M. H. GERRY.

Metallic Packing for Piston-Rods, &c.

No. 208,973. Patented Oct. 15, 1878.

FIG. I

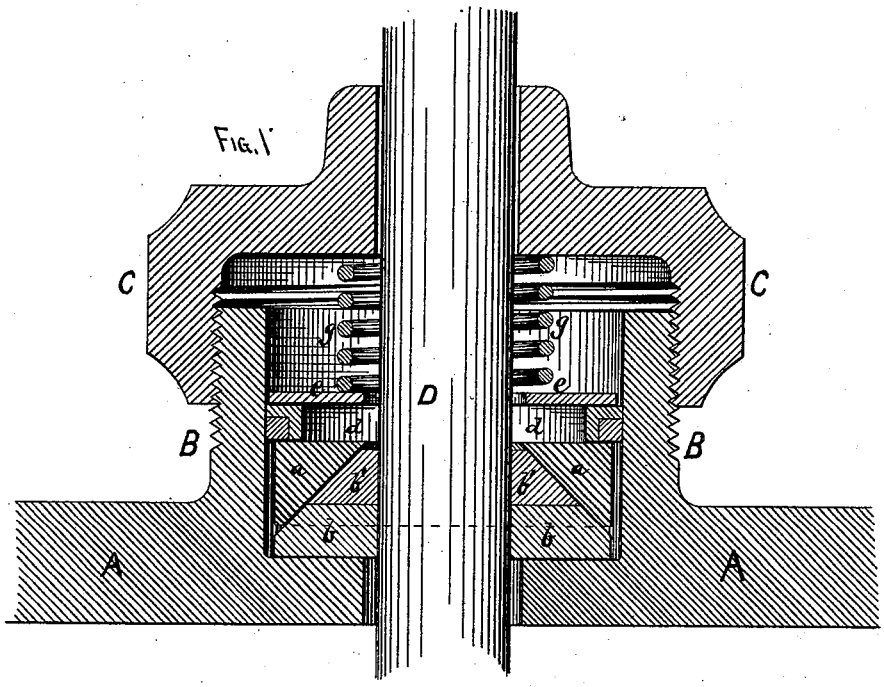
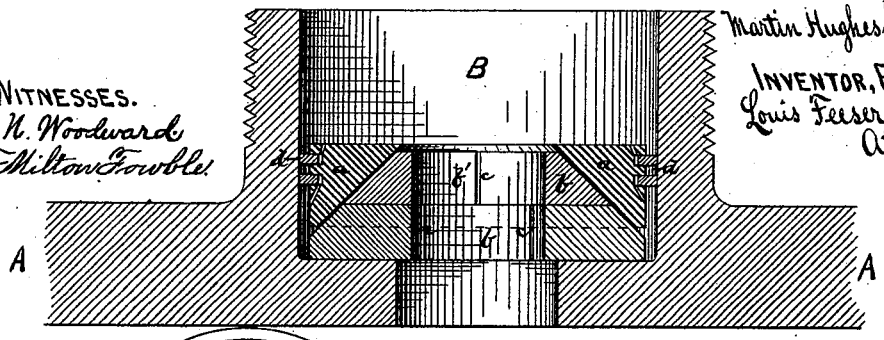


FIG. II



WITNESSES.

C. N. Woodward

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Martin Hughes Gerry,

INVENTOR, By

Louis Fesser & Co.

Attys.

FIG. III

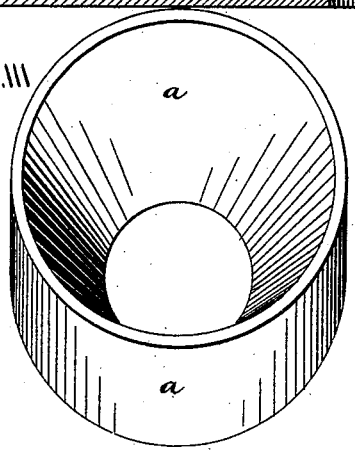
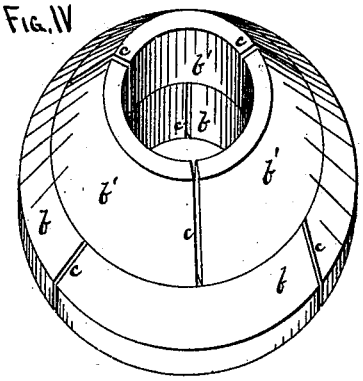


FIG. IV



UNITED STATES PATENT OFFICE.

MARTIN H. GERRY, OF MINNEAPOLIS, MINNESOTA.

IMPROVEMENT IN METALLIC PACKING FOR PISTON-RODS, &c.

Specification forming part of Letters Patent No. **208,973**, dated October 15, 1878; application filed May 16, 1878.

To all whom it may concern:

Be it known that I, MARTIN HUGHES GERRY, of Minneapolis, in the county of Hennepin and State of Minnesota, have invented certain new and useful Improvements in Metallic Packing for Piston-Rods, &c., which invention is fully set forth in the following specification and accompanying drawing, in which—

Figure 1 is a sectional side elevation of a stuffing-box, showing my arrangement of the packing. Fig. 2 is a similar view with the piston-rod and cap removed; Figs. 3 and 4, perspective detail views of the divided conical rings and conical cylindrical collar detached.

This invention relates to metallic packing for piston-rods, &c.; and consists in the arrangement of a series of divided conical rings and a conical cylindrical collar within the stuffing-box in such a manner that the steam within the cylinder and the outside air are free to act upon the packing and force it against the piston-rod when steam or a vacuum is used, as hereinafter specified.

The invention further consists in a packing ring or rings arranged in connection with the stuffing-box case and the packing to prevent the escape of steam or the entrance of air, as hereinafter explained.

A is a portion of the cylinder-head; B, the stuffing-box; C, the screw-cap, and D a portion of the piston-rod, all formed in the usual manner. *a* is a collar or cylinder, having its interior of a conical form, in which two or more divided conical rings, *b b'*, set. These rings are made with their surfaces steam-tight, and with their dividing joints *c c* overlapping or breaking, as shown in Figs. 2 and 4, so that no steam can escape through. They will also be ground upon their interior sides to fit the piston-rod steam-tight.

d is a packing-ring, made in any of the well-known forms, and either embedded in the side of the conical cylinder *a*, as in Fig. 2, or placed upon top thereof, as in Fig. 1, its use being to prevent the steam which may pass between the stuffing-box and packing from escaping. This packing, when made in the form shown in Fig. 1, will be held down upon the conical cylinder by a plate, *e*, and a spring, *g*, interposed between it and the cap C; but when used as shown in Fig. 2 the pressure of the steam alone will be sufficient to keep it tight. In the latter case the spring *g* will press directly upon the conical cylinder *a* to hold it down upon the rings *b b'*.

It will be readily seen that when the conical cylinder is pushed down or the conical rings pushed upward the latter will be pressed against the piston-rod, and thus pack it.

The operation is as follows: The cap C will be screwed down until the spring *g* has forced the conical cylinder *a* far enough upon the conical rings *b* to prevent rattling, but not enough to make them steam-tight. Then, when steam is let into the cylinder, a portion of it will enter the stuffing-box B through the opening left for that purpose around the piston-rod, and, pressing upon the conical rings, will force them upward into the conical cylinder *a* and against the piston-rod. By this means the pressure upon the piston-rod is perfectly regulated, as the heavier the pressure of steam in the cylinder the harder will the rings be forced against the rod, so that no unnecessary friction will be brought to bear upon it.

With the ordinary packing it is necessary to keep it pressed tight enough upon the rod at all times to resist the heaviest pressure that may be brought to bear upon it, thereby causing a very large amount of unnecessary friction upon the rod when the engine is running under a low pressure; but by my arrangement this is entirely avoided, as the pressure of the steam perfectly regulates the friction of the packing, so that when the engine is running without steam, as is frequently the case in locomotive and marine engines, little if any wear of the packing will occur.

The conical cylinder *a* and the divided conical rings *b b'* will be made slightly smaller than the stuffing-box B, as shown, to allow the piston-rod a slight side motion without affecting the packing in case of the wearing of the cylinder or piston-head.

In the case of low-pressure engines or air-pumps, where a vacuum occurs, the pressure of the atmosphere from the outside, which will enter the stuffing-box through the cap C around the piston-rod, (see Fig. 1,) will act upon the conical cylinder *a* and pack the rod in the same manner as the steam acting upon the conical rings. By this means the packing

will act equally well in high or low pressure engines.

I am acquainted with the patent of F. J. Roth, May 5, 1868, No. 77,534, who shows a conical cylinder and conical divided rings; but such I do not claim, broadly.

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

The combination and arrangement of the stuffing-box B, conical cylinder *a*, conical divided ring or rings *b b'*, plate *e*, spring *g*, and packing-ring *d*, whereby the pressure of the air from the outside regulates the pressure of the packing upon the piston-rod and causes it to adapt itself to the work required of it, substantially as hereinbefore specified.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

MARTIN HUGHES GERRY.

Witnesses:

C. N. WOODWARD,

LOUIS FEESER.