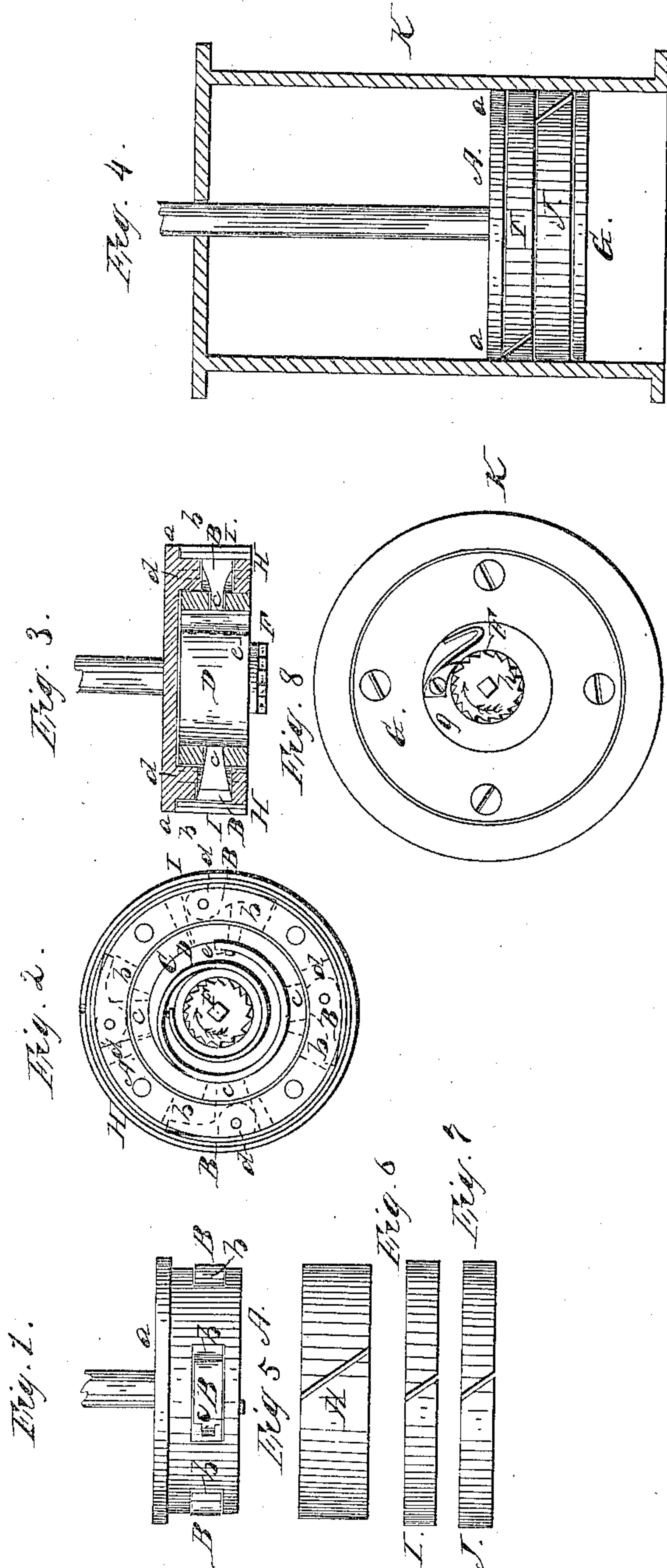


H. L. Russell,
Piston Packing.
No 10,159. Patented Oct. 25, 1853.



UNITED STATES PATENT OFFICE.

HENRY L. RUSSELL, OF HUDSON, MICHIGAN.

METALLIC PISTON-PACKING.

Specification of Letters Patent No. 10,159, dated October 25, 1853.

To all whom it may concern:

Be it known that I, HENRY L. RUSSELL, of Hudson, in the county of Lenawee and State of Michigan, have invented a new and
5 Improved Metallic Packing for the Cylinders of Steam-Engines and for other Cylinders in which a Tight Packing is Required; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the
10 accompanying drawings, making a part of this specification, in which—

Figure 1, is a side view of the drum, which contains the levers for expanding the bands.
15 Fig. 2, is an under view, or an inverted plan of the drum; showing the ring by which the levers are operated, and which is placed within the drum; and also showing the hub on which a ratchet is placed, and also the
20 coil-spring, which is attached to the hub and to the ring above mentioned. The levers are shown by dotted lines in this view. Fig. 3, is a vertical section of the drum, bands, and ring; the plane of section being taken
25 through the center; the coil spring and hub not being bisected. Fig. 4, is a vertical section of a cylinder; showing the packing within it. Fig. 5, is a side view of the band, which fits over the drum. Fig. 6, and Fig.
30 7, are side views of the bands which fit over the band shown in Fig. 5. Fig. 8, is a face view of the plate, which is secured to the under side of the drum. The ratchet and pawl are shown in this view.

35 Similar letters of reference indicate corresponding parts in each of the several figures.

This invention relates to a new and improved metallic packing, for the cylinders
40 of steam-engines, and for other cylinders in which a tight packing is required.

The invention consists in expanding a number of metallic bands, by means of levers, secured in the periphery of a drum
45 and operated by means of a ring, fitted within said drum and arranged as will be hereafter shown.

To enable others skilled in the art to make and use my invention, I will proceed
50 to describe its construction and operation.

A, represents a drum, closed at its upper end by a head, (a), which projects over the sides of the drum, and fits loosely within the cylinder for which the packing is intended.
55 The periphery of the drum is

pierced with a number of oblong rectangular apertures, (b); four of these apertures are shown in the drawings; in which apertures are placed levers, B, having shanks, (c), which project some distance beyond the
60 inner periphery of the drum, as shown by dotted lines in Fig. 2. The levers are secured in the periphery of the drum by pivots, (d), which form the fulcrums of the levers. In the interior of the drum, A, there
65 is placed a ring, C, the outer surface of which touches the inner periphery of the drum. The periphery of the ring is pierced with apertures in which the shanks, (c), of the levers, B, fit; this is shown by dotted
70 lines in Fig. 2.

D, is a coil spring, placed within the ring, C. The outer end of this spring is secured to the ring at, (e); see Figs. 2, and 3. The
75 inner end of the said spring is secured at (f), to a hub, E, in the center of the ring; as shown in Fig. 2. On the outer end of the hub, E, there is a ratchet wheel, F, seen in Figs. 2, and 5.

G, is a plate, which is screwed to the
80 lower end of the drum, A. This plate is of the same diameter as the head, (a), of the drum; see Fig. 4. At the center of the plate, G, there is a circular aperture, through which the ratchet wheel, F, passes;
85 and a pawl, (g), attached to the plate, G, catches into the teeth of the ratchet, as seen in Fig. 8.

H, in Fig. 5, is a metallic band, which fits
90 around the drum, A. This band is cut, or divided, as shown in Fig. 5; and as is usual with all bands used in metallic packing in order to obtain the necessary expansion.

I, J, are two metallic bands, also cut, or
95 divided, in the usual manner. These bands, I, J, are placed over the band, H. The band H, is of the same width as the drum, A; and the bands, I, J, are each one half the width of the band, H.

The operation will readily be seen. By
100 turning the hub, E, in the direction of the arrow, in Figs. 2, and 8, the ring will be moved in a corresponding direction, as the ring is attached to the hub by the coil
105 spring, D. And as the shanks, (c), of the levers, B, fit in recesses in the periphery of the ring, C, the outer ends of the said levers will be thrown out against the band, H, causing it and the two outer bands, I, J, to
110 expand and fit tightly the bore of the cyl-

inder, K, shown in Fig. 4. The ring, C, is prevented from moving casually by means of the coil spring, D, pawl, (g), and ratchet, F. The hub, E, is turned by means
5 of a key which is fitted in a square recess, (h), in the center of the ratchet.

By the above invention, the levers are made to operate alike at every point of bearing upon the packing. This packing is
10 simple, and not liable to get out of repair, and does not necessarily require an experienced "hand."

I do not claim the metallic bands, H, I, J, for they are now used in metallic packing;
15 but

What I do claim as new, and desire to secure by Letters-Patent, is,—

Expanding the metallic bands, H, I, J, which encompass the drum, A, by means of the levers, B, placed in the periphery of the
20 drum, A, and operated by means of the ring, C, within the drum, as herein shown and described; the ring, C, being prevented from moving casually, by means of the coil
spring, D, and ratchet, F, and pawl, (g),
25 or their equivalents.

HENRY L. RUSSELL.

Witnesses:

JOHN CONGER,
JACKSON M. WOOD.