

No. 719,805.

PATENTED FEB. 3, 1903.

G. S. INGLE.
SHAKING SCREEN.

APPLICATION FILED JULY 3, 1901.

NO MODEL.

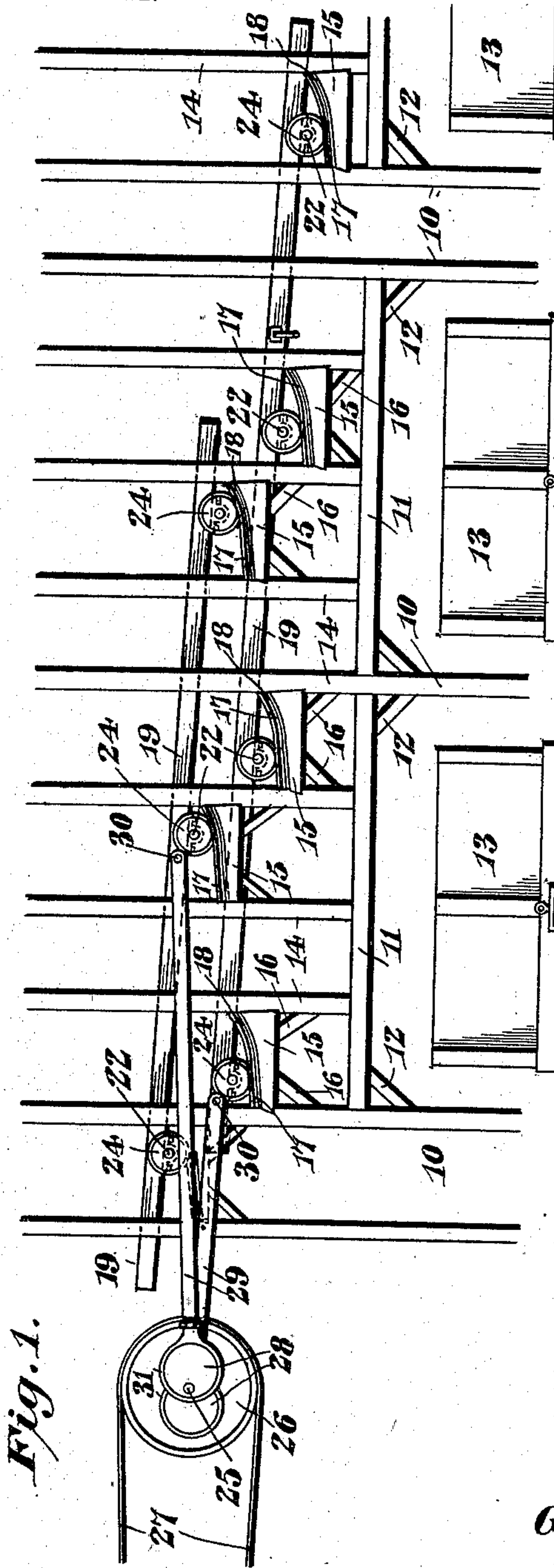


Fig. 1.

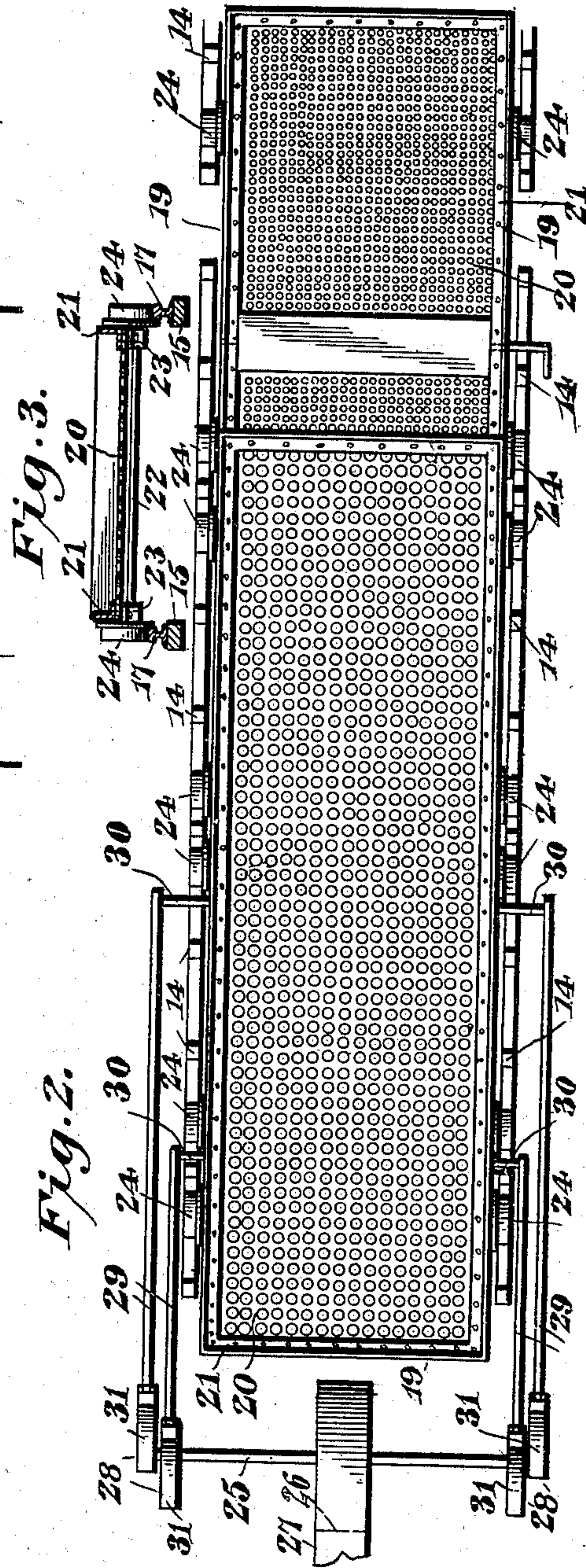


Fig. 2.

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UNITED STATES PATENT OFFICE.

GEORGE S. INGLE, OF INDIANAPOLIS, INDIANA.

SHAKING-SCREEN.

SPECIFICATION forming part of Letters Patent No. 719,805, dated February 3, 1903.

Application filed July 3, 1901. Serial No. 67,030. (No model.)

To all whom it may concern:

Be it known that I, GEORGE S. INGLE, a citizen of the United States, residing at Indianapolis, in the county of Marion and State of Indiana, have invented a new and useful Shaking-Screen, of which the following is a specification.

Screens employed in separating coal and like material into its several grades and removing the culm therefrom have usually been supported from overhead, one being located beneath the other and reciprocated simultaneously in opposite directions. As a result the building containing them has to be built comparatively high, and because of the support being at such a height the structure must be sufficiently stable to withstand the rack and vibration to which it is subjected. Another feature to be noted in the swinging support is that when the screens are swung outwardly or away from each other they are raised and power enough must be supplied to accomplish this simultaneous lifting of all. On the other hand, they will gravitate toward each other on the backward swing, thus relieving the driving power of its entire load. The consequence is that the load varies from its maximum to practically zero, and the driving mechanism is thus continually being subjected to extremely undesirable shocks.

The present invention relates to this class of apparatus; and its principal objects are to overcome the above objections, first, by providing means for mounting the screens so that the support will be comparatively low, decreasing the cost of the building both in size and construction, and, secondly, by so mounting the screens in pairs that they will counteract each other's movement, with a consequent decrease in the amount of driving power necessary and the practical removal of the shocks thereto above described, said screens being constructed and arranged to support substantially proportionate loads, so that they will always practically counterbalance.

Another object is to provide a novel construction and combination in which one of the counterbalancing-screens upon its movement in one direction will overcome the inertia of the other screen, and thus to a great degree eliminate the sudden jar and shock

otherwise imparted to the driving power in starting loaded screens from a state of rest.

In the accompanying drawings there is shown an embodiment of the present invention which is at present considered preferable, and the construction and operation thereof is fully described in the following specification. The invention, however, is not to be limited to the exact construction shown, but is open to such changes and modification as are within the scope of the claims.

In the drawings, Figure 1 is a side elevation of the improved screens and the supports therefor. Fig. 2 is a top plan view of the same, and Fig. 3 is a vertical transverse section clearly illustrating the mounting of the axles.

Similar numerals of reference designate corresponding parts in the different figures of the drawings.

In the practical embodiment of the invention, as shown in the accompanying drawings, a suitable supporting-frame is provided, comprising spaced standards 10, connected a suitable distance above the floor by stringers 11, which are strengthened by corner-braces 12, thus leaving open passage-ways beneath for cars or suitable receptacles, as indicated at 13. Supported upon the stringers 11 are vertically-disposed spaced studs 14, between certain of which are secured transverse carrier-blocks 15, having suitable braces 16. On these carrier-blocks are located tracks 17, that may be of any desired construction, but, as shown, comprise short sections of T-iron or railroad-rails. These tracks preferably are inclined their entire lengths, and each has an upstanding end, as 18, that is disposed at a greater inclination than the main portion. It will therefore be seen that these tracks each comprise a primary and a secondary portion that are connected and located in obtuse-angular relation, the primary portion being disposed at a less inclination than the secondary portion, and that each of the inclined portions of the several tracks are situated in parallel relation to the corresponding portions of the other tracks, so that the screens will maintain their parallel relation.

A pair of screens 19 are shown, one being arranged above the other, and said screens may be of any suitable construction, though,

as illustrated, comprising perforated steel plates 20, bolted or riveted to angle-steel frames 21. The perforations are graded in a manner well understood by those skilled in this art. It will be observed that the lower screen is considerably longer than the upper one and that said upper screen overlaps the lower one. This insures a counterbalance when the screens are loaded. The upper screen of course receives all the coal and is heavily loaded, while only part of said load passes through to the lower screen and a part of that which does reach said lower screen passes on through it. In order, therefore, to make up for the excess of weight on the upper screen, the lower one is made longer, so that the coal must remain on it for a longer period, and in this manner the necessary weight is obtained. Secured transversely across the under sides of the screens are axles 22 by means of clips 23, said axles projecting beyond the sides of the screens forming spindles upon which are rotatably mounted supporting-wheels 24, said wheels bearing upon the tracks 17. By referring to Fig. 1 it will be seen that the screens are inclined in one direction while the tracks are inclined in the opposite direction.

For the purpose of operating the screens a driving-shaft 25 is provided contiguous to one end thereof, said shaft having a pulley 26, over which runs a belt 27, connected to any suitable driving power. The shaft 25 is furthermore provided with eccentrics 28, a pair of which are located on opposite sides of the pulley 26, the eccentrics of each pair being arranged on opposite sides of the shaft. Pitmen 29 are pivotally connected to the opposite sides of the screens by means of pins 30 and are secured to the eccentrics by means of straps 31, the pitmen of one screen being secured to the eccentrics located on one side of the shaft, while those of the other are connected to the opposite ones.

In operation the driving-shaft is rotated through the medium of the belt 27, and because of the opposite arrangement of the eccentrics the screens will be simultaneously reciprocated in opposite directions. It will thus be seen that as one screen is moved up the inclined tracks the other is moved down, and because of this movement they practically counterbalance each other, so that the load upon the engine or driving mechanism remains constant. Further than this, however, because of the tracks being inclined in a direction opposite to the inclination of the screen when said screen is moved to its highest position and starts on the reverse movement it will drop slightly, and thus tend to move from under the coal or other material upon the same. On the other hand, during its upward movement it will be carried with greater force against the coal, which will move downward with it. A still further and important result is obtained by the specific structure of the tracks. This may probably

be best explained as follows: During each reciprocation the screens must come to a full stop before their motion is reversed. There is thus considerable inertia to be overcome even though the coal does not reach a state of rest. At the ends of their movements the rollers of one of the screens will be resting upon the upper sharper inclines of their tracks, while those of the other screen will bear upon the lower and lesser inclined portions. As the reverse movement takes place the weighted and raised screen will immediately drop down said steep inclines, and its momentum will be great enough to overcome the inertia of the lower screen, which will thereupon start up the inclines of less degree. As a result no heavy jars, shocks, or strains will be imparted to the driving power. The material will be moved at a comparatively rapid rate over the screen, thus giving the same a greater capacity. By this means the objects mentioned in the preliminary portion of the specification are accomplished, the entire mechanism is extremely simple, and the elements are few.

From the foregoing it is thought that the construction, operation, and many advantages of the herein-described invention will be apparent to those skilled in the art without further description, and it will be understood that various changes in the size, shape, proportion, and minor details of construction may be resorted to without departing from the spirit or sacrificing any of the advantages of the invention. For instance, the wheels 24 are shown as smooth and running on smooth tracks; but it will be obvious that they may be toothed and engaged with corresponding teeth provided on the upper faces of the tracks.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a separator of the class described, the combination with a pair of screens, of tracks arranged contiguous to each screen, said tracks each comprising sections, one section being disposed at an inclination to the other, supporting devices for the screens mounted upon the tracks, and means for simultaneously reciprocating the screens in opposite directions, the supporting devices of one screen being arranged to move over the inclined sections of their respective tracks when the supporting devices of the other screen are upon the opposite track-sections.

2. In a separator of the class described, the combination with longitudinally-movable screens arranged one below the other, of tracks disposed at an inclination to the screen and having their upper ends arranged at a sharper inclination than their main portions, supporting devices for the screens movably mounted upon the tracks, and means for reciprocating the screens in opposite directions, the supporting devices being so arranged that those of one screen will be moving upon the sharper

inclines of their respective tracks, while the supporting devices of the other screen are upon the main portions of their tracks.

3. In a separator of the class described, the
5 combination with an upper and a lower screen arranged in parallel relation and inclined in the same direction, of upper and lower tracks for supporting the screens and maintaining them in parallel relation, said tracks each
10 having its upper face composed of a primary and a secondary inclined portion having different degrees of inclination, and each of the inclined portions of one track being situated

in parallel relation to the corresponding portions of the other tracks, wheels journaled 15 upon the screens and movably mounted upon the tracks, and means for simultaneously reciprocating the screens in opposite directions.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in 20 the presence of two witnesses.

GEORGE S. INGLE.

Witnesses:

W. B. SULLIVAN,
J. S. COOKERLY.