J. DAVISON.

GRAVEL SCREEN.

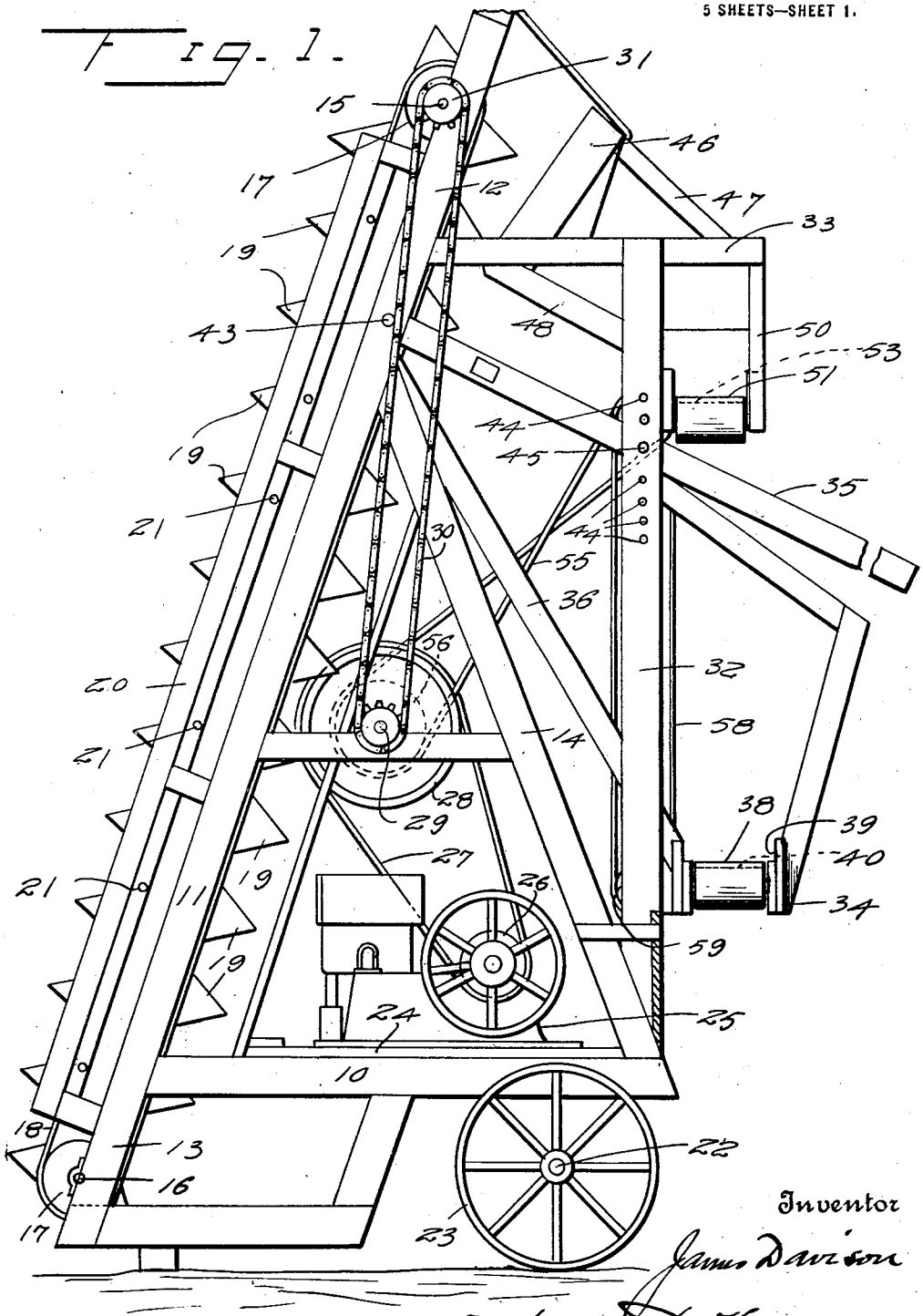
APPLICATION FILED DEC. 12, 1919.

1,363,762.

Patented Dec. 28, 1920.

5 SHEETS—SHEET 1.

Fig. 1.



Inventor

James Davison

By Thomas R. Harney

Attorney

J. DAVISON.

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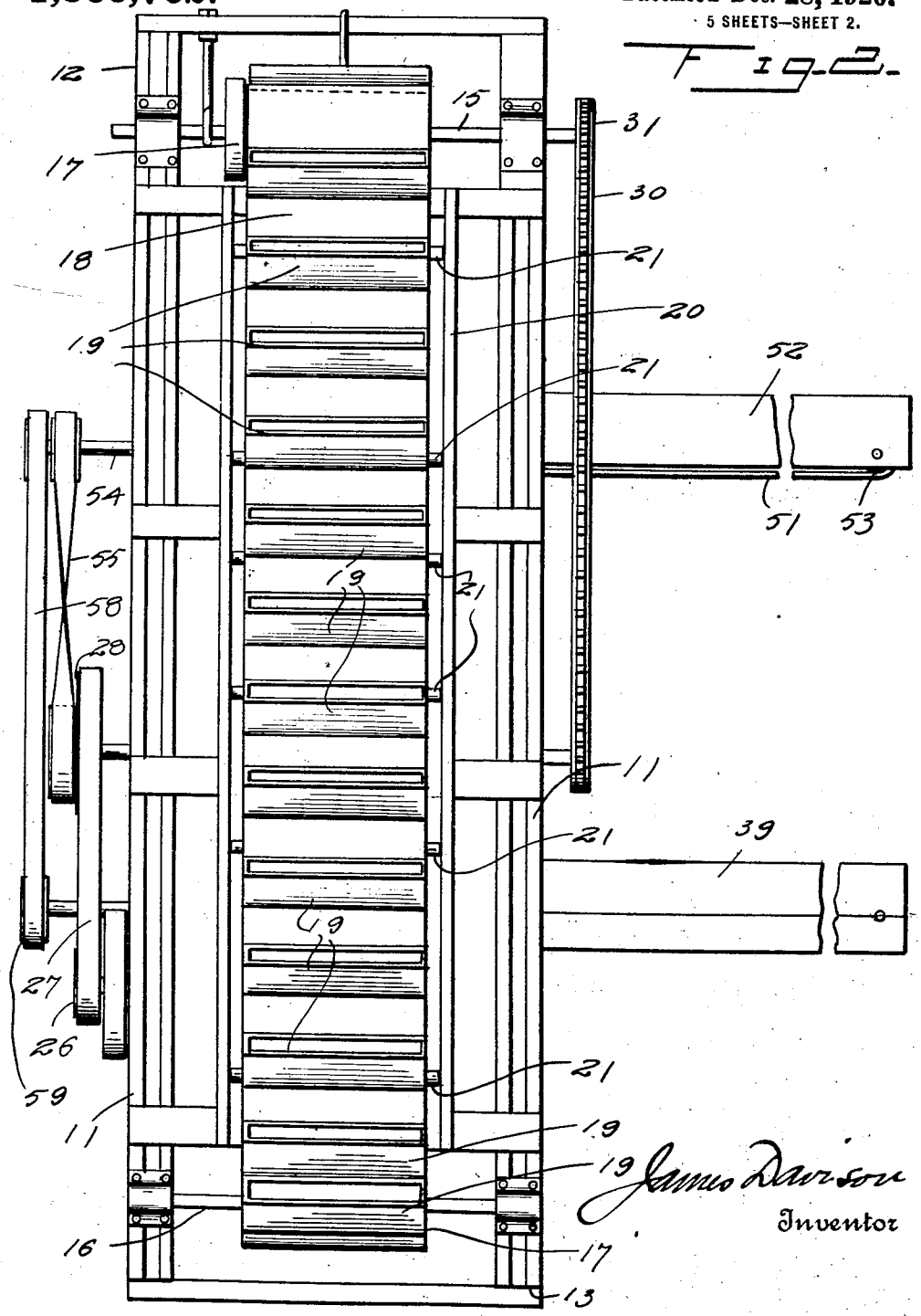
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5 SHEETS—SHEET 2.

Fig. 2.



James Davison
Inventor

By Thomas R. Harner
Attorney

J. DAVISON.

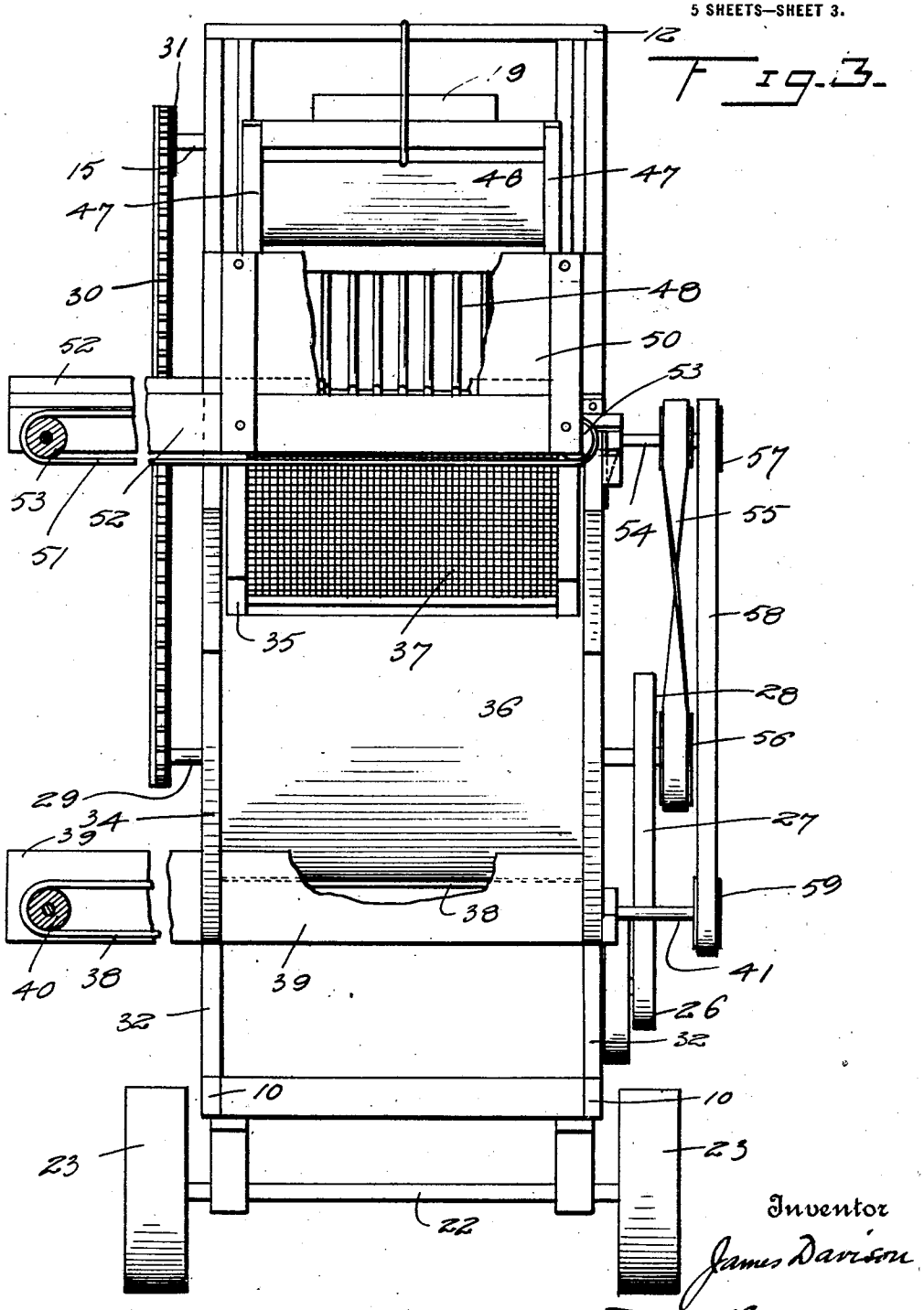
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5 SHEETS—SHEET 3.

Fig. 3.



Inventor

James Davison

By Thomas R. Harner

Attorney

J. DAVISON.

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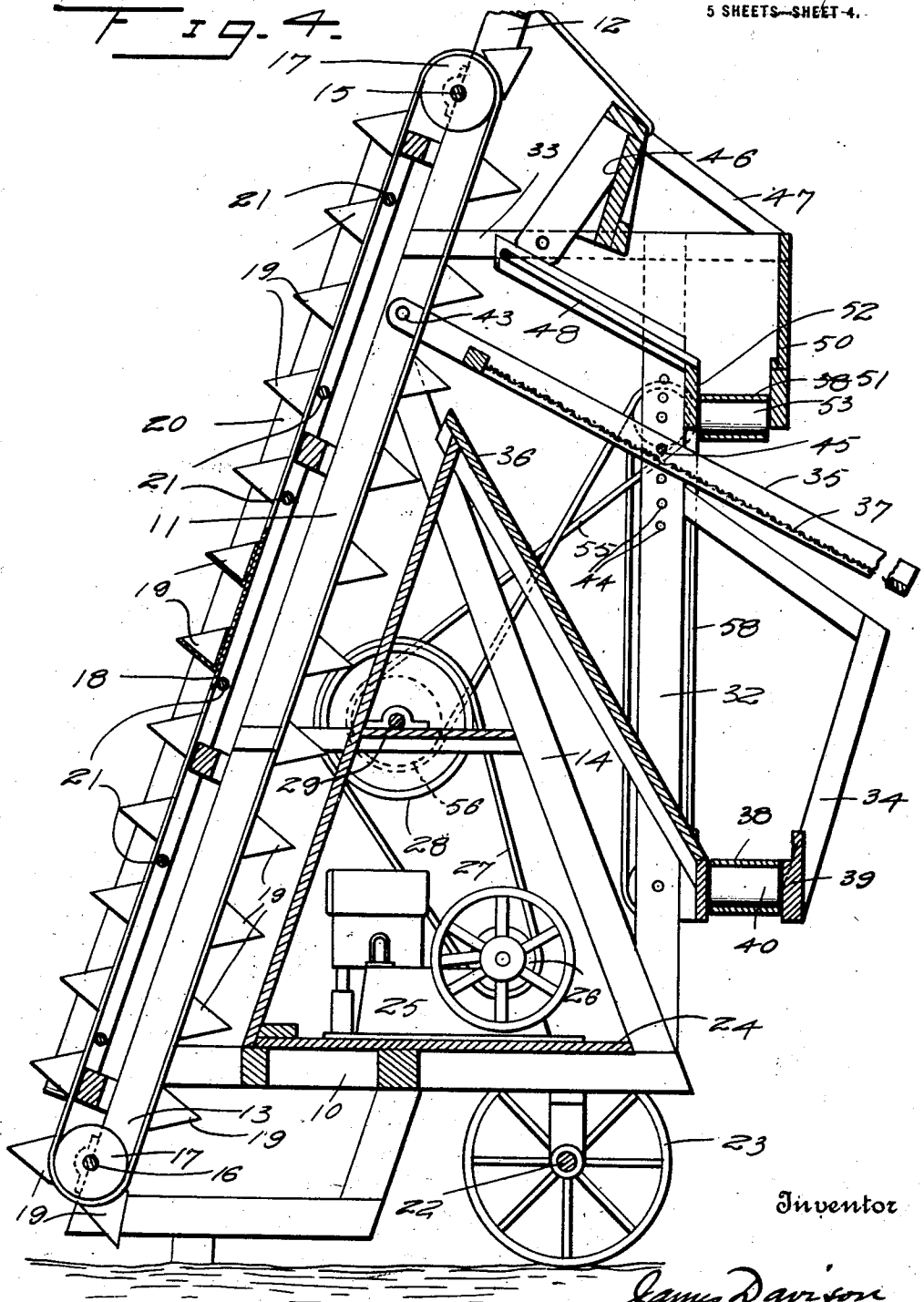
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5 SHEETS—SHEET 4.

Fig. 4.



Inventor

James Davison

By Thomas R. Harmon

Attorney

J. DAVISON.

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5 SHEETS—SHEET 5.

Fig. 5.

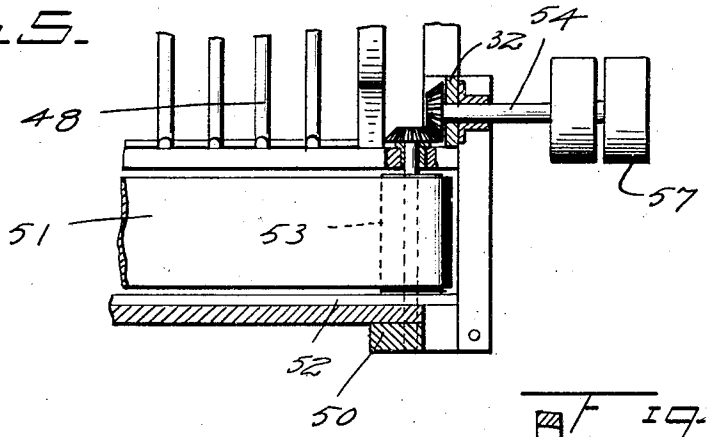


Fig. 6.

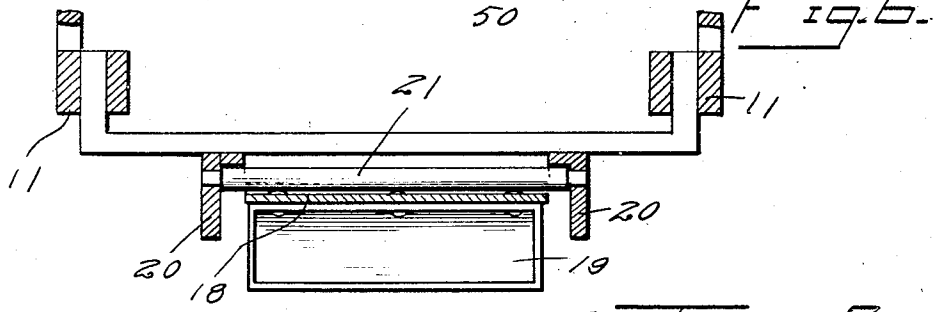
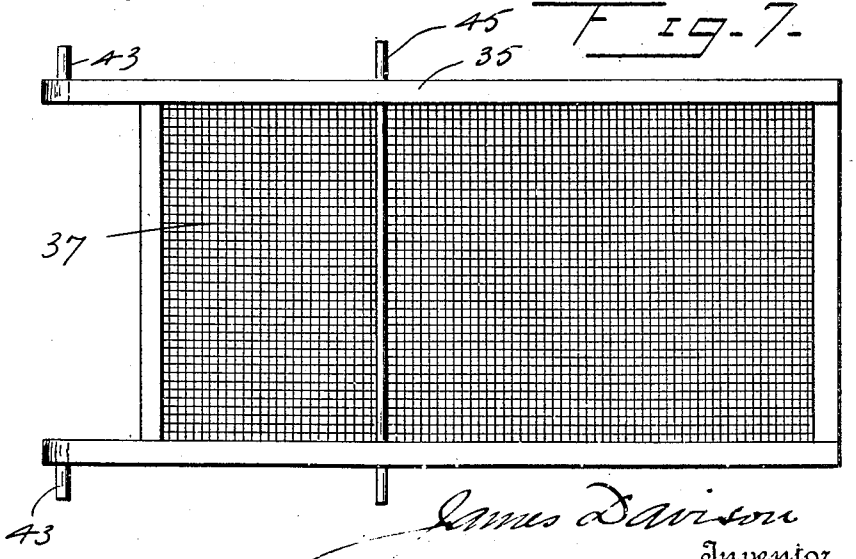


Fig. 7.



James Davison
Inventor

By Thomas R. Farmer
Attorney

UNITED STATES PATENT OFFICE.

JAMES DAVISON, OF LAPEER, MICHIGAN.

GRAVEL-SCREEN.

1,363,762. Specification of Letters Patent. Patented Dec. 28, 1920.

Application filed December 12, 1919. Serial No. 344,456.

To all whom it may concern:

Be it known that I, JAMES DAVISON, a citizen of the Dominion of Canada, and a subject of the King of Great Britain, residing at Lapeer, in the county of Lapeer and State of Michigan, have invented certain new and useful Improvements in Gravel-Screens, of which the following is a specification.

This invention relates generally to gravel screens and more particularly to devices of a portable nature in which provision is made for the separation and the separate disposal of sand, gravel and stones, the primary object of the invention being the provision of a simple, comparatively inexpensive and readily portable device which may be transported from place to place with the facility and despatch of an ordinary wagon, and one which will be speedy, effective and efficient in use.

With these general objects in mind, the invention in its most specific aspect resides in the features of construction, arrangement and operation to be now described, with respect to the accompanying drawings wherein,

Figure 1 is a side elevation,

Fig. 2 is an elevation of the front or elevator side,

Fig. 3 is an elevation of the rear or discharge side,

Fig. 4 is a side view partly in elevation and partly in vertical section,

Fig. 5 is a detail horizontal section through a portion of the stone hopper showing a part of its discharge means,

Fig. 6 is a detail horizontal section through a portion of the outer run of the elevator and its immediate supports, and,

Fig. 7 is a detail plan view of the gravel screen.

Referring now to these figures and particularly to Figs. 1, 2 and 3, the improved machine is made up of rigidly spaced and connected triangular side frames whose bases 10 are disposed horizontally and the forward inclined side beams 11 of which are respectively extended at their upper and lower ends, at 12 and 13, above the upper ends of the rear inclined beams 14 and below the lower horizontal beams 10. These extended portions 12 and 13 of the forward inclined beams 10 and 11 support bearings for lower and upper transverse shafts 15 and 16 upon which rollers 17 are mounted to receive the upper and lower portions of an endless belt 18, to which are secured ouckets 19. The beams 11 also support a frame 20 having transverse rollers 21 journaled at spaced points upon which the outer upwardly traveling run of the belt 18 moves, the buckets 19 being at this time in loaded condition.

The lower beams or bases 10 also support journals for a rear transverse shaft 22 at opposite ends of which are traction wheels 33 upon which the entire device is portable from place to place and the beams or bases 10 are further connected by a motor platform 24 upon which a suitable motor 25 is mounted, the driving shaft of which has a pulley 26 at one side of the frame connected by a belt 27 with one of the pulleys 28 of a counter shaft 29. This counter shaft has at one end a sprocket wheel connected by a vertically extending sprocket chain 30 with a sprocket wheel 31 mounted upon the upper shaft 15 of the bucket elevator.

At the rear of the machine uprights 32 rise from the rear portions of the beams 10 and are connected at their upper ends intermediate the ends of horizontal beams 33, the forward portions of the latter of which are securely fastened to the upwardly extending portions 12 of the forward inclined beams 11, these uprights 32 serving to support a sand hopper 34 disposed below the gravel screen frame 35.

The sand hopper 34 has a front wall 36 the upper portion of which is secured to the inclined uprights 11 and inclined rearwardly and downwardly so as to deflect sand falling through the gravel screen 37 within the frame 35, downwardly onto a transversely disposed endless belt conveyer 38 which moves in the base of hopper 34 and within a frame 39, projecting laterally from the lower portion of the sand hopper. This sand discharge belt 38 travels over rollers 40, one of which has a geared connection with a shaft 41, driven as hereinafter described.

The gravel screen frame 35 is of rectangular form with its upper forward portion bolted at 43 to the upwardly projecting portions of the forward inclined beams 11 and said frame pivots on these bolts 43, with its side bars projecting rearwardly between the uprights 32, having a vertical series of openings 44 by means of which the gravel screen frame is held in adjustably inclined relation

by a rod 45 extending through openings in its side beams and through selected openings of the series of openings 44.

It will be noted that the lower rear end of the gravel screen frame extends rearwardly beyond the sand hopper 34 so that the gravel may be discharged from its rear end directly into wagons and the like placed to receive the same.

Above the upper horizontal beams 33, before mentioned, is an upwardly and rearwardly inclined baffle 46 supported by braces 47 and against which the material is discharged from the upwardly moving buckets 19 as they round the upper pulley 17 of the elevator. This baffle 46 serves to check the material and allow the same to drop downwardly upon a stone screen frame 48, preferably having spaced parallel rods through which the gravel and sand pass while the stones are held. The frame 48 is inclined rearwardly and downwardly, however, with its lower end extending into a stone hopper 50 and discharging upon a laterally moving endless belt 51 operating also within a laterally projecting frame 52, belt 51 for the discharge of the stone traveling around rollers 53, one of which has a geared connection with a shaft 54 driven by a belt 55 from a pulley 56 of the counter shaft 29, and also provided with a pulley 57 connected by a belt 58 to a pulley 59 having a geared connection with the laterally extending sand discharge belt 38.

It is thus obvious that in use, it is simply necessary to move the entire device upon the traction wheels 23 to the place of use, the entire device being slightly tilted so as to move freely on the wheels and still adapt the same to be set up in use without delay or trouble. The motor 25 is then started which at once sets all of the movable parts in motion and it becomes necessary then for a mere feeding of material toward the lower end of the elevator so that it can be scooped by the buckets 19 and carried upwardly around the upper end of the elevator. From this point the material is discharged against the baffle 46 as previously described and falls therefrom onto the stone screen frame 48 and onto the stone screen rods 49. The sand and gravel fall through these rods onto the gravel screen 37 within its frame 35 while the stones travel downwardly on the rods 49 and onto the stone hopper 50 from where they are carried laterally and discharged by the endless stone discharge belt 51. The gravel travels downwardly upon the gravel screen 37 and discharges from the rear lower end of frame 35 into wagons and the like placed to receive the same, while the sand falling through the mesh of the gravel screen slides down upon the inclined wall 36 and into the sand hopper from which it is carried laterally and discharged by a sand discharge belt 38.

The machine as proposed is capable of ready handling and of continuous operation with comparatively little attention, reducing the number of necessary attendants to a minimum and thus materially lowering the usual cost of operations, without reducing speed of operation or efficiency of results.

The machine is also capable of ready handling in its movement from place to place and may be drawn by a team from one gravel pit to another with almost the facility of an ordinary wagon, and upon arrival at a gravel pit it is in position to be at once set up without the common delays incident to the starting of operations of known machines for this purpose.

I claim:—

A machine of the character described including a frame, a stone screen in the upper portion of the frame, a sand hopper in the frame below the stone screen, a gravel screen inclined between the stone screen and the sand hopper and having its free outer end projecting and discharging beyond the stone and sand hoppers, said frame including spaced uprights forming in part the supports of said sand and stone hoppers and to certain of which uprights the inner end of the gravel screen is pivoted, certain other uprights having vertical series of apertures, a rod extending through selected apertures of the last mentioned uprights and forming an adjustable support for the gravel screen intermediate its ends, said stone and sand hoppers having discharge devices movable to one side at right angles to the inclination of the gravel screen, and connections for simultaneously actuating said discharging devices.

In testimony whereof I affix my signature.

JAMES DAVISON.