

(No Model.)

2 Sheets—Sheet 1.

E. KEITH & C. A. LANPHERE.  
GRAIN SCOURER.

No. 580,978.

Patented Apr. 20, 1897.

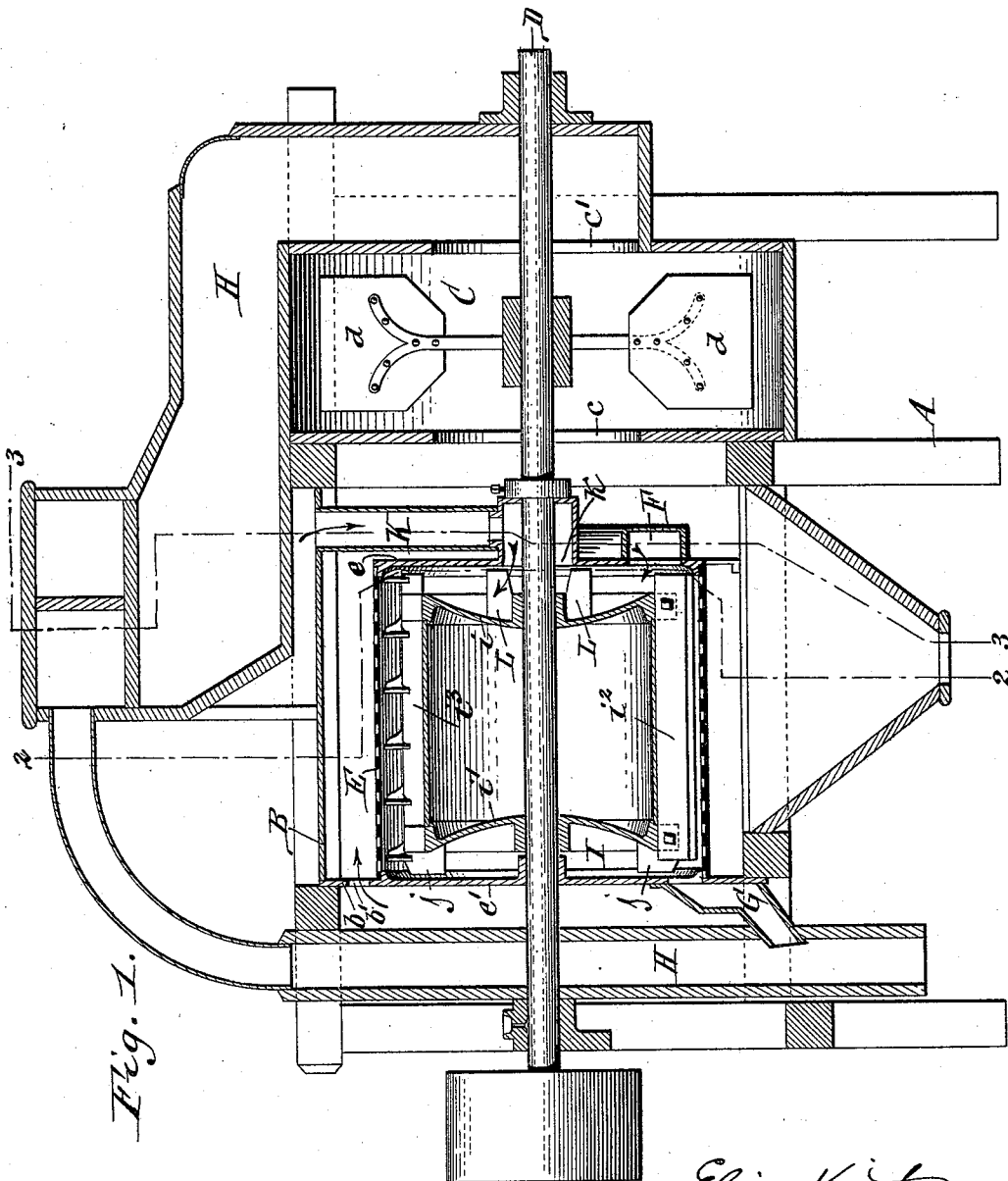


Fig. 1.

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By Wilhelm H. Popp  
Attorneys.

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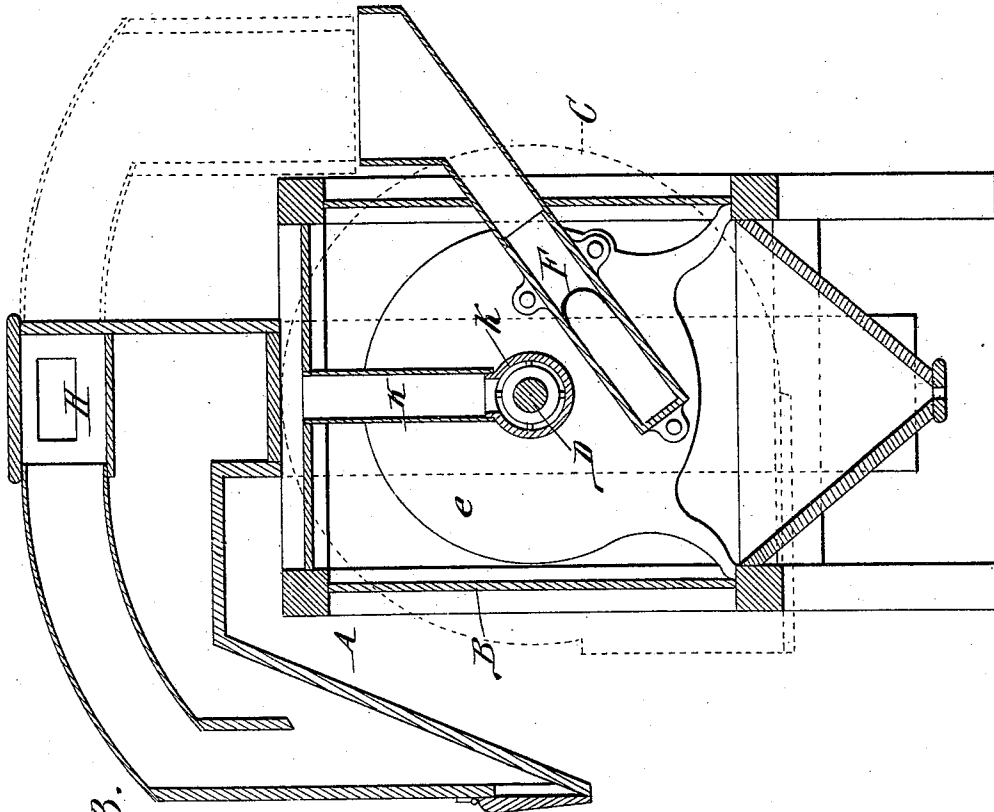


Fig. 3.

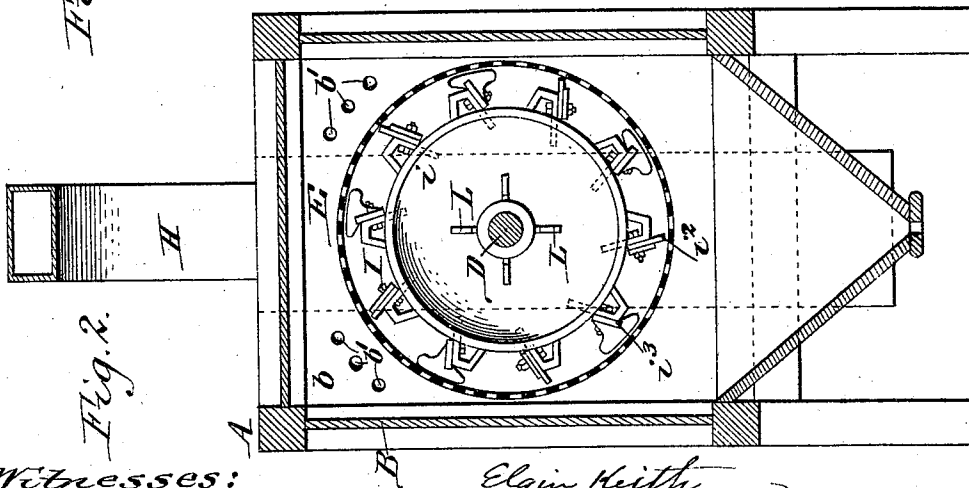


Fig. 2.

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# UNITED STATES PATENT OFFICE.

ELGIN KEITH AND CHAUNCEY A. LANPHERE, OF SILVER CREEK, NEW YORK, ASSIGNORS, BY MESNE ASSIGNMENTS, TO THE INVINCIBLE GRAIN CLEANER COMPANY, OF SAME PLACE.

## GRAIN-SCOURER.

SPECIFICATION forming part of Letters Patent No. 580,978, dated April 20, 1897.

Application filed July 6, 1896. Serial No. 598,154. (No model.)

*To all whom it may concern:*

Be it known that we, ELGIN KEITH and CHAUNCEY A. LANPHERE, citizens of the United States, residing at Silver Creek, in the county of Chautauqua, in the State of New York, have invented a new and useful Improvement in Grain-Scourers, of which the following is a specification.

This invention relates to a grain-scourer in which the grain is passed between a perforated horizontal scouring-case and a toothed rotary scouring-drum arranged in the case.

In machines of this character as heretofore constructed the air which was admitted into the annular space between the scouring-drum and case traveled in a direction opposite to that in which the grain passed through the machine, which prevented the air from being so thoroughly mixed with the grain as is desirable for carrying off the particles of dirt and dust which are removed by the scouring operation.

The object of our invention is to produce a scouring-machine in which air is mixed with the grain at the place where the latter enters the scouring-case and is forced in the same direction in which the grain travels through the machine, thereby thoroughly mixing the grain and air and effecting a better separation of the light impurities from the grain.

In the accompanying drawings, consisting of two sheets, Figure 1 is a vertical longitudinal section of our improved scouring-machine. Figs. 2 and 3 are vertical transverse sections in lines 2 2 and 3 3, Fig. 1, respectively.

Like letters of reference refer to like parts in the several figures.

A represents the stationary main frame of the machine, and B the casing, which incloses the scouring mechanism and which is provided at its rear end or wall *b* with air-inlet openings *b'*.

C represents the fan-case, provided with an inner eye *c*, opening into the front end of the inclosing casing, and D the horizontal driving-shaft, arranged in the inclosing case and fan-case and carrying the fan-blades *d*.

E represents the perforated horizontal scouring-case, arranged within the inclosing

case and separated from the latter at its sides and front end by an intervening space. The front end of the scouring-case is closed by a tight head *e*, and its rear end is closed tightly by a solid head *e'*, which is preferably formed integrally with the rear wall of the inclosing case.

F is the grain-inlet spout, which delivers the grain into the front end of the scouring-case through an opening in the front head of the scouring-case below the shaft, and G is the grain-discharge spout or outlet, which has its receiving end connected with the lower rear portion of the scouring-case by an opening formed in the rear wall of the latter. The discharge-spout opens with its delivery end into an air-trunk H, which communicates with the front or outer eye *c'* of the fan-case in the usual manner.

I represents the scouring-drum, secured to the shaft and consisting, essentially, of front and rear heads *i i'*, connected by a cylindrical body, and scouring and conveyer bars *i<sup>2</sup> i<sup>3</sup>*, arranged lengthwise on the outer side of the body and heads.

The grain delivered by the inlet-spout into the space between the scouring drum and case is scoured between these parts, and the particles of dirt removed therefrom escape through the perforations of the scouring-case into the inclosing case, from whence they are drawn into the fan and discharged. The scoured grain passes from the scouring-case through the discharge-spout and into the air-trunk, and as it drops through the latter any remaining light impurities are separated from the grain and drawn into the fan. The rear head of the scouring-drum is preferably provided with radial discharge-wings *j*, whereby the grain is carried toward the discharge-opening of the scouring-case.

It has been found in practice that the impurities which are detached from the kernels of grain are still mingled to a large extent with the body of the grain as the latter escapes from the scouring-case on account of insufficient ventilation of the grain during the scouring operation. For the purpose of securing a sufficient air-supply for producing

the desired separation of the impurities from the grain an air-supplying contrivance is provided, which is constructed as follows:

K represents an air-supply pipe, which  
5 opens with its receiving end outside of the inclosing case and with its delivery end into the front end of the scouring-case through an opening or eye *k*, formed in the latter around the shaft.

10 L represents fan-blades arranged around the shaft between the front head of the scouring-drum and the front head of the scouring-case, and preferably formed in one piece with the former.

15 In the operation of this machine an air-current is drawn into the scouring-case at the feed end thereof through the air-pipe. This air-current is set in motion partly by the suction of the fan, which has its eye connected  
20 with the space outside of the perforated scouring-case, and partly by the fan-blades attached to the head of the scouring-drum. The air-current enters the scouring-case at the feed end of the latter freely and passes along  
25 the scouring-case rearwardly in the same direction with the grain from the head to the tail end of the case. This insures a thorough mixing of the air with the grain, while the latter is acted on by the scouring mechanism  
30 and causes the greatest volume of air to pass through the perforations of the scouring-case near the feed end thereof, where the greatest amount of dust is liberated and detached from the grain, whereby the separated dust becomes  
35 fully suspended in the air-current, and is removed thereby and carried to the fan.

We claim as our invention—

40 1. In a grain-scourer, the combination with the scouring-drum, of a perforated scouring-case provided at its tail end with a tight head and a grain-discharge and at its feed end with

a head having an air-inlet which is in communication with the external air and a grain-inlet spout, a surrounding tight case, and a fan having its eye in communication with the  
45 space between the perforated scouring-case and the inclosing tight case, whereby an air-current is drawn by said fan into the scouring-case through said air-inlet at the feed end of the case and said current moves with  
50 the grain from the feed end toward the tail end of the scouring-case and passes laden with dust through the perforations of the scouring-case into the surrounding space and thence to the fan, substantially as set forth.  
55

2. In a grain-scourer, the combination with the scouring-drum provided with fan-blades at its head, of a perforated scouring-case provided at its tail end with a tight head and a grain-discharge and at its feed end with a  
60 head having a central air-inlet opening, a surrounding tight case, a fan arranged adjacent to the feed end of the scouring-case and having its eye in communication with the space between the scouring-case and the surrounding tight case, an air-pipe extending  
65 from the air-inlet opening at the feed end of the scouring-case through the surrounding tight case, a grain-spout opening into the head at the feed end of the scouring-case,  
70 and air-inlets opening into the space between the scouring-case and the surrounding tight case at the tail end of said space, substantially as set forth.

Witness our hands this 23d day of June, 75  
1896.

ELGIN KEITH.  
CHAUNCEY A. LANPHERE.

Witnesses:

LEON H. BRAND,  
C. W. GRASHO.