Dec. 2, 1952 G. A. JOHNSON ET AL 2,619,663

WIRE CLEANER

Filed Jan. 9, 1947

Fig. 1

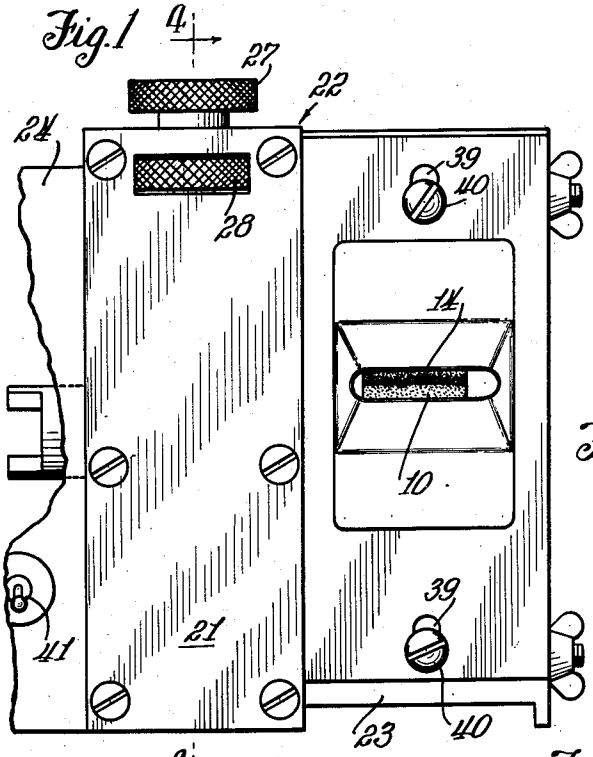


Fig. 3

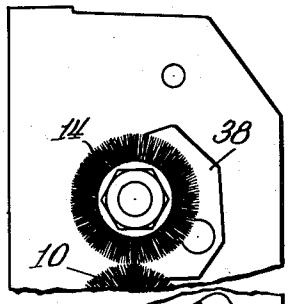


Fig. 5

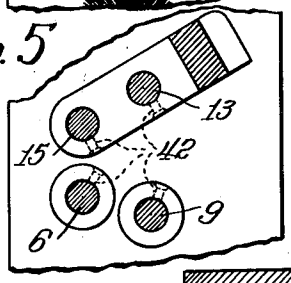


Fig. 2

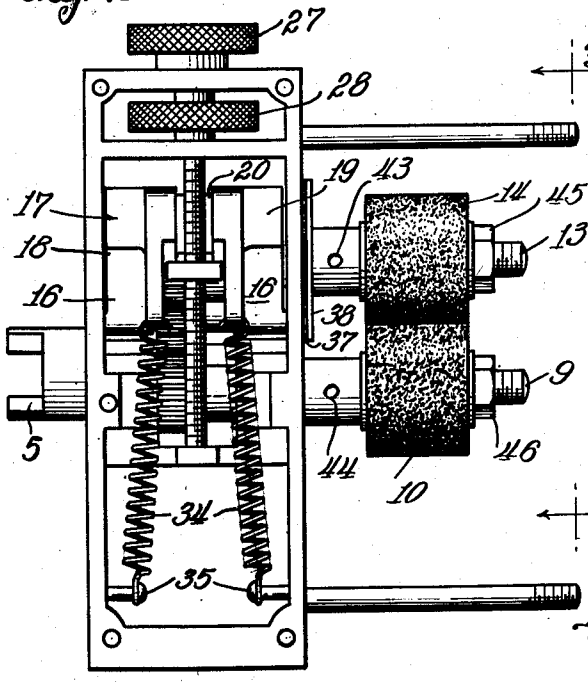
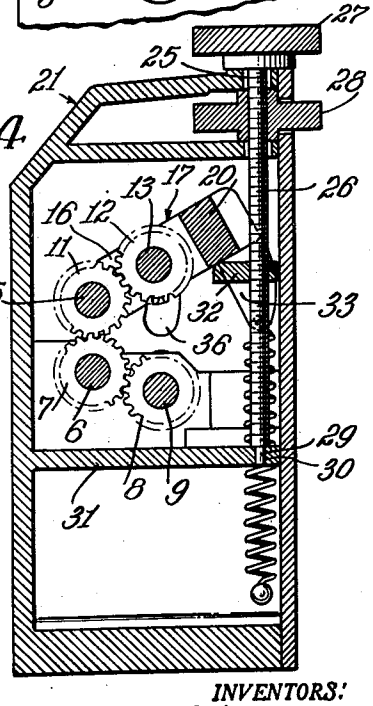


Fig. 4



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WIRE CLEANER

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7 Claims. (Cl. 15—88)

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This invention relates to cleaning machines. More particularly, it relates to wire-cleaning machines. Our invention relates to the type of cleaning device where there are provided two brushes rotating in different directions, one clockwise and the other anti-clockwise, to clean the end of a wire preparatory to soldering.

Among other advantages, is the advantage that the brushes may be very easily adjusted toward each other by the provision of improved means, according to the principle of our invention.

These improved means provide a hair-line adjustment, as will hereinafter more fully appear.

Also, by the provision of our invention, damage is prevented in the use of over-sized wires by means of resilient arrangements for the brush mountings.

According to our invention, brushes may be easily replaced merely by the removal of the nuts from the threaded shafts on which they are located.

Another advantage of our invention resides in the continuous self-lubrication of our device. According to the principle of our device, the interior of the housing is packed with grease, and when the mounting of the upper brush is lowered toward the mounting of the lower brush, the grease is continuously packed into the bearings.

Another feature of our invention is the provision of a housing guard to prevent the grease from becoming infilterated with abrasives, etc. The guard which we have provided is mounted on the shaft over an elongated slot, and when the shaft of the upper brush, for example, moves downwardly, then the guard moves with it.

Further objects and advantages will appear and be brought out more fully in the following specification, reference being had to the accompanying drawings, in which:

Fig. 1 is a front view of the housing enclosing the device.

Fig. 2 is a front elevation with the covers removed.

Fig. 3 is a view taken on the line 3—3 of Fig. 2.

Fig. 4 is a section on the line 4—4 of Fig. 1.

Fig. 5 is a sectional view of the arrangement for lubricating the gears, etc.

Referring to the drawings in detail, in which we have shown the preferred form for the purpose of illustrating the principle of our invention, we have shown a housing 22. A first axle 6 is rotatably supported in the housing 22 and has a gear 7 mounted thereon. A coupling 5 is fixedly secured on one end of the axle 6 and is adapted to be attached to a motor or other driving means.

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A first shaft 9 is rotatably supported in the housing 22 and said shaft has one end projecting beyond the housing. The gear 7 meshes with a gear 8 mounted on the shaft 9. A first brush 10 is positioned adjacent to the projecting end of shaft 9 and is secured thereto. The brush 10 may be fabricated of wire or other suitable material. The gear 8 will be driven by the gear 7, and will rotate the brush 10 on the shaft 9, as will hereinafter more fully appear.

A second axle 15 is arranged in spaced parallel relation with respect to the shaft 9 and is supported in the housing 22. An idler gear or rotatable element 11 is positioned within the housing 22 and is rotatably supported therein for rotation about axle 15 as an axis. The axis formed by the axle 15 is in spaced parallel relation with respect to the shaft 9 and the gear or rotatable element 11 meshes with the gear 7.

A supporting element or yoke 17 is positioned within the housing 22 and has one end thereof, or its bight, pivotally mounted in the housing 22 for angular movement about the axle 15 as an axis.

A second shaft 13 is arranged in spaced parallel relation with respect to the axis formed by the axle 15 and is rotatably supported in the yoke or supporting element 17. The shaft 13 is operatively connected to the gear 11 by means of a gear 12 mounted on shaft 13 which meshes with the idler gear 11. The yoke may be said to be formed in two sections 18 and 19, as shown in Figure 2. A cross piece 20 may be integrally formed to connect and mount the two sections of the yoke, as shown in Figures 2 and 4. One end of the shaft 13 projects beyond the housing 22 and is positioned adjacent to the projecting end of the shaft 9. A second brush 14 is positioned adjacent to the projecting end of the shaft 13 and is secured thereto. The brush 14 is normally in contacting relation with respect to the brush 10. The brush 14 is rotated to cooperate with the brush 10 to clean or otherwise treat the wire. For example, when it is desired to solder the end of a wire to make a good joint, the end is passed between the two brushes and cleaned before it is soldered.

We have also provided adjusting means in case the brushes wear, or for any other reason the distance is not what is desired between the brushes.

The gearing is enclosed in a section 21 of the housing 22 of which there are other sections 23 and 24 on opposite sides of the section 21.

A manipulating element or an externally threaded shank 26 is arranged transversely of

the axis formed by the axle 15 and is positioned between the legs of the yoke 17 adjacent the free ends thereof and is rotatably supported in the housing 22. The shank 26 has one end extending through the aperture 25 in the housing section 21 and projecting beyond the housing 22. A knurled nut 27 is mounted at the top of the shank and is secured thereto. A second knurled nut 28 is also provided as a lock nut. The shank 26 has a reduced portion 29, which extends into a bore 30 in a wall 31, for the purpose of pivoting the shank. An internally threaded shoe 32 is in threaded engagement with the external threads on the shank 26, the shoe being adapted for longitudinal movement of the shank upon rotation of the latter. Adapted to rest on the shoe is the central portion 20 of the yoke 17. The shoe is adapted for a contacting engagement with the legs of the yoke 17 to move the yoke about the axle 15 as an axis in one direction and the brush 14 into out-of-contacting relation with respect to the brush 10.

When it is desired to decrease the distance between the two brushes 10 and 14, the threaded shank may be turned by the knurled nut 27, to lower the shoe 32, and this will lower the central portion 20 of the yoke 17. Inasmuch as the shaft 13 is mounted on the yoke, it also will be lowered and moved nearer the shaft 9, and the upper brush will move closer to the lower brush.

A pair of springs or resilient means 34 are arranged in spaced side by side relation with respect to each other. The springs have one of their adjacent ends secured to the adjacent one of the legs of the yoke 17 adjacent the free end thereof, and said springs have their other ends secured to the housing 22. Specifically, each section of the yoke has a tail 33, and the tails have openings for the engagement of the upper ends of springs 34, which are anchored on pins 35 in the housing section 21 of housing 22. The springs 34 urge the yoke 17 about the axle 15 as an axis to move the brush 14 into contacting relation with respect to the brush 10.

The springs normally tend to urge the yoke downwardly, so that when the shoe is lowered, the yoke is resiliently held in engagement with the shoe by means of the spring.

If an over-size wire should be used, the same may be placed between the brushes with perfect safety, since the yoke, being attached to the spring, will naturally give to allow for the oversize.

The coupling 5, axle 6, gear 7, and gear 11 comprise a means which is positioned adjacent the shaft 9 and the shaft 13 and operatively connected to shafts 9 and 13 for driving the machine.

The coupling 5, axle 6, and gear 7 comprise a means which is interposed between the rotatable element or gear 11 and the shaft 9 and operatively connected to shaft 9 and gear 11 for driving the machine.

The shaft 13 extends through a slot 36, to allow for the downward movement of the shaft 13.

The slot 36 is covered by a felt washer 37, and is backed up by a steel washer 38, as clearly shown in Fig. 2.

This arrangement clearly keeps all the abrasives, etc. of the brushes from the grease and the gears, etc.

On section 23, we have provided an adjusting plate to compensate for the change in the meeting line between the two brushes. As the line may move downwardly on account of wear, so the plate may also be moved downwardly. This is accomplished by means of elongated slots 39 and screws 40.

Adapted to cover the coupling, is the safety housing section 24. In this section, we have mounted a switch 41 controlling the power to the device.

Among the features of our invention, is the provision of a grease pack which insures practically perpetual lubrication of the gearing,, etc.

It will be understood that the inside of section 21 is solidly packed with lubrication such as grease.

Bores 42 will be made to the bearings for the axles 6 and 15, and shafts 9 and 13, as clearly shown in Figure 5.

As the yoke 17 descends, it will be apparent to those skilled in the art that the confined grease will be forced into the bores 42, and into the respective bearings.

Orifices 43 and 44 are inserted in the shafts 13 and 9, in which may be inserted a pin or similar tool to prevent the shaft from turning when it is desired to remove the nuts 45 and 46.

While we have illustrated and described the preferred form of construction for carrying our invention into effect, this is capable of variation and modification without departing from the spirit of the invention. We, therefore, do not wish to be limited to the precise details of construction set forth, but desire to avail ourselves of such variation and modifications as come within the scope of the appended claims.

Having thus described our invention, what we claim as new and desire to secure by Letters Patent is:

1. A cleaning machine comprising a housing, a first shaft rotatably supported in said housing, a first brush positioned on said first shaft and secured thereto, a yoke positioned within said housing and having its bight pivotally mounted in said housing for angular movement about an axis in spaced parallel relation with respect to said first shaft, a second shaft arranged in parallel spaced relation with respect to said axis and rotatably supported in the legs of said yoke, a second brush positioned on said second shaft and secured thereto and in contacting relation with respect to said first brush, a manipulating element arranged transversely of said axis and positioned adjacent to the free ends of the legs of said yoke and rotatably supported in said housing, a shoe actuated by said manipulating element and adapted for contacting engagement with said legs of said yoke to move said yoke about said axis in one direction and said second brush into out-of-contacting relation with respect to said first brush, resilient means having one end secured to the free ends of the legs of said yoke and having its other end secured to said housing, said resilient means urging said yoke about said axis in the opposite direction and to move said second brush into contacting relation with respect to said first brush, and means positioned adjacent said first shaft and said second shaft and operatively connected to said first shaft and said second shaft for driving said machine.

2. A cleaning machine comprising a housing, a first shaft rotatably supported in said housing and having one end projecting beyond said housing, a first brush positioned adjacent to the projecting end of said first shaft and secured thereto, a yoke positioned within said housing and

having its bight pivotally mounted in said housing for angular movement about an axis in spaced parallel relation with respect to said first shaft, a second shaft arranged in parallel spaced relation with respect to said axis and rotatably supported in the legs of said yoke and having one end projecting beyond said housing adjacent to the projecting end of said first shaft, a second brush positioned adjacent to the projecting end of said second shaft and secured thereto and in contacting relation with respect to said first brush, a manipulating element arranged transversely of said axis and positioned adjacent to the free ends of the legs of said yoke and rotatably supported in said housing and having one end projecting beyond said housing, a shoe actuated by said manipulating element and adapted for contacting engagement with said legs of said yoke to move said yoke about said axis in one direction and said second brush into out-of-contacting relation with respect to said first brush, a pair of springs arranged in spaced side by side relation with respect to each other and having one of their adjacent ends secured to the adjacent one of said legs of said yoke adjacent the free end thereof and having their other adjacent ends secured to said housing, said springs urging said yoke about said axis in the opposite direction and to move said second brush into contacting relation with respect to said first brush, and means positioned adjacent said first shaft and said second shaft and operatively connected to said first shaft and said second shaft for driving said machine.

3. A cleaning machine comprising a housing, a first rotatably supported in said housing and having one end projecting beyond said housing, a first brush positioned adjacent to the projecting end of said first shaft and secured thereto, a yoke positioned within said housing and having its bight pivotally mounted in said housing for angular movement about an axis in spaced parallel relation with respect to said first shaft, a second shaft arranged in parallel spaced relation with respect to said axis and rotatably supported in the legs of said yoke and having one end projecting beyond said housing adjacent to the projecting end of said first shaft, a second brush positioned adjacent to the projecting end of said second shaft and secured thereto and in contacting relation with respect to said first brush, an externally threaded shank arranged transversely of said axis and positioned between said legs of said yoke adjacent the free ends thereof and rotatably supported in said housing and having one end projecting beyond said housing, an internally threaded shoe in threaded engagement with the external threads on said shank and adapted for longitudinal movement on said shank upon rotation of the latter, said shoe being adapted for contacting engagement with said legs of said yoke to move said yoke about said axis in one direction and said second brush into out-of-contacting relation with respect to said first brush, a pair of springs arranged in spaced side by side relation with respect to each other and having one of their adjacent ends secured to the adjacent one of said legs of said yoke adjacent the free end thereof and having their other adjacent ends secured to said housing, said spring urging said yoke about said axis in the opposite direction and to move said second brush into contacting relation with respect to said first brush, and means positioned adjacent said first shaft and said second shaft and operatively connected to said first shaft and said second shaft for drivng said machine.

4. A cleaning machine comprising a housing, a first shaft rotatably supported in said housing and having one end projecting beyond said housing, a first brush positioned adjacent to the projecting end of said first shaft and secured thereto, a rotatable element positioned within said housing and rotatably supported therein for rotation about an axis in spaced parallel relation with respect to said first shaft, a supporting element positioned within said housing and having one end pivotally mounted in said housing for angular movement about said axis, a second shaft arranged in parallel spaced relation with respect to said axis and rotatably supported in said supporting element and operatively connected to said rotatable element and having one end projecting beyond said housing adjacent to said projecting end of said first shaft, a second brush positioned adjacent to the projecting end of said second shaft and secured thereto and in contacting relation with respect to said first brush, a manipulating element arranged transversely of said axis and positioned adjacent to the other end of said supporting element and rotatably supported in said housing and having one end projecting beyond said housing, a shoe actuated by said manipulating element and adapted for contacting engagement with said supporting element to move the latter about said axis in one direction and said second brush into out-of-contacting relation with respect to said first brush, resilient means having one end secured to said other end of said supporting element and having its other end secured to said housing, said resilient means urging said supporting element about said axis in the opposite direction and to move said second brush into contacting relation with respect to said first brush, and means interposed between said rotatable element and said first shaft and operatively connected to said rotatable element and said first shaft for driving said machine.

5. A cleaning machine comprising a housing, a first shaft rotatably supported in said housing and having one end projecting beyond said housing, a first brush positioned adjacent to the projecting end of said first shaft and secured thereto, a rotatable element positioned within said housing and rotatably supported therein for rotation about an axis in spaced parallel relation with respect to said first shaft, a yoke positioned within said housing and having its bight pivotally mounted in said housing for angular movement about said axis, a second shaft arranged in parallel spaced relation with respect to said axis and rotatably supported in the legs of said yoke and operatively connected to said rotatable element and having one end projecting beyond said housing adjacent to the projecting end of said first shaft, a second brush positioned adjacent to the projecting end of said second shaft and secured thereto and in contacting relation with respect to said first brush, a manipulating element arranged transversely of said axis and positioned adjacent to the free ends of the legs of said yoke and rotatably supported in said housing and having one end projecting beyond said housing, a shoe actuated by said manipulating element and adapted for contacting engagement with said legs of said yoke to move said yoke about said axis in one direction and said second brush into out-of-contacting relation with respect to said first brush, resilient means having

one end secured to the free ends of the legs of said yoke and having its other end secured to said housing, said resilient means urging said yoke about said axis in the opposite direction and to move said second brush into contacting relation with respect to said first brush, and means interposed between said rotatable element and said first shaft and operatively connected to said rotatable element and said first shaft for driving said machine.

6. A cleaning machine comprising a housing, a first shaft rotatably supported in said housing and having one end projecting beyond said housing, a first brush positioned adjacent to the projecting end of said first shaft and secured thereto, a rotatable element positioned within said housing and rotatably supported therein for rotation about an axis in spaced parallel relation with respect to said first shaft, a yoke positioned within said housing and having its bight pivotally mounted in said housing for angular movement about said axis, a second shaft arranged in parallel spaced relation with respect to said axis and rotatably supported in the legs of said yoke and operatively connected to said rotatable element and having one end projecting beyond said housing adjacent to the projecting end of said first shaft, a second brush positioned adjacent to the projecting end of said second shaft and secured thereto and in contacting relation with respect to said first brush, a manipulating element arranged transversely of said axis and positioned adjacent to the free ends of the legs of said yoke and rotatably supported in said housing and having one end projecting beyond said housing, a shoe actuated by said manipulating element and adapted for contacting engagement with said legs of said yoke to move said yoke about said axis in one direction and said second brush into out-of-contacting relation with respect to said first brush, a pair of springs arranged in spaced side by side relation with respect to each other and having one of their adjacent ends secured to the adjacent one of said legs of said yoke adjacent the free end thereof and having their other adjacent ends secured to said housing, said springs urging said yoke about said axis in the opposite direction and to move said second brush into contacting relation with respect to said first brush, and means interposed between said rotatable element and said first shaft and operatively connected to said rotatable element and said first shaft for driving said machine.

7. A cleaning machine comprising a housing, a first shaft rotatably supported in said housing and having one end projecting beyond said housing, a first brush positioned adjacent to the projecting end of said first shaft and secured thereto, a rotatable element positioned within said housing and rotatably supported therein for rotation about an axis in spaced parallel relation with respect to said first shaft, a yoke positioned within said housing and having its bight pivotally mounted in said housing for angular movement about said axis, a second shaft arranged in parallel spaced relation with respect to said axis and rotatably supported in the legs of said yoke and operatively connected to said rotatable element and having one end projecting beyond said housing adjacent to the projecting end of said first shaft, a second brush positioned adjacent to the projecting end of said second shaft and secured thereto and in contacting relation with respect to said first brush, an externally threaded shank arranged transversely of said axis and positioned between said legs of said yoke adjacent the free ends thereof and rotatably supported in said housing and having one end projecting beyond said housing, an internally threaded shoe in threaded engagement with the external threads on said shank and adapted for longitudinal movement on said shank upon rotation of the latter, said shoe being adapted for contacting engagement with said legs of said yoke to move said yoke about said axis in one direction and said second brush into out-of-contacting relation with respect to said first brush, a pair of springs arranged in spaced side by side relation with respect to each other and having one of their adjacent ends secured to the adjacent one of said legs of said yoke adjacent the free end thereof and having their other adjacent ends secured to said housing, said springs urging said yoke about said axis in the opposite direction and to move said second brush into contacting relation with respect to said first brush, and means interposed between said rotatable element and said first shaft and operatively connected to said rotatable element and said first shaft for driving said machine.

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