

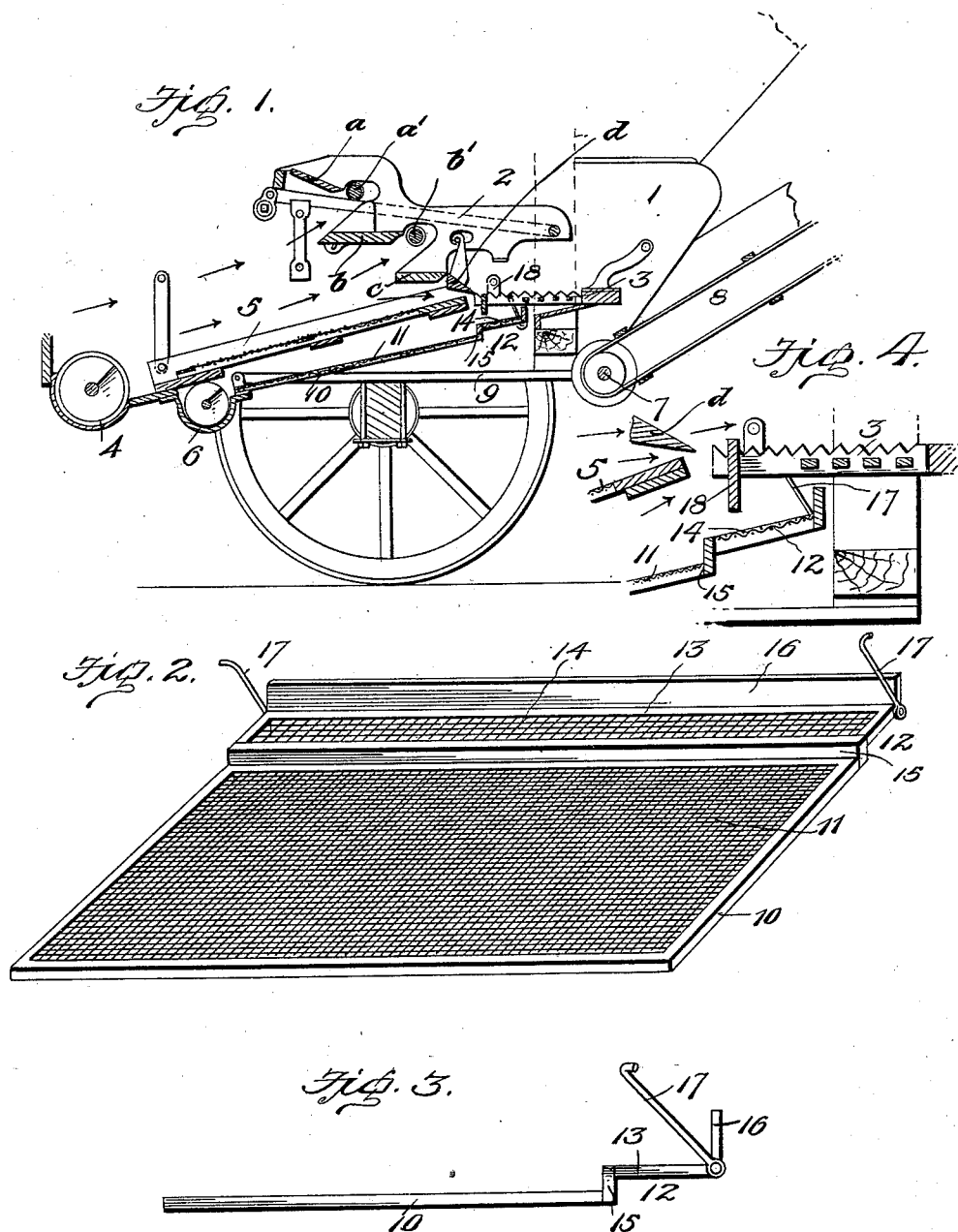
**No. 676,364.**

Patented June 11, 1901.

**P. HENSS.**  
**THRESHING MACHINE.**  
(Application filed June 28, 1900.)

(No Model.)

2 Sheets—Sheet 1.



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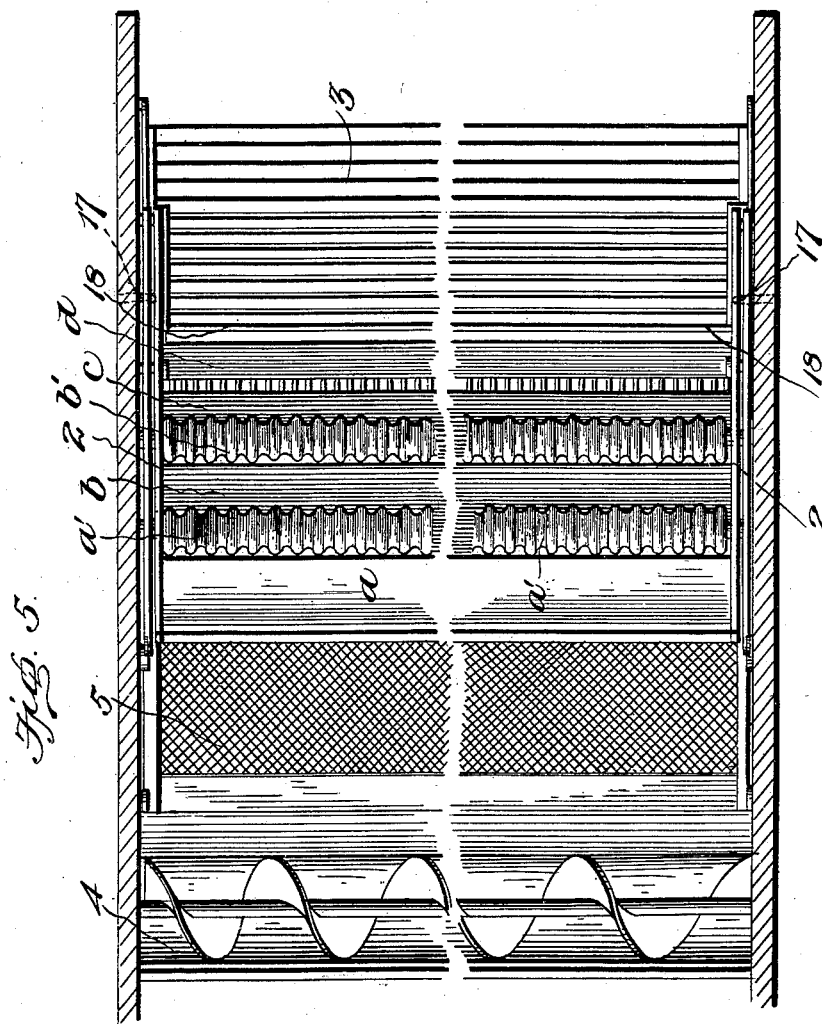
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# UNITED STATES PATENT OFFICE.

PHILIP HENSS, OF ST. CLAIR COUNTY, ILLINOIS.

## THRESHING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 676,364, dated June 11, 1901.

Application filed June 28, 1900. Serial No. 21,930. (No model.)

### *To all whom it may concern:*

Be it known that I, PHILIP HENSS, a citizen of the United States, residing in St. Clair county, Illinois, have invented certain new and useful Improvements in Threshing-Machines; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to improvements in grain-separators for threshing-machines; and it consists of an attachment interposed between the cleaning-shoe and tailings-spout of the machine to separate the "cheat" or "chess" from the tailings and prevent it from again passing through the machine and being discharged with the clean grain.

Chess, or "cheat," as it is commonly called, is a grass or plant which grows among the wheat, particularly in the New England States, and is valueless for use as food. So far as I am aware no attempts have heretofore been made to separate this refuse grain from the wheat. In all separators with which I am familiar it is permitted to run through the machine together with the wheat until it reaches the tailings-spout, whence it is carried back to the cylinder, going through the same process as before, thus circulating around and around until it finally passes out with the clean wheat-grain. The object of my invention is to obviate this objection by providing an attachment which in practice is located between the cleaning-shoe and tailings-spout and below the vibrating rack and serves to separate the cheat from the tailings and discharge it from the machine, thus preventing a second passage of the cheat through the machine and its mingling with the clean grains of wheat discharged through the grain spout or auger.

The invention is illustrated in the accompanying drawings, in which—

Figure 1 is a vertical longitudinal section through so much of a threshing-machine as is necessary to illustrate my invention. Fig. 2 is a perspective view of the cheat-separating attachment on an enlarged scale. Fig. 3 is a side elevation of the same. Fig. 4 is an enlarged detail sectional view through the rack, a portion of the cheat-separator, and

the dividing-board. Fig. 5 is a top plan view of the device as shown in Fig. 1 on an enlarged scale.

Referring now more particularly to the drawings, in which like reference characters designate corresponding parts throughout the several views, 1 represents a portion of the frame of a threshing-machine in which is located the grain-cleaning shoe 2, the vibrating rack or screen 3, the grain spout or auger 4, the reciprocating screen and grain-board or bottom 5, which conduct the threshed wheat-grains to the auger, and the tailings-spout 6, from which the tailings are conducted by a conveyer back to the cylinder in the usual manner. These parts may be of the ordinary or any approved construction, the only difference from the usual relative location being that I have varied the arrangement of the tailings-spout by placing it under the front portion of the screen and grain-board 5 instead of under the front edge of the vibrating rack 3.

7 represents the lower shaft of the straw-conveyer 8, and 9 the connecting-rod for imparting reciprocatory movement from said shaft to the part 5.

In the operation of separators of ordinary construction the grain passes from the shoe 2 down onto the reciprocating screen and grain-board 5 and thence to the auger 4, while the straw is blown onto the conveyer 8, and thus discharged, and the tailings, unthreshed grain, and cheat drop down into the tailings-spout under the front edge of the rack 3 and are thence conveyed to the cylinder to be re-threshed and circulated through the machine, the result being that the cheat mingles with the clean wheat and is discharged therewith through the auger 4. To obviate this objection and effect a thorough separation of the cheat from the wheat, I shift the tailings-spout, as before stated, from its usual position under the front edge of the vibrating rack 3 to a point just in rear of the grain-auger and under the fore part of the screen and grain-board 5, as shown, and locate between the shoe 2 and tailings-spout 6 a separating attachment by which the cheat is separated from the tailings prior to the introduction of the latter into said spout. This attachment comprises a rectangular frame 10,

arranged parallel with and beneath the screen 5 and carrying a screen or riddle 11. At its rear the frame is stepped or offset, having an elevated portion 12, formed of an auxiliary frame 13, extending on a plane parallel with and above the frame 10. This frame 13 is located immediately under the front portion of the vibrating rack 3 and is of like width, but shorter than the main frame 10, and carries a screen or riddle 14 of coarser mesh than the longer screen 11. The front end of the auxiliary frame is rigidly connected to the main frame by a vertical transverse bar 15, which holds the two frames in their proper relative positions, and the rear end thereof extends upwardly above the plane of the screen 14 and forms a stop or deflector 16 to prevent the outward passage of any of the lighter tailings falling with the cheat onto said screen. The separating attachment thus constructed is mounted to reciprocate in unison with the screen and grain-board 5, being suspended at its rear from the machine-frame 1 by links 17, connected to the offset frame part 12 and connected at its lower or front end to the rod 9. With the separating attachment coöperates a vertical transverse dividing-board 18, connected to the vibrating rack 3, substantially in line with the inner or forward end of the screen 14 and adjacent to the outer or rear end of the screen 11. The lower end of this board terminates a short distance above the separating attachment, and the function of the board is to divide the cheat from the unthreshed heads, tailings, &c., as hereinafter set forth.

The operation is as follows: After the grain has been separated from the short straw and light chaff in the usual manner by any ordinary or approved type of mechanism not necessary to be herein shown it falls upon the cleaning-shoe 2. This shoe is provided with shelves *a*, *b*, and *c*, arranged one below the other, and rollers *a'* and *b'* between said shelves, said rollers in practice being formed with annular grooves or otherwise constructed to allow the grain to drop through. The lower edge of the shelf *c* is provided with a comb for a similar purpose, and arranged adjacent thereto is a deflector or vibrating member *d*. This is an old and well-known construction of shoe and is shown simply to illustrate the mode of application of the invention, it being understood that the invention may be employed in connection with any other suitable construction of cleaning-shoe and coöperating parts. The grain feeds down the shelf *a* to the roller *a'*, the grooves of which are of a size sufficient to allow the grain to pass between them and the operating edge of shelf *b*. All the grain that does not drop through between the roller *a'* and shelf *b* is carried over the roller and drops on shelf *b*, forming a pile of grain, the top of which is the dividing-line between the cleaned grain and the coarse matter. A blast of air is forced upwardly and rearwardly between the shelves of the shoe

and deflector or vibrating member *d*, between said deflector and the screen 5, as indicated by the arrows in Figs. 1 and 4, by any approved form of blower or fan. The sharp blast strikes the ridge or pile of grain on shelf *b*, causes all the refuse or coarse matter to drop to the rear side of the ridge of grain, and to again be operated upon by the roller *b'*. This roller picks out all the refuse matter, letting nearly all of the grain pass between it and the shelf *c*. The very small amount of grain which is carried over roller *b'* drops upon the short shelf *c* and thence down to the screen 5 through the comb-edge of shelf *c*, adjacent to the deflector or vibrating member *d*. In the ordinary construction of machine, wherein the tailings-spout is located beneath the rack 3, the unthreshed heads and refuse matter pass over the part *d* and onto the rack 3, the unthreshed heads, cheat, and other like particles dropping through said rack into the tailings-spout, while the heavier bulky matter—such as sticks, cornstalks, thistles, &c.—passes rearwardly over the rack and onto the conveyer 8. By this means the cheat is again carried back to the cylinder and passes through the machine and out with the clean grain. With my construction, however, the heavier particles—viz., the tailings, unthreshed heads, &c.—drop from the part *d* down between the screen 5 and the rack 3 onto screen 11 and run down along the same to the tailings-spout 6, while the cheat and other lighter particles are blown back over the board 18 and onto the rack 3 and drop down through said rack either directly to the ground in rear of the deflector 16 or upon the screen 14, the openings of which are made of such size as to prevent the passage of any unthreshed heads of wheat that may fall thereon, while permitting of the free downward passage of the cheat, by which the cheat is discharged from the machine. The vibration of the improved separating attachment 10 12 causes the unthreshed heads and tailings of the screen 11 to feed downwardly through the tailings-spout 6, and should there be any unthreshed heads upon the screen 12 they would also be forced down and caused to drop upon the screen 11 and thence to pass to the tailings-spout. The function of the board 18 is to prevent the blast of air entering between the screen 5 and vibrating part *d* from blowing the unthreshed heads and other heavier particles back upon the rear portion of the screen 12, said board thus serving as a deflector to conduct the unthreshed heads and tailings as far as possible directly on the screen 11, leaving the screen 12 clear to receive cheat and other lighter particles falling thereon from the rack 3. The screen 14 is, as stated, of a coarser mesh than the screen 11, so as to let the cheat freely discharge, but not coarse enough to let any unthreshed heads of wheat which may casually drop thereon pass through, the stop 16 acting to prevent such heads from being blown back off said

screen. The screen 11 is of relatively fine mesh, so as to allow only the finer refuse particles which may be carried along with the heavier particles of the tailings to drop to the ground.

The attachment may be readily applied to existing separators by simply changing the location of the tailings-spout, as hereinbefore set forth, and has been found in practice to perform its work in an effective manner.

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

In a grain-separator, the combination, with a winnower-shoe 2 provided with separating means, of the tailings-rack 3, the grain spout or auger 4, the vibrating grain-screen 5 below the winnower-shoe and between the rack

and auger, the tailings-spout 6 beneath the forward end of said screen, the divider 18 at the front edge of the tailings-rack, and the inclined vibrating stepped screen beneath the rack and grain-screen and having riddles 11 14 of two different degrees of fineness and the stop or deflector 16 at the rear end of said screen, the stepped portion of the screen being located under and adjacent to the said dividing-board 18, substantially as set forth.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

PHILIP HENSS.

Witnesses:

ALFRED GINZEL,  
OSCAR GINZEL.