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Thompson

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[54] **MOBILE MATERIAL SCREENING TOWER**

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[51] **Int. Cl.** **B07b 1/46**

[58] **Field of Search** ..... 209/240, 244, 412, 413, 209/414, 415, 420, 421, 380; 198/233; 214/502, 512; 296/23 C, 26

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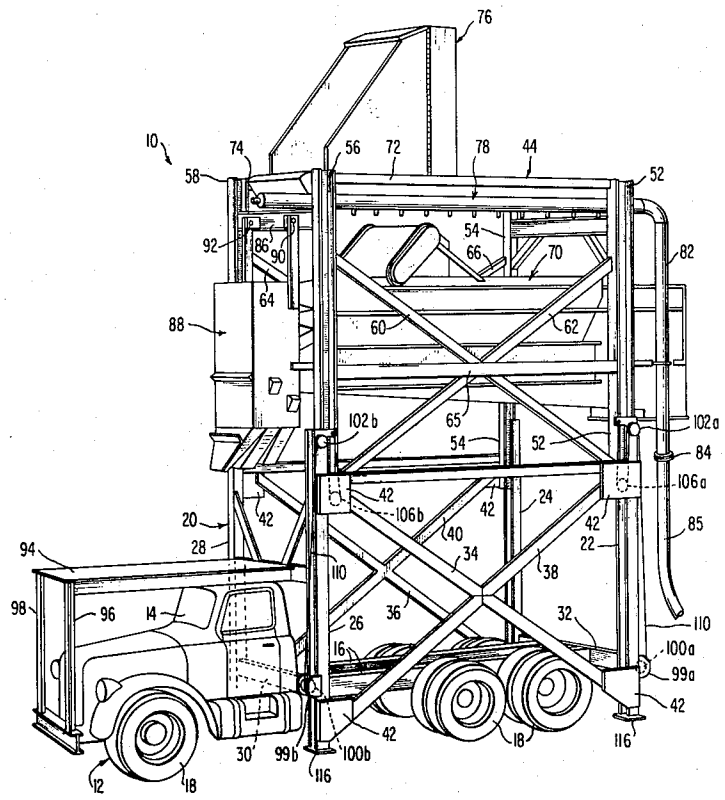
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[57] **ABSTRACT**

A portable screening tower for mounting on a wheeled vehicle having a first framework connected to ground engagement means for supporting said tower in use, a second framework movable vertically with respect to the first framework and having a material screening facility mounted thereon.

4 Claims, 4 Drawing Figures



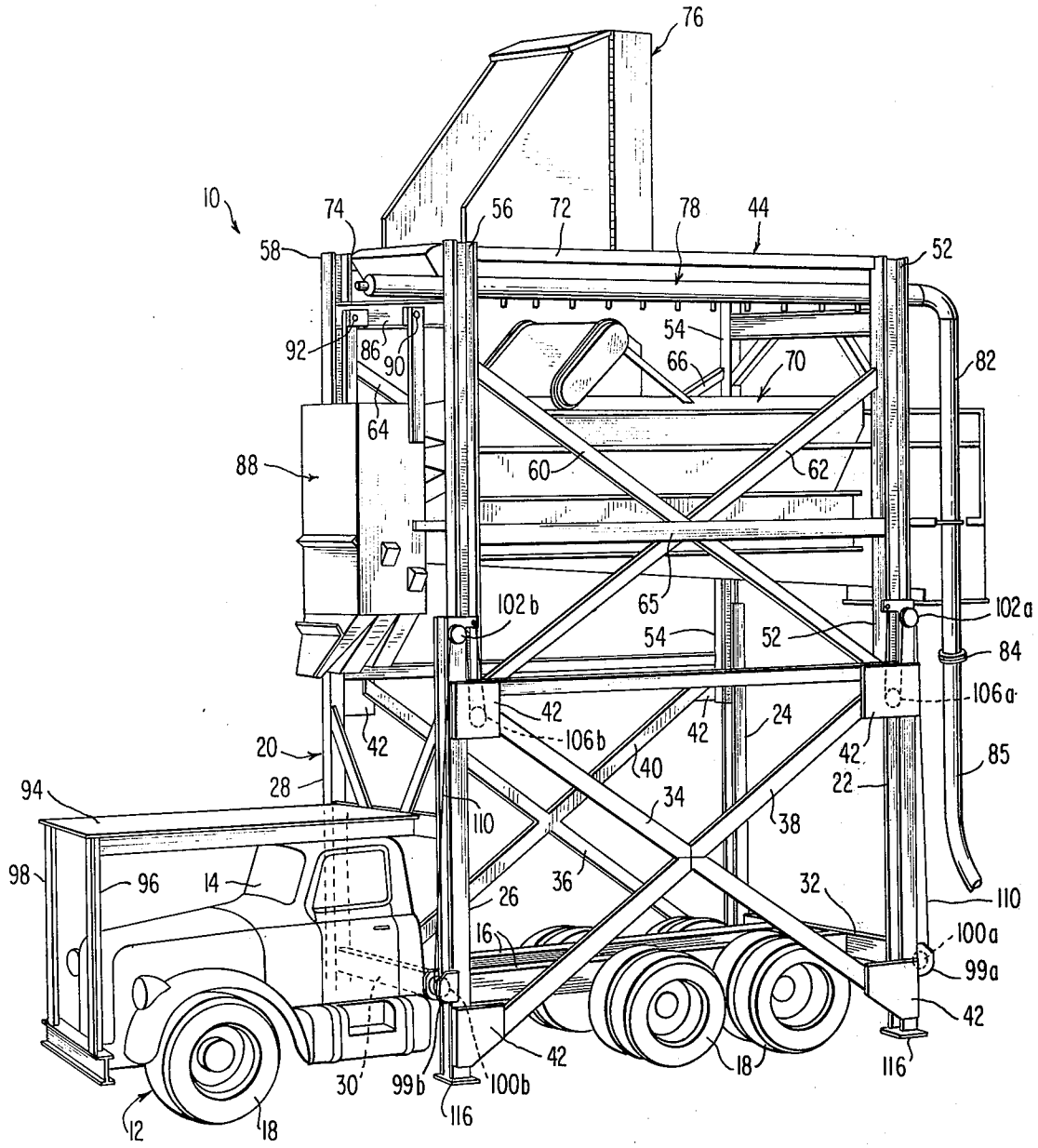

76
10
74
56
72
78
44
58
52
54
92
86
90
66
70
82
64
88
60
62
102b
65
102a
54
52
84
106a
42
106b
42
24
42
20
42
85
94
28
40
22
34
110
38
98
96
14
36
32
26
110
16
100a
99a
42
42
18
116
30
99b
100b
116
12
18

FIG. 1

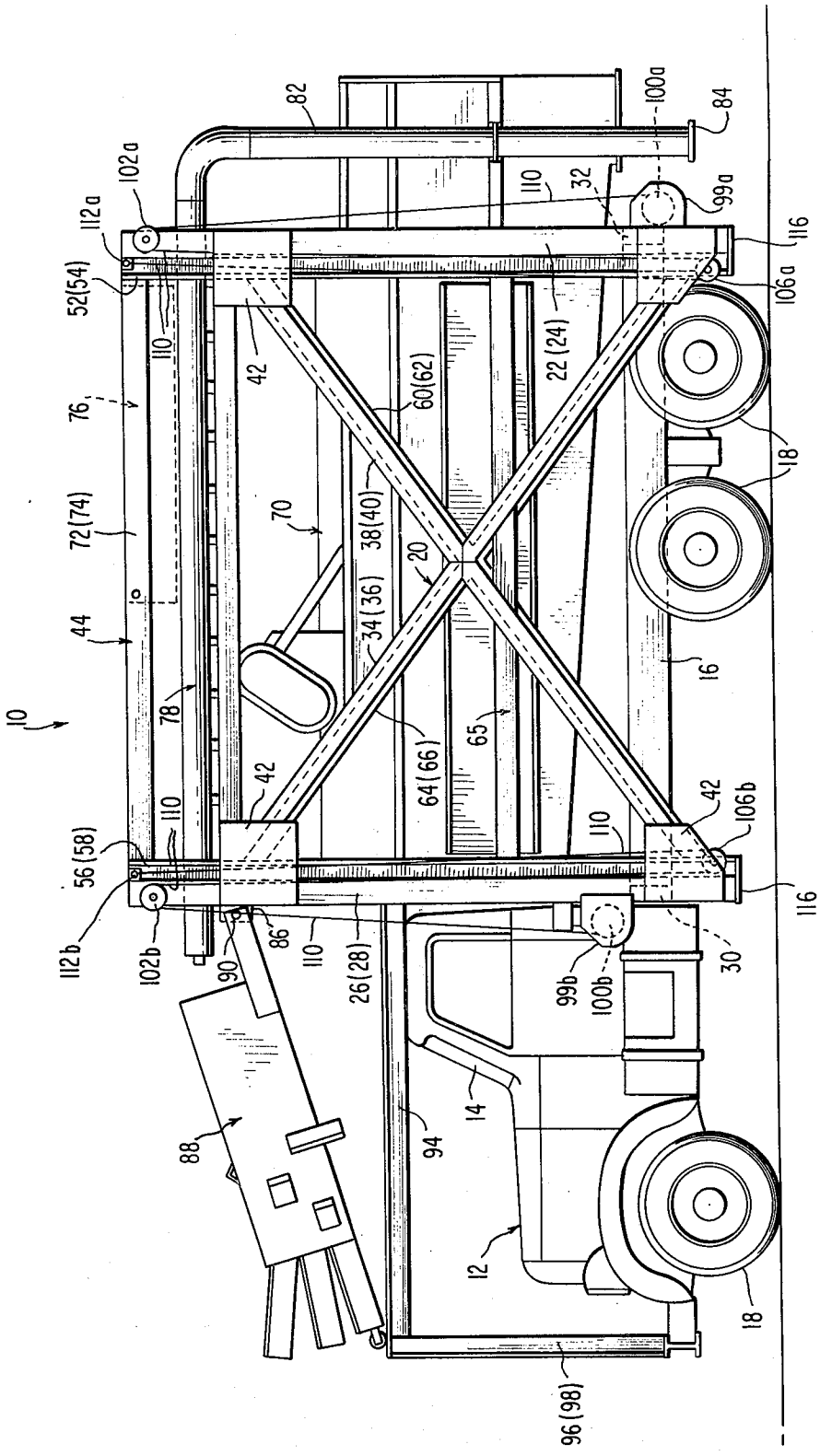

82
100a
84
102a
112a
110
32
99a
116
52(54)
106a
42
22(24)
60(62)
76
18
72(74)
70
38(40)
20
34(36)
44
16
10
78
65
64(66)
42
106b
110
56(58)
116
112b
102b
86
110
26(28)
30
90
99b
100b
14
88
94
12
18
96(98)

FIG 2

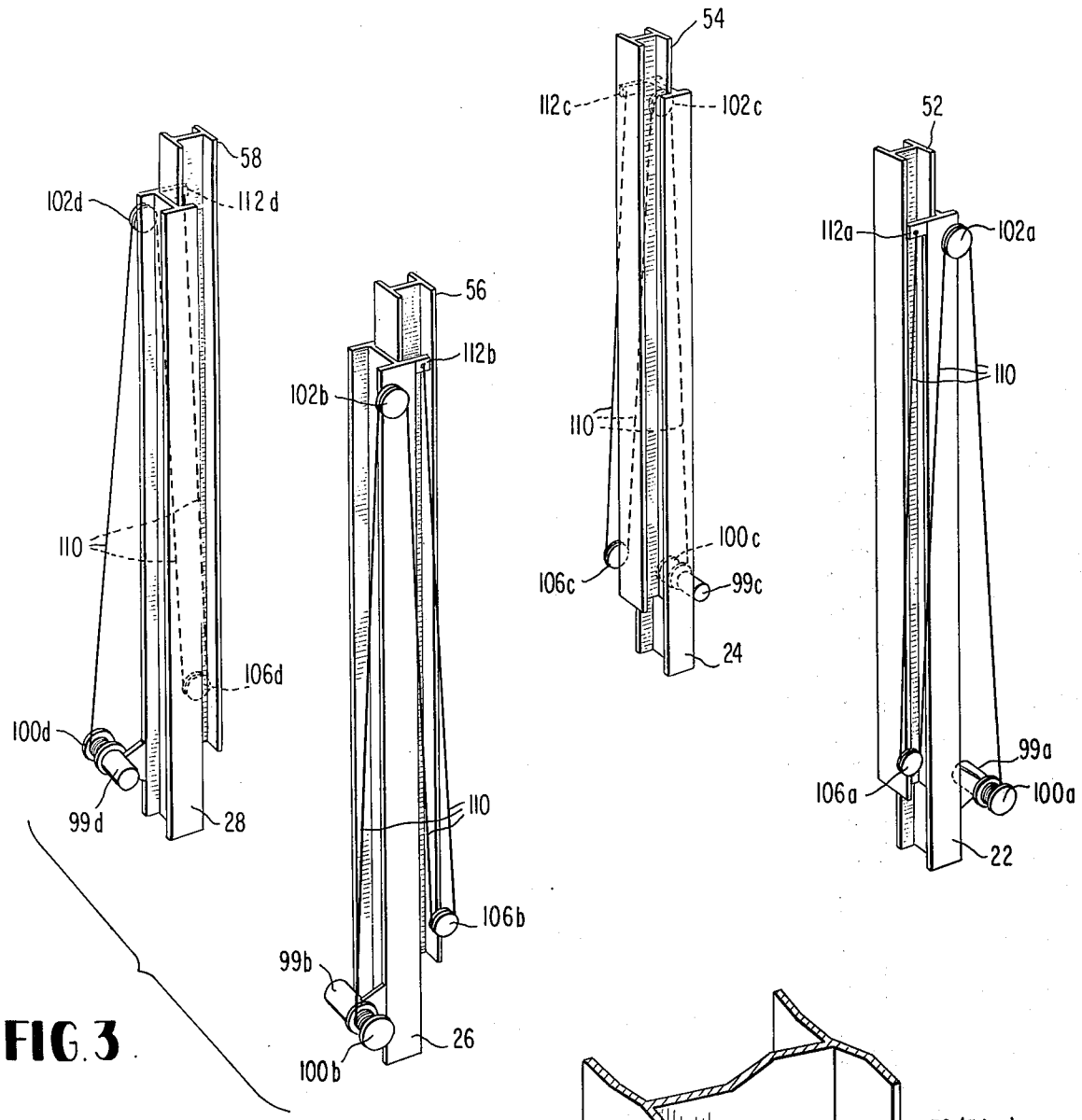

58
102d
112d
110
106d
100d
99d
28
56
112b
102b
110
106b
99b
100b
26
54
112c
102c
110
100c
106c
99c
24
52
112a
102a
110
99a
106a
100a
22

FIG. 3

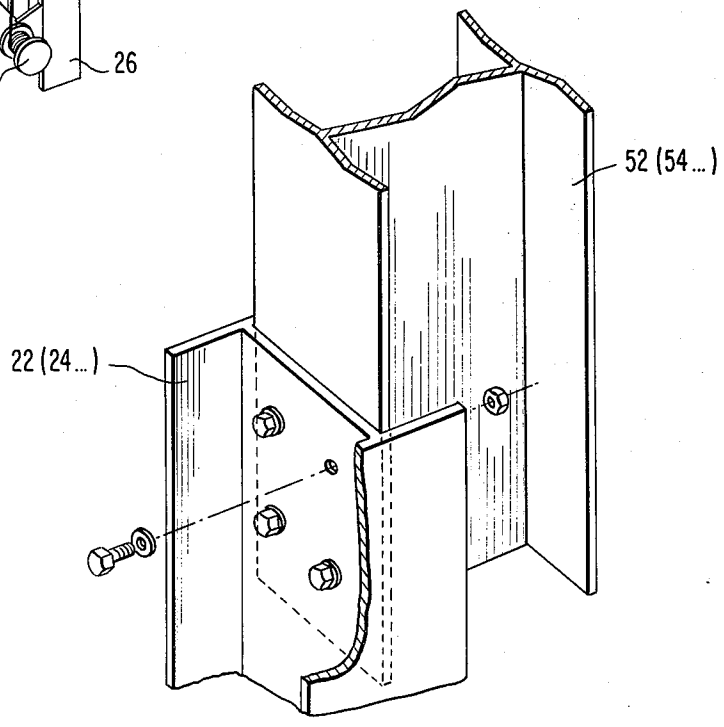

52 (54...)
22 (24...)

FIG. 4

MOBILE MATERIAL SCREENING TOWER

This invention relates to a mobile material screening device for separation purposes such as that used in connection with dredging operations and sand washing arrangements.

The prior art knows of many working devices for separating either a dry or wet material into various grades of gravel and sand. However, the equipment of the prior art is large and cumbersome. The prior art equipment is difficult to transport and to erect without serious time-consuming requirements.

The principal objective of this invention is to provide a mobile screening device which is usable in a variety of environments and will have height and length requirements which meet current standards of highway travel. Although meeting the legal requirements of highway travel, an efficient and rugged screening tower is provided which is not less efficient than those of conventional design.

An important objective of this invention is to provide framework suitable for securement to a truck bed having a telescoping section supporting a material screening mechanism which is nested within the main framework during travel and can be extended to a tower-like arrangement when in use.

A further object of the present invention is to provide a mechanism of the type described having a water supply conduit attached to the movable framework that has nozzle means for delivering water to the screening apparatus and has its inlet end disposed for connection to a water supply.

A still further objective of this invention is to provide a pivotal discharge chute which extends outwardly over the cab of a supporting vehicle in the travel position and which assumes its working position upon the raising of the framework carrying the material screening apparatus.

A still further objective of this invention is to provide a cable and sheave arrangement for elevating the material screen mechanism which arrangement can be powered from the engine of the vehicle.

A still further objective of the invention is to provide a pivotal material receiving hopper which is efficiently erected into a use position from a nested travel position.

According to one preferred embodiment of this invention a sturdy framework is securely fastened to the bed of a vehicle so that the material screening mechanism is carried directly on the bed framework of its prime mover and the prime mover is utilized as a supporting member at the area of operation.

These and other objects of the invention will become more apparent to those skilled in the art by reference to the following detailed description when viewed in light of the accompanying drawings wherein:

FIG. 1 is a perspective view of the invention in its operating position;

FIG. 2 is a side elevation of the invention in its travel position;

FIG. 3 is a floating perspective of the cable system; and

FIG. 4 is a perspective of the locking system.

Referring now more specifically to the drawings wherein like numerals indicate like parts, a vehicle assembly incorporating the essentials of this invention is generally indicated by the numeral **10**. A truck **12** having a cab **14** and a bed portion **16** is the supporting

structure for the operating member. The vehicle includes ground-engaging wheels **18** providing support and mobility. A first framework **20** consists of I-beams **22, 24, 26,** and **28.** The beams are secured to forward and trailing beam members **30** and **32** of the bed **16.** The beams **22–28** are reinforced by cross struts **34, 36,** 38, and **40.** The junctures of the beams and struts are further secured by spanner plates all of which are indicated by the numeral **42.**

Cavities of I-beams **22** and **28** face each other as do the U-shaped cavities of beams **24** and **26.** In other words, the flanges of the I-beams are in the direction of travel and the webs thereof are parallel to one another and transverse to the direction of travel.

A second framework **44** is slidably received within the framework **20.** Framework **44** consists primarily of I-beams **52, 54, 56** and **58.** Each I-beam has one of its flanges respectively received within the cavities of the first framework beams **22, 24, 26,** and **28.**

The upper framework **44** is also provided with cross struts **60** and **62** between beams **52** and **56** and cross struts **64** and **66** between beams **54** and **58.** Intermediate the vertical length of the framework **44** is a supporting platform **65.** Platform **65** is rigidly secured to the upper framework **44** and carries a material screening apparatus **70** of conventional design. Extending between the tops of beams **52** and **56** is a cross-bar **72** and extending between beams **54** and **58;** is a cross-bar **74.** Pivotally secured between the cross-bars **72** and **74** is a collapsible hopper **76** for receiving and guiding the materials to be screened.

Mounted immediately below cross-bar **72** is a conduit **78** having a plurality of nozzle members **80** disposed above screening mechanism **70.** This substantially rigid conduit member has a downwardly extending leg **82** having a fitting **84** thereon for connection to a water supply via a flexible hose **85.**

Between beams **56** and **58** is a cross-bar **86** having a gravel chute **88** pivotally connected thereto at lug members **90** and **92.** A platform **94** is secured over the cab **14** by way of the frameworks generally indicated by the numeral **96** and **98.** As seen best in FIG. **2,** the chute is permitted to extend outwardly over the cab during travel.

Secured near the lower end of beams **26** and **22** are winches **99***a* and **99***b* for cable drums **100***a* and **100***b*, respectively. Secured near the lower ends of beams **28** and **24** are winches **99***c* and **99***d* for cable drums **100***c* and **100***d* respectively. Similar winches and drums **102***a–d* and **104***a–d* are secured near the upper ends of beams **22, 24, 26,** and **28.** At the lower ends of beams **52, 54, 56,** and **58** are housings and sheaves **106***a–d* and **108***a–d*. As seen best in FIG. **3,** a cable **110** wound about sheave **100***c* extends upwardly about sheave **104***c* downwardly about sheave **108***c* (mounted to lower end of beam **56**) and the cable **110** then extends upwardly where its outer end is clamped to the upper end of beam **26** by clamp **112***c*.

Drums **100** are conveniently driven by a power take-off from vehicle **12** or independent hydraulic motors. It can readily be seen that when sheaves **100***c* and **100***d* are driven in a wind-up direction, sheaves **108** and beams **56** and **58** (and consequently the entire upper framework) is lifted. When the cable is payed-out the upper framework is lowered. As seen best in FIG. **4,** the framework **52** can be locked in its upper position by inserting bolts through matching openings in beams **22**

(24 . . .) and 52 (54 . . .). This will relieve the tension on the cable system and insure that the upper framework will maintain its upper position until the units is to be moved.

As seen in FIG. 2 the mobile screening tower 70 is in its nested, travel position. The gravel chute 88 extends outwardly over cab 14 and rests on the platform 94. The hopper 76 is folded down over screening device 70. The second framework 44 is nested within the framework 20 and the platform 76 rests on bed 16. In this position, all highway regulations as to height, weight, and length can be satisfied and the unit is securely supported on the vehicle.

When the truck, reaches the site of operation, the cable sheaves 100 are operated and the framework 44 and the parts supported thereby are elevated. The gravel chute 88 assumes the position of FIG. 1 and the hopper 76 is raised to its material-receiving position. The water inlet 114 is connected to a water supply. It should also be noted that the beams 22, 24, 26 and 28 extend below the bed 16 and the bottomed by plates 116. Jacks, four-by-fours, or other members can be wedged under such plates for additional support and stability.

In a general manner while there has been disclosed an effective and efficient embodiment of the invention, it should be well understood that the invention is not limted to such an embodiment as there might be changes made in the arrangement, disposition, and form of the parts without departing from the principle of the present invention as comprehended within the scope of the accompanying claims.

I claim:

1. A portable material screening tower comprising

a base,

a plurality of wheel members supported on said base,

a first vertically disposed framework having its lower end secured to said base,

a second vertically disposed framework telescopically received by said first framework,

power means to raise and lower said second framework with respect to said first framework,

a material screening mechanism having a discharge end and a second end and means securing said screening mechanism to said second framework,

a material reception hopper having means pivotally securing said hopper to the upper end of said second framework and having one position for receiving the unscreened material and guiding same to said mechanism,

a discharge chute extending outwardly from said discharge end of said material screening mechanism,

means pivotally connecting said chute to said second framework,

a water conduit having inlet and discharge nozzles,

means affixing said conduit to said second framework wherein said nozzles are disposed above and directed at said mechanism and said inlet is disposed near the lower end of said second framework.

2. The invention of claim 1 wherein said base is the bed portion of a truck, a third framework extends outwardly over the cab portion of said truck and said pivotally connecting means mounts said discharge chute in a generally horizontal travel position in engagement with said third framework and in a working, generally vertical position.

3. The invention of claim 2 wherein said power means includes the engine of said truck.

4. The invention of claim 3 wherein said power means further includes cable and sheave means interconnecting said first and second vertically disposed frameworks.

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