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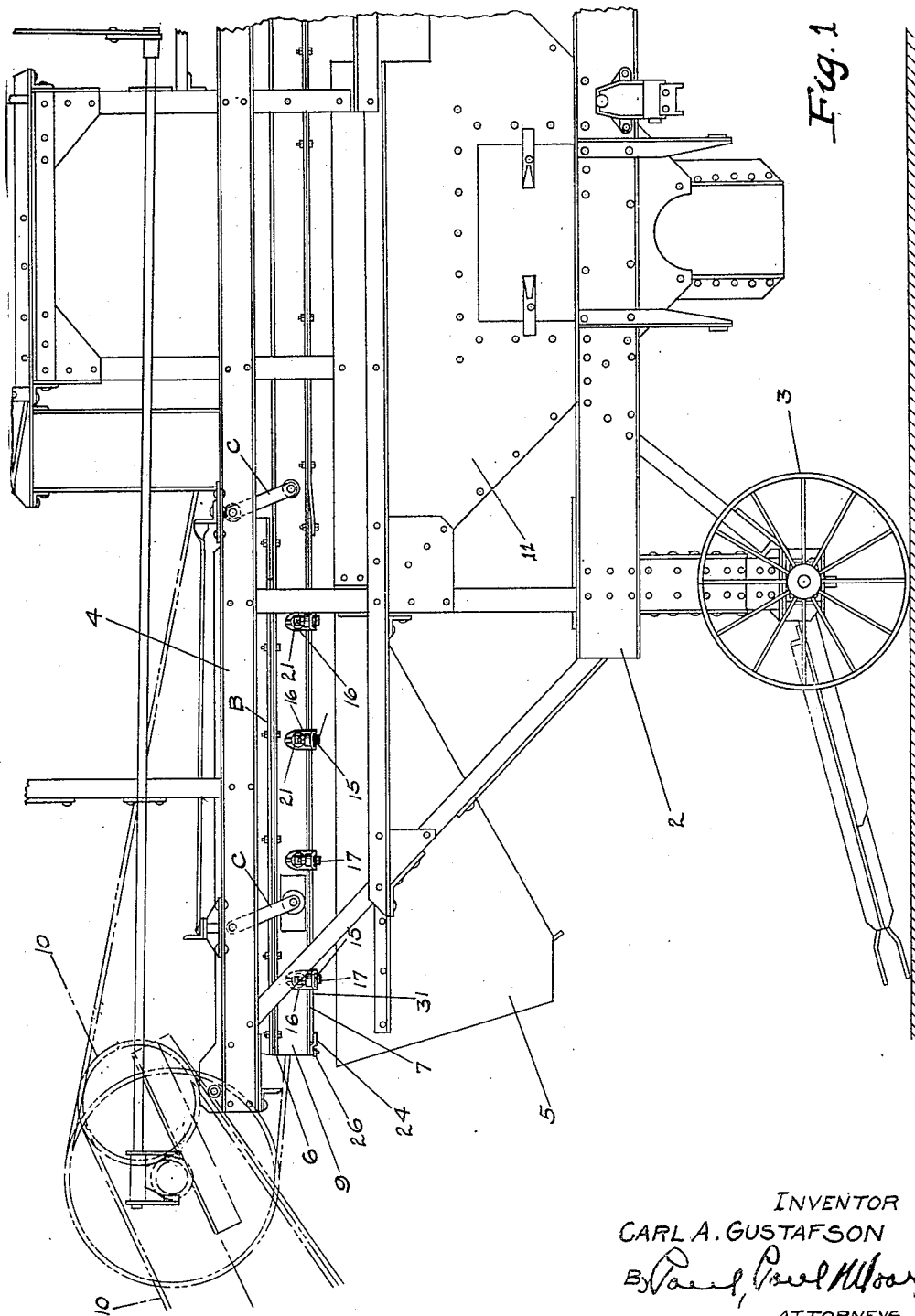
C. A. GUSTAFSON

1,829,348

SCREENING APPARATUS

Filed June 4, 1928

3 Sheets-Sheet 1



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3 Sheets-Sheet 2

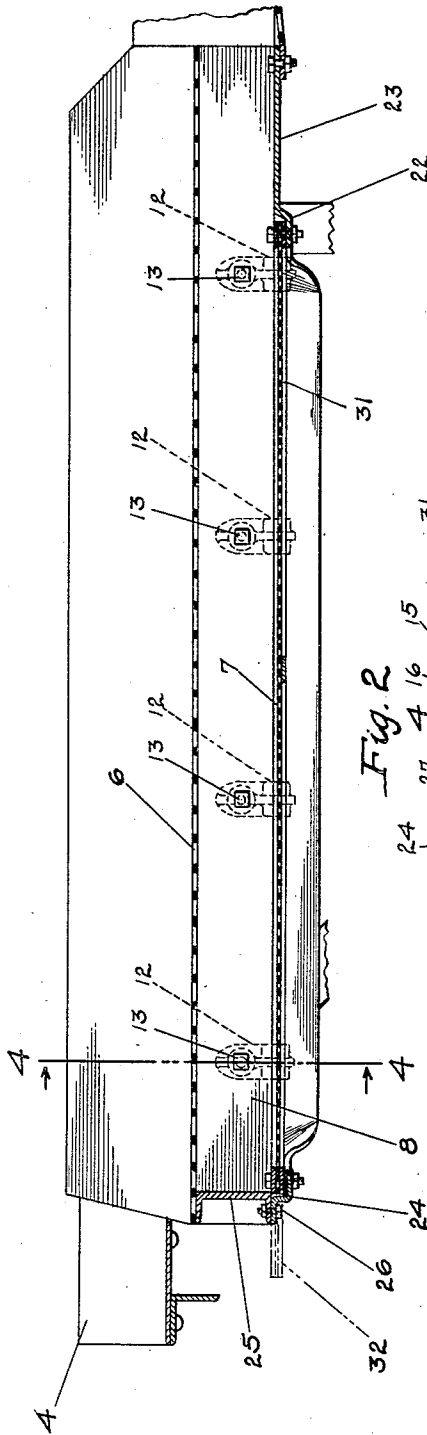


Fig. 2

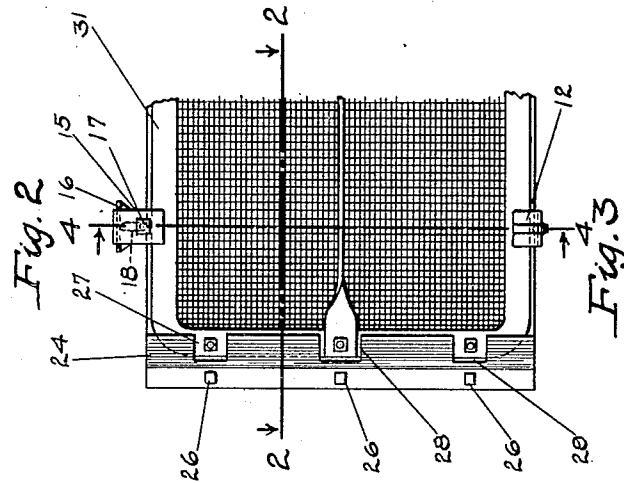


Fig. 3

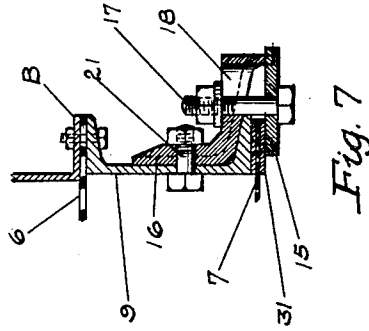


Fig. 7

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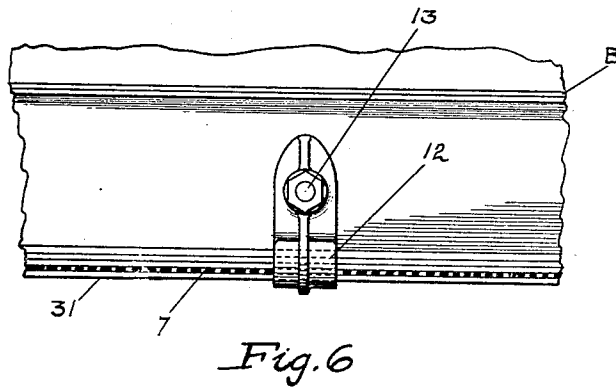
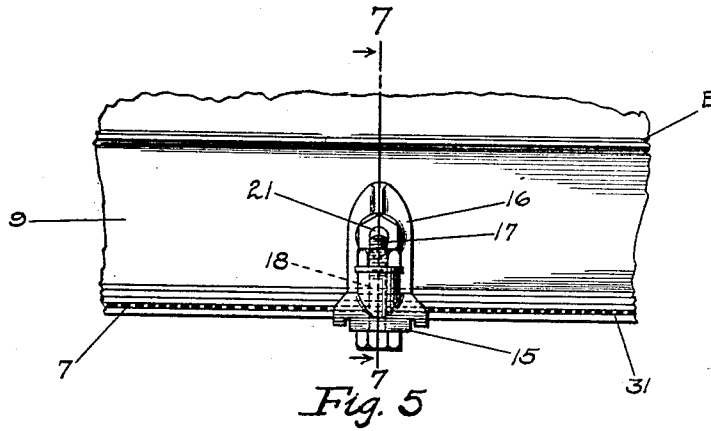
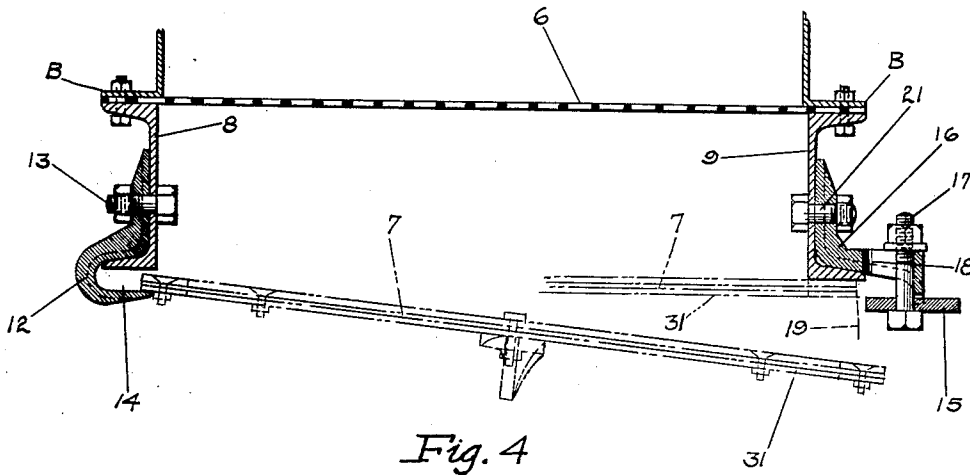
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3 Sheets-Sheet 3



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UNITED STATES PATENT OFFICE

CARL A. GUSTAFSON, OF MINNEAPOLIS, MINNESOTA, ASSIGNOR, BY MESNE ASSIGNMENTS, TO PIONEER GRAVEL EQUIPMENT MANUFACTURING COMPANY, OF MINNEAPOLIS, MINNESOTA, A CORPORATION OF MINNESOTA

SCREENING APPARATUS

Application filed June 4, 1928. Serial No. 282,692.

This invention relates to new and useful improvements in screening apparatus, and more particularly to means for demountably securing a screen or material-separating member to its supporting frame.

An object of the present invention is to provide a novel clamping means for demountably securing a screen to its supporting means, whereby it may be quickly and readily detached therefrom for repairs, or to permit a new one to be substituted therefor, when necessary.

A further object of the invention is to provide means for demountably securing a screen or other member to a pair of spaced supporting members, comprising a plurality of inwardly turned hook elements secured to one of said supporting members, and a plurality of clamping elements secured to the other supporting member and cooperating with the hook elements to demountably secure the screen to the frame members.

A further object is to provide means for demountably securing a screen or other member to a pair of spaced frame members, which comprises a plurality of inwardly turned hook elements secured to one of the frame members and having their lower portions spaced from the bottom of said member to provide a seat for one side of the screen, and a plurality of clamping elements being secured to the other frame member and adapted to clampingly engage the opposite side of the screen to secure it to said frame member, and a transverse clamping plate being mounted between and secured to said frame members at each end of the screen and adapted to engage the ends thereof and cooperating with said hook and clamping elements to demountably secure the screen to the supporting members.

Other objects of the invention will appear from the following description and accompanying drawings and will be pointed out in the annexed claims.

In the accompanying drawings, there has been disclosed a structure designed to carry out the various objects of the invention, but it is to be understood that the invention is not confined to the exact features shown as

various changes may be made within the scope of the claims which follow.

In the accompanying drawings, forming part of this specification;

Figure 1 is a side elevation of one end of a gravel screening and crushing apparatus, showing the invention applied thereto;

Figure 2 is a longitudinal sectional view on the line 2—2 of Figure 3, showing the frame members to which the screen is demountably secured;

Figure 3 is a bottom view of the rear end portion of the screen;

Figure 4 is a cross sectional view on the line 4—4 of Figure 2, showing in dotted lines the screen partially removed from its supporting means;

Figure 5 is an enlarged detail elevational view showing one of the clamping elements;

Figure 6 is a similar view, showing one of the hook elements; and

Figure 7 is a detail sectional view on the line 7—7 of Figure 5, showing one of the clamping elements in clamping engagement with the screen.

In the selected embodiment of the invention here shown, for purposes of disclosure, there is illustrated in Figure 1, a side elevation of one end of a gravel screening and crushing apparatus of the type shown in my Patent No. 1,611,026. This machine comprises a main frame 2 mounted upon carrying wheels 3 as shown. A super frame 4 is supported upon the main frame 2 and comprises a shaker frame B, positioned over a hopper 5 which is adapted to receive the fine sand and screenings passing through a pair of screens 6 and 7, mounted in the shaker frame B. The material is delivered onto the screens 6 and 7 by a suitable conveyor 10, indicated in dotted lines in Figure 1. The shaker frame comprises side beams 8 and 9 movably suspended from the super frame 4 by suitable links C, each having one end pivotally connected to the super frame 4 and their lower ends to the side beams 8 and 9 of the shaker or screen supporting frame B.

Machines of the type shown in Figure 1 are adapted for use in preparing gravel or similar material utilized in the construction

of roads, road surfaces, pavements, etc., and as this material usually has to be of a certain fineness or grade, to meet the requirement of certain road contracts, it is desirable that the screens provided in the shaker frame B, particularly the lower screen 7, be demountable so that it may readily be removed and another one substituted therefor, depending upon the fineness of the material required. These screens may be constructed of wire mesh or perforated plates, and the upper screen 6 is usually of a rather coarse mesh, and the lower screen 7 of a relatively finer mesh. The purpose of the screen 7 is to separate the sand, which is not desirable for use as a road material, from the coarser material, the finer material being discharged into the hopper 5 while the coarser road material is discharged into a hopper 11, from whence this material may be removed by suitable means not shown, to trucks or other conveyances for distribution along the road or highway.

A feature of this invention resides in the novel means provided for demountably securing the screen 7 to the side beams 8 and 9, whereby it may quickly be removed from its supporting means and another screen substituted therefor, when necessary. To thus demountably secure the screen 7 to the side beams 8 and 9, a plurality of hook elements 12 are secured, in this instance, to the side beam 8 by suitable bolts 13. The lower portions of the hook elements 12 are turned inwardly and spaced from the bottom of the beam 8 to provide a longitudinal seat 14 for one side of the screen 7, as shown in Figure 4.

The opposite side of the screen 7 is secured to the side beam 9 by means of clamping elements 15, movably supported in brackets 16 by suitable bolts 17. Each bolt 17 is mounted in a slot 18, provided in its complementary bracket 16, which permits the bolt 17 and element 15 to be moved from the position shown in Figure 7 to that shown in Figure 4. In Figure 7, the clamping member 15 is clampingly engaged with the frame of the screen 7. When the nuts on the bolts 17 are loosened, the clamping elements 15 may readily be moved outwardly to the position shown in Figure 4, after which the screen may be lowered out of engagement therewith as indicated by the dotted line 19 in Figure 4. The brackets 16 are secured to the side beam 9 by suitable bolts 21.

The forward end of the screen 7 is supported upon a ledge 22, marginally formed in one side of a transverse plate 23, having its ends suitably secured to the side beams 8 and 9. The forward end of the screen is not bolted to the ledge 22.

The rear end of the screen 7 is supported upon an off-set clamping plate 24, secured to the cross member 25 of the shaker frame B,

by suitable bolts 26. This clamping plate is notched as indicated at 27, 28, and 29 to provide clearance for the bolts provided in the frame 31 of the screen.

To remove the screen 7 from the shaker frame B, the clamping plate 24 is removed from the frame, after which the bolts 17 are loosened, and the clamping elements 15 moved outwardly to the position shown in Figure 4. The screen is then moved rearwardly to the dotted line position, indicated at 32 in Figure 2, after which the right hand side of the screen, when viewed as shown in Figure 4, may be lowered to the dotted line position shown in Figure 4, permitting the screen to be disengaged from the hook elements 14, as shown. The clamping elements 15, therefore, need not be disengaged from the shaker frame, it being only necessary to disengage the transverse clamping plate 24 from the cross member 25 to permit removal of the screen 7 from the shaker frame. Convenient access may be had to the bolts 26 securing the transverse clamping plate 24 to the cross member 25, and also to the bolts 17, securing the clamping elements 15 to the brackets 16 and screen 7.

I claim as my invention:

1. The combination of a frame comprising spaced side beams, a screen, a plurality of inwardly turned hook elements secured to one of said beams and having their lower portions spaced from the bottom thereof to provide a seat for the screen, means secured to said beams to provide a seat for the forward end of said screen, a plurality of brackets secured to the other side beam, extending outwardly therefrom, and each having a clamping element slidably mounted therein and adapted to engage the opposite side of the screen, said hook elements, plate and clamping elements co-operating to demountably secure the screen to said beams, and permitting removal of the screen from the frame without detaching any of said parts therefrom.

2. The combination of a frame having spaced side beams, a screen, means fixed to one of said beams adapted to loosely support one side of the screen, a bracket secured to the other side beam and having a portion extending outwardly therefrom provided with a seat, a clamping element slidably mounted on said seat and adapted to engage the opposite side of the screen, said bracket having an elongated aperture in the outwardly extending portion thereof, and a bolt carried by said clamping element, traversing said elongated aperture and functioning to move the element into clamping engagement with said screen to demountably secure it to the beams.

3. The combination of a supporting frame having spaced side beams, a screen, a plurality of spaced hook elements secured to one of said side beams and adapted to form a seat for one side of the screen, a transverse plate

secured to said side beams and having an off-set portion forming a seat for the forward end of the screen, a plurality of clamping elements secured to the other side beam and adapted to engage and secure the opposite side of the screen thereto, and a transverse plate demountably secured to the rear ends of the side beams for supporting the rear end of the screen.

turned bracket portions, brackets secured to the outer surface of the opposite side member of the frame and having outwardly extending portions, and horizontally disposed clamping elements inseparably mounted upon said outwardly turned bracket portions and adapted to clampingly engage the opposite side of the screen, whereby the screen may be demountably secured to said support.

In witness whereof I have hereunto set my hand this 29th day of May, 1928.

CARL A. GUSTAFSON.

4. The combination with a frame having a side rail provided on its lower portion with a flange, of a shank seated against the face of said rail and fitting the angle formed by said face and flange, said shank having a part depending below said flange and spaced therefrom to form a recess, a screen having one edge adapted to enter said recess and be supported by said shank, and means for securing said screen to the opposite rail of said frame.

5. The combination with a frame having oppositely arranged side rails of channel cross-section and provided with upper and lower flanges, of a series of shanks secured to one of said rails at intervals and formed to fit the angle between the lower flange and the web of said rail, said shanks having downwardly and inwardly turned portions spaced from the lower flange, a screen adapted to enter said space and be supported by said shanks, and means for securing the opposite side of said screen to the adjacent rail.

6. The combination with a frame having side rails and means for supporting a screen on one of said rails, the other rail having a flange formed on its lower portion against which the adjacent edge of said screen is seated, brackets secured to said rail above said flange, a plate adapted to engage the under face of said screen and hold it against said flange, and means adjustably mounted in said bracket for holding said plate and allowing it to be moved outwardly to clear said screen.

7. A support for a screen comprising a frame including spaced side members, brackets secured to one of said side members and having inwardly turned portions spaced from the bottom face of said side member whereby one side of the screen may be supported upon said inwardly turned bracket portions, brackets secured to the opposite side member of the frame and having outwardly extending portions, and horizontally disposed clamping elements mounted upon said outwardly turned bracket portions adapted to clampingly engage the opposite side of the screen, whereby the screen may be demountably secured to said support.

8. A support for a screen comprising a frame including spaced side members, brackets secured to the outer surface of one of said side members and having inwardly turned portions spaced from the bottom face of said side member whereby one side of the screen may be supported upon said inwardly

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