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ELECTRON - AIR - METAL DISINTEGRATOR

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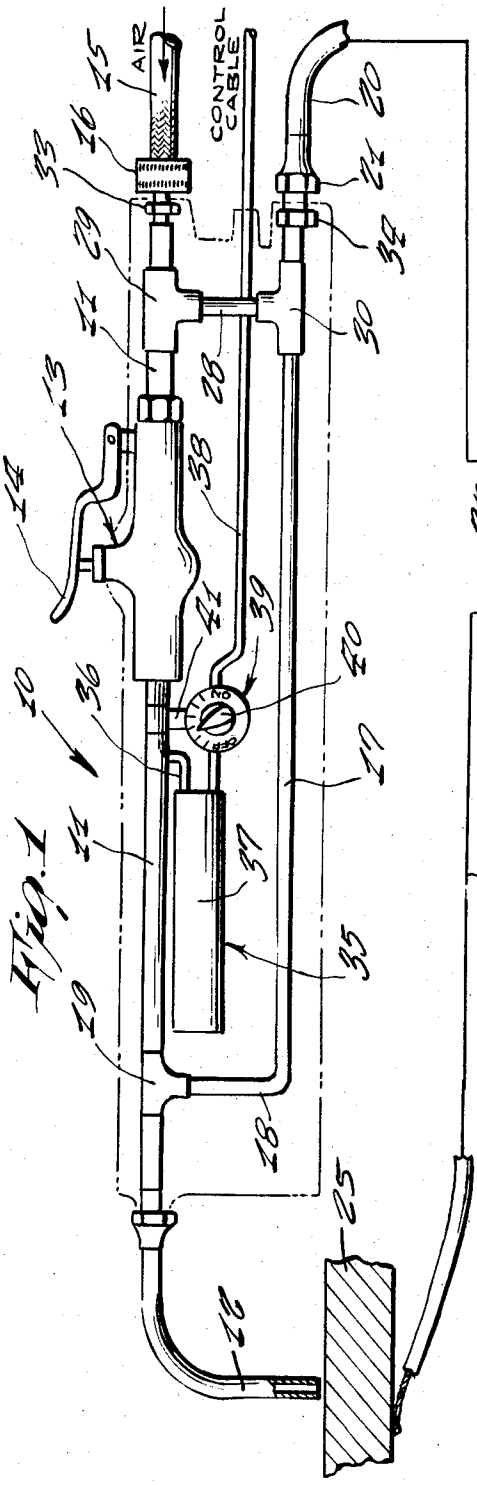


Fig. 1

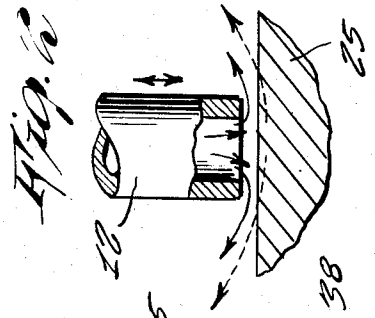


Fig. 2

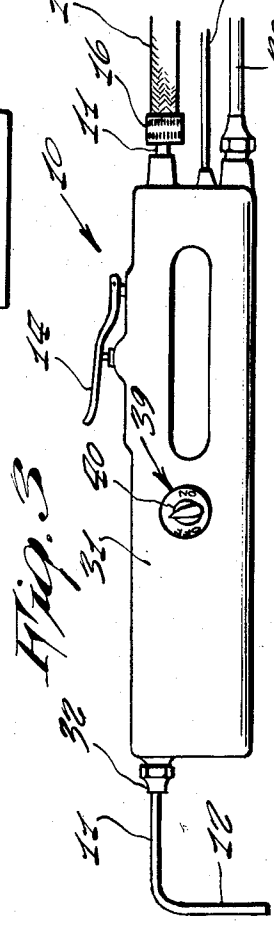


Fig. 3

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ELECTRON-AIR-METAL DISINTEGRATOR

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2 Claims. (Cl. 219—70)

This invention relates to metal disintegrators.

It is an object of the present invention to provide a metal disintegrator wherein means are provided for vibrating the nozzle against the metal so as to open and close the electron circuit of the device and to cut through the metal more effectively than heretofore; also, not subjecting the adjacent parent metal to heat and change in characteristic.

It is another object of the present invention to provide a metal disintegrator of the above type wherein the vibrating means is built into the disintegrator unit in a compact and easily operable manner.

Other objects of the invention are to provide a metal disintegrator bearing the above objects in mind which is of simple construction, has a minimum number of parts, is easy to use, is portable and efficient in operation.

For other objects and a better understanding of the invention, reference may be had to the following detailed description taken in connection with the accompanying drawing, in which:

Figure 1 is a side elevational view shown partly in section and partly diagrammatically of preferred embodiment of the present invention.

Figure 2 is an enlarged fragmentary perspective view shown partly in section of the nozzle; and

Figure 3 is a side elevational view of this part, including the casing forming a part of the invention.

Referring now more in detail to the drawing, **10** indicates generally a metal disintegrator including an air line **11** which terminates in the nozzle **12**, a control valve indicated generally at **13** being mounted on the air line **11** and including the actuating lever **14**, substantially as illustrated. An air hose **15** connected at one end to a suitable source of compressed air is connected to the inlet end of the air line **11** by means of the coupling **16**.

An electrical conductor **17** is provided and connects with air line **11** by means of the T **19**. Conductor **17** is connected to an electrical supply cable **20** by means of the connector **21**. The air line **11** and nozzle **12**, as well as the conductor **17** are constructed of electrically conductive material. The inlet end of the conductor **17** being connected to terminal **22** of the storage battery **23**, by means of cable **20**.

The metal to be disintegrated **25** is connected to the terminal **26** of storage battery **23** by means of the insulated conductor **27** (Fig. 1). Thus, whenever the nozzle **12** touches the material **25**, the electron circuit will be closed, as will be obvious.

The conductor **17** is also connected to the inlet end of the air line **11** by means of the branch **28** and T's **29** and **30**.

A casing **31** is provided for the disintegrator, the forward end thereof being connected to the nozzle **12** by means of the adaptor **32** while the rear end of the casing is connected to the air line **11** and the conductor **17** by means of suitable connectors.

An electric motor indicated generally at **35** is mounted below the air line **11** in suitable connection thereto, one terminal of the electric motor **35** being connected to the air line **11** by means of the conductor **36**. The electric motor **35** includes the casing **37**, as well as eccentric means, not shown, mounted on the drive shaft thereof whereby to impart vibrations to the air line **11** and nozzle **12** when in operation. Said eccentric means may take the form of any well-known mechanical arrangement such as an out-of-balance armature for the motor **35** or a small adjusable weight mounted radially from said motor shaft. The other terminal of the motor **35** is connected to the terminal **26** of storage battery **23** by means of the control cable **38**, a variable controlled rheostat indicated generally at **39** being connected in series with the motor **35** and including the manually operated knob **40**. The variable controlled rheostat **39** is mounted in the case **31** to permit its operation externally. Thus, upon moving the knob **40** to the "ON" position of the variable controlled rheostat the motor **35** will operate the eccentric means and impart vibrations to the air line **11** and nozzle **12**.

In operation the disintegrator **10** is held in the hand of the operator generally by placing the right hand about the lever **14** and through the finger hole shown in Figure 3. The left hand is then free to steady the tool and to manipulate the knob **40** on variable control rheostat **39**, the nozzle is made to contact the metal **25**, the intensity of vibration is controlled by the setting of operable knob **40** on variable controlled rheostat **39** and it will be readily seen from a cursory glance at the drawings that as a result of the placement of motor **35** and handle portion of the tool the vibrations of nozzle **12** will occur in a semi-pivoting action about a pivot point adjacent the rear of the tool. In some instances, the rear of the tool may be rested on a bench or similar work surface. The temperature is controlled by the volume of air passing through valve **13** controlled by valve lever **14**.

Whenever the nozzle **12** contacts the material **25** an electric circuit is formed. By employing vibration and air, a controlled disintegration of the material is accomplished.

While various changes may be made in the detail construction, it shall be understood that such changes shall be within the spirit and scope of the present invention as defined by the appended claims.

Having thus set forth and disclosed the nature of my invention, what is claimed is:

1. A light, compact, portable metal disintegrator tool for cutting and removing selected portions of hard metals and the like without damaging the surrounding material comprising an elongated main case member having therein an air supply line, a control lever for said air supply line mounted toward the end of said case away from the nozzle member, a finger hole cut in said case adjacent said control lever, coupling means at one end of said case for joining said line to an external supply of air, a hollow nozzle member connected to said supply line and extending outwardly of said case, the tip of said nozzle being disposed at an angle of approximately ninety degrees to the axis of said case, a small diameter electric motor mounted within said case therewith, electric conductor means connected to said nozzle and said motor within said case, electric connector means mounted on one end of said case and connected to said conductor means for connection to an external electric current source, eccentric means mounted on said motor for unbalancing the rotor upon rotation thereof whereby said tool is vibrated in a semi-pivoting fashion about the end away from said nozzle member.

2. A device as described in claim 1 including a rheostat member connected in series in between said motor and said electric current source whereby the speed of rotation of said motor may be controlled to vary the degree of vibration of said tool.

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