

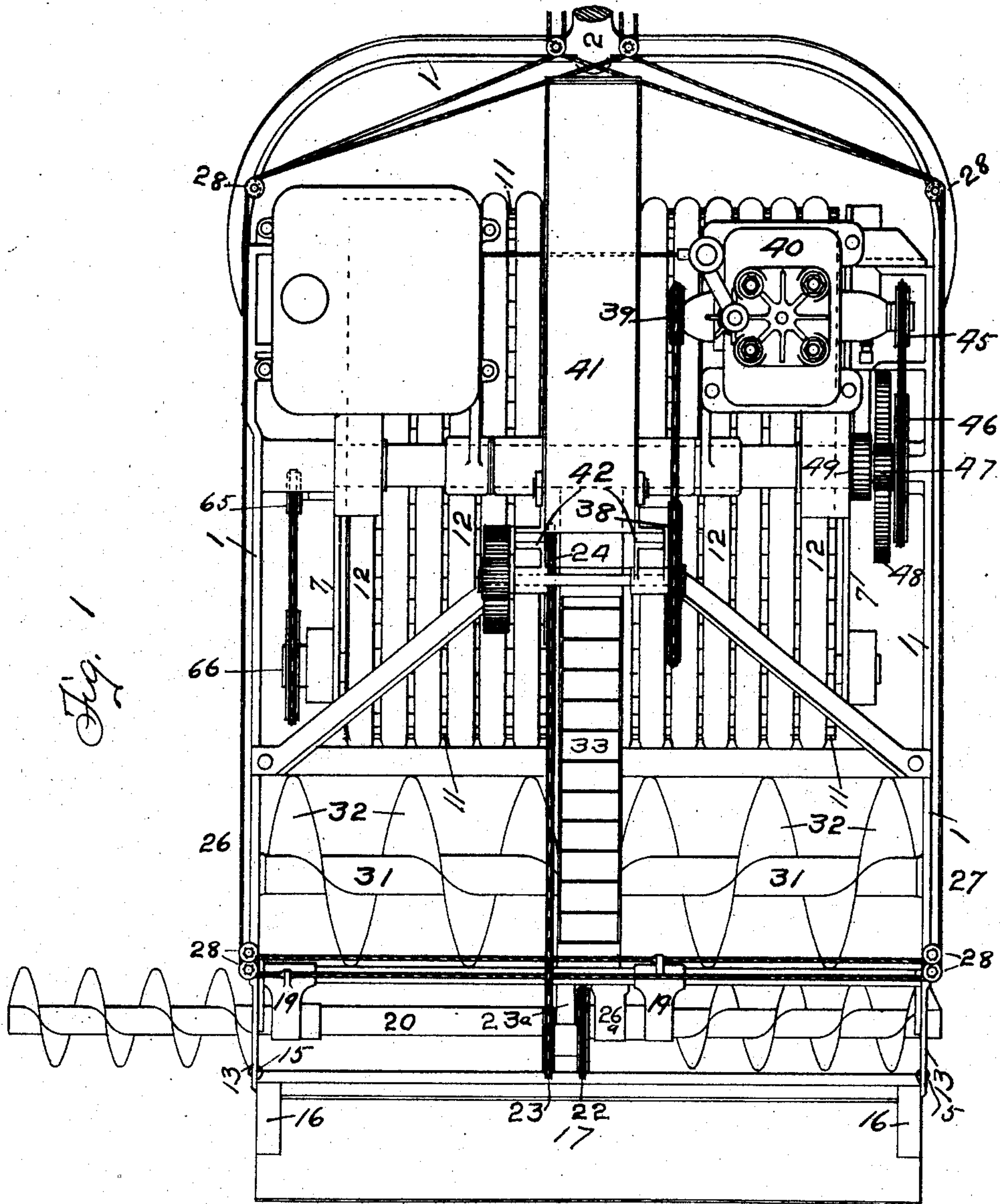
No. 864,151.

PATENTED AUG. 27, 1907.

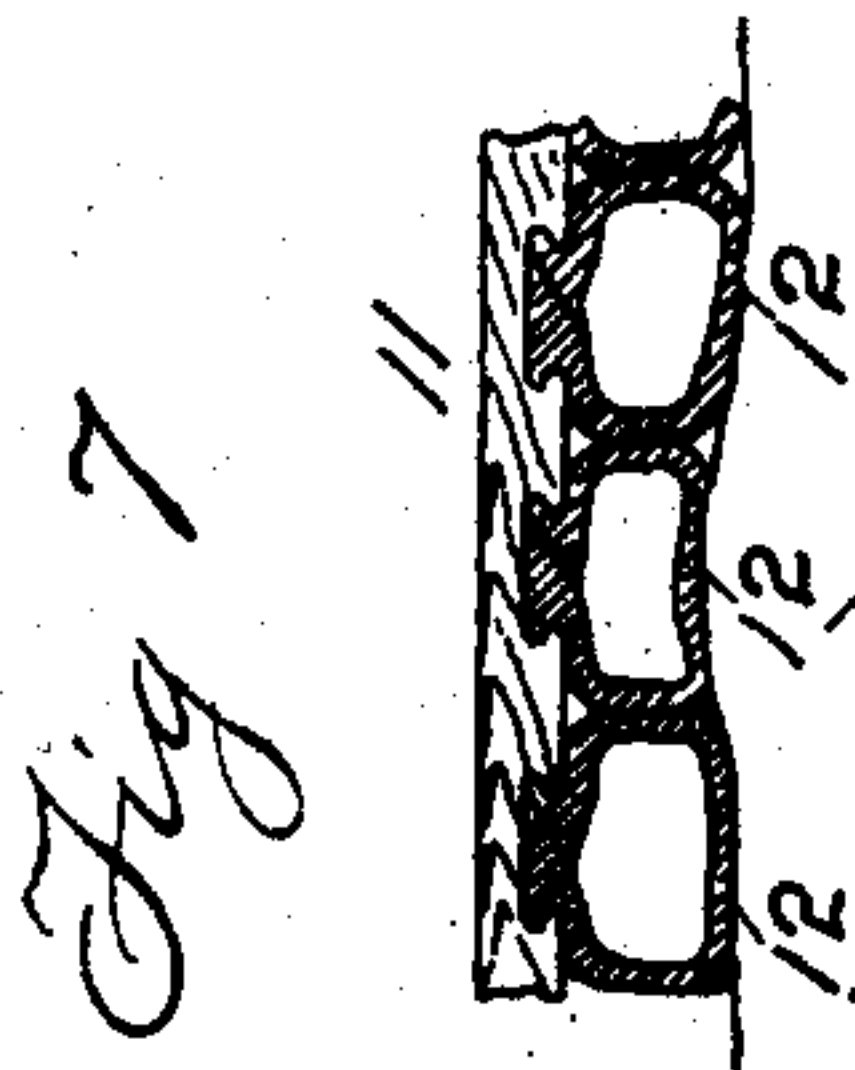
H. W. BLAISDELL.
MANUAL SCRAPING MACHINE.

APPLICATION FILED NOV. 16, 1904.

4 SHEETS—SHEET 1.



WITNESSES:
Owen G. Cates.
E. Freeman Mould.



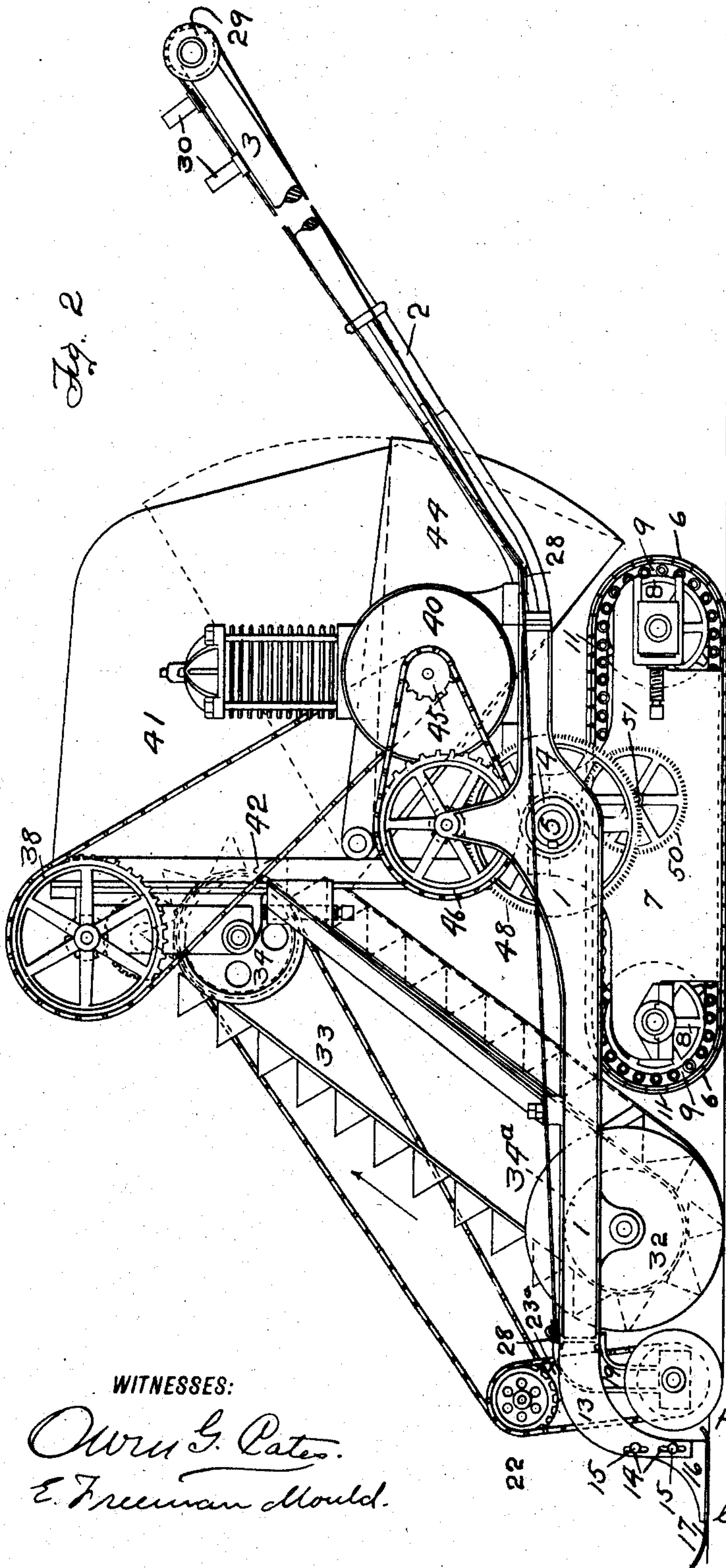
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Hiram W. Blaisdell
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4 SHEETS—SHEET 2.



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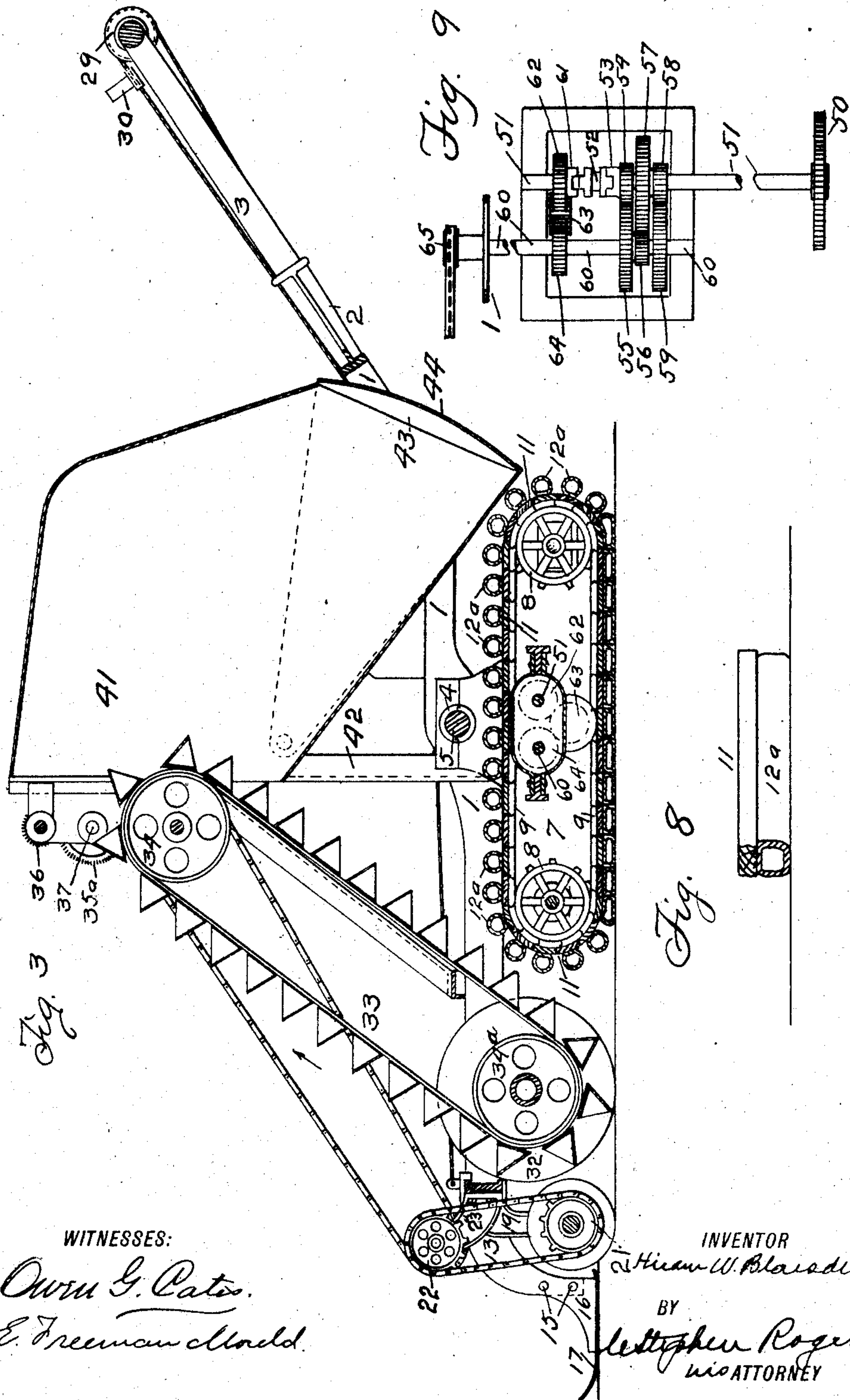
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4 SHEETS—SHEET 3.



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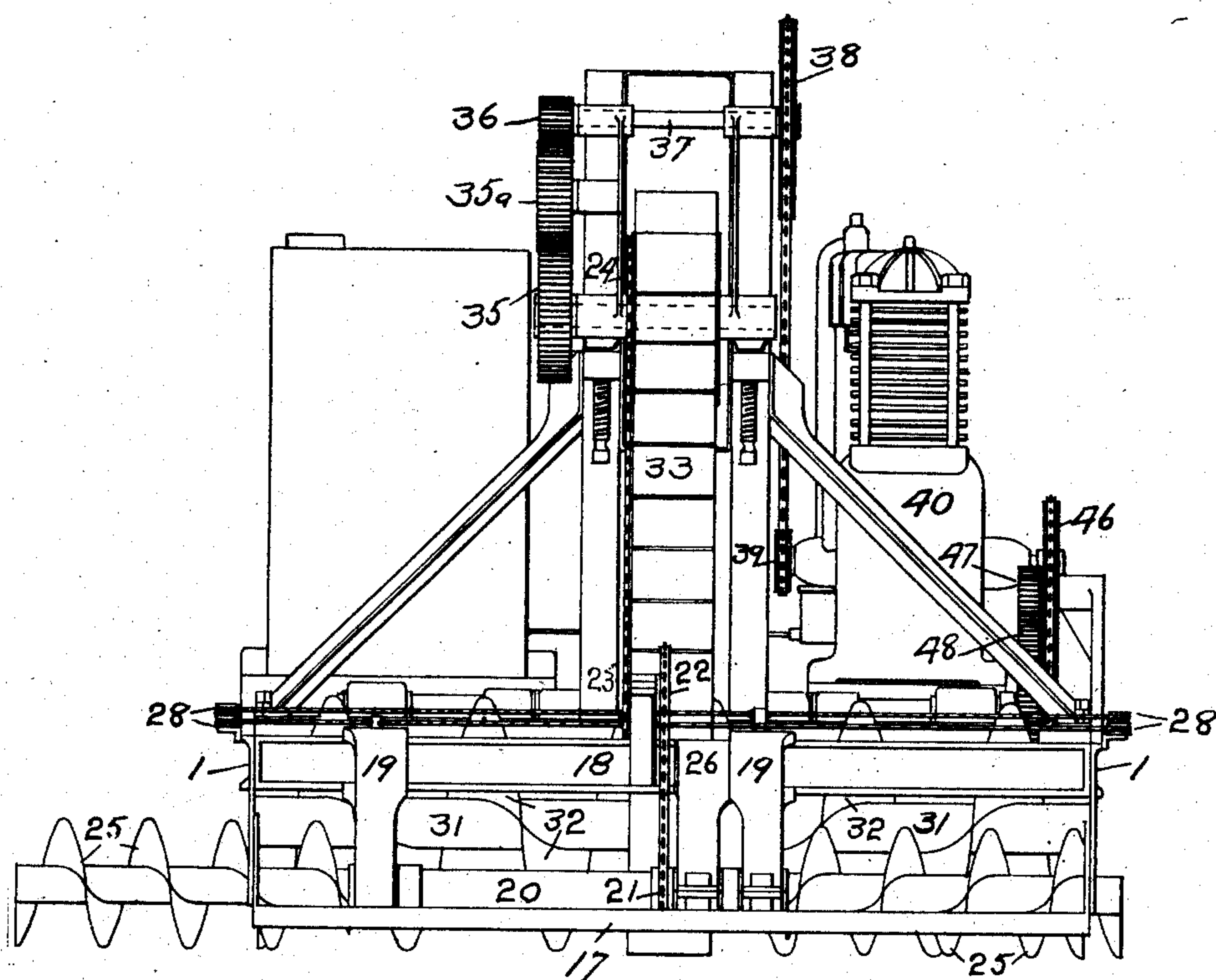
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4 SHEETS—SHEET 4.

Fig. 4



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UNITED STATES PATENT OFFICE.

HIRAM W. BLAISDELL, OF LOS ANGELES, CALIFORNIA.

MANUAL SCRAPING-MACHINE.

No. 864,151.

Specification of Letters Patent.

Patented Aug. 27, 1907.

Application filed November 16, 1904. Serial No. 233,002.

To all whom it may concern:

Be it known that I, HIRAM W. BLAISDELL, a citizen of the United States, residing at Los Angeles, in the county of Los Angeles and State of California, have invented certain new and useful Improvements in Manual Scraping-Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

10 This invention relates to means for operating upon filtration plants or filter beds, and particularly to means constructed to operate upon slow sand filters; and some of the objects of the invention are to provide means of this general character which are simple and
15 cheap in operation and effective for the purpose intended.

Another object of the invention is to provide means for removing the upper or surface portion of filtering material from filtration plants or filter beds, or to scrape
20 the same; and to discharge or dump the material so removed or scraped into piles or rows upon the filter.

It is also an object of the invention to provide means for movably supporting the machine upon the surface or crust of a filtration plant or filter bed in such a manner that the weight of the machine will be equally and
25 uniformly distributed over the entire surface whereon the machine rests, irrespective of any irregularities or unevenness in the surface of the filter.

Furthermore an object of the invention is to provide
30 a machine constructed to travel upon the surface of a filter or other body which is propelled by an internal combustion motor or driving apparatus, by means of which the machine requires no connection with the source of motive power or otherwise.

35 With these, and other, objects in view the invention consists essentially in the construction, combination and arrangements of parts substantially as more fully described in the following specification, and as illustrated in the accompanying drawings forming part of this application in which
40

Figure 1 is a top plan view of a machine embodying this invention; Fig. 2 is a side elevational view of the same; Fig. 3 is a longitudinal, central, sectional view of the machine; Fig. 4 is a front elevational view of the same; Fig. 5 illustrates a detail of a portion of the traction device or traveling support shown in Fig. 2; Fig. 6
45 is a detail view of a modified form or arrangement of the construction illustrated in Fig. 5; Fig. 7 is a detail view of the traveling support represented in Fig. 1; and Fig. 8 is a detailed view of the traveling support shown in Fig. 3. Fig. 9 is a plan view of a portion of the driving mechanism.

Similar characters of reference designate corresponding parts throughout the several views.

55 Although this invention has particular relation to use upon or in connection with filtration plants or filter-

beds, and is so shown and described in this application, yet it is not limited or confined to such use, but is capable of employment for many other purposes, and the right is reserved to use the invention wherever such use
60 can be accomplished without materially changing the construction and operation of the instrumentalities herein shown and described.

Before the machine is put into operation the water, upon the filter bed to be operated upon, should be
65 drawn off partially or entirely to facilitate the operation of the machine.

The diminution in the yield of filtration plants or slow sand filters is evidence that the surface thereof has become clogged, and that the upper or surface portion of the filtering material must be removed, in other words the filter must be "scraped," which is now accomplished by men using shovels and placing the removed material in piles to be conveyed away in wheelbarrows, at a great expense of time and labor.
75

By means of this invention it is intended to accomplish the scraping of the filter, or the removal of the upper or surface portion of the filtering material mechanically, and to likewise effect the discharge of the removed material into piles or rows.
80

Referring to the drawings, reference character 1 designates a frame or casing, of any suitable form or construction, provided with a socket or casting 2 for the reception of a handle or steering device 3, by means of which the machine may be guided or directed during
85 the operation thereof.

The main frame is preferably provided with bearings 4, Fig. 2, constructed to receive a shaft 5, whereon is movably mounted the side plates or members 7 of the supporting or traction frame, wherein are mounted
90 sprocket wheels 8, carrying sprocket chains 9, the links of which are preferably mounted in, or connected with, brackets 10, attached to transverse slats or strips 11, substantially as illustrated particularly in Figs. 1, 2 and 3 of the drawings.
95

Attached to the slats or plates 11, preferably crosswise thereof, Figs. 1 and 7, are one or more flexible or resilient tubes 12, desirably similar to the inflatable tires of vehicles, and these tubes are adapted to be inflated with fluid to the desired degree, as will be
100 readily understood; and in Figs. 3 and 8 of the drawings there is shown a flexible or resilient tube 12^a secured or attached to each of the slats or plates 11, longitudinally of the same, but in this construction the tubes last mentioned are not designed or intended to be inflated, as in the construction shown in Figs. 1 and 7; while in Figs. 2, 5 and 6 strips of resilient material 6 are shown attached to, or secured upon, the plates or strips 11, both longitudinally and transversely thereof, as illustrated respectively in Figs. 5 and 6 of the
105 drawings.

By means of this construction a soft and flexible

bearing surface is provided for the supporting frame, and one whereby the weight of the machine will be uniformly distributed over the entire surface whereon the machine rests, irrespective of the irregularities or unevenness in the contour of such surface, thus preventing the breaking of the crust or surface at the highest points by the travel or weight of the machine.

The importance of this feature of construction will be appreciated by those familiar with the art of filtration by means of slow sand filters, and acquainted with the manner of treating and operating the same.

The side pieces of the mainframe are preferably extended at the forward end thereof to form curved portions 13, wherein are formed slots 14, constructed to receive adjusting bolts or devices 15, for the connection of the side pieces or extensions 16 of a shoe or regulating device 17, substantially as shown.

Slidably mounted in or upon the forward end 18 of the main frame are traveling bearings 19, carrying a shaft 20, whereon is splined a sprocket wheel 21, chained to a sprocket wheel 22 in an upwardly curved arm 23^a, formed on, or connected with, the end 18 of the frame, and on the shaft of the last mentioned sprocket wheel is secured another sprocket wheel 23, chained to sprocket wheel 24, on the shaft of the driving pulley of the elevator, as subsequently more fully explained.

Formed on, or connected with, the end portions of the shaft 20 are right and left hand flights, or endless screw conveyers, 25, constructed to be projected laterally from one side or the other side of the machine, Figs. 1 and 4, the shaft 20 being also mounted in stationary or fixed bearing 26, preferably connected with the end 18 of the main frame, essentially as illustrated.

The reciprocation or alternate extension and retraction of the auxiliary or winged conveyers 25 are preferably effected by means of cords or ropes 26 and 27, connected with the sliding or traveling bearings 19, and passing around sheaves or rollers 28, upon the main frame of the machine, and around rollers 29 in the end of the handle 3, and the cords or ropes 26 and 27 may be provided with knobs or hand devices 30 to facilitate the operation thereof.

A shaft 31, preferably mounted in the forward portion of the main frame, desirably carries right and left hand flights or endless screw conveyers 32, constructed to progress the material towards the middle of the machine, where it is desirably taken up by a bucket, or other, elevator 33, passing over a driving pulley 34, on the shaft of the sprocket wheel 24, and over a tail pulley 34^a, on the shaft 31, of the main conveyer or scraper 32, whereby the latter is driven or actuated by the travel of the conveyer, which travel is preferably effected through the mediation of the gear wheel 35, on the shaft of the driving pulley 34, of the elevator, with which gear wheel meshes an idler 35^a engaging a pinion 36, on a shaft 37, carrying a large sprocket wheel 38, chained to the driving pinion 39 on the shaft of an internal combustion engine, or driving apparatus 40, as will be readily understood.

A receiver or hopper 41 is preferably formed on, or connected with, the upright portion 42 of the machine, and the receiver or hopper is preferably provided with a discharging orifice 43, which is preferably closed by means of a hinged or pivoted cover or section 44, con-

structed to be raised when it is desired to discharge the contents of the hopper, after the same has been partially or entirely filled with the fouled material discharged thereinto by the elevator 33.

The machine is preferably constructed to be progressed or propelled in a forward or in a rearward direction respectively, by means of a sprocket 45, upon the driving shaft of the gasoline engine, or other driving apparatus 40, which sprocket is chained to the sprocket wheel 46, on the shaft of which is mounted a pinion 47, meshing with a large gear wheel 48 on the shaft of which is mounted a pinion 49 meshing with a large gear wheel 50, on a shaft 51, whereon is feathered a clutch 52, constructed to engage with a clutch member 53, carried by a pinion 54, loose on the shaft 51, and meshing with a gear wheel 55, loosely mounted on a counter shaft 60, and having secured thereto a pinion 56, meshing with a gear wheel 57, loose upon the shaft 51, and carrying a pinion 58, meshing with a gear 59, keyed on the shaft 60, carrying sprocket wheel 65, chained to sprocket wheel 66, on the propelling shaft which carries one set of sprocket wheels 8, whereover passes the supporting or traction device; by means of this construction is the machine propelled in a forward direction at a slow rate of speed; and, by throwing the clutch 52 out of engagement with the clutch-member 53 and into engagement with the clutch member 61, carried by the pinion 62, motion is imparted to the latter, and from thence to the idler 63, meshing with the pinion 64, fast upon the counter-shaft 60, thereby propelling the machine in a rearward direction at a high rate of speed.

The operation of the machine will be readily understood from the foregoing description when taken in connection with the accompanying drawings and the following explanation thereof.

The machine being in operating position the engine 40 is started thereby imparting motion to the sprocket 45, chained to the sprocket wheel 46, on the shaft whereof is mounted pinion 47, meshing with the large gear wheel 48, carrying the pinion 49 meshing with gear wheel 50 on the shaft 51, the clutch 52 being in engagement with the clutch member 53 secured to the pinion 54, thereby imparting motion to the gear 55, pinion 56, carried thereby, gear 57, pinion 58, carried by the latter, and gear 59, secured upon the counter-shaft 60, carrying the sprocket wheel 65, chained to the sprocket 66, on the propelling shaft carrying the driving sprocket wheels 8, which actuate the supporting or traction device, whereby the machine is propelled in a forward direction over, or in contact with, the surface of the filter, preferably at a low rate of speed.

The machine is desirably propelled in a rearward direction at a higher rate of speed, by throwing the clutch 52 into engagement with the clutch member 61, on the pinion 62, which meshes with idler 63, engaging the pinion 64, on the counter-shaft 60, carrying the pinion 65, chained to the sprocket wheel 66, on the said propelling shaft.

The engine 40 likewise imparts motion to the sprocket 39, chained to the sprocket 38, on the shaft 37, carrying the pinion 36, driving the gear 35, on the shaft of the driving pulley 35 of the elevator 33, and also imparting motion to the sprocket 24, chained to the sprocket 23, on the same shaft with sprocket 22 chained to sprocket 21 splined on the shaft 20, of the auxiliary con-

veyer, whereby the travel of the elevator operates the main conveyer, the tail pulley of the elevator being keyed on the shaft of the main conveyer, and also the auxiliary conveyer, by the means just described.

5 As the machine travels over the surface to be operated upon the main conveyer scrapes the material towards the center of the machine, where it is taken up by the elevator and discharged into the receiver, from whence it is dumped or allowed to escape, whenever the door or
10 movable section thereof is raised; and when it is desired to scrape the surface between or around the piers, buttresses or other obstructions the ropes 26 and 27 are operated to project the auxiliary or wing conveyer in the desired direction to effect the scraping of such sur-
15 face.

It is not desired to limit or confine this invention to the specific construction, combination and arrangement of parts herein shown and described, and the right is reserved to make all such changes in, and
20 modifications of, the same, as come within the spirit and scope of this invention.

Claims

1. A machine for removing material from filters comprising sand removal means, a supporting frame therefor,
25 a second frame movably connected therewith, and a resilient traction device supported in said second frame adapted to travel on the surface of the filter bed to support the operating parts.

2. A machine for removing material from filters comprising sand removal means, a supporting frame therefor,
30 a second frame movably connected therewith and inflatable resilient traction means supported in said second frame adapted to rest on the surface of the filter bed to support the operating parts.

3. A machine for removing material from filters comprising sand removal means, a supporting frame therefor,
35 a second frame movably connected therewith, and a pneumatic traction device supported in said second frame adapted to travel on the surface of the filter and to support the operating parts.

4. A machine for removing material from filters and the like provided with means for collecting the material in a heap, means for elevating the same into the machine

and means for intermittently discharging the same therefrom.

5. A machine for removing material from filters and the like provided with means for collecting the material in a heap, means for elevating the same into the machine and means for discharging the same in a heap on the surface of the filter bed.

6. A machine for removing material from filters and the like provided with means for collecting the material in a heap, means for elevating the same into the machine, a hopper into which said elevating means discharges said material and means permitting said hopper to be emptied
55 intermittently.

7. A machine for removing material from the surface of filter beds provided with a resilient supporting and progressing device for distributing the weight of the machine on the surface of the filter, means governed by the surface of the filter bed for regulating the depth of material removed, a receiver for the material, a device for effecting the discharge of the material from the receiver, an internal combustion motor, and means for operating the parts.

8. A manually guided machine for removing material from the surface of filters provided with a flexible supporting device on endless means for distributing the weight of the machine on the surface of the filters, means governed by the surface to be operated upon for regulating the depth of material removed, a receiver for the material, a device for effecting the discharge of the material from the receiver and means for operating the parts.

9. A manually guided machine for removing material from the surface of filters, provided with a flexible supporting device on endless means for distributing the weight of the machine on the surface of the filter, means governed by the surface of the filter bed for regulating the depth of material to be removed, a receiver for the material, a device for effecting the discharge of the material from the receiver and an internal combustion engine to operate the parts.

In testimony whereof, I have signed my name to this specification, in the presence of two subscribing witnesses at Los Angeles, in the county of Los Angeles, State of California this second day of November 1904.

HIRAM W. BLAISDELL.

Witnesses:

H. T. MORROW,
MIGNON FORD.