A. BELCHAMBER.

Grain Screen.

No. 19,905. Patented April 13, 1858.

Fig. 3,

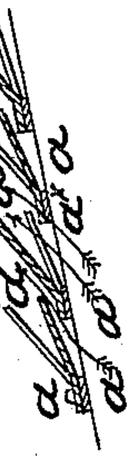


Fig. 1,

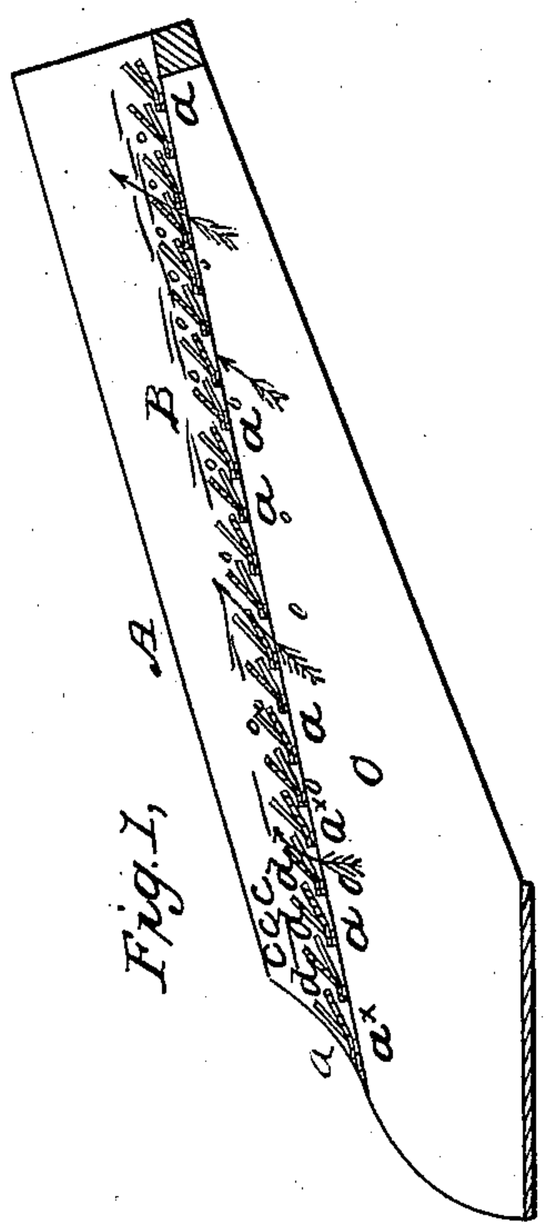
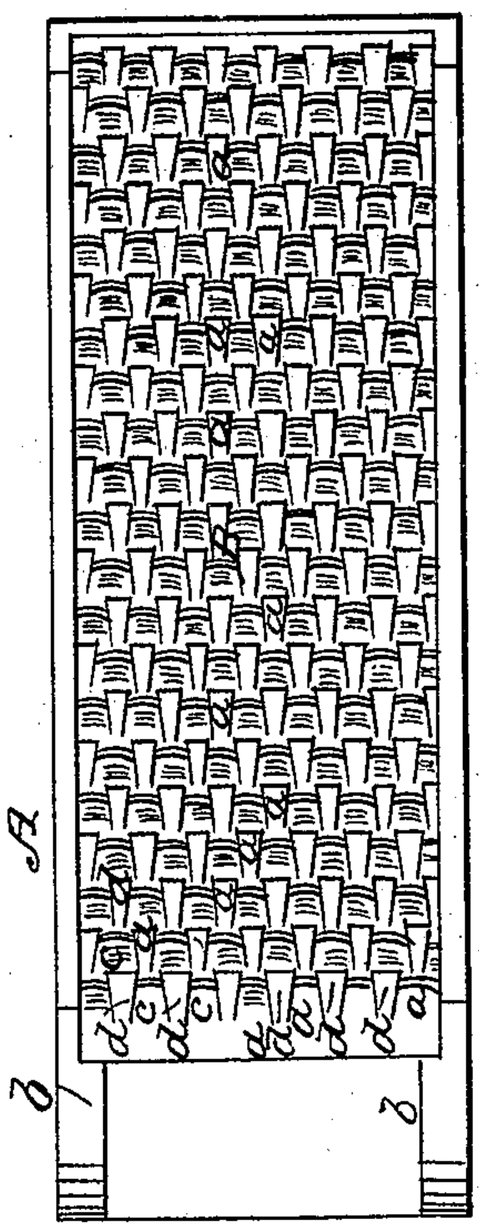


Fig. 2,



UNITED STATES PATENT OFFICE.

ALFRED BELCHAMBER, OF RIPLEY, OHIO.

CHAFF-SCREEN FOR WINNOWING-MACHINES.

Specification of Letters Patent No. 19,905, dated April 13, 1858.

To all whom it may concern:

Be it known that I, ALFRED BELCHAMBER, of Ripley, in the county of Brown and State of Ohio, have invented a new and useful Improvement in the Construction of Chaff-Screens for Winnowing-Machines; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the annexed drawings, making a part of this specification, in which—

Figure 1, is a longitudinal vertical and central section of my improvement. Fig. 2, is a plan or top view of ditto. Fig. 3, is an enlarged longitudinal section of a portion of ditto.

Similar letters of reference indicate corresponding parts in the several figures.

This invention consists in the peculiar construction of the screen as hereinafter described, whereby the screen is rendered strong and durable, more effective in its operation, readily cleared or freed from foreign substances if they are caught in it, and quite economical to construct.

To enable those skilled in the art to fully understand and construct my invention, I will proceed to describe it.

A, A, represents the two sides of the screen which may be constructed of wood and in the usual way.

B, is the screen which is constructed of sheet metal plates (*a*) one side or edge of each plate is bent over and pressed up against the under surface as shown clearly at (a^x) in Fig. 3, so as to give a requisite degree of strength to the same. The ends of the plates (*a*) are secured firmly to ledges or shoulders (*b*), (*b*), on the inner surfaces of the sides A, A.

The front edge or side of each plate (*a*) is slitted or cut back as far, or nearly as far, as its bent edge (a^x) and the portions of the plates between the slits are bent upward every alternate portion (*c*) having a greater elevation than the intermediate portions (*d*), the portions (*c*) having an inclination of about 30° and the portions (*d*) an inclination of 10° or less. The plates (*a*) are secured to the side pieces parallel with each other and they overlap each other so that the front edge or side of each plate will be over the bent edge (a^x) of the plate directly in front of it, or, the front edges of the bent portions (*c*) (*d*) of each plate directly over the base or inner ends of the bent portions of the plate in front of it. This is clearly shown in Fig. 3. By this overlapping of the plates (*a*) the apertures formed by the bending up of the portions (*c*), (*d*), are fully protected by said bent portions that is, the apertures are covered by said portions in a vertical direction.

The screen constructed as described is very open and a blast of air is consequently allowed to pass from below freely through it as indicated by the arrows so that the chaff, straw and other foreign substances are effectually separated from the sound grain which passes, on account of its superior gravity, through the screen. The bent portions (*c*) (*d*) serve as checks or guards and prevent foreign substances from passing through the screen, and as the portions (*c*) (*d*) are made, on account of the overlapping of the plates (*a*), to project some distance over the apertures below them, the blast as it passes through the several apertures is concentrated and rendered more effective than it otherwise would be.

This improvement if superficially viewed would seem to resemble the ordinary punched screens, those which are formed of metal sheets punched so that burs may be turned up to protect the apertures. There is however a vast difference between the two kinds of screens. In the first place a metal plate could not be punched so as to have the apertures as near together as in my improvement for the plate would "buckle" or "kink" and also break, there not being sufficient metal to retain the proper shape. Consequently my screen being more open the blast and also the grain is allowed to pass more readily through it. By having the plates overlap each other the bent portions (*c*) (*d*) are allowed to project over or beyond their apertures, and thereby fully protect or cover them, serving as efficient checks or guards and effectually preventing the chaff and foreign substances from passing through the orifices, and they also by their greater length compared with the apertures effectually agitate and loosen the chaff so that it may be the more readily acted upon by the blast. In the punched screens the bent portions being of equal length to the apertures and bent upward forming radii of circles, cannot project over the apertures which are consequently not perfectly guard-

ed. Further, in case of any of the apertures becoming choked or clogged by foreign substances, a contingency not liable to occur often, the screen may be readily cleaned or freed from them by depressing the central portions of the plates as they will readily spring or give by the pressure of the finger or hand. The screen also in consequence of being formed of strips has a certain degree of vibration or tremor as it is operated, owing to the elasticity of the strips. This renders the screen very effective in separating.

Having thus described my invention, I would state that I do not claim forming chaff screens for winnowers by punching sheet metal plate so that burs may be formed and turned up, for this has been previously done, but

I do claim as new and desire to secure by Letters Patent,

Constructing the screen of sheet metal plates or strips (*a*), bent or turned over at one edge and slitted or cut at the opposite edge, so that portions (*c*) (*d*) may be bent up as shown. The plates being secured in the frame or between the sides A, A, so as to overlap each other and the whole arranged substantially as and for the purpose set forth.

ALFRED BELCHAMBER.

Witnesses:
WM. F. WYLIE,
O. F. CAMPBELL.