

(No Model.)

2 Sheets—Sheet 1.

S. ARMSTRONG.
Piston Rod Packing.

No. 242,808.

Patented June 14, 1881.

Fig. 1.

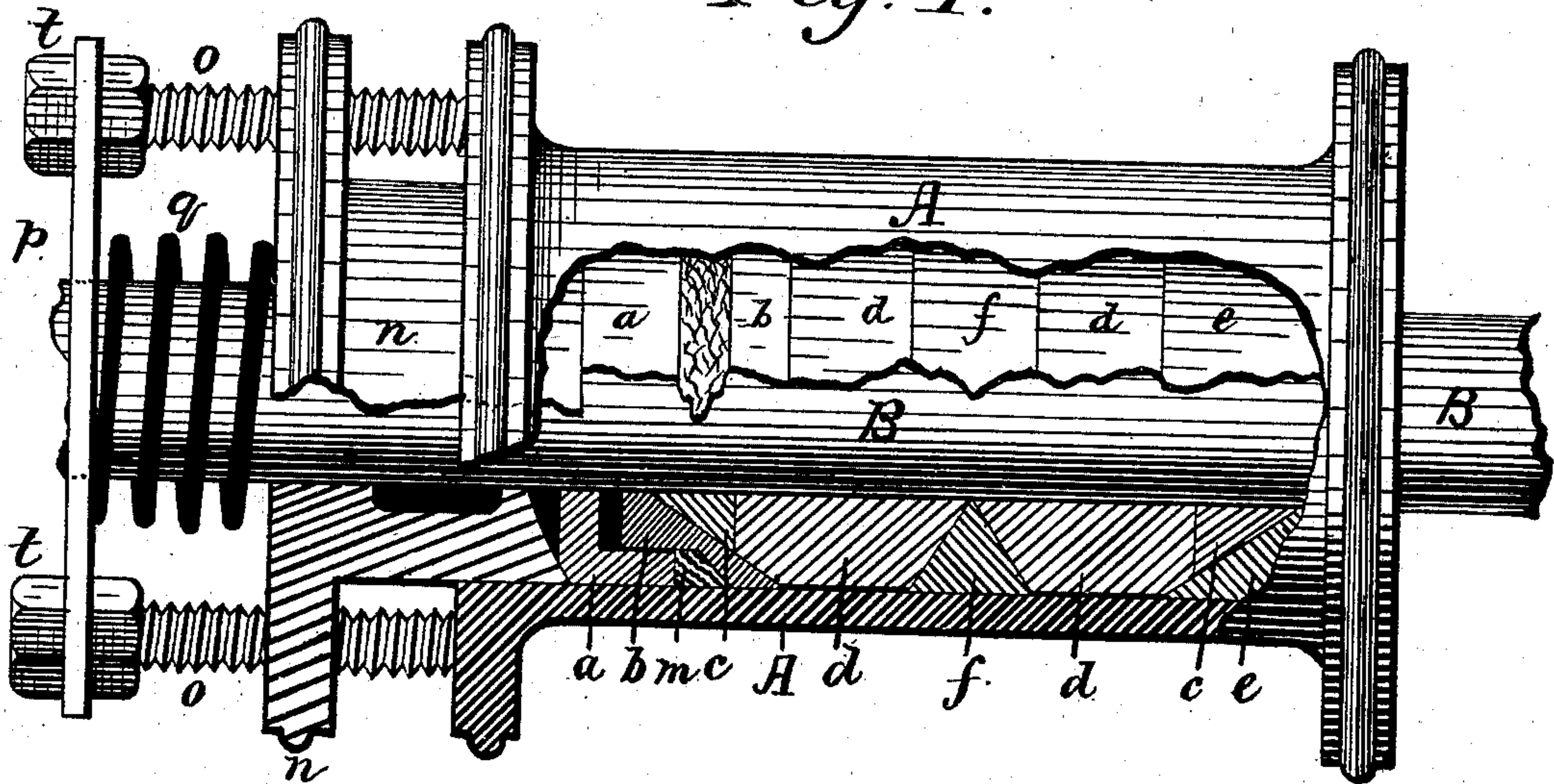


Fig. 2.

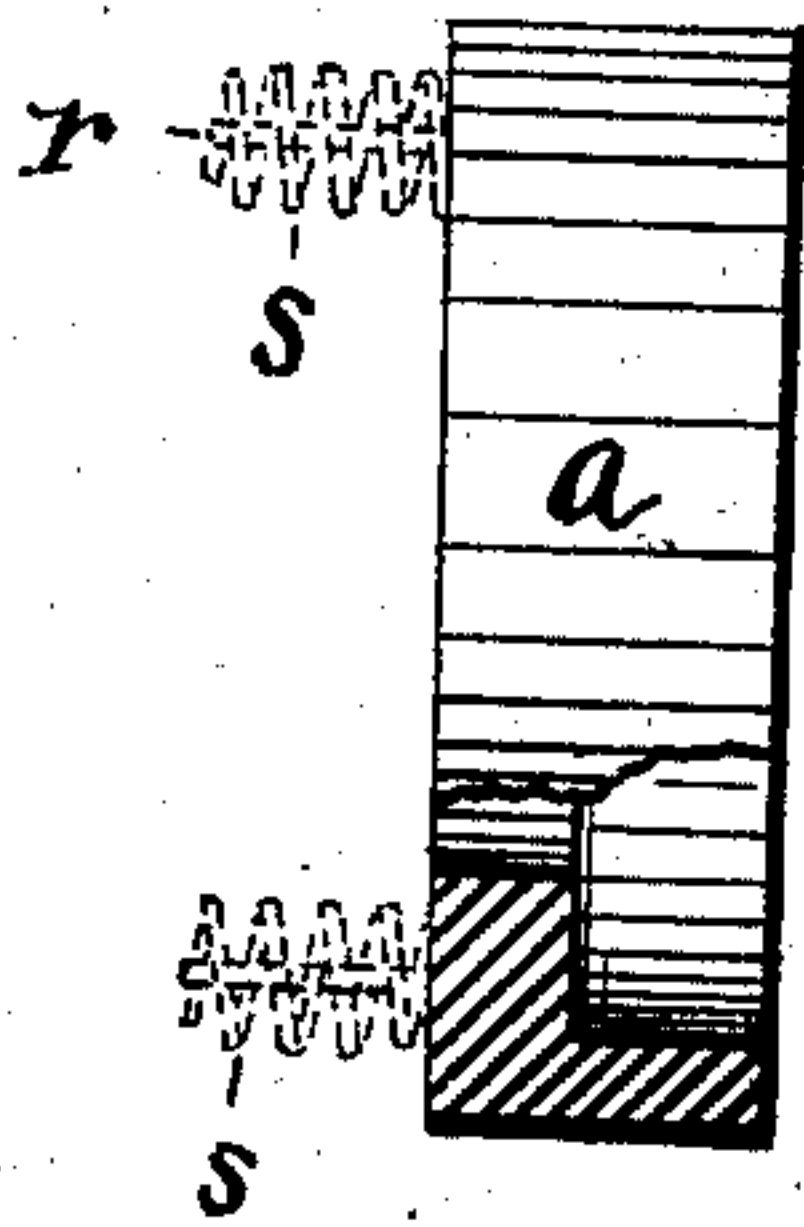


Fig. 3.



Fig. 4.



Fig. 5.

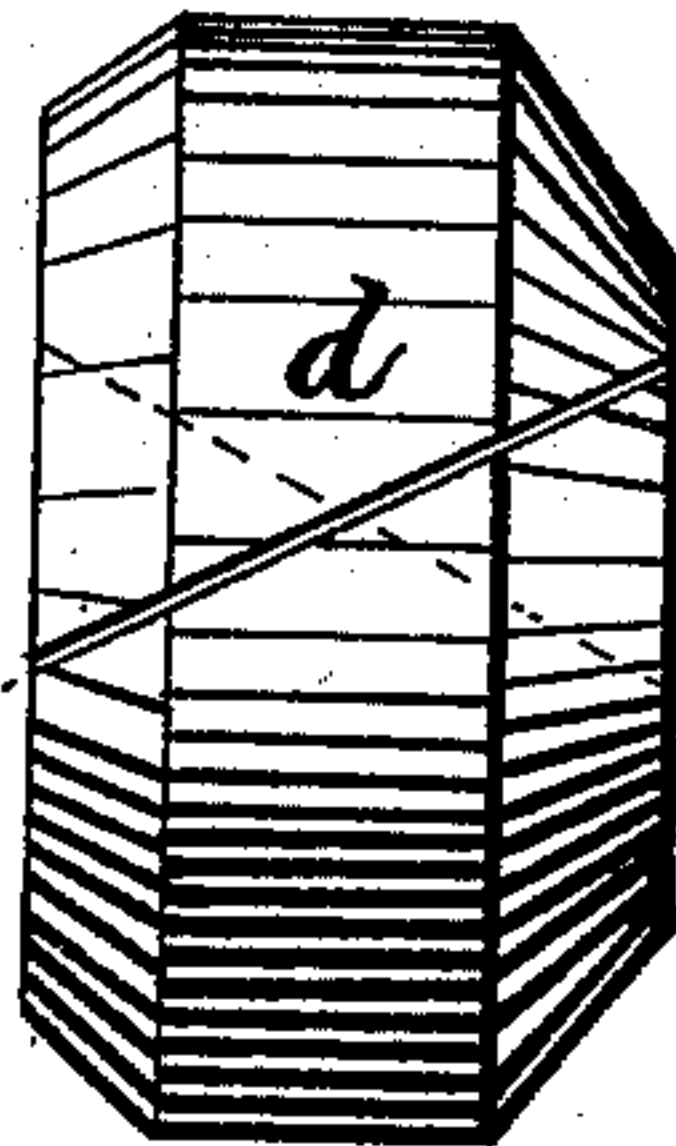


Fig. 6.



Fig. 7.



Witnesses:

Charles H. Dell
Geo. B. Adams

Inventor:

Samuel Armstrong.
By O. Drake,
Att'y.

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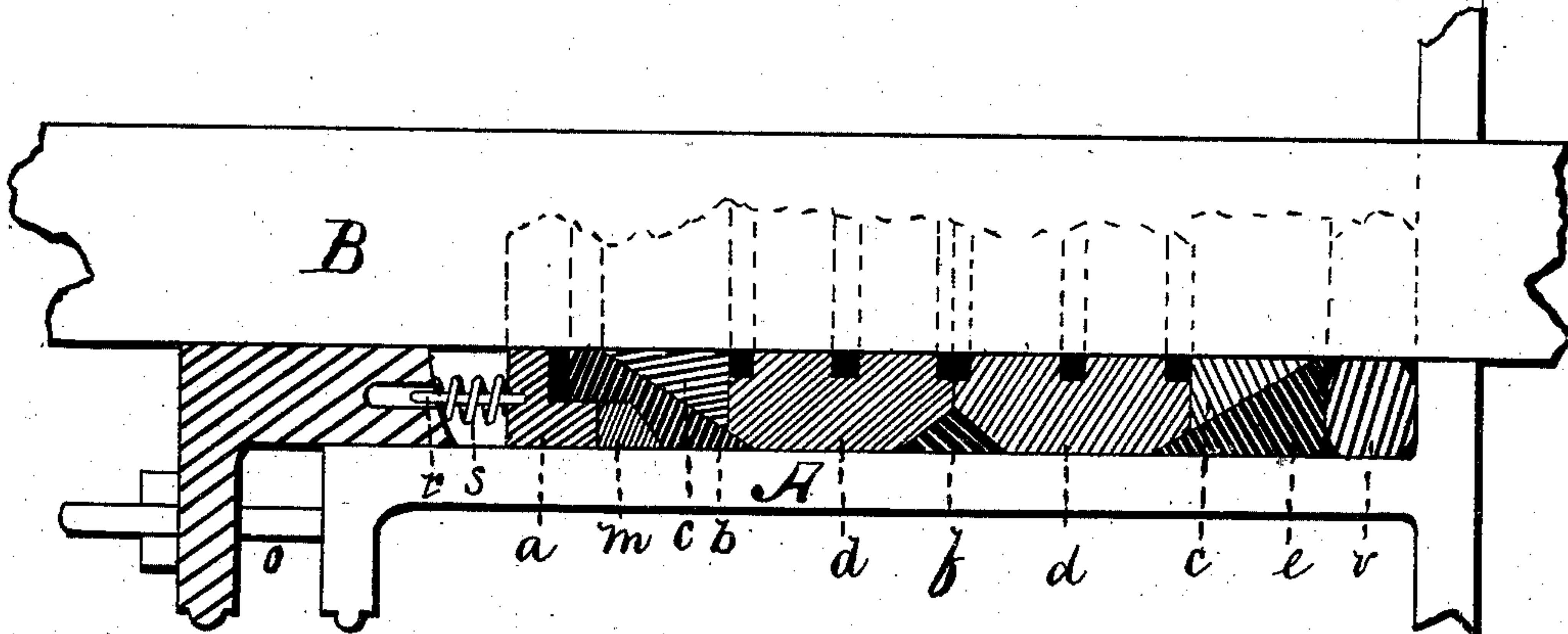


Fig. 8.



Fig. 9.

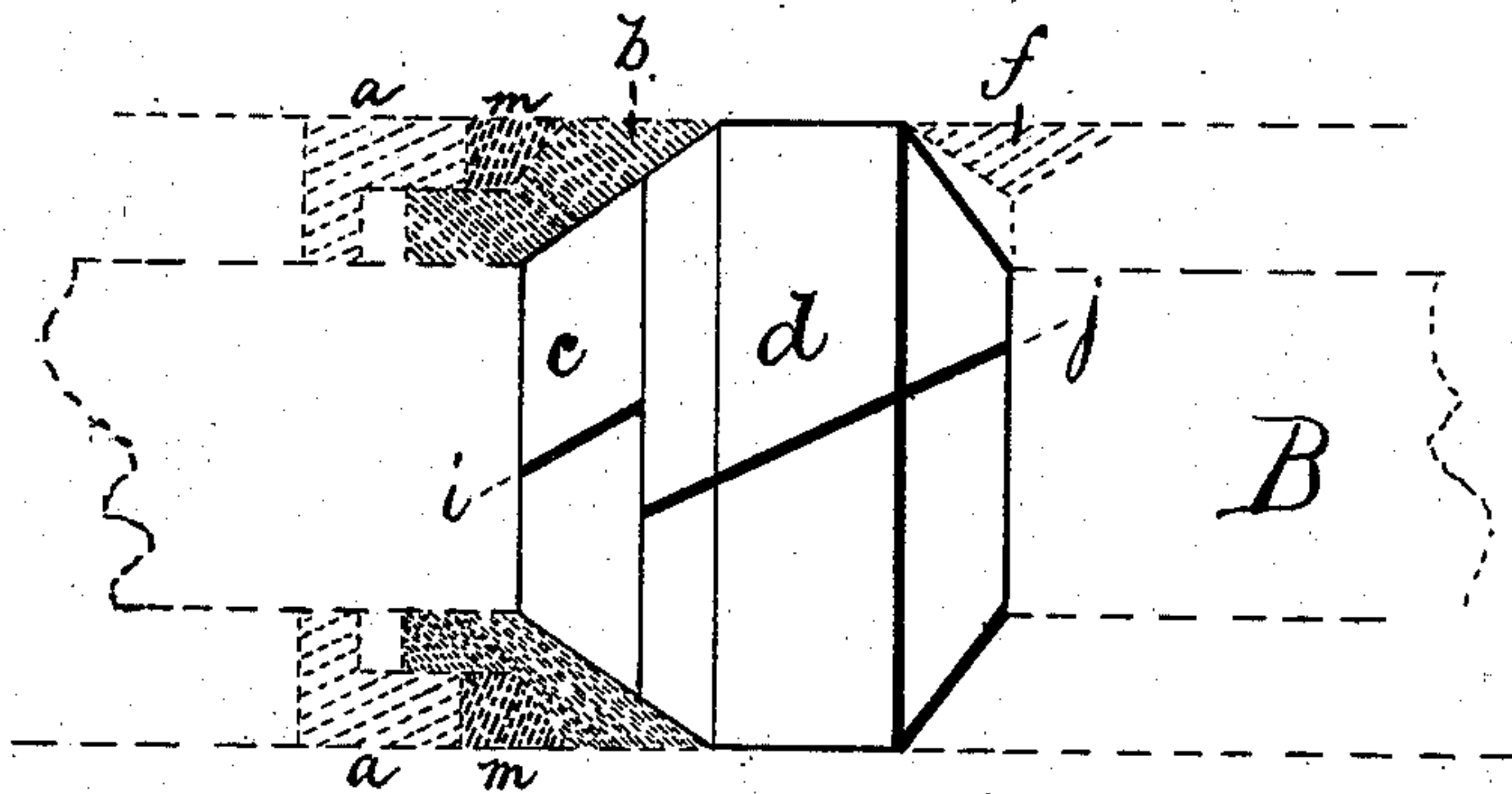


Fig. 10.

Witnesses

Charles H. Bell
Chas. Herr

Inventor.

Samuel Armstrong
By O. Drake, Att'y.

UNITED STATES PATENT OFFICE.

SAMUEL ARMSTRONG, OF NEWARK, NEW JERSEY.

PISTON-ROD PACKING.

SPECIFICATION forming part of Letters Patent No. 242,808, dated June 14, 1881.

Application filed September 30, 1880. (No model.)

To all whom it may concern:

Be it known that I, SAMUEL ARMSTRONG, of the city of Newark, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in Piston-Rod Packings; and I 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 appertains to make and use the same, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification.

This invention relates to that particular class of piston-rod packings composed of beveled metallic rings adapted to interlap and engage with one another; and the object is to form a more complete, constant, and durable obstruction to the escapement of the steam.

My invention consists in the construction and combination of parts hereinafter described, and then sought to be pointed out in the claims.

Referring to the accompanying drawings, in which similar letters of reference indicate like parts in each of the several figures, Figure 1 represents a piston-rod, a stuffing-box, and attendant parts forming my invention, all partially broken away to show sections thereof, and to clearly illustrate the mutual relations of each of the several parts to the other. Figs. 3, 4, 5, 6, 7, and 9 show the several rings individually, most of them being also broken away to show sections. Fig. 8 illustrates further variations of my invention which I wish to claim, and Fig. 10 is a more comprehensive illustration of a particular combination.

The manner of carrying out my invention is as follows: Through the stuffing-box A passes the piston-rod B, which is packed therein by means of the several rings, *a b c d e f g m*, arranged substantially as shown in Figs. 1 and 8, and as will be fully described in the order they are placed in the stuffing-box and as they appear in said figures. The ring *e* has a comparatively wide inward bevel, *h*, Fig. 6, into which is placed the ring *c*, a section of which is triangular. Said ring *c* is cut at *i*, Fig. 4, which thus enables it to contract as the surface in contact with the rod wears away. As the ring *c* is narrower than the ring *e*, the said ring *e*

overlaps and leaves a remaining space, into which the ring *d* is placed, thus breaking joints and completely preventing the escapement of the steam between the rod and rings *c d*. The rings *c d* have heretofore formed but one ring, the bevel of which coincided with the ring *e*, and the cuts *i* and *j* formed but one continuous cut; but by this old arrangement it is evident that the steam had free passage through the said continuous cut *i j*; but by separating the rings and forming a steam-tight joint between them communication will be more effectually cut off, as will be readily understood, especially after reference to Fig. 10. The joints between the rings *b c d* are formed upon the same principle in their relation to each other, and the sets *b c d* and *d c e*, taken individually or conjoined by the ring *f*, form a perfect and steam-tight packing as far as the piston-rod is concerned; but it now remains to form an impenetrable joint between the rings and the stuffing-box, and to accomplish this I form upon the ring *b* the annular flange *k*, which is adapted to engage with the ring *a*, having an annular socket therein for the reception of said flange. The ring *b* has a short bevel running from the flange *k* outwardly to the periphery of said ring, so that when the two rings *a* and *b* are in engagement there is left a peripheral groove adapted to receive fibrous packing *m*, or, as may be advisable under some circumstances, a ring of metal, capable of expansion and conforming to said groove.

It is evident, referring to Fig. 1, that when an inward pressure is brought to bear upon the packing *m* it will be forced by means of the incline to expand against the stuffing-box, preventing all egress of steam at that point. To give additional security a fibrous ring, *v*, may be placed as in Fig. 8. Thus the said rings form a perfect and constant packing, capable, in connection with the to be described springs, of automatically readjusting itself as the said packing wears away by the action of the piston-rod thereon.

The improved arrangement of the spring, whereby the action of the gland or follower *n* is facilitated, is as follows: To the studs *o* is affixed the plate *p*, which is adapted, by being centrally perforated, to pass around the rod B and form a bearing for the spring *q*, which

thus forces the said gland hard upon the enclosed metallic packing. Under certain circumstances it will be needful to gain room by doing away with the plate and spring, as shown in Fig. 1, and to do this I construct upon the outer ring of the series the studs *r*, Figs. 2 and 8, adapted to fall into a corresponding recess in the gland, and upon these studs place the springs *s*, same figures, upon which the gland presses and forces the interior rings into close engagement, as in the former case.

Should I desire, I may groove the inner face of the rings, as shown in Fig. 8, by which action a wet packing is formed. The oil, &c., catching in said grooves forms a cushion or bed, which not only aids in making the joints steam-tight, but greatly reduces the wear caused by friction.

Having thus described my invention, what I claim, and wish to have secured by Letters Patent, is—

1. In a piston-rod packing, the combination of the annularly-socketed ring *a*, the flanged and outwardly and inwardly beveled annular ring *b*, a packing, *m*, in the groove formed between ring *a* and bevel of ring *b*, and split packing-rings between the piston-rod and ring *b*, the several parts being arranged and adapted to operate as set forth.

2. The combination, with the rod, stuffing-box, and gland, of the socketed ring *a*, flanged ring *b*, expansible ring or packing *m*, divided rings *c d*, and inwardly-beveled inexpandible

ring *f*, all arranged and operating as set forth and shown. 35

3. The combination, with gland *n*, studs *o*, and plate *p*, of the piston-rod B, and spring *q*, encircling said rod and bearing against said plate and the gland, substantially as and for the purpose set forth. 40

4. The piston-rod B and stuffing-box A, in combination with rings *b f e* and intermediate split rings provided with grooves in their faces next to the piston-rod, substantially as and for the purpose set forth. 45

5. The combination, in a piston-rod packing, of a ring, *c*, having a beveled periphery, a ring, *d*, having a portion of its periphery beveled, and a ring, *b*, interiorly beveled, the three parts being combined so that the bevel of *b* will cover the bevels of *c* and *d* and break the joints between them, as set forth. 50

6. The combination, with the groups of rings *d e e* and *b c d*, separated by the ring *f* and adapted to bear upon the rod, of the rings *a m*, adapted, when in connection with the ring *b*, having an outward bevel or incline and operated upon by the gland, to bear against the stuffing-box, as and for the purpose shown and described. 60

In testimony that I claim the foregoing I have hereunto set my hand this 27th day of May, 1880.

SAMUEL ARMSTRONG.

Witnesses:

OLIVER DRAKE,
CHARLES H. PELL.