

No. 785,933.

PATENTED MAR. 28, 1905.

O. M. BLOOM.
CASING PACKER SHOE.
APPLICATION FILED JAN. 16, 1905.

Fig. 1.

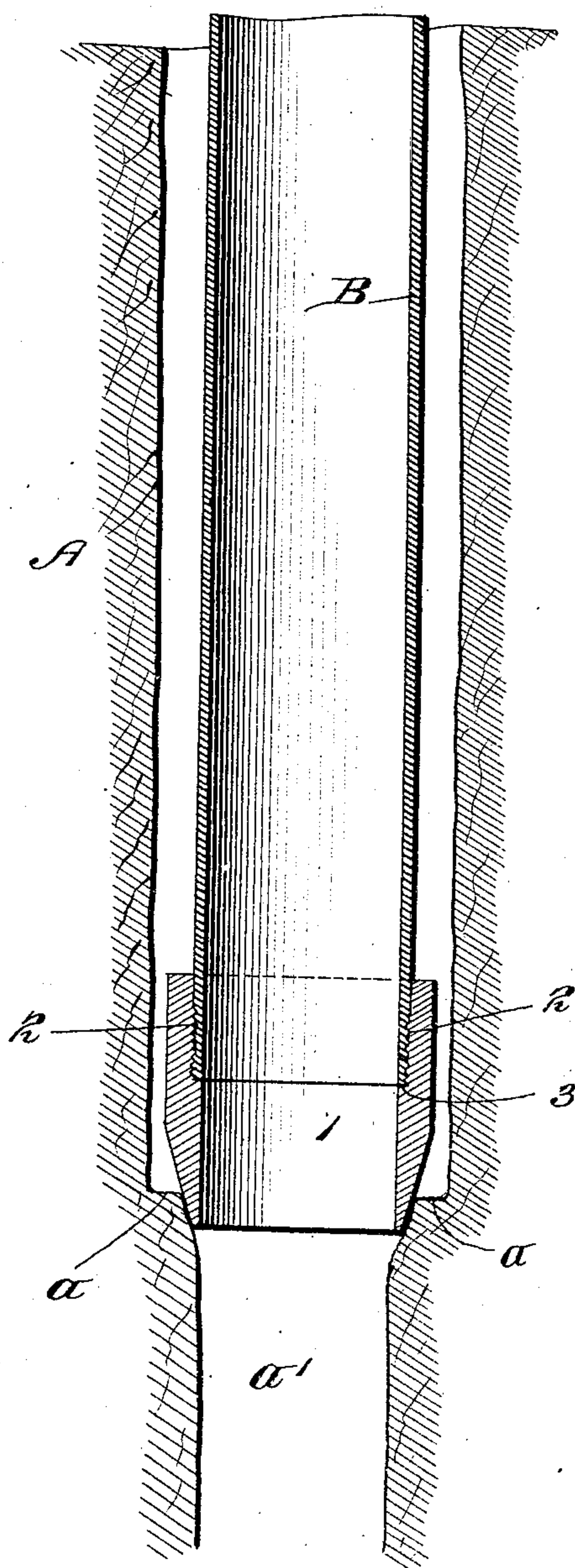


Fig. 2.

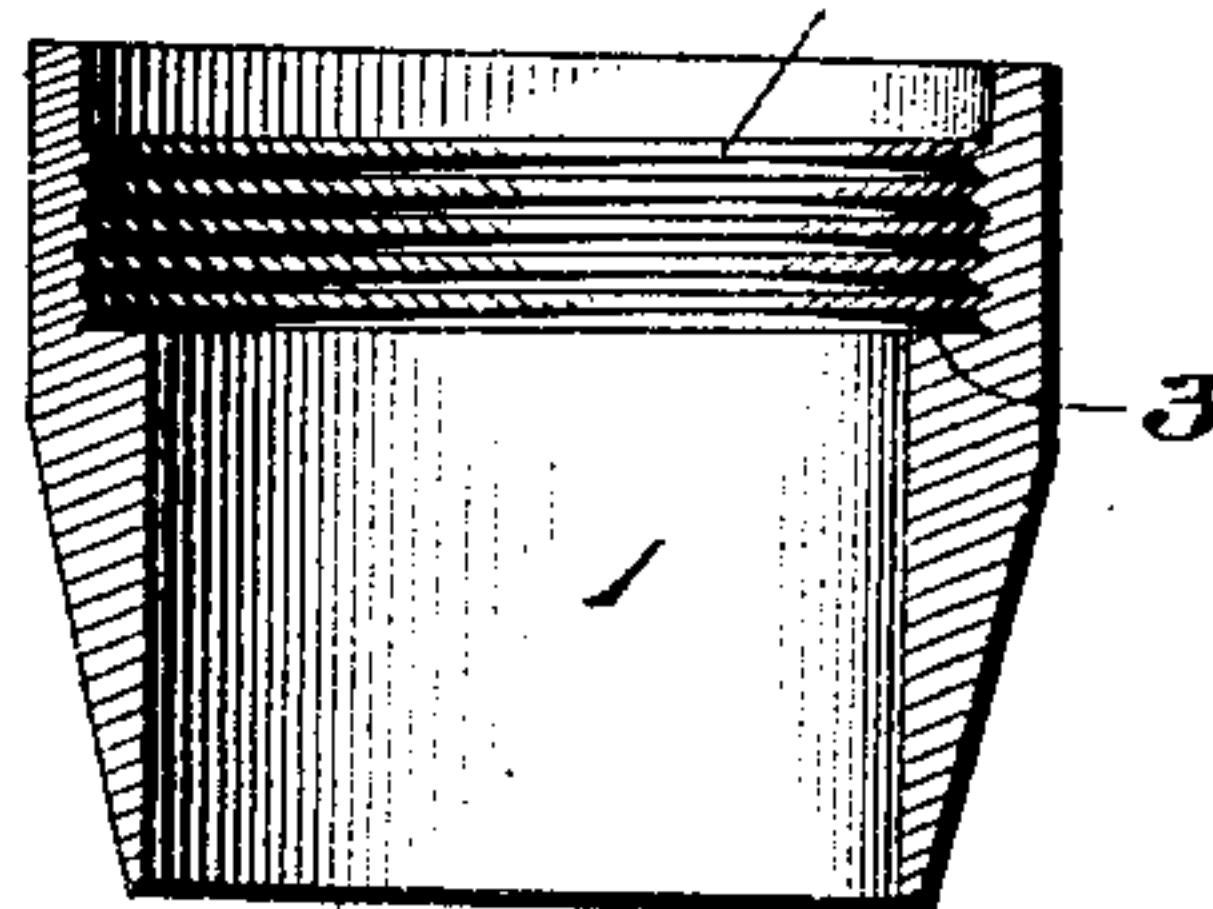
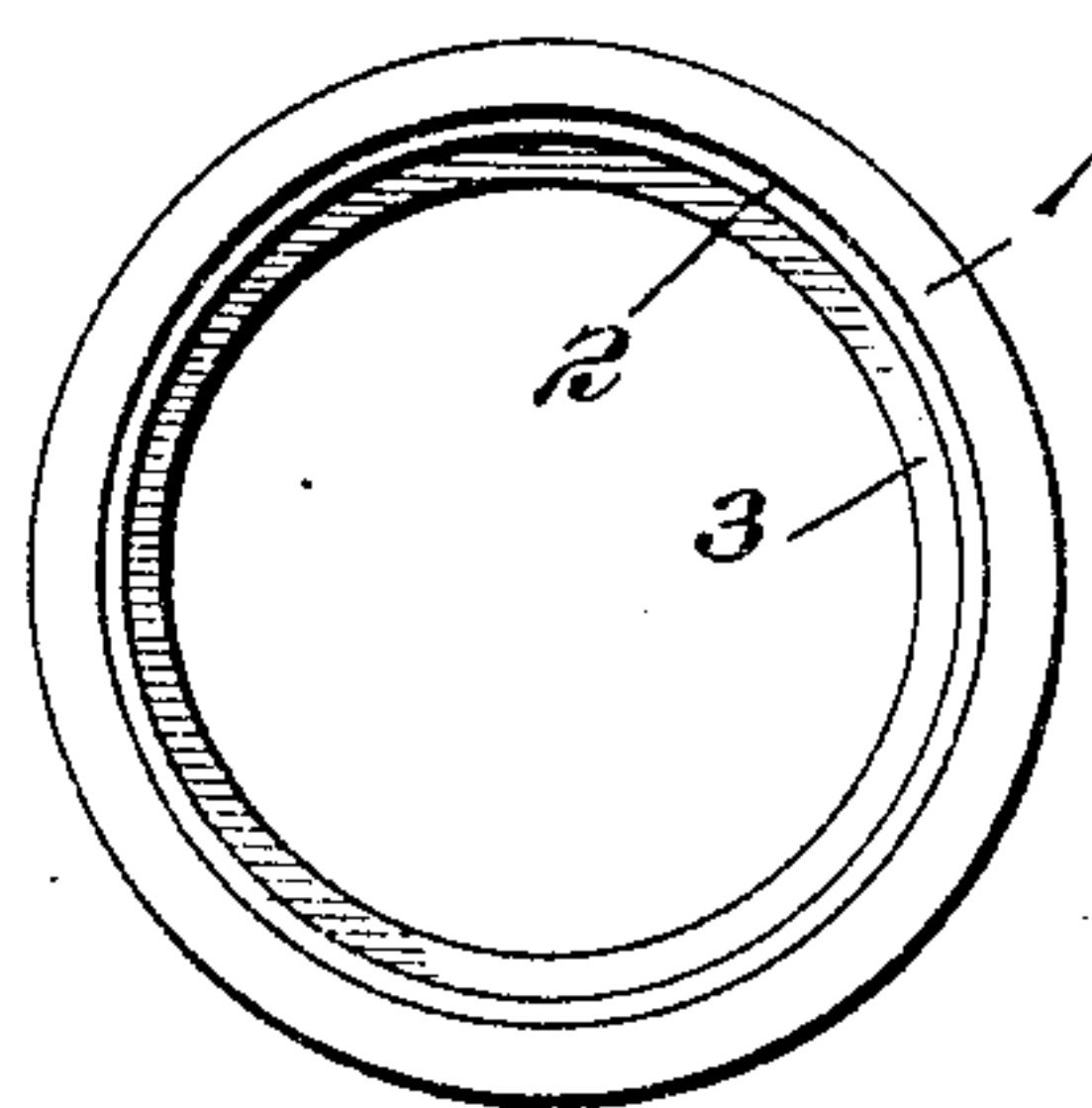


Fig. 3.



WITNESSES:

H. J. Dieterich
G. F. Rutter

INVENTOR

Orris M. Bloom

BY *F. M. Rutter, Jr.*

Attorney

UNITED STATES PATENT OFFICE.

ORVIS M. BLOOM, OF INDEPENDENCE, KANSAS, ASSIGNOR OF ONE-HALF TO INDEPENDENCE IRON WORKS COMPANY, OF LIMA, OHIO, A CORPORATION OF OHIO.

CASING PACKER-SHOE.

SPECIFICATION forming part of Letters Patent No. 785,933, dated March 28, 1905.

Application filed January 16, 1905. Serial No. 241,282.

To all whom it may concern:

Be it known that I, ORVIS M. BLOOM, a citizen of the United States, residing at Independence, county of Montgomery, State of Kansas, have invented certain new and useful Improvements in Casing Packer-Shoes; and I hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, wherein—

Figure 1 is a vertical central section of a section of casing, a packer-shoe embodying my invention applied thereto, and a well showing the method whereby the packing of the casing is effected. Fig. 2 is a detached sectional view of a packer-shoe embodying my invention, and Fig. 3 is a plan view of the packer-shoe shown in Fig. 2.

Like symbols refer to like parts wherever they occur.

My invention relates to that class of devices termed "packers," which are employed generally in oil or Artesian wells for the purpose of packing the tube or casing in order to shut off the water from the lower or oil-bearing section of the well.

Ordinarily in the drilling of oil or Artesian wells one or more water-veins are commonly encountered before the oil-bearing sand or the desired depth of the well is reached, and it is essential, especially in oil-wells, that the water from said veins should be shut off from the lower or oil-bearing section of the well. To effect this, the common practice is to first drill a large hole—say, one of eight and one-quarter inches, more or less, in diameter—to a point below the water-veins and to shut off the water therein by inserting a suitable casing and packing therefor, the latter located in said large hole at a point below the water-veins. Thereafter the well is continued downward at a less diameter—say, six and one-quarter inches, more or less—to the oil-bearing sand or until the desired depth has been reached. Where the diameter of the well is reduced, a shoulder is formed, which affords the usual support for the well-casing, and in some instances has been utilized to ef-

fect a packing of the casing either by the direct contact of the lower end of the casing or a shoe thereon and in some instances by the interposition between the lower end of the casing or a shoe thereon and said shoulder of an expansible or resilient and compressible packing medium—as, for instance, lead or rubber. Experience has shown that this shoulder at the point where the bore of the well is decreased is seldom perfectly flat, and as a consequence packings dependent thereon are frequently inefficient, so that as a rule expansible packings of rubber or other suitable material interposed between the casing and side walls of the well and dependent for their operation not only on the superposed weight of the casing, but on mechanical expanding devices, are most commonly employed.

The object of my invention is to avoid complex mechanical packings, such as are required for packing with the side walls, and composite packings necessary to insure an efficient packing between the shoulder and the lower end of the casing; and to this end the main feature of my invention, generally stated, resides in a packing-shoe adapted to engage with the lesser bore of the well at the mouth thereof, while a minor or secondary feature of my invention, which relates to the particular means for carrying out my invention, resides in a casing packer-shoe having the form of the frustum of a cone, the lesser diameter of which substantially corresponds to the lesser diameter of the well.

It is well known to those skilled in the art of drilling wells that the bore of the well where the diameter thereof is reduced, or, in other words, the edges of the shoulder, are more or less rounded, seldom regular or square, and liable to crumble under weight, and it is of this fact that I take advantage in applying my improved casing-packer.

I will now proceed to describe my invention more fully, so that others skilled in the art may apply the same.

In the drawings, A indicates a portion of the upper section or casing-section of a well,

a the usual shoulder therein located below the water-veins or water strata, and *a'* a portion of the lower section of the well or that section of reduced diameter extending downwardly to the oil-bearing sand or its equivalent.

B indicates the usual casing of any desired or required diameter, to the lower end of which is secured a packer-shoe 1, embodying my invention, the greatest diameter of said shoe being preferably from one-fourth to one-half an inch less than that of the well at the point where the packer is applied, and its least diameter being substantially that of the diameter of the lower section of the well, the upper end or mouth of which it is to enter or engage at the shoulder *a* of the well.

The form of the packer-shoe preferred by me is that of a frustum of a hollow cone recessed and threaded above, as at 2, for attachment to the casing and to form a shoulder 3 to receive the lower end of said casing and relieve the threads from the strain which might tend to strip them from the shoe and casing; but in lieu of such a connection other suitable connection between the casing and shoe may be employed, or, in fact, the shoe can be integral with the lower section of the casing without departing from the spirit of my invention, which contemplates the use of the top of the smaller hole in packing the casing in lieu of the side walls or shoulder of the well, as heretofore practiced.

The packer-shoe on the lower end of a string of casing being lowered into the well and caused to engage the bore of the lower section or lesser diameter of the well, as indicated in Fig. 1 of the drawings, will so embed

itself under the weight of a string of casing as to insure an efficient packing, and the sediment, &c., which settles upon the shoulder *a* of the well and around the packer-shoe 1 will make an absolutely water-tight joint.

It is evident that the packing hereinbefore described will be equally efficient in oil or salt wells and may be applied thereto, and its use under such and similar conditions falls within the scope of the following claims.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

1. The combination with a well-casing, of a packer-shoe adapted to engage and pack with the lesser diameter bore of an oil or Artesian well, substantially as and for the purposes specified.

2. A packer-shoe for well-casing, said shoe of tapering form and having one diameter corresponding to the lesser diameter of a well with the bore of which said packer-shoe is adapted to engage, substantially as and for the purposes specified.

3. A packer-shoe for well casing or tubing, said shoe having the form of a frustum of a hollow cone the lesser diameter of which approximates the lesser diameter of the well in which the same is adapted to be used, substantially as and for the purposes specified.

In testimony whereof I affix my signature, in presence of two witnesses, this 11th day of January, 1905.

ORVIS M. BLOOM.

Witnesses:

WM. D. O'NEILL,
J. H. McMORROW.