Oct. 29, 1940. A. G. GURRIES 2,219,477

LEVELING SCRAPER

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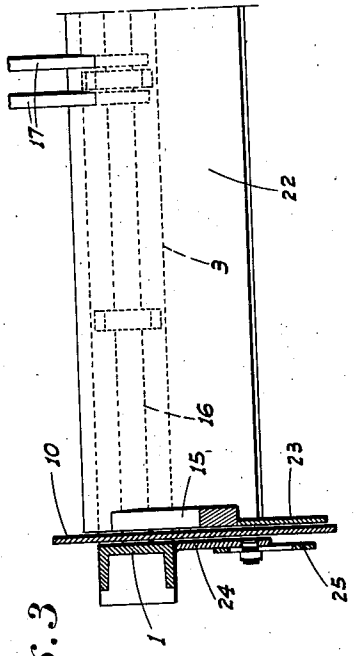


Fig. 3

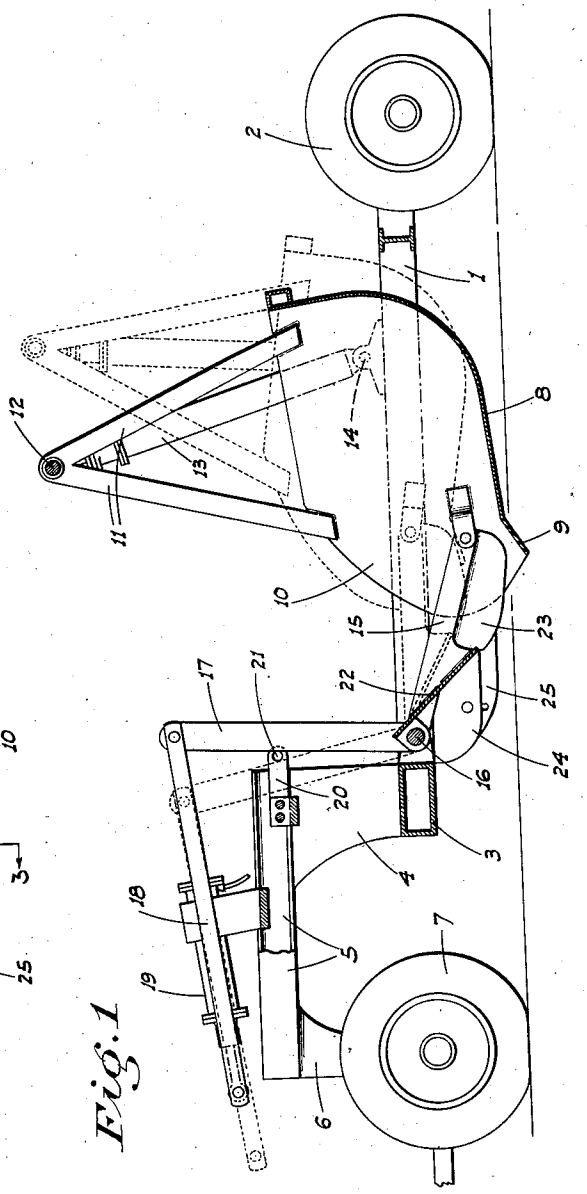


Fig. 1

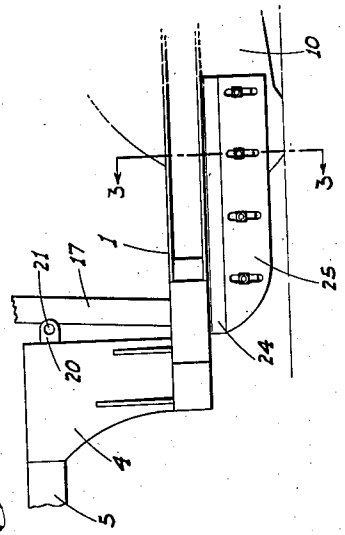


Fig. 2

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LEVELING SCRAPER

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2 Claims. (Cl. 37—126)

This invention relates to leveling scrapers, in which the dirt, after being scraped into the bowl, is at once re-deposited on the ground, as distinguished from carrying scrapers, in which the dirt may be transported a considerable distance before being discharged.

After the bowl of a leveling scraper has been filled, or partially so, any further dirt which is scraped up by the blade with the advance of the scraper rolls up in front of the blade, and remains ahead of the same, and in scrapers of this type as ordinarily constructed, such dirt may be pushed along on the ground as the scraper advances to the point of desired leveling or dumping. This dirt movement sets up considerable resistance and necessitates a relatively great expenditure of power to operate the scraper.

It is therefore the principal object of my invention to lessen this objectionable resistance by providing a form of front apron for scrapers of the leveling type, so arranged as to relieve this resisting pressure at the cutting edge of the blade as well as on the ground. At the same time, no interference with the desired freedom of leveling or dumping of the entire load is had.

A further object of the invention is to increase the load carrying capacity of the scraper without increasing its size, by the provision of means in addition to the apron to prevent lateral spillage of dirt around the bowl from in front as the scraper advances and becomes loaded.

A further object of the invention is to produce a simple and inexpensive device and yet one which will be exceedingly effective for the purpose for which it is designed.

These objects I accomplish by means of such structure and relative arrangement of parts as will fully appear by a perusal of the following specification and claims.

In the drawing similar characters of reference indicate corresponding parts in the several views:

Figure 1 is a sectional elevation of my improved leveling scraper.

Figure 2 is a fragmentary side elevation of the same.

Figure 3 is a fragmentary cross section taken on the line 3—3 of Figure 2, and looking forward.

Referring now more particularly to the characters of reference on the drawing, the frame of the scraper comprises side beams 1 supported by wheels 2 at their rear end. At their forward end the beams are connected by a transverse beam 3, which supports spaced upstanding plates 4. Relatively short beams 5 extend forwardly in converging relation from the top of the plates 4, and at their forward end support a depending post 6 on which the front swivel wheel truck 7 is mounted.

Disposed between the side beams 1, intermediate the rear wheels 2 and the cross beam 3 is the scraper bowl which includes a back and bottom plate terminating in a scraping blade 9 and side plates 10 projecting somewhat ahead of the blade. A pair of straps 11 converging to their upper end, project upwardly from each side plate, these pairs of straps being connected at the top by a cross shaft 12. This shaft at its ends serves as a connecting means for the piston rods of hydraulic cylinders 13, which at their lower end are pivoted on the beams 1, as indicated at 14.

A short distance above the blade, tension arms 15 are pivoted at their rear end on the side plates on the inside thereof, which arms at their forward end are secured on a transverse shaft 16 turnably mounted on the frame adjacent and back of the cross beam 3. An upstanding arm unit 17 is secured on the shaft 16 centrally of its ends, which is connected by a forwardly extending linkage 18 to the piston rod of a hydraulic cylinder 19, swivelly supported from the beams 5 on top of the same. It will thus be seen that by movement of the piston rod in one direction or the other, the arms 15 will be raised or lowered, correspondingly raising or lowering the scraping blade of the bowl. With this movement of the blade, the hydraulic cylinders 13 swing about the pivots 14 somewhat.

It is sometimes desired to hold the bowl raised clear of the ground a pre-determined distance without relying on the fluid pressure in the cylinder 19, as when transporting the unloaded scraper from one point to another. I therefore provide a pair of straps 20 which are supported in fixed relation between the plates 4, and which project on opposite sides of the arm unit 17. These straps at their rear end are provided with alined pin receiving holes 21, which are disposed just back of the rear edge of said arm unit when the latter is in a forward position and the scraper bowl is raised well clear of the ground, as indicated in dotted lines in Fig. 1.

Secured rigid with the shaft 16 and arms 15 and extending the full distance between the latter from on top of the shaft is an apron plate 22, disposed with a downward slant relative to said arms. The length of this plate is such that it clears the ground a certain distance when the blade is in scraping position, as shown in Fig. 1, and the rear end of said apron is then disposed in front of and above the blade.

The apron therefore forms a dirt supporting shelf onto which a considerable amount of dirt falls as such dirt becomes banked up and pushed ahead by the forward movement of the scraper, and which would otherwise be all retained on the ground where it would offer great resistance to said movement. Also the downward pressure of the dirt on the scraping blade, and which acts in opposition to the pressure of the incoming dirt as it rides up on the blade is considerably reduced, since the mound of dirt which creates such downward pressure is reduced by an amount corresponding to the load supported by the apron. At the same time, the apron, without materially moving from such position, does not interfere with freedom of leveling or load discharging operations. This is beacuse as the bowl is tilted to a discharge position by fluid applied to the cylinder 13, the scraping blade swings back on account of the position thereof relative to the pivot point of the arms 15 with the side plates, and the width of the gap between the blade and apron is increased.

In order to prevent escape of dirt laterally between the apron and side plates of the bowl, skirt plates 23 are secured on and depend from the arms 15, which plates extend from the rear end of the apron to the rear end of said arms in close overlapping relation to the side plates of the bowl. Additional protection against loss of dirt laterally is afforded by means of longitudinal skirt plates 24 rigid with and depending from the inner edges of the beams 1, as close to the side plates 10 as possible. These plates 24 extend from the back edge of the cross beam 3 some distance rearwardly of the forward edge of the side plates 10. Vertically adjustable extension skirt plates 25 overlap and are secured against the plates 24, so that side closures extending to adjacent the ground level from a point at least overlapping the scraping blade may be formed as desired.

From the foregoing description it will be readily seen that I have produced such a device as substantially fulfills the objects of the invention as set forth herein.

While this specification sets forth in detail the present and preferred construction of the device, still in practice such deviations from such detail may be resorted to as do not form a departure from the spirit of the invention, as defined by the appended claims.

Having thus described my invention, what I claim as new and useful and desire to secure by Letters Patent is:

1. A leveling scraper comprising a wheel supported frame having side beams, a bowl tiltably hung between the beams and including side plates and a scraping blade adjacent the forward end of the plates, tension arms pivoted on the side plates adjacent but above the blade and extending thence forwardly, a cross shaft turnably supported from the frame and on which the arms at their forward end are secured, means to control the rotation of said shaft, an apron plate rigid with the shaft and arms and extending the full distance between the latter at a downward angle thereto to a termination in a plane above and well ahead of the blade and skirt plates depending from the arms and extending rearwardly from the apron to adjacent the rear end of the arms in overlapping relation to the side plates of the bowl.

2. A scraper comprising a frame which includes side beams, a bowl tiltably hung between the beams and having a scraping blade at its forward end, tension arms pivoted at their forward end on the frame ahead of the bowl and at their rear end on the bowl adjacent its forward end, means to turn the arms about their frame pivot, an apron plate rigid with and extending rearwardly and downwardly between the arms at an acute angle to a horizontal plane to a termination above and ahead of the blade but below the top of the bowl and skirt plates rigid with and depending from the arms and extending rearwardly from the apron plate to adjacent the rear end of the arms at a level near the blade in overlapping relation to the sides of the bowl.

ALBERT G. GURRIES.