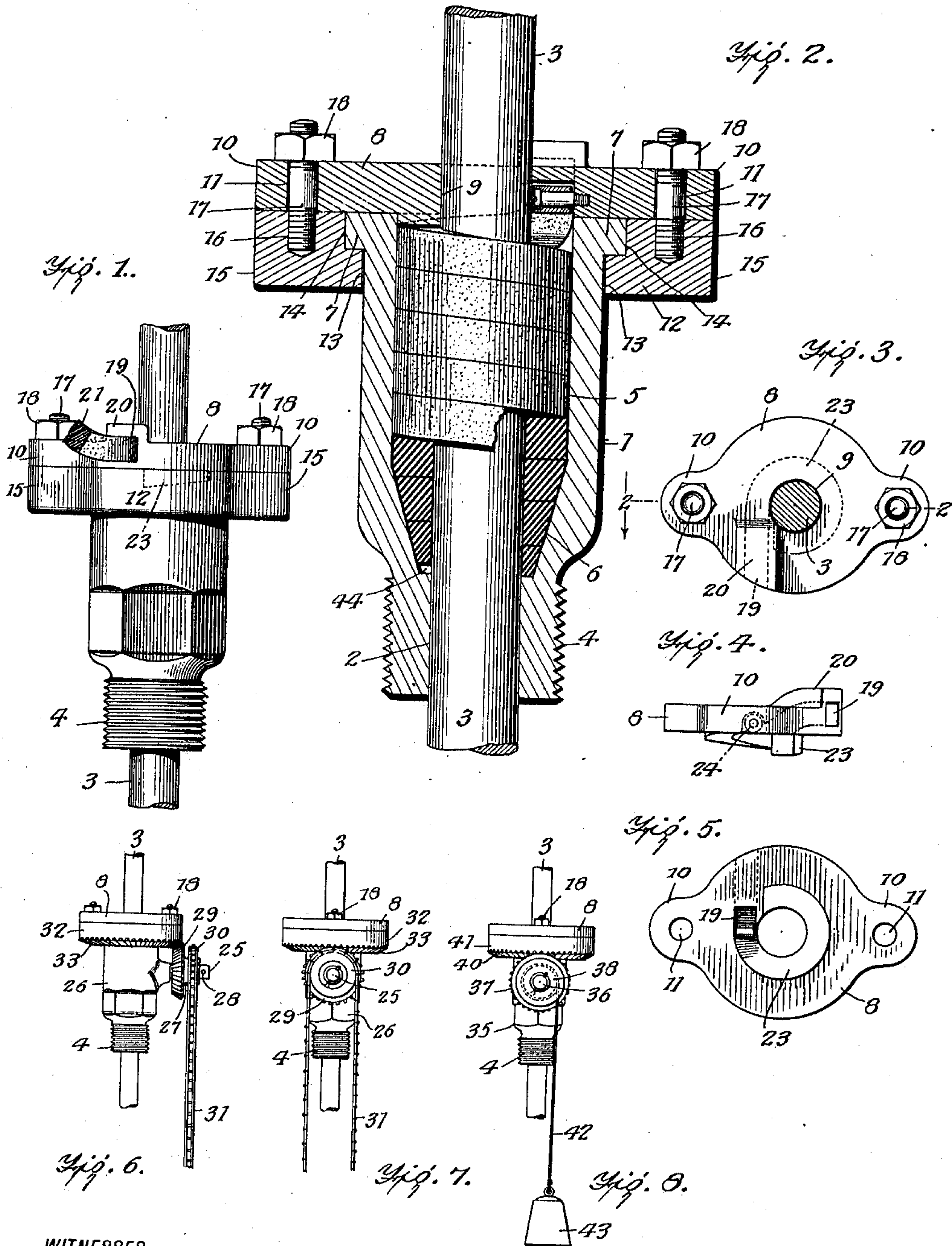


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STUFFING BOX.  
APPLICATION FILED AUG. 22, 1910.

992,109.

Patented May 9, 1911.



WITNESSES:

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# UNITED STATES PATENT OFFICE.

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## STUFFING-BOX.

992,109.

Specification of Letters Patent.

Patented May 9, 1911.

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*To all whom it may concern:*

Be it known that I, CLAUDE D. CAMPBELL, a citizen of the United States, and residing at Lower Salem, in the county of Washington and State of Ohio, have invented a new and useful Improvement in Stuffing-Boxes, of which the following is a specification.

My invention is an improvement in stuffing boxes, and consists in certain novel constructions, and combinations of parts, hereinafter described and claimed.

Referring to the drawings forming a part hereof, Figure 1 is a side view of one embodiment of the improvement. Fig. 2 is an enlarged central longitudinal section, on the line 2—2 of Fig. 3. Fig. 3 is a top plan view. Fig. 4 is a side view of the cap. Fig. 5 is a bottom plan view of the cap. Fig. 6 is a side view of another embodiment of the invention. Fig. 7 is a side view of the construction shown in Fig. 6 at right angles to the said figure, and Fig. 8 is a side view of another embodiment.

In the embodiment of the invention shown in Figs. 1 to 5, a casing or box 1 is provided having at one end an opening 2 fitting the rod 3 closely, and the casing is reduced at the said end, and externally threaded at 4, to engage an opening in the cylinder or other mechanism out of which the rod is to extend. Above the reduced portion 4, the bore of the casing is enlarged, to form a chamber 5, and the wall of the chamber is connected with the wall of the opening 2, by a tapered portion 6. The opposite end of the casing or box from the reduced portion is open, and is provided with an annular external lateral flange 7. A cap 8 is provided, the said cap having a central opening 9 to receive the rod, and to fit the rod closely, and on each side of the opening the cap is provided with a lateral ear 10, transversely perforated as shown at 11. A ring 12 is arranged inside of the cap 8 and is provided with an opening 13 for receiving the casing or box, and with an annular enlargement 14 at the outer end of the opening for receiving the flange, the flange fitting within the enlargement, so that the end of the box is flush with the face of the ring. The ring is also provided with lateral ears 15 registering with the ears of the cap,

and with threaded recesses 16 in the ears, registering with the openings 11 of the cap ears, and bolts 17 are threaded into the recesses. The outer ends of the bolts are engaged by nuts 18 to hold the parts together. The cap 8 is provided with a passage 19 leading from one side edge longitudinally to the central opening, and inclining downwardly toward its inner end, and opening on the lower face of the cap. The opening is of greater depth than the thickness of the cap, so that the upper face of the cap is ribbed as shown at 20, the passage being formed in the rib. The passage is adapted to receive and guide a strip 21 of packing, into the chamber 5, and the packing is arranged in spiral form in the chamber, the coils being interposed and filling the chamber. At the lower end of the chamber, the packing is compressed in the tapering portion, to make a fluid tight joint between the rod and the casing. The under face of the cap 8 is provided with a spiral rib 23, encircling the central opening, and gradually increasing in thickness, from the inner end of the passage 19, at which point the rib commences, to its free end. The rib exerts a wedging action on the packing, forcing it downwardly into the tapered portion of the chamber. A roller 24 is journaled in the cap above and transverse to the passage 19, and the lower portion of the roller extends into the passage, and engages the upper face of the packing strip. The ring and cap are journaled on the casing, and are freely rotatable with respect thereto, and it will be evident that when the cap and ring are rotated with respect to the casing, in the proper direction, the strip 20 will be forced into the chamber. The inner end of the strip is fixed by the wedging of the same in the tapered portion. When the ring is rotated on the casing, with the end of the strip fixed as described, the strip is forced into the chamber, and the upper face of the uppermost coil is pressed and smoothed by the roller, and is compressed onto the preceding coils by the rib.

In the above described embodiment which is the simplest construction, the strip of packing is introduced manually, and when the packing becomes loose, an additional



length of the strip is forced into the box. It is desirable that this operation should be automatic, and in Figs. 6 to 8 inclusive, is shown means for automatically feeding the packing.

In Figs. 6 and 7, a stub shaft 25 extends laterally from the casing 26, and a sleeve or hub 27 is journaled on the shaft and held in place by a pin 28, passing through the shaft. A bevel gear 29 is formed at one end of the hub, and a sprocket wheel 30 at the other. A sprocket chain 31 engages the wheel 30, and any suitable means may be connected with the chain for turning the hub, as for instance a weight. The ring 32 is provided with an annular series 33 of teeth forming a bevel gear ring meshing with the gear 29, and the cap 34 is connected to the ring by the bolts 35, as described for the construction shown in Figs. 1 to 4. The construction of the present embodiment except as above mentioned is precisely the same as that shown in Fig. 2.

In Fig. 7, the casing or box 35 has a laterally extending stub shaft 36. A hub is journaled on the shaft, and is provided at one end with a bevel gear wheel 37 and at the other with a grooved wheel or pulley 38. A pin 39 holds the hub in place, and the gear wheel 37 meshes with the gear ring 40 on the ring 41, secured to the cap 8.

From an inspection of Fig. 2, it will be seen that the tapered portion 6 of the chamber, does not extend entirely to the opening 2, but is separated therefrom by an annular shoulder 44. The shoulder prevents any wedging of the packing on the rod, so that there is no possibility of the rod becoming locked to the casing.

A cord or strap 42 winds at one end on the pulley, and a weight 43 is connected with the other end of the cord. It will be evident that as the packing becomes loose, the ring and cap will be moved angularly with respect to the casing, thus drawing more packing in, and the roller and rib compress the same into the tapered portion of the chamber.

I claim—

1. In combination with the rod, of a casing having one end reduced and externally threaded, and provided with an opening fitting the rod, the opposite end of the casing being enlarged to form a chamber encircling the rod and having a tapered portion adjacent to the opening, said casing having an annular external flange at the enlarged end, a ring encircling the casing and having a recess for receiving the flange, a cap seated on the ring and having an opening for the rod, said cap having a passage for receiving a strip of packing leading from one side edge tangential to the opening and opening on the inner face of the cap, the inner face of the cap being provided with a rib encircling the central opening, and commencing at the

inner end of the passage, and gradually increasing in height from the said opening, means for detachably connecting the cap and ring, a roller journaled in the cap, the surface thereof extending into the passage, and means for rotating the cap and ring on the casing.

2. In combination with the rod, and a casing through which the rod passes, said casing having at one end a chamber encircling the rod and tapering inwardly toward the opposite end, a ring journaled on the opposite end of the casing, a cap connected to the ring, said cap having an opening for the rod, and having a lateral passage tangential to the opening, and opening on the inner face of the cap, a strip of packing arranged spirally in the chamber and extending through the passage, means for rotating the ring on the casing, a roller journaled in the cap and engaging the strip, and a spiral rib on the inner face of the cap, said rib commencing at the inner end of the passage and gradually increasing in height.

3. In combination with the rod, of a stuffing box encircling the rod and comprising a casing having a chambered portion at one end, said chamber having a tapered portion at its inner end, a strip of packing arranged spirally in the casing, a cap journaled on the casing, said cap having an opening for the rod, and a passage for the strip leading from one side edge tangential to the opening and opening in the inner face of the cap, a roller in the cap engaging the strip, and a spiral rib on the inner face of the cap commencing at the inner end of the passage and gradually increasing in height.

4. In combination with the rod, of a stuffing box encircling a casing having a chambered portion at one end, said chamber having a tapered portion at its inner end, a strip of packing arranged spirally in the casing, a cap journaled on the casing, said cap having an opening for the rod, and a passage for the strip leading from one side edge tangential to the opening and opening on the inner face of the cap, a roller in the cap engaging the strip, and means on the cap for compressing the strip in the chamber.

5. In combination with the rod, of a stuffing box encircling the rod and comprising a casing having a chambered portion at one end, said chamber having a tapered portion at its inner end, a strip of packing arranged spirally in the casing, a cap journaled on the casing, said cap having an opening for the rod, and a passage for the strip leading from one side edge tangential to the opening and opening on the inner face of the cap, and a roller in the cap engaging the strip.

6. In combination with the rod, of a stuffing box encircling the rod and comprising a casing having a chambered portion at one end, said chamber having a tapered portion



at its inner end, a strip of packing arranged spirally in the casing, a cap journaled on the casing, said cap having an opening for the rod, and a passage for the strip leading from one side edge tangential to the opening and opening on the inner face of the cap, and means on the cap for compressing the strip in the chamber.

7. In combination with the rod, of a stuffing box encircling the rod and comprising a casing having a chambered portion at one end, said chamber having a tapered portion at its inner end, a strip of packing arranged spirally in the casing, a cap journaled on the casing, said cap having an opening for the rod, and a passage for the strip leading from one side edge tangential to the opening and opening on the inner face of the cap.

8. In combination with the rod, of a stuffing box encircling the rod and comprising a casing having a chambered portion at one end, said chamber having a tapered portion at its inner end, a strip of packing arranged spirally in the casing, a cap journaled on the casing, said cap having an opening for the rod, and a passage for the strip, and means on the cap for compressing the strip in the chamber.

9. In combination with the rod, of a stuffing box encircling the rod and comprising a casing having a chambered portion at one end, said chamber having a tapered portion at its inner end, a strip of packing arranged spirally in the casing, a cap journaled on the casing, said cap having an opening for the rod, and a passage for the strip.

10. A stuffing box comprising a casing having at one end an internal enlargement forming a chamber, the inner end of the chamber being tapered, a cap having a central opening registering with the chamber journaled on the casing, a strip of packing arranged spirally in the chamber, said cap having a passage for the strip tangential to the central opening, means in the cap for smoothing the strip, and means on the cap for compressing the strip in the chamber.

11. A stuffing box comprising a casing having at one end an internal enlargement forming a chamber, the inner end of the chamber being tapered, a cap having a central opening registering with the chamber journaled on the casing, a strip of packing arranged spirally in the chamber, said cap having a passage for the strip tangential to the central opening, and means on the cap for smoothing the strip.

12. A stuffing box comprising a casing having at one end an internal enlargement forming a chamber, the inner end of the chamber being tapered, a cap having a central opening registering with the chamber, and a strip of packing arranged spirally in the chamber, said cap having a passage for the strip tangential to the central opening.

13. A stuffing box having one end internally enlarged to form a chamber, said chamber tapering inwardly at its inner end, a cap journaled on the box at the outer end of the chamber, said cap having an opening in alinement with the axis of the box, a strip of packing arranged spirally in the chamber, the cap having a passage through which the strip extends, and means for rotating the said cap on the box.

14. In combination with the rod, of a stuffing box encircling the rod and comprising a casing having a chambered portion at one end, said chamber having a tapered portion at its inner end, a strip of packing arranged spirally in the casing, a cap journaled on the casing, said cap having an opening for the rod, and a passage for the strip, and means engaging the cap and acting normally to rotate the same on the casing.

15. In combination with the rod, of a stuffing box encircling the rod and comprising a casing having a chambered portion at one end, said chamber having a tapered portion at its inner end, and having an annular shoulder between the inner end of the tapered portion and the rod, a strip of packing arranged spirally in the casing, a cap journaled on the casing, said cap having an opening for the rod and a passage for the strip.

16. A stuffing box comprising a casing having at one end an internal enlargement forming a chamber, the inner end of the chamber being tapered, a cap having a central opening registering with the chamber journaled on the casing, a strip of packing arranged spirally in the chamber, said cap having a passage for the strip tangential to the central opening, means on the cap for smoothing the strip, and means acting normally to rotate the cap on the casing in the same direction as the spiral of the strip.

17. A stuffing box comprising a casing having at one end an internal enlargement forming a chamber, the inner end of the chamber being tapered, and the tapered portion being separated at its inner end from the opening of the casing by an annular shoulder, a cap having a central opening registering with the chamber, and a strip of packing arranged spirally in the chamber, said cap having a passage for the strip tangential to the central opening.

18. A stuffing box comprising a casing having at one end an internal enlargement forming a chamber, the inner end of the chamber being tapered, a cap having a central opening registering with the chamber, a strip of packing arranged spirally in the chamber, said cap having a passage for the strip tangential to the central opening, and means acting normally to rotate the cap on the casing.

19. A stuffing box having a bore one end



of which is enlarged to form a chamber, the enlargement being connected with the bore by a tapered portion, and the said casing having an annular shoulder between the tapered portion and the bore, a strip of packing arranged spirally in the casing, and means for feeding the strip into the chamber and for bringing it in spiral form.

20. A stuffing box having a bore one end of which is enlarged to form a chamber, the enlargement being connected with the bore by a tapered portion, and the said casing having an annular shoulder between the tapered portion and the bore.

21. A stuffing box having a bore enlarged at one end to form an annular chamber to receive a packing, said chamber being connected with the bore by a tapered portion and the bore being separated from the tapered portion by an annular shoulder, and

means for feeding a strip of packing to the chamber and in spiral form.

22. A stuffing box having a bore enlarged at one end to form an annular chamber to receive a packing, said chamber being connected with the bore by a tapered portion and the bore being separated from the tapered portion by an annular shoulder.

23. A stuffing box having a bore enlarged at one end to form an annular chamber to receive a packing, a packing strip arranged spirally within the chamber and having one end extending out of the chamber, and means engaging the said end for automatically feeding the strip into the chamber as the strip becomes worn.

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Witnesses:

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Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."

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