J. H. HUBBLE.

DEVICE FOR USE IN THE APPLICATION OF PISTON RINGS TO PISTONS.

APPLICATION FILED FEB. 27, 1920.

1,375,291.

Patented Apr. 19, 1921.

2 SHEETS—SHEET 1.

Fig. 1.

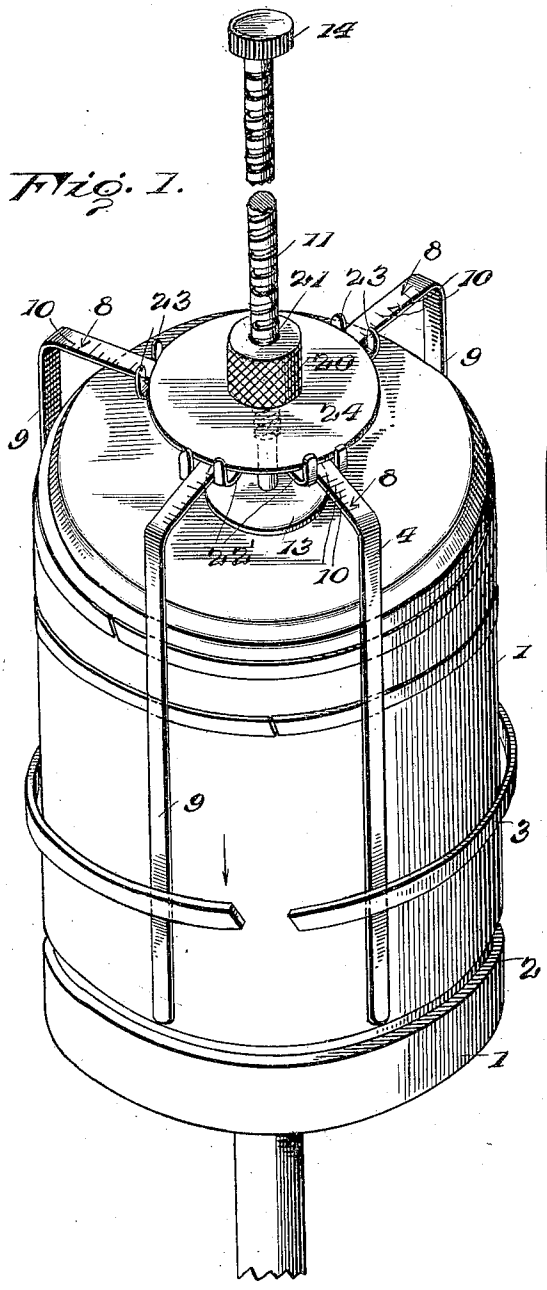
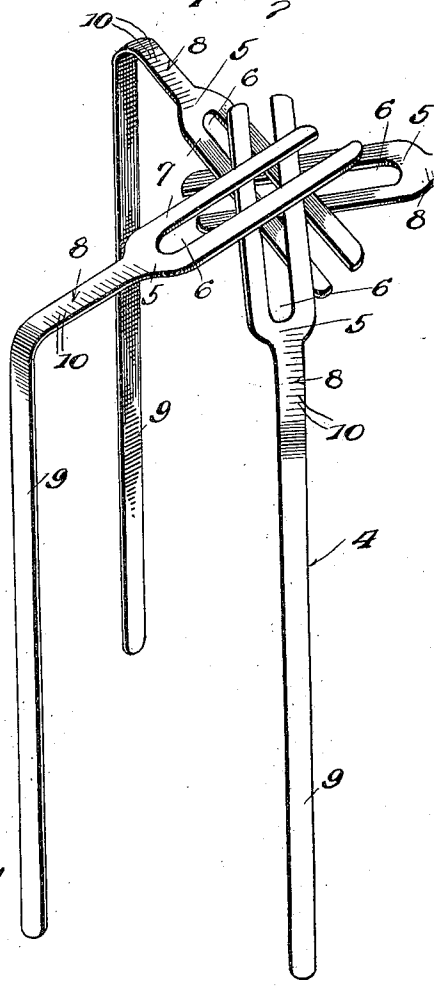


Fig. 2.



Inventor

J. H. Hubble.

By Lacey & Lacey, Attorneys

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2 SHEETS—SHEET 2.

Fig. 3.

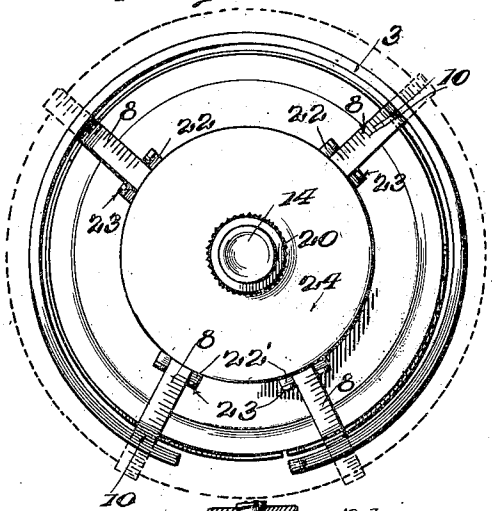
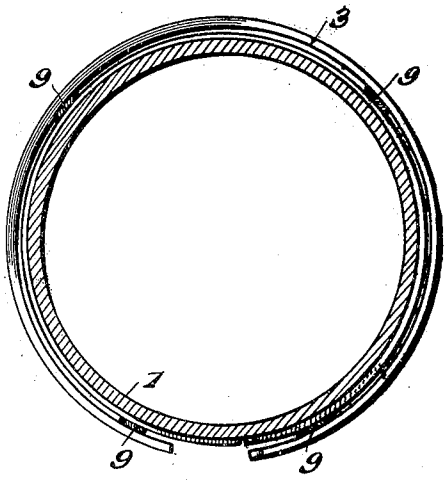


Fig. 4.



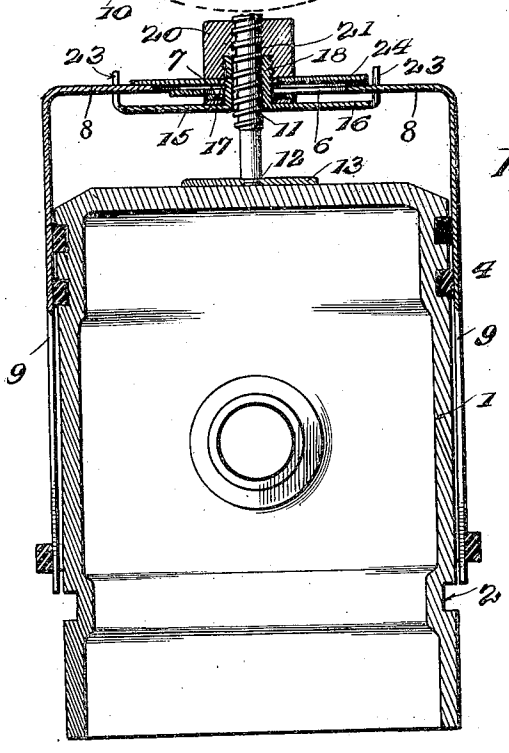
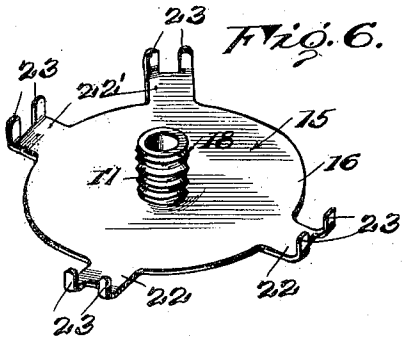


Fig. 5.

Fig. 6.



Inventor

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By Lacy & Lacy, Attorneys

UNITED STATES PATENT OFFICE.

JOE H. HUBBLE, OF TEKOA, WASHINGTON, ASSIGNOR TO GRANT McCANN AND ROBERT L. RAGON, OF TEKOA, WASHINGTON.

DEVICE FOR USE IN THE APPLICATION OF PISTON-RINGS TO PISTONS.

1,375,291. Specification of Letters Patent. **Patented Apr. 19, 1921.**

Application filed February 27, 1920. Serial No. 361,684.

To all whom it may concern:

Be it known that I, JOE H. HUBBLE, a citizen of the United States, residing at Tekoa, in the county of Whitman and State of Washington, have invented certain new and useful Improvements in Devices for Use in the Application of Piston-Rings to Pistons, of which the following is a specification.

This invention relates to devices for applying piston rings to pistons and has as its general object to provide a device which may be readily and conveniently manipulated for the purpose of slipping the rings onto the piston without likelihood of distortion, spreading or breaking of the rings.

Another object of the invention is to so construct the device that when the occasion arises, it may be employed in guiding a ring over or past another ring or other rings which are already in place upon the piston, and this without any undue distortion of the ring being applied.

Another object of the invention is to so construct the device that the terminal portions of a ring being applied by the use of the device will be given the proper support and thus be prevented from springing inwardly to such an extent as to interfere with proper application of the ring.

A further object of the invention is to provide for adjustment of the device so as to adapt the same for application to pistons of various diameters.

In the accompanying drawings:

Figure 1 is a perspective view of the device embodying the present invention, the view illustrating the device applied to a piston and illustrating the manner in which a piston ring may be slipped into place through the use of the device;

Fig. 2 is a perspective view illustrating the guiding members of the device in assembled relation but disassembled from the remainder of the device;

Fig. 3 is a top plan view of the device in use, the full lines illustrating the device as applied to a small piston and the dotted lines illustrating the adjustment of the device to adapt it for application to a piston of larger diameter;

Fig. 4 is a horizontal sectional view through the device applied;

Fig. 5 is a vertical diametric sectional view through the device applied;

Fig. 6 is a perspective view of the spider member of the device.

In the drawings the numeral 1 indicates in general a piston of any of the ordinary types and which piston is provided with the usual circumferential grooves 2 for the reception of the piston rings which are indicated by the numeral 3.

The device embodying the invention is applicable to the piston in a manner which will presently be explained and includes in its structure guiding members having fingers which extend beside the circumferential surface of the piston when the device is applied and over which the piston rings may be slipped and by which they are guided.

These guiding members are indicated in general by the numeral 4 and in the present instance four of the members are employed although it will be understood that the number may be increased or decreased if found desirable. Inasmuch as the members are of counterpart construction, a description of one will suffice for all. Each member comprises a head portion 5 bifurcated as at 6 to provide spaced portions 7, and this head portion 5 is provided at its outer end with an arm 8 terminating in a relatively long and thin finger 9 which projects downwardly at right angles from the arm and which is of a length nearly equal to the length of the longest piston to which the device will be applicable. If desired a suitable scale 10 may be marked off upon the upper side of each arm 8. The bifurcations 6 are formed longitudinally in the head portions 5 of the guiding members and in assembling these members they are arranged with their bifurcated head portions in superposed relation substantially as shown in Fig. 2 of the drawings.

The numeral 11 indicates a feed screw which is swiveled at its lower end as at 12 to a bearing plate 13, and which at its upper end is provided with a thumb nut 14 whereby it may be rotated for a purpose to be presently explained. The device also includes a spider which is clearly illustrated in Fig. 6 and which is indicated by the numeral 15, and this spider comprises a flat circular plate 16 formed or provided centrally with an upstanding sleeve 17 which loosely surrounds the feed screw 11 and

which is exteriorly threaded as at 18 for the application thereto of a clamping thumb nut 20 interiorly threaded as at 21 to fit the feed screw. The spider plate 16 is provided at its periphery with radial lugs 22 each provided with terminal upstanding spaced fingers 23. The arms 8 of the guiding members 4 are disposed slidably between the fingers 23 of respective ones of the lugs 22 with the spaced portions 7 formed by the bifurcations 6, straddling the lower end portion of the sleeve 17. In this manner the guiding members are assembled with the spider for radial adjustment so as to provide for corresponding adjustment of their guiding fingers 9 to adapt the device for application to pistons of various diameters. When the guiding members have been assembled with the spider in the manner above stated, a plate 24 is fitted onto the sleeve 17, the nut 20 is applied, and after the guiding members have been suitably adjusted, this nut may be tightened so as to bind the head portions of the spiders between the plates 16 and 24 in the manner most clearly shown in Fig. 5 of the drawings. Of course, in manipulating the clamping nut 20 to clamp the guiding members in their positions of adjustment, the spider 15 will be held stationary, and this is also done when the nut is to be loosened for the purpose of obtaining a new adjustment of the guiding members.

By reference to Figs. 1, 3, 4 and 6 of the drawings it will be observed that the lugs 22 are not equidistantly spaced about the periphery of the spider plate 16 but that two of these lugs, indicated specifically by the numeral 22′ to distinguish them from the other lugs are located relatively close together or in any event closer than they are to any of the said other lugs, so that the guiding members which are assembled with these lugs 22′ will have their guiding fingers likewise located closer to each other than to the fingers of the other guiding members. The purpose of this arrangement will presently be made clear.

In the use of the device, the guiding members are radially adjusted, after the clamping nut 20 has been loosened, until it is determined, as for example by reference to the registration of the marks of the scales 10 with the periphery of the spider plate 16, that the proper adjustment has been obtained to adapt the fingers of the guiding members to fit closely to the circumferential surface of the piston to which the ring or rings are to be applied. The clamping nut 20 is then tightened and the device is applied to the piston by fitting it onto the piston so that the guiding fingers 9 will extend beside the said circumferential surface of the piston in the manner clearly shown in Figs. 1 and 5 of the drawings. In thus assembling the device with the piston, the bearing plate 13 will be brought to bear against the head of the piston as shown in the said figures, and after the device has thus been applied, the ring to be fitted into place is slipped over the device at the juncture of the fingers 9 with the arms 8 and is slipped downwardly over the fingers until it snaps into its respective groove 2, the feed screw 11 having been previously adjusted so as to bring the lower ends of the fingers 9 substantially flush with the upper side of the said groove. It will be evident that the feed screw 11 may be adjusted so as to bring the terminals of the guiding fingers into proper position with relation to any one of the grooves formed in the piston 1 and it will further be evident, particularly by reference to Figs. 1 and 5, that the fingers may extend over rings which are already in place so as to guide another ring which is to be applied over the first mentioned rings. By reference to Figs. 1 and 3 it will be noted that the fingers of the guiding members which are associated with the lugs 22′, and which are located relatively close to each other, are so positioned that when the piston ring to be applied is slipped over all of the fingers in proper position, the terminal portions of the ring will be supported by these two fingers and will therefore be prevented from springing inwardly to an extent which would cause them to come in contact with the rings already applied or with the walls of the grooves which at the time are not occupied with rings.

Having thus described the invention, what is claimed as new is:

1. A device for use in the application of piston rings to pistons comprising an assemblage of guiding members having parallel fingers to extend beside the circumferential surface of a piston to which the device is to be applied.

2. A device for use in the application of piston rings to pistons comprising an assemblage of guiding members having parallel fingers to extend beside the circumferential surface of a piston to which the device is to be applied, and means whereby the members may be adjusted radially, without disturbing the parallelism of the fingers.

3. A device for use in the application of piston rings to pistons comprising an assemblage of guiding members having parallel fingers to extend beside the circumferential surface of a piston to which the device is to be applied, and means whereby the members may be adjusted so as to adjust the fingers longitudinally of the piston, while maintaining parallelism.

4. A device for use in the application of piston rings to pistons comprising a head, guiding members assembled with the head

for radial adjustment with relation thereto, the guiding members having fingers to extend beside the circumferential surface of a piston to which the device is to be applied.

5. A device for use in the application of piston rings to pistons comprising a head, a plurality of guiding members having head portions assembled in intersecting relation and radially adjustable with relation to the head, and a guiding finger extending downwardly from each of the guiding members.

6. A device for use in the application of piston rings to pistons comprising a head, means adjustably assembled with the head and designed to coact with the head of a piston and operable to feed the head toward and away from the piston, and guiding members carried by the head and having guiding fingers to extend beside the circumferential surface of a piston to which the device is to be applied.

7. A device for use in the application of piston rings to pistons comprising a head, means adjustably assembled with the head and designed to coact with the head of a piston and operable to feed the head toward and away from the piston, and guiding members carried by the head and having guiding fingers to extend beside the circumferential surface of the piston to which the device is to be applied, the said guiding members being radially adjustable with relation to the head.

8. A device for use in the application of piston rings to pistons comprising a feed screw arranged at one end to bear against the head of a piston, a head including a member having threaded engagement with the said screw, and guiding members assembled with the head and having fingers to extend beside the circumferential surface of a piston to which the device is to be applied.

9. A device for use in the application of piston rings to pistons comprising a feed screw arranged at one end to bear against the head of a piston, a head including a member having threaded engagement with the said screw, and guiding members assembled with the head and having fingers to extend beside the circumferential surface of a piston to which the device is to be applied, the said guiding members being radially adjustable with relation to the head.

10. A device for use in the application of piston rings to pistons comprising a feed screw, a spider having a sleeve slidably fitting the screw, the said screw having means at one end for bearing engagement against the head of a piston, the said spider having guiding means arranged at intervals in its circumference, guiding members having slotted heads slidably engaging the sleeve and arms extending from the heads and coacting with the guiding means to be guided thereby in the radial adjustment of the guiding members, the said arms of the guiding members having guiding fingers to extend beside the circumferential surface of a piston to which the device is to be applied, and a clamping nut having threaded engagement with the feed screw and likewise having threaded engagement with the sleeve and constituting means for effecting longitudinal adjustment of the guiding fingers with relation to the piston and for clamping the guiding members in positions of radial adjustment.

11. A device for use in the application of piston rings to pistons comprising a feed screw, a spider having a sleeve slidably fitting the screw, the said screw having means at one end for bearing engagement against the head of a piston, the said spider having guiding means arranged at intervals in its circumference, guiding members having slotted heads slidably engaging the sleeve and arms extendiing from the heads and coacting with the guiding means to be guided thereby in the radial adjustment of the guiding members, the said arms of the guiding members having guiding fingers to extend beside the circumferential surface of a piston to which the device is to be applied, and a clamping nut having threaded engagement with the feed screw and likewise having threaded engagement with the sleeve and constituting means for effecting longitudinal adjustment of the guiding fingers with relation to the piston and for clamping the guiding members in positions of radial adjustment, certain of the guiding members being positioned relatively close to one another whereby to support the terminal portions of a piston ring being guided over the fingers of the said members.

In testimony whereof I affix my signature.

JOE H. HUBBLE. [L. S.]