Dec. 20, 1932. C. LE BLEU 1,891,428

SCRAPER FOR DIGGING OR LEVELING

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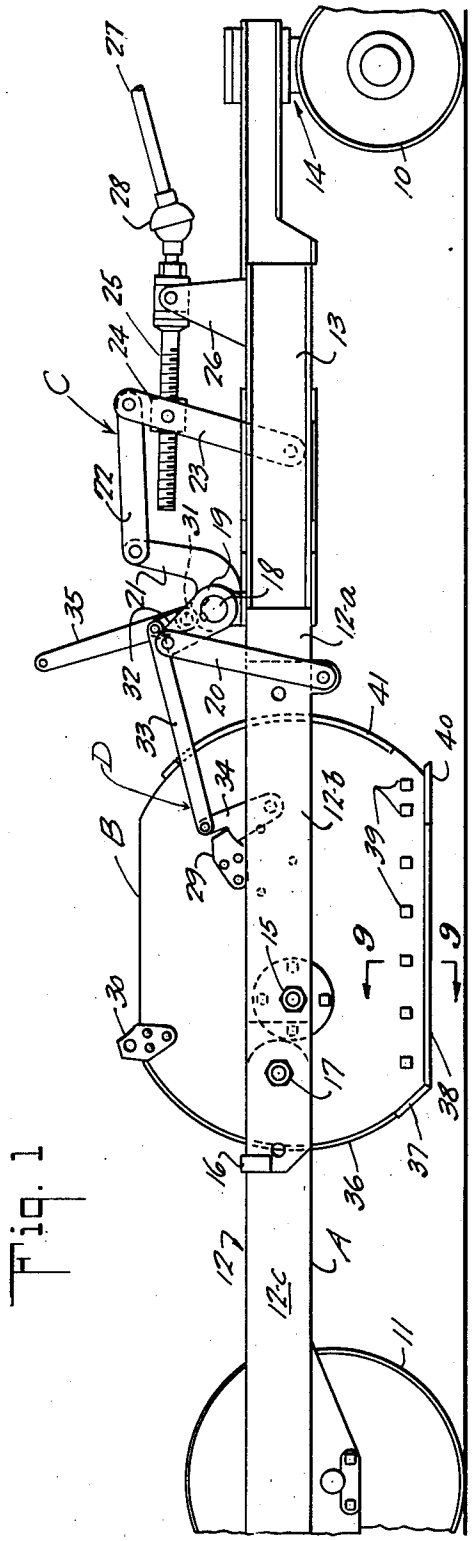


Fig. 1

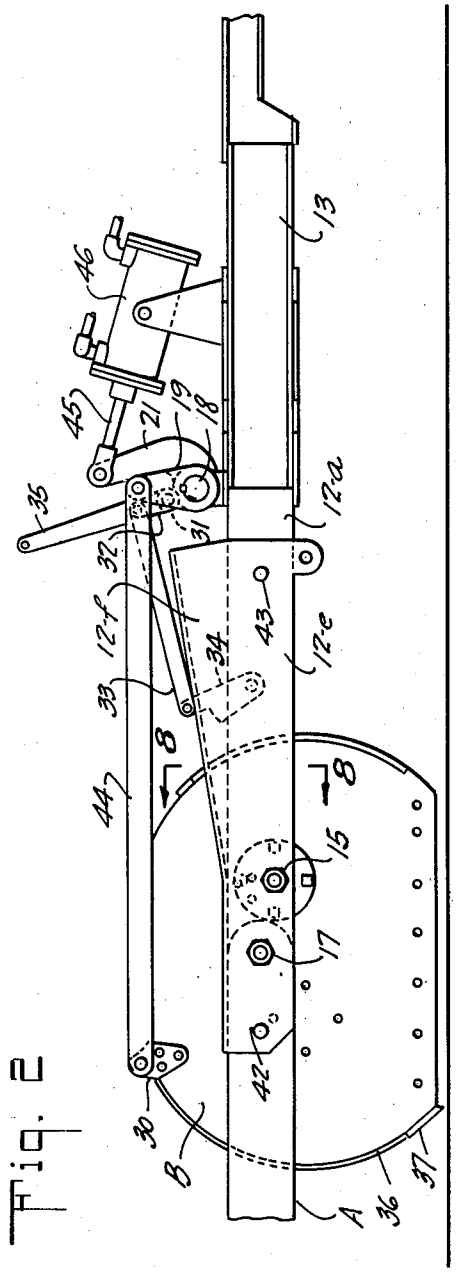


Fig. 2

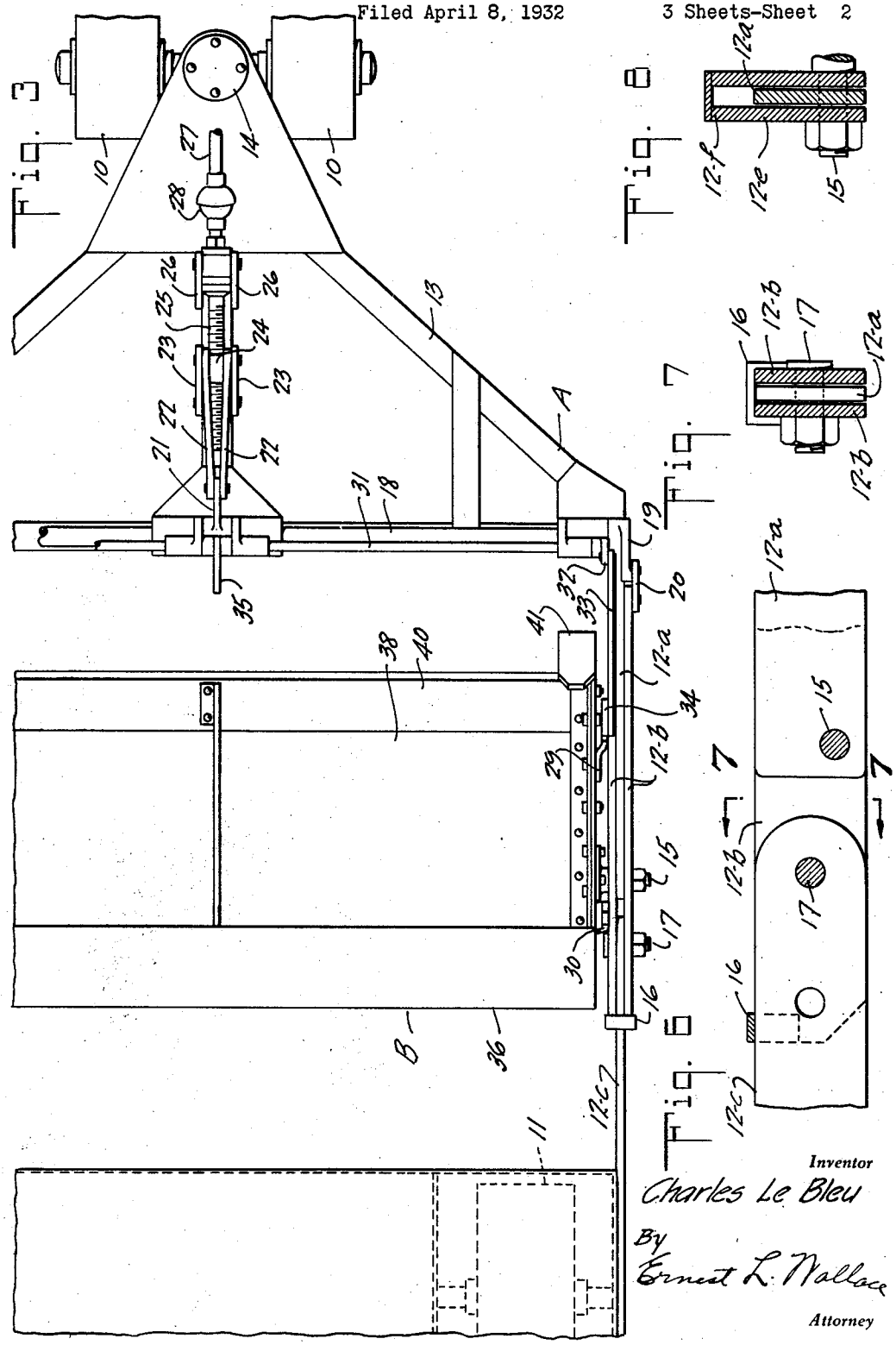
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Fig. 4

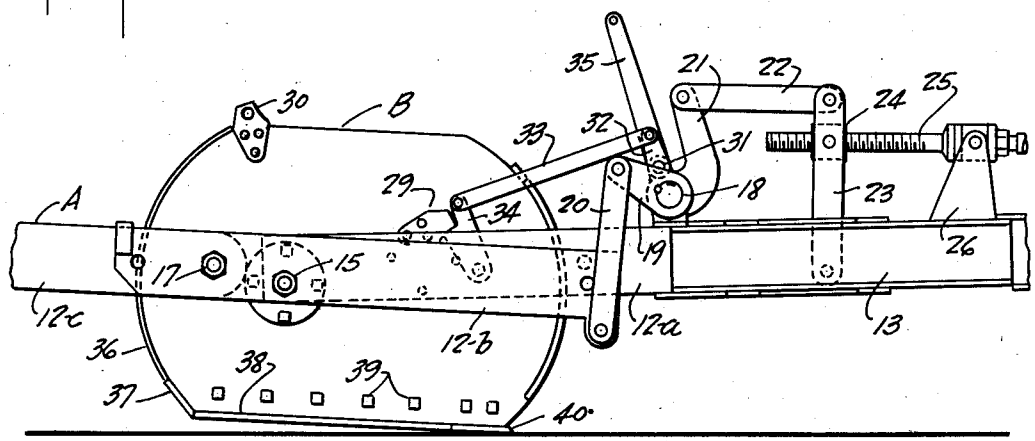


Fig. 5

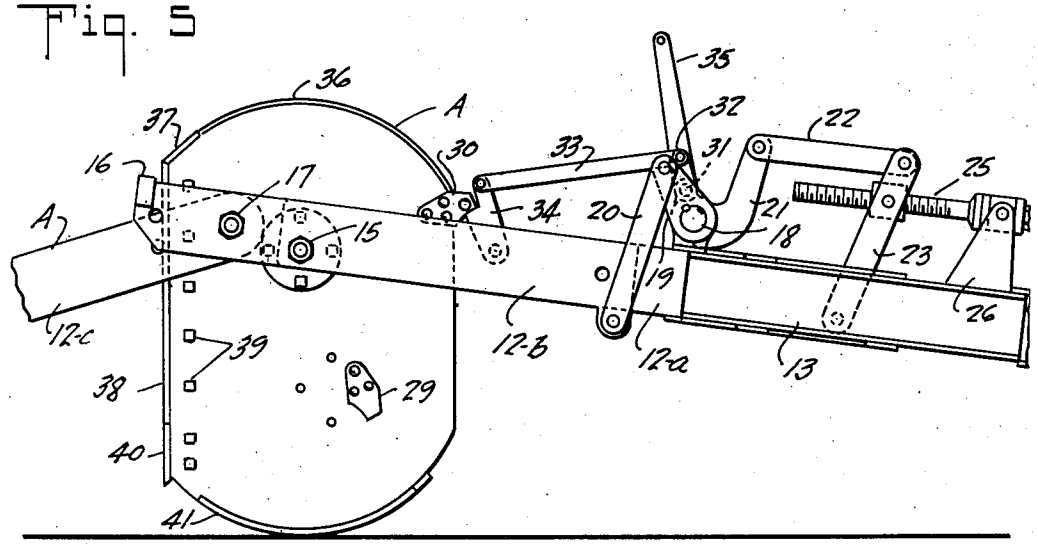
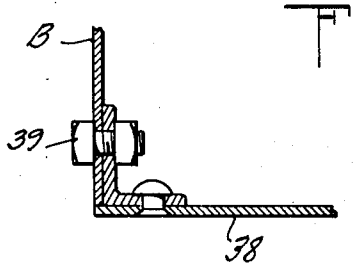


Fig. 9



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UNITED STATES PATENT OFFICE

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SCRAPER FOR DIGGING OR LEVELING

Application filed April 8, 1932. Serial No. 603,958.

The invention relates to a machine for moving dirt and distributing it in desired locations and having a bowl which may be tilted. It relates to a device used in what is termed "scraper work". Such scraper work may be divided into three classes, namely, short haul, long haul and leveling. A short haul is considered to cover fifty to six hundred feet and a long haul from six hundred feet upward. This has resulted in the development of many different designs of scrapers which fall in one of the three classes because an individual scraper will perform some one of these classes of work more efficiently than others. The result is that a scraper which may be properly classified as a short haul scraper cannot successfully compete with long haul scrapers in long haul work and vice versa. Likewise, a long or a short haul scraper cannot successfully compete with a land leveler in finish or land leveling work. In scraper work, it is usual that on any one job all three classes of work are included. The result is that those engaged in such work must have individual machines for these three classes and a large investment in equipment.

The broad object of this invention is to provide a scraper which is adaptable to perform with equal efficiency all three of the above mentioned classes of work. It is the principal object of this invention to provide a scraper having two blades and a removable bottom adapting it to use as a scraper or a leveler.

These objects are obtained by means of the embodiments of my invention illustrated in the accompanying drawings, in which:—

Fig. 1 is a side elevation of a scraper having a knuckle frame with the bucket disposed in carrying position; Fig. 2 is a side elevation of a modification with the side bar members of the frame fastened to be rigid and the bucket arranged and mounted for leveling; Fig. 3 is a fragmentary plan view of the structure shown in Fig. 1; Fig. 4 is a view similar to Fig. 1 with the bucket in digging position; Fig. 5 is a side view with the bucket in dumping position; Fig. 6 is a fragmentary detail view of a side bar knuckle partly in section; Fig. 7 is a section as seen on the plane designated 7—7 in Fig. 6; Fig. 8 is a section as seen on the plane designated 8—8 in Fig. 2; and Fig. 9 is a section as seen on the line 9—9 of Fig. 1.

Referring more particularly to Figs. 1 and 3 to 7 inclusive, a supporting frame A carries a revoluble bucket B. The frame is supported upon front wheels 10 mounted on a truck and rear wheels 11.

The front wheels are dirigible and may be secured to the frame in any suitable manner enabling the scraper to be coupled to and follow a tractor. Mechanism to raise and lower the bucket is indicated generally by C. A device to limit the tilting of the bucket is marked D.

Referring more particularly to the frame A, it comprises side bars which have a double knuckle intermediate the front and rear wheels. The side bars are indicated generally by 12 and at the front there are converging members 13 which form bridles. As shown herein, the front wheel truck is connected to the frame by a king pin structure shown conventionally and marked 14. The side bars are counterparts of one another, each comprising a section 12*a* and a section 12*b* secured thereto by a pintle 15. The pintle serves as a trunnion for the bucket B. The section 12*b* is formed of a pair of bars, one on each side of the section 12*a*, as best shown in Figs. 3 and 7. At the rear end of section 12*b* is a yoke 16. Secured to the section 12*b* by means of a pivot pin 17 is a rear section 12*c*. The yoke 16 forms a rule joint abutment so that the sections 12*b* and 12*c* can only break upwardly. Sections 12*b* have projections on their lower sides for pinning thereto a link.

Mounted in suitable bracket bearings so as to be supported upon the side bar sections 12*a* is a shaft 18. Keyed to the shaft 18 at opposite ends are arms 19 pinned by links 20 to the projections on side bar sections 12*b*. Keyed to the shaft 18 at its center is a crank arm 21 pivotally connected by a link rod 22 to a rocker 23. The link rod comprises two pieces, placed side by side, and the rocker comprises two bars. Between the bars of

rocker 23 is a nut 24 swivelled thereon. Engaged with the rocker is a threaded shaft 25 held by a thrust collar which is swivelled to a bearing bracket 26. Shaft 25 is connected to an operating shaft 27 by a universal joint 28. The operating shaft 27 is preferably power actuated from the tractor and it is obvious that by rotation of the shaft the rocking of arm 21 may be effected and thereby turning of shaft 18 resulting in determining the angular relation of sections 12*a* and sections 12*b* of the frame.

As will be noted from Figs. 1 and 4, the carrying and digging positions of the bucket may be determined by operation of shaft 27. The amount of digging may be made adjustable. However, when the bucket is in digging position as shown in Fig. 4, there would be a tendency of the bucket to turn over into the dumping position shown in Fig. 5 unless restrained. On the sides of the bucket are catches 29 and 30. A shaft 31 extends across the frame adjacent the shaft 18 and is mounted in suitable bearings. Fixed to the ends of shaft 31 are arms 32 to which links 33 are pinned. Pinned to the inner bar of section 12*b* on each side is a keeper rocker 34 which is pivotally connected at its upper end to link 33. Keepers 34 have shoulders so as to be swung into the path of catches 29 and 30 thereby to arrest clockwise movement of bucket B. To control the position of keepers 34, a handle 35 is secured to the shaft 31. By means of the handle 35, the keepers 34 may be disposed to be engaged by the catches or retracted therefrom. In the position shown in Figs. 1 and 4, the keepers 34 engage catches 29 and the level of the bucket is controlled entirely by bending of the frame about the trunnions 15. If the bucket is in digging position as shown in Fig. 4 and the keepers are released, the bucket will turn over and assume dumping position, the keepers being restored to arresting position so as to engage catches 30 as shown in Fig. 5. In this position, the frame control should be operated to aline sections 12*a* and 12*b*. By releasing the keepers, the bucket may completely turn over and by restoring the keepers catches 29 may be engaged and the bucket disposed in either carrying or digging position.

The bucket has a rear arcuate wall 36 with a scraper blade 37 at its lower edge used in leveling. A removable bottom 38 may be secured to the bucket by bolts 39. At the forward edge of the bottom 38 is a digging blade 40. Shoes 41 are provided at the front of the bucket for riding upon the ground when the bucket is in dumping position.

The device is operable as a lever, as shown in Fig. 2. The structure of the side bars is modified, in that, the center section of the side bars indicated by 12*e* is of channel form in cross section as shown in Fig. 8. The web of the channel flares upwardly as shown in Fig. 2 and indicated by 12*f*. When used as a leveler, the side bars are made rigid by inserting locking pins 42 and 43 in registering apertures in the sections. Bucket B has the trunnion attachment 15 placed further forward. Catches 30 have bolt holes. Links 20 shown in Figs. 1, 4 and 5 are removed and replaced by connecting bars 44 which are pinned to catches 30. Tilting of the bucket B is controlled by movement of the connecting rods 44 effected from arm 21. Handle 35 and its associated parts are inoperative when used as a leveler. Instead of the mechanical nut and threaded shaft construction heretofore described for operation of the arm 21, a hydraulic motor may be provided. Arm 21 is shown connected to a piston rod 45 which is operably a piston in an oscillating cylinder 46 mounted upon the bearing bracket 26. Suitable pipes are provided for introducing an exhausting fluid from the ends of the cylinder. In the operation of the device as a leveler, the bottom 38 is removed and the blade 37 performs the cutting function.

The provision of the scraper blade 37 and the removable digging blade 40 and bottom 38 enables a change to be made adapting the bucket either to scraper operation or to leveler operation. It will be apparent that the bottom and blade structure is not limited to the specific control for the position of the bucket or to the particular frame structure.

What I claim is:—

1. A bowl for dirt moving machines adapted to be drawn across the surface of the ground, said bowl being adapted to be positioned at selected angles with relation to the ground and comprising: a transversely extending scraper blade at the rear of the bowl and a detachable bottom with a digging blade at its forward edge.

2. A bowl for dirt moving machines adapted to be drawn across the surface of the ground comprising a frame, a bowl extending transversely of and supported on said frame, and means to selectively position said bowl to determine its angular tilt, said bowl having a transversely extending scraper blade at the rear of the bowl and a detachable bottom with digging blade at its forward edge.

3. A dirt moving machine adapted to be drawn across the surface of the ground comprising a frame, a bowl extending transversely of and supported on said frame, and means to position said bowl and determine its angular tilt, said bowl having a back with a scraper blade at its lower edge and a detachable bottom with a digging blade at its forward edge.

4. A wheeled dirt moving machine adapted to be drawn across the surface of the ground comprising a frame supported on front and rear wheels, a tiltable bowl extending transversely of and supported on said frame intermediate the front and rear wheels, and mecha-

nism to control the angular position of said bowl with relation to the ground, said bowl having a transversely extending scraper blade at its rear and a detachable bottom with a digging blade at its forward edge.

5. A bowl for dirt moving machines adapted to be drawn across the surface of the ground, said bowl being adapted to be positioned at selected angles with relation to the ground and comprising: side walls, a back with a scraper blade at its lower edge and a detachable bottom with a digging blade at its forward edge.

6. A bowl for dirt moving machines adapted to be drawn across the surface of the ground comprising a frame, a bowl extending transversely of and supported on said frame, and means to selectively position said bowl to determine its angular tilt, said bowl having side walls, a back with a scraper blade at its lower edge and a detachable bottom with a blade at its forward edge.

7. A wheeled dirt moving machine adapted to be drawn across the surface of the ground comprising a frame supported on front and rear wheels, a tiltable bowl extending transversely of and supported on said frame intermediate the front and rear wheels, and mechanism to control the angular position of said bowl with relation to the ground, said bowl having a back with a scraper blade at its lower edge and a detachable bottom with a digging blade at its forward edge.

In witness that I claim the foregoing I have hereunto subscribed my name this 31 day of March, 1932.

CHARLES LE BLEU.