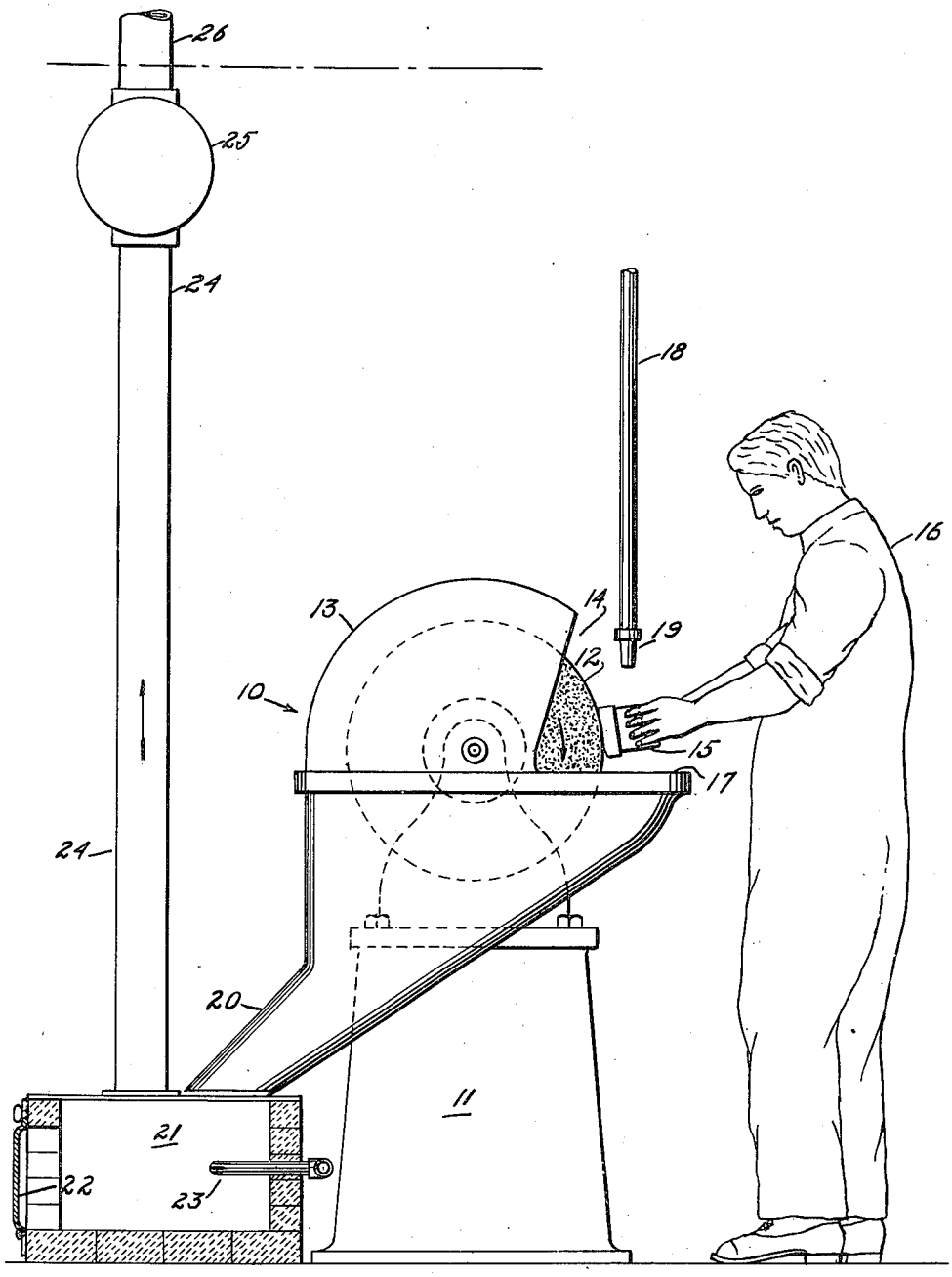
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SCRAP DISPOSAL SYSTEM

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SCRAP DISPOSAL SYSTEM

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4 Claims. (Cl. 51—273)

This invention relates to the disposal of scrap from machine tool operations, and more particularly to the elimination of the fire hazard attendant upon the machining of combustible material.

In the application of Harry J. Walpole, Serial No. 421,207, filed December 1, 1941, the hazard surrounding the machining and disposal of magnesium scrap has been discussed.

It is an object of the present invention to provide an improved system, whereby the scrap of combustible material, such as magnesium, may be safely disposed of during the machining process.

It is a further object of the invention to provide a means whereby magnesium and magnesium alloy scrap may be burned prior to final disposal of the scrap.

Other objects of the invention include the elimination of the fire hazard to the machine tool and the machine tool operator in the processing of combustible metals, and also, the provision of a means whereby the scrap, in its final form, may be stored or disposed of without the possibility of fire being caused during storage or during the disposal operation.

Other objects will appear from a study of the following specification when made in conjunction with the attached drawing, throughout which like numerals designate like parts, and wherein the single figure of the drawing represents, in elevation and partly in cross-section, one embodiment of the system of the present invention.

A grinding tool 10 comprises a base portion 11, upon which is supported a motor-driven grinding wheel 12, surrounded by a metal envelope or hood 13, having an open work-receiving portion or aperture 14, through which work 15 may be projected against wheel 12 in the customary manner by the operator 16.

Directly beneath aperture 14, is placed a scrap-receiving trough 17, which extends outwardly a sufficient distance to trap the ground metal falling from the piece of work 15. A jet of air, from any suitable source, is carried through the pipe 18 and the nozzle 19, and is directed downwardly upon the work 15 to maintain it free of all ground particles and to blow the particles into the scrap trough 17. Envelope 13 and trough 17 connect with a duct 20, which opens at its bottom end into the top of a combustion chamber 21. This chamber, which may be formed of fire brick or other similar material, has a clean-out door 22, and also contains a plurality of gas jets 23, only one of which is shown in the figure. An exhaust conduit 24 opens at its lower end into combustion chamber 21, and has its upper end connected to the input of a fan or blower 25, which has an exhaust conduit 26 opening into the atmosphere.

It will be readily understood that the particles of metal ground from the work 15 will fall or be drawn into trough 17 and into combustion chamber 21 through duct 20 by the force of the draft induced by blower 25. Further, any particles that tend to rest upon the work or upon the surface of the abrading wheel 12, will be blown into the trough 17 by the air jet from nozzle 19. Chamber 21 is maintained at a high temperature by means of gas flames from the jets 23, and scrap formed at the abrading wheel, upon being drawn into the chamber 21, will be burned, and the resulting oxide, in the form of a powder, will be deposited in the bottom of chamber 21, and may be removed periodically through the clean-out door 22. The air that is drawn through work aperture 14 and trough 17, as well as the gaseous products of combustion, will be exhausted to the outside atmosphere through the conduit 26 connected to the output of blower 25.

The safety features stressed in the above-identified Walpole application are applicable to the present invention, and it is believed unnecessary to repeat the explanation fully set forth in that application as to the benefits derived from burning the combustible scrap to a safe and easily handled oxide of magnesium. By means of the present invention, a combustion chamber is maintained at a high temperature at all times during the machining operation, and a large quantity of scrap, in the form of powder or small chips, can be readily oxidized in the combustion chamber provided, so that, even in the case of deep cuts or heavy grinds of the work, complete combustion of all the scrap may be obtained.

Further, due to its weight, the scrap, which is easily drawn down the inclined duct 20, will be precipitated into the combustion chamber from the induction system, and will be thoroughly burned so that the product removed from the clean-out door 22, at definite periods during the machining operation, will be a completely burned oxide, which may be safely handled whether it be stored or disposed of in any other way.

While only one embodiment of the present invention has been shown in the drawing, it is to be understood that various changes may be made without departing from the scope of the present invention. For this reason, it is intended not to

limit the invention by the description herein given as an example, but solely by the scope of the appended claims.

What is claimed is:

1. In combination with a grinding wheel, means for burning scrap from work being ground, which comprises an envelope extending about said wheel, a work-receiving aperture formed in said envelope, said envelope having a scrap trough beneath said work-receiving aperture, means for directing an air stream into said trough, a combustion chamber below said envelope, an inclined passageway connecting said envelope and said combustion chamber, means for maintaining said combustion chamber in heated condition, and means including an exhaust blower and an exhaust conduit opening into said chamber to draw off gases formed in said chamber.

2. In combination with a machine tool, means for burning scrap from work being machined, which comprises an envelope extending about said tool, a work-receiving aperture formed in said envelope, said envelope having a scrap-receiving trough beneath said work-receiving aperture, a combustion chamber spaced from said envelope, a duct connecting said envelope and said combustion chamber, means for maintaining said combustion chamber in heated condition, and means for drawing off gases of combustion from said chamber.

3. In combination with a machine tool, means for disposing of scrap from work being machined, which comprises an envelope extending about said tool, a work-receiving aperture formed in said envelope, a combustion chamber below said envelope and spaced therefrom, a duct connecting said envelope and said combustion chamber, means for heating said combustion chamber, and means for drawing scrap through said envelope and into said combustion chamber.

4. In combination with a machine tool, a scrap-receiving hood adjacent said tool, a combustion chamber below said hood and spaced therefrom, a duct connecting said hood and said combustion chamber, means for heating said chamber, and air exhaust means connected to said combustion chamber for drawing off gases of combustion and for inducing a draft through said hood and duct into said combustion chamber.

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