(No Model.) 2 Sheets—Sheet 1.

W. ALLEN.

STARCH SEPARATOR.

No. 275,320. Patented Apr. 3, 1883.

Fig. 1.

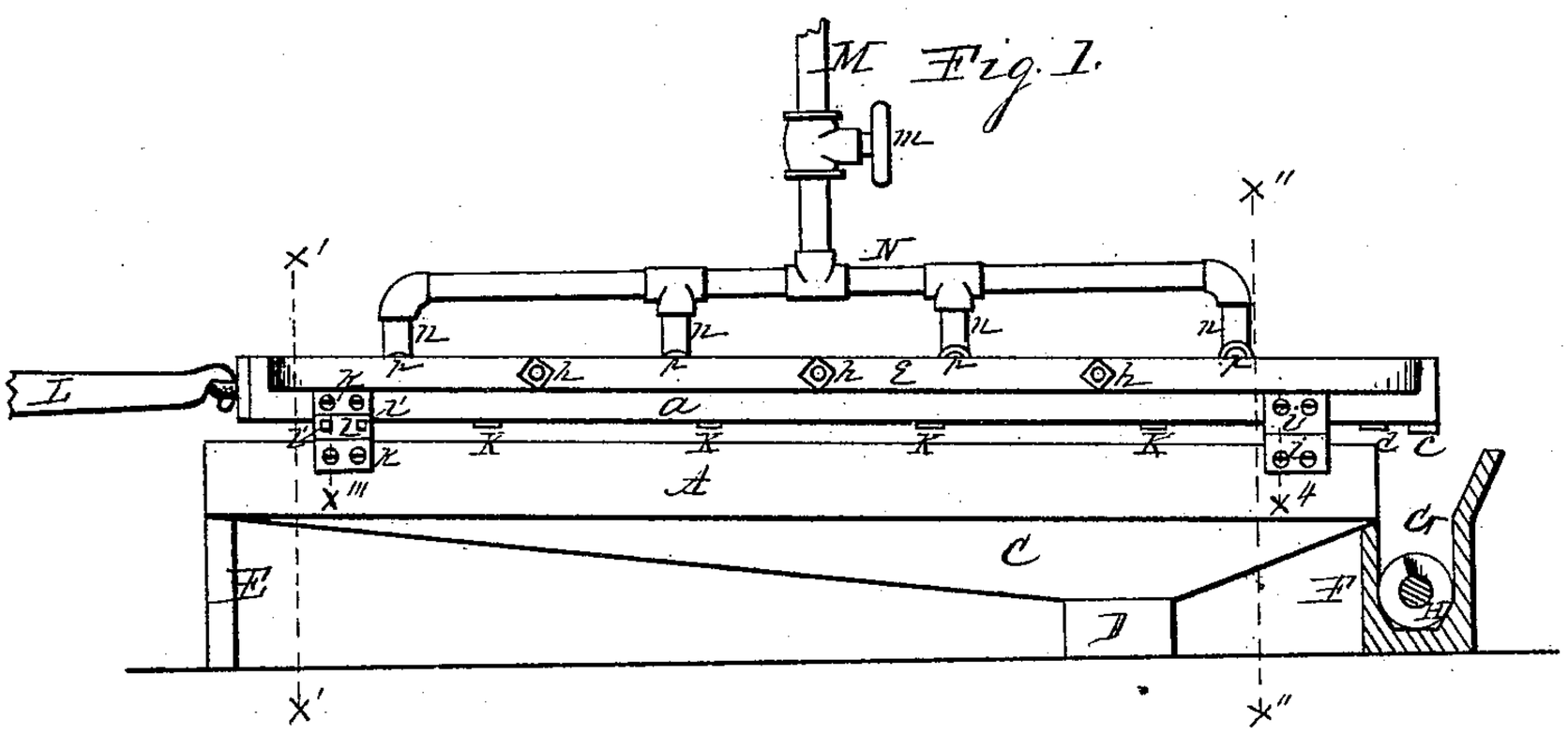


Fig. 2.

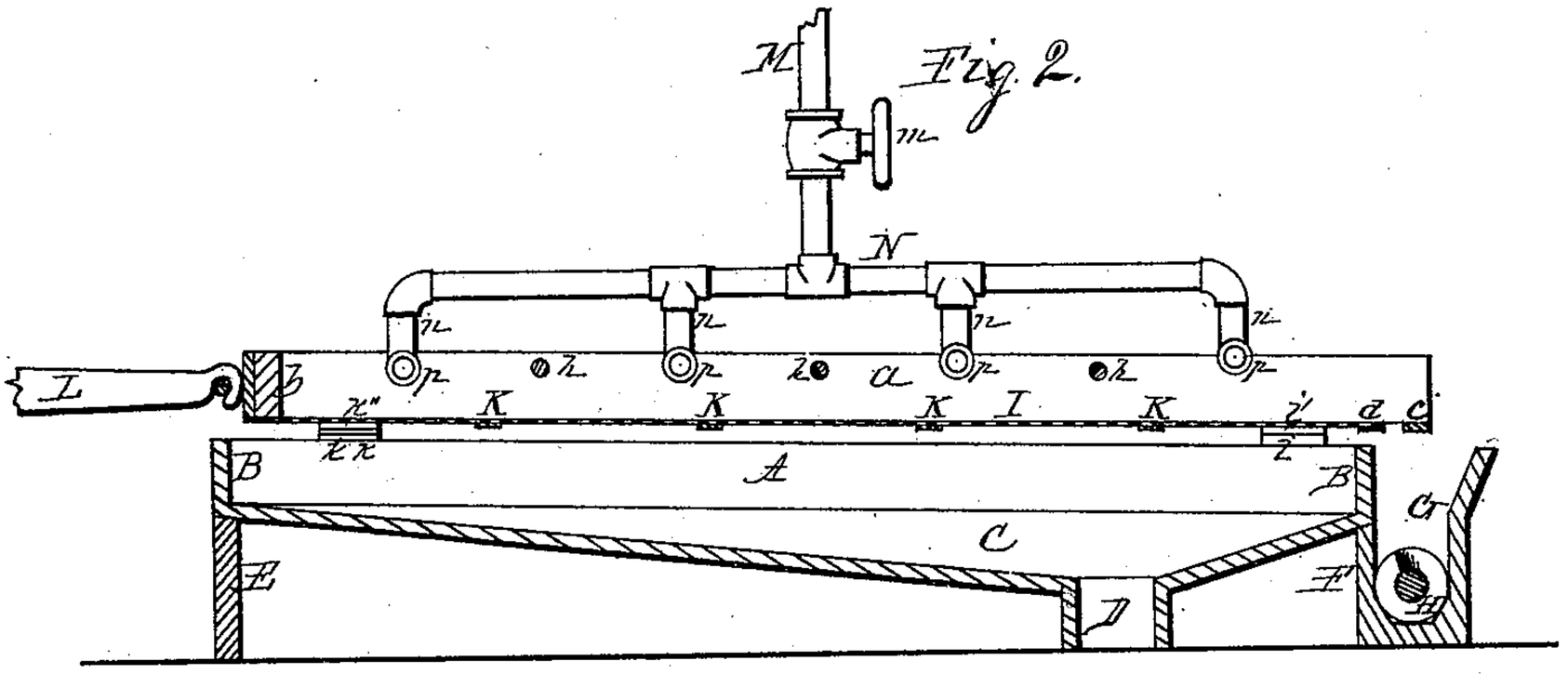


Fig. 7.

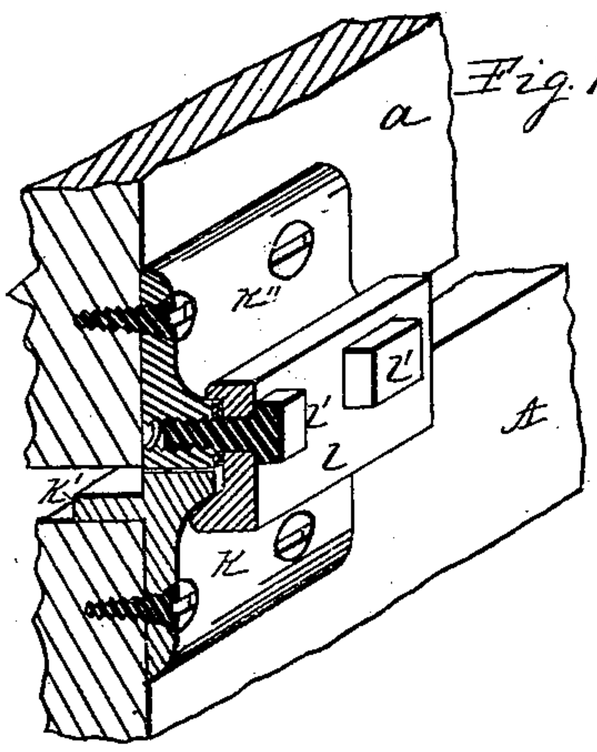
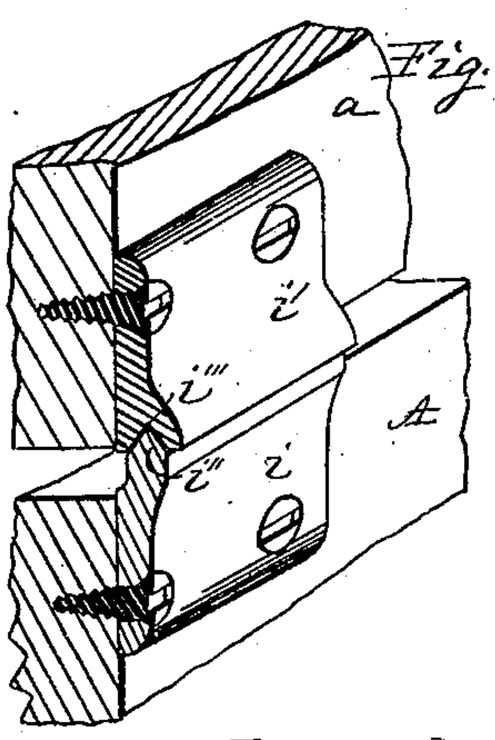


Fig. 8.



Witnesses,
Emma Behel
A. O. Behel

Inventor.
William Allen.
Per Jacob Behel.
Atty.

(No Model.) 2 Sheets—Sheet 2.

W. ALLEN.

STARCH SEPARATOR.

No. 275,320. Patented Apr. 3, 1883.

Fig. 3.

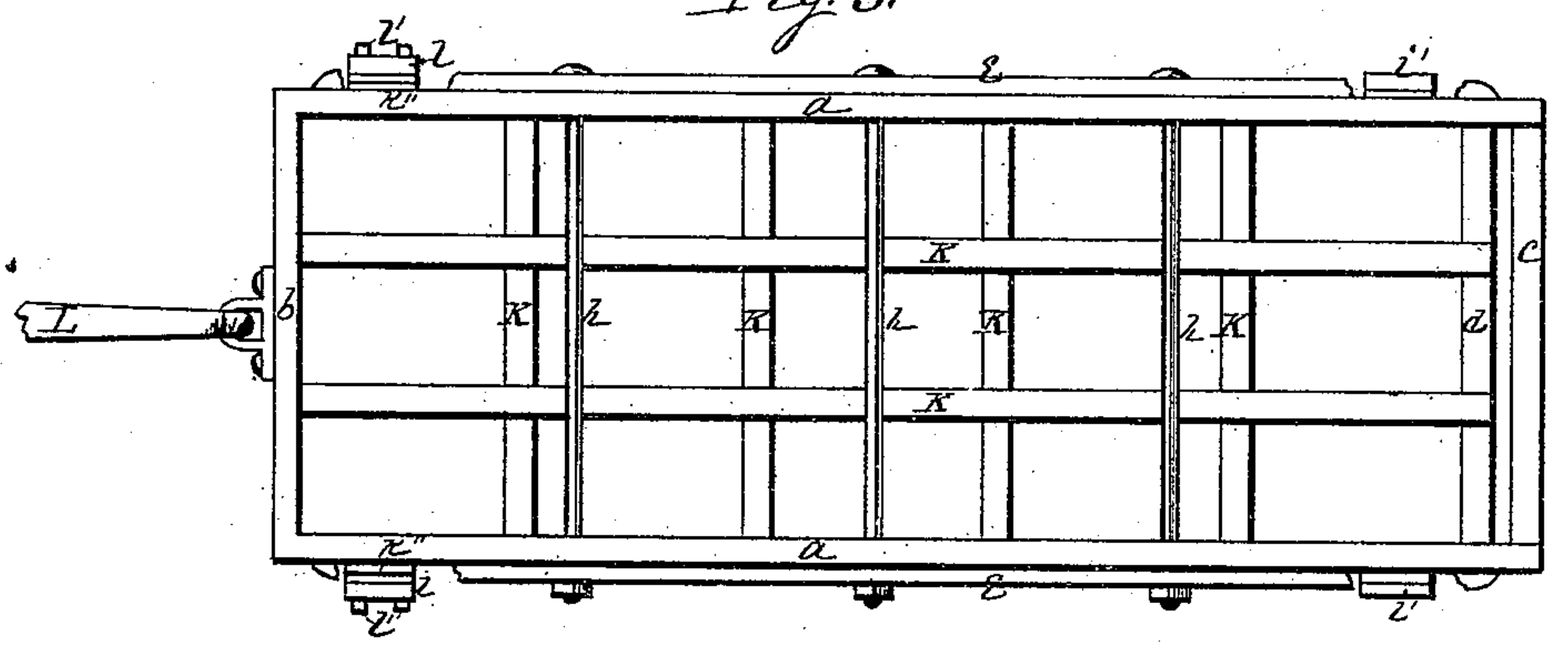


Fig. 4.

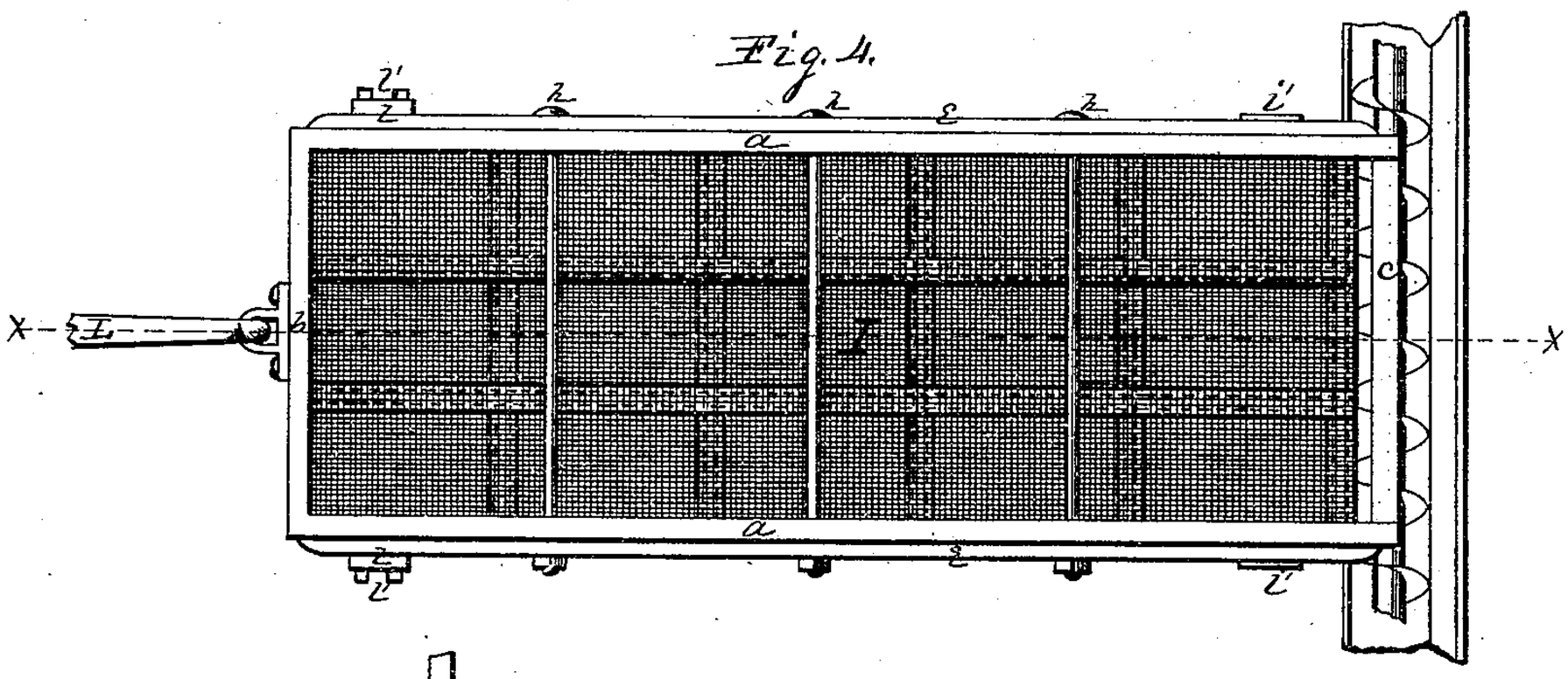


Fig. 5.

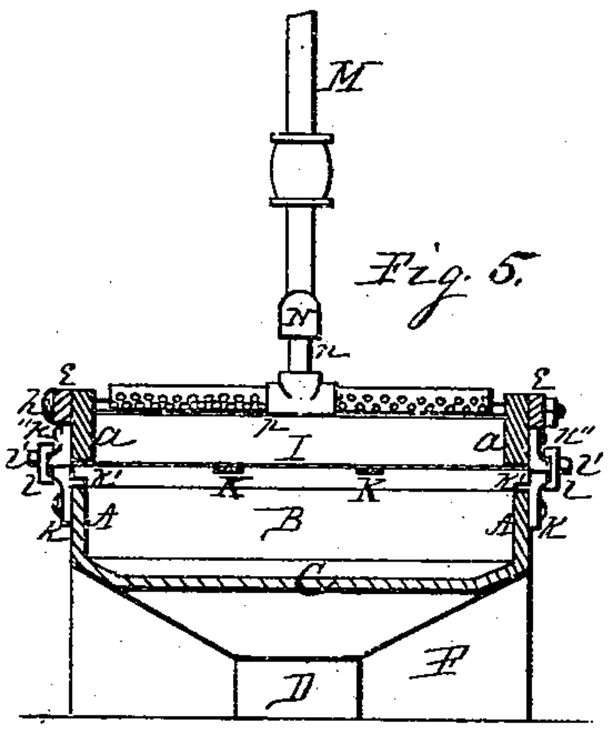
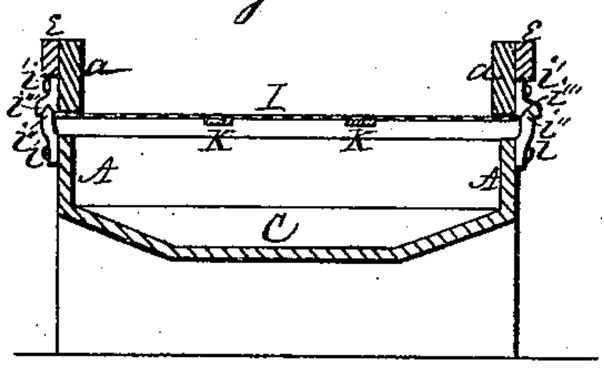


Fig. 6.



Witnesses.
Emma Behel.
A. O. Behel.

Inventor.
William Allen.
Per Jacob Behel
Atty.

UNITED STATES PATENT OFFICE.

WILLIAM ALLEN, OF ROCKFORD, ILLINOIS, ASSIGNOR OF ONE-HALF TO ANDREW M. JOHNSTON, OF SAME PLACE.

STARCH-SEPARATOR.

SPECIFICATION forming part of Letters Patent No. 275,320, dated April 3, 1883.

Application filed June 29, 1882. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM ALLEN, a citizen of the United States, residing in the city of Rockford, in the county of Winnebago and State of Illinois, have invented new and useful Improvements in Starch-Separators, of which the following is a specification.

This invention relates to separators employed in the manufacture of starch, glucose, and grape-sugar to separate the starch from the bran or other refuse.

The object of my invention is to construct a sieve in which the bolting-cloth or equivalent fabric employed as the sieve material will be suitably supported to relieve it from undue strain, and in such a manner that when worn portions of the sieve-cloth may be readily removed and new portions inserted. These and other improvements, to be hereinafter described, constitute the subject-matter of this specification.

In the accompanying drawings, which illustrate my invention, Figure 1 is a side elevation. Fig. 2 is a lengthwise central vertical section on dotted line *x*. Fig. 3 is a plan view of the sieve-frame. Fig. 4 is a plan view of the sieve. Fig. 5 is a transverse vertical section on dotted line *x'*. Fig. 6 is a transverse vertical section on dotted line *x''*. Fig. 7 is a fragmental transverse vertical section of the sieve-guides and of the bars to which the guides are attached at the tail end of the sieve, cut on dotted line *x'''*. Fig. 8 is a fragmental transverse vertical section of the sieve-guides and of the bars to which the guides are attached at the head end of the sieve, cut on dotted line x^4.

In the figures in the accompanying drawings, A represents the sides, and B the ends, of a receptacle, rectangular in form, provided with a hopper-formed bottom, C, terminating in an outlet-discharge pipe, D. This receptacle is supported in a slightly-inclined position in the direction of its length on end supports, E, at its head end, and F at its tail end.

G represents a conveyer-trough at the tail end of the receptacle. This conveyer-trough is provided with a conveyer, H, placed therein lengthwise. These parts are substantially the same as like parts heretofore used for the purposes for which this receptacle and conveyer are designed.

At *a* is represented the sides, and at *b* the head end, of a sieve-frame. This end piece, *b*, has its ends suitably joined to the end of the side pieces, *a*, at right angles thereto, producing three sides of a rectangular frame. The sides of this frame are joined at their open end by means of a transverse bar, *c*, having its ends securely fixed to the under edge of their open ends. At *d* is represented a transverse bar fixed to the under edge of the side bars a suitable distance inside of the transverse end bar, *c*.

At I is represented a suitable sieve-fabric, in this instance of bolting-cloth, cut to proper size to span the sieve-frame in its length and breadth.

At K are represented bars or strips of webbing, of a suitable width, of a strong fabric, placed lengthwise and crosswise of the bolting-cloth on its under side at proper intervals. These bars or strips of webbing are joined to the bolting-cloth by suitable lines of stitching, preferably near the edges of the webbing, as represented in Fig. 4. This bolting-cloth, with its strips of webbing suitably stitched thereto, is stretched on the under side of the sieve-frame, having its side and head-end edges tacked or otherwise fixed to the under edges of the sieve-frame, and its tail end fixed in like manner to the upper surface of the inner cross end bar, *d*. By the employment of the webbing cross-bars in the construction of sieves I produce a sieve of greater strength, and support the sieve-fabric in such a manner as to relieve it from the severe strain to which it would be exposed if unsupported, and by this construction I am enabled to repair the sieve, when worn, by removing the worn section from the fabric and inserting other portions in their stead.

At *e* are represented re-enforce bars, of suitable dimensions, placed on the outer side of the side bars, *a*, of the sieve, to which they are securely fixed in any suitable manner.

At *h* are represented screw-bolt rods, passed transversely through the re-enforce bars and through the sides of the sieve-frame, which serve to support the parts in their relative position.

At *i* and *i'* are represented the two parts of a metallic slide, employed to support the tail end of the sieve a suitable distance above the receptacle in such a manner as to permit a reciprocating endwise movement of the sieve.

The under portion, *i*, of this slide is fixed to the outside upper edge portion of the receptacle, near its tail-end portion. This slide rises a suitable distance above the receptacle, and its upper edge is produced in rising V form, as represented at *i''*. The upper portion, *i'*, of the slide has its under edge provided with a V-formed groove, as at *i'''*, fitted to receive the V-formed edge of the under portion of the slide. This upper portion of the slide is fixed to the side of the tail-end portion of the sieve in position to engage the lower portion, *i*, of the slide. The head-end portion of the sieve is supported in position above the receptacle by means of adjustable guideways, the lower portion of which is represented at *k*, fixed to the outside upper edge of the head-end portion of the receptacle. This portion of the guideway rises a suitable distance above the receptacle, and its upper portion is of shelf form, projecting outward, having its upper face produced in a horizontal plane, and its under face of outward-curving bracket form. This portion of the support is also provided with a flange, *k'*, projecting at right angles from its inner face in position to rest on the upper face-edge of the receptacle.

At *k''* is represented the upper portion of the slide-support, which is fixed in position on the outer vertical face of the head-end portion of the sieve-frame in position to engage the upper face of the lower portion, *k*, of the slide. The lower edge of this upper portion, *k''*, of the slide is of substantially the same outline form as the upper edge of the lower portion, *k*, of the slide.

At *l* is represented a clasp, having its inner face grooved to embrace the outer edges of the slides *k* and *k''* in such a manner as to permit a free endwise movement of the sieve upon its slide supports. This clasp is adjustably fixed to the upper portion, *k''*, of the slide by means of clamping screw-bolts *l'*, passed through the clasp and screw-threaded into the upper portion of the slide. This clasp is constructed to receive a suitable packing between its inner face and the outer face of the slide, to which it is fixed by means of the clamping-screws. By means of this packing, in connection with the clamping-screws, the clasp may be readily adjusted to take up any slackness produced by wearing or otherwise, and clamp the parts in a proper manner to hold the sieve in position and permit a free endwise movement of the sieve.

At L is represented a portion of a pitman, having a suitable hinge-connection with the head end of the sieve. This pitman is designed to have a suitable crank or eccentric connection to impart a reciprocating or shifting endwise movement to the sieve.

At M is represented a water-induction pipe, having a suitable connection with the water-supply. This induction-pipe is provided with a stop-cock, *m*, by means of which the flow of water through the pipe may be regulated.

At N is represented a horizontal pipe, extending lengthwise centrally over the sieve, having its central portion suitably joined to the induction-pipe.

At *n* are represented pendent pipes, having a suitable connection with the horizontal pipe N at substantially equal intervals. These pendent pipes connect centrally with transverse pipes or troughs *p*, which extend laterally over the sieve, suitably supported in position. These transverse pipes *p* are suitably perforated to distribute the water over the sieve in a proper manner. The several pendent pipes *p*, if desired, may each be provided with a suitable stop-cock for the purpose of better regulating the distribution of the flow of water over the sieve.

In use, the material to be separated is introduced into the head end of the sieve, preferably in a sheet about the full width of the sieve, and by means of the stop-cocks a suitable quantity of water is distributed over the sieve through the perforated transverse tubes, and by reason of the reciprocating or endwise shivering movement of the sieve the starch will be separated and washed through the sieve into the receptacle, to be conducted through the discharge-outlet to a suitable receptacle prepared to receive it, and the bran and other refuse will be carried over the open end of the sieve and discharged into the conveyer-trough to be delivered by the conveyer into a suitable receptacle to be disposed of in any proper manner.

I do not claim, broadly, the use of a fabric for supporting the sieve fabric; but

What I claim as my invention is—

1. The combination, with the separating-sieve fabric of a starch-separator, of webbing-supports, said webbing-supports suitably joined to the sieve fabric, substantially as and for the purpose set forth.

2. The combination, with a sieve-frame, of a sieve fabric having webbing-supports suitably joined thereto, said sieve fabric and its webbing-supports joined to the sieve-frame, substantially in the manner and for the purpose set forth.

3. The combination, with the herein-described sieve-frame, of the re-enforce bars *e* and transverse rod-bolts, substantially as and for the purpose set forth.

4. The combination, with a receptacle and with a sieve-supporting frame, of an adjustable guide-support, consisting essentially of an upper and lower guide and an adjustable clasp, substantially as and for the purpose set forth.

5. The combination, with a receptacle and with a sieve-supporting frame provided with an adjustable guide-support at or near the head end of the sieve, of a two-part tail-support, having V-formed bearing-surfaces, substantially as and for the purpose set forth.

WILLIAM ALLEN.

Witnesses:
FRANK H. KIMBALL,
A. O. BEHEL.