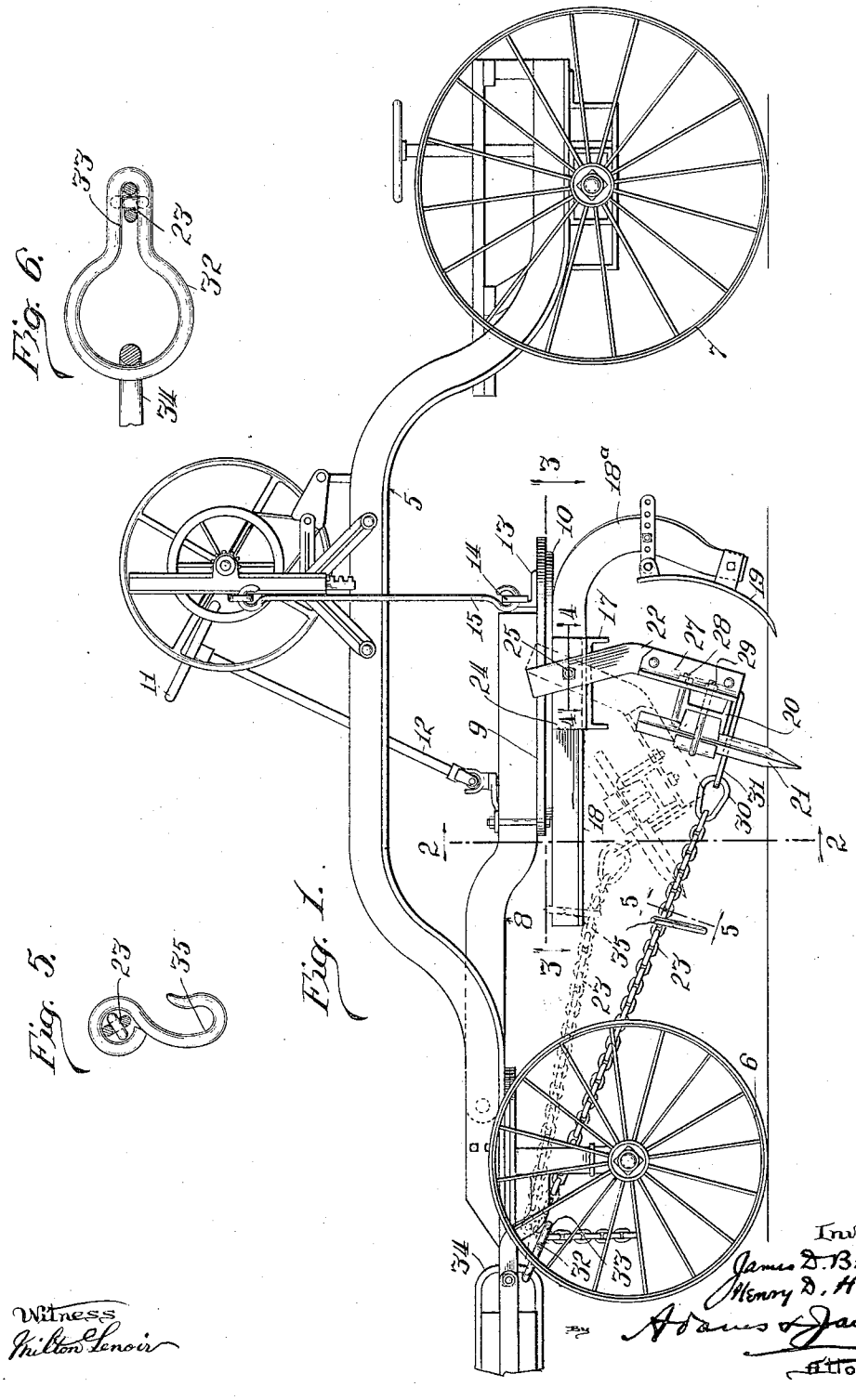
June 24, 1924. 1,499,093

J. D. BENBOW ET AL

ROAD MAKING MACHINE

Filed Feb. 5, 1923 2 Sheets-Sheet 1



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Fig. 2.

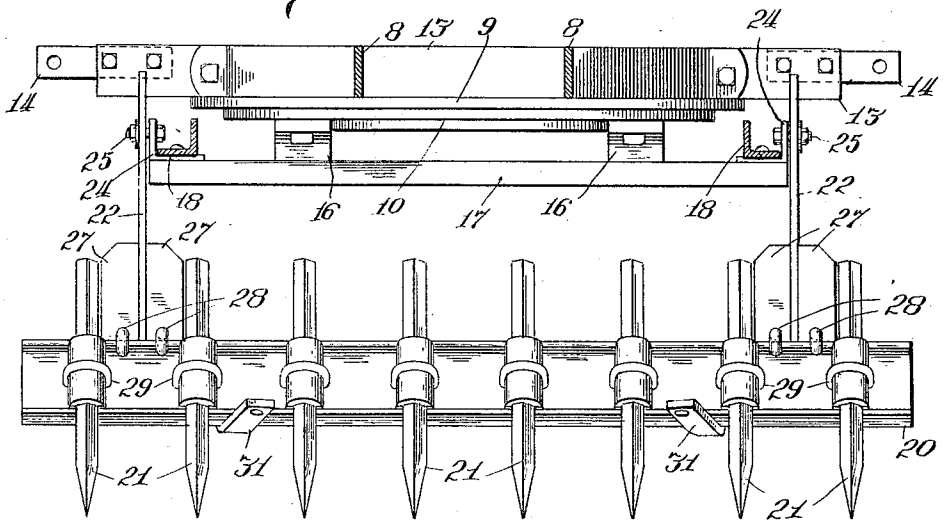


Fig. 3.

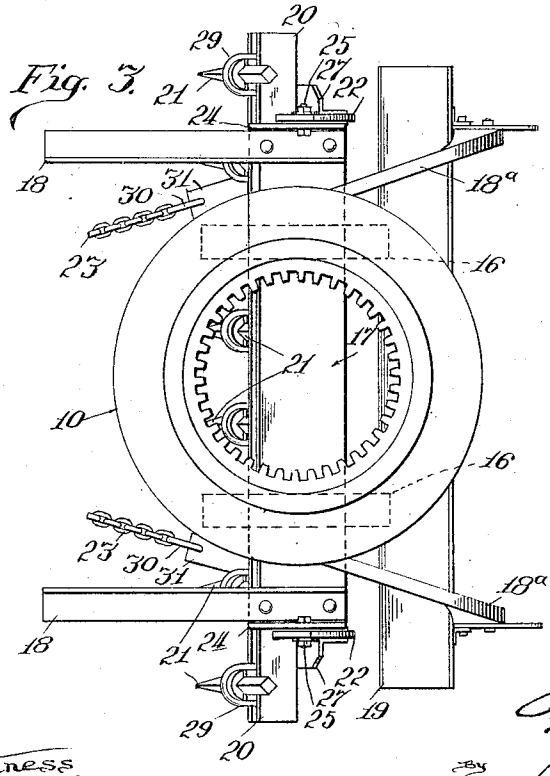
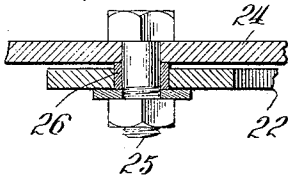


Fig. 4.



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UNITED STATES PATENT OFFICE.

JAMES D. BENBOW AND HENRY D. HAMPER, OF AURORA, ILLINOIS, ASSIGNORS TO WESTERN WHEELED SCRAPER COMPANY, OF AURORA, ILLINOIS, A CORPORATION OF ILLINOIS.

ROAD-MAKING MACHINE.

Application filed February 5, 1923. Serial No. 617,115.

To all whom it may concern:

Be it known that we, JAMES D. BENBOW and HENRY D. HAMPER, citizens of the United States, and residents of Aurora, in the county of Kane and State of Illinois, have jointly invented certain new and useful Improvements in Road-Making Machines, of which the following is a specification, reference being had to the accompanying drawings.

This invention relates to improvements in that type of machines for making and repairing roads in which there is employed a scraper-blade suspended under a wheeled frame and adjustable so as to vary its angular relation to the line of draft, and also adjustable vertically. In many cases it is desirable, in order that the best results may be secured from the work of the blade, that the earth that the blade acts upon be stirred and broken just prior to being attached by the blade, and it is the object of our present invention to provide a device for that purpose which is so connected with the movable parts that the blade is attached so that it will be raised and lowered and also angularly adjusted with relation to the line of draft simultaneously with such movements of the blade, and at the same time will be capable of being independently moved to carry it out of operative position at such times as the condition of the earth renders its use unnecessary. This object we attain by the means shown in the drawings and hereinafter described. That which we believe to be new will be set forth in the claims.

In the drawings,—

Fig. 1 is a side elevation of a road-grading machine of a well-known type in connection with which are illustrated our improvements, and showing in dotted lines the scarifying member in its inoperative position;

Fig. 2 is a vertical cross-section on the line 2—2 of Fig. 1 and showing in front elevation the scarifying device;

Fig. 3 is a view taken along the line 3—3 of Fig. 1 and showing in plan the scraper-blade and scarifying device and a portion of the means that adjustably connect such parts with the wheeled frame;

Fig. 4 is a detail, being a vertical section taken at line 4—4 of Fig. 1 and illustrating the manner of pivotally securing the upper ends of bars that support the scarifying device;

Fig. 5 is a view taken at line 5—5 of Fig. 1 through one of the chains that connect the scarifying device with the front end of the machine; and

Fig. 6 is a detail, being a face view of one of the metal eyes connected with the forward end of the machine and which detachably hold the chains of the scarifying device.

Referring to the several figures of the drawings,—5 indicates one of the two longitudinally-extending bars of the main frame of an ordinary wheeled scraper, the front and rear wheels being indicated, respectively, by 6 and 7. Suitably connected to the forward end portions of the frame bars 5 are bars 8, the connection of the bars 8 with the main frame being a pivotal one to permit them to be moved up and down, as usual, to carry the scraper blade that is connected with them into and out of operative position. Affixed to the rear end portions of these bars and lying beneath them is a large ring 9, with which is rotatably associated a fifth wheel device 10 that, as shown in Fig. 3, is toothed on its inner edge so as to be adapted to be engaged by a gear, (not shown) and which is operated by the turning of a hand wheel 11 fast on the upper end of a shaft 12 that connects with a short vertical shaft that carries said gear. The bars 8 are shown as connected at their rear ends by an angle-iron bar 13 that rests on the ring 9, and to such angle-iron bar is bolted another bar 14 in the projecting ends of which are holes, as shown in Fig. 2, that are adapted to be engaged by links 15 that connect with suitable rack devices that are operated by a hand wheel as usual, and as shown in Fig. 1—such devices being, as is well understood, for the purpose of effecting a raising and lowering of the scraper blade. The fifth wheel member 10 has connected to it by heavy depending brackets 16, or otherwise, a cross-bar 17 that will preferably be made of a heavy piece of channel iron, as shown in Fig. 1, and secured upon the upper face of such bar 17 at opposite ends thereof are two forwardly-extending parallel beams 18,

Also secured to said cross-bar are two diagonally-disposed curved beams 18ª that have connected to them an ordinary scraper blade 19 whose pitch may be regulated by any usual adjusting means. The scraping machine mechanism so far described is of ordinary construction, with the exception of the forwardly-extending beams 18 that are provided for a purpose hereinafter referred to. In view of the fact that the scraping machine illustrated is of a well known type, and also in view of the fact that the invention is applicable to scraping machines involving many changes in the details of construction from those shown, it is not deemed necessary to more fully describe such mechanism.

Turning now to the devices with which our invention is more particularly concerned, 20 indicates a heavy bar located at some little distance in front of the scraper blade 19 and approximately parallel therewith, with which bar are connected a plurality of scarifying devices, here shown as pointed teeth, which are adapted to dig into and break up to a certain extent the hard earth of a roadway, so as to better prepare it for the action of the scraper blade. In the construction shown this scarifying device that comprises the laterally-extending bar 20 and the pointed teeth 21 is suspended from the same member that the forwardly-projecting beams 18 and scraper-carrying beams 18ª are, namely, the cross-bar 17, and hence it will be evident that when the fifth wheel that the cross-bar 17 is attached to is rotated for the purpose of effecting a changed position of the scraper blade relative to the line of draft, the scarifying device will be turned likewise, provided that one of the two chains that connect the scarifying device with the forward end of the machine, as hereinafter described, is loosened from its connection at such forward end. The scarifying device is held connected with the machine by two sets of devices, viz, two heavy links 22 and two chains 23. Each of the links is pivotally connected at its upper portion with a bracket 24 that is best formed of a short piece of angle-iron, as shown in Fig. 2, which bracket, as there shown, can be secured beneath the rear end portion of the adjacent beam 18. This bracket 24 has extending through it a bolt 25 which serves as a pivot upon which the arm may be rocked. As shown in Fig. 4, the hole in the arm 22 through which the bolt passes is of greater diameter than the diameter of the bolt, in order to receive a bushing 26 that is slightly longer than the thickness of the link, whereby the nut on the bolt may be screwed down very tightly so as to lock the bolt in place and yet not interfere with the free swinging movement of the link. These links being located near opposite ends of the beam 20, as best shown in Fig. 2, sustain the scarifying device evenly, so that the rotatable fifth wheel member will freely turn. The links 22 may be connected with the teeth-carrying bar 20 in any suitable manner, and the teeth themselves may be removably connected with such bar by any desired means. As shown, the connection of each link 22 with the bar 20 is through flanged plates 27 that are bolted to the lower end of the bar, and through the flanges of which pass hook bolts 28 that engage over the front of the bar. The teeth, as shown, are secured by eye-bolts 29 that pass through blocks located in the channel of the bar, but so far as the present invention is concerned, any other suitable means may be employed for connecting the links 22 with the cross-bar of the scarifying device and for securing the pointed teeth to such bar. The particular means here shown will form the subject matter of a separate application by us.

The two chains before referred to that form the other means for connecting the scarifying device with the machine are connected respectively with the cross-bar member 20 of the scarifying device at opposite sides of the center thereof, such connection being through a link 30 that is inserted through a hole in an arm 31 made fast to and projecting from the under side of the bar 20. These chains converge toward the front of the machine, and the forward end portion of each is passed through an eye 32 that is bent to form a narrow slotted portion 33 that is wide enough to receive one link of the chain, but narrow enough to prevent an adjacent link of the chain from being pulled through—see Fig. 6. These chains are to be inserted through the eyes 32 in such manner as to hold the scarifying device in proper position to properly incline the pointed teeth for effective action. By proper adjustment of the chains it will be evident that the scarifying device may be tilted and held at any desired angle. As shown, the eyes 32 are held in the loop of a suitable hitch device 34.

There are many occasions when, owing to the condition of the roadway to be scraped, it is not necessary to use a scarifying device, and in order to hold such device up fully out of the way, we provide each of the chains with a hook 35 that is adapted to engage over the forward portion of the adjacent beam 18 as indicated in dotted lines in Fig. 1. It is because of this manner of supporting the scarifying device out of operative position that the beams 18 project forward to the extent shown. The two chains converge, as stated, and as Fig. 3 indicates, and because of that arrangement it will be evident that drawing each chain sideways in order to have its hook 35 engage over the adjacent scraper beam will tend to carry

the scarifying device up to a considerable distance, as is desirable, and even when held at its extreme raised position, as indicated by the dotted lines in Fig. 1, it will not be necessary to have previously changed the engagement of the chains with the eyes 32, and therefore when the device has been dropped again into operative position it will stand at the desired previously-fixed angle. The angle at which the scraper blade stands with reference to the line of draft will ordinarily remain the same for any particular road scraping job, but when occasion arises for changing such angle a loosening of the chains from engagement with the narrowed portion 33 of the eyes 32 will permit the desired angular adjustment to be made through a turning of the fifth wheel member 10 in the ordinary manner and, after such new adjustment has been had, the chains will again be locked in engagement with the eyes 32 so as to again properly hold the scarifying device as desired.

By our invention we have provided means whereby an ordinary road scraper may be provided that will stir and break up the hard earth in advance of its scraper blade, or which may be quickly moved out of operative position when, owing to the condition of the earth, the scraper alone is sufficient to perform the desired work. Also, by our invention the scarifying device is so connected with the machine that regardless of the angle to the line of draft at which the scraper blade may be set, the scarifying device will always be turned at the same time into corresponding position so as to be at all times so located as to cooperate with such scraper in the work of road making or repairing. Furthermore, the said scarifying device is so connected with the means that carry the scraper blade that when the scraper blade is raised out of or into operative position the scarifying device will be likewise so moved.

What we claim as our invention and desire to secure by Letters Patent, is—

1. A road-scraping machine comprising a wheeled frame, a transversely-arranged scraper-blade, and horizontally-rotatable supporting means with which said blade is rigidly connected, in combination with a scarifying device, two rigid links pivotally connected with said rotatable supporting means and depending therefrom and rigidly connected with said scarifying device, and means for holding said scarifying device in different adjusted positions.

2. A road-scraping machine comprising a wheeled frame, a transversely-arranged scraper-blade, and horizontally-rotatable supporting means with which said blade is rigidly connected, in combination with a cross-bar connected with said supporting means and rotatable therewith, a scarifying device located opposite said blade, two rigid links pivotally connected with end portions of said cross-bar and depending therefrom and rigidly connected with said scarifying device, and means for holding said scarifying device in different adjusted positions.

3. A road-scraping machine comprising a wheeled frame, a transversely-arranged scraper-blade, and horizontally-rotatable supporting means with which said blade is connected, in combination with rigid means connected with said rotatable supporting means and projecting forwardly therefrom, a scarifying device located in advance of said blade and also connected with said rotatable supporting means, and a flexible connection extending forwardly from said scarifying device adapted to hold said device in different operative positions and also adapted to be connected with said rigid forwardly-projecting means for holding said scarifying device out of operative position.

4. A road-scraping machine comprising a wheeled frame, a transversely-arranged scraper-blade, and horizontally-rotatable supporting means with which said blade is connected, in combination with two forwardly-extending bars connected with said rotatable supporting means, a scarifying device located in advance of said blade and pivotally connected with said rotatable supporting means so as to be adapted to swing toward and from said blade, and two forwardly-converging chains connected with said scarifying device for holding it in operative position, said chains being also adapted to be connected with said forwardly-extending bars for holding said scarifying device out of operative position.

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