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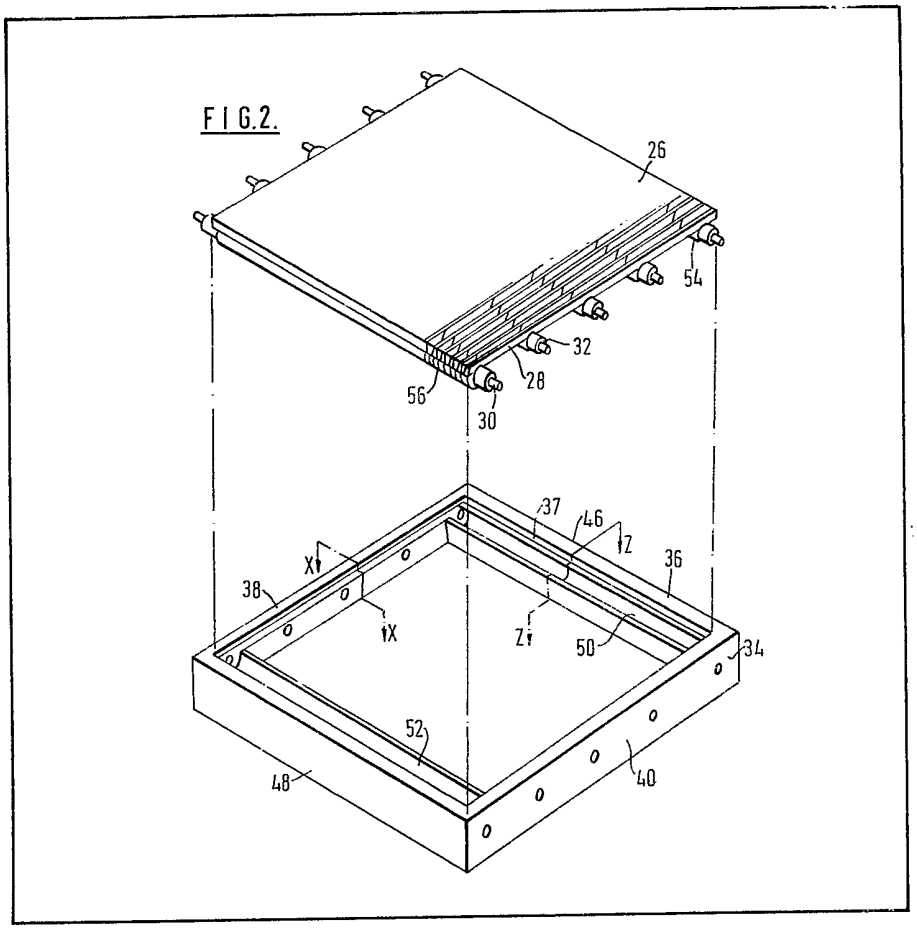
(54) **Screening apparatus**

(57) A sieve screen, for separating and/or deliquefying particulate material such as aggregates, comprises a plurality of apertured metal sieve elements (26) secured together and/or to an underlying support structure by attachment means (34) of synthetic plastics, rubber or other elastomeric material.

Such an arrangement allows advantages of traditional sieve media, such as woven wire, perforated plate or wedge-wire, to be realised in combination with those of newer materials, such as synthetic plastics.

The attachment means may comprise edge fitments or collars for individual metal sieve elements, or a lattice securing a plurality of the sieve elements edge-to-edge, conveniently arranged rank and file.



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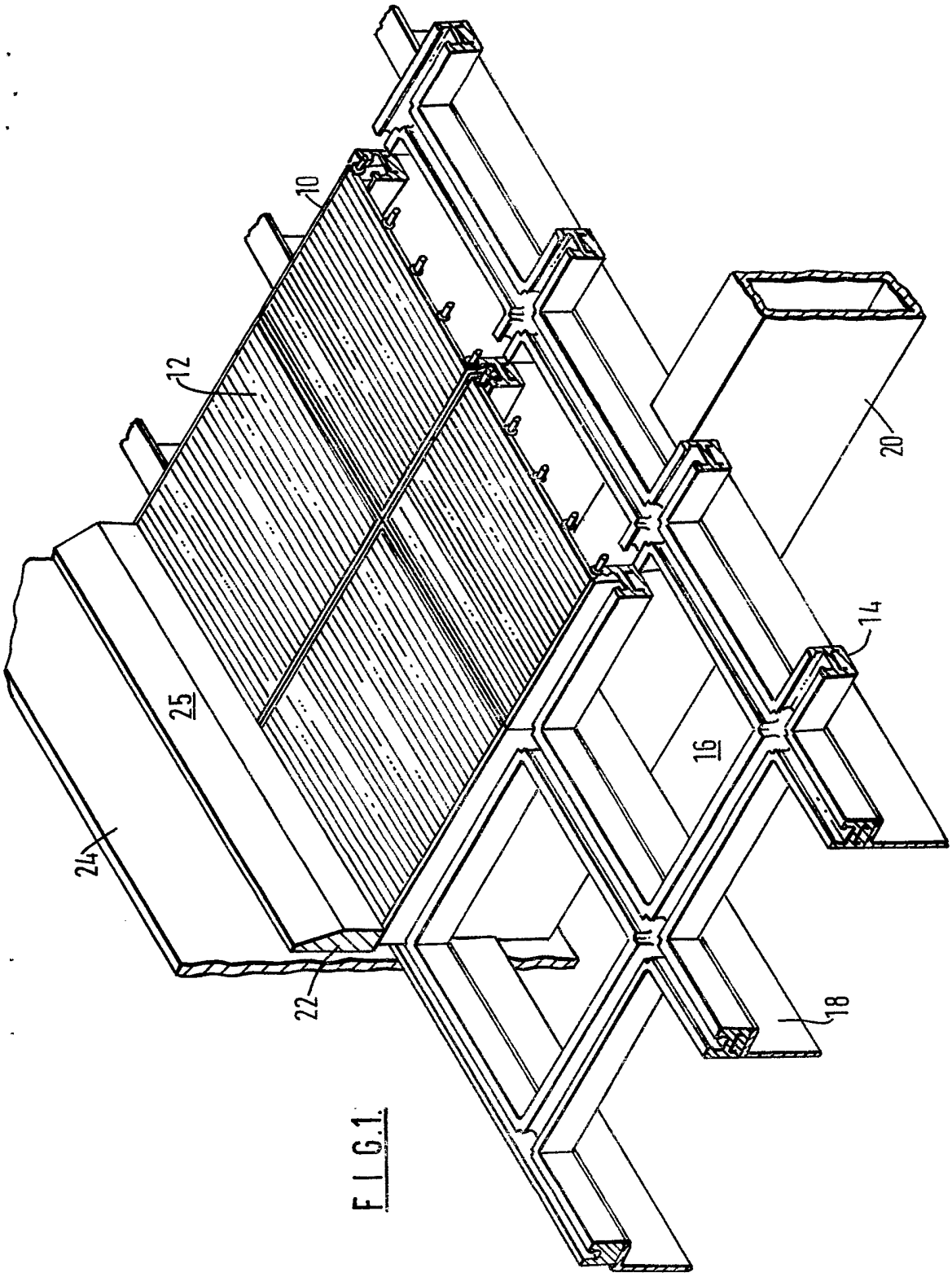
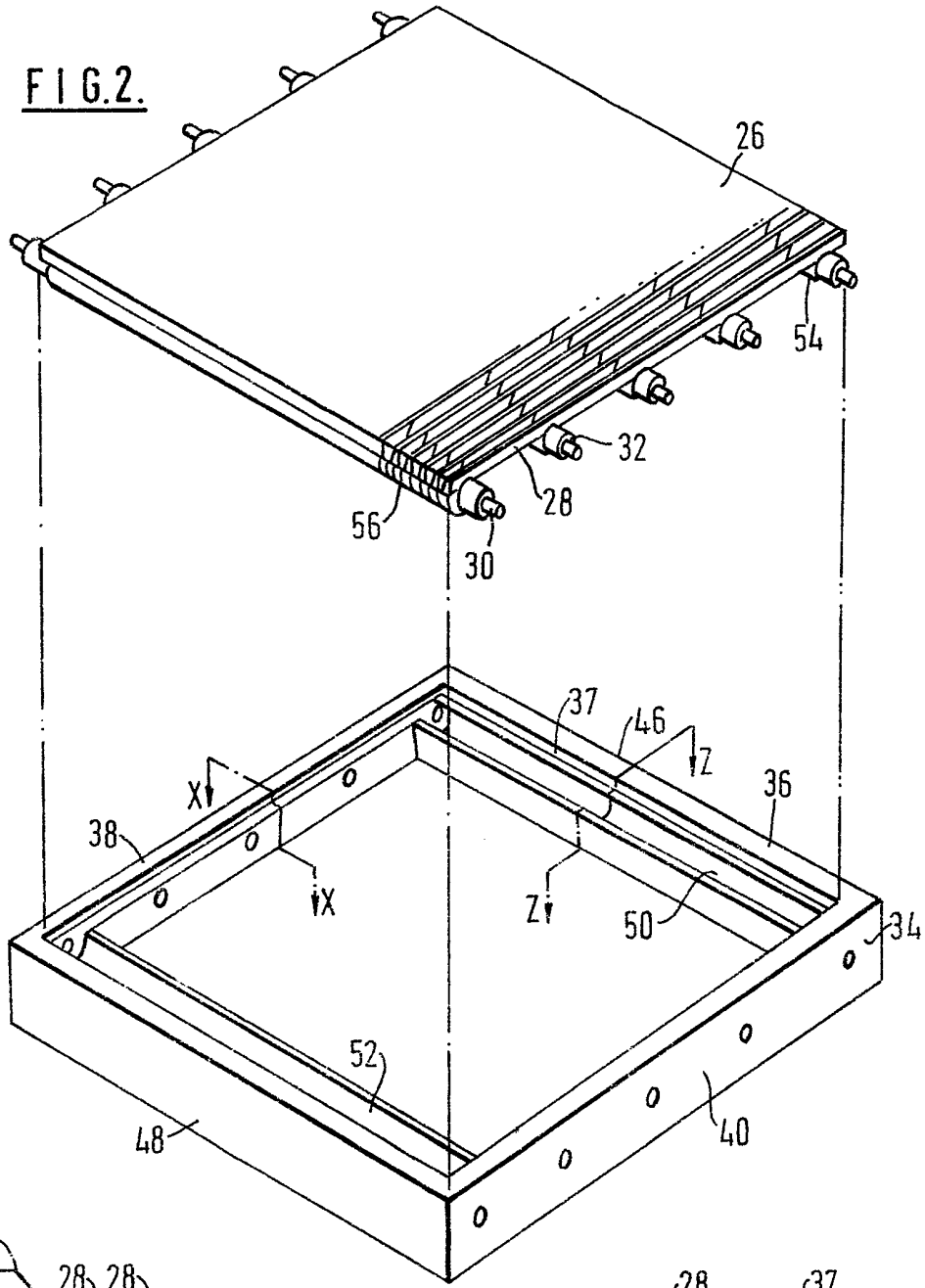


FIG.1.

FIG.2.



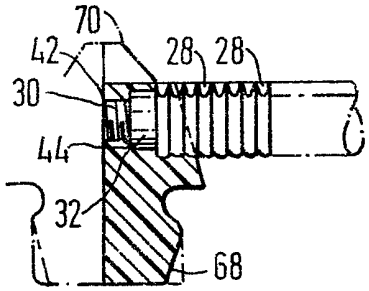


FIG.3.

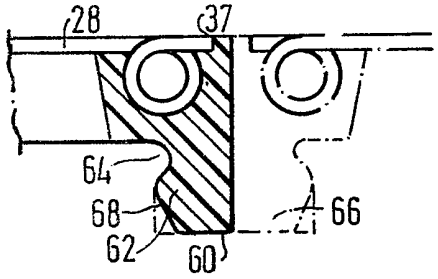
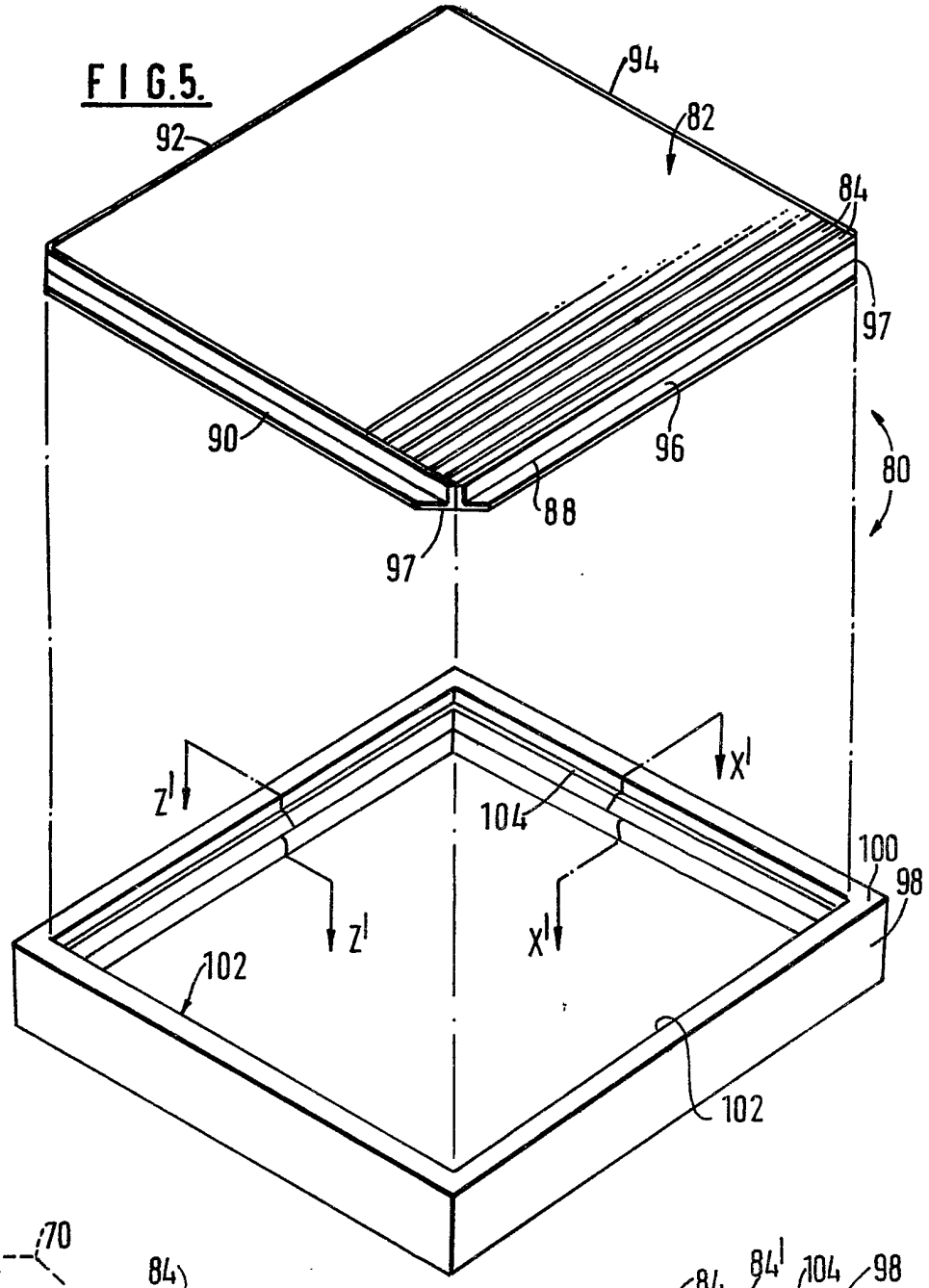


FIG.4.

FIG.5.



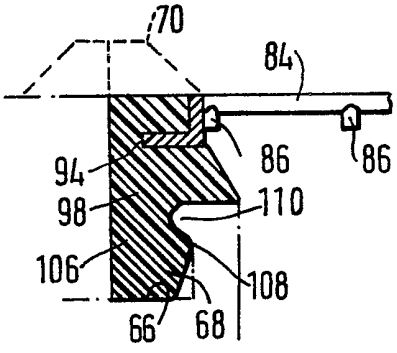


FIG.6.

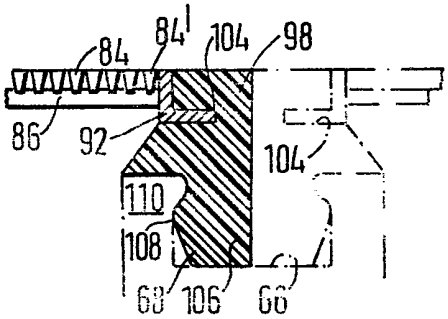


FIG.7.

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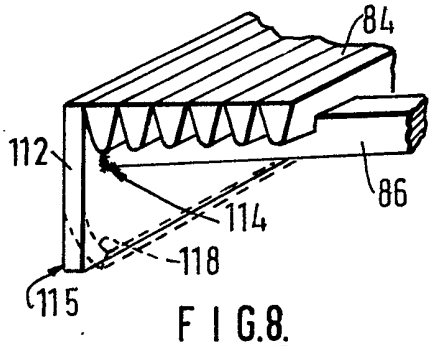

FIG.8.

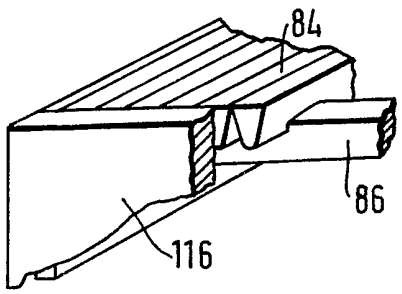

FIG.9.

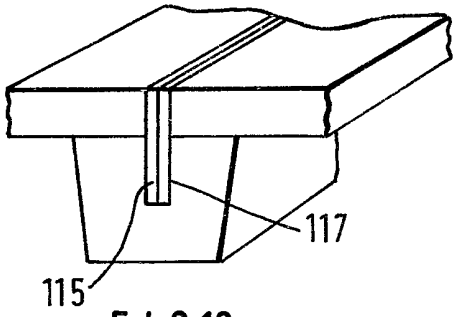

FIG.10.

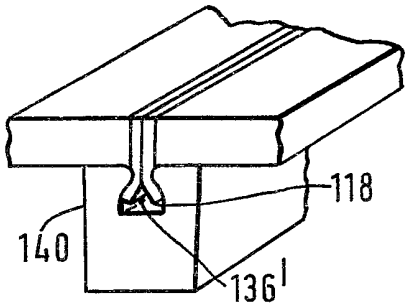

FIG.11.

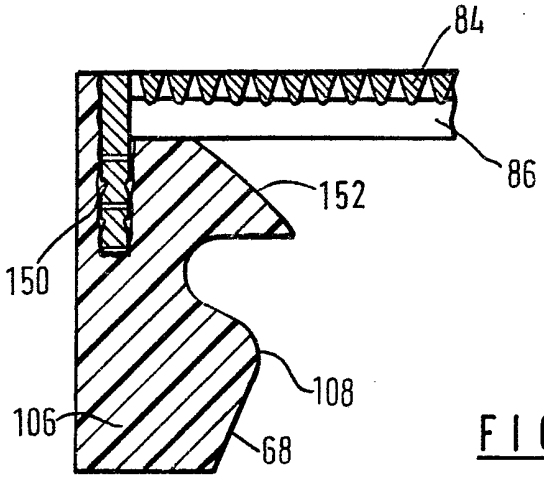

FIG.13.

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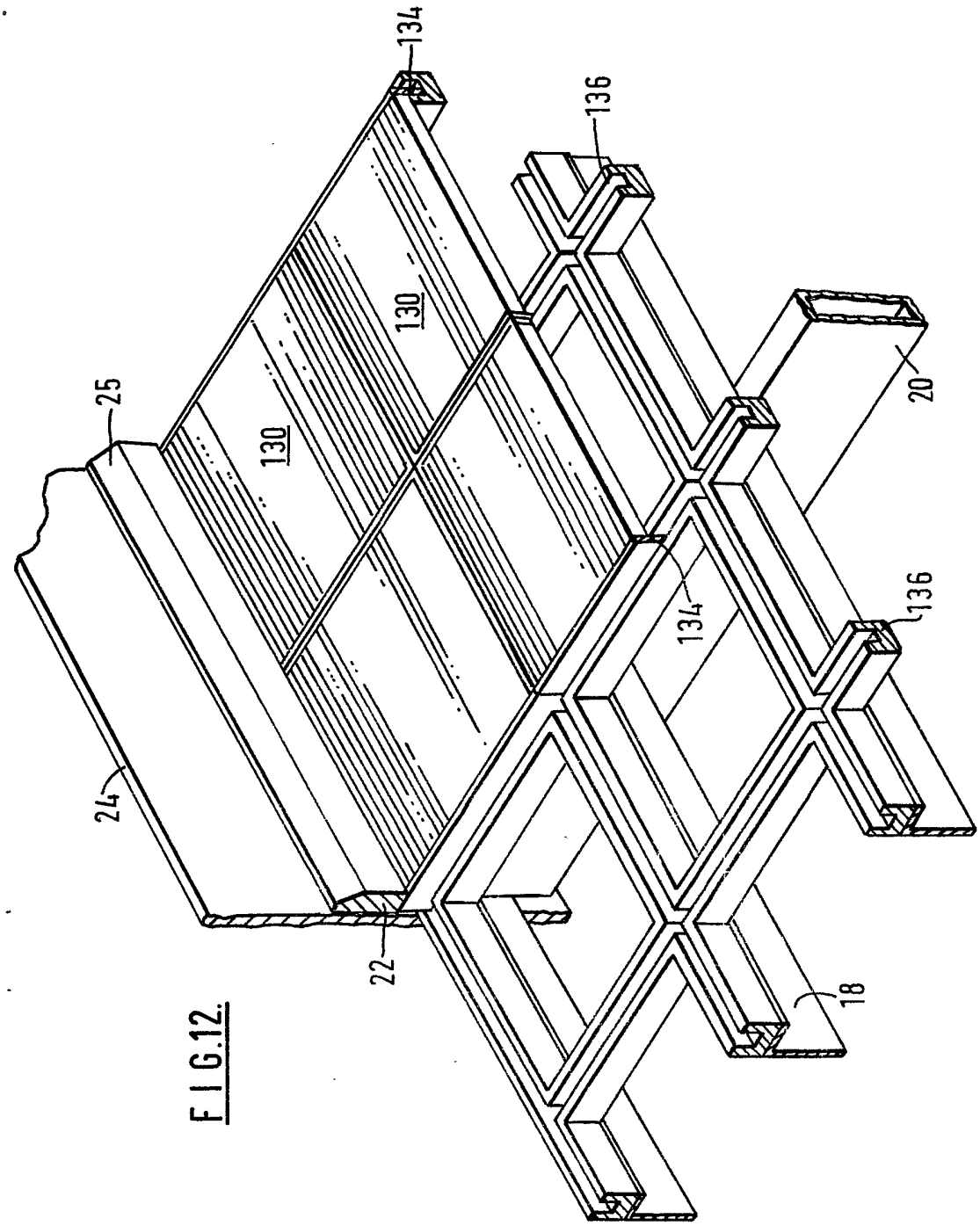

FIG.12.

SPECIFICATION

Screening apparatus

The invention relates to screening apparatus, particularly for sizing and/or deliquefying particulate materials, such as aggregates, and is especially, but not exclusively, applicable to screening apparatus having a flat or cambered sieve screen surface.

Traditional materials for such screening machines have included perforated metal plate, looped or welded wedge-section wire, woven wire, and welded mesh. More recently, however, sieve screens have been made of synthetic plastics material, such as polyurethane, either as one or more apertured plates stretched across the bed of the machine, or as a plurality of separate screen modules which can be replaced individually. The selection of synthetic plastics screens in preference to traditional metal screens is due mainly to their high wear resistance and quiet operation, the latter especially when screening dry materials.

However, in some applications traditional metal screens may be preferred due to their special characteristics. For example, in screening sticky materials, slurries, and those with a high fines content, wear rate and noise may be of lesser importance than resistance to blinding, high accuracy and maximum open area.

An object of the present invention is to provide screening apparatus for sizing and/or deliquefying aggregates which allows realisation of advantages of both synthetic plastics and traditional metal screening media.

According to the present invention there is provided a sieve screen for sizing and/or deliquefying aggregates, comprising a plurality of apertured metal sieve elements and attachment means of synthetic plastics, rubber or other elastomeric material cooperating with edge portions of each sieve element to secure the elements together and/or to an underlying support structure.

The sieve screen may comprise a plurality of similar modules, each comprising at least one said apertured metal sieve elements and associated synthetic plastics attachment means.

The metal sieve element may be secured to the attachment means by way of metal flanges, tongues or other protrusions projecting from the periphery of the element, conveniently to a groove or slots in the attachment means.

In one embodiment the flange or tongue members extend in a plane which is substantially parallel to the screening surface. The flange or tongue member may then conveniently comprise one flange of a member of "L" shaped cross-section, the other flange being secured to the apertured portion of the metal sieve element.

Alternatively the metal flange or tongue members may project downwardly from the periphery of the sieve element, i.e. away from that surface of the element which will be uppermost in use.

The lower part of the or each depending flange or tongue may be lipped, curved, beaded or otherwise formed to positively engage the slot or groove so as to resist removal therefrom.

In a preferred embodiment, each sieve element comprises a plurality of wires, typically of wedge-section, secured side-by-side by transverse ribs. Flanges or tongue members which extend in the direction of the ribs are secured to the ends of the wires, for example by welding, similar members extending parallel to the wires may then be secured to the ends of the transverse ribs or/and to the endmost wire adjacent that edge of the element.

Preferably the flange members extend continuously along each side of the element. Where the element is of cornered shape, for example rectangular, with one or more flanged members secured to each side thereof, adjacent flanged members may also be secured together at the corner. Conveniently the flanged member comprises a continuous ring around the element.

The attachment means may extend releasably around the entire periphery of the metal sieve element and have depending formations to engage the support structure, for example lugs to engage a lipped groove in the support frame. The attachment means may be formed as a unitary member, or from a plurality of separate parts, for example two L-shaped parts which, fitted onto the edges of the element, form a complete collar. Such a plurality of separate parts may be separable from the metal sieve element, their engagement with the support structure and/or adjacent modules when installed, being arranged to maintain, even enhance, their interfitment with the elements.

The attachment means may be moulded directly onto the edges, e.g. flanges, of the metal sieve element, especially where the metal sieve element is made of apertured plate of wire mesh. Where the sieve element is of looped or welded wedge wire or the like, however, such direct moulding may require steps to be taken to limit penetration of the sieve apertures by the plastics material, for example by providing removable inserts in the apertures adjacent the edges of the sieve element during moulding.

The sieve elements may comprise looped wedge wires secured together by tie rods, any of the various known rod end fitments being employed, such as nuts on threaded tie rods or rivetted ferrules. Then, instead of a peripheral flange being provided, the ends of the tie rods may project beyond the edge of the metal sieve element and locate in recesses in opposed side parts of the attachment means. The endmost aligned loops of the element then preferably seat in grooves in the other opposed side parts of the attachment means. Advantageously the cross-section of at least a medial part of each groove is such as to retain the respective loops therein.

The aforesaid support structure of the screening apparatus may comprise a plurality of parallel support bars, the metal sieve elements being supported

above and between the bars by the associated attachment means cooperating with a grid or lattice-like support frame of metal and/or synthetic plastics material, conveniently supported by the support bars, which preferably are aligned with cross-members of the lattice-work frame.

The attachment means may also comprise a lattice or grid, the plurality of metal sieve elements being secured over or in holes in the grid, preferably in rows or columns with one element for each hole. Such a lattice attachment means might be supported directly upon the afore-mentioned support bars of the support structure i.e. in place of the support frame and may extend across the whole width of the screening surface. Alternatively several attachment lattices could be carried by a larger lattice-work support frame.

Embodiments of the invention will now be described by way of example only and with reference to the accompanying drawings, in which:—

Figure 1 is a perspective partial view of one embodiment in which a sieve screen comprising a plurality of sieve elements is attached to a support frame in the form of a lattice;

Figure 2 is an exploded view of one of the screen modules of Figure 1 comprising a metal sieve element and surrounding synthetic plastics attachment collar;

Figure 3 is a partial cross-section on the line XX of Figure 2, with the metal sieve element and synthetic plastics attachment collar assembled together;

Figure 4 is a sectional view corresponding to Figure 3 but on the line ZZ of Figure 2;

Figures 5, 6 and 7 are views corresponding to Figures 2, 3 and 4 but of a second embodiment;

Figures 8 and 9 are detail views of a part of a metal sieve element;

Figures 10 and 11 illustrate attachment of the metal elements of Figures 9 and 10 to a support;

Figure 12 is a perspective view of a part of a third embodiment, and

Figure 13 is a partial sectional view of a modification applicable to the embodiments of Figures 8 and 9.

For convenience, in the drawings corresponding components in different views are identified by the same reference numeral.

Referring to Figure 1, a screening machine has a plurality of screen modules 10 assembled edge-to-edge to form a screening surface 12. The modules 10 are secured to an underlying support frame in the form of a square lattice or grid 14. Each modules obscures one hole 16 of the lattice, which is itself supported by support bars 18, of inverted "L" section, which extend longitudinally of the bed of the machine and coincide with the cross-members of the lattice 14. The support bars 18 are carried by beams 20 which extend across the bed of the machine. If desired the heights of the support bars 18 may increase towards the middle of the machine to camber the screening surface. At each longitudinal edge of the screening surface a wedge-shaped polyurethane wear strip 22 is provided between the machine side plates 24 and the adjacent screen modules so as to present an inclined surface 25 to divert aggregate inwardly to the screening surface.

As shown in Figure 2, each screen module 10 comprises a metal sieve element 26 made up of a plurality of looped wedge-section wires 28 secured side-by-side, the loops being thicker or "joggled" in known manner to define sieve apertures between the wires. Threaded tie rods 30 extend through aligned loops of the wires 28, which are clamped together by nuts 32 screwed onto opposite ends of the tie rods. Alternative end fitments, such as ferrules, might be employed.

The sieve element 26 fits into a rectangular attachment collar 34 of synthetic plastics material, such as polyurethane. In the upper surface 36 of the collar is a square recess 37 equal in size to the wedge wire part of the element so as to accommodate the latter with the upper surface of the wires level with that 36 of the collar 34. Opposite sides 38 and 40 of the attachment collar 34 each have a series of five registering holes 42, immediately beneath the bottom of the recess 37 and spaced apart to accommoate the ends of the tie rods 30 and associated nuts 32. As shown in Figure 3, the holes 42 are stepped at 44, and dimensioned to conform to the tie rods and nuts.

The other opposed sides 46 and 48 of the attachment collar 34 have upwardly-opening grooves 50 and 52, respectively, to accommodate the endmost rows 54 and 56 of aligned loops of the wires 28. As shown in Figure 4, the grooves 50 and 52 are of circular section and extend around a major portion of each loop to secure together that side of the attachment collar and the sieve element. The tie rods and nuts associated with the endmost aligned loops of wires are also accommodated in holes 42 suitably aligned with the grooves 50.

It is envisaged that the looped wedge-wire sieve element might be provided with a peripheral flange or tongues, extending outwardly or downwardly, to engage in a suitably disposed groove or slots in the attachment collar 34. The flange or tongues might be welded to the wires 28 and/or to the tie rods 30, which might extend through suitably aligned holes in the flange.

Figures 5, 6 and 7 illustrate the screen module 80 of a second embodiment of the invention. The screen module 80 is intended to fit a screening machine having a support frame 14, supports 18 and beams 20 as disclosed in Figure 1.

Each screen module 80 shown in Figure 5 differs from those disclosed in Figure 2 in that, instead of a metal sieve element made up of a plurality of looped wedge-section wires the screen module 80 comprises a rectangular metal sieve element 82 made up of a plurality of straight wedge-section wires 84 secured side-by-side by spaced transverse ribs 86 (see Figures 6 and 7) extending across substantially the entire width of the element 82. The ribs 86 are of rectangular cross-section and are secured, conveniently by resistance welding, to the undersides of the wires 84.

The edges of the sieve element 82 are bounded by metal flange members 90, 92, 94 and 96, respectively. Each member is of "L" shaped cross-section and has one flange secured to the wire(s) 84 so that

its other flange extends outwardly from the element and generally parallel to the uppermost surface thereof.

The two flange members 90 and 94 extending across the wires 84 are welded to an endmost one of the transverse ribs 86', (see Figure 6) which is secured to the wires 84 immediately adjacent their ends. Alternatively the flange members 90 and 94 could be welded directly to some or all of the respective adjacent ends of the wires 84.

The other two flange members 92 and 96 extend across, and are welded to some or all of, the opposite ends of the transverse ribs 86. If desired, these flange members may also be secured directly to the wire 84' (see Figure 7) adjacent the ends of the ribs 86.

Ends of flange members 90, 92, 94 and 96 are secured e.g. welded, to each other at the corners of the element to form a continuous ring. As can be seen from Figure 5, the ends of the members 90, 92, 94 and 96 are mitred so that the corners of the assembled element 82 are truncated, as at 97.

It will be appreciated that the flange members 90-96 could be attached to a sieve element of a different type e.g. the looped wedge wire type described with reference to Figure 2, or woven mesh, perforated plate or other apertured metal.

The sieve element 82 fits into a rectangular attachment collar 98 of synthetic plastics material, for example polyurethane. In the upper surface 100 of the collar is a square recess 102 equal in length and width to the upper part of the sieve element 82 i.e. as measured across the vertical flanges of members 90-96. At a depth equal to the vertical flanges, the recess 102 opens into a slot 104, extending into the collar and parallel to the plane of the sieve element. The slot 104 is dimensioned to receive, and preferably grip, the outwardly-directed flanges of the element.

It should be noted that the projecting flange need not extend along the entire side of the element. It is envisaged that a plurality of discrete flanges or tongues might be provided spaced around the periphery of the element. The slot 104 might still be continuous, although a more robust construction might be achieved where a corresponding plurality of slots were provided, each complementary to the associated one of the discrete flanges or tongues.

The sieve elements 110 illustrated in Figure 8 and 9 have downwardly-projecting peripheral flanges 112, each comprising a strip of metal welded to the edge of the element so that its upper edge is level with the upper surface of the element and its lower edge projects below the lower cross-rods 86. The sieve element shown in Figure 8 has only two flanges extending one at each opposite edge of the element and parallel to the wires 84. Each flange is welded to the ends of the cross-rods 86 as at 114. If desired, the inner surface of the metal strip flange could also be welded to the endmost wire.

The sieve element shown in Figure 9 is similar to that shown in Figure 8, but has flanges at all four edges of the element. The flanges 116 extending parallel to the cross-rods 86 are welded to the ends of the wires 84 and/or at their ends to the adjacent flanges 110.

The downwardly-projecting portion 115 of the flange is intended to fit into a vertical slot in the synthetic plastics attachment means, relying upon the resilience of the material to grip and retain the flange therein.

Improved security of the element in the attachment means may be obtained by suitable shaping of the depending portion of the flange, for example by curving it inwardly, as indicated by broken lines in Figure 8, to form a lip 118, which can then underengage a suitable lug of the attachment means.

Where the elasticity of the attachment collar will enable it to be stretched sufficiently for fitting onto the sieve element, the collar may be moulded as a separate unitary member. Alternatively the collar may be formed by a plurality of parts, for example two "L" shaped parts which, when assembled onto the edges of the metal sieve element, will form a complete collar. It is also envisaged that the attachment means might be provided on only two, opposed, sides of the sieve element, especially where the latter is self-supporting e.g. looped or welded wedge wire, perforated plate, or woven wire.

Installation of the module onto the support frame, with its outer edges abutting adjacent modules as shown in Figure 4 or Figure 7, will usually ensure that the attachment means, whether unitary or not, does not disengage from the sieve element. Specifically, that part of the collar above the slot 104 is prevented from flexing outwardly, to release the flange, by virtue of its abutting against the corresponding part of the adjacent collar.

The attachment collar has a peripheral depending skirt 106, (not visible in Figure 2) the inner surface of which is undercut to form an inwardly directed lug 108, which engages beneath a corresponding lip 110 formed by an undercut sidewall of a groove 66 in the associated cross-member of the support frame 14. As can be seen from Figure 4, each groove 66 is of generally "T"-shaped cross-section to secure together the edges of two adjacent modules.

The inner surface 68 of the skirt 60 beneath the lug 62 slopes outwardly to assist flexing of the skirt and/or groove wall during installation by applying downwards pressure to the module.

The opposite edges of each attachment collar which, in use, will lie parallel to the material flow direction may have upstanding lips 70, having inner walls sloping upwardly and outwardly and vertical outer walls so that the lips 70 of adjacent modules about to form a truncated triangular rib which serves to divert the material being screened away from the joint and towards the apertured portions of the sieve elements.

The provision of a depending skirt and grooved support frame is especially advantageous where the support frame is at least partially of synthetic plastics material. It should be appreciated, however, that alternative attachment means might be employed to secure the elements to the support frame. For example, discrete spigots or pegs might depend at intervals from the attachment collar to engage in corresponding holes in the support frame, perhaps with pairs of spigots of adjacent modules in the same

hole. Alternatively the edges of the attachment collars might have several semi-cylindrical recesses, stepped so that when the edges of adjacent modules are juxtaposed, the recesses form counterbored holes through which headed spigots or studs are inserted to secure the modules to the support frame.

It should be noted that these alternative attachment means could also be adapted to secure the edges of the metal sieve elements to the synthetic plastics attachment strips.

It is also envisaged that the synthetic plastics attachment means might be adapted to secure the modules to each other as well as, or even instead of, to the underlying support structure. Thus the outer edges of the collars might be castellated and the modules secured together by a rod or other elongate member extending through the intercalated parts of adjacent modules.

It should be noted that the screen modules may cover more than one aperture of the lattice 14. In particular, a screen module may be any desired multiple of lattice apertures e.g. 4 by 4, 4 by 1. If, as is envisaged, the screen module is attached only to the cross-members around its periphery, strip inserts may be installed in the grooves in intermediate cross-members, preferably conforming in cross-section to the groove, to prevent ingress and accumulation of the material passing through the superjacent sieve element.

Thus, it should be noted that the attachment means may itself be formed as a lattice or grid securing a plurality of the metal sieve elements together. Several such screen lattices might then be secured to a support frame as described hereinbefore.

Alternatively, the sieve screen might be a lattice or lattices large enough and strong enough to rest directly upon the supports 18 of the machine, i.e. without the intermediate support frame 14. Such an arrangement is shown in Figure 12, a plurality of metal sieve elements 130, of the kind described with reference to Figure 8 or 9, being secured to a lattice-work attachment means 132 of synthetic plastics material which extends across the entire width of the machine in place of the support frame 14.

The downwardly-projecting metal flanges 115 of the sieve elements 130 fit into upwardly-opening grooves or slots 136 in the intersecting cross-arms or laths of the lattice. As shown in Figure 10, juxtaposed flanges of adjacent elements are fitted into a common groove 136, the sides of the slot, being of resilient synthetic plastics material exerting a resilient, firm grip on the flanges.

Figure 11 illustrates a modification, wherein the grooves 136 in the attachment means have sidewalls undercut to provide lips 140, similar to those of the support frame 14, beneath which the curved flanges 118 of the metal elements engage to secure the latter in position.

Figure 13 shows a preferred cross-section of the attachment means as fitted to the embodiments having a depending flange.

The attachment means has a vertical slot 150 of a depth equal to that of the flange 115 of the sieve element so that the upper edge of the attachment means is level with the screen surface. The inner wall 152 of the attachment means inclines downwardly and inwardly towards the middle of the sieve element, at an angle of about 45°, its uppermost edge 154 coinciding with the junction between the flange 115 and the transverse ribs 86. Consequently the apertured portion of the sieve element is not obstructed by the attachment means, permitting an open-area of as high as 92 per cent.

The attachment means may be attached resiliently to the flange or, and preferably, moulded directly onto the flange 115, which may be indented or apertured as at 156 for added security of attachment.

Various other modifications are envisaged. For example, metal sieve elements having outwardly-directed flanges could be laid upon a support frame with their flanges supported by the cross-bars of the frame and clamped thereto by an attachment means in the form of a strip overlying adjacent flanges of each adjacent pair of elements and secured to the underlying cross-bar. If desired, where the support frame is metal, a synthetic plastics strip could be provided between the flanges and the support frame.

The overlying strip might have integral depending studs or ribs to project between the juxtaposed flanges and into a hole or slot in the cross-members.

Alternatively such a strip might have counterbored holes formed at intervals along its length and be secured by studs or spigots passing through these holes and registering holes in the support frame. Moreover two parallel registering strips with stepped semi-cylindrical recesses might be combined to give the counterbored holes.

It is further envisaged that the synthetic plastics attachment means might be bonded to the periphery of the metal sieve element, for example to the flanges, where provided, perhaps even to a flat peripheral surface extending perpendicular to the plane of the element.

Instead of a flange, the metal sieve element might have a peripheral sidewall, extending generally perpendicular to the plane of the element, provided (for example by deformation) with a ridge to engage a recess in the synthetic plastics attachment means. The recess may be preformed or may be formed by resilient deformation on insertion of the element.

It will be appreciated that the sieve element might be of any traditional construction, for example welded or looped wedge wire, perforated plate, woven wire, welded mesh.

Embodiments of the invention advantageously allow advantages of traditional screening media in particular applications to be realised in combination with those of synthetic plastics material such as lower noise level and modular construction with replaceable elements. For example, in dewatering coal or other slurry a wedge-wire type sieve element can be used yet individual screen modules, when worn, can be replaced quickly and easily and without special tools.

Similarly, readily replaceable screen modules may be provided with woven wire or other high open area sieve elements such as are preferred for damp material having a high fines content.

Embodiments of the invention will generally be

quieter in operation than conventional metal screens since the synthetic plastics attachment means may act as a shock absorber. It should be noted that the attachment means might be made from alternative material, for example rubber or other elastomeric material.

Moreover, the smaller size of sieve element employed in modular construction will be less susceptible to resonance and reverberation, leading to reduced noise levels, particularly where the sieve element comprises perforated metal plate.

It is further envisaged that the attachment means might be of wedge-shaped vertical cross-section so that the screening surface has a sawtooth sectional profile, the "steps" extend across the direction of flow of the material to be screened. This arrangement is particularly useful for screening slurries.

Although described with particular reference to flat-bed or cambered screens, the invention also comprehends cylindrical or conical screens, for example centrifugal apparatus and trommel screens.

CLAIMS

1. A sieve screen for sizing and/or deliquefying particulate material, comprising a plurality of apertured metal sieve elements and attachment means of synthetic plastics, rubber or other elastomeric material cooperating with edge portions of each sieve element to secure the elements together and/or to an underlying support structure.

2. Screening apparatus as claimed in claim 1, wherein the apertured metal sieve elements are rectangular and attachment means cooperate with at least two edges of the elements.

3. A sieve screen as claimed in claim 1 or 2, wherein the attachment means comprises a separate collar for each element and completely surrounding the element.

4. A sieve screen as claimed in claim 1 or 2, wherein the attachment means comprises two L-shaped members each cooperating with two adjacent edges of the element.

5. A sieve screen as claimed in claim 1 or 2, wherein the attachment means comprises a lattice of synthetic plastics material, a plurality of sieve elements being secured one in or over each hole defined by intersecting cross-members of the lattice by cooperation with said cross-members.

6. A sieve screen as claimed in any preceding claim, wherein the attachment means has depending portions engageable with a support structure underlying the elements to secure the latter thereto.

7. A sieve screen as claimed in claim 6, wherein the depending portions comprise an undercut rib or spigot member engageable with a lipped groove or hole of the support structure.

8. A sieve screen as claimed in any preceding claim, wherein the edge portions of each element comprise protrusions cooperating with grooves or slots in the attachment means to secure the element thereto.

9. A sieve screen as claimed in claim 8, wherein the protrusions project in a plane generally parallel to that of the element to engage in a sidewall part of the attachment.

10. A sieve screen as claimed in claim 8, wherein the protrusions project downwardly into the attachment means.

11. A sieve screen as claimed in claim 8, 9 or 10 wherein the protrusions comprise flanges extending along substantially the whole of each edge of the element.

12. Screening apparatus as claimed in claim 8, 9 or 10, wherein the protrusions comprise a plurality of tongues spaced along the edge of the element.

13. A sieve screen as claimed in claim 8, wherein the protrusions comprise an external ridge on a peripheral wall of the element.

14. A sieve screen as claimed in any preceding claim, wherein each apertured metal sieve element comprises a plurality of wires extending parallel to, and spaced from, each other to define slit apertures between adjacent wires.

15. A sieve screen as claimed in claim 14, wherein the wires are secured together by a plurality of tie rods or bars extending across the element transversely to the length of the wires.

16. A sieve screen as claimed in claim 15, wherein the wires have formed therein loops extending in the plane of the wire and are secured together by a tie rod extending through aligned loops of different wires, end portions of the tie rods each extending beyond the endmost wire and into a recess in the attachment means.

17. A sieve screen as claimed in claim 16, wherein a row of aligned said loops adjacent the edge of the element is retained in a complementarily-formed groove in the attachment means.

18. A sieve screen as claimed in claim 15, wherein the wires are straight and the tie rods or bars are welded directly to lowermost parts of the wires.

19. A sieve screen as claimed in claim 18, wherein strip members extending along respective opposite edges of the element parallel to the wires are welded to the ends of the tie rods or bars, the or a protrusion for securing the element to the attachment means comprising a flange portion of the strip depending below the tie rods or bars.

20. A sieve screen as claimed in claim 10 or 19, wherein the protrusions are arcuate in cross-section and engage a lip formed by a recessed sidewall of a groove or slot in the attachment means.

21. A sieve screen as claimed in claim 10 or 19, wherein the depending flange extends into a slot in the attachment means, which means has an inclined surface extending downwardly and inwardly from a position beneath the edge of the apertured part of the metal sieve element.

22. A sieve screen as claimed in any preceding claim, comprising a support frame in the form of a lattice-work having arms of metal and/or synthetic plastics material, the attachment means cooperating with the arms to secure the elements thereto.

23. Screening apparatus comprising a plurality of support bars extending across the length or width of its screening surface and a sieve screen as claimed in claim 22 secured thereto with said support frame carried by the support bars.

24. Screening apparatus comprising a plurality

of support bars extending across the length or width of its screening surface and a sieve screen as claimed in claim 5 secured thereto with the attachment means lattice carried by the support bars.

25. A sieve element for a sieve screen as claimed in any of claims 1 to 22, comprising an apertured metal portion and edge portions engageable by said synthetic plastics attachment means.

26. A sieve element as claimed in claim 25, wherein the apertured metal portion comprises a plurality of wires extending parallel to, and spaced from, each other to define slit apertures therebetween, and a peripheral flange or tongue projecting from the edge of the element.

27. A sieve element as claimed in claim 25 or 26, wherein the flange comprises one web or an L-shaped member, the other web of which is attached to the apertured portion such that the flanges projects in a plane generally to that of the element.

28. A sieve element as claimed in claim 25 or 26, wherein the flange comprises part of a strip secured to the apertured portion such that the flange depends below the underside of the apertured portion.

29. A sieve element as claimed in claim 28, wherein the flange is arcuate in cross-section.

30. A sieve screen substantially as described herein with reference to, and as shown in, Figures 1, 2, 3 and 4, or Figures 5, 6 and 7, or Figures 10, 11, 12 and 13 of the accompanying drawing.

31. A sieve element substantially as described herein with reference to, and as shown in Figures 1, 2, 3 and 4, or Figures 5, 6 and 7 or Figures 8, 9, 12 and 13 of the accompanying drawings.

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