No. 636,859. Patented Nov. 14, 1899.

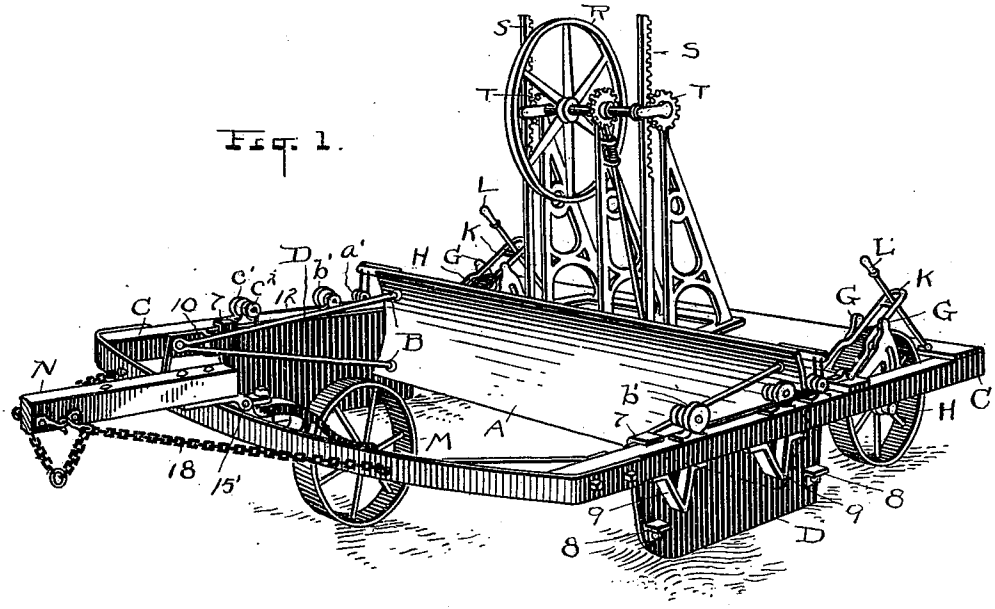
B. F. SHUART.

EARTH SCRAPER.

(Application filed Sept. 8, 1898.)

(No Model.) 2 Sheets—Sheet 1.

Fig. 1.



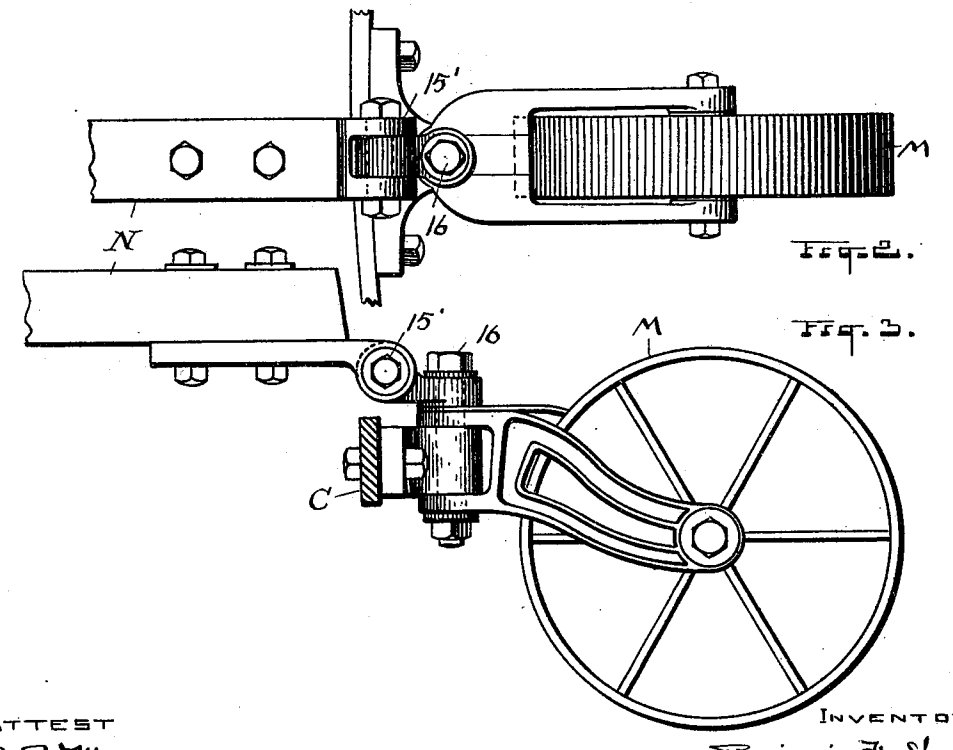


Fig. 2.

Fig. 3.

ATTEST

R. B. Moser

H. E. Mudra.

INVENTOR

Benjamin F. Shuart.

By H. J. Fisher ATTY

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Fig. 4.

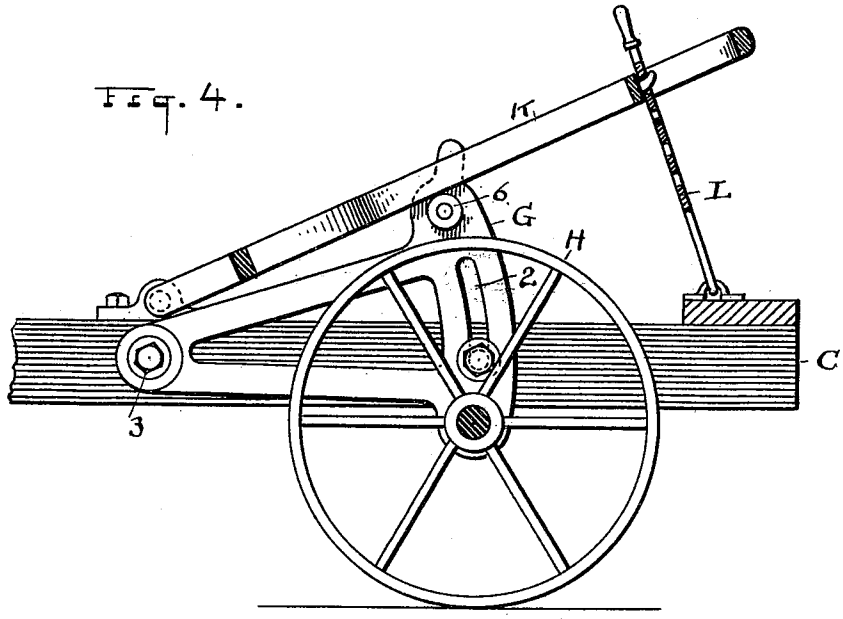
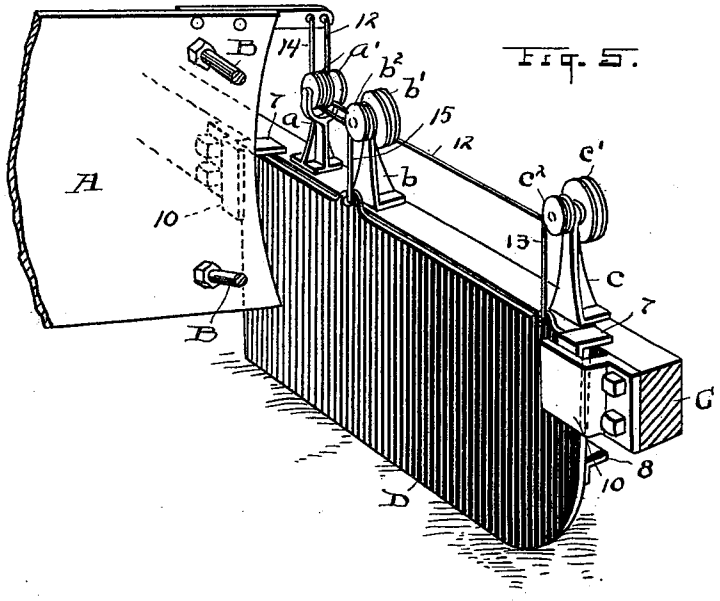


Fig. 5.



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UNITED STATES PATENT OFFICE.

BENJAMIN F. SHUART, OF OBERLIN, OHIO.

EARTH-SCRAPER.

SPECIFICATION forming part of Letters Patent No. 636,859, dated November 14, 1899.

Application filed September 8, 1896. Serial No. 605,072. (No model.)

To all whom it may concern:

Be it known that I, BENJAMIN F. SHUART, a citizen of the United States, residing at Oberlin, in the county of Lorain and State of Ohio, have invented certain new and useful Improvements in Earth-Scrapers; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to earth-scrapers, and embodies improvements more particularly on the construction shown in Letters Patent issued to me May 22, 1894, No. 523,085.

In the accompanying drawings, Figure 1 is a perspective view of my improved scraper complete. Fig. 2 is an enlarged plan view of the pole connection and front caster, and Fig. 3 is a side elevation of said parts. Fig. 4 is an enlarged sectional side elevation of a portion of the rear end of the main frame, an axle-supporting bracket, and the raising and lowering mechanism for the frame, as hereinafter fully described. Fig. 5 is a perspective inside view of one of the side fenders and sections of the main frame and the scraping-blade and showing the mechanism for operating the fender from the said blade.

Several different and distinct improvements enter into the present construction, which add materially to the efficiency and availability of the machine, and the first which may be mentioned is that which relates to the scraper-blade A. This blade, as heretofore, is provided with draft rods or bails B, pivoted on the main frame C well to its front and engage the blade near its respective edges, so that the blade will swing in the arc of a circle and have the requisite vertical play and at the same time balance the draft upon the blade. It will be noticed also that in this instance, as heretofore, the ends of the blade come so closely up to the side fenders D that escape of earth between them is prevented and the blade is caused to rise and fall at each end with the frame at that side; but in the old construction there was no provision for adjustment of the parts, so that the scraper could be set deeper or shallower at its ends regardless of the position of the rear wheels H, because said wheels had fixed bearings in the main frame or platform C and both wheels went up and down together, and owing to the fact that the ends of the scraper abutted evenly against the side fenders D there could be no independent adjustment of the scraper alone. Neither is there any now; but by my present construction I meet the demand for a scraper which can be set deep or shallow at one end or the other, according to the needs of the work, and this enables me to perform work with the present machine which was impossible with the old machine, and the availability and value of the machine are thus materially enhanced. To this end I provide wheel-bearing brackets G, one on each side, pivoted at their front ends on the inside of the main frame and having segmental slots 2 at their rear, at an arc of a circle from the pivot-point 3, which are penetrated by headed pins or projections 4, which fix the limit of vertical movement of the main frame in respect to wheels H. Each side of the main frame is also provided with a lever K, pivoted on the main frame to the front of wheels H and extending to the rear thereof, with a roller-fulcrum 6 at the top of bracket G above the wheel-bearings. A suitable swinging arm L is shown as provided with holes to engage a projection on the lever K and fix it in any position to which it may be adjusted. Any other suitable means for engaging and holding the lever may be used. By this construction the frame and the scraper are adapted to be raised or lowered at either side of the machine at the will of the operator. Normally the frame rests on the projecting ends of the wheel-axles, which are long enough for this purpose. Hence when it is desirable to cut deeper at one side than the other the frame remains down on the deeper side and the shallower side is correspondingly raised. All the adjustments of the frame necessarily are above the fixed up and down limits of the axles, as described. To effect the adjustments in either direction, the operator simply uses lever K to make the change as may be wanted, and thus controls the position of both the frame and scraper A, which move together in these adjustments.

The second point of invention is found in the side fenders D. According to my former

construction as shown in the patent above mentioned, these fenders or wings were pivoted at their front ends on the inside of the main frame and had a free up-and-down play from this pivot at their rear ends; but there are objections to this construction and arrangement of fenders, as hereinafter enumerated, which I have wholly overcome by my present construction. In this construction the fender is not pivoted, as before, but is set within suitable guides and supports, so as to leave both ends free to rise and fall simultaneously, subject, however, to connections with the scraper-blade, as will hereinafter appear. Each fender has two stops 7 at its top to prevent it from falling below a certain level, and other stops 8 at its side to prevent it from rising above a certain level, and V-shaped brackets or guides 9 on the outside of the frame and confining straps or plates 10 at the inside, with the frame C and the ends of the blade, serve to keep the fenders in their working position and brace and support them laterally.

Now in order that the fenders may clear obstructions readily in turning and operate in an easy and efficient manner I have provided a system of sheaves or rollers and cables connecting said parts. Thus three several standards $a\ b\ c$ are arranged on the main frame at each side supporting the several sheaves $a'\ b'\ c'$. The sheaves a' are in duplicate. A cord or cable 12 goes from a projection on the end of the scraper-blade A under one sheave a' and is attached to sheave c', and a cord 13 is attached to the front end of the fender D and small sheave c^2, and a cord or cable 14 goes from the scraper under the other sheave a' over to sheave b' and a cord 15 from small sheave b^2 to the rear end of the fender D. Both sides of the machine are equipped alike. The object of these fenders is to inclose the earth scraped up and confine it at the front of the blade. Their proper position, therefore, whenever earth is being handled is down in contact with the surface of the earth. The object in elevating the fenders is to have them clear obstructions in turning the machine short about. The cords or chains connecting their rear ends with the blade are therefore so adjusted that the blade can rise about eight inches before it begins to lift the fenders. This permits the operations of gathering and wasting the earth to be carried on without disturbing the fenders at all; but where the load has been discharged and it is desired to turn the machine about in order that the fenders may clear impediments the blade is thrown above the limits of its free action independent of the fenders, and thus carries the fenders upward with it. It will be observed, however, as a peculiarity of this invention that the fenders are free to rise and fall simultaneously and equally at each end. The advantage of such a fender over the old style is that it clears obstacles so much better in turning the machine about, the old fender having the objection that its forward end could not be raised sufficiently.

Obviously still other means may be used to accomplish the same object as the sheaves and cables shown, and I do not wish to be considered as limited to these particular means, the idea being that it is new to use mechanism substantially as described for operating the fenders from the scraper-blade.

It may be noted that in addition to the action of fender already described this fender in practical operation when it encounters obstacles in its forward movement will have also an automatic movement, in which the ends instead of rising simultaneously will rise and fall successively or alternately. In other words, there would be a rocking action like that of a boat in crossing a wave. This automatic action of the fender is of great practical importance, for without it the operator would be compelled to lift the fender every time it encountered an object, involving endless annoyance.

The third and last point of the invention is found in the means for connecting the pole or tongue N of the machine with the main frame. In some instances it is desirable to have a laterally-pivoted pole and in other instances one that is laterally rigid. To make a short turn, a horizontal pivot is preferred, because that enables the team to pull or draw the machine around instead of forcing it around from the point of the pole; but for some kinds of work a rigid pole is wanted. Therefore in order that either form of pole may be had at pleasure I provide the pole with what is practically a universal joint, in which the vertical pivot is shown at 15′ and the horizontal pivot at 16. Then in order to make the pole rigid when desired I employ the side chains 18 or their equivalent, fixed at one end to the main frame in any suitable way and at the other end to the pole N by a hook or other means. A single front central caster-wheel M is used, as before, and is supported in this instance on the same vertical bolt as the pole N.

It will be clearly seen from the foregoing description as it relates to the scraper-blade that said blade necessarily is raised and lowered at its end when the main frame is raised and lowered at that side because of the racks S, pinions T, and wheel R, by which the blade is supported from the frame. Hence when it is stated that the frame is raised or lowered at either side it follows that the blade goes with it, though the blade has an independent adjustment.

What I claim as new, and desire to secure by Letters Patent, is—

1. The main frame, and a scraper-blade transversely across the same, fenders at the ends of said scraper and means to raise and lower either side of said frame independently of the other, thereby tilting the scraper-blade and fender, said means consisting of independent rear wheels brackets supporting said

wheels on the main frame and guided thereon, and levers to operate said brackets, substantially as described.

2. In a wheeled scraper, a transverse scraper-blade, a frame on which said blade is supported, brackets pivoted on said frame at one end and guided on said frame at the other end, a set of rear supporting-wheels in said brackets and a lever at each side pivoted on said frame and fulcrumed upon the said brackets to lift the frame and tilt the blade, substantially as described.

3. The frame and a central front caster-wheel thereon, the scraper-blade separately pivoted to rise and fall independently of the frame, in combination with a rear wheel at each side of the frame, brackets for said rear wheels having guides on said frame and pivots at their front ends, and levers fulcrumed on said brackets to raise and lower said frame, and pivoted locking devices for said levers, substantially as described.

4. In a wheeled scraper, a transverse scraper-blade, a set of side fenders free to rise and fall at each end and mechanically connected with said scraper, substantially as described.

5. The wheel-supported frame, the scraper-blade pivoted therein, the fenders at the ends of said blade free to rise and fall at each end, and mechanism connecting the ends of the said blade with both ends of each fender, substantially as described.

6. The machine having a scraper-blade, fenders at the ends of said blade and cable-and-pulley mechanism connecting said blade and fenders, substantially as described.

7. In a scraper the frame thereof and the scraper-blade, and fenders at the sides of the frame disconnected at both ends and free to rise and fall their full length simultaneously in respect to the frame, substantially as described.

8. The frame and the scraper-blade, fenders at the ends of said blade disconnected at both ends, and lateral stays for said fenders, whereby said fenders are left free to rise and fall simultaneously at both ends, substantially as described.

9. The construction described comprising the frame and the scraper-blade, the side fenders and the brackets on the outside and the confining-strip on the inside to keep said fenders in place, substantially as described.

10. A scraper as described, side fenders therefor free at both ends, stops on said fenders to limit vertical movement thereof, and lateral supports for the fenders, substantially as described.

11. The scraper-frame, the draft-pole, horizontal and vertical pivot connections for the end of said pole with said frame and lateral connections for said pole with the scraper-frame independent of said pivot connections and engaging the pole forward of the frame, substantially as described.

12. The scraper-frame, the horizontally and vertically pivoted pole, and lateral stay-chains connecting pole and frame at the front of the pivot-point of the pole, substantially as described.

13. The scraper-frame and an independent wheel-support for the front of the frame and the pole independent of said wheel-support and having vertical and horizontal pivot connections with the frame, whereby the pole is given vertical and horizontal pivot action independent of the frame and the said wheel-support, substantially as described.

14. The scraper-frame and the pole, and a caster-wheel at the front and center of the frame behind said pole, a vertical pivot-bolt supported by said frame and having said pole and caster-wheel pivoted to swing horizontally and independently thereon, and said pole having a horizontal pivot in front of its vertical pivot and supported on said bolt apart from the scraper-frame, whereby the said frame is carried at its front by said caster and the pole is free to operate, substantially as described.

Witness my hand to the foregoing specification this 28th day of August, 1896.

BENJAMIN F. SHUART.

Witnesses:
LILLIAN CARTER,
EFFIE CANNAN.