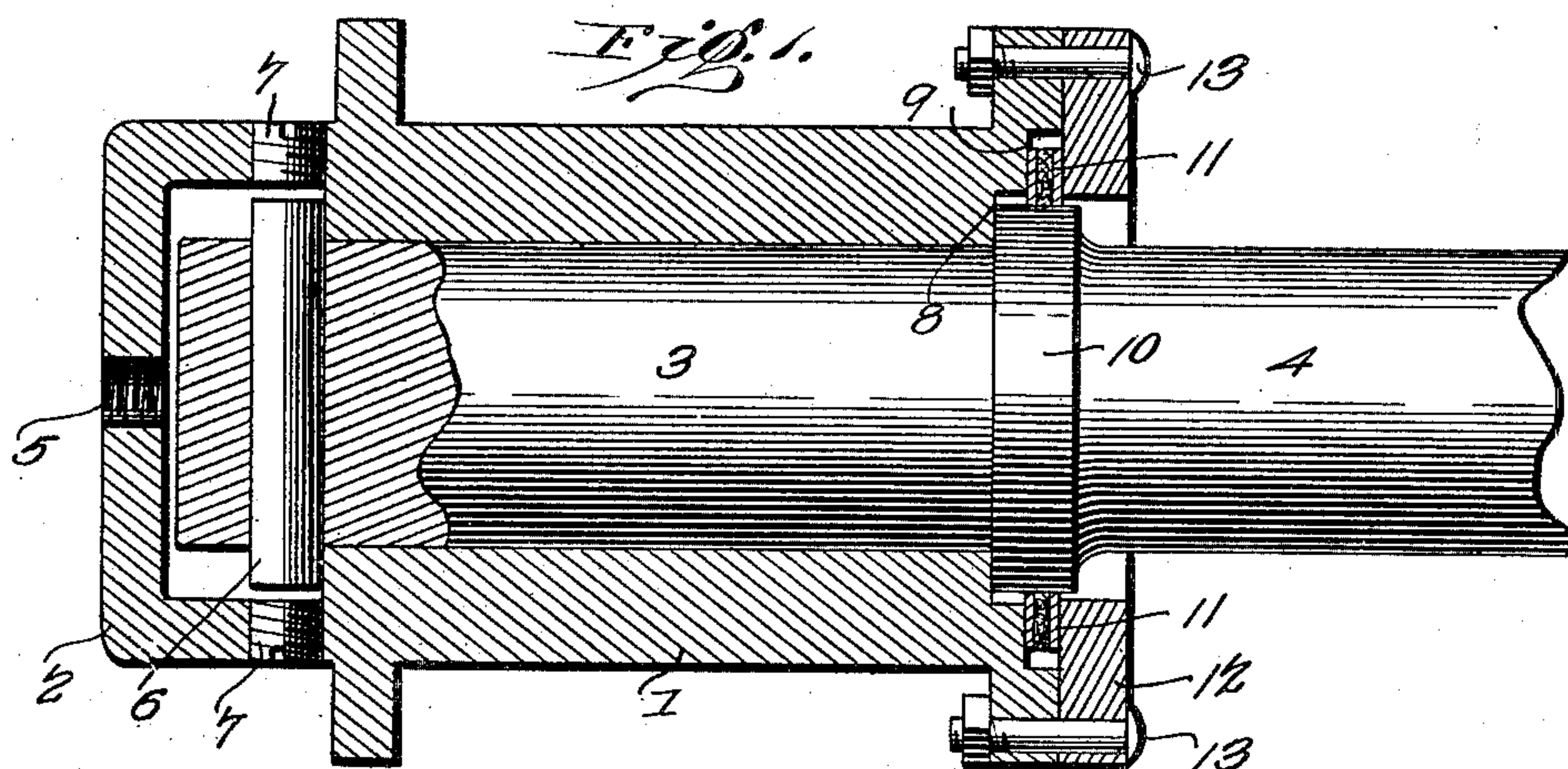
Patented Aug. 12, 1902.

G. W. WILMOT, N. MALEY & G. T. BROWN.

OIL RETAINING BOX.

(Application filed Nov. 7, 1901.)

(No Model.)



Witnesses  
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# UNITED STATES PATENT OFFICE.

GEORGE W. WILMOT, NIXON MALEY, AND GEORGE T. BROWN, OF FREE-  
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## OIL-RETAINING BOX.

SPECIFICATION forming part of Letters Patent No. 707,043, dated August 12, 1902.

Application filed November 7, 1901. Serial No. 81,410. (No model.)

*To all whom it may concern:*

Be it known that we, GEORGE W. WILMOT, NIXON MALEY, and GEORGE T. BROWN, citizens of the United States, residing at Free-  
land, in the county of Luzerne and State of  
Pennsylvania, have invented a new and use-  
ful Oil-Retaining Box, of which the follow-  
ing is a specification.

The invention relates to improvements in  
oil-retaining boxes.

The object of the present invention is to  
improve the construction of oil-retaining jour-  
nal-boxes and to provide a simple and com-  
paratively inexpensive one designed for use  
on mining-cars and adapted to be readily  
constructed and capable of positively retain-  
ing a lubricant within it and of preventing  
the same from leaking at the inner end of the  
journal and of excluding dust at that point.

The invention consists in the construction  
and novel combination and arrangement of  
parts, hereinafter fully described, illustrated  
in the accompanying drawings, and pointed  
out in the claims hereto appended.

In the drawings, Figure 1 is a longitudinal  
sectional view of an oil-retaining box con-  
structed in accordance with this invention.  
Fig. 2 is a transverse sectional view. Figs.  
3 and 4 are detail views of oil-retaining pack-  
ing-rings or shields.

Like numerals of reference designate cor-  
responding parts in all the figures of the draw-  
ings.

1 designates a wheel-hub designed particu-  
larly for use on mining-cars and provided at  
its outer end with a cap 2 of greater diameter  
than the journal 3 of the axle 4 and prefer-  
ably formed integral with the hub; but it may  
be constructed in any other suitable manner.

The cap is provided at its outer end with an  
oil-hole 5, having interior screw-threads and  
adapted to be closed by a plug, when desired,  
for excluding dust from the cap. The lower  
portion of the cap is designed to be filled with  
lubricating-oil for lubricating the axle, and  
as the front of the hub is closed the oil can-  
not escape at that point. The outer end of  
the journal 3 is provided with a transverse  
opening through which passes a pin 6, which  
engages the outer end of the hub, as clearly  
illustrated in Fig. 1. The cap 2 is provided  
at diametrically opposite points with thread-

ed apertures, which are normally closed by  
immovable plugs 7, and these apertures are  
adapted to be aligned with the transverse open-  
ing of the outer end of the journal to permit  
the transverse pin 6 to be removed and re-  
placed. The inner end of the hub is pro-  
vided with inner and outer concentric bores  
8 and 9, receiving, respectively, a collar or  
enlargement 10 of the journal 3 and an oil-  
retaining shield or ring 11, which is retained  
in the outer annular recess 9 by an attach-  
ment plate or ring 12, secured to the inner  
end of the hub by means of bolts 13 or other  
suitable fastening devices. The collar or en-  
largement 10 of the journal extends from the  
vertical wall of the inner annular recess 8 to  
a point slightly beyond the inner face of the  
attachment plate or ring 12, and it receives  
and fits snugly within the ring or shield 11,  
and the latter presents metallic side faces to  
the inner vertical wall of the outer annular  
recess 9 and to the inner face of the attach-  
ment plate or ring 12. The outer annular re-  
cess 9 is of greater diameter than the shield  
or ring, and while it is securely held against  
movement on the hub longitudinally of the  
axle it is permitted free radial movement  
in all directions to enable it to preserve its  
contact with the end of the hub and with  
the attachment plate or ring when the jour-  
nal becomes worn and there is a limited vi-  
bration of the parts incident to such wear.  
The metallic faces of the ring or shield are  
adapted to fit sufficiently close to the hub and  
the collar of the axle to effectually prevent  
the escape of the lubricant, and such contact  
also serves to exclude dust and dirt. The  
wear on the shield or ring is reduced to a  
minimum, as it is only subjected to a verti-  
cal pressure resulting from its own weight, as its  
outer periphery is spaced from the outer cir-  
cumferential wall of the recess 9. This con-  
struction effectually prevents the shield or  
ring from being subjected to the weight of  
the car after the journal becomes slightly  
worn, and it has been found by experience  
that the wear resulting from several months'  
use of the ring or shield is imperceptible.  
The annular recesses of the inner end of the  
hub are adapted to be readily cut or other-  
wise formed during the construction of the  
hub and simultaneously with the construc-



tion of the bore or bearing-opening of the same. This enables the way for the shield or ring to be easily and cheaply manufactured, and the said shield or ring is adapted to be readily placed within the groove or way formed by the outer recess and the shield or plate, and when the parts are assembled the said groove or way is entirely closed at the exterior of the hub entirely around the same, so that there is no chance for dust to settle upon the hub and work downward into the bearing.

It has been found by experience that a solid metallic ring or shield 14 may be constructed to fit sufficiently close to the inner and outer side faces at the groove or way to prevent the escape of the lubricant; but should it be desired to secure a closer contact between the metallic faces the ring or shield 11 may be used. The ring or shield 11 (illustrated in Figs. 1 and 3) is composed of a pair of rings or plates 15 and an intermediate ring or layer 16, of felt or other suitable material, which is adapted when the parts of the hub are assembled to be compressed and which will possess sufficient elasticity to hold the metallic plates or rings 16 firmly in engagement with the walls of the groove or way. The solid metallic ring or shield 14 and the side plates or rings 15 of the composite shield are preferably constructed of brass; but any other suitable material may be employed for this purpose.

It will be seen that the oil-retaining journal-box is simple in construction, that it is easily and cheaply manufactured, and that the guard or ring presents metallic faces to the box and the axle and effectually prevents the escape of the lubricant. It will also be seen that while the shield or ring is capable of radial movement in any direction on the hub it is securely held against movement thereon longitudinally of the axle and that the outer edge of the shield or ring is spaced from the hub, whereby the shield is subjected to a vertical strain or pressure resulting from its weight only and that it cannot after the journal and the box have become worn be subjected to the weight of the car. Also it will be readily apparent that the attachment ring or plate, which coöperates with the body portion of the hub and the outer annular recess thereof to form the groove or way for the shield or ring, entirely closes such groove or way at the exterior of the hub throughout the entire extent of the same, so that there is no liability of dust settling upon the exterior of the hub and working downward into the bearing.

The oil-retaining axle-box, besides being applicable to and especially adapted for mining-cars, is designed to be applied to pulleys and various other forms of wheels requiring an oil-tight and dust-proof bearing.

What we claim is—

1. In a device of the class described, the

combination of a hub provided at its inner end with an annular recess, a plate detachably secured to the inner end of the hub beyond the recess and forming an outer wall for the recess to provide a vertical way and extending entirely around the recess and closing the same at the top, bottom and sides of the hub, a spindle, and a vertical shield or ring arranged within the said way and presenting metallic faces to both of the walls of the same and to the spindle to form dust-proof and oil-tight joints at the spindle and at the inner end of the hub, said shield or ring terminating short of the periphery of the annular recess and being capable of radial movement in the way, whereby the shield or ring is prevented from being subjected to the weight of the spindle when the parts become worn, substantially as described.

2. In a device of the class described, the combination of a hub provided at its inner end with an annular recess and having an annular flange extending outward from the hub in substantially the same plane as the annular recess, a plate detachably secured to the annular flange and forming an outer wall for the annular recess and extending entirely around the same and closing the said recess at the top, bottom and sides of the hub, a spindle, and a vertically-disposed shield or ring presenting metallic faces to the spindle and to the walls of the recess to prevent the escape of oil and to exclude dust, said shield or ring being of less diameter than the recess and spaced from the periphery thereof to permit it to move radially and to prevent it from coming in contact with the hub when the bearing becomes worn, substantially as described.

3. In a device of the class described, the combination of a hub provided at its inner end with an annular recess, a detachable plate secured to the inner end of the hub and extending entirely around the recess and forming an outer wall for the same to provide a vertical way, and an expansible shield or ring arranged in the way and composed of two metal side plates presenting metallic faces to the walls of the way and to the spindle, and an intermediate layer of compressed material adapted to hold the metal side plates in contact with the sides of the way, said shield or ring being of less diameter than the recess and spaced from the periphery thereof to permit it to move radially with the spindle without being subjected to the weight of the same, substantially as described.

In testimony that we claim the foregoing as our own we have hereto affixed our signatures in the presence of two witnesses.

GEORGE W. WILMOT.  
NIXON MALEY.  
GEORGE T. BROWN.

Witnesses:

THOMAS A. BUCKLEY,  
JAMES GOULDEN.