J. FORREST.

BOLTER.

APPLICATION FILED JAN. 2, 1906.

965,447.

Patented July 26, 1910.

2 SHEETS—SHEET 1.

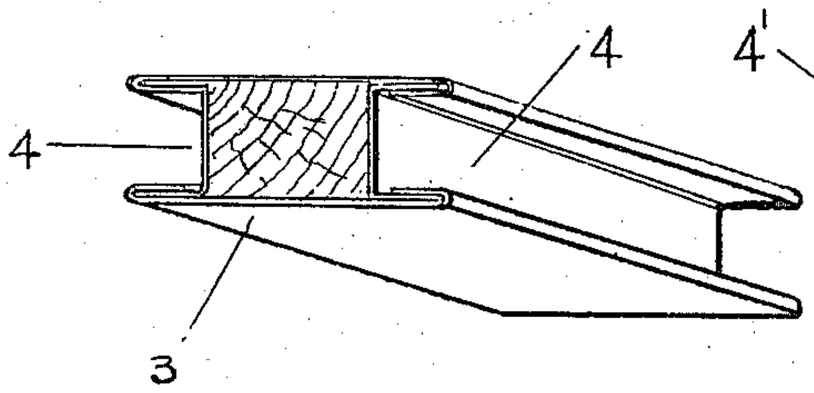

FIG. 2

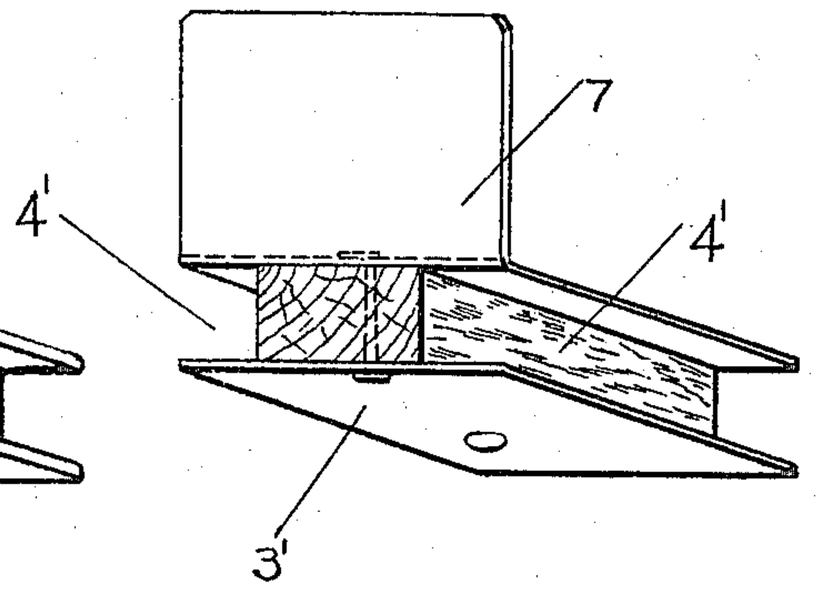

FIG. 3

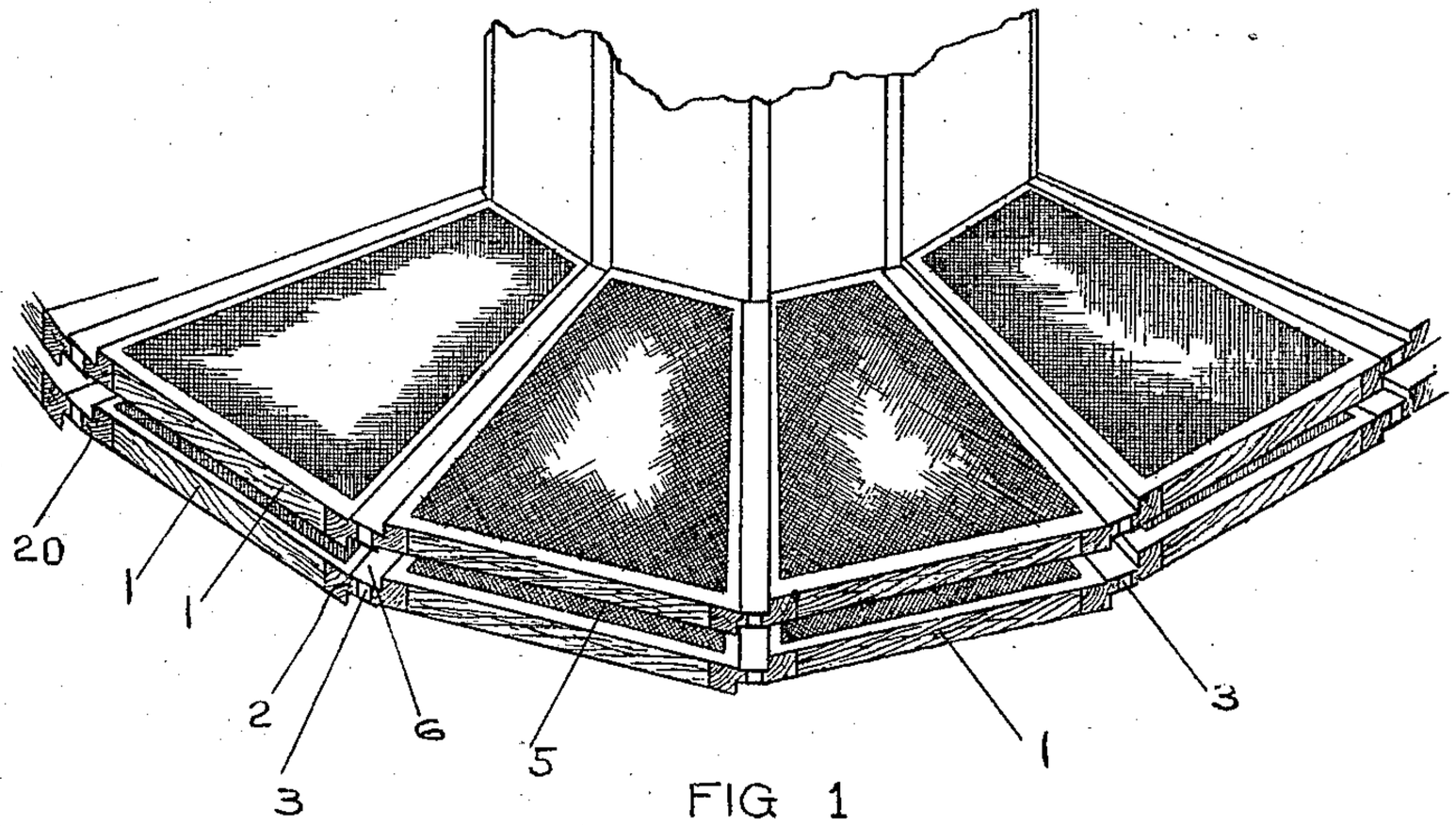

FIG 1

WITNESSES:

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Geo E Kirk

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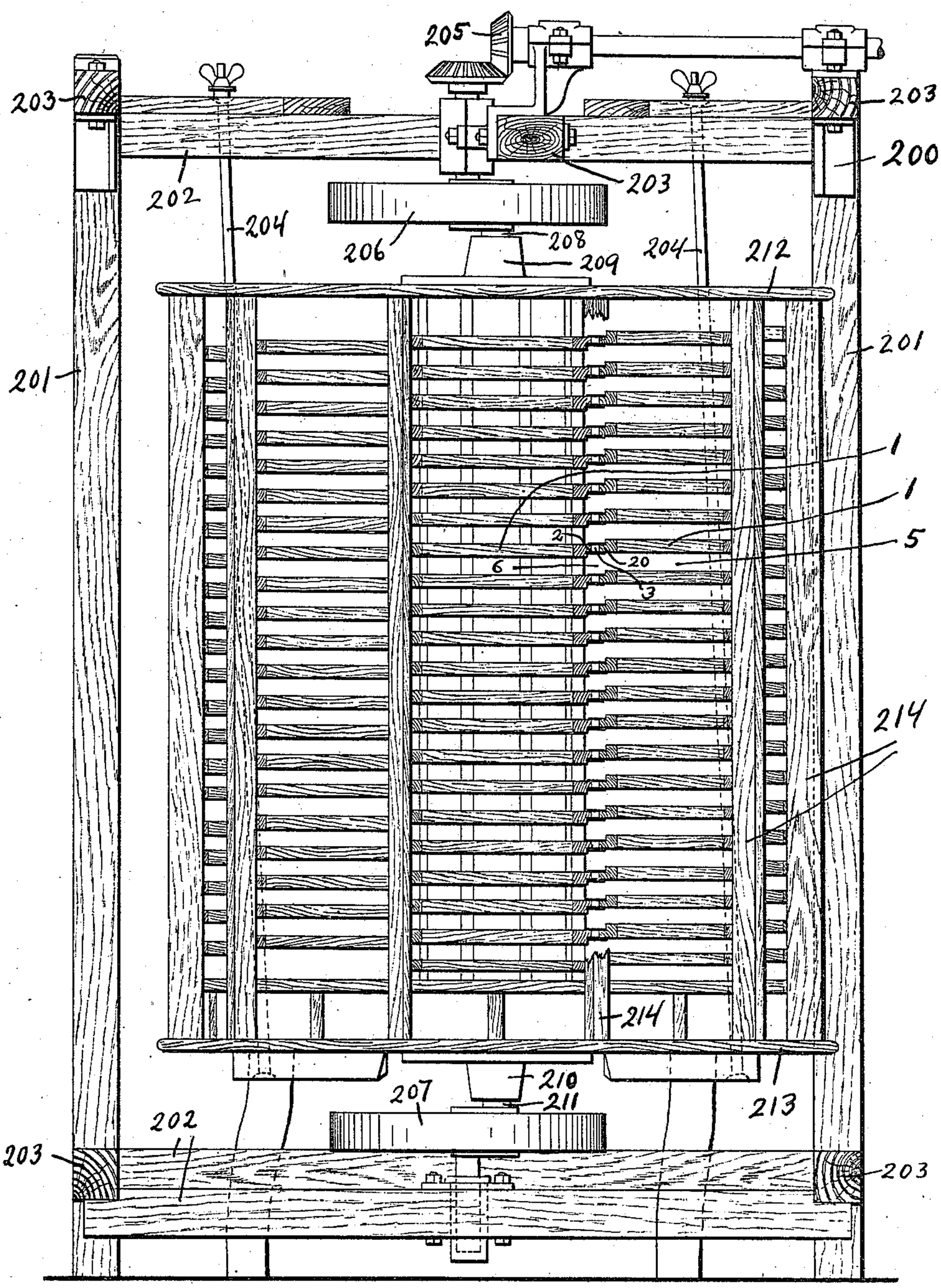

Fig. 4.

WITNESSES:
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UNITED STATES PATENT OFFICE.

JAMES FORREST, OF MILWAUKEE, WISCONSIN, ASSIGNOR TO ALLIS-CHALMERS COMPANY, OF MILWAUKEE, WISCONSIN, A CORPORATION OF NEW JERSEY.

BOLTER.

965,447. Specification of Letters Patent. **Patented July 26, 1910.**

Application filed January 2, 1906. Serial No. 294,296.

To all whom it may concern:

Be it known that I, JAMES FORREST, a citizen of the United States, residing at Milwaukee, in the county of Milwaukee and State of Wisconsin, have invented certain new and useful Improvements in Bolters, of which the following is a specification.

This invention relates to improvements in the construction of supports for sieves or similar material supporting members.

The invention has utility in bolters and when applied thereto considerably increases the capacity thereof owing to the fact that unimpeded progress of the material is permitted along the passage ways between the material supporting members.

In order to avoid confusion throughout this specification, the material supporting members will be designated merely as "sieves" but it is not intended to limit the invention to sieve supporting members only.

In bolters as heretofore constructed it has been customary either to arrange the separate sieves so that they present a smooth and practically unimpeded surface upon which the material is shaken, or they have been constructed with a broken surface, the following sieves in a series being disposed below the preceding sieves, both of which constructions are well known in the art and can be applied to the specific type of bolter illustrated by the drawings accompanying this specification.

This invention relates to that construction of the sieve surface in which the sieve members do not present a smooth and uniform surface to the material being treated, but in which the sieves are arranged somewhat after the fashion of a flight of steps; and the purpose of the invention is to so construct the sieve frames and supports that the sieve frames may be placed very close together vertically while no impediment shall be offered to the free passage of the material from one sieve to the other, this result being accomplished by the specific construction shown by so propositioning the supports and the adjacent edges of the sieve frame that pockets are formed at the junctions of the sieve frames, these pockets being of greater cross-sectional area than the cross-sectional area existing between the sieve frames; or, expressed in other words, the construction is such that the cross-sectional area which exists between the sieve frames is not reduced in the passage way leading from one sieve to the next adjacent sieve.

A clear conception of the invention can be obtained by referring to the accompanying drawings in which like reference characters designate the same or similar parts in like or different views.

Figure 1 shows a fragment of a bolter with an embodiment of the support disclosed therein. Fig. 2 shows a perspective view of one of the supports. Fig. 3 shows a perspective view of another form of support. Fig. 4 discloses an elevation of a bolter embodying the invention, the cover of the bolter being omitted.

Referring to the drawings, the numeral 200 designates as a whole, a frame-work which may be constructed of uprights 201, and cross-pieces 202, 203. The bolter is hung by rods 204 from upper cross members, which rods are so supported that the bolter may swing around bodily in a circle without being revolved about its own axis. The revolution is accomplished by a bevel gear 205, by means of which the wheel 206 is rotated, said wheel being provided with an eccentrically disposed pin 208 which engages with a box 209 secured to the bolter, and preferably to the center thereof. Axially opposite this box 209 and secured to the lower end of the bolter, is a box 210 with which engages a pin 211, which is eccentrically secured to the wheel 207, the eccentricity being equal to the eccentricity of the pin 208 relative to the wheel 206.

The numeral 212 designates the top of the bolter and the numeral 213 designates the bottom thereof. The numeral 214 designates uprights, secured to the top 212 and bottom 213 of the bolter, to which the supports or ways 3 are secured, the space between the upright members 214 being sufficient to allow the insertion or withdrawal of the sieves 1.

The above described construction is essen-

tially the same as that shown and described in the patent to Gray, No. 559,374, dated May 5, 1896, and therefore does not require an extended description, especially since the apparatus in its general form is in extensive public use.

Each sieve 1 has at its upper plane, with upper surface lying in said plane, a projecting upper tongue 2, and at its lower plane with lower surface lying in said plane, a projecting lower tongue 20. The lower surface of the upper tongue 2 and the upper surface of the lower tongue 20 lie in intermediate planes or the same intermediate plane of the sieve from which they project. The tongues are supported by the intermediate supports or ways 3, which have grooves 4, the walls of which engage the tongues 2, 20. When so supported the sieves 1 have one side of one sieve extended for some distance as a continuation of the corresponding side of the adjacent sieve; that is, for example, the upper side of one sieve is extended across the supporting way 3 as a continuation of the corresponding side of the adjacent sieve where it forms the upper side of the tongue of that adjacent sieve. The sieves 1 when assembled are arranged helically in stepped relation to each other, that is to say, a series or run of sieves form a helical surface about the central axis of the bolter. Between the run of sieves 1 is the passage 5, which passage is of minimum width between said sieves; that is, the portion 6 of the passage lying between the supports or ways 3 is larger, being the maximum width of the passage. The material passing over the sieves 1 is delivered on the step or support 3.

The support 3 is of such a form that it permits the material passing over the sieve 1 to be unimpeded at the steps, and as a result the passages at the steps are unrestricted, being enlarged at these points. Essentially then, the support is so constructed as not to reduce the cross-section of the passages 5, 6. Efficient means to bring about this result and thereby increase the capacity of the bolter as much as 25 per cent., are the supports or ways 3 which are of less thickness than the sieve frames and have their upper surfaces lying in the plane of the upper surfaces of the adjacent lower sieve frames and lying below the upper surfaces and in the planes of the intermediate surfaces of the adjacent upper sieve frames. The supports have their lower surfaces lying above the lower surfaces and in the plane of the intermediate surfaces of the adjacent lower sieve frames and lying in the plane of the lower surfaces of the adjacent upper sieve frames. Such a support is shown herewith having a body, as of wood, and a pair of lateral members, as metal, extending beyond the body, thereby forming a pair of grooves. These grooves as shown in Fig. 2, are metal lined. In Fig. 3 the sieve support or way 3′ is shown with a body portion having two lateral members which form the grooves 4′. One of these lateral members is upset at its end 7, thus forming a convenient means for attachment.

The operation of the apparatus is as follows: The material being fed to the bolter through flexible spouts, not shown, and the wheel 206 being rotated, a point on the bolter describes a circular path in approximately the same horizontal plane, which results in the material upon the sieves being moved or shaken in the usual way, and as the material advances along the sieves during the bolting operation, in passing from one sieve to the next adjacent sieve in its line of travel, with the specific construction disclosed, no impediment is encountered, such as for instance, the annoyance of clogging the machine thereby necessitating the stopping of the machine and removal of accumulated material.

On account of the specific construction described, the sieves 1 can be placed nearer together, thus permitting the placing of more sieves 1 in the same sized machine than with constructions heretofore used, the result being an increased efficiency of the bolter, which increase is proportional to the additional sieve surface introduced. As the sieves 1 in the type of machine to which this invention relates, when made up or fully constructed, are generally spoken of as "sieves", meaning thereby both the sieve member proper and its support, the descriptive terms "sieve" and "sieve frame" are used as synonyms throughout the specification.

It should be understood that it is not desired to be limited to the exact details of construction shown and described, for obvious modifications will occur to a person skilled in the art.

It is claimed and desired to secure by Letters Patent,—

1. The combination in a bolter, of a plurality of material supporting members arranged in runs one of which is located above the other, adjacent material supporting members of each run being disposed at different levels, and supports located between adjacent material supporting members and supporting same, said supports of the several runs being one above the other and in substantially vertical alinement and being of less thickness than the material supporting members.

2. The combination in a bolter, of a plurality of material supporting members arranged in runs one of which is located above the other, adjacent material supporting

members of each run being disposed at different levels, the material supporting members each having a tongue projecting from one side substantially at its upper face and a second tongue projecting from the opposite side at substantially its lower face, and supports provided with grooves adapted to receive said tongues, said supports being substantially of the same thickness as said tongues.

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

JAMES FORREST.

Witnesses:

JOHN DAY, Jr.,

GEO. E. KIRK.