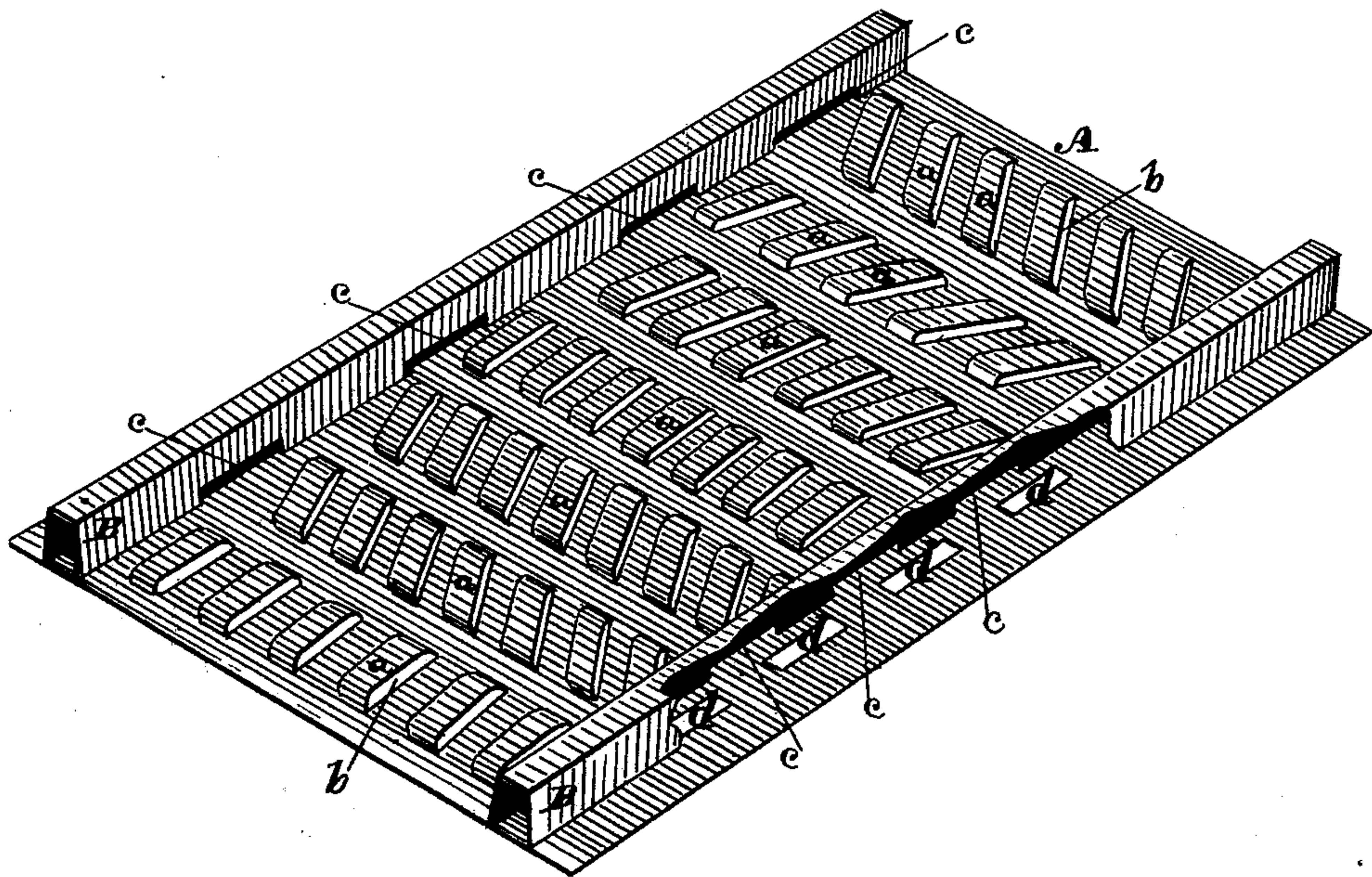


B. F. PETTIT.
Grain and Seed Separating Screens.

No. 229,632.

Patented July 6, 1880.



WITNESSES

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UNITED STATES PATENT OFFICE.

BENJAMIN F. PETTIT, OF SAN LUIS OBISPO, CALIFORNIA.

GRAIN AND SEED SEPARATING SCREEN.

SPECIFICATION forming part of Letters Patent No. 229,632, dated July 6, 1880.

Application filed September 17, 1879.

To all whom it may concern:

Be it known that I, BENJAMIN F. PETTIT, of the town and county of San Luis Obispo, and State of California, have invented a Grain and Seed Separating Screen; and I hereby declare the following to be a full, clear, and exact description thereof.

My invention relates to certain improvements in screens or sieves for separating grains and cleaning grain of cheat and other worthless seeds and foreign substances.

It consists in the construction of the metallic plate of which the sieve is made with slots which are cut and raised to such a height and width as to permit the passage through of seeds, grains, and other matter it is intended to save, those of larger size not passing through, but being directed off at the end.

The peculiar construction of the sieve is such that the separation depends on differences of size or shape, and not on specific gravity of the grains or seeds, and different-sized slots may be used for different grains, as is more fully described hereinafter, reference being had to the accompanying drawing, in which the figure shown is a perspective view of my screen.

In the ordinary sieves or screens in use in thrashing-machines the slots or spaces are so formed that the seeds of certain sizes fall through, while others pass over the orifices and are discharged separately. These orifices are all made in a plane surface, and the surface is then inclined and the sieves shaken from side to side, or longitudinally, or both. By this system it is extremely difficult to make a close separation, since the meshes become clogged. The seeds or grains in passing down the screens on their flat sides drop through vertically, and the mesh must be large enough to admit the passage of the grain at its broadest part, so that material of equal or smaller size also passes through. It is, moreover, necessary to have a series of these screens in order to clean the grain even passably well, the material falling from one to the other.

In forming my screen or sieve the plate A, of which it is made, is constructed of a sheet of metal. In this, at suitable distances apart and in rows, I swage or punch up the raised caps or covers *a*, as shown. When these are

formed thus, on each side of each one will be a slot or mesh, *b*, as shown, the cap or cover forming the upper part of said slots, and being above the general plane of the screen-plate. The covers and slots are arranged in rows, which may be parallel with the sides or set at varying angles, as desired. I prefer to make the rows in varying angles, for the purpose hereinafter described. The length and width of the slots and height of the caps or covers will vary in different screens which are to be used in separating different varieties of grains or seeds. The slots are all punched in the single plate, which may have supporting-ribs, if desired.

In working, the screen is set at any desired angle of inclination necessary for the proper separation and cleaning of the grain, this inclination being adjustable in any convenient manner. A lateral motion is given to the screen by any suitable mechanism.

As the material passes on its way down the screen, to which the side motion is imparted, the grains and seeds are agitated, and those of proper size pass through the slots or meshes and drop down. Those which are too large cannot pass through, but slide along down and are discharged at the lower end.

On each side of the screen-plate is a hollow flange, B, having slots *c* on the inner side, of the same size as those in the plate. Inside the hollow flange, on the bottom, are larger slots *d*, through which the material coming through the slots *c* may drop.

It will be seen that the action of this screen is different from those in which holes are punched in a flat plate, or those made of wire-gauze. There is for each slot a guard or cover consisting of the cap *a*, against which the seed or grain will strike and be directed into the slot. All the grains or seeds must pass through these side openings or slots to the caps before being able to fall vertically. The screen will clear itself quickly, since the material is directed down between the series or rows of slots and caps, and where a seed passes by one and the next is at a different angle it may fall through there. The separation depends more on the form than on any difference in specific gravity. In separating flaxseed and cheat,

for instance—a heretofore difficult operation—the flaxseed lies on its side, and the slots are made of suitable width to let it pass through when lying sidewise but not on edge. The cheat, being larger, cannot pass through the side slots, but is directed off over the screen. If simple holes or meshes were made, this separation would not be so perfect, inasmuch as the cheat and flaxseed are of the same size one way, and the flaxseed would not turn up edgewise in passing down, so as to drop through vertically.

In separating wheat from barley the wheat will pass through and the barley remain on top. In separating wheat and cheat the sieve is set at a considerable angle, so that the grain going down will shake at the angle edge of the caps or covers and follow a zigzag course, in which way it will have to go a greater distance over the same surface of screen than would be possible in a wire or punched screen where it passes straight along.

The discharge of this screen is, it will be seen, a side and not a bottom discharge, this side-discharge principle being maintained the whole length of the screen. The grain cannot pack on the sides of the screen, since there are slots there also which allow the grain of proper size to pass into the hollow flange, and thence to be discharged downward onto the next screen. The lateral motion assists this side discharge, being directly in unison with it, so these seeds are not tumbled about indiscriminately, searching for a place to discharge themselves.

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

1. The grain or seed separating or cleaning screen consisting of the metal plate A, having caps or covers *a* swaged upward over the side openings or slots, *b*, substantially as and for the purpose herein described.

2. The grain or seed separating or cleaning screen consisting of the metal plate A, having caps or covers *a* swaged upward to form the side openings or slots, *b*, these caps and slots being formed in said plate in rows or series of varying angles, substantially as and for the purpose herein described.

3. In a grain or seed separating screen, the elevated caps or covers *a* formed above the slots or holes *b*, opening from the sides above the plane of the screen-plate A, said caps or covers being arranged in series of rows formed at varying angles to the length of the plate, whereby the grain is caused to travel over a greater distance than the length of the plate, substantially as herein described.

4. In combination with the grain-separating plate A, with its raised caps *a* and elevated side openings, *b*, the hollow side flanges, B, with their side admission-slots, *c*, and bottom discharge-openings, *d*, whereby grain is prevented from accumulating on the sides of the screen and the capacity of the screen enlarged, substantially as herein described.

In witness whereof I have hereunto set my hand.

BENJAMIN F. PETTIT.

Witnesses:

CHAS. G. YALE,
FRANK A. BROOKS.