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GRINDING EQUIPMENT

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Fig. 1.

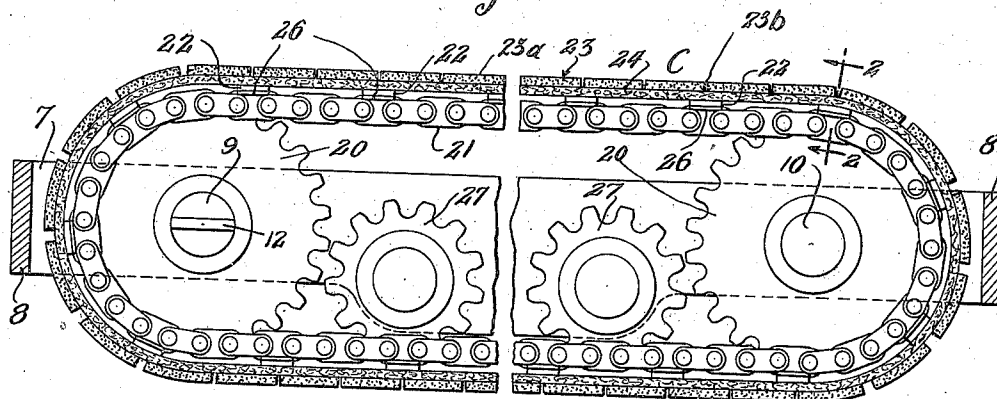
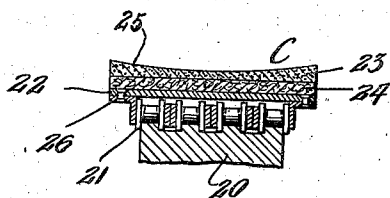


Fig. 2.



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GRINDING EQUIPMENT

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2 Claims. (Cl. 51-136)

This invention relates to grinding equipment and is especially concerned with a grinder of the type incorporating an endless grinder belt mounted on spaced rotating members so as to present a substantially flat grinding surface at one side.

One of the principal objects of the invention is the provision of a novel type of flexible grinding belt, at least a portion of which is preferably formed of a molded rubber compound or the like having finely divided and widely distributed abrasive particles embedded therein.

Another object of the invention is involved in the provision of a novel backing means for one of the straight runs of the belt, with a view to providing a substantially flat grinding surface.

The invention is also concerned with an improved belt composed of a plurality of layers of material the inner one of which serves as a carrier and at least the outer one of which is composed of a molded compound having abrasive particles embedded and widely distributed therein.

While the invention is not limited to any particular field of grinding, it is of especial use as a rail grinder for railroad or street car trackways.

Still further the invention is particularly applicable to a relatively small unit such as may readily be manipulated by hand, in contradistinction to larger machines which are sometimes mounted on trucks adapted to travel on the tracks to be ground, an advantageous characteristic of the invention being relatively light weight and simple construction.

How the foregoing objects and advantages are attained, together with others which will occur to those skilled in the art, will be more apparent from the following description, making reference to the accompanying drawing illustrating several embodiments of the invention, in which drawing

Figure 1 is a longitudinal sectional view through a grinder embodying the features of the invention; and

Figure 2 is a sectional view taken on the line 2-2 of Figure 1.

In Figure 1 the equipment is illustrated as including a frame which may conveniently include side members 7 and end or cross-ties 8 forming a box within which the various elements now to be described are mounted. A pair of shafts 9 and 10 are preferably rotatively mounted in the frame members 7 and serve to support rotative members such as sprockets 20. One of the shafts (9 in Figure 1) is preferably equipped with connection

means such as the tongue 12 adapted for ready coupling and uncoupling with respect to a flexible power shaft for the purpose of driving the grinder. In this connection it is pointed out that this type of ready connection and disconnection of the drive is of especial advantage in a grinder adapted for hand manipulation since it may conveniently be moved from place to place and coupled and uncoupled as desired.

The flexible grinding belt as clearly appears in Figure 1, surrounds the sprockets 20, and I preferably provide backing members or sprockets 27 which are made considerably smaller in diameter than the supporting sprockets 20 so as to permit close spacing thereof and thus give support to one of the straight runs of the belt at a multiplicity of relatively closely spaced points.

The flexible belt, which is generally designated by the letter C, is provided with a carrier chain 21 which is adapted to engage and be driven by the sprockets 20.

While it might not always be essential, my present preferred practice is to employ sprockets 20 of multiple construction so as to provide a wide base to support the belt. The chain carries transversely extending support members 22 which in turn carry the flexible belt generally indicated by the letter C, the support members being secured to angles 26 carried by the chain. The backing sprockets 27 are also preferably of multiple construction.

With further reference to the flexible grinding belt, it is noted that I prefer to incorporate an outer layer 23 of a moldable material such, for example, as a rubber compound which is adapted to harden upon cooling, although it should be noted that other moldable compounds may also be employed so long as they are flexible after being molded. This compound has embedded therein, and preferably widely distributed, relatively finely divided particles of any suitable abrasive. The particles of the abrasive are desirably well distributed or dispersed in such manner as to minimize contact between the particles, this being of importance in order to avoid internal friction during flexing of the belt as it passes around the supporting rollers.

Obviously, the belt may be reinforced as by employing fabric embedded therein.

It is further pointed out that I prefer to vulcanize the outer layer onto the inner layer 24 of the belt, which is also preferably formed of a rubber compound, or its equivalent, although if desired the inner layer of the belt may be formed of leather or fabric (with or without im-

pregnation with a rubber compound or the like), and in this arrangement the inner layer of the belt is preferably bolted or riveted to the carrier plates 22. The outer or abrasive layer may be vulcanized to the inner layer even when the latter is formed of fabric or the like.

The abrasive layer 23 is shown sectionalized into sections 23a to provide clearance spaces 23b for loose materials.

10 As seen in Figure 2, I prefer to adopt a concave outer belt surface 25 approximating the desired cross-sectional contour of the rail surface to be ground. This may be different in accordance with the rails on which the equipment is to be used, the example shown in Figure 2 being illustrative only but approximating that desired for the top surface of most railroad rails.

15 In accordance with the foregoing I have provided an improved grinder which is characterized, among other things, by extreme simplicity and novel arrangement of substantially direct drive from the rotative supporting members to the flexible belt itself, as well as by other features hereinbefore discussed more fully, the entire
20 assembly lending itself readily to a small size

light weight unit adapted for convenient handling, removal from place to place, and quick attachment and disconnection of a power drive.

I claim:—

1. Grinding equipment of the character described including a pair of rotative members at least one of which is toothed, a flexible chain surrounding said members and adapted to be driven by the toothed member, spaced support devices carried by said chain, and a flexible end-
less grinding belt carried by said support devices.

2. Grinding equipment of the character described including a pair of rotative members at least one of which is toothed, a flexible chain surrounding said members and adapted to be driven by the toothed member, spaced support devices carried by said chain, and a flexible end-
less grinding belt carried by said support devices, the belt incorporating an inner flexible layer constituting a carrier which is secured to the support devices and an outer layer composed of molded material having abrasive particles embedded therein.

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