W. W. THIEDE.

PISTON.

APPLICATION FILED NOV. 29, 1921.

1,436,922.

Patented Nov. 28, 1922.

2 SHEETS—SHEET 1.

Fig. 2.

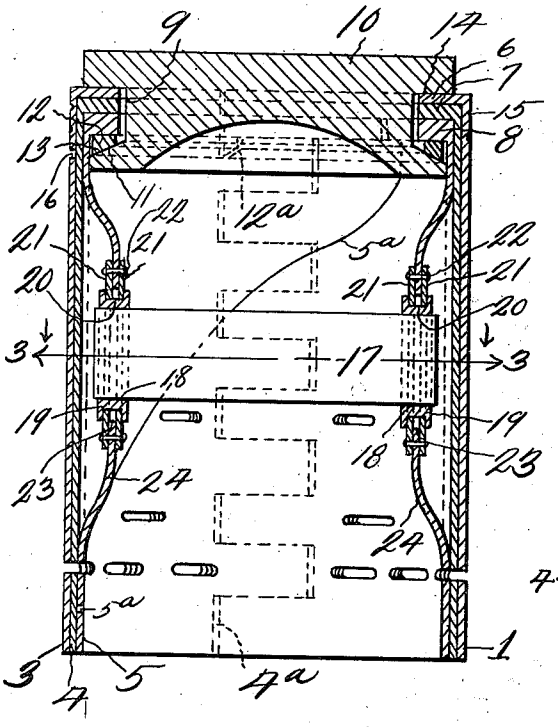
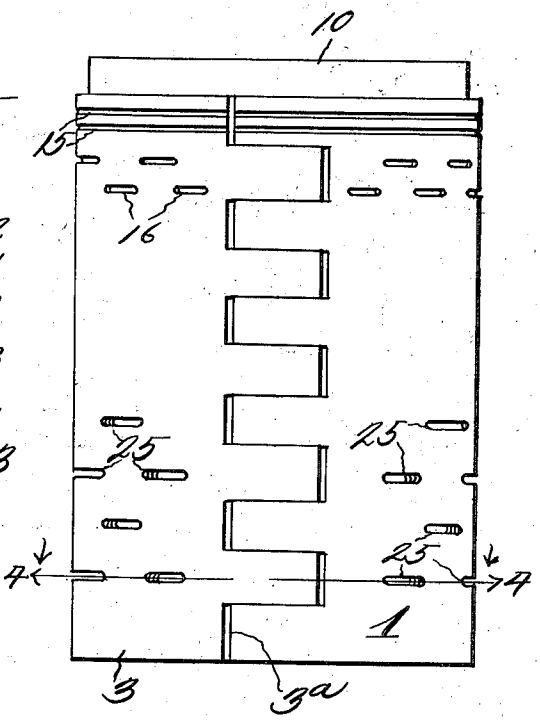


Fig. 1.



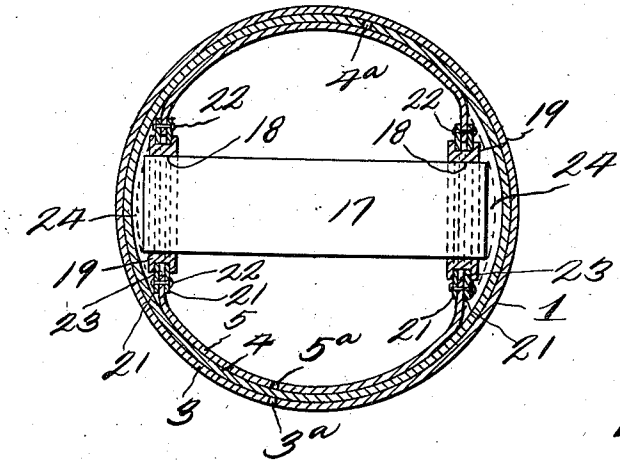


Fig. 3.

Inventor

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By Philip A. B. Sewell

His Attorney

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2 SHEETS—SHEET 2.

Fig. 4.

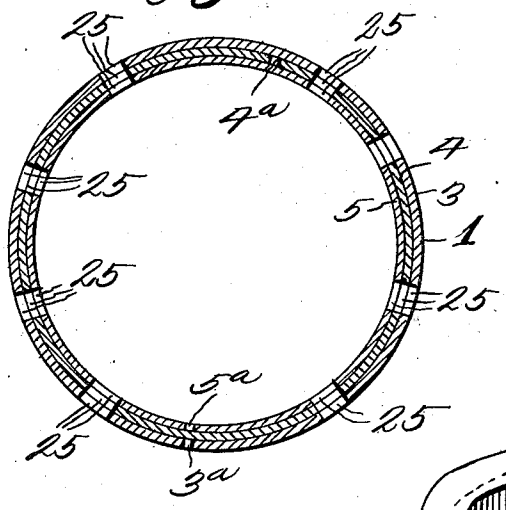
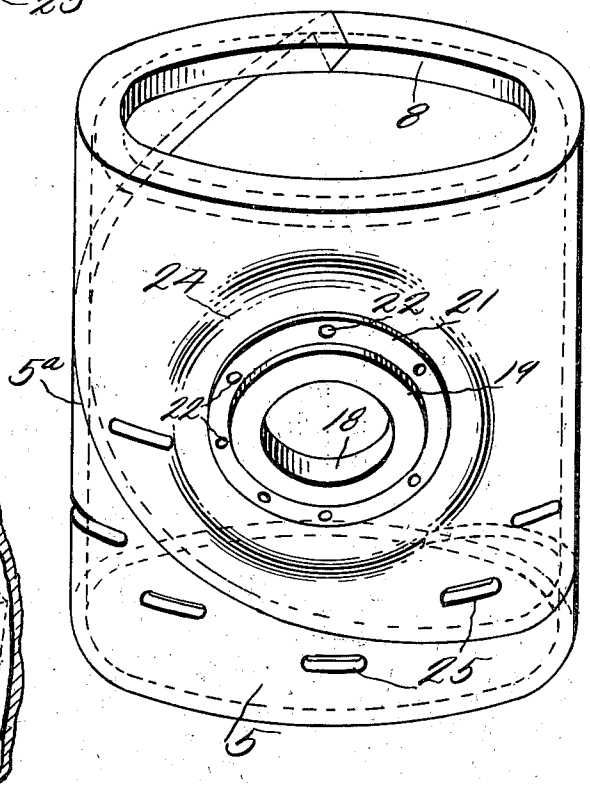


Fig. 5.



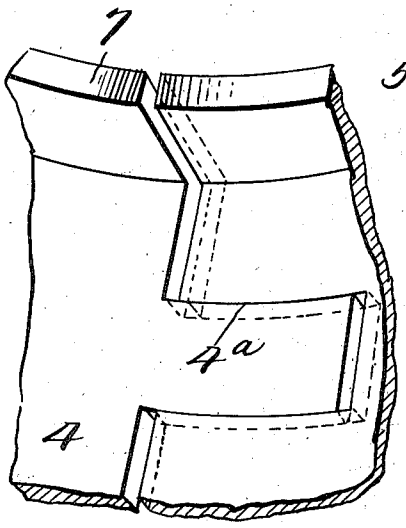


Fig. 6.

Inventor

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Patented Nov. 28, 1922. 1,436,922

UNITED STATES PATENT OFFICE.

WALTER W. THIEDE, OF AMHERST, NEBRASKA.

PISTON.

Application filed November 29, 1921. Serial No. 518,553.

To all whom it may concern:

Be it known that I, WALTER W. THIEDE, a citizen of the United States, residing at Amherst, in the county of Buffalo and State of Nebraska, have invented certain new and useful Improvements in Pistons, of which the following is a specification, reference being had therein to the accompanying drawings.

The invention relates to pistons particularly adapted for use in connection with internal combustion engines, and has for its object to provide a device of this character formed from a plurality of cylindrical sleeves, the upper ends of which are provided with registering flanges disposed in an annular groove of a piston head. Also to provide a split ring within the groove and coperating with a bevelled surface thereof, said split ring maintaining the flanges of the sleeves in engagement with each other, said sleeves and their flanges being preferably formed integral and split.

A further object is to provide means whereby the wrist pin is carried by inwardly struck portions of the inner sleeve, also to provide apertures in the sleeves for lubricating purposes. Also to provide a piston formed from a plurality of sleeves, which sleeves carry at their upper ends a piston head, which piston head may be formed from light material, such for instance as aluminum, thereby allowing a light piston to be constructed.

With the above and other objects in view the invention resides in the combination and arrangement of parts as hereinafter set forth, shown in the drawings, described and claimed, it being understood that changes in the precise embodiment of the invention may be made within the scope of what is claimed without departing from the spirit of the invention.

In the drawings:—

Figure 1 is a side elevation of the piston.

Figure 2 is a vertical sectional view through the piston.

Figure 3 is a horizontal sectional view through the piston, taken on line 3—3 of Figure 2.

Figure 4 is a horizontal sectional view taken on line 4—4 of Figure 1.

Figure 5 is a perspective view of the inner sleeve.

Figure 6 is a bottom perspective view of a portion of the upper end of one of the sleeves, showing its flange.

Referring to the drawings, the numeral 1 designates a piston, which piston is formed from a plurality of sleeves 3, 4 and 5, which sleeves are telescopically engaged and have their upper ends provided with inwardly extending flanges 6, 7 and 8. The flanges 6, 7 and 8 register with each other and engage each other, and are preferably welded to the sleeves, however it is to be understood that they may be integrally formed or secured in any suitable manner. The flanges 6, 7 and 8 are disposed within an annular channel 9 of a piston head 10, which piston head may be formed from light material, such for instance as aluminum. The lower side 11 of the channel 9 is bevelled and disposed within the channel is a split contractible ring 12, which ring is provided with a bevelled surface 13 which cooperates with the bevelled surface 11 and with the under side of the flange 8, thereby maintaining all of the flanges 6, 7 and 8 in close engagement with each other and the flange 6 in close engagement with the upper side 14 of the channel 9 in such a manner as to prevent leakage or loss of compression. It will be noted that the use of piston rings of the conventional form are obviated and that no piston rings are used. The sleeve 3 adjacent its upper end may be provided with small grooves 15, which may be of any number desired and form lubricant receiving means whereby lubricant will be delivered to the upper portion of a cylinder wall during the reciprocation of the piston. The sleeve 3 adjacent its upper end is provided with elongated apertures 16 which only extend through the sleeve 3 and form lubricant collecting chambers and lubricate the cylinder wall during the reciprocation of the piston. The ring 12 is split as at 12^a shown in Figure 2.

The sleeves 3 and 4 are split as at 3^a and 4^a, which splits extend through the flanges 6 and 7, thereby allowing the flanges to be placed within the annular channel 9 by spreading the sleeves 3 and 4, and the piston head 10 to be received by the sleeve. However there is a slight expansible action of the sleeves 3 and 4 so as to create little or no friction during the reciprocation of the piston but sufficient for sealing purposes. The inner sleeve 5 is for the sole purpose of carrying the wrist

pin 17, and is split preferably circumferentially and spirally as shown at 5ª in Figure 5 in such a manner that it will not exert an outward expansive action on the inner periphery of the sleeve 4, but will closely engage the periphery thereof. The ends of the wrist pin 17 are mounted in bearings 18 of bearing blocks 19, which bearing blocks are provided with annular grooves 20 which receive the rings 21 secured by means of rivets 22 to the marginal edges of openings 23 in struck in portions 24 of the sleeve 5. The struck in portions 24 of the sleeve 5 are diametrically disposed, therefore the wrist pin 7 is diametrically disposed in relation to the piston. The upper end of the connecting rod may be connected to the wrist pin in any suitable manner. The lower ends of the sleeves 3, 4 and 5 are provided with registering apertures 25, which apertures allow what is known as the "fog" in the crank case to spray the cylinder wall and at the same time they reduce the weight of the sleeves.

From the above it will be seen that a piston is provided, which piston is formed from a plurality of sleeves detachably carried by a piston head, thereby allowing easy assembling of the piston and at the same time eliminating the use of piston rings, allowing a light construction of piston, and one which will give the maximum efficiency. It will be understood that the splits 3ª, 4ª and 5ª may be of any conventional form.

The invention having been set forth what is claimed as new and useful is:

1. A piston comprising a piston head having an annular channel therein, telescopically engaged sleeves, the upper ends of said sleeves being provided with inwardly extending engaging flanges, said flanges being disposed within the annular channel of the piston head, a split ring disposed within the channel and normally holding the flanges in engagement with each other and one of them in engagement with one side of the channel, said telescopically engaged sleeves being split.

2. A piston comprising a piston head having a channel therein, telescopically engaged sleeves, flanges carried by said sleeves and engaging each other and disposed within the channel of the piston head, means for sealing the joint between the flanges and the piston head, said sleeves and flanges being split, and a wrist pin carried by the inner sleeve.

3. A piston comprising a piston head, telescopically engaged sleeves detachably carried by the piston head and forming the skirt of a piston, and means whereby a wrist pin may be supported by the inner sleeve.

4. A piston comprising a piston head, telescopically engaged sleeves carried by the piston head, the inner sleeve being provided with oppositely disposed struck-in portions having apertures therein, means carried within said apertures for supporting the ends of a wrist pin, and a wrist pin extending diametrically across the inner sleeve and having its ends disposed within the supporting means in the apertures of the struck-in portions of the sleeve.

5. A piston comprising a piston head, telescopically engaging sleeves carried by said piston head, a wrist pin disposed within the inner sleeve, said wrist pin being entirely supported by said inner sleeve.

In testimony whereof I hereunto affix my signature.

WALTER W. THIEDE.