

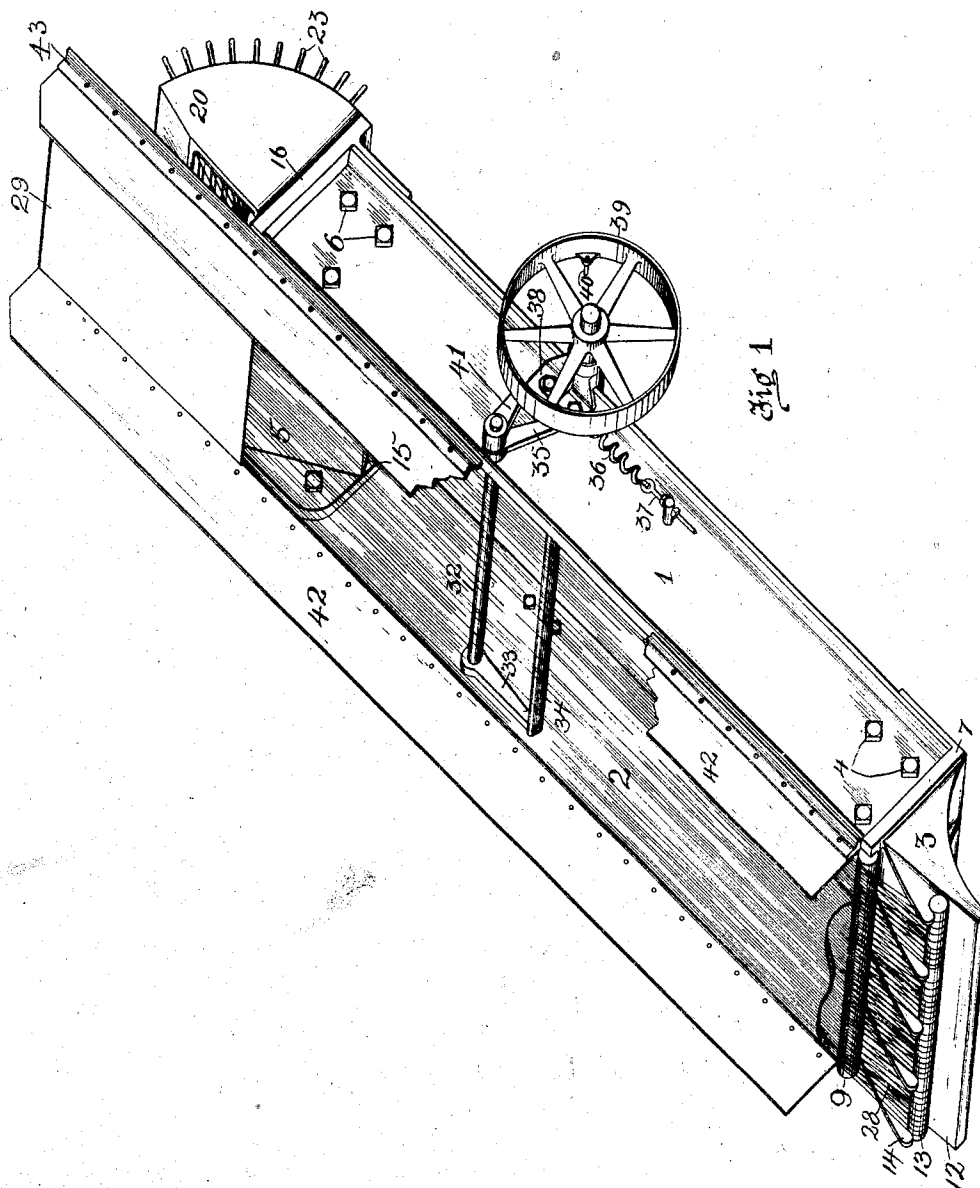
No. 878,728.

PATENTED FEB. 11, 1908.

C. B. HARROP.
WIRE SCREEN.

APPLICATION FILED MAY 9, 1907.

2 SHEETS—SHEET 1.



Witnesses.

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Inventor.

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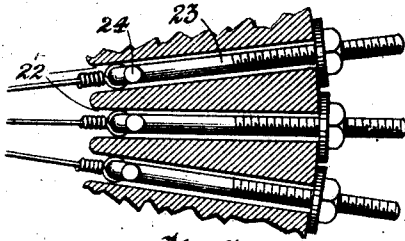


Fig 3

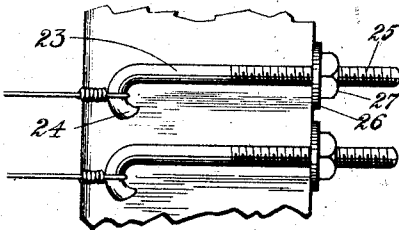


Fig 4

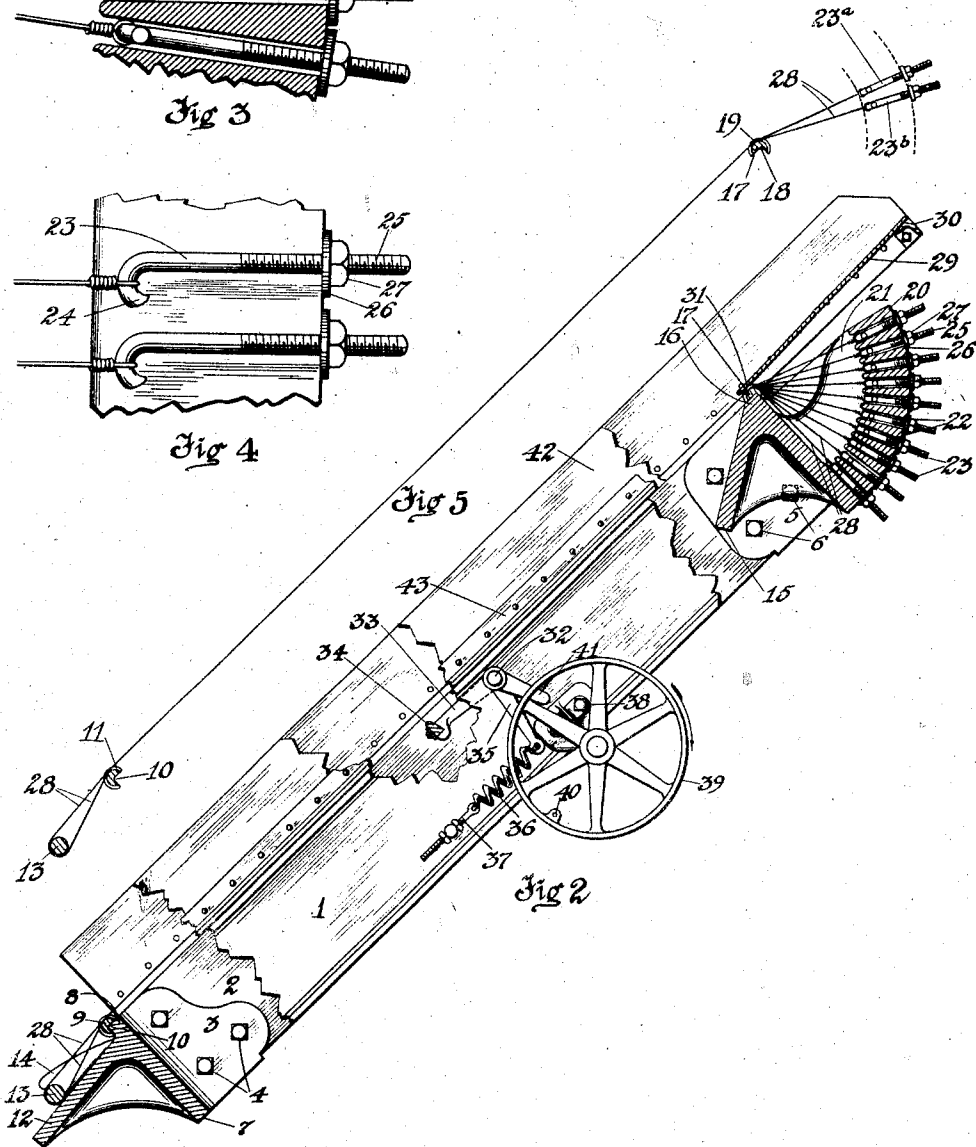


Fig 2

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WIRE SCREEN.

No. 878,728.

Specification of Letters Patent.

Patented Feb. 11, 1908.

Application filed May 9, 1907. Serial No. 372,823.

To all whom it may concern:

Be it known that CARL B. HARROP, a citizen of the United States, residing at Columbus, in the county of Franklin and State of Ohio, has invented certain new and useful Improvements in Wire Screens, of which the following is a specification.

My invention relates to improvements in wire screens, especially of that class of screens which are adapted to remain stationary while the process of screening is being carried on.

It comprises improvements in the devices for tensioning the wires whereby the same may not only be adjusted as tightly as desired, but may readily be removed and other wires readily inserted in their places; it further contemplates the use of a wire having both its ends secured at the same end of the screen, whereby a single wire forms two strands of the screening surface; it further contemplates means for imparting a vibratory motion to the wires when desired for cleaning the same; it further contemplates the provision of a head member in which the ends of the various wires are secured, constructed in such manner that all of the wires used are of substantially the same length; it further contemplates the use of removable spacing bars properly threaded for the positioning of the wires thereon; it contemplates other improvements which shall be hereinafter specifically set forth.

Referring to the drawings in which one embodiment of my improvement is disclosed, Figure 1 is a projection of the screen; Fig. 2 is a side view of the screen with parts broken away; Fig. 3 is a vertical section through the head member, disclosing the manner of positioning the securing bolts; Fig. 4 is a top view of one of the transverse slots through the head member, showing the bolts in place; Fig. 5 represents one of the wires passing from its hook bolt over the face of the screen and around the anchor bar and back over the face of the screen, being secured to an adjacent hook bolt.

Referring to the drawings in which the same numerals indicate the same parts throughout, 1 and 2 are the side members of the screen formed preferably of channels, with their flanges directed outwardly; at one end of the screen is a cast member 3 secured to the ends of the channels by bolts 4, and at the other end of the screen is a second cast

member 5 appropriately secured to the adjacent ends of the channels by the bolts 6. The two channels and the two end members form the frame of the screen; when in use, the screen is adapted to be positioned at an incline so that clay thrown thereon will tend to move downwardly over the face thereof. The screen is adapted to be stationary.

The cast member 3 which may be designated as a foot casting, has the web 7 extending substantially at a right angle with the face of the screen; adjacent the upper end of this web is an extension 8 upon which is positioned a spacing bar 9 extending transversely across the face of the screen, and having a recess 10 therein which is adapted to engage the upper and a side portion of extension 8, whereby the same is firmly seated thereon. In the upper face of said spacing bar 9 threads or depressions 11 are provided, which are adapted to receive the wires forming the screen and hold the same against lateral displacement. The foot casting 3 is also provided with a shelf member 12, upon which is placed transversely, an anchor member or bar 13, around which the wires forming the screen are adapted to be given a turn to anchor the same; brackets 14 are positioned upon the shelf 12 at intervals, and are provided with recesses adapted to receive the anchor bar 13, the latter being held snugly against said brackets by the tension of the screen wires. At the opposite end of the screen the cast member 5 which may be designated the head casting is provided with the web 15, preferably positioned at an oblique angle with the face of the screen, and a second web member 16, preferably positioned at a right angle with the face of the screen; adjacent the upper end of the ladder is mounted a spacing bar 17 provided with the recess 18 which is adapted to engage the web 16 snugly; and having on its upper surface threads or depressions 19 for receiving the wires and preventing lateral displacement of the same. The spacing bars 9 and 17 are removable, and are held in place on their respective castings by the depression causing the same to embrace two faces of said castings, and also by the wires passing over said spacing bars and by their tension binding the same closely against said castings. It is apparent that if the wires be loosened, said spacing bars or either of them may be removed and other bars substituted without a

removal of the wires. This will be explained more fully hereinafter.

The head casting 5 has a segmental portion 20 extending across the end of the screen frame, and having the reinforcing member 21 about the middle thereof. This segmental portion is provided with radial slots 22, which may be as numerous as desired, said slots passing through the segmental portion from the inner to the outer face thereof, and extending transversely of said segmental portion. The center of the circle of which the segment 20 is a portion is coincident with the head spacing bar 17, whereby, necessarily, the slots are equidistant from said spacing bar. Bolts 23 having a hook 24 at their inner ends and having threads 25 adjacent their outer ends, are adapted to be inserted into the said slots radially, with the hook portion lying transversely thereof. The hook is of such length as compared with the height of the slot that it cannot turn therein, but must always lie flatwise or sidewise in said slot. Each bolt carries the washer 26 and the nut 27, and as the latter travels inwardly on the threads, the bolt is drawn outwardly, and vice versa. In this construction, therefore, no individual holes are provided for the bolts, and the latter are positioned side by side and may be moved laterally through the slots; it is therefore possible to use as many or as few bolts as desired. It is apparent that in a screen of coarse mesh, fewer bolts would be needed, while if finer wire is used, more bolts would be required, and this provision of transversely extending slots makes it possible to adapt my screen to the use of either fine or coarse wire if desired. If individual holes were provided for the bolts, the same degree of adjustment to provide for different sized wires would not be possible.

The depth to which the bolt penetrates the slot is therefore regulated in the manner stated, and for the purpose of exerting a greater or less tension upon the wire which may be secured thereto as shown in Figs. 2 and 3. Selecting any wire, as 28, it is seen that one end thereof is secured to a bolt 23^a as appears in Fig. 4, is then passed over the face of the spacing bar 17 in one of the threads 19 thereon, and drawn longitudinally across the face of the screen over the spacing bar 9 at the lower end thereof, being positioned in a thread 11 thereon, and then led around the anchor bar 13, and back over the spacing bar 17, and then carried to the adjacent bolt 23^b, to which the end is secured. One wire therefore, furnishes two strands of the screen, and both its ends are secured in the segmental portion of the head casting. The latter being formed on the radius of the circle of which the head spacing bar is the center, all of the wires used in forming the screen will be substantially of the same

length, thereby rendering it unnecessary to provide wires of different lengths for use in this screen. This is a matter of convenience and economy, for the reason that if one of the wires is broken, another wire may be readily substituted therefor, and assorted lengths need not be kept in stock by the operator. Proper manipulation of the nut will cause the wire to be tensioned to a greater or less degree as desired, and the same wire may be tensioned by the manipulation of two bolts, thereby rendering possible a very delicate adjustment. Further, if it is desired to remove the spacing bars and replace them by others, the wires may easily be loosened without detaching the same from the bolts, and the spacing bars thereupon may be removed and others inserted, and if the wires be then tightened, the screen will be ready for use. The wires are held at the lower end of the screen by passing the same around an anchor bar, and they are held in contact therewith by the tension created as aforesaid, and also operate to hold said anchor bar in place. Therefore the complete removal of a wire is easily effected by taking the nut from the bolt, pulling the bolt through to the inner side of the slotted segment, and twisting the hook out of the loop of the wire thereon, whereupon the wire is freed and may be pulled over the face of the screen without any difficulty, and it may be done very quickly. Hence, the removal of one wire and the substitution of another therefor, can readily be performed; this is a matter of importance, for instance, when a wire of a different mesh is to be substituted, or a wire has been broken. Arranging the head casting in an arc form also renders it possible to use any of the wires at any portion of the screen, thereby preventing any inconvenience due to the confusion where wires of different lengths are used. Further, it is to be noted, that the individual wires are positioned and adjusted independently of the others and are independently removable; that the wires are arranged in sets or groups secured at their ends to the bolts lying in a vertical plane on an arc, and that as many of such sets of bolts may be provided transversely of the segmental portion of the head casting as the space will permit and as may be desired.

My improvements render it easy to change the mesh of the screen, or a portion thereof, when desired, so that the mesh may be finer in one portion of the screen than in other portions; or all of the wires may be removed as shown and wires of a different size substituted, thereby adapting the screen to different clays. The advantages and economy of such construction are evident. Further, the repair of the screening surface of screens has heretofore been not only difficult but expensive, whereas, with my improved construction, the necessary repairs can be quickly,

cheaply and effectually made. Secured to the head casting and to the upper sides of the screen, hereafter mentioned, is a plate 29, secured at 30 and 31 which lies above the segmental portion of the head casting, and acts as a protection for the end fastenings from the clay which is dumped on the screen from the elevator; this plate may be made removable so that at any time ready access to the wire fastenings may be afforded. This plate receives the impact of the falling clay, thereby relieving the wires, and the clay then slides downwardly over the face of the latter, and very little of the shock incident to the delivery of the clay from the elevator is felt directly by the wires themselves.

For the purpose of assisting the screen in its operation and of cleaning it and freeing it from particles which may have become lodged thereon, I provide a vibrator device, which is adapted to strike the wires from beneath at intervals, thereby tending to shake loose any lodged particles, and also expediting the progress of the clay over the face of the screen. At 32 is mounted a bell crank with one arm 33 extending forwardly beneath the screen, and at the outer end thereof is mounted a bar 34 which extends transversely of the screen wires and beneath the same; the other arm 35 of said bell crank extends downwardly and has secured thereto a spring 36 the latter having its other end secured in the adjustable member 37. Mounted suitably in the bracket 38 secured to the side channel of the screen frame is a pulley 39, which may be connected with the elevator by a belt, not herein shown; said pulley contains the laterally extending lug 40, which is adapted, upon the rotation of the pulley, to contact with an arm 41 mounted rigidly upon the shaft 32 and projecting into the path of rotation of said lug. As the pulley is rotated, the lug 40 striking against the arm 41 will set up a rotation of the shaft which will retract the bar 34 from the wires, at the same time extending the spring 36; after the lug has passed off the arm 41, the contraction of the spring will give the bar 34 a sharp upward movement, thereby bringing the latter into contact with the screen from beneath. A vibratory movement will thereby be set up in the wires, and it will be repeated by the subsequent actuation of the bar 34 in the manner described. In this way sharp strokes will at short intervals be given to the wire screen from beneath which will tend to facilitate the passage of the clay downwardly from the screen and will also dislodge any particles which may have become stationed between the wires.

Sides 42 are provided for the screen, and are positioned upon the upper faces of the channels 1 and 2, by angle irons 43, the latter being riveted to the sides and to the upper flange of the channels.

I claim:

1. In a wire screen, a frame, wires arranged thereon having both ends positioned at one end of said frame, removable spacing bars for said wires mounted on said frame, an anchor member at one end of said frame about which said wires are looped, and individual means for securing each end of said wires and tensioning the same at the end of said frame opposite that on which said anchor member is mounted.

2. In a wire screen, a frame, wires arranged longitudinally thereon having both ends positioned at one end of said frame, an anchor member at the opposite end of said frame, around which said wires are led without being secured thereto, means for maintaining said anchor member in place, and individual means for securing each end of a wire and tensioning the same.

3. In a wire screen, a frame, a foot casting secured to said frame, an anchor member mounted on said foot casting, a head casting secured to said frame and having radial slots therein, wires arranged on said frame, means positioned in said slots for independently securing and tensioning said wires, each wire having both its ends positioned in said head casting and forming a loop over said anchor member.

4. In a wire screen, a frame, wires arranged thereon having both ends positioned at one end of said frame, a head casting having a portion thereof forming an arc, a spacing bar positioned approximately at the center of curvature of said arc, anchor means for said wires at the foot end of said frame, and adjustable and removable means arranged radially in said arc shaped portion of said head casting for independently securing and tensioning said wires, whereby said wires may each be of substantially the same length.

5. In a wire screen, a frame, a head casting thereon having a segmental portion, a spacing bar arranged approximately at the center of curvature of said segmental portion, a second spacing bar arranged at the opposite end of said frame, an anchor member arranged at said opposite end of said frame, wires of substantially the same length arranged on said frame, each wire having an end secured in said segmental portion and passed over said spacing bars and around said anchor member, and returned over said spacing bars and having its other end also secured in said segmental portion.

6. In a wire screen, a frame, removable spacing bars thereon, a removable anchor member thereon, means for maintaining said anchor member in position, wires of substantially the same length arranged on said frame and having both ends positioned at one end of said frame and forming a loop about said anchor member and engaging said spac-

ing bars, and removable and adjustable means at one end of said frame for securing each end of each wire and tensioning the same.

5 7. In a wire screen, a frame, a head casting thereon having a portion thereof formed on an arc, transverse slots arranged in said head casting, wires arranged on said frame, removable means radially and transversely
10 positioned in said slots for securing each end of each wire and tensioning the same.

8. In a wire screen, a frame, wires arranged thereon having both ends positioned at one end of said frame, a removable anchor
15 bar at the opposite end of said frame, about which said wires are looped, means for maintaining said anchor bar in place, removable means adjustable radially and transversely
20 for securing each end of each of said wires and for tensioning the same, whereby each wire may be separately removed by manipu-

lating the securing means at one end of the frame, without disturbing the remaining wires.

9. In a wire screen, a stationary frame, 25 wires positioned thereon, an arm pivotally mounted on said frame, a pulley mounted on said frame adjacent the said arm, means for rotating said pulley, and an extension on
30 said arm with which said pulley engages in its rotation, whereby said arm is intermittently caused to strike said wires, and means for intermittently actuating said arm to
35 strike said wires, whereby a vibratory motion is imparted to the latter for cleaning said screen.

In testimony whereof I affix my signature in the presence of two witnesses.

CARL B. HARROP.

Witnesses:

G. A. GIBSON,
ELLIS LOVEJOY.