Sept. 30, 1941. G. BROUWER 2,257,330

CLOSING DEVICE FOR PISTON RINGS

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Fig. 1.

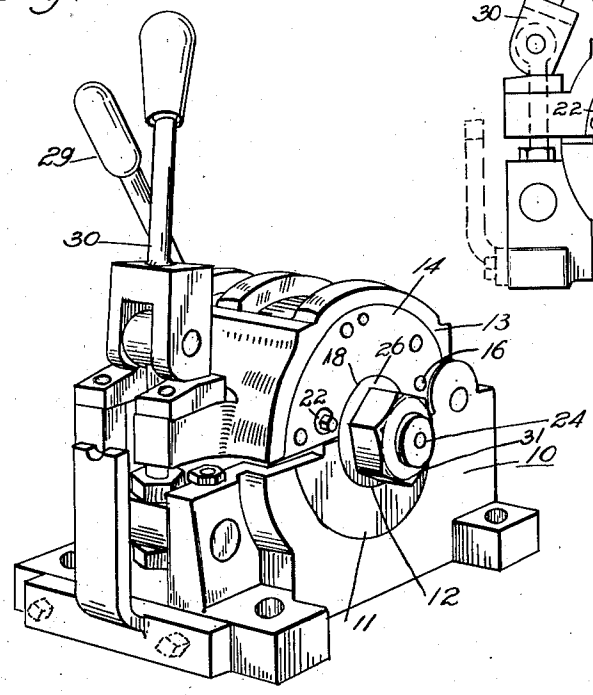


Fig. 2.

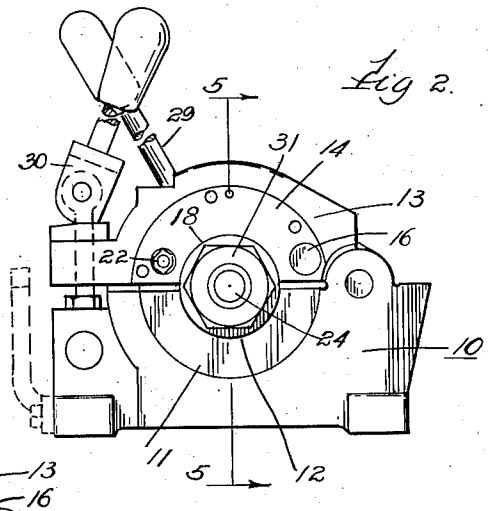


Fig. 4.

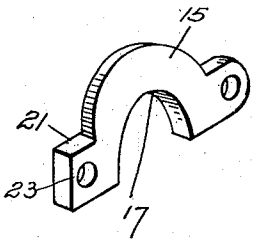
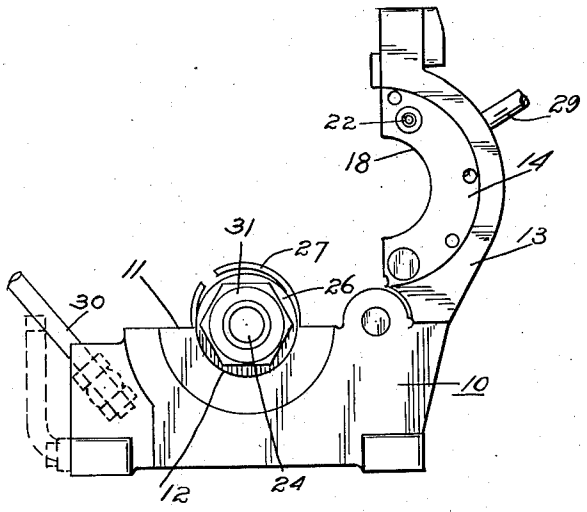


Fig. 3.



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Fig 5.

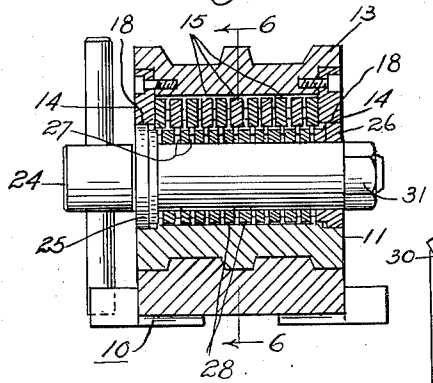


Fig 6.

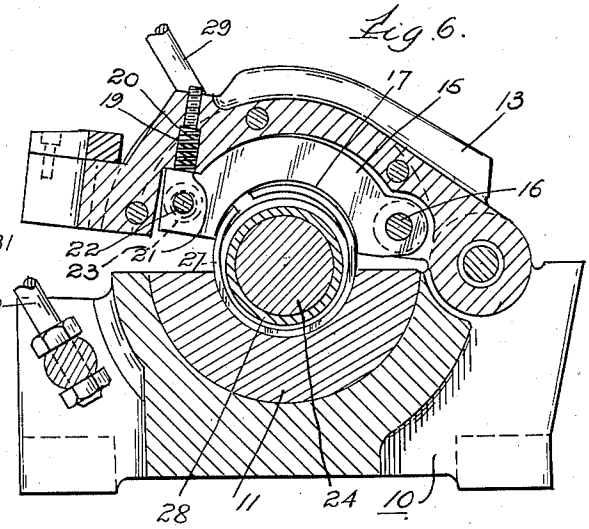


Fig 7.

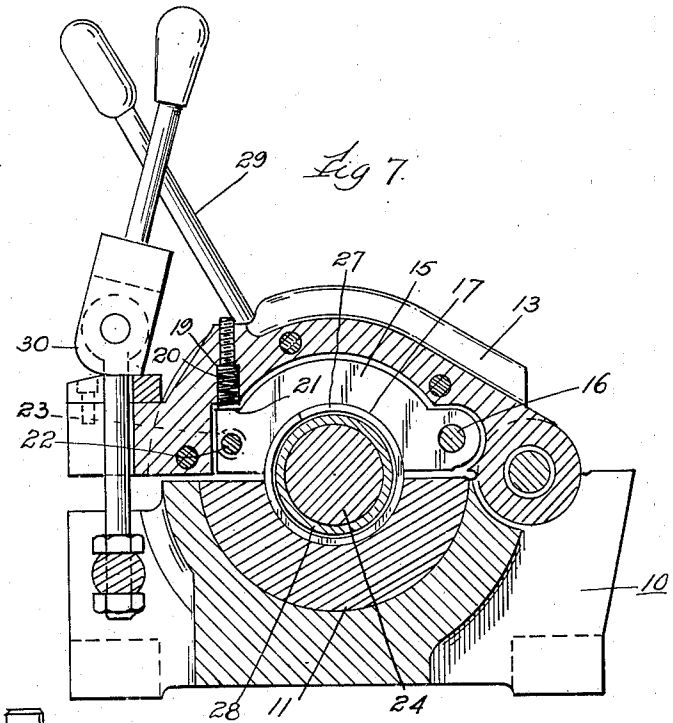
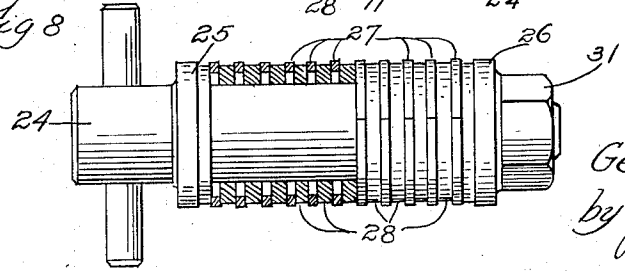


Fig 8



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UNITED STATES PATENT OFFICE

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CLOSING DEVICE FOR PISTON RINGS

George Brouwer, Muskegon, Mich., assignor, by mesne assignments, to Ramsey Manufacturing Company, a corporation of Michigan

Application December 30, 1939, Serial No. 311,755

2 Claims. (Cl. 29—89)

My invention relates to a device for closing the gap openings of a plurality of piston rings without distortion of the piston rings.

Among the objects of my invention is to eliminate many steps in the finishing of piston rings; to provide a segmental closing device for closing the gap openings of a plurality of piston rings; to supply a segmental closing device in which there is a fixed and non-yielding member cooperating with a plurality of yielding portions positioned to close the gaps of the piston rings, and such other objects, advantages and capabilities as will later more fully appear and which are inherently possessed by my invention.

While I have shown in the accompanying drawings a preferred form of my invention, yet I desire it understood that the same is susceptible of modification and change without departing from the spirit of my invention.

Referring to the drawings, Fig. 1 is a perspective view of my device in closed position; Fig. 2 is a side elevation of the same in closed position; Fig. 3 is a side elevation opened to receive the arbor; Fig. 4 is a detail perspective view of one of the segments; Fig. 5 is a sectional view on line 5—5 of Fig. 2; Fig. 6 is a sectional view on line 6—6 of Fig. 5 showing the device ready for closing; Fig. 7 is a view similar to the view in Fig. 6, with the device closed and clamped; Fig. 8 is a detail view, partly in section, of the arbor with assembled piston rings.

The embodiment selected to illustrate my invention comprises a base 10 having attached thereto a fixed non-yielding bushing 11 having a rounded hollowed out portion 12. Hinged to the rear of the base 10 is a cover 13. The cover 13 has a pair of spaced outer collars 14 between which are positioned a plurality of spaced segments 15. A pin 16 extends through the lower portions of the segments 15, said pin being attached on opposite ends to collars 14. The segments 15 are semi-circular in form at 17 like corresponding portions 18 of the collars 14 and are in alignment therewith.

In the upper inner portion of the cover 13 are a plurality of spaced openings 19 to receive a plurality of springs 20 to contact with their other ends shoulders 21 of segments 15 to exert pressure thereagainst. A pin 22 is attached on opposite ends to spaced collars 14 and passes through enlarged holes 23 in the upper portions of segments 15 to prevent their accidental disengagement from the cover, but adapted to permit the segments to float.

Placed in the rounded portion 12 of fixed unyielding bushing 11 is an arbor 24 with a fixed collar 25 on one end and a removable collar 26 on the other end and provided with a plurality of uncompleted piston rings 27 therebetween, spaced by a plurality of spacers 28 so as to face the oppositely disposed segments 15 in the cover 13.

By use of handle 29 attached to cover 13 said cover 13 is moved down until segments 15 are against collars 25 and 26 of the arbor 24, to form a perfect circle therewith. The clamping structure 30 is then operated. The independently operating spring contacting segments each contact one ring with enough pressure to cause the ends to abut, the spring absorbing any further pressure. The fixed non-yielding bushing cooperates to hold the ring to its true radius so that the ring retains its proper spring tension. With the ends of the rings held in contact, the collars 25 and 26 are tightened by a nut 31 and the rings are held in this closed position while finish turned. The rings are turned slightly under size so that when released and allowed to expand outwardly by their own tension against a ring gauge or cylinder, the gap opening will be within specified limits, each ring one to another being alike in tolerances allowed in the gap opening without the necessity of gauging each ring and grading the rings according to their gap variances.

While I have shown a removable bushing 11 attached to base 10, I may hollow out base 10 itself and eliminate a separate member for bushing 11.

I have also shown the cover as hinged to the base 10, but it is within the contemplation of my invention that cover 13 may be separate from base 10 and may be moved in and out of contact with base 10 or bushing 11 by any suitable means.

My fixed non-yielding member may be on the bottom or top, and my yielding members may be on either the lower or upper portion without departing from the spirit of my invention.

Having thus described my invention, I claim:

1. A closing device for piston rings comprising a fixed and non-yielding member having a rounded hollowed out portion, an opposite member having a plurality of segments, each of said segments having a rounded hollowed out portion, said segments being formed of non-yielding material, said opposite member also having a plurality of springs, with one of each said springs bearing against one of each of said segments so that each of said segments is independently yielding, said device adapted in open position to

receive an arbor having a plurality of spaced uncompleted unclosed piston rings, with each of said piston rings positioned therein between the fixed and non-yielding member and a single segment of the opposite member, and means for closing said device so that the fixed and non-yielding member cooperates with the segments to cause the ends of the piston rings to abut, each spring behind each segment independently absorbing any further pressure.

2. A closing device for piston rings comprising a base, a fixed and non-yielding bushing having a rounded hollowed out portion attached to said base, a cover hinged to said base, a plurality of segments of non-yielding material floatably attached to said cover, said segments having a rounded hollowed out portion, a plurality of springs housed within said cover with one of each of said springs bearing against one of each of said segments so that each of said segments is independently yielding, said device adapted in open position to receive an arbor having a plurality of spaced uncompleted unclosed piston rings with each of said piston rings positioned between the fixed and non-yielding bushing and a single segment of the cover, and means for closing said device so that the fixed and non-yielding bushing cooperates with the segments to cause the ends of the piston rings to abut, each spring behind each segment independently absorbing any further pressure.

GEORGE BROUWER.