No. 750,534. PATENTED JAN. 26, 1904.

S. GEORGE.

ADJUSTABLE PACKING DEVICE FOR THE STUFFING BOXES OF ROTARY MOTORS.

APPLICATION FILED AUG. 28, 1901. RENEWED OCT. 23, 1903.

NO MODEL. 2 SHEETS—SHEET 1.

Fig. 1.

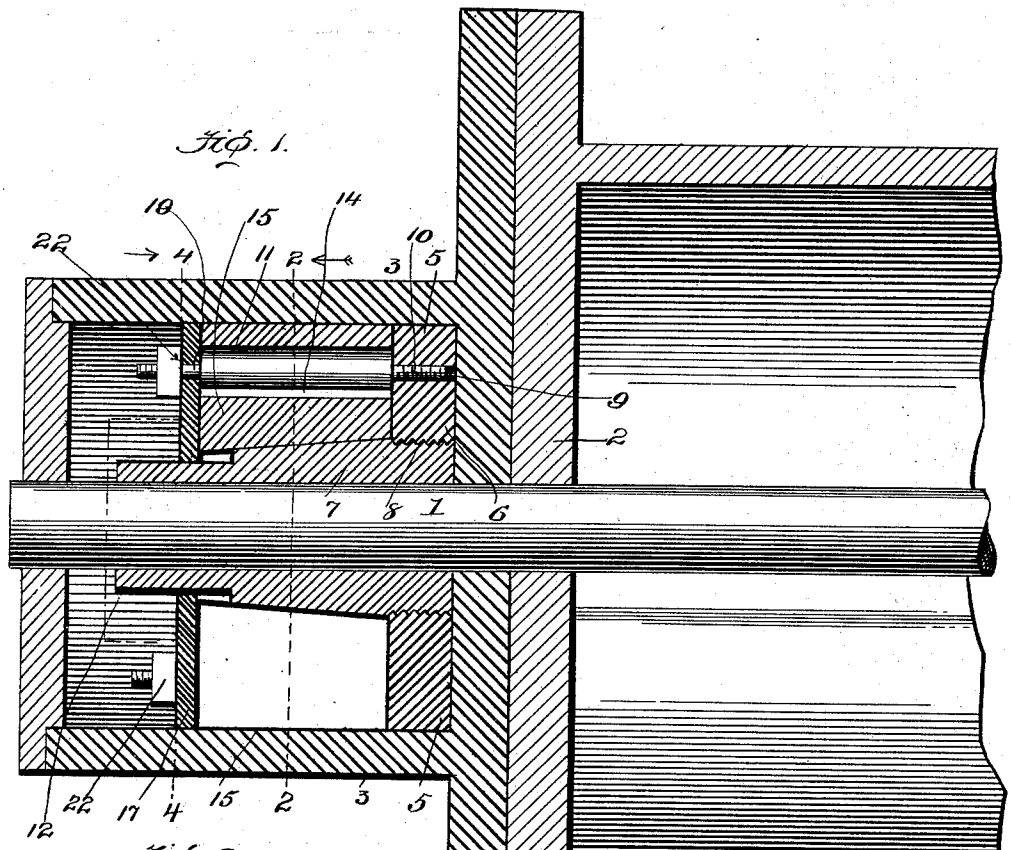


Fig. 2.

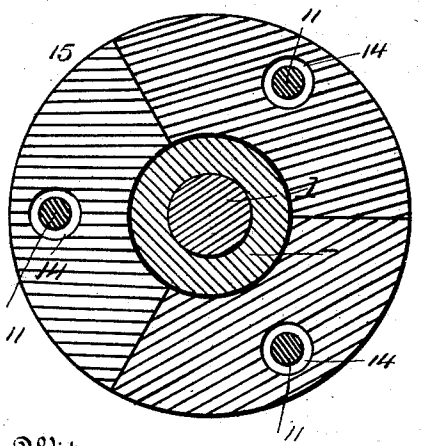
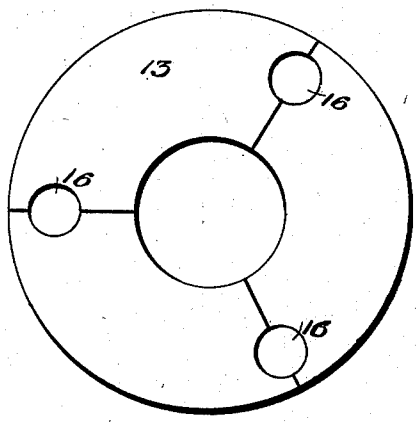


Fig. 3.



Witnesses

C. C. Hyus

S. B. Stetner

Inventor

Seymour George

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

No. 750,534. PATENTED JAN. 26, 1904.

S. GEORGE.

ADJUSTABLE PACKING DEVICE FOR THE STUFFING BOXES OF ROTARY MOTORS.

APPLICATION FILED AUG. 28, 1901. RENEWED OCT. 23, 1903.

NO MODEL. 2 SHEETS—SHEET 2.

Fig. 4.

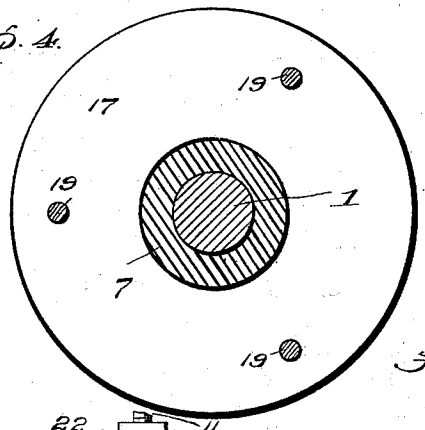


Fig. 6.

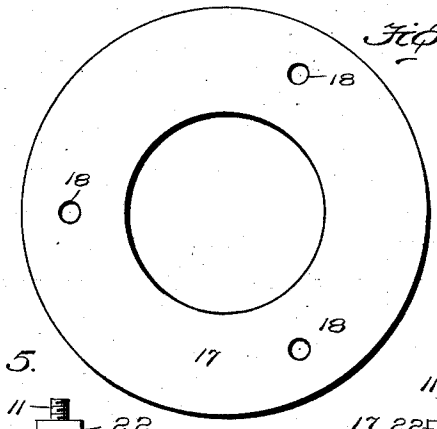


Fig. 5.

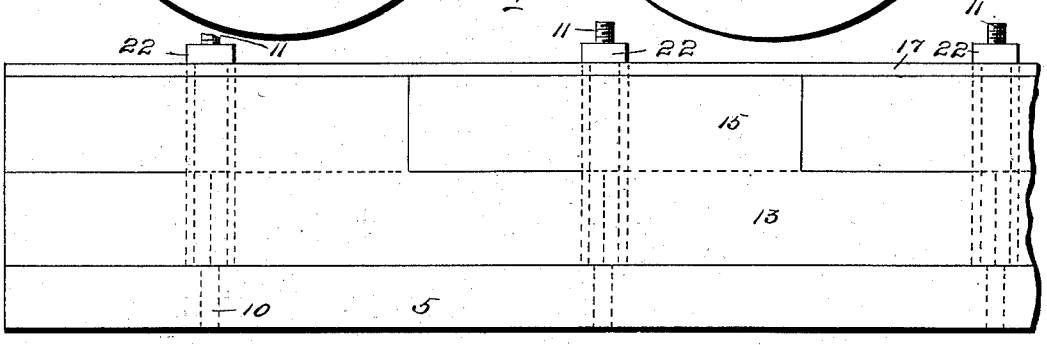


Fig. 7.

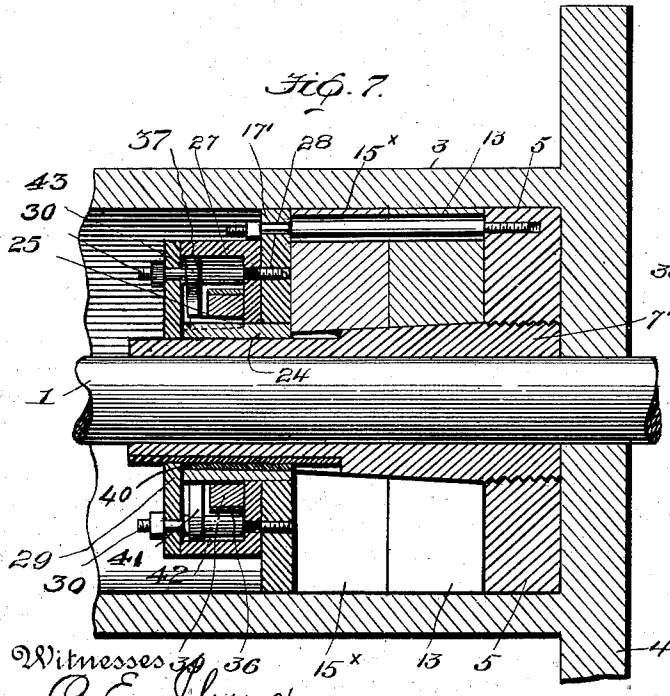
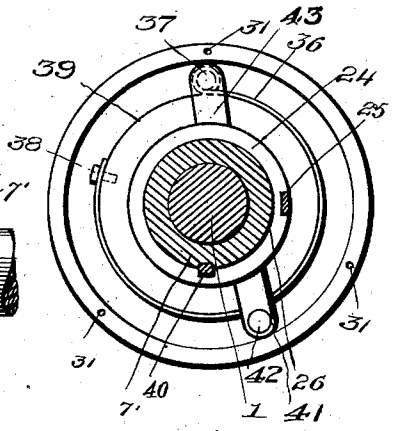


Fig. 8.



Witnesses
C. E. Sykes
S. B. Stetner

Inventor
Seymour George

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

No. 750,534. Patented January 26, 1904.

UNITED STATES PATENT OFFICE.

SEYMOUR GEORGE, OF DERRY STATION, PENNSYLVANIA, ASSIGNOR OF ONE-HALF TO CHARLES FRANCIS HARRIS, OF PITTSBURG, PENNSYLVANIA.

ADJUSTABLE PACKING DEVICE FOR THE STUFFING-BOXES OF ROTARY MOTORS.

SPECIFICATION forming part of Letters Patent No. 750,534, dated January 26, 1904.

Application filed August 28, 1901. Renewed October 23, 1903. Serial No. 178,281. (No model.)

To all whom it may concern:

Be it known that I, SEYMOUR GEORGE, a citizen of the United States, residing at Derry Station, in the county of Westmoreland and State of Pennsylvania, have invented certain new and useful Improvements in Adjustable Packing Devices for the Stuffing-Boxes of Rotary Motors; 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.

This invention relates to certain new and useful improvements in adjustable or self-adjusting packing devices or a device for making a stuffing-box steam-tight or water-tight with metallic packing. It is designed for use upon a rotary shaft and primarily for use in connection with the rotary shaft of a rotary steam or water motor.

My improvement is applied to the stuffing-box and when in position makes the box steam or water tight, thus shutting off the flow of steam or water between the stuffing-box and the shaft.

The present invention has for its objects, among others, to provide a simple and efficient means for the purposes above outlined by which not only is the stuffing-box rendered steam and water tight, but providing for ease of adjustment when necessary.

With my improvements applied to a rotary shaft, especially when the latter is equipped with some suitable means for keeping the same in perfect alinement, there is no appreciable wear; but to compensate for such wear as may occur I provide the adjusting means hereinafter described.

Affixed to the exterior of the casing or rotary cylinder-head is a casing forming the stuffing-box, and within this casing or chamber is disposed my improved device, which comprises rings in segments of three in each ring, more or less, the segmental joints of one of said rings having bolt-holes and the other ring having bolt-holes between its joints. These rings are placed between a base-plate or flange and an outer or face-plate ring and about a conical thimble sleeved on the rotary shaft of the motor or other device. Bolts pass loosely through these holes in the rings and into the base-plate or flange and through the outer ring or face-plate, where they receive nuts. The inner end of the thimble or sleeve is threaded into the flange or base-plate, as will hereinafter appear. The segmental-ring bolts are provided with shoulders which prevent said rings being clamped so tightly that they cannot slip on their faces. They are designed to be just tight enough to turn steam, but loose enough to move easily when the thimble is drawn outward. The face-plate ring is designed to enable the bolts to hold the rings in a firm solid body. The inner ends of the bolts, that are received in the flange or base-plate, are screw-threaded to fit the screw-threaded holes in the flange or base-plate, the reverse being true of the outer ends of the bolts where they engage the inner face of the ring or face-plate, the object being that the flange and the face-plate will form a solid clamp to hold the rings firmly together, so that when the nuts on the outer ends of the said ring-bolts are tightened the said segmental rings cannot move from their position except from their center lines outward. In one of the forms of embodiment of my invention I provide an automatic adjuster for the rings, which will be specifically explained as the description proceeds.

In one of the embodiments of my invention, as hereinafter clearly set forth, there is employed a counter-clutch or spring-lock, the construction being such that after the motor has stopped running all that is necessary in order to adjust the rings and take up any wear that may have taken place would be to remove the cap to the ratchet-box and loosen the counter-clutch or spring-lock, and the spring will turn the thimble and tighten the rings, as will be apparent as the explanation proceeds. Provision may be made, as by an arrangement outside of the cap to the ratchet-box, to loosen the counter-clutch from the outside without removing the cap; but this is not necessary and has not been shown. I provide

the cylindrical outer end of the thimble with a groove or key-seat and a loose collar sleeved on it with a corresponding groove or key-seat and a spring, the construction being such that the first clutch will hold the thimble from turning and clamp it to the shaft, and the second clutch will hold the spring from forcing the rings out when the shaft is in motion, and thus prevent friction between the periphery of the rings and the walls of the stuffing-box. It will thus be understood that the spring serves to draw the thimble out and the clutch serves to hold the thimble from moving back after the spring has tightened the rings and the counter-clutch serving the function above stated.

Other objects and advantages of the invention will hereinafter appear, and the novel features thereof will be specifically defined by the appended claims.

The invention is capable of embodiment in a variety of forms, the preferable ones of which are herein shown.

The invention in its preferable forms of embodiment is clearly illustrated in the accompanying drawings, which, with the numerals of reference marked thereon, form a part of this specification, and in which—

Figure 1 is a substantially central longitudinal section showing the application of one form of the invention. Fig. 2 is a cross-section on the line 2 2 of Fig. 1 looking in the direction of the arrow with the casing removed. Fig. 3 is a face view of one of the rings. Fig. 4 is a cross-section on the line 4 4 of Fig. 1 looking in the direction of the arrow, the device being removed from the casing. Fig. 5 is a view of the whole peripheral surface of the rings, face-plate ring, and base-plate or flange. Fig. 6 is a view of the face-plate ring removed. Fig. 7 is a substantially central longitudinal section showing a different form of adjuster for the rings. Fig. 8 is a view, partly in end elevation and partly in cross-section, of the construction shown in Fig. 7 removed from the casing.

Like numerals of reference indicate like parts throughout the several views.

Referring now to the details of the drawings, 1 designates a shaft, a rotary shaft, of a motor about which the present improvement is to be applied, and 2 is the end or head of the steam-cylinder or cylinder of the motor or device to which the improvement is to be applied.

3 is the casing or chamber of the stuffing-box, the flange 4 of which is designed to be attached or affixed to the cylinder-head in the usual manner. Within this casing 3 works the shaft 1, and within this casing my improvement is disposed, as seen clearly in Fig. 1. It comprises in the form seen in Fig. 1 a base-plate or flange 5, resting against the outer face of the casing-head or cylinder, as shown, and having a screw-threaded bore 6, into which the threaded end of the conical thimble 7 is threaded, said screw-threaded end 8 being, as seen in Fig. 1, substantially circular, as is the opening into which it is engaged. This base-plate or flange is provided with a plurality of openings 9 to receive the screw-threaded ends 10 of the bolts 11, which screw-threaded ends fit neatly in said screw-threaded openings in the base-plate for a purpose which will soon be made apparent. The thimble 7 is, as above stated, conical in form, as seen clearly in Fig. 1, and its outer end is circular, as seen in Fig. 1 at 12, projecting beyond the face-plate for a purpose which will soon appear.

15 is a ring in three segments having a tapered bore, as shown, to fit the tapered outer face of the thimble 7, as seen in Fig. 1, and this ring is made of a series of segments of three, as seen in Fig. 2, or more or less, and having openings or bolt-holes 14 between the segment-joints of greater diameter than the portions of the bolts 11, that pass loosely therethrough, as seen in Figs. 1 and 2. This ring, as well as the ring 13, also in segments of three, and may be more or less, and which has also enlarged openings or bolt-holes 16, which are disposed at the joints in the segments, is of exterior diameter such as to fit snugly the inner wall of the casing 3, as will be readily understood from Fig. 7. The ring 15 is of tapered bore, as seen in Fig. 1, to snugly fit the outer wall of the said conical thimble, and the enlarged portions of the bolts pass loosely through the enlarged openings therein, as will be clearly seen from Fig. 1. The rings 13 and $15^{\times}$ in Fig. 7 are the equivalent of the one ring in Fig. 1. These rings may be composed of any material suited to the purpose, preferably metallic, and they may each be composed of any number of segments, but preferably not less than three, in each ring, the segments overlapping at the joints, so as to break joints. In Fig. 5 I have shown a ring of three segments overlapping at the joints. In this view the whole periphery-surface of the two rings is shown—that is, the rings 13 and $15^{\times}$, just described and shown in Fig. 7, being here shown as one solid ring in segments with overlaps to break joints, the dotted lines being the solid parts, the bolt-holes being through the joints of one half and through the solid portions of the other half. It is evident, however, that this particular form of ring is not absolutely essential, although one ring in three segments with one overlap at its inner face would be practically the same as the two segmental rings which break joints, so that I propose to make the rings of different forms, but all embodying this general idea.

17 is a face-plate disposed against the outer face of the outer ring 15, as seen in Fig. 1, and having holes for the reception of the unthreaded reduced portions 19 of the bolts 11, as seen in Fig. 1, the holes 18 being of such diameter as to cause the said reduced portions

19 to fit snugly therein. The bolts 11 have shoulders 20 and 21 at their outer and inner ends, respectively, as seen best in Fig. 1, for a purpose which will soon be set forth.

22 represents nuts on the outer threaded ends of the bolts 11, as seen in Fig. 1, and these nuts bear against the face-plate, as will be clearly seen from said view.

A wrench or any other suitable implement or device may be applied to the outer end of the thimble to draw the same outward when it is desired to spread the rings outward from their center lines.

The operation of the form of device herein-before described will be readily understood from the foregoing description when taken in connection with the annexed drawings and, briefly stated, is as follows: The inner end of the thimble being threaded into the flange or base-plate is to provide for the movement of the thimble outward to spread the rings instead of moving the rings inward upon the thimble. The shoulders on the ring-bolts 11 prevent the rings being clamped so tightly that they cannot slip on their faces. They should be just tight enough to turn steam, but loose enough to move when the thimble is adjusted or drawn outward. The face-plate is designed to enable the bolts to hold the rings firmly in their position between the outer face of the base-plate or flange and the inner face of the face-plate ring, the inner and outer ends of the bolts fitting tightly in the base-plate and face-plate ring, the base-plate and face-plate rings forming a solid clamp to hold the rings firmly together when the outer ends of the ring-bolts are tightened, so that when the thimble is turned the rings cannot move from their position except outward from their center lines. The nuts 22 serve to hold the flange or base-plate, segmental rings, and face-plate ring solidly together, as will be readily understood, thus forming a ring-rack.

The rings may be made of any suitable material, preferably metal. Babbitt metal will be found very efficient. The joining of the flange or base-plate and the inner end of the thimble by screw-threaded engagement, so that by turning the thimble to unscrew it it spreads the rings and drives them outward from their center lines, is considered an important feature of this construction, as it insures the necessary outward movement of the rings from their center lines whenever the thimble is adjusted. This construction is simple and practical and will be adapted for use in connection with steam or water motors of various forms whether they employ roller-bearings or not.

It will be noted that the base-plate or flange and segmental rings fill all the space at the inner end of the stuffing-box. Hence no steam can get through it, as the flange will be tight against the casing or steam-cylinder head and its periphery tight against the stuffing-box walls. It will also be observed that when the thimble is screwed back it will not only spread the rings and drive them outward from their center lines, but will at the same time clamp the thimble to the shaft.

In Figs. 7 and 8 I have shown an automatic adjuster for the segmental rings, and upon reference to these views it will be seen that the base-plate 5, the segmental rings 13 and $15^{\times}$, and the face-plate ring 17 are still employed, the rings being of a construction similar to those above described with reference to Fig. 1 and the thimble 7 being also conical in form and screw-threaded at its inner end in the flange or base-plate, as shown. The face-plate ring 17′ bears against the outer face of the outer segmental ring, as shown; but its bore is large enough to receive a loose collar 24, the inner end of which bears against the outer face of the outer ring, as shown, and this collar is sleeved upon the outer end of the thimble, which is cylindrical at this point, as seen in Fig. 7, the said collar having a key or tongue 25, fitted in a groove or keyway 26 in the cylindrical portion of the thimble and in the bore of the loose collar, as shown in Figs. 7 and 8, to permit the thimble to move lengthwise inward or outward without moving said loose collar 24 inward or outward, as will be readily understood. 27 is a ratchet-box secured to the face-plate ring 17′ by suitable bolts 28 and provided with a removable cap 29, detachably secured thereto in any suitable way, as by screws 30 engaging holes 31 in the outer end of the surrounding wall of the ratchet-box, such holes being shown in Fig. 8. The outer end of the thimble is provided with a polygonal portion to receive a wrench, or it may be otherwise turned. 36 is a spring secured at one end to the fixed back end of the ratchet-box by suitable means, as the bolt 37, and its other end secured, as by screw 38, to the subcollar or loose ring 39, as seen clearly in Fig. 8. It is evident that the spring may be secured directly to the loose collar; but I prefer to employ the subcollar or ring 39, which may be integral with or fast to the loose collar. I have herein shown it as separate, but fixedly secured to the loose collar by a key 40, it being understood that as the spring wraps around this subcollar or ring and draws it so as to move the loose collar by the spring the ring must be fast to and move with the said loose collar. 41 is a clutch carried by the bolt 42, which may be held in position in the ratchet-box. It will thus be seen that by this construction by turning the collar to the right it will turn the screw on the inner end of the thimble back into the screw-threaded bore of said base-plate or flange, and by turning it to the left it will unscrew from the same and draw it outward. Thus the spring being fast at one end to the fixed back of the ratchet-box and fast to the periphery of the subcollar or ring at the other end it will draw the loose

collar to the left, and so unscrew the thimble from the flange or base-plate. The clutch is so arranged as to permit the spring to turn the collar and thimble to the left, but prevent them from turning back. Thus the thimble will be forced outward automatically and its conical or wedge surface will drive the rings apart and outward from their center line, and hence not only hold them tight against the stuffing-box walls, but move them up as fast as they wear, and if the rings are made of Babbitt metal or a portion of their periphery composed of such material the wear will be entirely on the periphery of the rings, and thus they can be renewed when necessary at small cost. This construction renders the stuffing-box complete and absolutely steam-tight at all times whether the shafting is maintained in perfect alinement or not.

I may sometimes employ a second clutch-lock 43 in inverse or reverse order to the clutch above described, the object being to lock the spring and prevent its drawing on the loose collar for the purpose of preventing the thimble from tightening the rings too tight against the walls of the stuffing-box when the shaft is moving or revolving, as it might make too much and needless friction, besides bind and strain the bolts, also wear one end of a segment, and so wear them irregular. In some instances the spring may be omitted and the thimble drawn outward and the rings made steam-tight without the pressure from a spring; but when the spring and the two clutches are present they will hold the thimble in one position when adjusted as a lock. If the spring is not employed, the loose collar will afford a handy means for moving the thimble. The spring may also prevent the thimble from returning back into the base-plate, while the second clutch will restrain the spring by its counter action from unduly pressing the rings outward. Hence the counteracting or clutch lock is essential if the spring be employed.

From the foregoing it will be seen that I have devised a simple and cheap novel construction for rendering steam-tight the rotary shaft of a motor or the like, and while the structural embodiment of the invention as herein disclosed is what I at this time consider the preferable one it is evident that the same is subject to changes, variations, and modifications without departing from the fundamental principle of the invention or sacrificing any of its advantages, and I therefore reserve the right to make such changes, variations, and modifications as come properly within the scope of the protection prayed.

What I claim as new is—

1. A device for the purposes described, embodying a flange or base-plate, a conical thimble sleeved on the shaft of a rotary motor and adjustable in said base-plate, packing-rings in segments surrounding said thimble and arranged to break joints, and means for moving the thimble endwise outward on a line with the shaft for the purpose of forcing the segments of said rings outward from their center lines, as set forth.

2. A device for the purpose described comprising a base-plate, a conical thimble screw-threaded into said base-plate, rings in segments around said thimble and arranged to break joints, bolts through the face of said rings with reduced inner and outer ends thus forming shoulders flush with the inner and outer faces of said rings, a face-plate with bolt-holes adapted to receive the outer reduced ends of said bolts, the inner reduced ends of said bolts being screw-threaded and screw-threaded bolt-holes in said base-plate, adapted to receive said screw-threaded inner ends of said bolts, the reduced outer ends of said bolts being screw-threaded, said shoulders on the inner ends of said bolts engaging the outer face of said base-plate, shoulders on the outer ends of said bolts engaging the inner face of said face-plate, nuts on the outer ends of said bolts engaging the outer face of said face-plate, whereby said face-plate and said base-plate are clamped solidly together against the shoulders of said bolts, thereby forming a ring-rack whereby said rings are held neatly together on said thimble, but movable outward from their center lines when actuated by said conical thimble, means for drawing said thimble outward endwise on a line with said shaft and thereby forcing the segments of the said rings outward from their center lines, all substantially as herein shown and described and for the purpose specified.

3. In a device for the purpose described, a base-plate and a conical thimble having its inner end threaded into said base-plate, rings in segmental parts, around said thimble, a face-plate, the inner face engaging the outer face of said outer ring, the inner face of said inner ring engaging the outer face of said base-plate, bolts having one end seated in said base-plate and the other ends passed through said face-plate, and nuts on the outer ends of said bolts whereby said face-plate and said base-plate are held tightly together, thus forming a rack in which said rings are held in position on said thimble and their segments movable outward only from their center lines when said thimble is advanced endwise and outward on a line with said shaft, and for the purpose specified.

4. In a device for the purpose specified, a base-plate, a conical thimble having its inner end adjustable in said base-plate, a ring in segments, (arranged to break joints) around said thimble between said base-plate and said face-plate, and means for holding said ring against movement otherwise than toward the walls of the chamber or cylinder of the stuffing-box within which it is located, as and for the purpose specified.

5. In a device for the purpose described, a base-plate, a conical thimble adjustable there-

in, a ring in segments, around said thimble its inner face engaging the outer face of said base-plate, a face-plate its inner face engaging the outer face of said ring, means for clamping said base-plate and said face-plate for the purpose of securing said ring in its adjustable position on said thimble, and also to permit a free movement of the segments of said ring outward only from their center lines, means adapted to turn said thimble so as to draw the same outward on a line with the shaft for the purpose of spreading and forcing the segments of said ring toward the walls of the chamber or cylinder of the stuffing-box within which they are located, as and for the purpose specified.

6. In a device for the purpose described, a base-plate, a conical thimble having its inner end threaded into the base-plate, segmental rings around the conical body of the thimble, and adapted to break joints, and a face-plate, bolts having reduced ends held in the base and face plates with shoulders engaging the adjacent faces of said plates, and nuts on the outer ends of said bolts, as and for the purpose specified.

7. In a device for the purpose described, a base-plate, a conical thimble adjustable in said base-plate, a ring in segments, arranged to break joints, sleeved around said thimble, a face-plate bearing against the outer face of said ring and the inner face of said ring bearing against the outer face of said base-plate, and means adapted to turn the thimble to draw the same outward on a line with the shaft and at the same time spread the segments on said ring, and thereby force them outward from their center lines, as and for the purpose set forth.

8. In a device for the purpose described, a base-plate and a conical thimble adjustable therein, a ring in segments, sleeved around the conical body of said thimble and having its inner face bearing closely against the adjacent face of said base-plate, a second ring also in segments, around the conical body of said thimble, and its inner face bearing against the outer face of said first-mentioned ring, and the two rings arranged to break joints, and means for adjusting the thimble by moving it outward endwise for the purpose of forcing the segments of said rings outward from their center lines, as and for the purpose set forth.

9. In a device for the purpose described, a base-plate, and a conical thimble its inner edge detachably secured to said base-plate, a ring in segments, around the conical body of said thimble, a face-plate and means for confining said ring between said face-plate and base-plate, means for drawing said thimble outward on a line with its shaft, to force the segments of said ring outward from their center lines, as and for the purpose specified.

10. In a device for the purpose described, a conical thimble, sleeved on the shaft of a steam rotary motor and located within the interior of the chamber or cylinder of the stuffing-box attached to the casing or steam-cylinder head of said motor, a base-plate and the inner end of said thimble being screw-threaded into said base-plate, rings around the conical body of said thimble in segments and arranged to break joints, and means for automatically adjusting said rings and thereby creating a steam-tight joint between the periphery of said rings and the circular walls of said stuffing-box, as set forth.

11. In a device for the purpose described, a conical thimble, a base-plate in which it is adjustably held, rings in segments around said thimble, a face-plate bearing against the outer face of the outer ring and the inner face of the inner ring bearing against the outer face of the said base-plate, and an automatic device around the outer end of said thimble for the purpose of adjusting said rings, as set forth.

12. In a device for the purpose described, a base-plate, a conical thimble in which base-plate said thimble is detachably and adjustably secured, a ring in segments with overlaps to break joints around the conical body portion of said thimble, a face-plate bearing against the outer face of said ring and its inner face bearing against the outer face of said base-plate, bolts passing through the face of said ring, one end seated in the base-plate and the other end projecting through the face-plate, the bolt-holes being of greater diameter than the bolts to provide a space between said bolts and the bolt-holes in said ring to permit the segments to move outward from their centers, shoulders on said bolts flush with the inner and outer faces of said ring, engaging the base-plate and face-plate, nuts on the outer ends of said bolts bearing against the outer face of said face-plate, the inner ends of said bolts seated in said base-plate, and means surrounding the outer end of the thimble for automatic adjustment of said ring, as and for the purpose specified.

13. In a device for the purpose described, a base-plate, a conical thimble adjustably held therein at the inner end, a ring in segments, sleeved on said thimble, and a face-plate, bearing against the outer face of said ring, and the inner face of said ring bearing against the outer face of said base-plate, means for clamping said base-plate and face-plate firmly together thus forming a ring-rack whereby said ring is held in its adjusted position on said thimble, bolts through the face of said ring to hold it from movement on said thimble except outward from its center line, means around said thimble beyond the face-plate for automatically adjusting said ring and said thimble as and for the purpose set forth.

14. A device for the purpose described, embodying a base-plate, a face-plate, a thimble having a conical portion with one end adjustable in the base-plate, a packing-ring in seg-

ments surrounding the conical portion of the thimble and adapted to be spread outward by the endwise movement of the thimble, and means for holding the base-plate, face-plate and ring together, as and for the purpose specified.

15. In a device for the purpose described, a base-plate, a conical thimble having one end adjustably held thereto, a face-plate, bolts having shoulders near opposite ends, segmental rings around the conical thimble, means for drawing the thimble endwise to force the rings outward, and means in addition to said first-mentioned means for holding the rings against movement otherwise than outward toward the walls of the casing or box within which they are disposed, as set forth.

16. In a device for the purpose described, a base-plate, a face-plate, a conical thimble, segmental rings between the base and face plates, and surrounding the thimble, means for drawing the thimble outward to spread the rings outward from their center lines, bolts for connecting the base and face plates, and means on the ends of the bolts for adjustably holding their inner ends to the base-plate and adjusting their outer ends, as and for the purpose specified.

17. In a device for the purpose described, a base-plate, a conical thimble having one end adjustably held therein, segmental rings around the thimble, a face-plate, means for holding the base-plate and face-plate together and the rings between them against movement except outward toward the walls of the chamber within which they are located, and means for drawing the thimble outward to spread the segments of the rings outward, as set forth.

18. In a device for the purpose described, a base-plate, a face-plate, a conical thimble having one end adjustable in the base-plate, segmental rings around the conical portion of the thimble, means connecting the base-plate and face-plate and passing loosely through holes in the rings, the said means having shoulders bearing against the outer face of the base-plate and against the inner face of the face-plate, and means on the outer ends of said means for adjusting the same, and means for drawing the thimble endwise as and for the purpose specified.

19. A conical thimble sleeved on the shaft of a rotary motor and located within the interior chamber or cylinder of the stuffing-box attached to the casing or steam-cylinder head of said motor, said thimble having a flange or base-plate detachably secured to its inner end, rings in segments sleeved on the conical thimble, bolt-holes through the face of said rings, bolts in said bolt-holes of smaller diameter than the bolt-holes, a face-plate, its inner face engaging the outer face of the outer ring, and the inner face of the inner ring engaging the outer face of said flange or base-plate and said bolts having reduced inner and outer ends and being screw-threaded on said ends, screw-threaded bolt-holes in the outer face of said flange or base-plate adapted to receive the reduced inner ends of said bolts, bolt-holes in said face-plate registering with the bolt-holes in said rings and adapted to receive the reduced outer ends of said bolts, shoulders on the inner and outer ends of said bolts flush with the inner and outer faces of said rings, the inner shoulders of said bolts engaging the outer face of said base-plate and the outer shoulders of said bolts engaging the inner face of said face-plate, and nuts on the outer ends of said bolts engaging the outer face of said face-plate, whereby said base-plate and said face-plate are clamped solidly together, thus forming a ring-rack by which means said rings are held in their adjusted position on said thimble and while being steam-tight between their faces, are loose enough to move outward from their center lines when actuated by said conical thimble as and for the purpose set forth.

20. In a device for the purpose described, a pair of rings in segments, a plurality, in each ring, and arranged to break joints, a conical thimble surrounded by said rings, said thimble sleeved on the shaft of a rotary motor and located within the interior chamber or cylinder of the stuffing-box attached to the casing or steam-cylinder head of said motor, said thimble having a flange or base-plate detachably secured to its inner end, said flange or base-plate having a screw-threaded bore, and said thimble being screw-threaded on a portion of its inner end and adapted to fit the screw-threaded bore of said flange or base-plate, bolt-holes through the face of said rings, said bolt-holes in one ring registering with the bolt-holes in the other ring, when said rings are in their adjusted position on said thimble, bolts in said holes of smaller diameter than said bolt-holes to afford space for the segments of said rings to move outward from their center lines and means for holding said rings in proper position on said conical thimble, whereby said rings while being steam-tight between their faces will move outward from their centers freely when actuated by said conical thimble, means for turning said thimble on said shaft for the purpose of moving the same on a line with its shaft outward and thus causing the segments of said rings to spread and move outward from their centers, until their periphery-surfaces engage the interior circular walls of said stuffing-box, and thereby packing the same for the purpose of making a steam-tight joint between said surfaces, as and for the purpose set forth.

21. A ring in segments, a second ring in segments, one face of the first ring engaging one face of the second ring, and the two rings sleeved on a thimble on a rotary shaft of a rotary motor and located within the interior

chamber or cylinder of the stuffing-box attached to the casing or a steam-cylinder head of a motor, the diameter of said rings being equal to the interior diameter of said stuffing-box, bolt-holes through the face of said rings, said holes in one ring registering with said holes in the other ring, bolts in said holes whereby the said rings break joints, bolt-holes in said rings of larger diameter than the bolts, to afford space for the segments of said rings to spread when forced outward from their center lines, means for spreading the segments of said rings by forcing them outward from their center lines until their periphery-surfaces engage the inner circular surface of the walls of said stuffing-box and thereby making a steam-tight joint between the periphery of said rings and said walls and a base-plate as set forth.

22. A conical thimble, a ring in segments, sleeved on said conical thimble and said thimble also sleeved on a thimble on a rotary shaft of a motor and located within the interior chamber or cylinder of a stuffing-box attached to the casing or steam-cylinder head of said motor, said ring arranged to break joints at its segment-joints to prevent the escape of steam through the same, the diameter of said ring being equal to the interior diameter of the chamber or cylinder of said stuffing-box, bolt-holes through the face of said ring and bolts of smaller diameter than said bolt-holes to afford space for the segments of said ring to spread when actuated by said conical thimble, said thimble having a flange or base-plate at its inner end and said thimble being screw-threaded on a portion of its inner end, and said flange or base-plate having a screw-threaded bore adapted to receive the screw-threaded inner end of said thimble, whereby said thimble is detachably secured to said flange or base-plate, means for turning said thimble and thereby unscrewing the same from its flange or base-plate and thus moving said thimble endwise outward on its shaft, whereby the conical surface of said thimble engages the conical bore of said ring, thereby spreading its segments and forcing them outward from their center lines, means for holding said ring in its adjusted position on said thimble from movement in all directions except outward from its center line, substantially as and for the purpose specified.

23. A conical thimble, a ring in segments, sleeved on said thimble, said thimble being sleeved on a rotary shaft of a motor and located within the interior chamber or cylinder of a stuffing-box attached to the casing or steam-cylinder head of a motor, the diameter of said ring being equal to that of the interior of the chamber or cylinder of said stuffing-box, means for spreading the segments of said ring by forcing them outward from their center lines, whereby their periphery-surfaces engage the circular walls of said stuffing-box, thereby creating a steam-tight joint between said surfaces of said ring and said walls and means for holding said segments of said ring in their adjusted position on said shaft, and means for preventing the movement of the segments of said ring in all directions except outward from their center lines, as and for the purpose set forth.

24. A conical thimble, a ring in segments, sleeved on said thimble, the latter being sleeved on a thimble on the shaft of a rotary motor and located within the interior chamber or cylinder of a stuffing-box attached to the casing or steam-cylinder head of said motor, said ring having overlaps at its segment-joints to prevent the escape of steam therethrough, and the diameter of the said ring being equal to the interior diameter of the chamber or cylinder of said stuffing-box, means for forcing said ring outward by forcing its segments outward from their center lines, and means for holding said ring in its adjusted position on said shaft against movement otherwise than outward from its center line, as and for the purpose specified.

25. A conical thimble sleeved on the shaft of a rotary motor and located within the interior chamber or cylinder of the stuffing-box attached to the casing or steam-cylinder head of said motor, said thimble having a flange or base-plate detachably secured to the inner end of said thimble, said thimble being screw-threaded on a portion of its inner end and said flange or base-plate having a screw-threaded bore adapted to receive the screw-threaded inner end of said thimble, packing-rings in segments sleeved on the conical body portion of said thimble, the inner face of said ring engaging the outer face of said base-plate, a face-plate, its inner face engaging the outer face of said outer ring and means for clamping said face-plate firmly to said base-plate, said thimble being cylindrical on a portion of its outer end and having a loose collar sleeved thereon, said cylindrical outer end of said thimble being provided with a groove or key-seat on its periphery-surface parallel with its shaft and said loose collar also having a corresponding groove or key-seat in its bore parallel with said groove or key-seat in the outer end of said thimble and adapted to receive a loose tongue or key, whereby said loose collar when turned to the right or left will also turn said thimble in the same direction, and thus move said thimble inward or outward on a line with said shaft, a ratchet-box or cylindrical chamber surrounding said cylindrical outer end of said thimble, said ratchet-box being attached or detachably secured to the outer face of said face-plate, said ratchet-box having a base at its inner end and a cap detachably secured to its outer end, bolts with reduced inner and outer ends and being screw-threaded on said ends, screw-threaded bolt-holes in said base to receive the screw-threaded inner ends of said bolts, bolt-holes in the

face of said cap adapted to receive the reduced outer ends of said bolts, and nuts on the outer ends of said bolts whereby said bolts are secured firmly to said base and said cap, a sub-collar surrounding said loose collar, attached or detachably secured thereto, a spring secured at one end to one of said bolts and wrapping around the periphery of said sub-collar and secured thereto at the opposite end of said spring, whereby said spring will turn said thimble and thereby move the same endwise outward on its shaft, by which means the conical body portion of said thimble will spread said rings and force their segments outward from their center lines, for the purpose of packing said stuffing-box automatically, a clutch pivoted on its outer end to one of said bolts, and its inner end slightly off its center line engaging the periphery-surface of said loose collar, thereby forming a clutch-lock for the purpose of preventing said thimble when turned by said spring from turning backward, a second clutch or lock pivoted on a second one of said bolts and its inner end slightly off its center line in an inverse or opposite order to the before-mentioned clutch engaging the periphery-surface of said loose collar, whereby said spring will be locked and thus prevented from turning said thimble and thereby removing the automatic pressure of said conical body of the said thimble against the segments of said rings, for the purpose of preventing friction between the periphery-surfaces of said rings and the circular walls of said stuffing-box when the shaft of said motor is revolving, as and for the purpose set forth.

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

SEYMOUR GEORGE.

Witnesses:
J. A. COIE,
E. J. LAYTON.