(No Model.) 4 Sheets—Sheet 1.

H. SIMON.

SHAKING SIEVE.

No. 495,190. Patented Apr. 11, 1893.

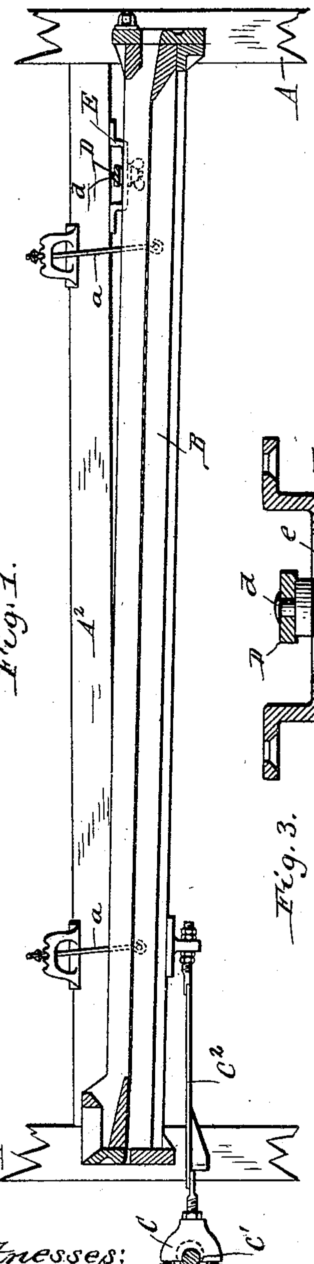


Fig. 1.

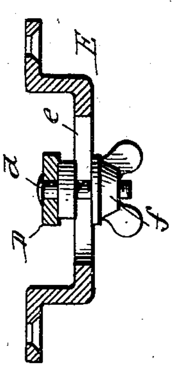


Fig. 3.

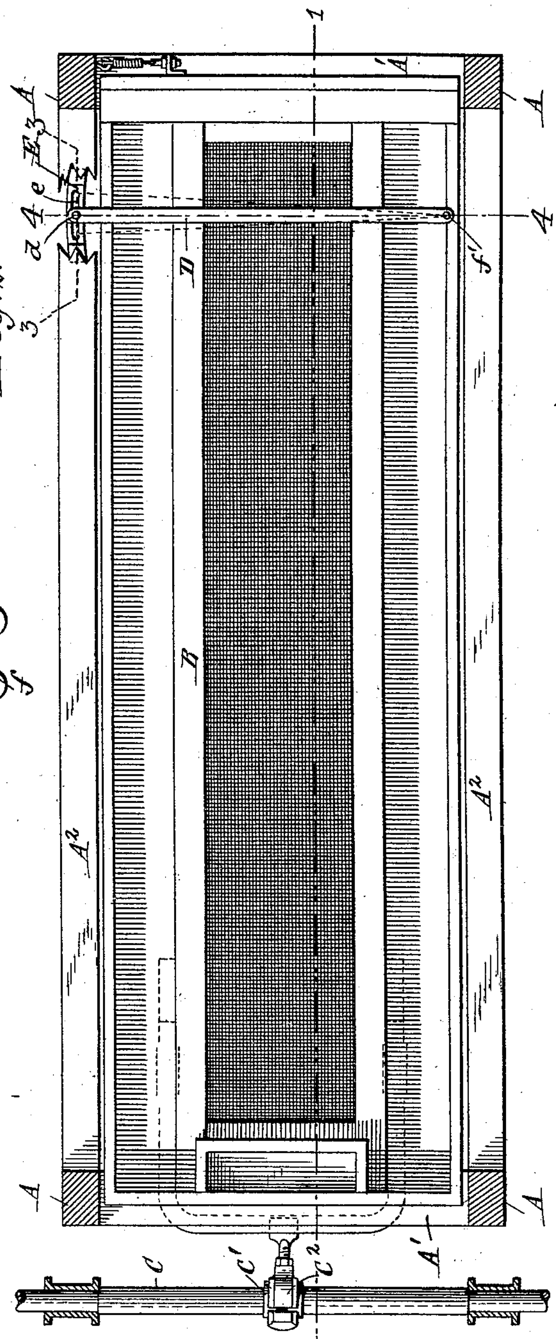


Fig. 2.

Witnesses:
Emil Neuhart.
Theo. L. Popp.

Henry Simon Inventor.
By Wilhelm & Bonner. Attorneys.

(No Model.) 4 Sheets—Sheet 2.

H. SIMON.

SHAKING SIEVE.

No. 495,190. Patented Apr. 11, 1893.

Fig. 4.

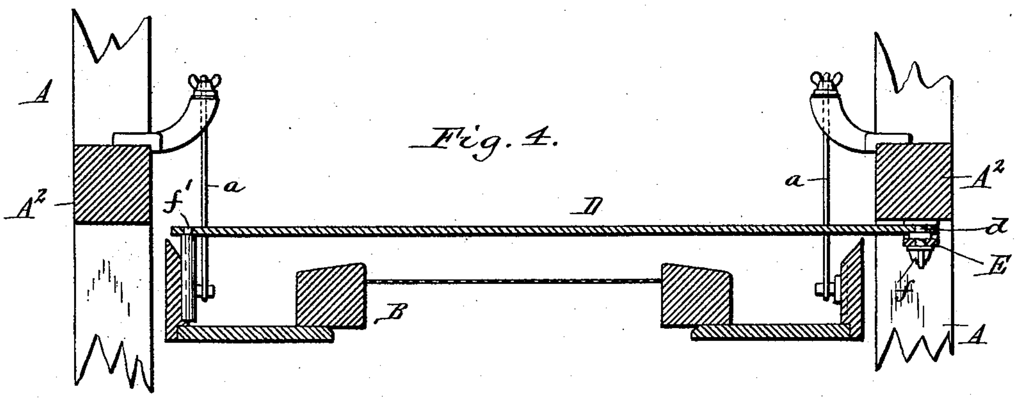
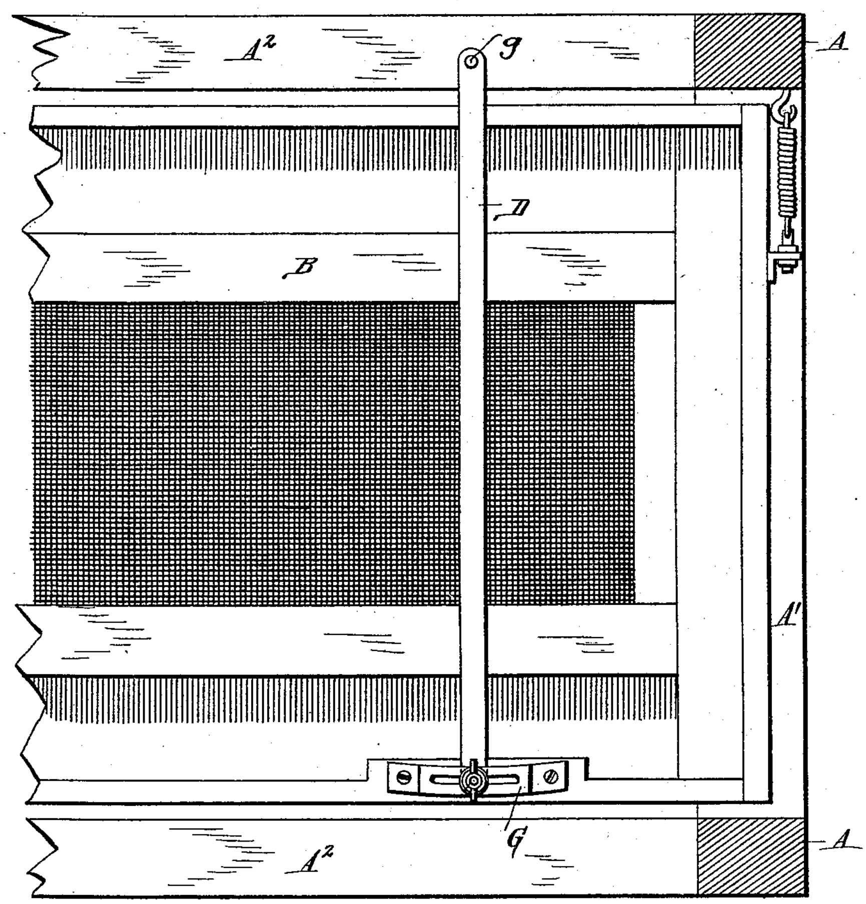


Fig. 5.



Witnesses:
Emil Neuhart.
Theo. L. Popp.

Henry Simon Inventor.
By Wilhelm Bonner.
Attorneys.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

(No Model.)

4 Sheets—Sheet 3.

H. SIMON.

SHAKING SIEVE.

No. 495,190.

Patented Apr. 11, 1893.

Fig. 6.

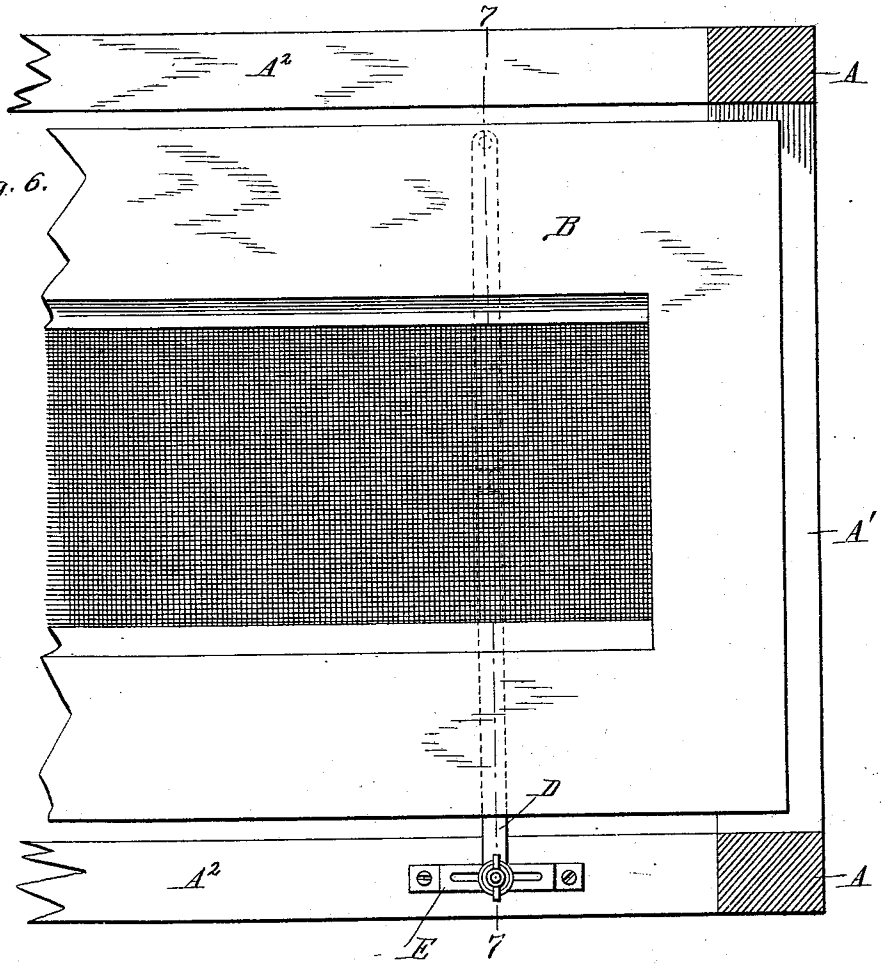
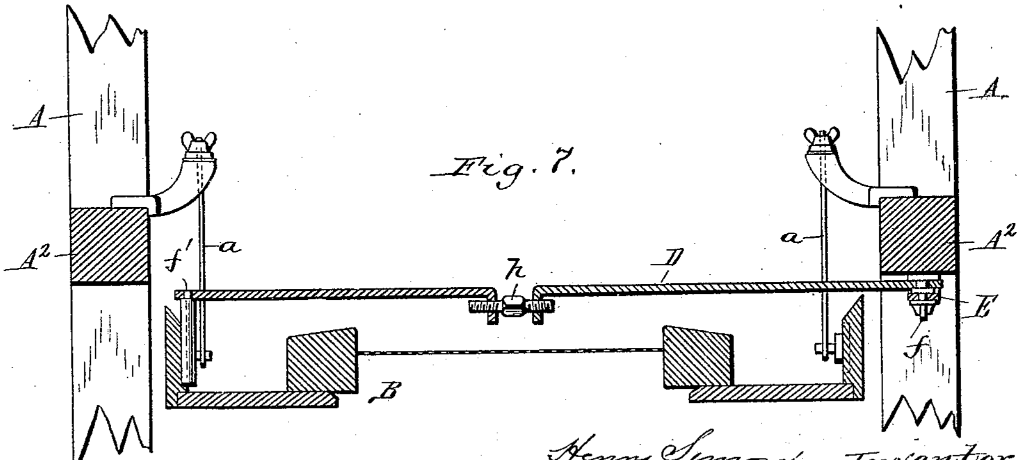


Fig. 7.



Henry Simon Inventor

Emil Neuhart
Theo. L. Popp. } Witnesses.

By Wilhelm Bonner, Attorneys.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

(No Model.) 4 Sheets—Sheet 4.

H. SIMON.

SHAKING SIEVE.

No. 495,190. Patented Apr. 11, 1893.

Fig. 8.

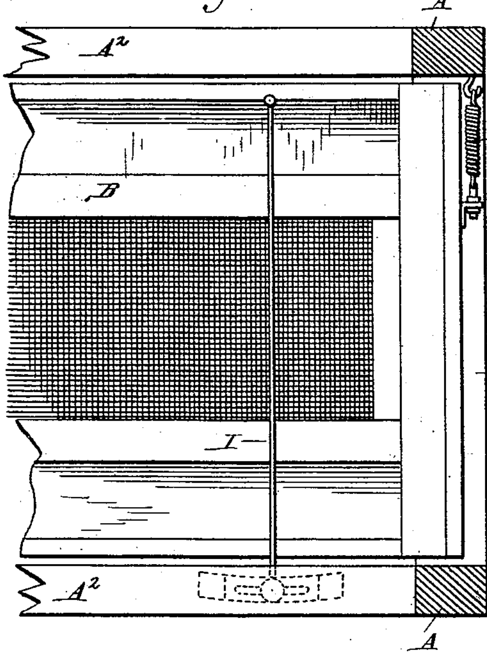


Fig. 9.

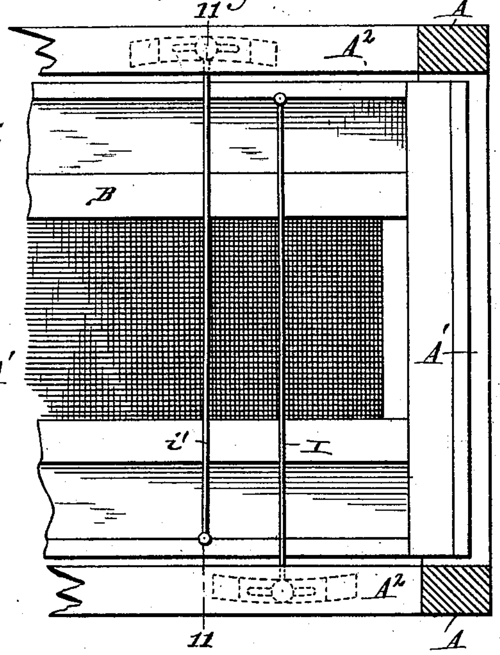


Fig. 10.

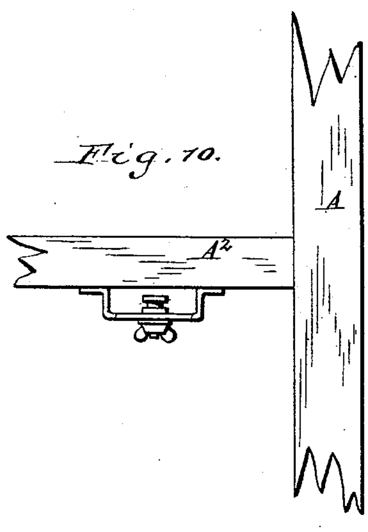
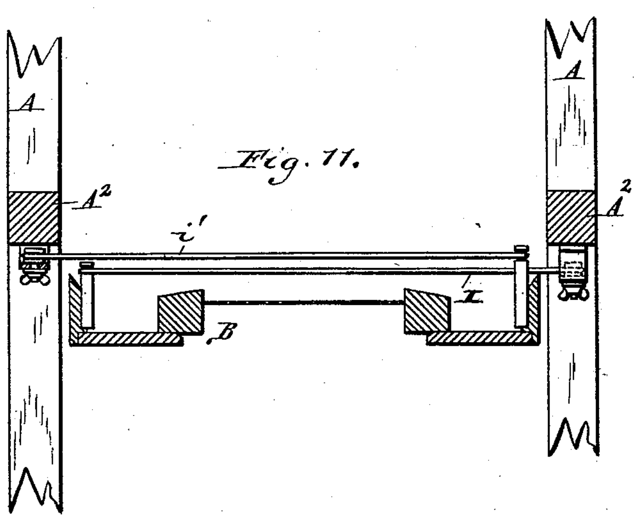


Fig. 11.



Witnesses:
Emil Neuhart
Theo. L. Popp.

Henry Simon Inventor.
By Wilhelm Bonner
Attorneys.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

HENRY SIMON, OF MANCHESTER, ENGLAND.

SHAKING-SIEVE.

SPECIFICATION forming part of Letters Patent No. 495,190, dated April 11, 1893.

Application filed October 18, 1892. Serial No. 449,209. (No model.)

To all whom it may concern:

Be it known that I, HENRY SIMON, a subject of the Queen of Great Britain, residing at Manchester, England, have invented new and useful Improvements in Shaking-Sieves, of which the following is a specification.

This invention has special reference to the shaking sieves of middlings purifiers and other machines in which an air current passes upwardly through the sieve, although it is also applicable to sieves with which no air current is employed.

In the purification of middlings and other grain products, it is of the utmost importance that the material operated upon should spread evenly over the sieve, because if the material runs to one side those parts of the sieve which are not covered by any material or by a layer of material of the proper thickness, permit the passage of too much air and do no work, or comparatively little work, while those parts on which the material accumulates in layers of undue thickness will not properly perform the work of separation.

The sieves of middlings purifiers and similar machines are of considerable length and owing to this fact, the impracticability of securing rigidity in their construction and supports, and unavoidable inaccuracy in fitting the actuating mechanism, and frequent changes which take place in these parts, it has been found extremely difficult if not impossible, to secure an even distribution of the material over the sieve and a uniform delivery of the tailings across the width of the sieve. In middlings purifiers in which the sieve is actuated by a crank and rod on each side it has been attempted to control the movement of the material on the sieve by adjusting the length of one or the other, but this adjustment is liable to be disturbed at any moment by the heating of one of the boxes, the loosening of one of the bearings and other accidental disturbances. In the purifiers in which the sieve is actuated by a crank and rod centrally arranged the difficulties arising from the unequal wear or heating of one set of actuating parts are avoided but other equally serious difficulties are encountered, and the difficulties which arise from the warping of the sieve frame and lack of rigidity and permanency are still present. Another cause of the uneven movement of the material over the sieve is found in some purifiers in the fact that the current of air enters the space below the sieve not quite uniformly, and the ascending current through the sieve being stronger on one side than the other causes an uneven flow of the material over the sieve. The material which passes over the tail of the purifier sieve is usually subjected to aspiration and it is therefore not only important that the material should be spread evenly over the sieve surface but also that it should be discharged evenly over the tail of the sieve.

The object of my invention is to produce means whereby an even flow of material over all parts of the sieve can be maintained at all times and the material can be effectually prevented from running to one side or the other in passing over the sieve. I attain this result by providing the sieve with an adjustable guiding contrivance whereby a variable or controllable lateral motion is imparted to the sieve in addition to its longitudinal shaking or oscillating motion, which lateral motion can be regulated so as to correct or neutralize the effect of the causes which produce an irregular movement of the material over the sieve.

In the accompanying drawings consisting of four sheets:—Figure 1 is a longitudinal sectional elevation of a shaking sieve provided with my improvements, the plane of section being taken in line 1—1, Fig. 2. Fig. 2 is a top plan view thereof, partly in section, showing part of the stationary frame broken away. Fig. 3 is a longitudinal sectional elevation, on an enlarged scale, of the slotted bracket to which the swinging link is pivoted, the plane of section being taken in line 3—3, Fig 2. Fig. 4 is a vertical transverse section in line 4—4, Fig. 2, on an enlarged scale. Fig. 5 is a fragmentary top plan view of the sieve, showing the slotted bracket attached to the sieve instead of the stationary frame. Fig. 6 is a fragmentary bottom plan view of the sieve, showing the bracket provided with a straight slot and the link adjustable as to its length. Fig. 7 is a vertical transverse section in line 7—7, Fig. 6. Fig. 8 is a fragmentary top plan view of the sieve showing a cord and spring substituted for the rigid link. Fig. 9 is a fragmentary top plan view of the sieve showing two cords substituted for the rigid link. Fig. 10 is an elevation of the bracket and connecting parts. Fig. 11 is a vertical transverse section in line 11—11, Fig. 9.

Like letters of reference refer to like parts in the several figures.

In Figs. 1, 2, 3, and 4, A represents the upright posts, A′ the cross pieces and A^2 the longitudinal pieces of the stationary frame of a middlings purifier or other machine.

B represents the sieve frame which is suspended in the stationary frame by hangers *a* or other suitable means, so as to be capable of a longitudinal reciprocating motion.

C represents the driving shaft, C′ the crank or eccentric mounted thereon, and C^2 the bifurcated rod connected with the sieve frame and imparting to the latter a longitudinal reciprocating motion. Any other suitable actuating mechanism may however be employed.

D represents a transverse link or radius bar pivoted with one of its ends to one side of the stationary frame and with its opposite end to the opposite side of the sieve frame. The link is arranged near the tail end of the sieve, since the latter usually requires no correction of its motion near its head upon which the material is fed in a uniform stream by a feed roller or other feed device.

The link D is arranged above the sieve, and the pivot bolt *d*, on which it oscillates, is attached to a bracket E secured to the under side of one of the longitudinal pieces A^2 of the stationary frame. This pivot bolt passes through a longitudinal slot *e* in the bracket so that the pivot can be adjusted back and forth on the bracket, as may be necessary to give the link the position in which it causes the material to flow evenly over the sieve. The pivot bolt is secured in its adjusted position by a thumb nut *f* on the under side of the bracket. The slot *e* in the bracket is preferably curved concentric with the attaching bolt *f′* at the opposite end of the link so that the pivot can be adjusted without drawing the sieve out of line. When the pivot is placed in the center of the slot, the link stands at right angles to the longitudinal line of the sieve and to the direction of its reciprocating movement and the tail portion of the sieve is caused by the link to move during its backward as well as its forward stroke, first to one side and then to the other, so that both of these movements neutralize each other and the material flows practically as if no link were employed. By moving the pivot forwardly from the central position, the link is placed at an angle to the longitudinal line of the sieve and the angle is such that the sieve moves during its return stroke to the right. The material is thereby directed to the left side of the sieve, as the latter, during its return stroke slips underneath the material and then moves it toward the left on the forward stroke. By shifting the pivot backwardly from the central position the link is placed at such an angle that the material will flow toward the right. The extremes of these angular positions of the link are indicated by the dotted lines in Fig. 2. The direction and extent of the lateral movement which the tail portion of the sieve and the material thereon receive by this adjustment of the link can be nicely and quickly regulated by means of the adjustable pivot, and this enables the operator to control the flow of the material over the sieve at all times. For instance, if the material runs to the left on the sieve, that tendency is easily neutralized by adjusting the link so that it produces an equal amount of movement toward the right.

If desired, the arrangement of the parts may be reversed, as shown in Fig. 5, in which construction the pivot *g* of the link is stationary and the connection of the link with the sieve frame is made adjustable by a slotted bracket G secured to the sieve frame.

The slot in the bracket may be made straight, as shown in Figs. 6 and 7, in which case the length of the link is preferably made adjustable by making the link in two parts connected by an adjusting screw *h* or by other suitable means.

Instead of a rigid link, a flexible cord or chain I may be employed, in which case the cord or chain is held taut by a spring *i* connecting the sieve frame with the stationary frame, as represented in Fig. 8. Or, the spring of the last named construction may be replaced by another cord or chain *i′*, each cord or chain connecting one side of the sieve frame with a slotted bracket on the opposite side of the stationary frame, as represented in Figs. 9, and 11.

My improved device for controlling the flow of the material over the sieve does not interfere with the actuating mechanism by which the longitudinal reciprocating motion is produced but permits of a free and lively motion in this direction which is very essential, in most cases, for the proper performance of the work of separation.

I claim as my invention—

1. The combination with the sieve, the stationary frame, and actuating mechanism whereby a longitudinal reciprocating motion is imparted to the sieve, of an adjustable lateral connection between the longitudinally vibrating sieve and the stationary frame whereby a lateral motion in either direction and of greater or less extent can be imparted to the sieve, substantially as set forth.

2. The combination with the sieve, the stationary frame, and mechanism whereby a longitudinal reciprocating motion is imparted to the sieve, of an adjustable pivoted link connecting the sieve laterally with the stationary frame, substantially as set forth.

3. The combination with the sieve the stationary frame, and mechanism whereby a longitudinal reciprocating motion is imparted to the sieve, of a lateral oscillating connection,

and a slotted bracket by which the angle of said connection can be adjusted, substantially as set forth.

4. The combination with the sieve, the stationary frame, and mechanism whereby a longitudinal reciprocating motion is imparted to the sieve, of a bracket secured to the stationary frame, and a lateral connection attached to the sieve and made adjustable on said bracket lengthwise of the sieve, substantially as set forth.

Witness my hand this 16th day of September, 1892.

HENRY SIMON.

Witnesses:
JOSEPH INGLEBY,
JOHN RIDGWAY RADFORD.