

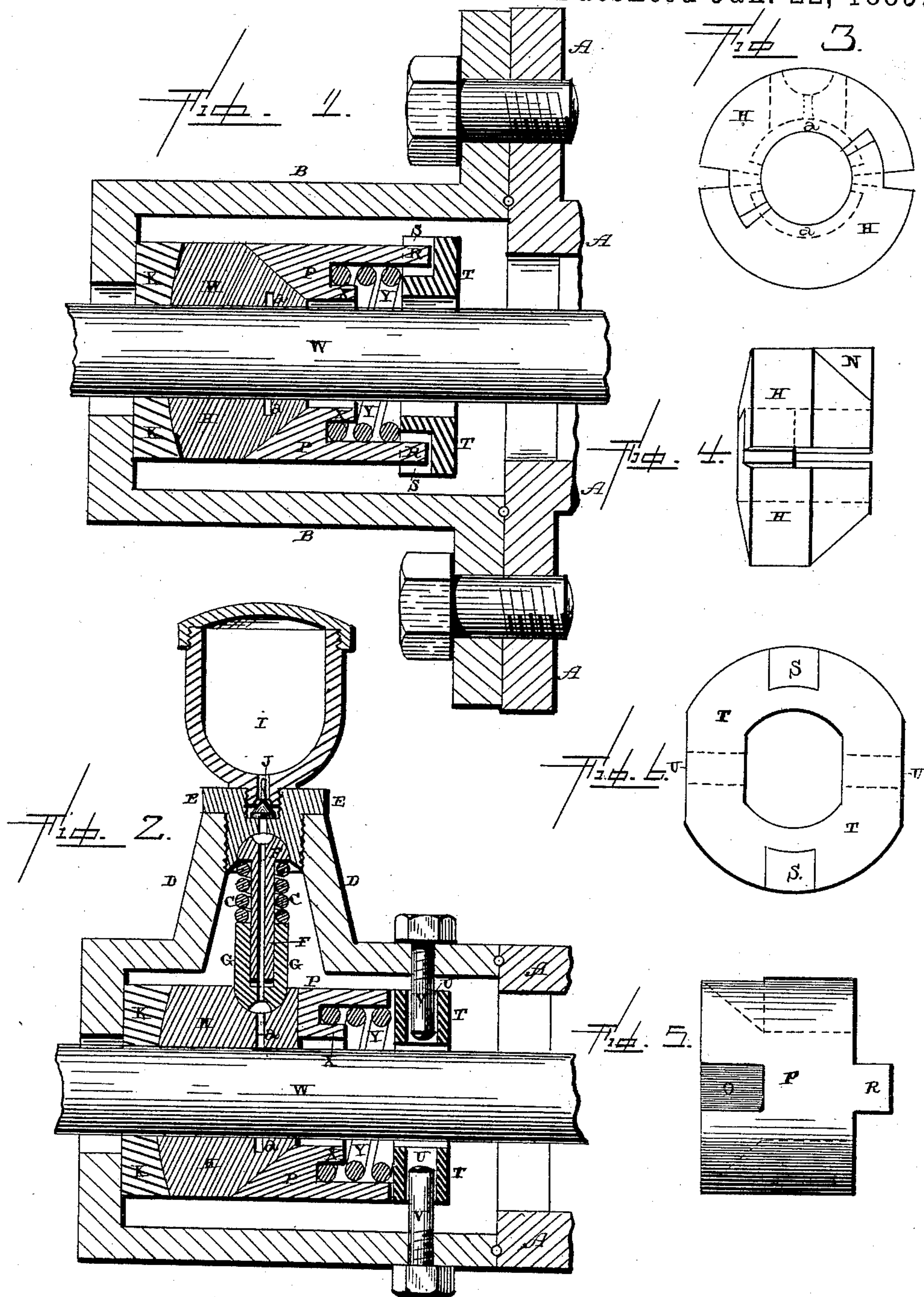
(No Model.)

F. A. WESTBROOK & W. S. COOK.

METALLIC PACKING.

No. 396,634.

Patented Jan. 22, 1889.



Witnesses.
L. L. Burket,
Edm. P. Ellis.

Inventors.
F. A. Westbrook,
W. S. Cook,
per J. A. Lehmann, atty.

UNITED STATES PATENT OFFICE.

FRANK A. WESTBROOK, OF PORT JERVIS, AND WINFIELD S. COOK, OF MIDDLETOWN, NEW YORK; SAID COOK ASSIGNOR TO SAID WESTBROOK.

METALLIC PACKING.

SPECIFICATION forming part of Letters Patent No. 396,634, dated January 22, 1889.

Application filed March 13, 1888. Serial No. 267,116. (No model.)

To all whom it may concern:

Be it known that we, FRANK A. WESTBROOK and WINFIELD S. COOK, of Port Jervis and Middletown, respectively, in the county of Orange and State of New York, have invented certain new and useful Improvements in Metallic Packings; and we do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it pertains to make and use it, reference being had to the accompanying drawings, which form part of this specification.

Our invention relates to an improvement in packing-boxes for steam-engines; and it consists in, first, the combination of the packing-box, which is secured to the outer side of an ordinary stuffing-box, a perforated ring, which forms a tight joint with the inner end of the packing-box, a packing-ring, which forms a tight joint with the perforated ring, and which is provided with a projection upon its inner edge, a hollow ring or sleeve, which bears against the inner end of the packing-ring and inside of which is placed a spring, and a collar, which is held in position by means of bolts passing through the packing-box; second, the combination of a packing-box provided with a chamber upon one side, a screw-cap fitting in the chamber, an oil-cup, a conducting-tube, which is formed in two parts, and a spring is placed between the parts whereby a constant supply of oil is maintained and the supply-tube allowed a slight play, all of which will be more fully described hereinafter.

The object of our invention is to produce a packing-box which can be applied to any engine now in use, and which will always form an absolutely-tight joint at the same time that it will allow the piston-rod a slight lateral play, and to insure a constant supply of oil to the piston-rod, no matter how great the pressure of the steam may be.

Figures 1 and 2 are sections, taken at right angles to each other, of a packing-box which embodies our invention. Figs. 3 and 4 are detail views of the packing-ring. Fig. 5 is a side elevation of the ring inside of which the

spring is placed. Fig. 6 is a side elevation of the collar.

A represents an ordinary stuffing-box flange, to which the packing-box B is bolted. This packing-box can be used in connection with any steam-engine now in use which is provided with a stuffing-box. The opening through the outer end of the packing-box is larger than is absolutely necessary for the passage back and forth through it of the piston-rod W, and this opening is closed by the ring K, which has an opening through its center slightly larger than is necessary for the passage of the piston-rod W. The inner end of the chamber is nicely turned out, and the outer side of the ring K is made to form a steam-tight joint with the end of this chamber, as shown. The inner side of this ring K is made concave, as shown, and the outer end of the packing-ring H is made convex, so as to form a steam-tight joint with it. Any movement of the piston-rod W out of a straight line carries the ring K and the packing-ring H with it, and the packing-ring H adjusts itself to the ring K, no matter into what position it may be moved, and always maintains a tight joint.

The ring H, as shown in Figs. 3 and 4, is preferably made of two parts, but may be made in a single piece, if so preferred. In order to close the joint between the two parts, which fit snugly against the sides of the packing-ring, each part is formed with a recess upon one side and a corresponding tongue and tenon upon the other, and these tongues fit steam-tight in the tenons, so that there can be no leakage of steam past them toward the opening through the ring K. These two parts of the packing-ring H adjust themselves to each other and to the rod W.

Upon one side of one of the parts of the ring H is formed the angular shoulder or projection N, which fits in a corresponding recess, O, formed in the outer end of the ring P. With the exception of this angular part N, the inner end of the ring H is made conical, as shown, and fits snugly within the recess formed in the outer end of the ring P. This projection N catches in the recess O, so as to

hold the two rings H P always in a fixed relation to each other. In the top of this shoulder or angular portion N is made a conical recess, and leading from the bottom of this recess and a portion of the way around the piston-rod is an oil-hole, *a*, through which the oil passes in direct contact with the piston-rod W.

The ring P, made conical at its outer end so as to fit over the packing-ring H, has an opening through its center of larger diameter than the piston-rod, and formed inside of this ring and extending parallel with the rod W is the flange X, which serves to prevent the spring Y from coming in contact with the piston-rod. The inner end of the ring P, which is formed in a single piece, is provided with the projections R, which catch in corresponding recesses S in the collar T. This collar T is also placed over the piston-rod W, but does not come in contact with it, and is held in position in the packing-box by means of the screw-bolts V. The bolts V are threaded only a portion of their length, as shown in Fig. 1, and their inner smooth ends are made to catch in openings U, made through the collar. The collar T being held in position by means of the screws V, and the spring Y being made to bear against the outer side of the collar, the rings P H are held forcibly in contact with each other, and the ring K is held tightly against the inner end of the packing-box. Of the four rings used the one H alone is made to fit snugly against the piston-rod, and the two parts of the ring are made to always fit snugly against it by means of the pressure of the conical end of the ring P over the conical end of the ring H. The pressure of the spring Y is sufficiently great to hold the two parts of the ring H tightly against the piston-rod W, and cause them to take up the wear and to form a steam-tight joint between the inner end of the packing-box and the ring K and a tight joint between the rings K H. As the ring P and collar T do not come in contact with the piston-rod, it will readily be seen that the rod can have a lateral play without moving any part of the packing except the rings H K. As the piston-rod is allowed a slight lateral play without binding, it will readily be seen that there is less friction and less wear and tear of the parts.

Formed upon one side of the packing-chamber B is a cone or chamber, D, which has its outer end closed by the perforated screw-plug E. In the outer side of the plug E is formed a recess, into which the oil-cup I is screwed, the screw-threaded portion of the cup extending to the bottom of the recess so as to allow a slight vertical play of the valve J, which controls the flow of oil from the cup. As long as the parts form a tight joint and the steam does not have access to the cup I, the valve J remains in the position shown in Fig. 1 and the oil feeds freely to the piston-rod; but should a steam-leak occur the press-

ure of the steam against the lower end of the valve will instantly close the valve J, and thus shut off the flow of oil.

Through the plug E is made an oil-hole, and in the under side of the plug is made a conical recess, so as to receive the conical head of the part F of the conducting-tube, through which the oil or other lubricant passes. The head F and its socket form a tight joint at all times, and even if the conducting-tube should get more or less out of line the tight joint will be maintained and the flow of oil to the packing-rod be uninterrupted. The other portion, G, of the conducting-tube has a socket made in its upper end, so as to receive the lower end of the part F, as shown in Fig. 1, the two parts being made to fit steam-tight together. The lower end of the part G is made globular or conical, and fits in the correspondingly-shaped recess in the top of the packing-ring H. In between the two parts F G of this conducting-tube is placed the spring C, which serves to press the outer ends of the two parts F G tightly into their sockets and maintain a tight joint at all times. Should the piston-rod W have any lateral play, the ring H, moving with it, will affect the conducting-tube correspondingly without in any manner allowing a steam-leak between the parts and without interrupting the flow of oil to the piston-rod.

A packing-box constructed as here shown and described can be applied to any engine now in use, and yet limit the endwise and turning movement of the packing-ring. There is no flow of oil except when the piston-rod is actually in use. As no steam can get access to the oil-cup, the flow of oil is uninterrupted, no matter how great the steam-pressure may be.

Having thus described our invention, we claim—

1. The combination of the packing-box, the ring K, which forms a tight joint against the inner end thereof, the packing-ring H, which fits tightly against the piston-rod and forms a tight joint with the ring K, the ring P, which has a socket in its end to receive the conical end of the ring H, the spring Y, placed inside of the ring P, the collar T, and the screws which hold it in position, substantially as shown.

2. The combination of the packing-box, the ring K, which forms a tight joint against the inner side of its outer end, packing-ring H, provided with a shoulder or angular part, N, the ring P, having a socket in its end to fit over the conical part of the ring H, the recess O and the projections R, the ring Y, the collar T, provided with recesses S to receive the projections R, and the screws V, which pass through the side of the packing-box into the collar, substantially as described.

3. The combination of the packing-box, the packing-rings, the conducting-tube made in two parts, the spring C, placed between the two parts of the tube, the plug E, and the oil-

cup provided with a valve, the packing-rings being held from turning upon the piston-rod W by suitable stops extending through the packing-box, substantially as set forth.

- 5 4. The combination of the packing-box, the packing-rings, which have a lateral movement with the piston-rod, and an adjustable oil-conducting tube having its inner end seated in or upon the packing-ring, the screw-
10 plug, and the oil-cup, the packing-rings being prevented from turning upon the piston-rod W by stops which catch in the inner ring or collar, substantially as specified.

5. The combination of the packing-chamber, the ring K, the packing-ring H, the ring 15 P, provided with the flange X, the collar T, and the screws V, the parts being arranged to operate substantially as shown and described.

In testimony whereof we affix our signatures in presence of two witnesses.

FRANK A. WESTBROOK.
WINFIELD S. COOK.

Witnesses:

AARON J. HORNBECK,
HENRY W. WIGGINS.