

Nov. 23, 1965

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3,219,065

ADJUSTABLE SCREEN CLOTH STRETCHER

Filed Oct. 22, 1962

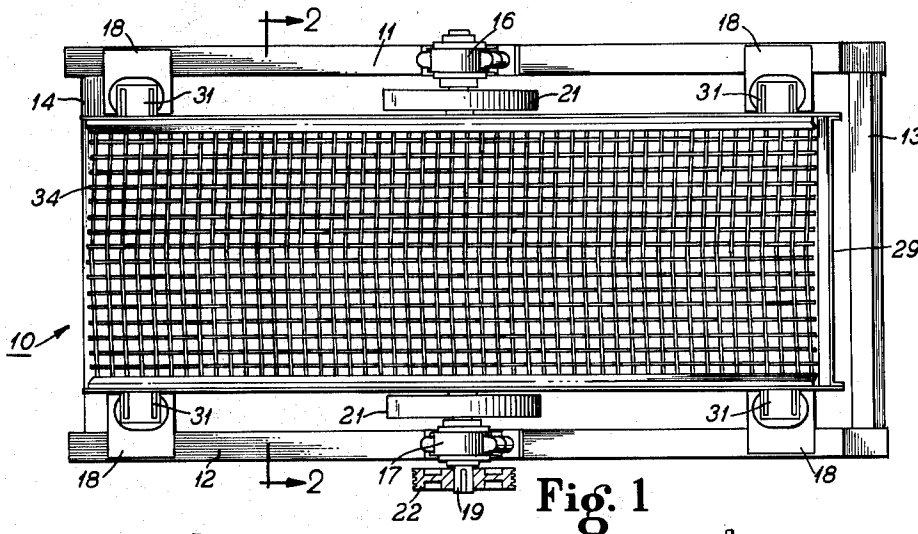


Fig. 1

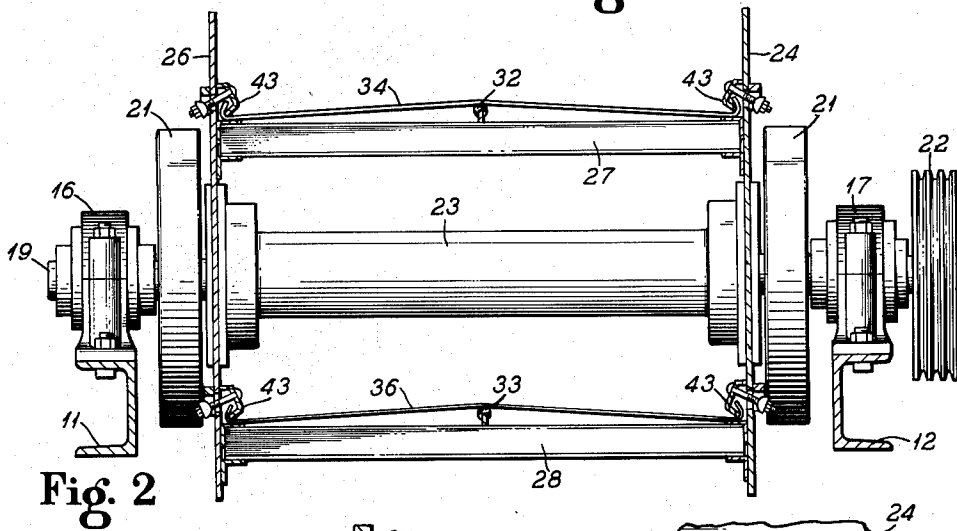


Fig. 2

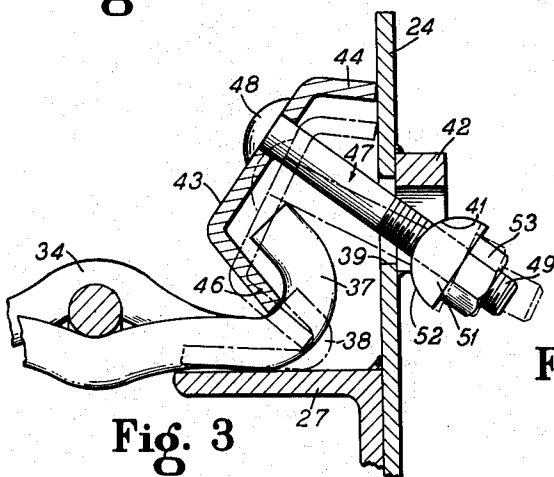


Fig. 3

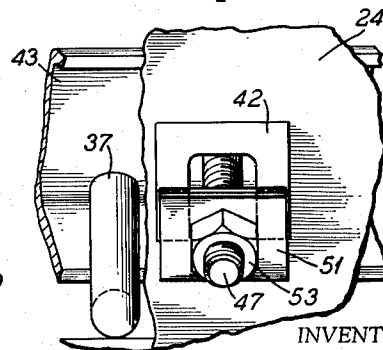


Fig. 4

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3,219,065

## ADJUSTABLE SCREEN CLOTH STRETCHER

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Filed Oct. 22, 1962, Ser. No. 232,213

2 Claims. (Cl. 140-108)

This invention relates generally to clamping and tensioning apparatus for screen cloth and more particularly to an adjustable clamping and tensioning device operable with a wide range of screen cloth sizes.

In the operation of sizing screens, it is desirable to substitute various sizes of screen cloth quickly without interchanging a number of auxiliary parts. It is also desirable to provide a narrow screen frame where the sizing screen is to be part of a portable crushing plant operable over highways. It is further desirable to tension the screen cloth laterally while frictionally binding the margins to a horizontal surface in order to prevent destruction of the screen cloth from ripples set up during operation.

Accordingly, it is a principal object of the present invention to provide a clamping and tensioning device for screen cloth, operable through a wide range of cloth sizes. It is a further object to provide clamping apparatus for binding the margin of a screen cloth to a horizontal frame member. Further objects and advantages of the invention will become apparent from the following description together with the drawings.

In the drawings:

FIGURE 1 is a plan view of a sizing screen showing a screen cloth in place on the top deck;

FIG. 2 is an end view, in section, of the sizing screen taken along the line 2-2 of FIG. 1;

FIG. 3 is an enlarged fragmentary end view, in section, showing details of the clamping apparatus; and

FIG. 4 is an enlarged fragmentary elevation view of a portion of the clamping apparatus.

Referring more particularly to the drawings, a vibratory sizing screen is indicated by the numeral 10. A base is formed of longitudinal side members 11 and 12 and cross members 13 and 14. Bearings 16 and 17 and mounting plates 18 are secured to side members 11 and 12. An eccentric cross shaft 19 is rotatably mounted in bearings 16 and 17 and is driven by pulley 22. Flywheels 21 are mounted to rotate with shaft 19 and cross tube 23 is journaled on shaft 19. A pair of sidewalls 24 and 26 are connected to and spaced apart by cross tube 23. Sidewalls 24 and 26 are further spaced apart by braces 27 and 28 and end wall 29. The body of the screen comprising sidewalls 24, 26, end wall 29, braces 27, 28 and cross tube 23 is further supported on side members 11 and 12 by resilient material, not shown, between brackets 31 and mounting plates 18. The above-described mounting permits the body to vibrate relative to the frame under the influence of rotation of the eccentric shaft. Spacers 32 and 33 are mounted respectively on braces 27 and 28 and serve as center supports for screen cloth 34 and 36 respectively. In the larger mesh sizes, screen cloth such as 34 and 36 is formed of interwoven abrasive-resistant wires defining uniform openings. The cross wires of such screen cloth are bent to form hooks along opposite margins as shown at 37 in FIG. 3. It is common commercial practice to provide screen cloth in various wire sizes maintaining a constant width dimension measured to the outside of the hook. For purposes of comparison, a smaller wire is shown in broken lines at 38 in FIG. 3. In order to function properly, it is necessary to tension the cross wires of a screen cloth and mount the screen cloth in such a way that its center and lateral margins are fixed against vertical movement. Fixing the cross wires against

vertical movement at the center and lateral margins overcomes the destructive effect of wave motion set up in the wires by the vibrating motion of the screen body.

The desirable combination of tensioning and vertical damping is provided by spacers 32 or 33 and clamping apparatus to be described.

A series of apertures 39 are formed in each sidewall 24, 26 running along the length of the sidewall parallel to the planes in which braces 27 and 28 are located. A two deck screen such as the one shown in the drawings has two series of apertures in each sidewall, one associated with each deck. A parti-cylindrical surface 41 is formed in the outer face of sidewalls 24, 26 extending along and adjacent to apertures 39. For convenience of manufacture, surface 41 may be formed in blocks 42 and welded to sidewalls 24 and 26. The surface 41 and block 42 need not be continuous throughout the whole length of the sidewall but may be discontinuous between apertures 39 as indicated in FIG. 4. Clamp rails 43 extend along the inside of walls 24 and 26 and each has an edge 44 bearing on the inner face of a respective sidewall. The opposite edge 46 of each clamp rail 43 engages a hooked margin 37 on one side of a screen cloth. A plurality of bolts 47 extend perpendicularly from each rail 43 between edges 44 and 46, and are spaced longitudinally in alignment with the series of apertures 39 in one of the sidewalls 24 or 26. Bolt 47 has a shouldered head 48 for maintaining perpendicular alignment with clamp rail 43 and a threaded portion 49 at its opposite end for purposes of adjustment. An adapter 51 fits over the threaded portion of bolt 47 and has a parti-cylindrical surface 52 engaged with the parti-cylindrical surface 41 in sidewall 24 or 26. A threaded nut 53 is engaged with the threaded portion of bolt 47 and bears on adapter 51.

As nut 53 is turned on the threaded portion of bolt 47, clamp rail 43 is pulled downwardly and outwardly in a curved path. This downwardly and outwardly curved path of movement results in edge 46 engaging margin 37 of screen cloth 34 and pulling it laterally to provide tensioning while binding it to a horizontal member associated with brace 27. The curved path of movement of edge 46 provides the above-described tensioning and binding effect with various wire sizes as illustrated by wire 38 in FIG. 3.

While I have shown and described a preferred embodiment of my invention, it is to be understood that various other forms and modifications may be practiced within the spirit of the invention and the scope of the appended claims.

I claim:

1. Apparatus for stretching screen cloth comprising:
  - a frame having spaced vertical sidewalls extending along opposite sides thereof, said sidewalls having a series of apertures extending along the length thereof;
  - a screen cloth extending along said frame in a generally horizontal plane, said screen cloth comprising longitudinal wires and cross wires, said cross wires having upwardly bent hooks at each end thereof;
  - a pair of elongated screen cloth clamps, each clamp having a pair of spaced parallel edges, in different planes, one of which is slidably mounted on the inner face of a respective one of said sidewalls and another of which is adapted to engage the hooks on a respective margin of said screen cloth;
  - a plurality of threaded tensioning bolts extending outwardly from each of said clamps between the edges thereof and adapted to extend through the apertures in said sidewalls;
  - a first parti-cylindrical surface formed in the outer face of each of said sidewalls generated about a horizontal axis of generation spaced a substantial dis-

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- tance outside said sidewall and parallel to said series of apertures;
- a plurality of adapters one for each bolt and each having a second parti-cylindrical surface engageable with said first parti-cylindrical surface; and
- threaded tensioning means engageable with respective bolts and adapters and effective to pull the cloth engaging edge of said clamp in a downwardly and outwardly curved path toward a respective sidewall.
2. Apparatus for stretching screen cloth comprising:
- a frame having spaced vertical sidewalls extending along opposite sides thereof, said sidewalls having a series of apertures extending in horizontal alignment along the length thereof;
- a screen cloth extending along said frame in a generally horizontal plane, said screen cloth comprising longitudinal wires and cross wires, said cross wires each having a hook at opposite ends thereof;
- a pair of elongated screen cloth clamps, each clamp having a C-shape profile defining a concavity adapted to face respective of said sidewalls and terminating in a pair of spaced parallel edges, one of which is slidably mounted on the inner face of a respective one of said sidewalls and another of which is adapted to engage the hooks on a respective margin of said screen cloth;
- a plurality of threaded tensioning bolts extending outwardly from each of said clamps between the edges thereof and adapted to extend through the apertures in said sidewalls;

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- a first parti-cylindrical surface formed in the outer face of each of said sidewalls generated about a horizontal axis of generation spaced a substantial distance outside said sidewall and parallel to said series of apertures;
- a plurality of adapters one for each bolt and each having a second parti-cylindrical surface engageable with said first parti-cylindrical surface; and
- threaded tensioning means engageable with respective bolts and adapters and effective to pull the cloth engaging edge of said clamp in a downwardly and outwardly curved path toward a respective sidewall.

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