(No Model.)

# G. N. FOLSOM.

## COMBINED SCRAPER AND LEVELER.

No. 563,760. Patented July 14, 1896.

Fig 1

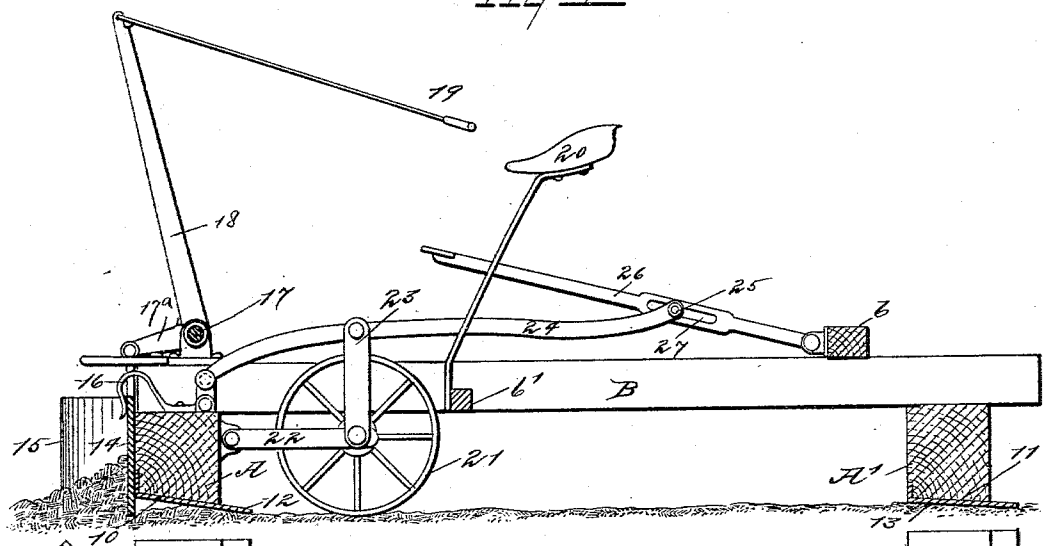
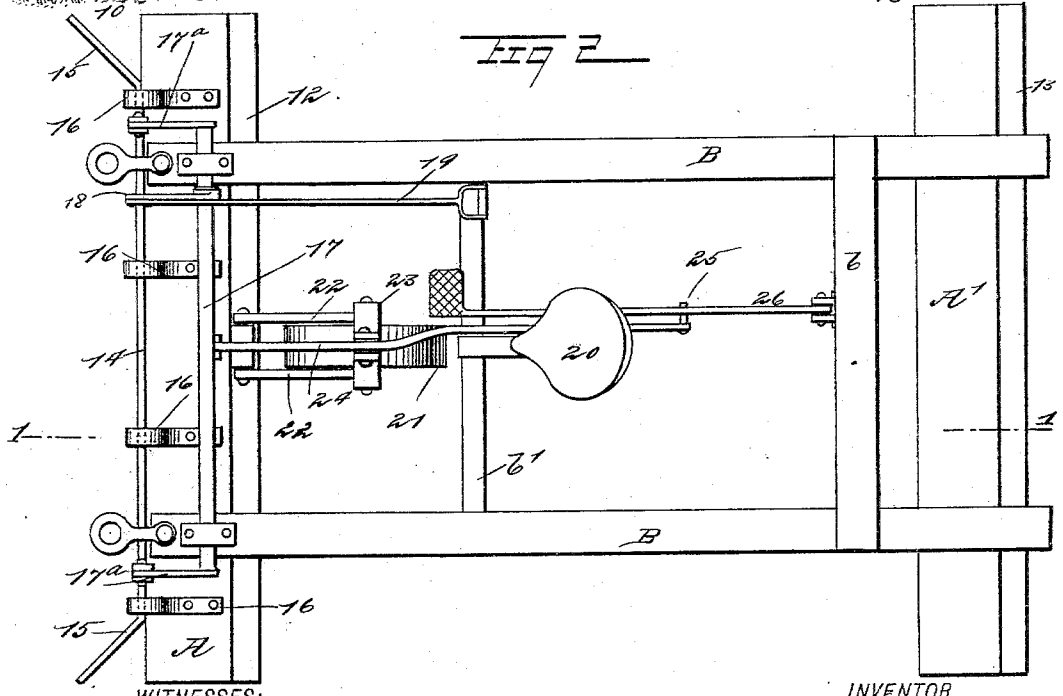



Fig 2

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# UNITED STATES PATENT OFFICE.

GILMAN N. FOLSOM, OF HOBART, NEVADA.

## COMBINED SCRAPER AND LEVELER.

SPECIFICATION forming part of Letters Patent No. 563,760, dated July 14, 1896.

Application filed November 2, 1895. Serial No. 567,674. (No model.)

*To all whom it may concern:*

Be it known that I, GILMAN N. FOLSOM, of Hobart, in the county of Douglas and State of Nevada, have invented a new and Improved Combined Scraper and Leveler, of which the following is a full, clear, and exact description.

My invention relates to machines for scraping and leveling roads and like surfaces; and it has for its object to combine a leveler and scraper in one machine, and to provide a means whereby the earth may be scraped and carried in advance of the machine to any desired point, and gradually or instantly released from the scraper and dumped for the purpose of filling in a rut in a road, for example, the leveling attachments of the machine following immediately on the deposited dirt to level the same and pack it closely in position.

A further object of the invention is to so construct the leveling attachment that it will automatically ride up any mound of loose earth while leveling the same, and will so pass up the mound as to cause the team the least possible amount of exertion.

A further object of the invention is to provide a combined scraper and leveler which will be of great service to the farmer by reason of the fact that by carrying the machine once over any ordinary plowed ground the machine will leave it level and smooth, so that it can be easily and quickly irrigated.

The machine not only serves to accomplish the above results, but also pulverizes the ground, thereby saving the work of using a harrow in connection with leveling and scraping. The machine may likewise be used to great advantage in building new roads and keeping old roads level and in good condition, scraping off the high places and filling up the ruts and hollows.

The invention consists in the novel construction and combination of the several parts, as will be hereinafter fully set forth, and pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in both views.

Figure 1 is a longitudinal section through the machine, taken substantially on the line 1 1 of Fig. 2; and Fig. 2 is a plan view of the machine.

In carrying out the invention, the frame of the machine consists of a front transverse runner A, which is in the nature of a beam, a rear transverse and parallel runner A′, two longitudinal beams B, connecting the forward and rear runners or beams, and cross-bars *b* and *b′*, extending from one of the longitudinal tie-beams to the other.

The under face of the forward runner or beam A is decidedly beveled in a downwardly and rearwardly direction, whereby the height of the runner at the rear is greater than its height at the front, and this beveled surface 10 is shod with a metal plate 12, and the said plate extends a predetermined distance beyond the inner or rear face of the forward runner, continuing the incline thereof; and the under face of the rear runner A′ is provided with a similar beveled surface 11, but this surface is not beveled to such a degree as that of the forward runner; but the beveled surface of the rear runner A′ is shod with a metal plate 13, which extends rearwardly beyond the same, and the inclination is downwardly and rearwardly.

A scraper-blade 14 is adjustably mounted upon the front vertical face of the forward runner or beam A. This scraper or blade extends downward below the leveling-plate 12, attached to the runner, as shown in Fig. 1, and the said plate is provided at each end with a wing 15, the wings extending forwardly and outwardly, thus being at an angle to the body of the blade or scraper, in order that the said wings shall hold the earth loosened or scraped by the blade in front thereof, preventing it escaping at the ends of the blade. The scraper-blade is held, preferably, in contact with the forward runner by a suitable number of spring-clips 16, secured ordinarily to the top of the said runner, being curved downwardly and over the blade 14 to an engagement with its forward face, and where each clip passes over the blade a vertical slot is made in the top portion to receive the clip, as illustrated in Fig. 1, so that the blade may be adjusted vertically without interfering with the functions of the said clips. The adjustment of the blade is accomplished through the medium of a rock-shaft 17, journaled upon the forward portion

of the frame in suitable bearings, preferably placed upon the longitudinal beams B. A crank-arm $17^a$ is formed at each end of this rock-shaft, and the crank-arms are connected in any suitable or approved manner with the upper edge of the scraper-blade 14. The rock-shaft is operated through the medium of a lever 18, attached to the shaft at a convenient point, and the said lever is preferably provided with a hand-rod 19, which is carried to within convenient reach of the driver's seat 20, the latter being supported from the cross-bars $b'$ of the frame.

Thus when it is required to gradually dump the earth from the front portion of the scraper-blade, or to free the earth from the blade, it may be accomplished by raising the blade by means of the lever 18; or by the manipulation of this lever the scraper-blade may be made to enter the ground to a greater or a less extent, and when the earth is released from the front of the scraper-blade the inclined plate 12 on the forward runner will readily ascend the mound formed by the loosened earth, and gradually, yet perfectly, level the mound; and should the leveling not be perfectly done by the front plate 12, it will be satisfactorily finished when the rear leveling-plate 13 is drawn over the surface.

It is often desirable to release the earth from the scraper-blade 14 quickly, and this is accomplished by elevating the entire front portion of the machine; and in performing this act a wheel 21 is preferably used, located just back of the forward runner, and being of sufficient strength and size to sustain the weight of the forward portion of the machine. This wheel is journaled between horizontal arms 22, and these arms are pivotally connected with the central portion of the rear face of the forward runner A, and a yoke 23 is projected upward from the hub of the wheel over the upper peripheral surface thereof, to pivotally receive a lift-lever 24, the forward end of which lever is fulcrumed upon a fixed support carried by the said runner A.

The lift-lever 24 is provided with a pin 25, or the equivalent thereof, at its rear end, and this pin is made to enter a slot 27 in a foot-lever 26, the lever being fulcrumed upon the rear cross-bar $b$ and is carried forward, its free end being within convenient reach of the operator's foot when said operator is in the seat 20; and it is obvious that by pressing downward upon the foot-lever 26 the rear end of the lift-lever will be carried downward, and the wheel serving as a fulcrum for this lever will sustain the weight of the forward portion of the machine as this portion is lifted, owing to the upward movement of the forward end of the lift-lever.

By setting the blade or "knife," as it may be called, higher or lower more or less work is performed, and when the blade is raised the bevel or slope of the runners will allow the machine to slide up over the load, gradually leaving the load wherever desired, the forward runner smoothing the load and the rear runner continuing the smoothing operation; and since the inclination of the rear runner is less than that of the forward runner, the rear runner rises slowly over the load and distributes it evenly, and the said slope of the rear runner likewise prevents it from doing any scraping or digging of the dirt ahead of it and leaving it where it is not wanted. Under all circumstances the blade, together with the inclined surface of the runner A, regulates perfectly the cutting off of the high places, which can be done more or less as the blade is lowered, and the load may be deposited in any desired quantity by raising or lowering the blade to a greater or less extent. If it is desired to leave the load on the top of a knoll, as in road-building, or if the machine is working in rough, stony ground, then the front of the machine is elevated and is supported by the wheel 21, which allows it to pass over obstructions.

With reference to the merits of this machine, it will place land in perfect shape for irrigating, will fill up all the bed-furrows in a field, and will practically make said field as smooth as a lawn. The machine will fill up the ruts and hollows in roads and will leave them smooth and even and will save plowing in mending or making roads where the ground is soft or sandy, and it will frequently dispense with the use of a harrow in working a field.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. A scraper and leveler, the same consisting of a frame having a forward and a rear transverse runner, the under surfaces of which are inclined, and a scraper-blade adjustably mounted on the forward runner in front of the highest point of its lower inclined surface, as and for the purpose specified.

2. In a scraper and leveler, a forward and a rear connected transverse runner, each runner having its under face beveled downwardly and rearwardly from the front, and a scraper-blade adjustably mounted upon the front portion of the forward runner, as and for the purpose specified.

3. In a scraper and leveler, a forward and a rear transverse runner, and a connection between the two, substantially as described, each runner being provided with an inclined bottom surface, the inclination being from the front downwardly and rearwardly, the said inclined surfaces being shod with metal plates extending beyond the rear faces of the runners, and a scraper-blade located in front of the forward runner, the ends of the scraper-blade being forwardly projected at an angle to the body, as and for the purpose set forth.

4. In a scraper and leveler, a forward and a rear transverse runner, a connection between the two, the under faces of the said runners being beveled downwardly and rear-

wardly, a scraper-blade adjustably mounted in front of the forward runner and having its ends projected forwardly and outwardly, clamps for the said blade, a rock-shaft, mechanism for rocking the same, and a connection between the rock-shaft and scraper-blade, as and for the purpose specified.

5. A leveler and scraper, the same consisting of a forward transverse runner having an inclined under surface, a rear runner connected with the forward one, a plate located in front of the aforesaid forward runner, a wheel connected with the rear portion of the forward runner near its center, a lift-lever fulcrumed at one end upon the said forward runner and intermediate of its ends upon a support carried by the wheel, and a manipulating-lever operating the said lift-lever, as specified.

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Witnesses:
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