

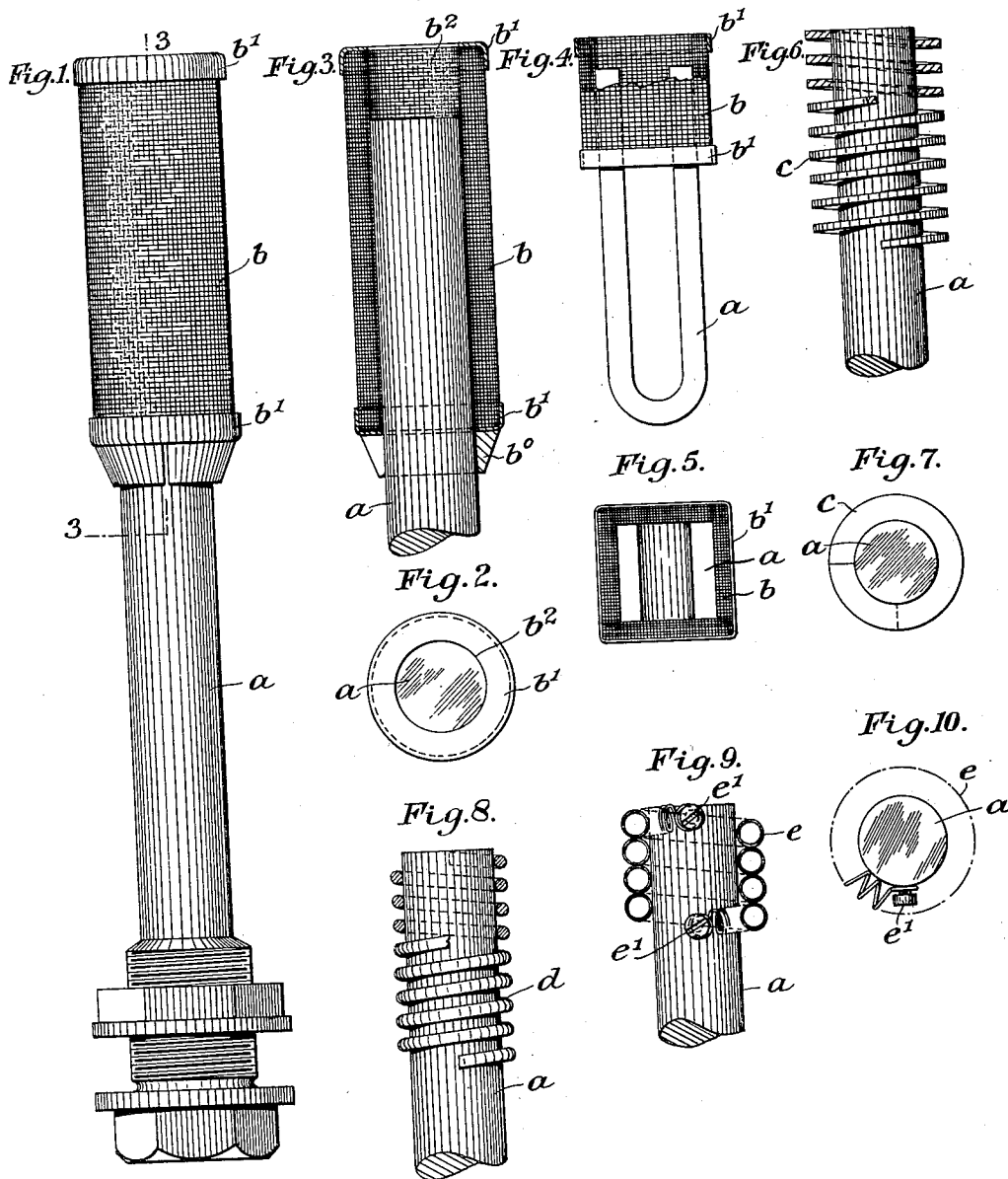
May 19, 1931.

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1,806,002

MEANS FOR CLEANSING OR FILTERING LUBRICATING OILS

Filed Dec. 28, 1927



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MEANS FOR CLEANSING OR FILTERING LUBRICATING OILS

Application filed December 28, 1927, Serial No. 243,153, and in Great Britain November 14, 1927.

Our invention relates to means for cleansing or filtering lubricating oils which involves the use of magnets for attracting particles of iron or steel present in lubricating oils and has for its object to provide improved means whereby the attracted particles can be collected, retained and subsequently removed from the magnet.

To this end, according to the invention, the pole or poles of a magnet used for attracting the particles of iron or steel, when immersed in the lubricating oil is or are each surrounded by a device (which for convenience of reference we term a "cage") having openings or spaces therein to allow the passage of the said particles to the side of the pole or poles in a direction at or about right angles thereto or to the axis thereof, which openings or spaces serve to retain or hold the attracted particles so that they cannot be removed by the movement of the oil.

In a suitable way of carrying out the invention, the cage is formed from a strip of wire gauze of suitable dimensions, rolled upon itself and secured by soldering or the like to form a sleeve of a size to fit over a magnet pole or poles. The coil or sleeve is preferably provided with a ring or rim of metal at each end for strengthening and manipulative purposes.

When the magnet and the sleeve or cage are immersed in oil, the particles of iron or steel attracted by the magnet will become enmeshed in the gauze sleeve and retained thereby, the movement of the oil assisting the enmeshing of the particles rather than removing them, and the said sleeve can then be easily removed from the magnet for cleaning purposes when the latter is removed from the oil. The sleeve is usually of non-magnetic material but it may be of magnetic material.

In a modification for use particularly in cases in which the worn or broken-off pieces may be comparatively large as in gear-boxes, a coiled spring may be wound round the

magnet to form the cage or a helical spring of flat, round, rectangular or other section may be employed in place of the wire gauze sleeve.

When the device is fitted to a magnet of horse-shoe form, the sleeve or cage may be rectangular and embraces both poles of the magnet.

In order that the invention may be fully understood we will now describe it by reference to the accompanying drawings, in which:—

Figures 1 and 2 are, respectively, an elevation and a plan view of a bar magnet having applied thereto a device constructed according to the invention for retaining and collecting the ferrous particles.

Figure 3 is a section on the line 3—3, Figure 1.

Figures 4 and 5 are, respectively, similar views to Figures 1 and 2, but showing the device applied to both poles of a horse-shoe magnet.

Figures 6 and 7 are, respectively, a sectional elevation and a plan view of a modified form of retaining device.

Figs. 8 and 9 show sectional elevations of further modifications.

Fig. 10 is a plan view of Fig. 9.

Referring to Figures 1 to 5, a is the magnet and b the sleeve or cage, which is applied to the end thereof and which consists of a strip of wire gauze rolled upon itself and secured by soldering or the like to form a coil, circular in Figures 1 to 3 and rectangular in Figures 4 and 5. b^1, b^2 are the rings of metal provided at each end of the coil b for strengthening and manipulative purposes and b^0 is a stop slidable on the magnet a to determine the position of the sleeve b thereon.

When the magnet and the sleeve or cage are immersed in the lubricating oil, the particles of iron or steel attracted by the magnet a will become enmeshed in the gauze sleeve b and be retained thereby and the said sleeve can then

easily be removed from the magnet *a* for cleaning purposes when the latter is removed from the oil. When the sleeve *b* is fitted over the magnet *a* it is advantageous to let it project beyond the end of the magnet to form a space *b*² in which the attracted particles will collect.

In the modification shown in Figures 6 and 7, *c* is the length of flat helical spring which we employ in place of the wire gauze in Figures 1 to 5, the said spring *c* being designed to fit over and grip the end of the magnet *a*. The iron or steel particles from the oil will collect between the turns of the spring *c*, which latter may be removed as desired for cleansing.

Figure 8 shows a spring retaining device or cage similar to that shown in Figures 6 and 7 but made of circular section wire.

Figures 9 and 10 also show a helical spring retaining device or cage but made from coiled wire *e* and retained in position by fixing screws *e*¹, *e*¹, the wire being coiled with such pitch as to collect fragments of metal broken from the teeth of wheels in gear-boxes and similar mechanisms.

Claims:

1. The combination with a magnet device for removing metallic particles from oil, of a removable collecting means surrounding portions of said magnet device to be immersed in the oil, and detachably secured thereto, and comprising a sleeve formed separately from the magnet device and providing spaces for retaining the metallic particles collected by the magnet, and removable from the magnet with the collected particles for cleaning, the removal of the collecting device effectively cleaning the enclosed portions of the magnet device.

2. The combination with a magnet device for removing metallic particles from oil, of a removable collecting means surrounding portions of said magnet device to be immersed in the oil, and detachably secured thereto, and comprising a strip of wire gauze coiled around the magnet and removable therefrom with the collected particles for cleaning, the removal of said collecting means effectively cleaning the enclosed portions of the magnet device.

3. The combination with a magnet device for removing metallic particles from oil, of a removable collecting means surrounding portions of said magnet device to be immersed in the oil, and detachably secured thereto, and comprising a strip of wire gauze of non-magnetic metal coiled around the said portions of the magnet device and removable therefrom with the collected metallic particles for cleaning, the removal of said collecting device effectively cleaning the enclosed portions of the magnet device.

4. The combination with a magnet device for removing metallic particles from oil, of a

removable cage surrounding portions of said magnetic device to be immersed in the oil, and detachably secured thereto, and comprising a metallic device coiled around the said portions of the magnet device and having portions in frictional engagement therewith, the removal of said collecting means effectively cleaning the enclosed portions of the magnet device.

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