

Nov. 24, 1942.

F. P. LESCHINSKY

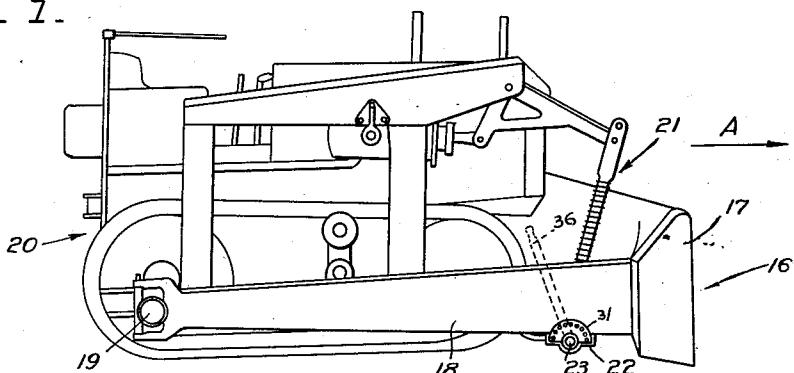
2,302,702

BULLDOZER ATTACHMENT

Filed June 9, 1937

2 Sheets-Sheet 1

FIG. 1.



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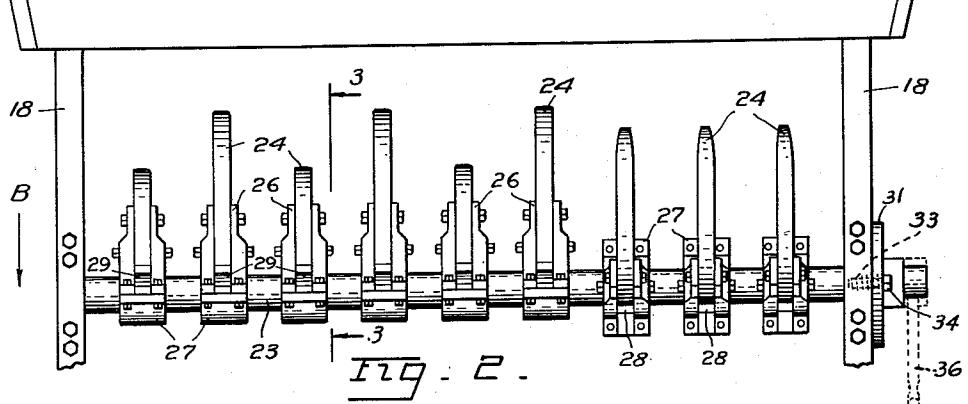


FIG. 2.

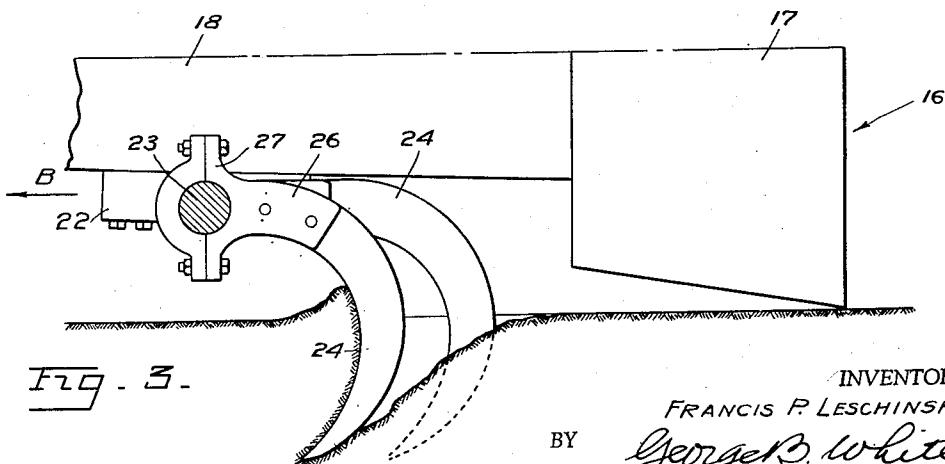


FIG. 3.

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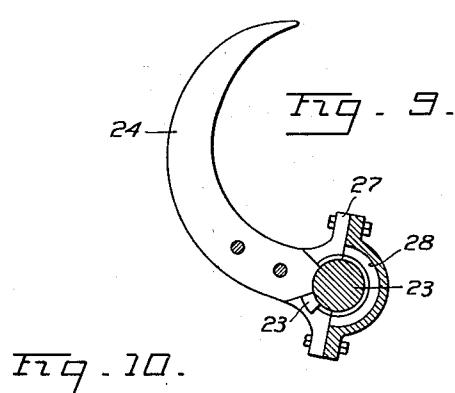
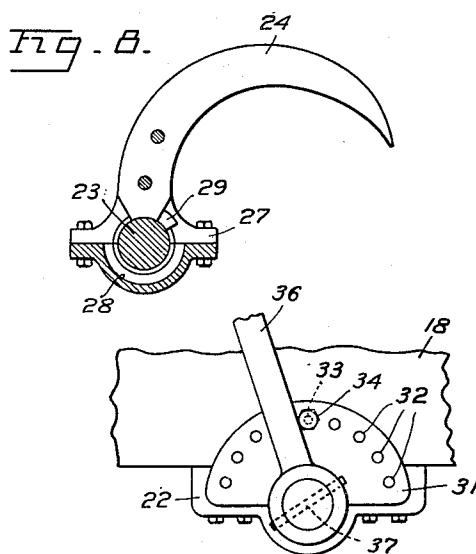
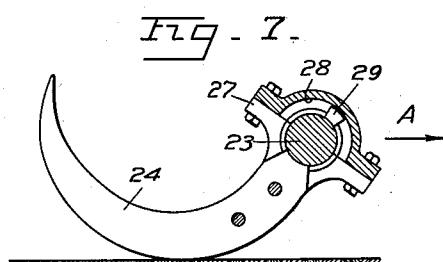
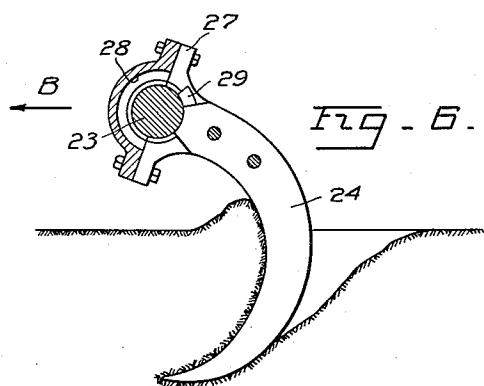
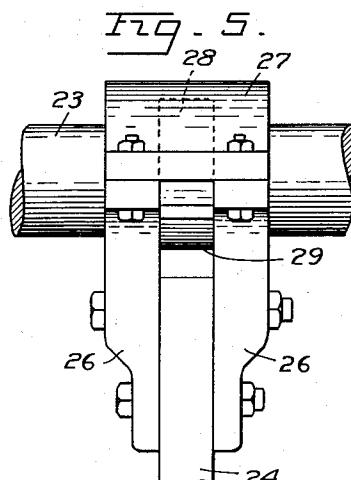
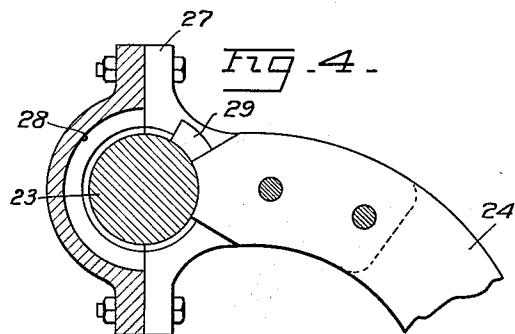


Fig. 10.

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2,302,702

BULLDOZER ATTACHMENT

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Application June 9, 1937, Serial No. 147,263

4 Claims. (Cl. 37—145)

This invention relates to attachment to tractors and bulldozers, and the like.

The primary object of the invention is to provide an attachment for earth working machinery whereby the ground can be loosened or broken by the drawing of the attachment in one direction only but when the attachment is drawn in the other direction it rides on the surface.

Another object of the invention is to provide an attachment for a bulldozer which can be readily applied behind the usual bulldozer so as to break or loosen the ground as the bulldozer is backed rearwardly, but be inoperative when the bulldozer is moved forwardly; said attachment including suitable blades that can be easily adjusted to penetrate the ground to a desired depth or which may be brought selectively or together into entirely inoperative positions.

Another object of this invention is to provide an attachment for earth working machinery which is highly useful and simple in construction. Convenience of arrangement, lightness and comparative inexpensive of manufacture are further objects which have been borne in mind in the production and development of the invention.

I am aware that some changes may be made in the general arrangements and combinations of the several devices and parts, as well as in the details of the construction thereof without departing from the scope of the present invention as set forth in the following specification, and as defined in the following claims; hence I do not limit my invention to the exact arrangements and combinations of the said device and parts as described in the said specification, nor do I confine myself to the exact details of the construction of the said parts as illustrated in the accompanying drawings.

With the foregoing and other objects in view, which will be made manifest in the following detailed description and specifically pointed out in the appended claims, reference is had to the accompanying drawings for the illustrative embodiment of the invention, wherein:

Figure 1 is a somewhat diagrammatic side view of my attachment in place on a bulldozer on a tractor.

Figure 2 is a top plan view of my attachment.

Figure 3 is a sectional view, the section being taken on the line 3—3 of Fig. 2.

Figure 4 is a fragmental sectional view of a blade and its mounting.

Figure 5 is a fragmental plan view of the blade and its mounting.

Figure 6 is a sectional view of a blade and its mounting in digging position.

Figure 7 is a sectional view of a blade and its mounting in the return, sliding position.

Figure 8 is a sectional view of a blade and its mounting, in an inoperative position.

Figure 9 is a sectional view of a blade and its mounting turned into an inoperative position by the shaft, and

Figure 10 is a fragmental side view of the blade adjusting elements.

In carrying out my invention in the illustrative embodiment shown in the drawings I make use of a bulldozer 16 of the usual type which includes the bowl 17 supported on side arms 18, or the like, which latter are fulcrumed on bearings 19, at the trailing end of a tractor 20. The bulldozer 16 is lifted and lowered relatively to the ground by a usual mechanism such as the hydraulic ram 21.

My attachment is preferably placed between the trailing face of the bulldozer bowl 17 and the leading end of the tractor 20. On each side arm 18 is provided a bearing bracket 22, in which is journaled a shaft 23 in parallelism with the bulldozer bowl 17 but so positioned as to be clear of the leading end, or radiator of the tractor 20.

On this shaft 23 are supported a plurality of blades 24. Every second blade is longer than the next adjacent blades so as to facilitate the loosening of the ground around the blade path. Each blade 24 is curved at one end and has the other end thereof fixed between the ears 26 of a bearing 27 which latter is suitably journaled on the shaft 23.

Each bearing 27 has a substantially annular groove 28 which slidably fits over a radial projection 29 fixed on the shaft 23. This projection 29 determines the position of a bearing 27 and prevents the latter from sidewise displacement. The secured end of each blade 24 is extended into the groove 28 and is tapered on each side at such angle as to fit over and abut on the respective projection 29. Thus the projection 29 also functions as an abutment both in operative and inoperative positions.

The shaft 23 is adjustably fixed in position by means of a disc 31 fixed on an end of the shaft 23 and provided with holes 32 arranged on a semicircle. A threaded hole 33 in the adjacent side arm 18 is on the same radial distance from the center of the bearing bracket 22 as the holes 32 are from the center of the shaft 23, so that the holes 32 may be selectively brought into alignment with the hole 33. Then by a suitable

bolt 34 extended through the aligned holes 32 and 33 the shaft 23 is held in an adjusted angular position. All the bearings are preferably provided with anti-friction means, such as linings or the like.

In operation inasmuch as the attachment is supported on the sidearms 18 it will be raised or lowered relatively to the ground every time the bulldozer 16 is raised or lowered by the ram 21. When the bulldozer 16 is on the ground in operative position, then the weight of the equipment and action of the usual hydraulic ram 21 urges the blades 24 into the ground. As the bulldozer 16 is pushed forwardly namely in the direction of the arrow A in Fig. 1 and Fig. 7 the blades 24 roll around the shaft 23 until they reach the position shown in Fig. 7, namely the backs of the blades 24 rest and slide on the surface. The blades 24 in this position freely follow the contour of the surface, and to a certain extent smooth the surface. As the tractor 20 and bulldozer 16 are moving rearwardly, namely in the direction of the arrow B in Fig. 2, Fig. 3, and Fig. 6, then the blades 24 are pressed into the ground. The turning of the blades 24 in a clockwise direction is resisted by the abutment projection 29, so that the weight of the bulldozer equipment causes the blades 24 to cut and loosen the ground. The shorter blades 24 in this digging operation precede the longer blades 24 so that the working of the latter is facilitated by reason of the loosening of the lateral furrows.

The angle of the operative position of the blades 24 is determined by the position of the projection 29. In order to adjust such angle, first the bolt 34 is removed, then a handle 36 may be fitted over the end of the shaft and keyed in place by a pin 37. A bar or other suitable means may be also provided to supply the leverage for turning the shaft 23. In order to deepen the cut of the blades 24 the shaft 23 and the projections 24 therewith are adjusted in a clockwise direction viewing Fig. 6 or Fig. 10. On the other hand by adjusting the shaft 23 and projections 24 in a counterclockwise direction, viewing the same figures, the projection 24 is raised and allows the blades 24 to swing higher out of the ground under pressure, therefore lessening the depth of the cut. The depth of the cut relatively to the bulldozer level therefore may be preadjusted and then fixed by replacing the bolt 34 to hold the shaft 23 non-rotatable.

The area of cut may be also determined by rendering certain of the blades 24 inoperative. This is accomplished by turning one or more selected blades 24 in a clockwise direction into the position shown in Fig. 8. In this position the blade 24 rests on the upper side of the projection 29 and is thus resting in an out of way position. Thus for instance all blades 24 on either half of the tractor, or in the center may be rendered inoperative and the digging limited to a strip of predetermined width relatively to the bulldozer.

All the blades 24 may be rendered inoperative simultaneously by turning the shaft 23, in a clockwise direction about 180° viewing Fig. 10, thereby to cause the projection 29 to assume the

position shown in Fig. 9, and to lift all the blades 24 into the upward pointing, out of way position. The shaft is adjusted and fastened as hereinbefore described.

It will be recognized that the use of the attachment heretofore described obviates the necessity for a separate ground breaking or loosening tool. The attachment can be easily assembled, and thereafter quickly rendered operative or inoperative at will. The operation is selective as to width and readily adjustable as to depth or spacing. The use of my invention heretofore described also permits the turning around of such implements on a comparatively small arc, instead of the awkward wide turns necessitated by tractor drawn ground breakers.

Having thus described my invention what I now claim and desire to secure by Letters Patent is:

1. The combination with a vehicle frame, of a bulldozer pushing element, means pivoted on the frame to support said bulldozer pushing element, a plurality of ground breaking elements on said pivoted means spaced from said pushing element being adapted to ride on the surface of the ground during the moving of the bulldozer pushing element in one direction and to penetrate the ground during the moving of the bulldozer in the opposite direction, and means for adjusting said pivoted means so as to simultaneously move said bulldozer pushing element and said ground breaking elements into and out of operative positions relatively to the ground and to the vehicle frame.

2. The combination with a vehicle frame, a bulldozer pushing element, arms extended from the bulldozer pushing element and pivoted to the frame of the vehicle, a plurality of ground breaking elements so supported on said arms as to be operable only when the vehicle is moving in one direction, and means connected to the vehicle frame for adjusting said arms so as to adjust said bulldozer pushing element and said ground breaking elements together relatively to the ground independently of the wheels of the vehicle.

3. The combination with a vehicle frame, a bulldozer support extended forwardly of the frame and carrying a bulldozer pushing element, and means to adjust said support relatively to said vehicle frame and to the ground; of a plurality of ground breaking elements, means of connection between said elements and said support for vertically adjusting said elements relatively to the ground by the vertical movements of the pushing element.

4. In a bulldozer, a frame pivoted on a vehicle, a bulldozer pushing element on said frame beyond an end of said vehicle, ground breaking means carried on said frame between said bulldozer pushing element and said end of the vehicle, and means for adjusting said frame so as to simultaneously raise and lower said bulldozer pushing element and said ground breaking means, and means to hold said ground breaking means in penetrating position only during movement in one direction.

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