R. S. BENSON.

PROPULSION SCREEN.

APPLICATION FILED SEPT. 28, 1918.

1,398,997. Patented Dec. 6, 1921.

Fig. 1.

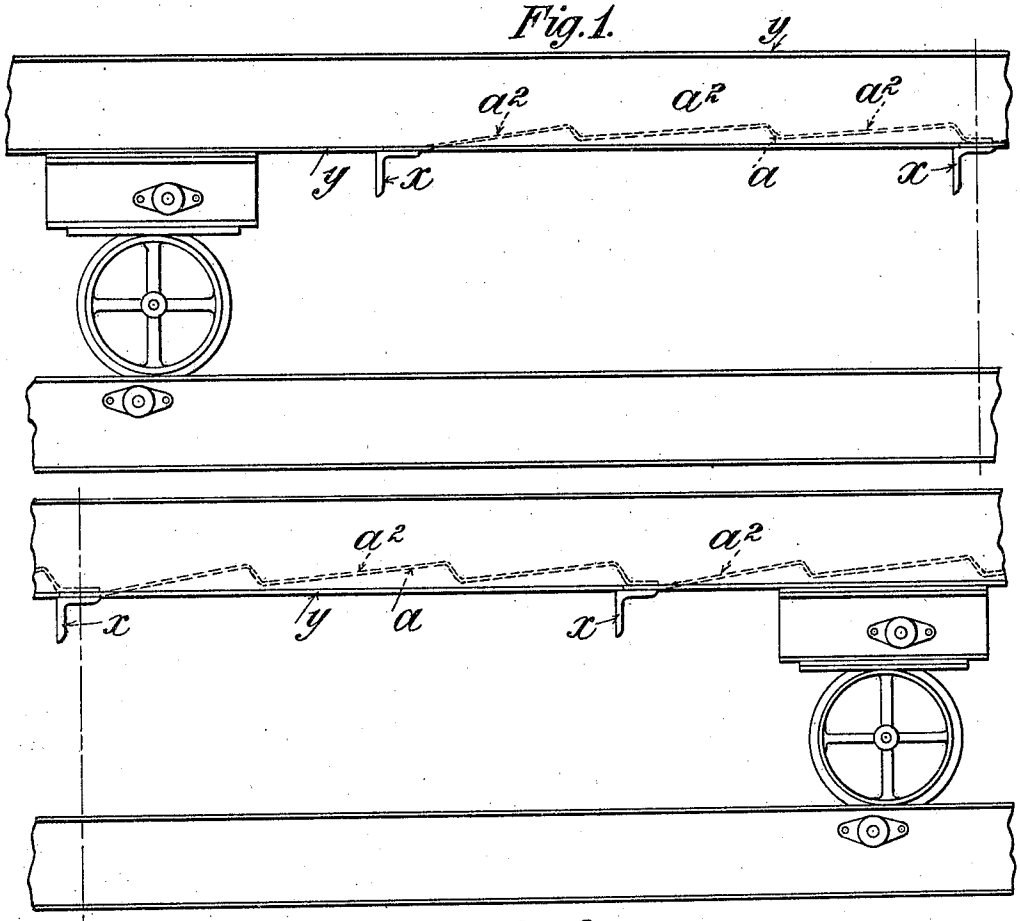


Fig. 2.

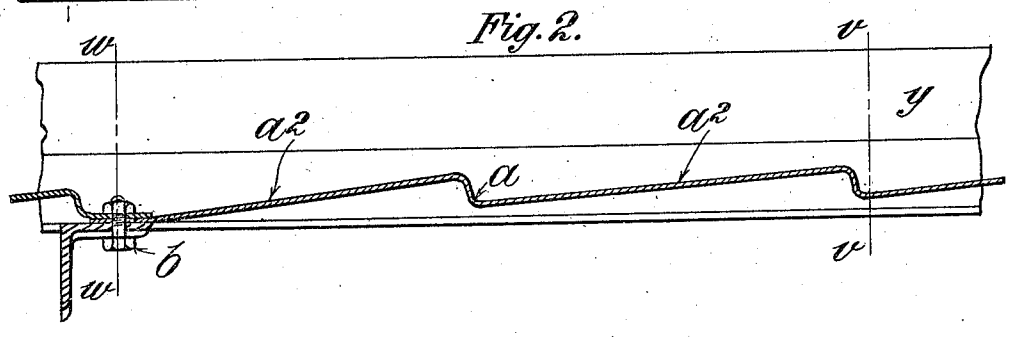


Fig. 4.

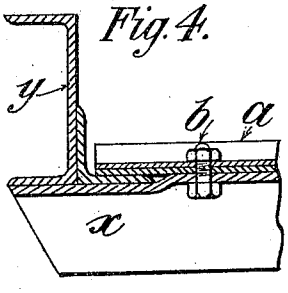
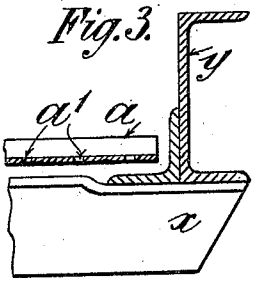


Fig. 3.



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UNITED STATES PATENT OFFICE.

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PROPULSION-SCREEN.

1,398,997. Specification of Letters Patent. Patented Dec. 6, 1921.

Application filed September 28, 1918. Serial No. 256,078.

(GRANTED UNDER THE PROVISIONS OF THE ACT OF MARCH 3, 1921, 41 STAT. L., 1313.)

To all whom it may concern:

Be it known that I, ROBERT SEYMOUR BENSON, a subject of the King of Great Britain and Ireland, residing at Middleton St. George, in the county of Durham, England, have invented a new and useful Improvement in Propulsion-Screens, (for which I have filed application in Great Britain No. 13072, Sept. 12, 1917,) of which the following is a specification.

This invention relates to propulsion screens and especially to that type in which the reciprocating conveying motion is uniformly accelerated and retarded in the forward and backward direction, and it consists of an improved form of screen plate, the object of which is to more effectively separate duff coal, *i. e.*, coal of about $\frac{1}{8}''$ cubes and under from mixed small coal.

I attain this end by the employment of a series of screen plates the effective areas of which are perforated with holes of a slightly greater diameter than the size of the coal to be separated. In the case of $\frac{1}{8}''$ cubes the holes would be approximately $\frac{3}{16}$th$''$ diameter. These plates are pressed or otherwise shaped to form a series of inclined transversely arranged corrugations and they are each so fixed to the frame or trough that a small amount of longitudinal camber is imparted to them which results in their remaining in a constant state of flexure.

By this construction the plates have sufficient flexibility to vibrate vertically with each shock of the propulsion motion, which vibratory motion keeps the plates clear and enables the larger coal to pass freely over said plates without clogging the perforations which results in a thorough and efficient separation of the smaller from the larger coal.

In the accompanying drawing which illustrates this invention:—

Figure 1 is a broken view in side elevation,

Fig. 2 is a broken view in sectional side elevation on an enlarged scale, and

Figs. 3 and 4 are broken views in transverse section on lines *v*—*v* and *w*—*w* respectively Fig. 2.

Throughout the views similar parts are marked with like letters of reference.

The improved screen plates *a*, which are provided with a series of small holes a^1 over their effective areas and which are corrugated in stepped form transversely so as to form a series of inclined planes a^2 the lengths of which in relation to the depths of the corrugations or steps can conveniently be in the ratio of 12 to 1, are so arranged in the trough or channel that the inclined planes slope upward in the direction of the conveying motion of the screen and they are fixed at each end to the transverse members *x* provided for stiffening the sides *y* of the trough or channel of the screen by bolts *b* or the like the distance between the holes for said bolts at the two ends of the plates *a* being slightly greater than the longitudinal distance apart of the holes for said bolts in the transverse members *x*, so that when the plates are fixed in position each is slightly cambered longitudinally and is thus brought into and maintained in a constant state of flexure. In this position the plates do not touch any part of the structure of the screen except at their points of fixation thereto.

These improved plates may be fitted to a screen acting as a separate unit dealing only with mixed small coal, or they may be employed as a lower deck to a main screen the upper deck or decks of which are arranged to deal with larger coal.

What I claim as my invention and desire to secure by Letters Patent is:—

1. In a propulsion screen, a screen plate comprising a plurality of longitudinally arranged perforated and transversely corrugated plates each of which is independently cambered longitudinally in a constant state of flexure.

2. In a propulsion screen, the combination with the reciprocating trough, of a screen comprising a plurality of perforated plates corrugated in stepped form transversely so as to form a series of longitudinally arranged inclined plates said plates being fixed at their ends in said trough by means of bolts or the like the holes for which in the plates are at a greater distance apart than the holes in the elements of the trough or channel to which said plates are fixed.

3. In a propulsion screen, the combination with the reciprocating trough, of a screen comprising a plurality of perforated plates corrugated transversely so as to form a series of longitudinally arranged inclined plates the upward slopes of which lie in the direction of the movement of the screen during its conveying motion, and means for fix-

ing said plates in the trough by their ends only so that each is in a constant state of flexure.

4. In a propulsion screen, the combination with the reciprocating trough comprising two longitudinal members and a plurality of transverse members, of a series of perforated and transversely stepped plates, of bolts for fixing said plates to the transverse members of the trough, holes in the ends of perforated plates to receive said bolts and holes in said transverse members to receive said bolts the longitudinal distance apart of the holes in the transverse members being less than that of the holes in the plates.

In testimony whereof I have signed my name.

R. SEYMOUR BENSON.