

No. 756,731.

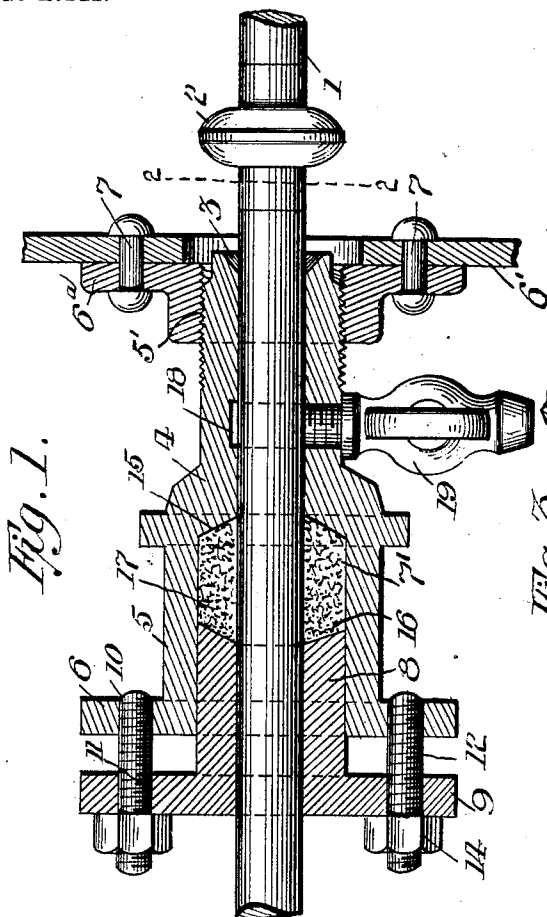
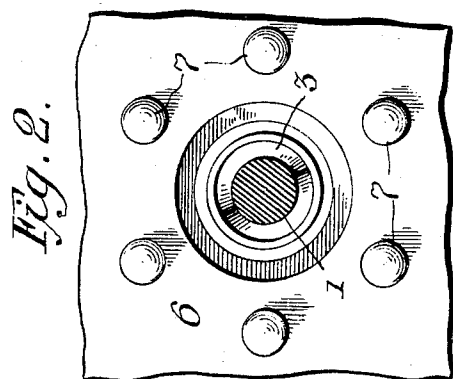
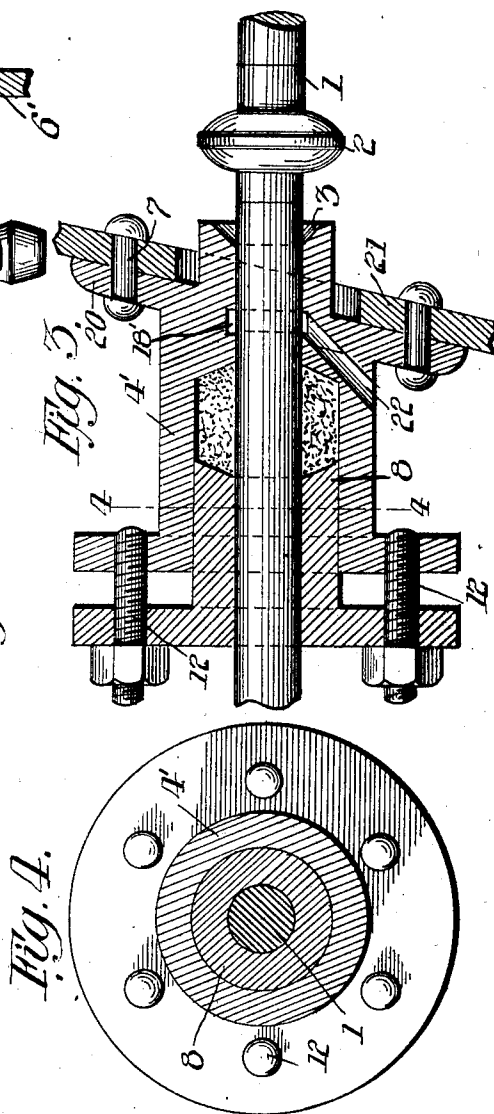
PATENTED APR. 5, 1904.

J. D. STURTZ.
PACKING GLAND FOR THROTTLE STEMS.

APPLICATION FILED JAN. 26, 1904.

NO MODEL.

3 SHEETS—SHEET 1.



Witnesses:
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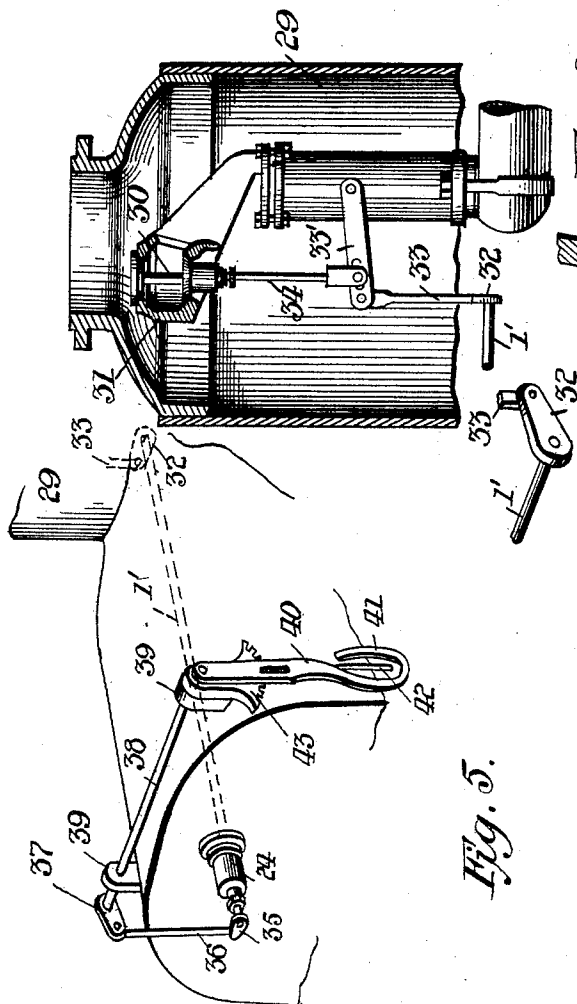


Fig. 5.

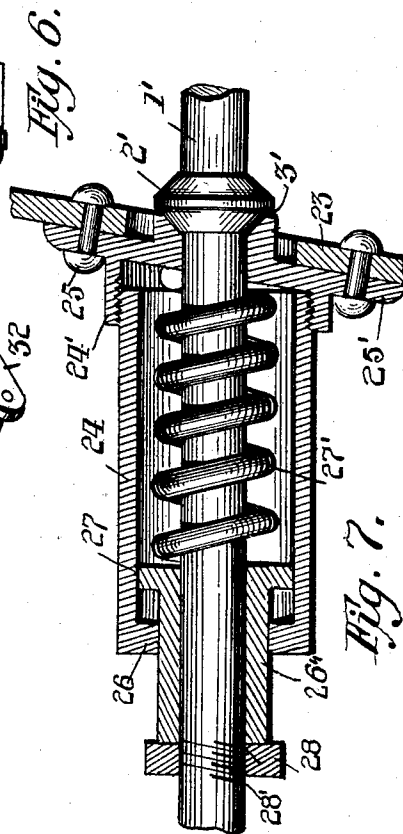


Fig. 6.

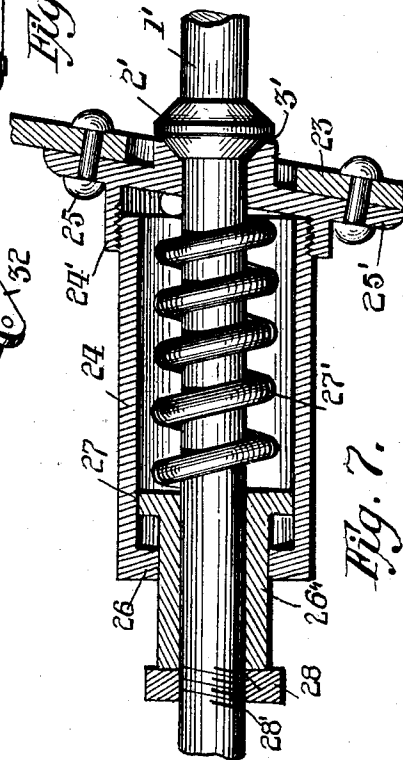


Fig. 7.

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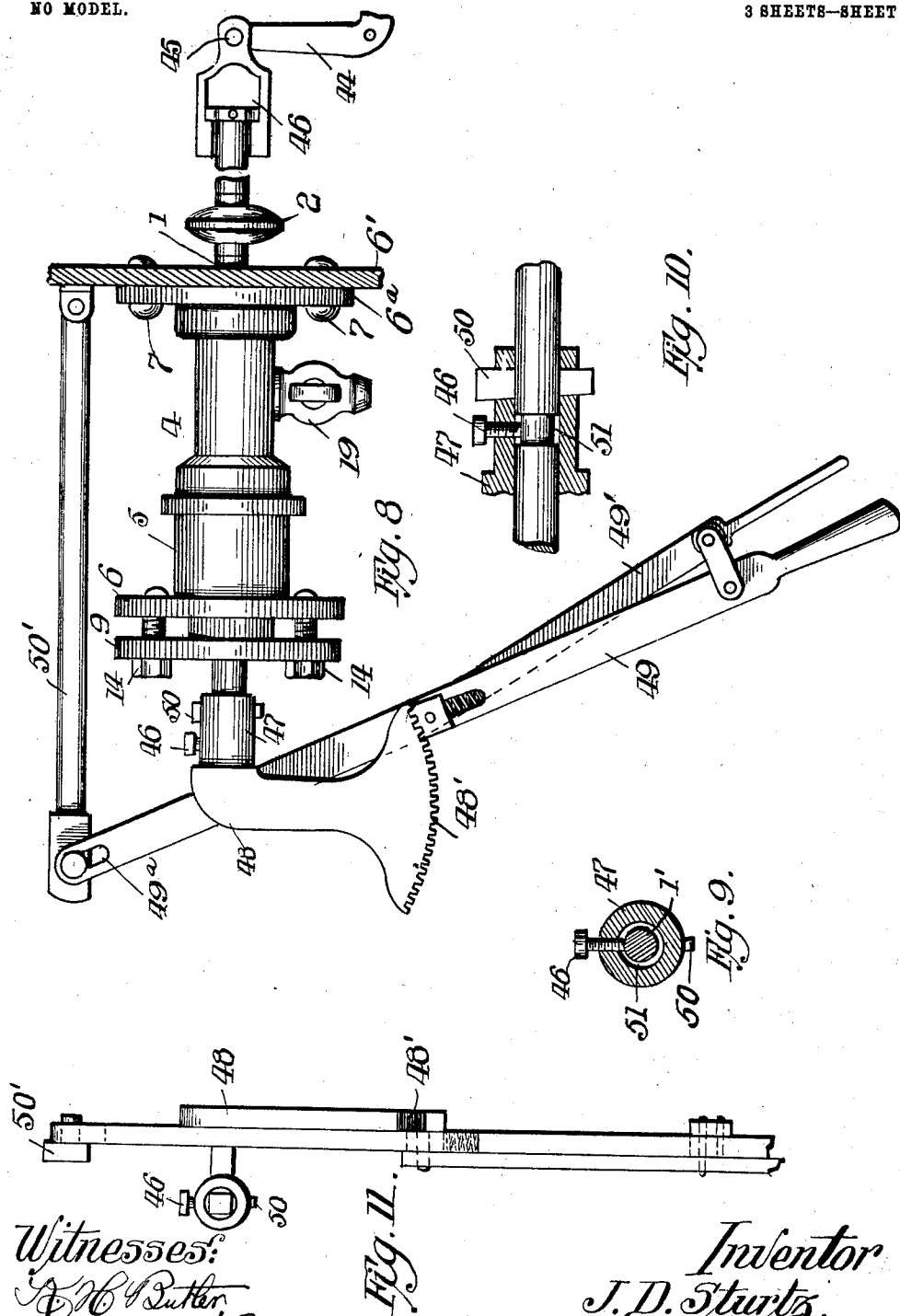
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3 SHEETS—SHEET 3.



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UNITED STATES PATENT OFFICE.

JOHN D. STURTZ, OF YOUNGWOOD, PENNSYLVANIA.

PACKING-GLAND FOR THROTTLE-STEMS.

SPECIFICATION forming part of Letters Patent No. 756,731, dated April 5, 1904.

Application filed January 26, 1904. Serial No. 190,693. (No model.)

To all whom it may concern:

Be it known that I, JOHN D. STURTZ, a citizen of the United States of America, residing at Youngwood, in the county of Westmoreland and State of Pennsylvania, have invented certain new and useful Improvements in Packing-Glands for Throttle-Stems, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to certain new and useful improvements in packing-glands for throttle-stems, and more particularly to that class of packing-glands which are employed where throttle stems or rods pass to the exterior of the casing and necessitate being packed.

The object of my invention is to provide a gland of this class which may be easily packed without permitting the steam to escape, said gland being adaptable more particularly to the throttle-stems of locomotives, where it has been necessary to deaden the fire of the locomotive and withdraw the steam before the gland can be packed, and with my improved gland means is provided whereby a valve will prevent the steam from escaping while the outer end of the gland is removed to pack the same.

Another object of my invention is to provide a gland of this type wherein the valve-seat thereof will project into the boiler or casing to which it is applied, thus considerably simplifying the construction of the gland. Means is also provided whereby the valve carried by the throttle-stem may be either rotated or reciprocated, and when the stem is rotated it is adapted to grind its seat, and thus remove all rust and scales from the same, providing a close-fitting valve that reduces the leakage thereof to a minimum.

The invention further consists in the novel construction, combination, and arrangement of parts to be hereinafter more fully described, and specifically pointed out in the claims.

In describing the invention in detail reference is had to the accompanying drawings, forming a part of this specification, and wherein like numerals of reference indicate like parts throughout the several views, in which—

Figure 1 is a longitudinal sectional view of

my improved packing-gland. Fig. 2 is a cross-sectional view taken on the line 2 2 of Fig. 1. Fig. 3 is a longitudinal sectional view of a modification of my improved packing-gland. Fig. 4 is a section on line 4 4 of Fig. 3. Fig. 5 is a perspective view showing a modified form secured to the end of a boiler and means for operating the same. Fig. 6 is a vertical sectional view of the dome of a locomotive-boiler, showing the throttle-valve. Fig. 7 is a longitudinal sectional view of a modified form of packing-gland as used in the construction shown in Fig. 6. Fig. 8 is a side elevation of the gland illustrated in Fig. 1 of the drawings, showing the operating means. Figs. 9 and 10 are respectively cross-sectional and longitudinal sectional views of the sleeve mounted on the throttle-stem. Fig. 11 is an edge view of the operating means shown in Fig. 8.

This invention is an improvement on my Patent No. 727,225, bearing date of May 5, 1903, for improvements in packing-glands for throttle-stems.

In carrying out my invention I employ the ordinary throttle-stem 1, upon the portion of which that extends into the locomotive I construct a valve 2, which is adapted when closed to engage with a seat 3, formed in the inner end of the gland-body 4. This gland-body is suitably secured, as by means of threads 5', to a plate 6", which is attached to the front or crown plate 6' of the boiler of the locomotive in any desirable manner, as by means of the rivets or bolts 7. The portion 4 of the gland-body has its outer end enlarged, as indicated at 5, and provided with an annular flange 6, and in this enlarged portion 5 of the gland-body is provided an annular recess 7', into which the gland 8 is adapted to engage, the said gland having an annular flange 9 at its outer end, whereby it may be secured to the flange 6 of the gland-body, as by bolts 12, engaging in threaded apertures 10 11 in the flanges 6 9 and held by nuts 14. In the chamber or recess 7', between the beveled end 15 of the recess 7 and the beveled inner end 16 of the packing-gland 8, I provide a suitable packing 17, and as this packing wears or becomes disengaged from the throttle-stem 1 the gland 8

may be further adjusted into the recess 7 to compress the packing or remove and new packing placed therein. In the gland-body 4 I provide an annular recess 18, and tapped into this recess is the valve 19, whereby should any steam escape through the seat 3 of the body portion the same may be exhausted through the valve 19, this valve being left open, as shown in Fig. 1 of the drawings, when new packing is placed in the valve-body, thereby dispensing with all danger of the steam escaping and injuring the person repacking the gland.

In Fig. 3 of the drawings a modification is shown wherein a portion of the gland-body projects into the interior of the boiler to which it is applied, the plate 6^a being dispensed with and the gland-body connected direct to the end or crown plate 21 of the boiler, as by providing the gland-body with a flange 20, securing the same by rivets 7, and in this view I have illustrated the same as applied to a boiler the forward end of which slopes or is on an incline, as indicated. In the body portion 4' of this modified form of construction an annular groove 18', similar in construction to groove 18, is employed, and communicating with this annular groove is a port 22, in which may be tapped or secured a valve (not shown) of a similar construction or equivalent to that of the valve 19, (shown in Fig. 1 of the drawings,) whereby when the packing is being renewed all danger of the steam escaping through that end of the gland is entirely eliminated.

In Fig. 7 of the drawings I have illustrated another modified form of packing-gland, the same being shown as applied to the sloping end 23 of a boiler, and in this construction the gland-body 24 is in the form of a cylindrical shell or sleeve and is threaded into the screw-threaded flange 24' of the plate 25', this plate being suitably secured to the end 23, as by the rivets 25. The outer end of the gland-body 24 is provided with an inturned annular flange 26, and in the outer end of the gland-body is mounted a gland 26', through which the throttle-stem 1' passes, the inner end of the gland being provided with a flange or head 27, against which one end of the spring 27' is adapted to engage while the other end of said spring engages the inner face of the plate 25'. The gland 26' is limited in its movement upon the throttle-stem by a nut 28, which is threaded upon the stem, as indicated at 28', and by this nut the tension of the spring may be regulated. On the end of the throttle-stem passing into the boiler or casing and adjacent to the sloping end 23 a valve 2' is mounted, which is normally seated in the valve-seat 3', formed in the plate 25'. It will be seen by this construction that the spring 27' normally holds the valve 2' in engagement with its seat, and upon the spring becoming weak or any leakage being detected the valve may be adjusted or tightened on its seat by the nut 28.

In Fig. 5 of the drawings I have shown this modified form as applied to the end of the boiler and also show a means for operating the same. In this modified form in order to operate throttle-valve 30 and unseat the same from the valve-seats of the valve-body 31, which is mounted in the dome 29, it is necessary to rotate the throttle-stem 1' and to provide for the raising and lowering of the valve 30 I provide a crank 32, connected to the inner end of the throttle-stem 1', and to the other end of the crank is pivotally connected a vertical rod 33, which in turn is pivoted at its upper end to a link 33', having a slotted pivoted connection with the stem 34 of the throttle-valve 30 in dome 29. The link 33' is pivotally supported from any suitable point within the dome. To rotate the throttle-stem 1' from the exterior of the boiler, and thus impart a vertical movement to the stem 34 to operate the throttle-valve 30, I connect to the outer end of the throttle-stem 1 a crank 35 and pivotally connect this crank and a crank 37 by a link or rod 36. The crank 37 is secured on one end of a transverse rod or shaft 38, journaled in bearings 39, secured to the boiler. To the other end of the rod or shaft 38 is fixed an operating-lever 40 for actuating the rod 38, having a suitable handle 41, and this lever 40 carries a suitable locking-rod 42 for engagement with the quadrant 43, which is secured to one of the standards 39. It will thus be seen that by moving the operating-lever 40 the throttle-stem 1' will be rotated in either one or the other directions, according to the direction of the movement of the lever 40, and the throttle-valve will be closed or opened, as desired.

In the construction shown in Figs. 5 and 7 the throttle-stem is rotated in order to actuate the throttle-valve; but in the construction shown in Figs. 1 and 3 the throttle-stem is reciprocated or moved longitudinally in order to actuate the throttle-valve. In Fig. 8 I show means for reciprocating the throttle-stem, and I also show in this view and in Figs. 9, 10, and 11 a means for holding the stem against longitudinal movement while rotating the same to regrind the valve-seat.

The operating means to reciprocate the throttle-stem comprises the bell-crank 44, suitably pivoted in the dome, (not shown,) as is the general practice, and which is connected to the throttle-valve. To this crank I pivotally connect, as at 45, a swivel 46, with which the inner end of the stem 1 is rotatably connected. This connection is such as to permit the rotation of the throttle-stem independent of the swivel, or when the stem is reciprocated it moves bell-crank 44 to operate the throttle-valve. On the stem 1 adjacent to its outer end is mounted a collar 47, normally held and caused to move with the collar by means of the key 50, passed through the collar and the stem. Pivoted to the collar 47 is

an operating-lever 49, the end of which has a suitable handle and the other end of which is pivotally connected to a supporting post or rod 50', connected to the boiler-front 6'. This lever 49 has its end slotted, as indicated at 49^a, to allow for the movement of said lever when it is desired to set the valve 2 within its seat. This lever 49 carries a locking lever or rod 49' for engagement with the quadrant 48', attached at any desired point. For permitting the rotation of the stem in the collar 47 I provide said stem with a groove 51, into which engages the inner end of a screw 46. Thus when the key 50 is removed the stem 1 may be rotated by applying a wrench to the stem, whereby the seat 3 or 3' may be reground. The valve-stem for this purpose may be provided with a faced portion adjacent the collar 47, or it may be extended beyond the collar and provided with a suitable shaped end to receive the wrench. If the seats become scaled or rusted, they may therefore be readily reground.

It will be observed from Fig. 7 of the drawings that the packing has been entirely eliminated from this form of construction and a spring substituted therefor, this spring being adapted to normally hold the valve 2' in its seat 3', and while I have herein shown means for rotating and operating the throttle-stem 1' it will be noted that any desired means may be used to accomplish this.

It will be obvious that various slight changes may be made in the details of construction

without departing from the general spirit of my invention.

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

1. In combination with the throttle-stem and the valve carried thereby, a gland-body recessed at its one end to receive the gland and having a valve-seat on its other end and formed with a steam-exhaust intermediate said recess and valve-seat.

2. In combination with the throttle-stem and the valve carried thereby, a gland-body carrying an adjustable flange on its forward end for securement to the boiler, and a valve-seat on said end extending beyond said flange so as to project within the boiler.

3. In combination with the throttle-stem, and the valve carried thereby, a gland-body having its forward end reduced for a portion of its length and exteriorly threaded, the opposite end of said body being enlarged and apertured, a gland adjustably received in said apertured portion, a flanged plate having threads and received over said threaded end of the gland-body, and means for securing said plate to the boiler.

In testimony whereof I affix my signature in the presence of two witnesses.

JOHN D. STURTZ.

Witnesses:

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E. E. POTTER.