March 16, 1943. H. J. KALAJIAN 2,314,145

REMOVING TOOL FOR BALANCE WEIGHTS

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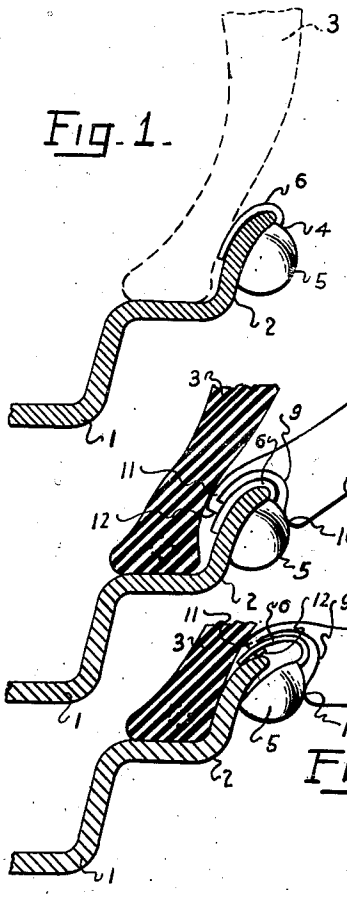


Fig. 1.

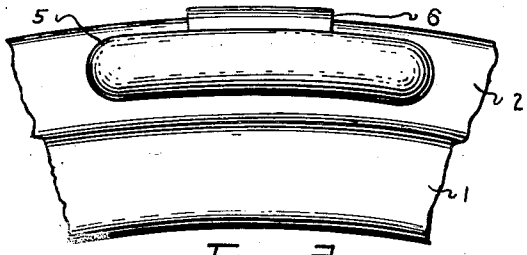


Fig. 2.

Fig. 5.

Fig. 6.

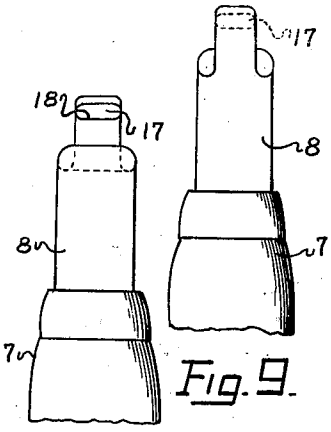


Fig. 9.

Fig. 8.

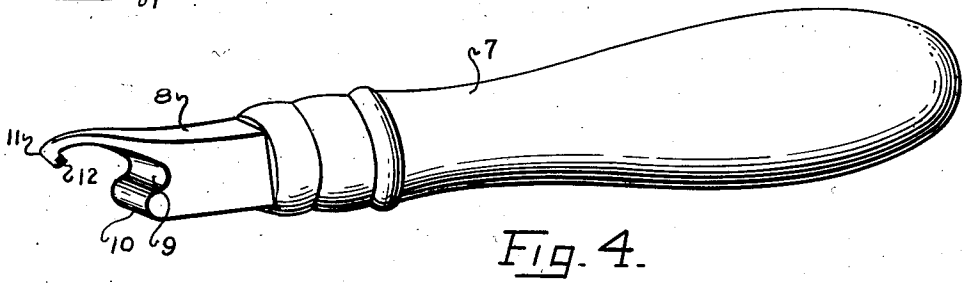


Fig. 4.

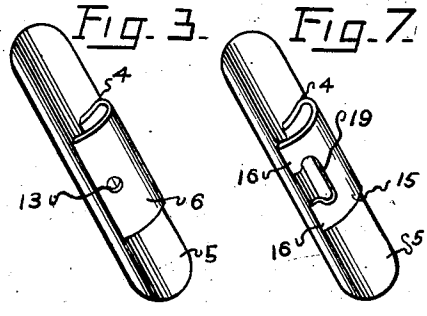


Fig. 3.

Fig. 7.

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REMOVING TOOL FOR BALANCE WEIGHTS

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5 Claims. (Cl. 254—131)

The present invention relates to a tool for removing spring clip balance weight assemblies from wheel rim flanges and more particularly to a tool for removing balance weights of the character disclosed in Patent No. 2,049,918, from wheel rim flanges while the pneumatic tire is on the rim.

In Patent No. 2,173,321, there is disclosed a tool for removing spring clip balance weight assemblies which consists of a rod for engaging in an opening in the spring clip on the outside of the rim flange. The construction disclosed in this patent is satisfactory where the balance weights are of some relatively hard metal, but when the balance weights are made of lead, there is such a strain placed on the lead that it is destructively deformed. The tool according to the present invention is particularly adaptable for use in removing balance weight assemblies wherein the weight is provided by a lead body and consists of a tool having a nose which reaches into the inside of the rim flange to engage a shoulder on the spring clip, which may be the edge thereof, to rock the balance weight assembly from the rim flange.

An object of the present invention is to provide a tool for removing spring clip balance weight assemblies from wheel rim flanges.

Another object of the invention is to provide a tool of the character described for engaging with a shoulder on the portion of the spring clip at the inside of the rim flange over which the spring clip is disposed.

Still another object of the invention is to provide a tool of the character described having a concave portion for receiving a rim flange and a balance weight spring clip disposed thereover, there being adjacent one end of the concave flange a heel portion for engaging with a portion of the balance weight assembly on the outside of the rim flange and having a toe portion for engaging with a portion of the spring clip on the inside of the rim flange.

These and other objects residing in the arrangement, combination and construction of the parts will be apparent from the following specification when taken with the accompanying drawing, in which:

Fig. 1 is a section of a wheel rim showing a pneumatic tire thereon in dotted outline and a spring clip balance weight assembly over the edge of the rim flange,

Fig. 2 is a side elevation of the view shown in Fig. 1,

Fig. 3 is a perspective of the spring clip balance weight assembly disclosed in Figs. 1 and 2,

Fig. 4 is a perspective of a tool according to the present invention,

Fig. 5 is a sectional view corresponding to Fig. 1 showing the tool of Fig. 4 in its initial removing position,

Fig. 6 is a section corresponding to Fig. 5, disclosing the tool of Fig. 4 in the process of moving off the assembly,

Fig. 7 is a perspective view of another form of spring clip for balance weight assembly, and

Figs. 8 and 9 are elevations of a second form of tool for removing a balance weight assembly having a spring clip of the type disclosed in Fig. 7.

Referring particularly to the drawing, the reference character 1 indicates a wheel rim of the drop center type having an outwardly flaring flange 2 of conventional configuration. Resting on the rim 1 is a pneumatic tire 3 shown in dotted outline. In Figs 1 and 2 there is disclosed on the flange 2 a balance weight assembly 4, consisting of a weighted body portion 5 and a spring clip 6. The weighted body portion 5 is molded about one end of the spring clip 6 in some suitable manner as for instance as disclosed in aforesaid Patent No. 2,049,918. The spring clip 6 and the adjacent side of the body portion 5 are shaped as shown in Figs. 1 and 2, that is, in such a manner that the spring clip 6 may be sprung over the flange 2 as disclosed in Fig. 1 and the balance weight assembly maintained thereon by the resiliency of the spring clip 6.

The tool according to the present invention for removing balance weight assemblies from the flange 2 is disclosed particularly in Fig. 4 and consists of a suitable handle 7, connected to a body portion 8. The body 8 has a concave portion 9 provided at one end with a heel 10 and at the other end with a nose 11, the nose 11 being provided with a clip 6 engaging projection 12.

When employing the tool according to the present invention for removing the balance weight assembly from the flange 2, the nose 11 of the tool is forced between the tire 3 and the flange 2 as disclosed particularly in Fig. 5 and the projection 12 is inserted in the centrally disposed opening 13 with which the spring clip 6 is provided, as shown in Fig. 3. The projection 12 is arranged so as to project substantially normally toward the flange when in clip removing relation therewith. The outer edge of the flange 2, and the spring clip 6 thereover, project into the recess defined by the concave surface 9, as shown in Fig. 5, and the heel 10 bears against the body 5.

Then, by swinging the handle 7 downwardly in the direction of the arrow in Fig. 6, the balance weight assembly, consisting of the spring clip 6 and the body 5, are rocked from the flange 2.

It will be apparent from the foregoing description that the nose 11 may be forced between the tire 3 and the flange 2 whether the tire 3 is inflated or not, and that therefore a balance weight assembly may be removed from a flange for the purpose of replacing or readjusting the same with a minimum of inconvenience. Furthermore, the balance weight assembly is removed without damage to the body 5 or the spring clip 6. It will be appreciated that should a screw driver for instance be employed to pry the balance weight assembly from the flange 2, there is a definite likelihood of the spring clip 6 being permanently deformed, preventing the re-use of the weight.

Spring clips for balance weight assemblies may be formed as shown by the spring clip 15 in Fig. 7. There, the spring clip 15 is provided at its outer ends with lips 16 for increasing the grip of the spring clip against the flange 2 by providing individually acting finger portions. When a spring clip of the character of the clip 15 is employed, the tool for removing the same from a rim flange may take a somewhat different form in that instead of providing a projection 12 on the nose 11, there is substituted on the nose 11 a projection 17, which is of appreciable width and provided with a straight clip engaging edge 18 for engaging with the straight shoulder 19 provided on the spring clip 15. It will be apparent from the drawing, that the tool disclosed in Figs. 8 and 9 removes the spring clip 15 disclosed in Fig. 7 from a flange 2 in the same manner as the tool disclosed in Fig. 4. Furthermore, by using the tool disclosed in Figs. 8 and 9 on the clip 15, the flat projection 17 will prevent the balance weight assembly from cocking to one side as might happen should the projection 12 be used on the clip 15.

It will be apparent from the foregoing specification that the particular spring clips illustrated have specially designed shoulders against which the clip engaging projection on the tool is adapted to bear in removing balance weight assemblies from their respective rims. It will be understood, however, that the tool could be so arranged as to engage with the extreme edge of a plain spring clip if desired. Accordingly, it is contemplated that the term shoulder employed in the claims as a portion of the spring clip for cooperation with the removing tool is to be considered any edge portion of the clip which may be engaged by a tool clip engaging projection.

Having thus described my invention, what I desire to secure by Letters Patent and claim is:

1. A tool for removing from a wheel rim of the character described having an outwardly flaring flange thereon, a spring clip balance weight assembly clipped over the flange, which comprises a body having a concave surface for receiving the edge of the rim flange and balance weight spring clip disposed thereover, said body having a heel for bearing against a portion of the balance weight assembly on the outside of the rim, said heel being adjacent one end of said concave surface, said body also having a nose, said nose being adjacent the other end of said concave surface and having a portion engageable with a shoulder on the portion of the spring clip at the inside of said rim flange and under a tire thereon, whereby said balance weight assembly may be rocked by said body about said rim flange and the spring clip removed from said rim flange.

2. A tool for removing from a wheel rim of the character described having an outwardly flaring flange thereon, a spring clip balance weight assembly clipped over the flange, which comprises a body having a concave surface for receiving the edge of the rim flange and balance weight spring clip disposed thereover, said body having a heel for bearing against a portion of the balance weight assembly on the outside of the rim, said heel being adjacent one end of said concave surface, said body also having a nose, said nose being adjacent the other end of said concave surface and having a portion engageable with a shoulder on the portion of the spring clip at the inside of said rim flange and under a tire thereon, said nose portion extending toward said rim flange in substantially normal relation thereto, whereby said balance weight assembly may be rocked by said body about said rim flange and the spring clip removed from said rim flange.

3. A tool for removing from a wheel rim of the character described, having an outwardly flaring flange thereon, a spring clip balance weight assembly clipped over the flange thereof, which comprises a body having a forwardly elongated nose for extending over the rim flange and under a tire thereon for engagement with a shoulder on the portion of the spring clip at the inside of the rim flange, and a forwardly extending portion for engagement with an external portion of the balance weight assembly, whereby said balance weight assembly may be rocked by said body about said rim and the spring clip removed from said rim flange.

4. A tool for removing from a wheel rim of the character described, having an outwardly flaring flange thereon, a spring clip balance weight assembly clipped over the flange thereof, which comprises a body having an elongated nose for extending over the rim flange and under a tire thereon, said nose having at the outer end thereof a portion arranged so as to extend toward said rim flange in substantially normal relation thereto when positioned in operative relation thereto for removing engagement with a shoulder on the portion of the spring clip at the inside of the rim flange, and a portion for engagement with an external portion of the balance weight assembly, whereby said balance weight assembly may be rocked by said body about said rim and the spring clip removed from said rim flange.

5. A tool for removing from a wheel rim of the character described, having an outwardly flaring flange thereon, a spring clip balance weight assembly clipped over the flange thereof, which comprises a body having an elongated nose for extending over the rim flange and under a tire thereon for engagement with a shoulder on the portion of the spring clip at the inside of the rim flange, said nose having a clip shoulder engaging portion which is arranged to extend in normal relation toward the rim flange when in operative relation thereto, whereby said balance weight assembly may be stripped from said flange.

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