Aug. 10, 1943. F. N. BARD 2,326,514

ROOF SCRAPER

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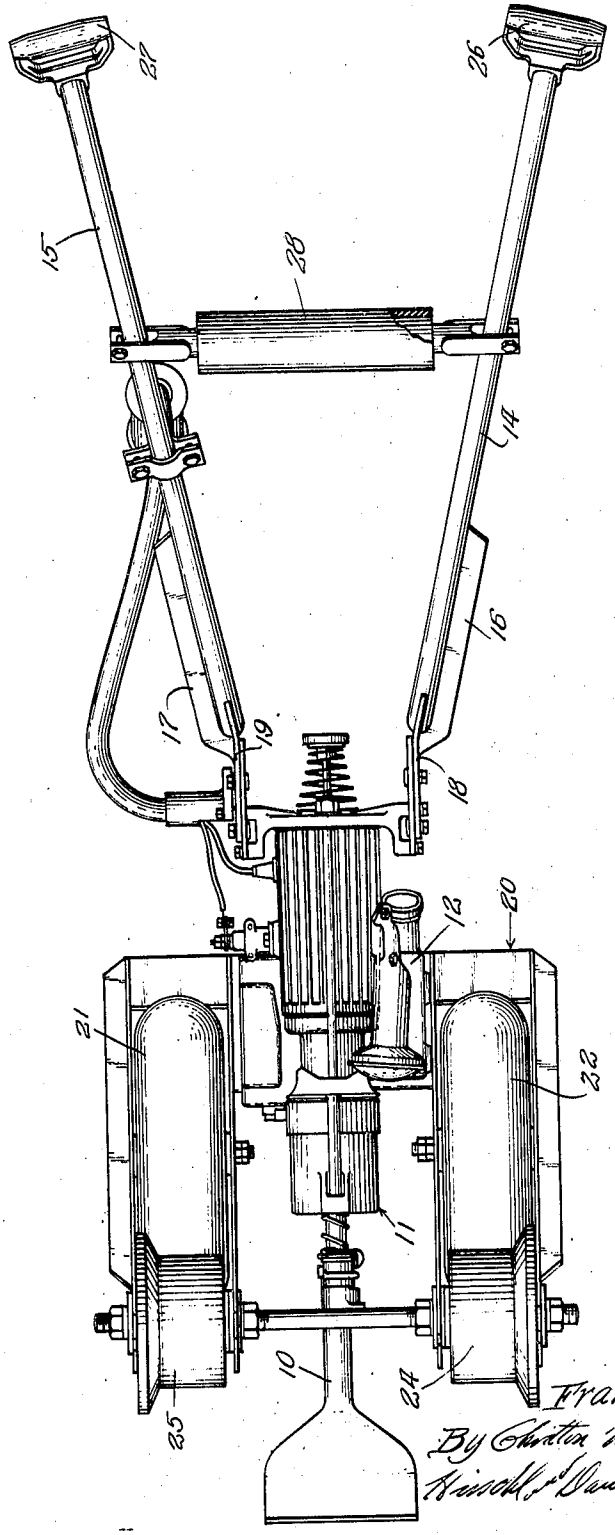


Fig. 1.

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Fig. 2.

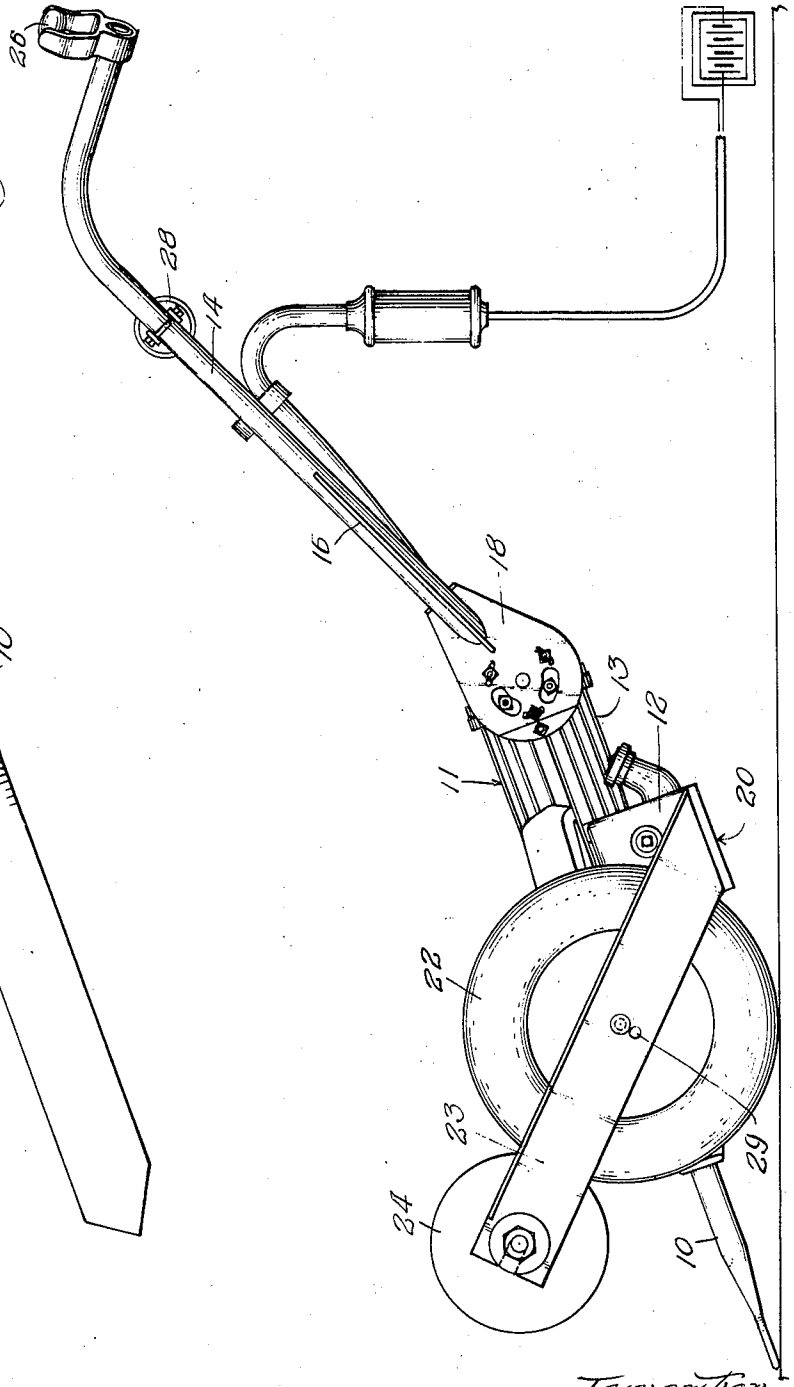


Fig. 3.

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Patented Aug. 10, 1943

2,326,514

UNITED STATES PATENT OFFICE

2,326,514

ROOF SCRAPER

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Application February 17, 1941, Serial No. 379,331

2 Claims. (Cl. 262—13)

This invention relates to a roof scraper, a device for removing old accumulations of gravel and binder on roofs preparatory to resurfacing.

One object of this invention is to provide readily portable easily handlable power scraping apparatus of a kind which may be readily used on smaller roofs; another feature of this invention is the provision of improved mounting means for supporting a working assembly comprising a scraping tool, a motor for driving the tool, and handles for the use of the operator; yet another feature of this invention is the fact that it is so arranged that the tool does not inadvertently cut into the base material, yet the arrangement is such that the distance of cut can be easily controlled; other features and advantages of this invention will be apparent from the following specification and the drawings, in which:

Figure 1 is a top plan view of apparatus embodying my invention; Figure 2 is a side elevation of the apparatus shown in Figure 1; and Figure 3 is an illustrative detail view of the end of one form of scraping tool.

A large number of roofs are surfaced with a fibrous base, as felt, and then covered with a coating of asphalt or bitumen and a wear-resistant surfacing of small stone or gravel. In laying new roof it is desirable to scrape off this gravel and some of the asphalt binder, but without damaging the felt or similar base material.

It has been generally customary to do this scraping of the old roof surface by hand. There have heretofore been available large rotary machines, but these have been of such a size and weight as to prohibit their use on any but the largest roofs. There has also been at least one attempt heretofore to use lighter power motors for operating the scraping tool, reference being had to the structure shown in Miller Patent 2,197,154. This has several defects and objections, however, which my present invention obviates. I provide a considerably inclined scraping tool and driving motor, together with handles enabling the workman to properly control the depth of cut, these handles being adjustable to the best position for a given worker. I have mounted the working assembly on a carriage, and employed counterweights, the arrangement being such that a two-wheel carriage supports the apparatus near its point of balance.

I have found it preferable to unbalance the apparatus slightly to the rear, so that some upward force or lift on the handles is necessary to bring the tool into working position.

In the particular embodiment of my invention illustrated herewith the scraping tool 10 is a type provided with a wide blade and a shank of such shape and size that it may be conveniently received by the lower end of conventional percussive devices to be driven thereby. To provide the desired impacts to the tool I employ, in this embodiment, an internal combustion percussive hammer of the free piston type, this being here indicated in general as 11. In this form of percussive device gasoline from the tank 12 is mixed with air and the explosive mixture delivered to a space in the cylinder 13 beneath the piston freely reciprocable therein. At an appropriate time this is transferred to the firing space above the piston, and there ignited by an electric spark, the resultant explosion driving the piston down to deliver its working impact through an anvil to the scraping tool 10. Internal combustion percussive devices of this type are being marketed by me and are well known in the trade, and I will therefore not describe it in further detail. Reference may be had to such patents as Charles Patent 2,180,034 and Boddinghouse Patent 2,162,416 for further specific information. Except that an internal combustion hammer is particularly satisfactory from the standpoint of portability, any other form of conventional percussive motor device could be used in so far as my present invention is concerned.

Handle means for manipulating the device are here shown in the form of rearwardly extending slightly divergent rodlike members 14 and 15. These may be of any convenient material, it being found preferable to make them of hollow piping to save weight, and to reinforce them by appropriate ribs 16 and 17 where they join the mounting plates 18 and 19. These mounting plates are adjustably attached to a yoke at the top of the percussive hammer, this being here shown as conveniently accomplished by bolts passed through slots in the associated parts. As is readily apparent, the adjustment is a rotative one enabling the outer ends of the handles to be raised or lowered with respect to the percussive motor by loosening the bolts, moving the handles to the desired position, and then drawing up the bolts. The range of adjustment is, of course, limited by the length of the slots.

Supporting means for carrying the working assembly is here shown in the form of a frame 20 having a cross piece on which the percussive motor is rigidly mounted, and side pieces between which the wheels 21 and 22 are mounted. The side pieces, as the piece 23, extend forward of the wheels and carry, at their outer ends, coun-

terweights 24 and 25. While these counterweights are here shown in the form of solid cast metal wheels, they have no function as wheels, and are rigidly mounted. The arrangement is such that the axis of the wheels 21 and 22 substantially intersects the axis of the scraping tool and the cylinder of its operative motor, being somewhat forward of the center of balance of the working assembly, as counterweighted. That is, when the device is inoperative the whole thing pivots or rotates about the axis of the wheels 21 and 22 until the back end of the carriage, or some other part of the device, comes into contact with the surface being scraped. That is, some upward force on the handles is necessary to bring the tool into the working position shown in the accompanying figures. I have so arranged the balance of the apparatus that a force of ten or fifteen pounds on the handles is sufficient to bring the tool 10 into engagement with the roof or similar surface being scraped. The fact that the axis of pivotal mounting is near the center of balance of the apparatus prevents undue fatigue on the workman; yet the pivotal mounting enables very good control of the depth of cut desired. In operation a workman grasps the transverse handles 26 and 27 at the back end of the members 14 and 15 and lifts upwardly until the working end of the tool 10 is in engagement with the roof. He then exerts a little more upward force to cause the tool to bite into the roof surface, and at the same time leans or pushes forwardly. The relative proportion of these forces, of course, determines the depth of cut of the tool, so that the material being scraped off may be regulated in any desired manner. I have found that, where both upward and forward forces are to be applied, the transverse handle members are more comfortable and less fatiguing to the operator. I have also provided a thrust or pusher member 28 between the handle members 14 and 15. This is preferably a metal cylinder three or four inches in diameter, covered with a layer of rubber. It provides a good surface against which the workman can lean with his thighs to provide forward force without undue fatigue.

I have found that it is desirable to use a straight scraping tool, but of such a kind that its cutting edges are ground at unsymmetrical angles. The edge of such a tool may be illustrated in Figure 3. This type of cut on the working edge of the tool tends to keep it from forcing itself to an undesirable depth into the surface being scraped. I have also found that scraping, without undesirable too deep cutting, is best accomplished if such a tool operates at an angle of thirty degrees or less to the surface being scraped, the preferable angle being in the neighborhood of nineteen to twenty degrees. Accordingly, I have so arranged the apparatus that the tool 10 and the operating motor 11 are disposed at this angle. In order that this angle may be changed slightly to meet varying conditions I provide a second set of openings, as 29, in the side members carrying the wheels. That is, the axles of the wheels 21 and 22 are shown in the drawings in an opening in the side members of the carriage substantially at the center of such side members. When it is desired to increase the angle of attack of the tool by a degree or two it is only necessary to move these angles to other holes provided in the side members, as the mounting hole 29. Obviously, as many of these may be provided as may seem desirable to give an appropriate range of adjustment.

While I have shown and described certain embodiments of my invention, it is to be understood that it is capable of many modifications. Changes, therefore, in the construction and arrangement may be made without departing from the spirit and scope of the invention as disclosed in the appended claims.

I claim:

1. Apparatus of the character described, including: a working assembly including an inclined impact tool, a motor for operating the tool, and handle means; a supporting carriage providing a pivotal mounting for the working assembly; and means for adjusting the point of pivotal mounting.

2. Apparatus of the character claimed in claim 1, wherein the pivotal mounting is about the axis of a pair of wheels of the carriage, and wherein provision is made for varying the mounting of the wheels on the carriage.

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