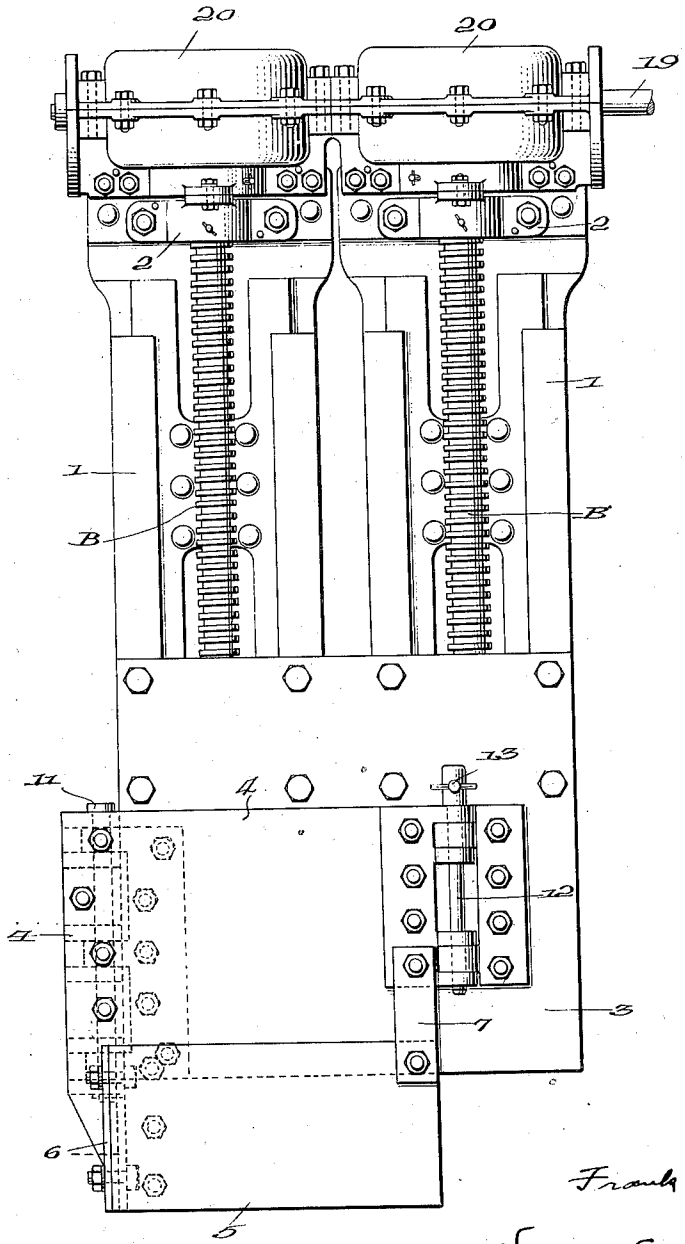
Oct. 5, 1937. F. SPENO 2,095,157

BALLAST CLEANING MACHINE

Filed Dec. 2, 1935 5 Sheets-Sheet 1

Fig. 1.



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Oct. 5, 1937. F. SPENO 2,095,157

BALLAST CLEANING MACHINE

Filed Dec. 2, 1935 5 Sheets-Sheet 2

Fig. 7

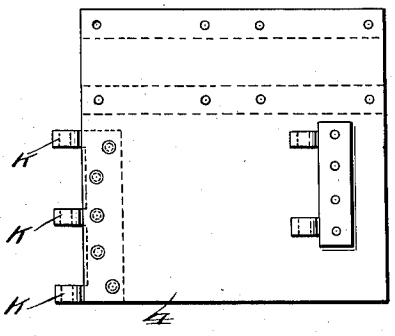


Fig. 8

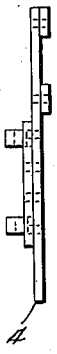


Fig. 9.

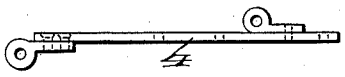


Fig. 10.

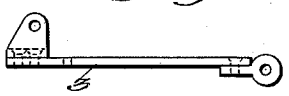


Fig. 11.

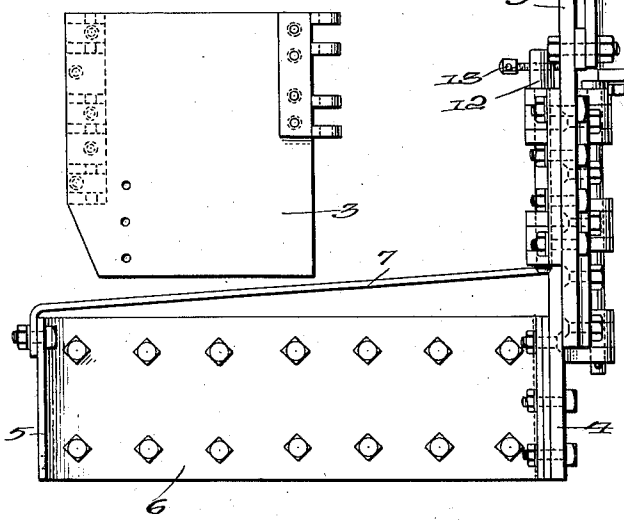
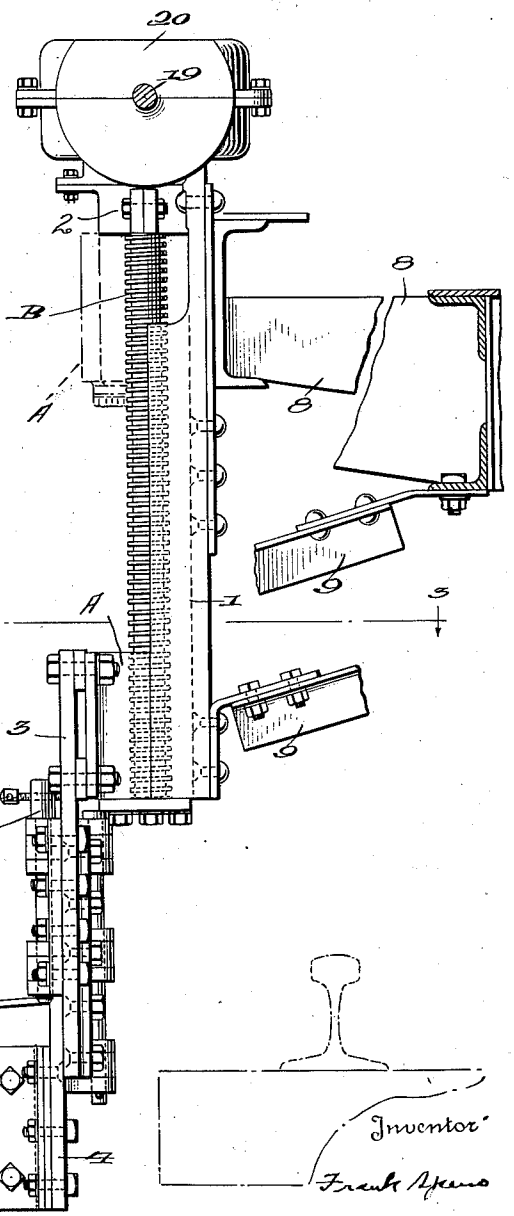


Fig. 2.



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BALLAST CLEANING MACHINE

Filed Dec. 2, 1935 5 Sheets-Sheet 3

Fig. 3.

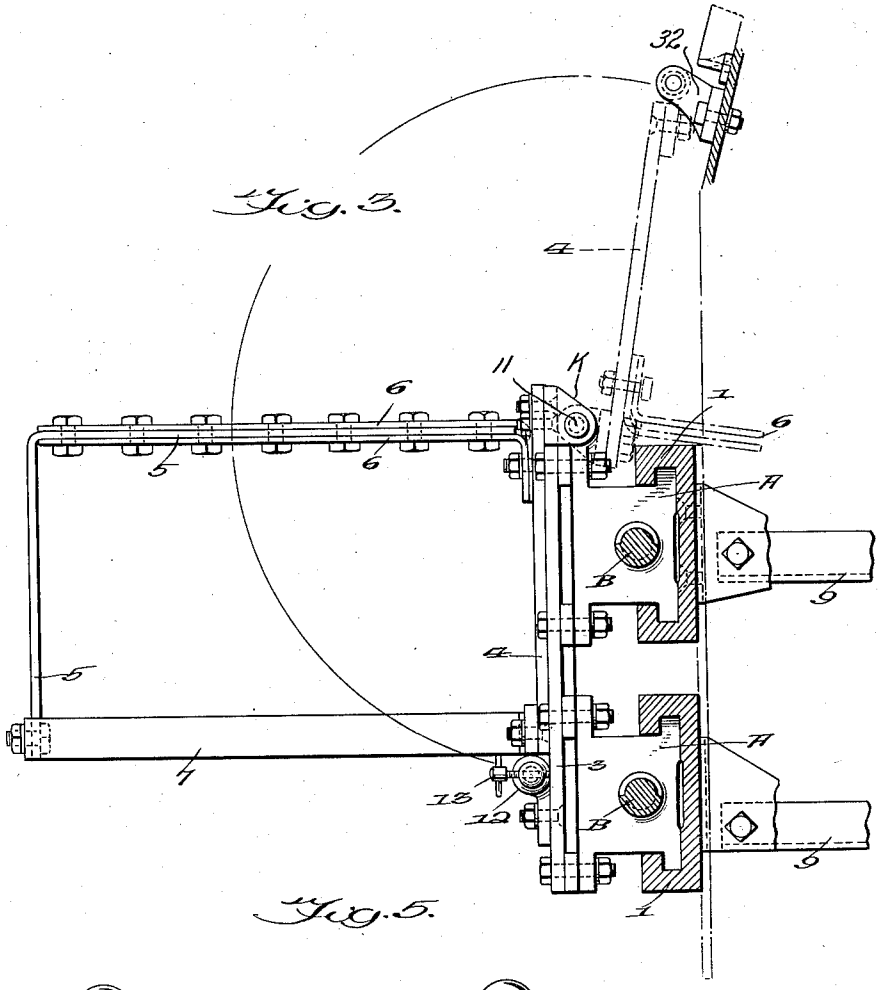
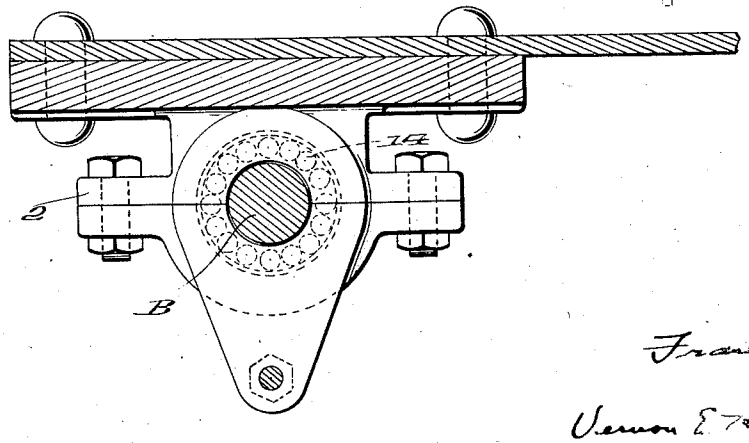


Fig. 5.



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BALLAST CLEANING MACHINE

Filed Dec. 2, 1935 5 Sheets-Sheet 4

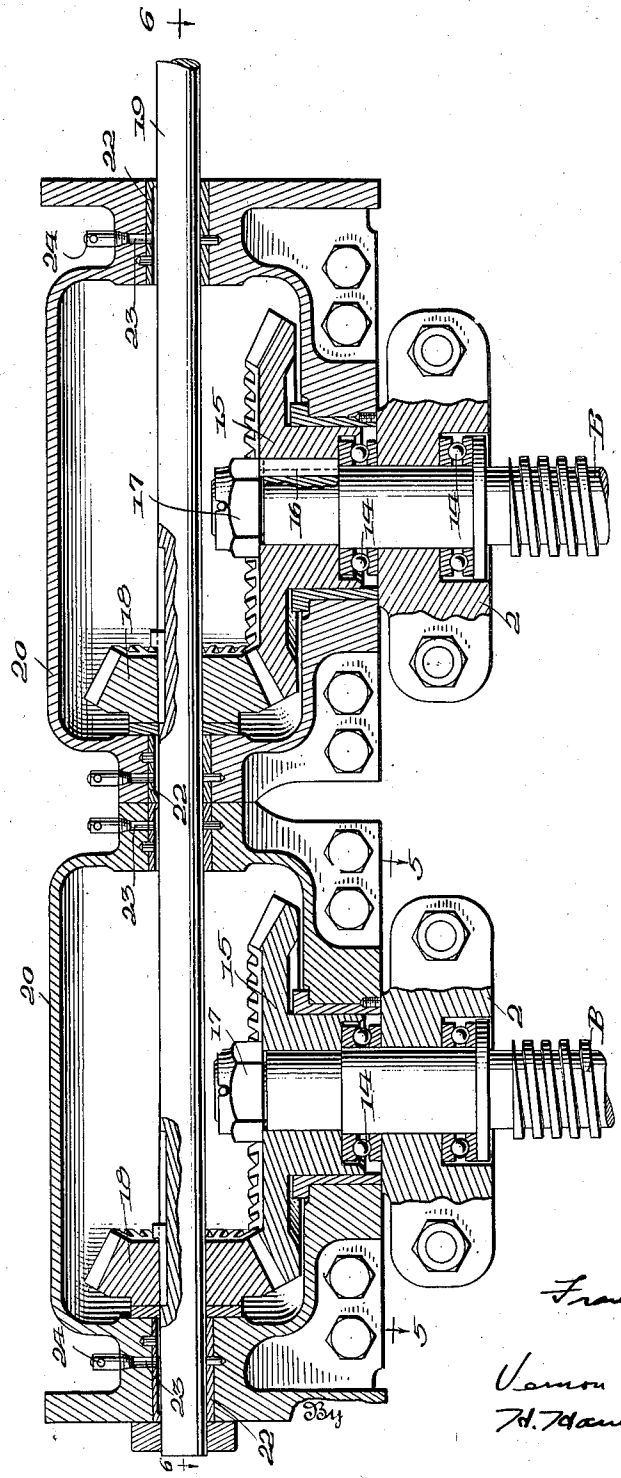


Fig. 4.

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BALLAST CLEANING MACHINE

Filed Dec. 2, 1935 5 Sheets-Sheet 5

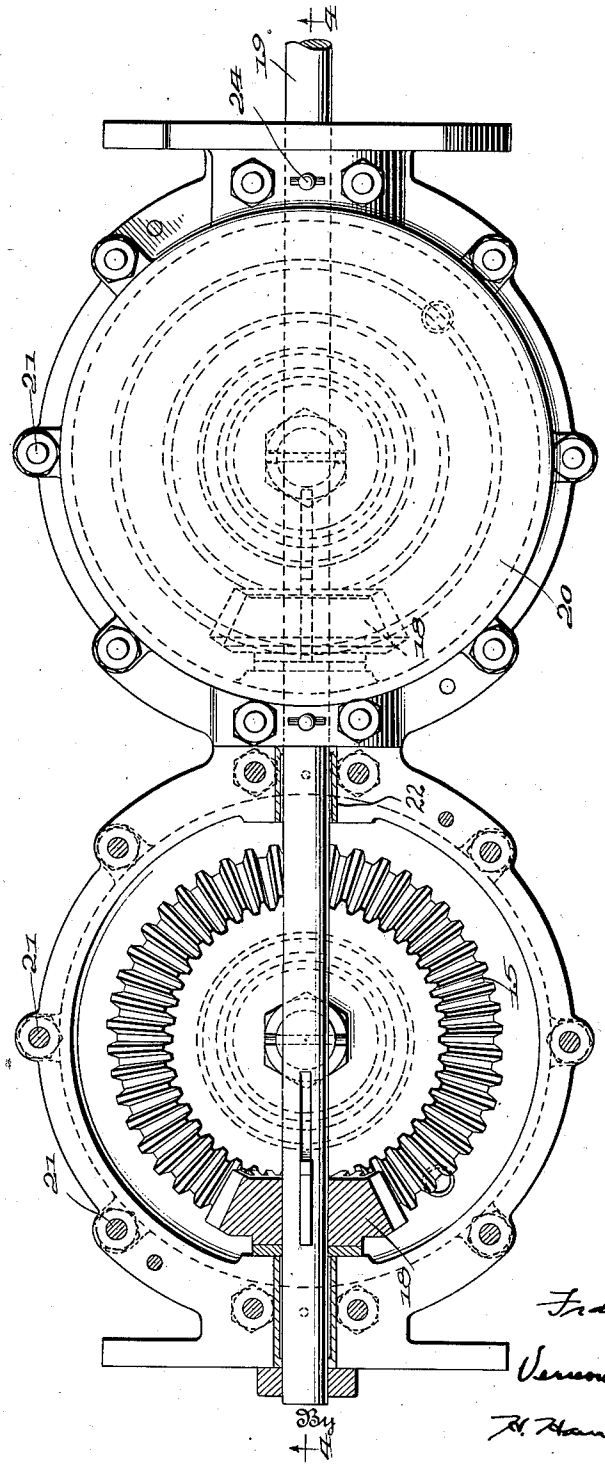


Fig. 6.

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Patented Oct. 5, 1937 2,095,157

UNITED STATES PATENT OFFICE

2,095,157

BALLAST CLEANING MACHINE

Frank Speno, Ithaca, N. Y.

Application December 2, 1935, Serial No. 52,607

9 Claims. (Cl. 37—105)

My invention relates to an improvement in ballast cleaning machines, and the present invention is really an improvement on the inventions set forth in Letters Patent Nos. 1,873,794, granted to me on August 23, 1932, and 1,951,451, granted to me on March 20, 1934, and this present improvement has to do more particularly with what is termed a ballast leveler.

A scraper is provided and arranged to cut its way through the ballast at the outer ends of the railroad ties with the forward movement of the machine and to level the ballast off without reaching under or striking the ends of the ties.

With the leveler blade, means is provided for raising and lowering the entire structure and maintaining it in a rigid position at all times so that any ordinary obstruction, such as would usually be encountered in the work of a machine of this character, will be pushed aside and the ballast leveled off; and means is also provided to permit swinging the leveler aside and out of the way and more or less parallel with the machine when desired as well as for adjusting and holding it in position vertically to regulate the depth of cut when in operation and for lifting it out of the way when not in action.

In the accompanying drawings:

Fig. 1 is a view in side elevation;

Fig. 2 is a view from the front;

Fig. 3 is an enlarged horizontal section on line 3—3 of Fig. 2, looking in the direction of the arrows;

Fig. 4 is an enlarged vertical section through the line 4—4 of Fig. 6;

Fig. 5 is a horizontal section on the line 5—5 of Fig. 4 looking in the direction of the arrows;

Fig. 6 is an enlarged horizontal section on the line 6—6 of Fig. 4 looking in the direction of the arrows; and

Figs. 7, 8, 9, 10 and 11 are detail views of parts going to make up the construction of the leveler.

The numeral 1 represents the arm guides; 2, the arm guide caps; 3 is the upper plate of the leveler, as shown in Fig. 11, whereas 4, is a hinge plate, the latter held in place by a hinge pin 11.

The numeral 5 indicates the outside leveler plate; and 6 is the inside leveler plate made in two parts as shown in Fig. 3, the outside and inside leveler plates being bolted securely together as shown in Figs. 2 and 3. A brace 7 extends from one end of the outside leveler plate 5 to the hinge plate 4 where it is bolted. The inner ends of the inside leveler plates 6 are also bolted to the hinge plate 4, as shown in Fig. 3. Rear and front braces 8 and 9 connect the arm guides 1 with the side of the ballast machine (not shown).

Cross-heads A are fittted to slide up and down in the arm guides 1, and their movement is regulated and controlled by the leveler screws B, of which there are two shown, (see Figs. 1, 2, 3 and 5) and when these screws are turned, the leveler plates are raised or lowered as the case may be. As has been explained, the inner edges of the inside leveler plates 6 are securely bolted to the hinge plate 4, and this hinge plate is hinged by means of a hinge pin 11 which extends through the knuckles K provided therefor on the edge of the hinge plate 4 (see Fig. 7) and through cooperating hinge parts on the plate 3.

The leveler plates are held securely in working position by a removable pin 12 (see Figs. 1, 2 and 3) and this is preferably locked in place by a wing-screw 13. When it is desired to swing the leveler plates aside, as shown in the dotted semi-circular line in Fig. 3, this lock-pin 12 is removed and the leveler may then be swung back alongside the machine and out of the way where it is locked in inoperative position by inserting the pin 12 in the bracket 32 attached to a side of the car.

The upper ends of the leveler screws B extend through the arm guide caps 2, as shown in Figs. 4 and 5, where they are journaled in antifriction thrust bearings 14. Bevel-crown gears 15 are secured to the extreme upper ends of the leveler screws by means of the castle-nuts 17. Meshed with these crown bevel gears 15 are the bevel pinions 18, and the latter are keyed to the drive-shaft 19 as viewed in Figs. 4 and 6. All these gears are encased in the bevel gear housing 20, the upper and lower sections of which are held together by bolts 21.

Interposed between the drive shaft 19 and the housing are bushings 22 of any approved form, and the lubricating ducts 23 are provided for Alemite or other lubricant and are closed by Alemite fittings 24.

In the operation of this leveler, the drive shaft 19 is turned clockwise in order to raise the leveler and counterclockwise to lower it, and this operation takes place from the cab of the machine (not shown).

I claim:

1. The combination of a leveler, a support therefor, arm guides, cross-heads movable vertically in the guides, leveler screws adapted to turn in the cross-heads, power means for turning the screws, the leveler including an upper plate, a hinge plate, outside and inside leveler

plates, means for hinging the hinge plate to the upper plate, removable locking means for securing the leveler plates in rigid operative position, and when removed to permit them to be swung out of operative position.

2. The combination of a leveler, a support therefor, arm guides, cross-heads movable vertically in the guides, leveler screws adapted to turn in the cross-heads, power means for turning the screws, the leveler including an upper plate, a hinge plate, outside and inside leveler plates, means for hinging the hinge plate to the upper plate, removable locking means for securing the leveler plates in rigid operative position, and when removed to permit them to be swung out of operative position, a drive shaft having bevel gears, crown bevel gears on the leveler screws meshed with the bevel gears on the drive shaft, whereby motion is transmitted from the drive-shaft to the leveler screws, and a bevel gear housing enclosing a portion of the drive shaft, the gears, and the upper ends of the leveler screws.

3. The combination of outside and inside leveler plates, a hinge plate to which the leveler plates are secured, an upper plate, guide arms, cross-heads to which the upper plate is secured, leveler screws adapted to turn in the cross-heads for raising and lowering the latter, means for hinging the hinge plate to the upper plate, and detachable means for holding the leveler plates in operative position or permitting them to be swung to inoperative position.

4. A leveler for ballast machines, comprising an outside leveler plate, one portion of which extends outwardly and another portion forwardly, inside plates secured on opposite sides of the outwardly extending portion of the outside plate, a hinge plate to which the inner ends of the inside plates are securely fastened, and a brace extending from the outer forward end of the outside leveler plate to the hinge plate.

5. A leveler for ballast machines, comprising an outside leveler plate, one portion of which extends outwardly and another portion forwardly, inside plates secured on opposite sides of the outwardly extending portion of the outside plate, a hinge plate to which the inner ends of the inside plates are securely fastened, a brace extending from the outer forward end of the outside leveler plate to the hinge plate, means for hinging the leveler to swing to or from an operative position, and means for mechanically raising and lowering the leveler.

6. A scraper structure comprising a longitudinal support movable lengthwise thereof, a leveler blade, a plate extending longitudinally of said support and carrying said blade and having said blade extending laterally from the support in normal operative position, means hinging the rear edge portion of the plate to the support for swinging movement of the leveler blade relative thereto, and means for latching the forward edge portion of the plate to the support in said operative position of the leveler blade.

7. A scraper structure comprising a longitudinal support movable lengthwise thereof, a leveler blade, a plate extending longitudinally of said support and carrying said blade and having said blade extending laterally from the support in normal operative position, a hinge pin connecting said plate with the support for swinging movement of the leveler blade relative thereto, and a latch pin for removably connecting the forward end of the plate with the support in said operative position of the leveler blade.

8. A scraper structure comprising a support, a leveler blade, a plate carrying said blade and having said blade extending laterally from the support in normal operative position, a hinge pin connecting said plate with the support for swinging movement of the leveler blade relative thereto, a latch pin for removably connecting the forward end of the plate with the support in said operative position of the leveler blade, and power means connected with the support for raising and lowering the leveler blade.

9. A scraper structure comprising a supporting plate, a hinge plate normally extending parallel with the supporting plate, means for hinging said hinge plate to the supporting plate, outside and inside leveler plates carried by the hinge plate and extending laterally therefrom, and removable locking means for securing the hinge plate in rigid operative position and when removed permitting it to be swung out of operative position with the leveler plates.

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