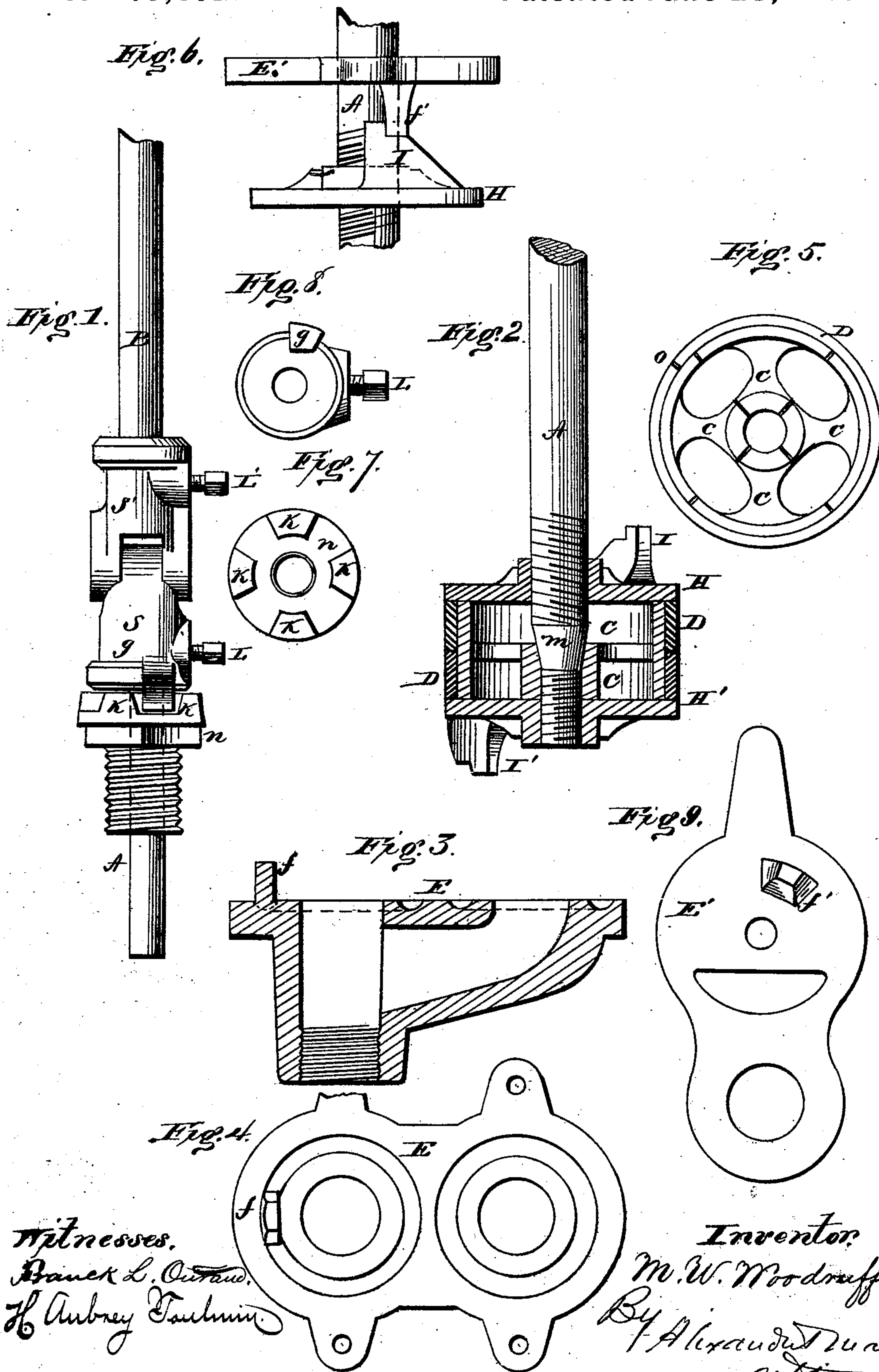


(No Model.)

M. W. WOODRUFF.
Piston Packing.

No. 243,672.

Patented June 28, 1881.



Witnesses.
Baker L. Outlaw.
H. Aubrey Tschmitt.

Inventor.
M. W. Woodruff.
By Alexander Hunter
att'y

UNITED STATES PATENT OFFICE.

MORRIS W. WOODRUFF, OF LYONS, NEW YORK.

PISTON-PACKING.

SPECIFICATION forming part of Letters Patent No. 243,672, dated June 28, 1881.

Application filed October 9, 1880. (No model.)

To all whom it may concern:

Be it known that I, MORRIS W. WOODRUFF, of Lyons, in the county of Wayne, and in the State of New York, have invented certain new and useful Improvements in Piston-Packings; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, making a part of this specification.

This invention relates to certain improvements in that class of pistons in which expandible metallic packing-rings are employed, in connection with suitable mechanism, to expand the rings, to take up the wear of the rings and of the inner surface of the cylinder.

The object of my invention is to obtain a metallic piston-packing which can be expanded uniformly in all directions radially, and to provide suitable mechanism for effecting such expansion without interfering with the parts of the cylinder or the piston and piston-rod. These objects I attain by the devices and mechanism illustrated in the accompanying drawings, in which—

Figure 1 represents an elevation of the piston and the stuffing-gland of the upper head of the cylinder, through which said piston-rod passes. Fig. 2 represents a vertical sectional view of the piston, its packing-rings, and the piston-rod. Fig. 3 represents a vertical longitudinal section of the lower cylinder-head. Fig. 4 represents a plan view of the same. Fig. 5 represents a detailed view of the portion of the piston which operates the expanding rings. Fig. 6 represents a sectional view of the upper cylinder-head and the upper piston-head, showing a portion of the piston-rod. Fig. 7 represents a detail view, showing the face of the stuffing-gland of the cylinder. Fig. 8 is a detail view, showing the face of the sleeve which engages the clutches on the gland; and Fig. 9 is a detail view, showing the inside face of the upper cylinder-head.

The letter A indicates the piston-rod, provided with a cone-bearing, *m*, and with screw-threads cut on opposite sides of said cone-bearing, one being a right and the other a left thread. The said cone-bearing sets in a recess formed by the inner ends of a series of seg-

mental supports, C. (Clearly shown in Fig. 5 of the drawings.) These supports are four in number in the present instance, and when arranged around their central bearing, *m*, form a disk, which is held radially together by the peripheral packing-rings D D', which it, in turn, supports inwardly. These supports bear such relation to the cone-bearing *m* that as the piston-rod is rotated they will be expanded or contracted by the action of the cone, and in turn will expand or contract the packing-rings.

In order to permit the rings to be adjusted without removing any of the parts of the cylinder, the respective cylinder-heads are provided with clutches *f f'* and I I', in such manner that either may be locked when the piston is rotated for such adjustment by forcing the piston home before such rotation to one end of the cylinder, so as to cause the clutch on one of the heads to engage the clutch of one of the cylinder-heads. The clutches I I' are provided with cams at one side. These cams are for the purpose of raising the piston-head vertically in the cylinder after it first comes in contact with the clutch on the cylinder-head and before said clutch stops the rotation of the piston-head. The object of this movement will be readily understood by reference to Fig. 1 of the drawings. Here it will be observed that a clutch, *g*, on the sleeve S fits into the clutch *k* on the stuffing-gland *n*. Now, if the piston-rod A and sleeve S move far enough to disengage the clutch *g* from its connection with the clutches *k* of the stuffer when the adjustment of the packing took place, it would force the stuffer down into the box when it might not be desirable to do so; and it is to prevent this that the clutches I I' are cammed on one side, that by lifting the piston it may disengage the clutch of the sleeve S from the clutches *n*. When, however, it is desirable to force the stuffer down, it can be effected by turning the jointed sleeve-coupling S S', when thrown off from cam on the lower plate-head of the cylinder.

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

1. The combination, with the piston-rod having conical bearing and reverse screw-threads

on opposite sides of the same, of the segmental supports, packing-rings, and piston-heads provided with cam-clutches, and the cylinder-heads provided with clutches to engage said
5 cam-clutches, substantially as specified.

2. In combination with the piston-rod and its clutch, the stuffing-gland and its clutch, the piston - packing and piston - heads, the latter provided with cam-clutches, and the cylinder-

heads provided with clutches, as described, 10 substantially as and for the purposes specified.

In testimony that I claim the foregoing I have hereunto set my hand and seal this 14th day of September, 1880.

MORRIS W. WOODRUFF. [L. S.]

Witnesses :

CHARLES ELLIS,
GEORGE KENT.