(No Model.)

P. F. HOLMGREN.

METALLIC PACKING.

No. 386,011. Patented July 10, 1888.

Fig. 1.

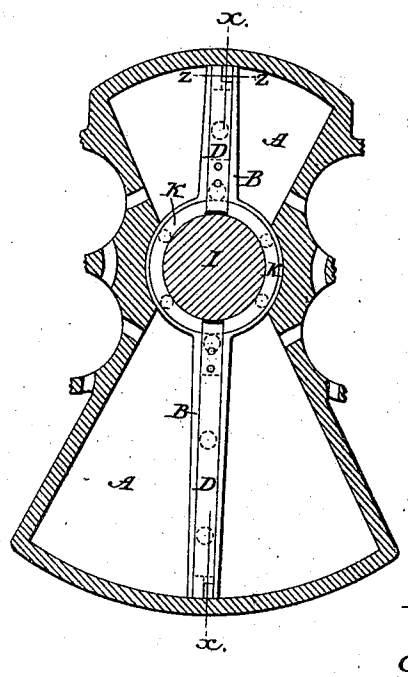


Fig. 2.

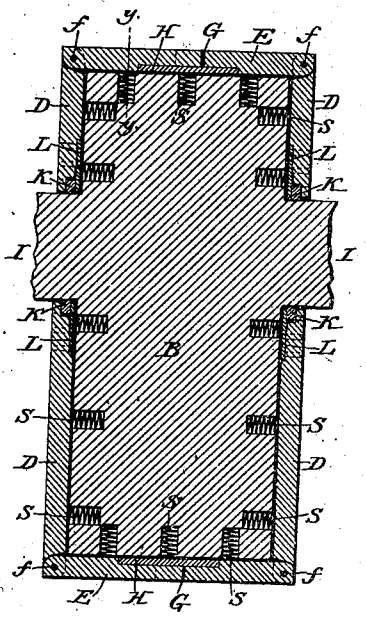


Fig. 3.

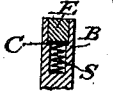
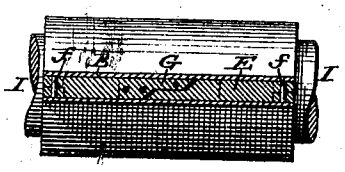


Fig. 4.



Attest:

A. N. Jesberg

C. M. Watson.

Inventor:

Peter F. Holmgren.

By David Arburr.

Atty.

UNITED STATES PATENT OFFICE.

PETER F. HOLMGREN, OF BROOKLYN, NEW YORK, ASSIGNOR TO ALEXANDER CRAIG, OF NEWARK, NEW JERSEY.

METALLIC PACKING.

SPECIFICATION forming part of Letters Patent No. 386,011, dated July 10, 1888.

Application filed November 1, 1887. Serial No. 253,987. (No model.)

To all whom it may concern:

Be it known that I, PETER F. HOLMGREN, of Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Metallic Packing for Vibrating Engines; and I do hereby declare that the following is a full 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, in which—

Figure 1 is a sectional view through one end of the piston-chamber of a vibrating engine, showing the proximate end of the piston and its packing in elevation. Fig. 2 is a central section through the piston in line *x x* of Fig. 1, showing the packing partly expanded in all directions by reason of wear; Fig. 3, a transverse section through a portion of one end of the piston and its packing in line *y y* of Fig. 2, and Fig. 4 a transverse section across the same end in line *z z* of Fig. 1, both views showing the packing expanded by wear, the wall of the piston-chamber being omitted in said views.

My invention relates to the combination of metallic packing-plates with the ends of the piston in a vibrating engine to make a close joint between the piston and the walls of the chamber in which it works, and has for its object to make a durable self-adjusting elastic joint which will remain perfectly steam-tight under long-continued wear and pressure.

It consists in the combination, with the end and side edges of the piston, of jointed and pivoted packing-strips having the form and arrangement hereinafter fully described, and which are inserted, as set forth, in longitudinal recesses in said edges.

In the accompanying drawings, A A represent the piston-chambers, and B the vibrating piston, of a compound vibrating-engine of the type described in the Letters Patent, No. 316,606, issued to William E. Crist, April 28, 1885. The edge of the piston at its ends and sides is centrally and longitudinally recessed, as shown at C in Fig. 3, to receive the improved packing-strips. These strips D D and E E are made, severally, of a length, width, and thickness to fit closely and accurately within the recess in the edges of the piston. The lateral strips D D are jointed to the strips E E at the ends of the piston by a simple halved joint, and are pivoted together by a transverse pivot-pin, *f*. Each end strip E is divided centrally by a lap-joint, as shown at G in Fig. 4, and the joint thus formed is broken and covered on the face thereof adjacent to the piston by means of a thin underlying plate, H, riveted at one end to one division of the strip E to extend under and overlap the other division so far as the joint extends.

The joints of the ends of the lateral strips D, with the trunnions I I of the piston, are severally covered and kept tight when the packing is drawn away from the trunnion by means of metallic rings K K, encircling each trunnion and fitting into a recess cut in the inner face of the lateral strip at its inner end to receive it, each ring being, however, lapped on its inner side by a thin spring-plate, L, riveted to the strip to move with it, as shown in Fig. 2. The tendency of the free end of the plate L is to spring outwardly, so that as the ring K, against which it bears, wears away, the pressure of said plate L against it will operate to keep the joint tight.

The several packing-strips are automatically forced outward from the piston and kept in constant contact with the walls of the piston-chamber by means of spiral springs S S S, interposed between the strips and piston and fitted into recesses formed for the purpose in the piston, as shown in Figs. 2 and 3. Similar springs may in the larger sizes of engines likewise be inserted between the ring K and its seat in the piston, as shown by dotted lines in Fig. 1, either in addition to the plates L or as a substitute therefor. The lateral strips D D may likewise in the larger engines be divided in their length with a lap-joint corresponding to the joint G of the end strips, E, and provided in like manner with an underlying plate, H.

In the operation of this improved packing, as the packing-strips become worn by reason of their friction with the walls of the piston-chamber, the central joints, G G, in the end strips, E, and the end joints of the lateral strips with the rings K K permit a movement of all the strips both outwardly and longitudinally, so that they may be held by the springs

S C in contact with the internal faces of the chamber throughout the entire movement of the piston, and in spite of the constant wear thereof by reason of said movement.

I claim as my invention—

1. The combination, in a packing for vibrating pistons, of divided end strips fitted in a longitudinal recess in each end of the piston, lateral strips fitted in longitudinal recesses in the side edges of the piston and jointed and pivoted to the end strips at the corners of the piston, packing-rings seated in the piston to encircle its trunnions and embraced within recesses at the inner ends of the inner sides of the lateral packing-strips, plates made fast to the side strips to cover the inner face of each packing-ring, a plate fast to the inner face of one division of each end strip to cover its joint with the proximate division, and a series of springs interposed between the several packing-strips and the piston, substantially in the manner and for the purpose herein set forth.

2. The combination, in a packing for vibrating pistons, having self-adjusting end strips, substantially as described, of lateral strips fitted each in a longitudinal recess in the side edge of the piston, packing-rings seated in the piston to encircle its trunnions, and which are severally embraced within recesses at the inner ends of the inner sides of the lateral packing-strips, and spring devices, substantially as described, for forcing the rings and strips outwardly against the wall of the piston-chamber, substantially in the manner and for the purpose herein set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

PETER F. HOLMGREN.

Witnesses:
A. N. JESBERA,
E. M. WATSON.