

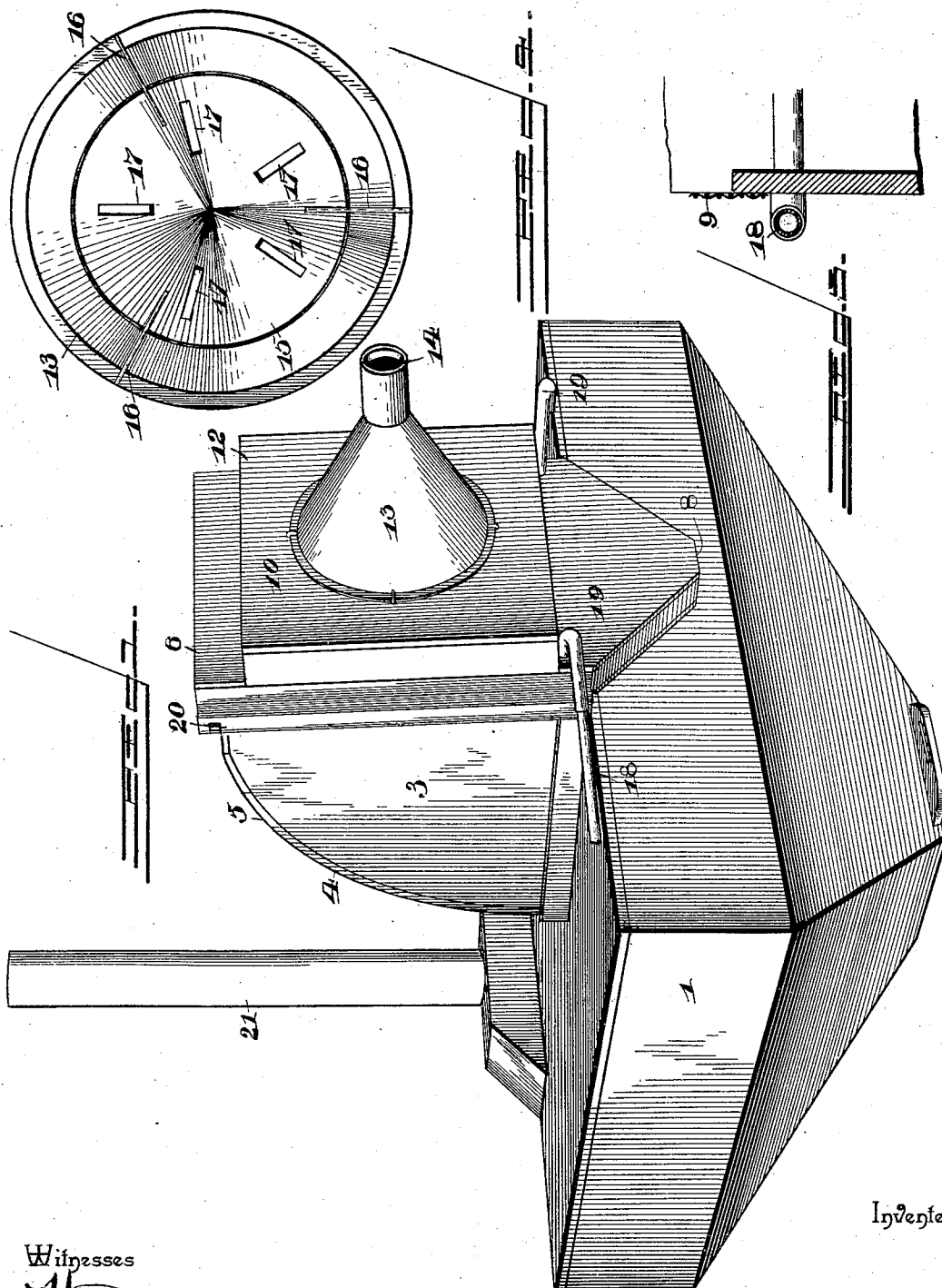
(No Model.)

2 Sheets—Sheet 1.

P. S. PLACE.
CLAY SEPARATOR.

No. 572,311.

Patented Dec. 1, 1896.



Inventor,

Witnesses
W. F. Doyle,
R. M. Smith

By his Attorneys,

Phil S. Place,

C. A. Snow & Co.

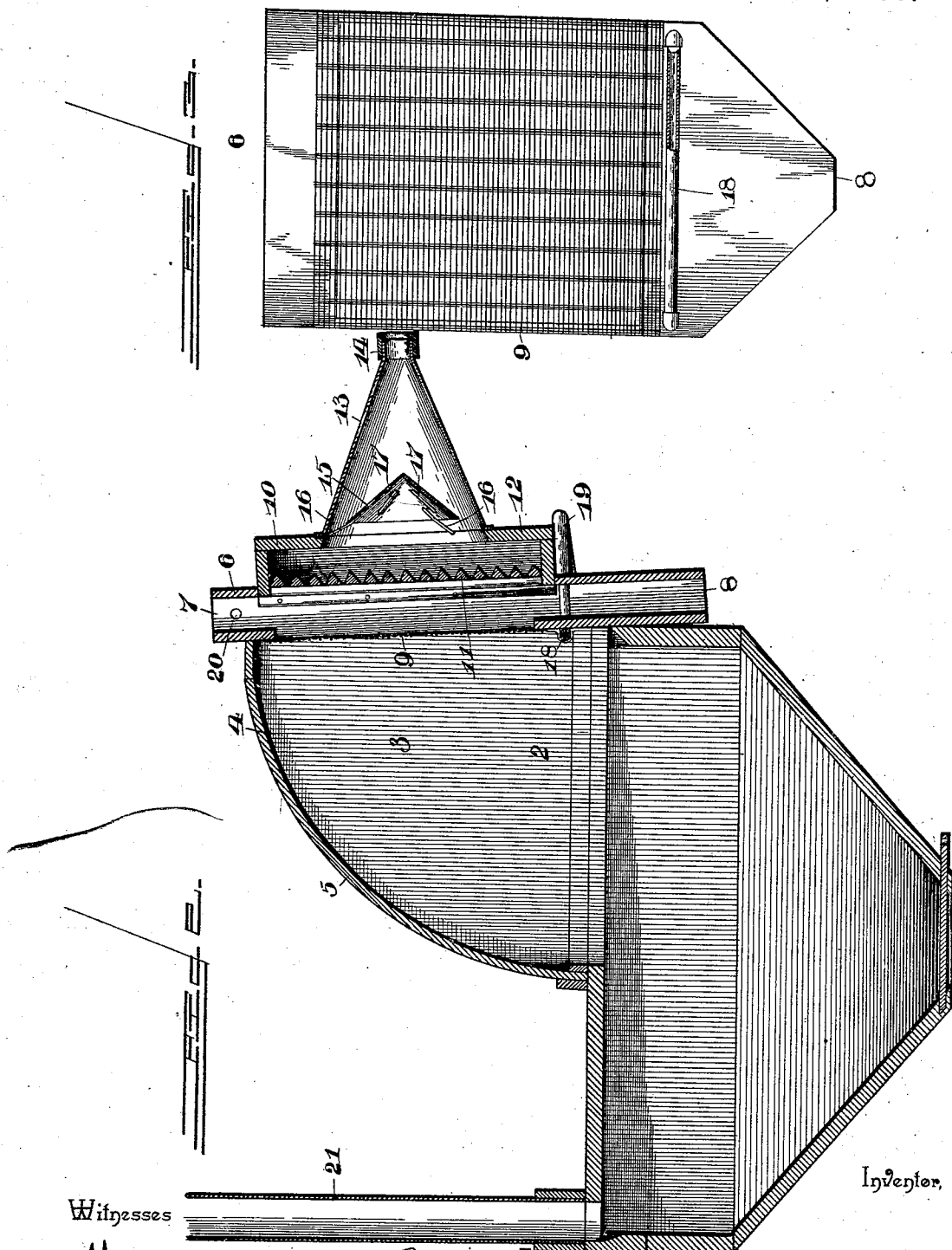
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Inventor,

UNITED STATES PATENT OFFICE.

PHIL SHERIDAN PLACE, OF ALFRED, NEW YORK.

CLAY-SEPARATOR.

SPECIFICATION forming part of Letters Patent No. 572,311, dated December 1, 1896.

Application filed November 21, 1895. Serial No. 569,643. (No model.)

To all whom it may concern:

Be it known that I, PHIL SHERIDAN PLACE, a citizen of the United States, residing at Alfred, in the county of Allegany and State of New York, have invented a new and useful Clay-Separator, of which the following is a specification.

This invention relates to an improvement in clay-separators.

The object of the present invention is to provide a simple and effective device for and method of freeing clayey material from deleterious substances.

While particularly designed as a clay-separator, it will be apparent in the course of the subjoined description that the device may be employed in the analogous treatment of other and similar materials.

With the above objects in view the invention consists in certain novel features and details of construction and arrangement of parts, as hereinafter fully described, illustrated in the drawings, and finally pointed out in the claims hereto appended.

In the accompanying drawings, Figure 1 is a perspective view of the improved apparatus for separating and purifying clay. Fig. 2 is a vertical sectional view through the same. Fig. 3 is a view in elevation of the screen-frame detached and looking toward the inner surface thereof. Fig. 4 is a view in elevation of the air-blast funnel, looking from the inside of the hood. Fig. 5 is a detail vertical section through a portion of the screen-frame, showing the spray-pipe also in cross-section.

Similar numerals of reference designate corresponding parts in the several figures of the drawings.

Referring to the accompanying drawings, 1 designates a bin which is preferably made rectangular in horizontal section and provided with correspondingly sloping and converging sides, which form a contracted lower end, through which the material may be discharged when required for use. In the top of this bin is formed a square or rectangular opening 2, over which is arranged a quadrantal hood 3, which comprises substantially quadrantal side plates 4, spaced a distance apart equal to the width of the opening in the top of the bin and having their curved edges connected by means of a curved or seg-

mental covering-plate and deflector 5. The interior of the hood is thus in communication with the interior of the bin, and the front end of the hood is left open to receive the screen-frame 6.

The screen-frame 6 is substantially rectangular in form, and is of a width adapting it to fit between the cheeks of the quadrantal side plates 4 of the hood, said screen-frame being left open at its upper end to form a feed-mouth 7 and contracted at its lower end to form a convergent discharge-spout 8. The rear side of the screen-frame is left open, so as to communicate with the interior of the hood 3, and is covered by wire-cloth or screen material of any desired mesh, as shown at 9.

10 designates a forward extension of the screen-frame, the said extension constituting an air-distributing chest and being separated from the screen-frame by means of a slatted partition. This partition is composed of a plurality of horizontally-disposed slats 11, which are triangular in cross-section and all arranged in corresponding relation, or with their apices facing forward and their flat sides disposed rearwardly or toward the screen-frame. These slats are spaced apart any suitable distance and are adapted to deflect an air-current as the same passes between them.

The front wall 12 of the air-chest is formed with a central aperture which corresponds in size to the contiguous inner end of an air-funnel 13, the latter being secured to the front wall of the air-chest in any convenient manner. This funnel is provided at its outer reduced end with a nozzle 14 for the reception of an air-blast pipe, and is also provided adjacent to its inner expanded end with a conical deflector 15. This conical deflector is supported centrally of the funnel, by means of radiating braces 16, connecting the funnel and deflector rigidly, and said deflector is further provided with a series of radially-disposed air-passages in the form of slots 17. By means of this construction the air-current passing in at the nozzle 14 will be deflected and spread as it enters the air-chest 10, and a portion of said current will pass through the slots 17, and finally the entire current will thus be distributed evenly to the triangular deflecting-slats 11, and by said slats projected in reverse directions, so as to thoroughly com-

minge with the particles of clay or other material gravitating through the screen-frame. The deflecting-cone, by reason of its particular location and arrangement at the juncture of the funnel with the air-chest and the disposition of its apex toward the nozzle 14, serves to divide and spread the incoming current of air just as it enters the air-chest, a portion of the air thus passing between the periphery of the cone and the interior surface of the funnel and being distributed throughout the air-chest, another portion of the air passing through the slots 17 of the cone and thence directly to the slats 11 and portions of the slats lying behind the said cone. A thorough spreading and distribution of the air is thus effected and the same spread over a greater area than would be possible without the interposition of the cone. The particles of clay or other material passing before and through the screen are thus subjected the longer and more thoroughly to the air-blast, and the efficiency and utility of the separator correspondingly enhanced.

18 designates a steam-spray pipe which passes through the screen-frame just beneath the air-chest at one side, after which it is extended in rear of and adjacent to the bottom of the screen-frame and in parallelism thereto and finally passed again through the screen-frame beneath the air-chest and at the opposite side to the entrance-point. A flexible steam-supply pipe 19 is attached to one end of said steam-spray pipe, and the opposite end of said spray-pipe may either be plugged or provided with a similar flexible pipe or hose for conducting the surplus steam to a second separator or to any desired point. That portion of the steam-spray pipe which lies parallel to and is located inside of the screen-frame, or rather within the hood 3, is provided with a plurality of upwardly-opening perforations through which the steam escapes and commingles with the air-blast and the falling particles of clay or other material. The screen-frame with the air-chest and other attachments hangs pendent upon an oppositely-disposed pair of bolts or pivots 20, passing through the quadrantal side plates 4 of the hood adjacent to the upper corners thereof, said bolts serving to permit the screen-frame, &c., to be adjusted as to its angle, thereby regulating the speed at which the material being acted upon may gravitate before the screen, and thus regulating the quality or fineness of the resultant material.

In operation it will be understood that the clay or other material, after having been pulverized, is fed into the entrance-mouth at the upper end of the screen-frame, whence it gravitates in front of the screen. Here it is acted upon by the air-blast passing through the funnel 13 and influenced by the several air deflectors and distributors and the particles of the material are forcibly projected some against and others through the mesh of the screen. The finer particles of material

which pass through the screen are immediately subjected to the action of the steam, or, more accurately speaking, the steam commingles with such particles and is simultaneously condensed by the air-current and is taken up or absorbed by such particles, which, thus moistened, pass through the hood and into the bin. During this same operation the larger or heavier particles of the material passing through the screen-frame and the gravel and other deleterious substances pass downward and out through the discharge-mouth 8 at the base of the screen-frame and into a suitable receptacle or conveyer, by which they may be returned to the pulverizer to be ground again. As above explained, the angle of the screen-frame and the other parts connected directly therewith may be adjusted for regulating the quality of the resultant material, such adjustment being permitted by the use of the flexible steam-supply pipe. A flexible air-supply pipe may be employed for the same purpose. The excess steam in the bin passes out through exhaust-pipe 21.

Changes in the form, proportion, and minor details of construction may be resorted to without departing from the spirit or sacrificing any of the advantages of this invention.

Having thus described the invention, what is claimed as new is—

1. In a clay-separator, the combination with the bin having a hood communicating therewith, of a pendent screen-frame covering the open end of said hood and hinged thereto, said screen-frame having a feed-opening extending longitudinally through the same and also comprising a screen proper at one side of the feed-opening and a plurality of deflecting-slats on the opposite side, and a funnel carried by the hinged screen-frame and adapted to direct the air-blast against the deflecting-slats, substantially as described.

2. A screen-frame covered at one side with meshed-wire fabric and having opposite thereto a plurality of deflecting-slats having each a substantially triangular cross-sectional shape, an air-chest forming an extension of the screen-frame and inclosing the slatted portion thereof, and an air-blast pipe communicating with said air-chest, all arranged substantially as and for the purpose described.

3. A screen-frame provided with entrance and discharge mouths and covered upon one side with screening material and partially covered at the other side with a plurality of triangular deflecting-slats, an air-chest extension of the screen-frame inclosing said slats, an air-supply funnel communicating with said air-chest, and an air-deflecting cone arranged within said funnel, substantially as specified.

4. A screen-frame covered at one side with meshed fabric and at its opposite side with a plurality of deflecting-slats, and an air-

chest extension of said frame inclosing said slats, in combination with an air-supply cone communicating with the air-chest, and a conical air-deflector arranged centrally of said
5 funnel and formed with radially-disposed slots, substantially as and for the purpose described.

10 5. In a machine of the class described, in combination, a bin, a hood in communication therewith, a pivoted screen-frame connected to said hood, provisions for supplying and distributing air to said screen-frame, a steam-

spray pipe arranged upon the screen-frame and projecting within the hood, and a flexible steam-supply pipe, all arranged substantially as described. 15

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

PHIL SHERIDAN PLACE.

Witnesses:

LYLE BENNEHOFF,
B. C. DAVIS.