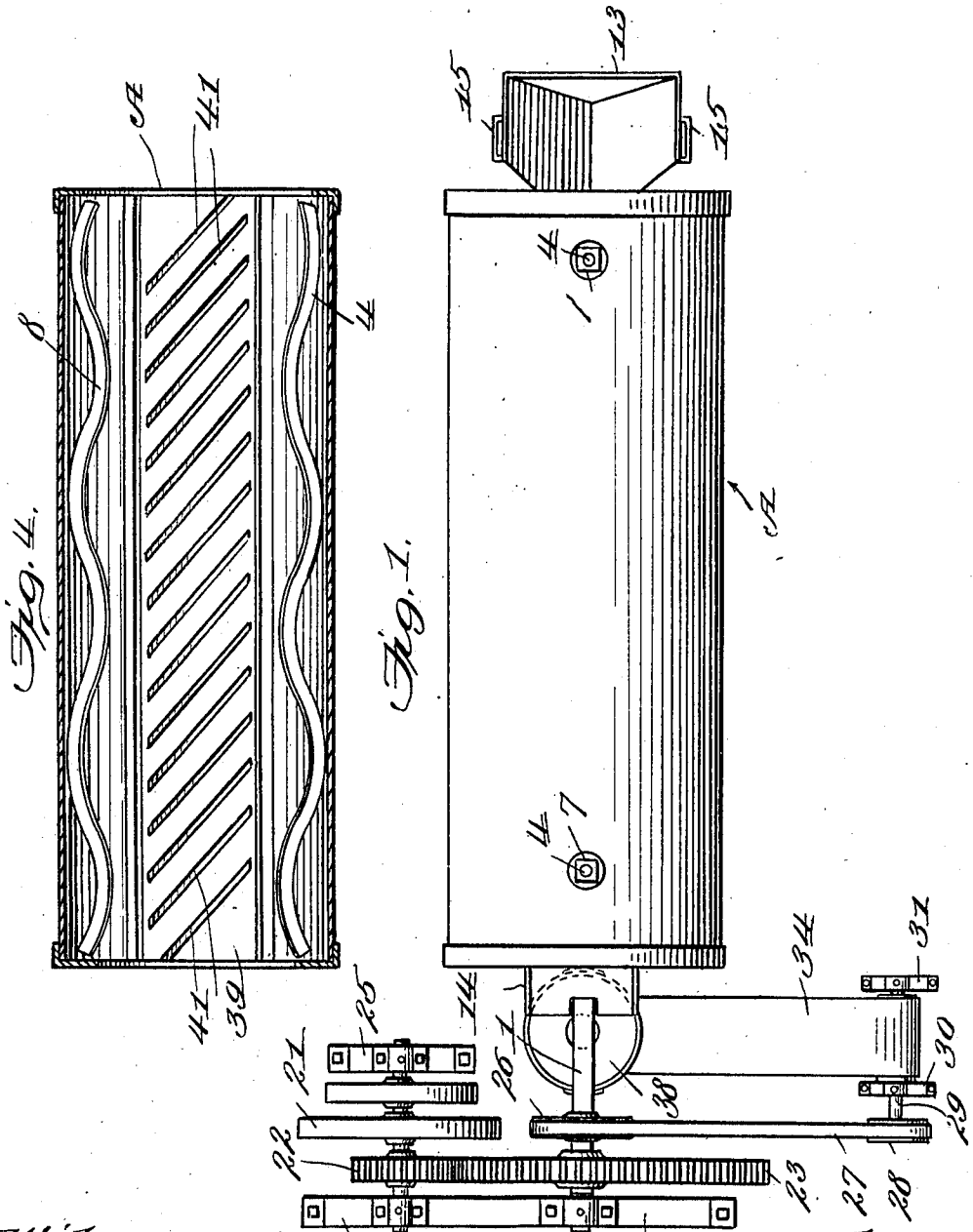


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MACHINE FOR CLEANING SAND AND GRAVEL.
APPLICATION FILED APR. 22, 1910.

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Patented Sept. 20, 1910.

2 SHEETS—SHEET 1.



Witnesses:

W. H. Kester
M. E. Connor

Inventor

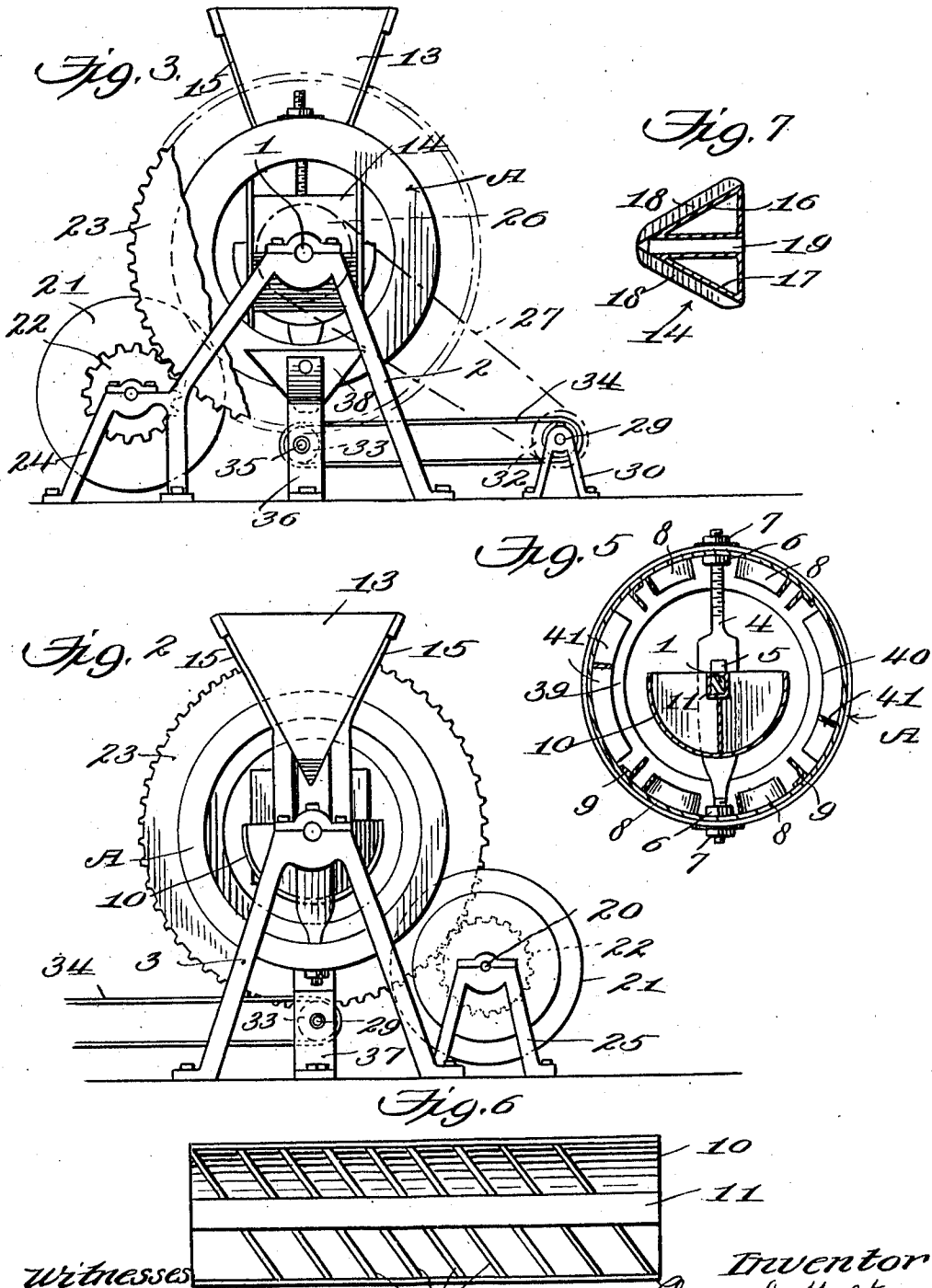
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M. E. Connor

Inventor

Charles J. Welty

BY *[Signature]*

UNITED STATES PATENT OFFICE.

CHARLES J. WELTY, OF NORTH LIMA, OHIO.

MACHINE FOR CLEANING SAND AND GRAVEL.

970,584.

Specification of Letters Patent. Patented Sept. 20, 1910.

Application filed April 22, 1910. Serial No. 557,055.

To all whom it may concern:

Be it known that I, CHARLES J. WELTY, a citizen of the United States of America, and resident of North Lima, Mahoning county, State of Ohio, have invented certain new and useful Improvements in Machines for Cleaning Sand and Gravel, of which the following is a specification.

The present invention relates to improvements in machines for cleaning sand and gravel, and it comprehends generally the production of a machine of that class comprising a rotating body so constructed as to insure the passage of the material to be cleaned from one end thereof to the other in a tortuous path, said body being provided with interiorly located devices for effecting such passage and for periodically tumbling over the material during the continuance thereof, whereby a separation of all dirt from said material is obtained.

A structural embodiment of the invention is illustrated in the accompanying drawings, wherein:—

Figure 1 is a plan view of the complete machine, Figs. 2 and 3 are views taken from opposite ends thereof, the former figure having a portion of the same broken away, Figs. 4 and 5 are longitudinal and transverse sectional views, respectively, through the body of the machine, Fig. 6 is a plan view of a trough arranged in said body, and Fig. 7 is a sectional view of a discharging device likewise associated with said body.

In said drawings, A designates, in a general manner, the aforementioned body of the machine, which may advantageously have the form of a hollow open-ended cylinder, as shown, and B the mechanism for imparting the requisite rotary movement thereto. Through said cylinder passes a squared shaft 1 the projecting rounded terminals of which are journaled in bearings provided upon standards 2 and 3. Means are provided for effecting the attachment of the cylinder to this shaft, and such means comprise, in the present construction, a pair of diametrically-arranged parallel bolts 4 having their enlarged body portions formed with longitudinal slots 5 through which said shaft passes and is rigidly secured; the end portions of these bolts are threaded and are inserted through perforations formed in cylinder A, displacement of said ends being

prevented by means of pairs of nuts 6 and 7 adapted to be tightened against the interior and exterior surfaces of said cylinder respectively.

The means for causing the aforementioned travel of the sand and gravel through the cylinder comprise, in the form illustrated, a plurality of sinuous strips 8 arranged longitudinally within said cylinder and at equal distances apart, and a pair of troughs 39 and 40. The strips 8 extend from end to end of the cylinder, as shown in Fig. 4, and have their inner edges formed with continuous flanges 9 which are suitably secured to the inner cylinder wall or surface. The troughs 39 and 40 are coextensive in length with the cylinder, and are secured to the inner surface or wall thereof in any desired manner. They are each provided with a series of spaced parallel blades 41 inclined with respect to the trough axes, the ends of the blades terminating short of the adjacent trough walls. Said troughs are arranged diametrically opposite each other. With said strips and troughs there is associated a third trough 10, located midway between troughs 39 and 40 and provided with a hollow sleeve 11 rectangular in cross section and extending from end to end thereof (see Fig. 6), the particular cross-sectional conformation of the sleeve enabling it to fit upon shaft 1 in such a manner as to be incapable of independent or relative rotation. The trough 10 is arranged upon said shaft between the two bolts 4 which abut against the trough ends and thus preclude longitudinal movement of said trough. Within this trough there is also provided a series of parallel blades 12, arranged similarly to the blades 41 above described and designed to effect a movement of the sand and gravel falling thereinto, as hereinafter described, from one side to the other.

There are finally provided in cooperation with the cylinder, a feed hopper 13 and a discharging device 14, the former of these elements being located at the inlet end of the cylinder and supported upon brackets 15 mounted upon the adjacent standard 3, the arrangement being such that the inclined bottom of the element extends a slight distance into the interior of said cylinder. The discharging device is shown in detail in Fig. 7 and is in the nature of a hollow

triangular frame or member having two inclined working surfaces or chutes 16 and 17 provided at their side edges with vertical flanges 18. This device is further provided with an interiorly-located sleeve 19 which is of rectangular cross-section, such construction permitting it to be securely fitted upon shaft 1, as will be apparent.

The mechanism B whereby the cylinder is rotated is shown in Figs. 1, 2 and 3 as comprising a main drive shaft 20 driven from any preferred source of power through the medium of a belt pulley 21, and carrying a small gear 22 which meshes with a relatively large gear 23 secured to shaft 1, adjacent the discharge end of said cylinder, said shaft 20 being suitably journaled in bearings provided upon a pair of supplemental standards 24 and 25. Shaft 1 also carries a pulley 26 connected by a belt 27 with a pulley 28 secured to a shaft 29 journaled in bearings provided upon standards 30 and 31. Shaft 29 is provided in turn with a roller 32 around which and a similar roller 33 travels an endless conveyer 34, the latter roller being secured to a shaft 35 journaled directly beneath a discharge hopper or funnel 38 likewise supported by the standards last referred to. It is to be understood of course, that no limitation to the exact form of mechanism shown and described for driving the cylinder and conveyer is intended or contemplated, since any equivalent mechanism may be substituted if preferred.

The operation of the machine may be stated as follows:—The drive mechanism B is started, and the feed hopper 13 then filled with the mixture of sand and gravel, which flows therefrom by gravity into the interior of the rotating cylinder. On entering the cylinder, the material falls into one or the other of the troughs 39 and 40 and into the spaces between the strips 8, and by reason of the sinuosity of the latter and the inelevation of the blades 41, is gradually advanced in a tortuous path toward the discharge end of said cylinder, during which time it is subjected to a more or less rapid shaking movement. As the cylinder rotates, the material is carried up and around by said strips and troughs, and on reaching a certain point falls back either into or upon the trough 10 according to the position which the latter happens to occupy at that time, such portion of the material as falls into this trough being given a sharp side-wise movement by the action of the blades 12. As the trough reaches an inverted position, the material falls therefrom, and the above cycle of operations is continued indefinitely until the material, on being carried upward by the strips and troughs 39 and 40, falls upon the

then uppermost chute surface of the device 14, whence it is discharged from the cylinder into and through the hopper 38 and upon the conveyer 34. During the various shaking movements imparted to the material, the dirt and dust adhering to the latter will be dislodged therefrom and will be carried away by the stream of water which flows continuously through the cylinder, being introduced therein by means of a hose, or pipe, leaving the material perfectly clean at the time of its exit from said cylinder.

I claim as my invention:

1. In a machine of the class described, the combination of a shaft and means for rotating the same; a hollow cylinder mounted upon said shaft for rotation therewith; said cylinder having an open discharge end; means arranged within said cylinder for carrying part-way around with the latter material introduced thereinto and for advancing such material toward said discharge end; and a longitudinally arranged trough located within said cylinder and suspended from and rotating with said shaft for periodically receiving material falling thereinto from said carrying means, said trough being provided with means for imparting a side-wise movement to said material at such time.

2. In a machine of the class described, the combination of a shaft and means for rotating the same; a hollow cylinder mounted upon said shaft for rotation therewith; said cylinder having an open discharge end; means arranged within said cylinder for carrying part-way around with the latter material introduced thereinto and for advancing such material toward said discharge end; and a longitudinally arranged trough located within said cylinder and suspended from and rotating with said shaft for periodically receiving material falling thereinto from said carrying means, said trough being provided with a series of interiorly located inclined blades for imparting a side-wise movement to said material at such time.

3. In a machine of the class described, the combination of a shaft and means for rotating the same; a hollow cylinder mounted upon said shaft for rotation therewith; a pair of troughs arranged longitudinally within said cylinder and secured to the wall thereof at points remote from each other; a trough secured to said shaft and located midway between the first-mentioned troughs; and a plurality of sinuous strips secured to said cylinder wall between said first-mentioned troughs.

4. In a machine of the class described, the combination of a shaft and means for rotating the same; a hollow cylinder mounted upon said shaft for rotation therewith; a

pair of troughs arranged longitudinally within said cylinder and secured to the wall thereof at points remote from each other, said troughs being provided with interiorly
5 located blades; and a plurality of sinuous strips secured to said wall between said troughs.

In testimony whereof I affix my signature in presence of the subscribing witnesses.

CHARLES J. WELTY.

Witnesses:

E. M. McBRIDE,

O. E. DISER,

WALTER I. LYON.