

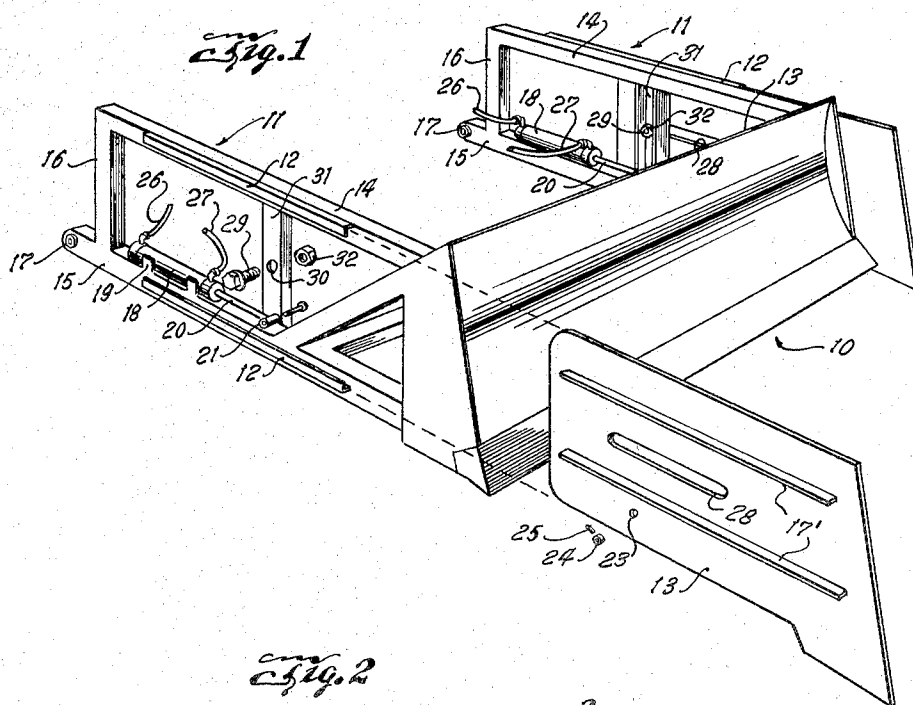
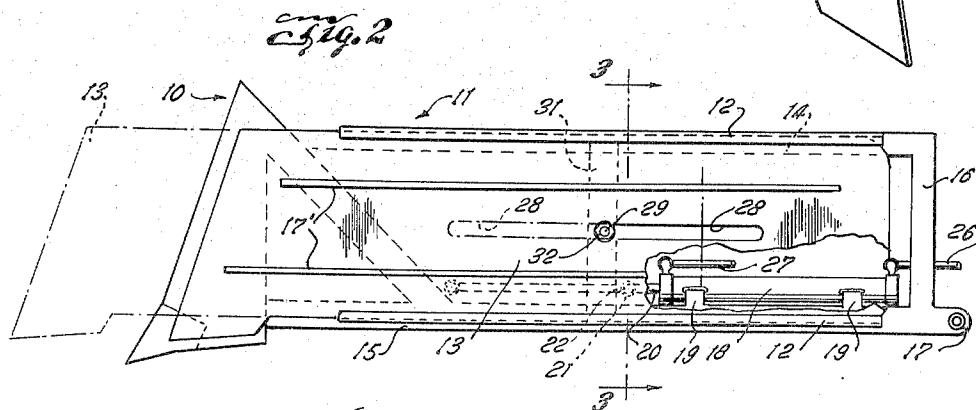
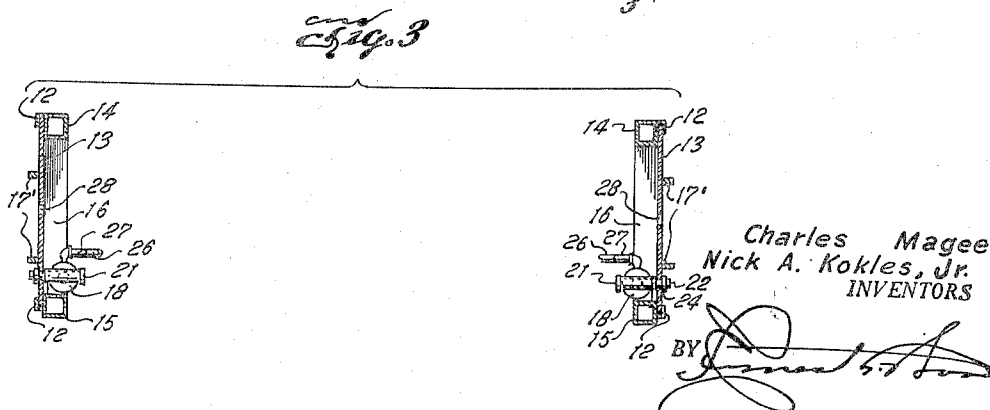
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BULLDOZER BLADE

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Charles Magee
Nick A. Kokles, Jr.
INVENTORS

BY

ATTORNEY

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BULLDOZER BLADE

Charles Magee and Nick A. Kokles, Jr., Dallas, Tex.

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8 Claims. (Cl. 37-143)

This invention relates to earth moving equipment and it has particular reference to certain new and useful improvements in bulldozer and scraper blades.

The principal object of the invention is to increase the carrying capacity of a bulldozer or other earth moving blade by providing a load confining plate at each end of the blade and so mounting these plates that they may be individually or jointly moved longitudinally or in a direction transverse to the longitudinal axis of the blade.

Another object of the invention is to provide actuating means for the end plates, preferably of hydraulic nature, which can be controlled from the operator's position on the tractor on which the bulldozer blade is mounted, thus to adjust the end plates in relation to the blade, as needed, or to effect full retraction of the plates prior to or during operations where no extra load carrying capacity is required.

Still another object of the invention is to provide extendable end plates for a bulldozer blade which are designed and constructed for both automatic adjustment and manual adjustment and, in any case, are easily installable on or removable from the bulldozer blade and its mounting arms and it would require but little variation in conventional blade mounting design to adapt the invention to conventional blades.

Other objects will appear as the description proceeds, taken in connection with the accompanying drawing, wherein:

Figure 1 is a perspective and partly exploded view of a bulldozer blade and adjustable end plates embodying the invention.

Figure 2 is a side elevational view showing in dotted lines an end plate in extended position, and

Figure 3 is a sectional view taken on line 3-3 of Figure 2.

Continuing with a more detailed description of the drawing, reference numeral 10 denotes generally a bulldozer blade of more or less conventional manufacture. Such blades are usually provided with parallel mounting arms, pivoted at their rear ends to a tractor. However, the mounting 11 to accommodate the invention is required to have channels 12 or equivalent means to slidably receive the upper and lower edges of an end plate 13, one of which is disposed at each end of the bulldozer blade 10. To support these channels 12, the mounting 11 is formed of two pairs of upper and lower arms 14 and 15 of tubular material, one side being identical to the other. The arms 14 and 15 are joined at their rear ends by a perpendicular member 16 and at their front ends, the arms are welded or otherwise suitably secured to the ends of the blade 10. The rear end of each of the lower arms 15 is provided with a hole 17 for the reception of bolts, not shown, which pivotally connect the blade mounting to a tractor.

In some contracting jobs, it is not necessary that a bulldozer move earth in great volume but in others requiring the handling of considerable quantities of material much time is lost by the falling off at the ends of

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the blade of material which could be conveyed if the blade had greater carrying capacity. This is the aim of the present invention in providing for the extension and retraction of the end plates 13 in their channels 12. The end plates 13 are reinforced by longitudinally extending and relatively parallel ribs 17'.

To operate the end plates 13, a hydraulic cylinder 18 is affixed by brackets 19 to the lower arms 15 of each mounting frame 11 and has a plunger 20, the operating end of which carries a fixed, right angular sleeve 21 through which passes a bolt 22. The bolt 22 extends through an opening 23 in an end plate 13 adjacent its lower edge and a nut 24 is threaded thereon and secured by a set screw 25 (Figure 1).

From the foregoing, it is evident that when fluid enters and leaves the cylinders 18 by way of fluid lines 26 and 27, respectively, the plungers 20 will be urged forwardly and will extend the end plates 13 the desired distance forwardly of the blade 10, thereby providing obstructions to prevent part of the blade load from falling off at the ends of the blade. To retract the end plates, the bulldozer operator manipulates a suitable valve of the hydraulic system, not shown, whereupon fluid flow will be reversed in fluid lines 26 and 27 to permit the plunger 20 to move into the cylinder.

Should it be desired to omit the hydraulic system and actuate the end plates 13 manually, the latter are each provided with a longitudinal slot 28 which is adapted to receive a bolt 29, extending through a hole 30 (Figure 1) of a vertical channel member 31, which latter extends from the upper arm 14 to the lower arm 15 of each mounting frame 11 at the approximate midsection thereof. A nut 32 is threaded onto the end of the bolt 29.

The slot 28 in each end plate 13 is sufficient in length to permit full extension or retraction of the plates and when the hydraulic system is used, the bolt 29 may be removed or simply loosened to permit unrestricted longitudinal displacement of the end plates but also serves to limit the degree of longitudinal displacement of the blades. In manual operation, the blades are extended the desired distance beyond the blade 10 and secured by the bolt 29 and nut 32. When the plates 13 are not in use, they are similarly secured in retracted position where they will not in any way interfere with normal function of the bulldozer blade.

Manifestly, the construction as shown and described is capable of some modification and such modification as may be construed to fall within the scope and meaning of the appended claims is also considered to be within the spirit and intent of the invention.

What is claimed is:

1. In a blade for earth moving machines, a load confining attachment for said blade comprising a plate mounted at each end of said blade for sliding displacement in a plane transverse to the longitudinal axis of said blade, upper and lower arms affixed at their ends to each end of said blade and extending rearwardly thereof perpendicular to the vertical plane of said blade, confrontingly arranged channel members carried by said arms for slidably receiving said plates, means for extending said plates forwardly of said blade and for retracting the same rearwardly thereof and means for limiting the degree of displacement of said plates.

2. A load confining attachment for an earth moving blade, comprising a vertically disposed plate at each end of said blade, a mounting affixed to each end of said blade and extending rearwardly thereof, confronting channels carried by each of said mountings for supporting said plates for longitudinal sliding displacement in a plane transverse to the longitudinal axis of said blade and means for extending and retracting said plate.

3. In an earth moving blade a load confining device

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there for comprising a plate vertically disposed adjacent each end of said blade parallel arms secured to each end of said blade and extending rearwardly thereof, confronting channel members carried by the arms at each end of said blade in which said plates are mounted for reciprocal movement in a plane transverse to the longitudinal axis of said blade and means for actuating said plates.

4. The structure of claim 3, and means for limiting the degree of reciprocal displacement of said plates.

5. A load confining device for the blade of an earth moving machine, comprising an elongate plate disposed in a vertical plane and at right angles to each end of said blade, a frame composed of upper and lower parallel arms affixed to each end of said blade, said frames each defining a mounting for each of said plates for holding the same against other than longitudinal reciprocal displacement to project the forward portions of said plates beyond the operative face of said blade, and means for limiting the degree of longitudinal displacement of said plates.

6. The structure of claim 5 and means to effect simultaneous movement of said plates.

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7. In an earth moving blade, apparatus for restraining earth against overflowing the ends of said blade, comprising an elongate plate substantially equal in width to the effective depth of said blade and movable in a plane transverse to the longitudinal axis of said blade at each end thereof, a frame composed of upper and lower parallel arms affixed to each end of said blade, said frames each defining a mounting for each of said plates rigid with and disposed rearwardly of said blade for supporting said plates for extension and retraction in relation to the operative face of said blade and means for simultaneously actuating said plates.

8. The structure of claim 7 and means for limiting the degree of extension and retraction of said plates.

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