July 12, 1932. W. H. CAMPEN ET AL 1,866,877

CLEANING MECHANISM

Filed June 11, 1931

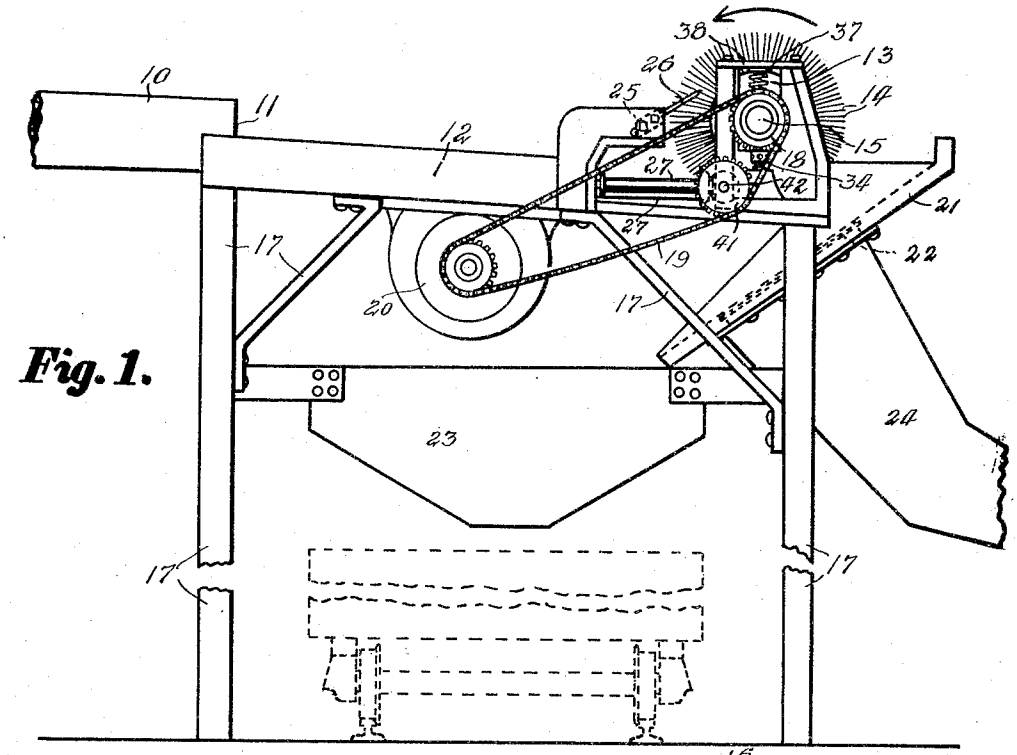


Fig. 1.

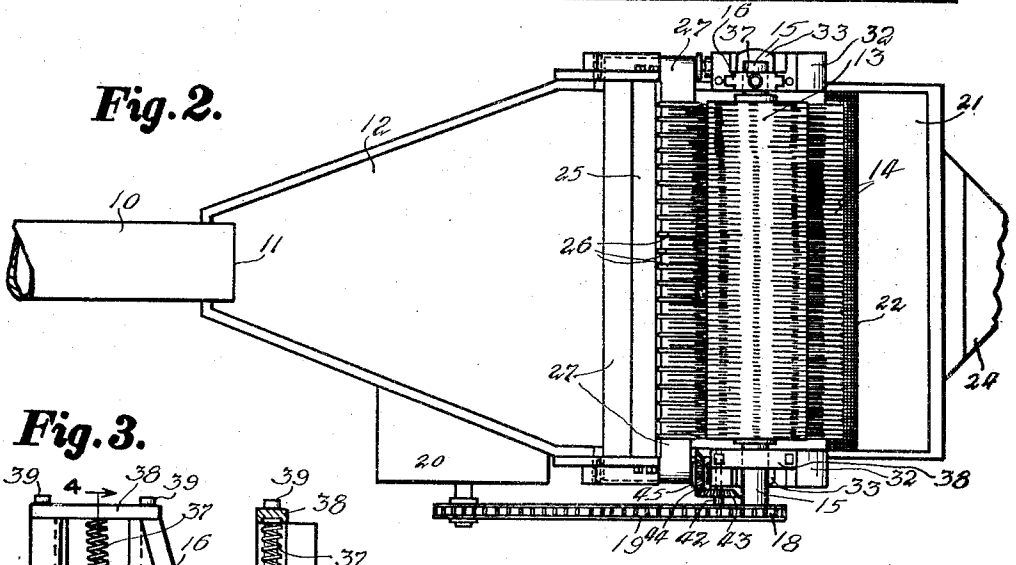


Fig. 2.

Fig. 3.

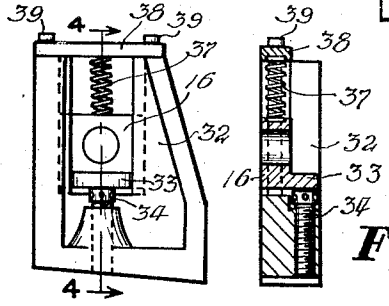


Fig. 4.

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CLEANING MECHANISM

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The present invention relates to a cleaning device adapted particularly for cleaning sand and gravel so as to properly condition these ingredients for use in making a good grade of concrete.

As heretofore practiced the separation of foreign substances from sand and gravel has not been carried out to any great degree such as is required for making a good grade of concrete, and an object of the present invention is to provide a machine which is of simple construction and one which may be economically used for properly separating foreign substances from the sand and gravel prior to use in making a good grade of concrete mix.

Another object of the present invention is to provide a machine which has mechanical means for positively effecting the proper separation of the foreign substances from the sand and gravel and which does not rely upon mere sifting or gravitation and wherein the sand and gravel after separation may be easily and effectively conducted to various points of deposit or storage.

With the foregoing and other objects in view, the invention will be more fully described hereinafter, and will be more particularly pointed out in the claims appended hereto.

In the drawing, wherein like symbols refer to like or corresponding parts throughout the several views.

Figure 1 is a side elevation of a machine constructed according to the present invention, parts being broken away.

Figure 2 is a top plan view of the same.

Figure 3 is a detail enlarged side elevation of one of the adjustable supports for the rotary brush employed, and

Figure 4 is a vertical section taken through the same on the line 4—4 of Fig. 3.

Referring now to the drawing, 10 indicates a spout or delivery member and it may be in the form of a pipe line of a diameter of ten inches, or the like, which is in operative communication with any suitable source of supply, not shown, and which may lead from a gravel pit. Usually, at the gravel pit end of the pipe line 10 a flexible conduit is provided through which the gravel, sand and loose earth are pumped from the bottom of the pit by suitable pumping means, these materials being conducted to the discharge end 11 of the pipe line 10 in the usual manner.

The cleaning machine of this invention is provided at its upper end with a platform 12 having suitable marginal walls to confine material on the upper surface of the platform, as shown in Fig. 2, this platform preferably converges at its forward end toward the delivery pipe 10 and terminates beneath the delivery end 11 of the pipe and inclines rearwardly therefrom to the opposite end of the machine. The platform 12 thus receives the material and permits the material to gradually spread out into a thin layer over the upper surface of the platform as the material is moved rearwardly thereover.

Arranged transversely over the rear end portion of the platform 12 is a rotary brush 13. The brush 13 comprises a cylindrical body part carrying a plurality of radially extending bristles 14 preferably of spring steel wire so as to possess the necessary inherent resiliency.

The brush 13 is provided at opposite ends with trunnions or shaft sections 15 which have bearing in suitable boxes 16 as shown particularly in Figs. 3 and 4, these boxes 16 are mounted to slide vertically in guide brackets 32 which are supported at opposite sides of the platform 12 upon the frame structure 17. As shown in Figs. 3 and 4, the brush 13 may be vertically adjusted over the platform 12 and maintained at a suitable operating distance therefrom depending upon the length of the bristles 14, adjustment being made to lower the brush from time to time incident to the shortening of the radially disposed bristles 14 incident to wear.

One of the axle sections 15 is provided with a sprocket wheel 18 over which passes a drive chain 19, the latter being driven by an electric motor 20, or any other suitable source of power supply. Spaced across the rear end of the platform or table 12 is a deflector or bevel plate 21 which is mounted

upon the frame 17 and is inclined forwardly and downwardly from a point spaced above the plane of the platform 12 to a point located beneath the platform, as clearly shown in Fig. 1. This deflector plate 21 has countersunk in its inner face, and intermediate its upper and lower ends, a screen 22 of suitable mesh. A bin or container 23 is mounted in the frame 17 beneath the lower forward end of the deflector plate 21 to receive material from the deflector plate. The deflector plate 21 is provided with an opening therethrough beneath the screen 22, and a suitable receiver or container 24 is bolted or secured against the under side of the deflector plate 21 in registry with the screen 22 and is adapted to receive material passing through the screen and conduct the material to a conveyor, or the like, which may lead to a gravel pit, or to any other suitable point of discharge.

A cleaning comb 25 is mounted upon the frame 17 across the upper side of the platform or table 12, in spaced relation thereto and at the front side of the rotary brush 13. This comb 25 carries a plurality of tines or teeth 26 preferably of relatively stiff steel wire, or the like, and which extend forwardly and rearwardly into the body of bristles 14 so as to clear the latter of accumulations as the brush 13 turns over forwardly in the direction indicated by the arrow in Fig. 1.

Arranged beneath the comb 25 and beneath the forward side of the brush 13 is a transversely disposed endless conveyor 27 which is mounted upon suitable rollers disposed longitudinally at opposite sides of the platform 12 and which is driven by a suitable gear mechanism which is driven by a sprocket wheel 41 which engages the lower run of the drive chain 19 and which is mounted upon a shaft 42 carried by the adjacent bracket 32. The shaft 42 carries a beveled pinion 43 which meshes with a second beveled pinion 44 carried on the shaft 45 which is secured to one of the rollers of the conveyor 27 for driving the latter when the chain 19 is operated.

The bearing blocks 16 for the opposite ends of the rotary brush 13 are provided at their lower ends with outwardly extending arms 33 beneath which engage jack screws 23 adapted to be operated for raising the blocks 16 or for releasing the blocks so that the latter may slide downwardly in the guide brackets 32. This admits of the proper adjustment of the rotary brush 13 relative to the length of the bristles 14. Each block 16 is provided with a spring 37 which bears against the top of the block and which at its upper end is seated beneath a strip 38 secured by screws 39, or the like, across the upper ends of the guide brackets 32 so that the springs 37 normally urge the blocks 16 downwardly upon the jack screws 34 and cause the blocks to follow the jack screws when lowered.

In operation, the sand, gravel, slit, earth and foreign substances are gathered in mixed condition from the bottom of the pit and are discharged as a mass from the end 11 of the spout or pipe 10. This mass falls upon the forward end of the platform 12, spreads outwardly thereover into a thin layer or film and is forced downwardly toward the rotary brush 13. As the material passes over the upper surface of the platform or table 12 it comes into contact with the bristles 14 of the rotary brush and the bristles thus function to

In operation, the sand, gravel, silt, earth from the sand and gravel.

As the bristles 14 revolve the accumulations of earth and foreign substances adhering to the bristles are removed therefrom by the comb teeth 26 and these foreign substances fall toward the platform 12 and are interposed by the transversely moving belt 27 which carries the foreign substances to one side of the machine and discharges the substances thereout.

The sand and gravel thus freed from the earth and the like, strike against the deflector 21 at the rear end of the machine and gravitate downwardly over this deflector plate and over the screen 22. The screen 22 sifts the sand and gravel into two separate commercial sizes. The finer size passes through the screen 22 into the spout 24 and is thus conducted back into the pit in instances where the fine sand is not desired.

The residue, or the larger particles of sand and gravel pass over the upper surfaces of the deflector plate 21 and are deposited in the bin 23, and the latter may be of the size of a carload, and if desired a car 36, shown in dotted lines in Fig. 1, may be positioned beneath the bin 23 to receive the material therefrom if it is desired to feed the material directly through the opening.

We do not wish to be restricted to the size, form, and proportions of the various parts, and obviously changes could be made in the construction herein described without departing from the spirit of the invention, it being only necessary that such changes fall within the scope of the appended claims.

What is claimed is:

1. In a cleaning mechanism for indurate substances comprising a downwardly inclined platform, a revoluble brush transversely positioned adjacent the roller edge of said platform, a comb in operative communication with said brush and in longitudinal alinement therewith, and means for imparting revoluble movements to said brush.

2. A machine for cleaning sand, gravel, and the like, comprising a platform, means for feeding the material over the upper surface of the platform, a brush member arranged transversely across the platform for

spreading the material into a thin layer and removing foreign substances from the material, separating means for receiving the material from the platform for passage from said brush member, a cleaning device for said brushing member to remove the adhering foreign substances therefrom, and a transversely operable device beneath said cleaning member to carry off the substances removed from the brushing member.

3. A machine for cleaning sand and gravel comprising a platform, a machine for feeding the material in a thin layer over the upper surface of the platform a rotary brush mounted transversely across the platform for engaging the material to remove earth and the like therefrom, adjustable means for raising and lowering the brush over the platform, cleaning means for the brush, and means disposed adjacent the cleaning means for receiving the earth and other foreign substances therefrom removed from the brush.

In testimony whereof, we affix our signatures.

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