No. 806,397. PATENTED DEC. 5, 1905.

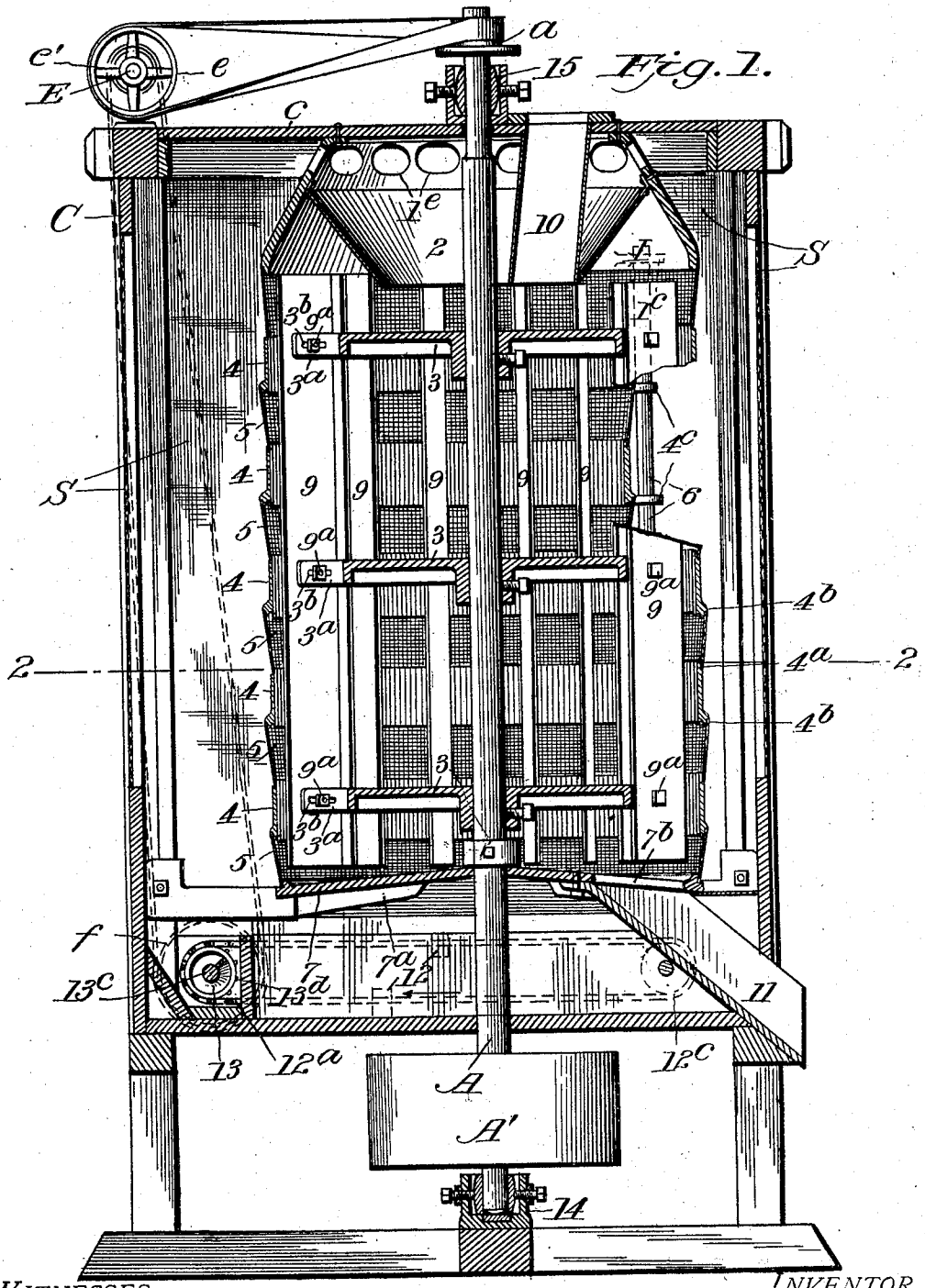
J. B. CORNWALL.

GRAIN SCOURER.

APPLICATION FILED FEB. 21, 1905.

2 SHEETS—SHEET 1.

Fig. 1.



WITNESSES:

C. H. Walker

James R. Mansfield

INVENTOR

John B. Cornwall.

BY

Alexander & Towell

Attorneys

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2 SHEETS—SHEET 2.

Fig. 2.

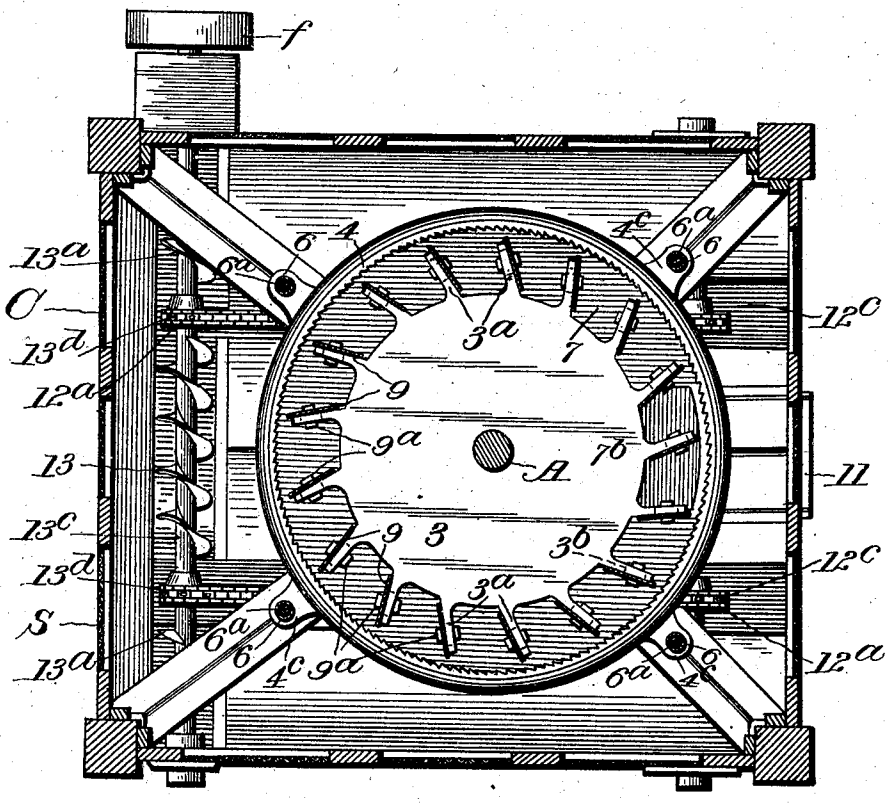
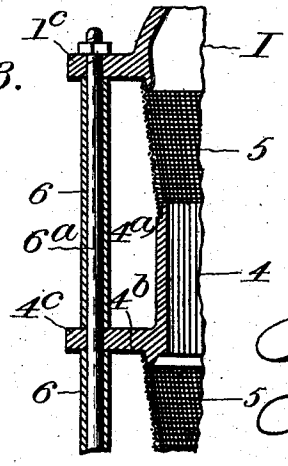


Fig. 3.



WITNESSES:

C. M. Walker.

James L. Mansfield

INVENTOR

John B. Cornwall

BY

Alexander & Dowell

Attorneys.

UNITED STATES PATENT OFFICE.

JOHN B. CORNWALL, OF MOLINE, ILLINOIS, ASSIGNOR TO BARNARD AND LEAS MANUFACTURING COMPANY, OF MOLINE, ILLINOIS.

GRAIN-SCOURER.

No. 806,397. Specification of Letters Patent. Patented Dec. 5, 1905.

Application filed February 21, 1905. Serial No. 246,744.

To all whom it may concern:

Be it known that I, JOHN B. CORNWALL, of Moline, in the county of Rock Island and State of Illinois, have invented certain new and useful Improvements in Grain-Scourers; and I hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, which form part of this specification.

This invention is an improved grain scouring and cleaning machine, preferably of the vertical type; and the invention resides in the novel construction and combination of parts hereinafter described and claimed, having particular reference to the construction of the scouring-case and the means for separating the dirt from the grain without the use of a suction-fan.

The invention will be clearly understood from the drawings and the following description of the machine illustrated therein which embodies the invention in the preferred form.

In said drawings, Figure 1 is a vertical central section through the complete machine. Fig. 2 is a transverse section on line 2 2, Fig. 1, looking down. Fig. 3 is a detail sectional view of the scouring-case.

The main-shaft A is journaled in a step-bearing 14 at bottom and a bearing 15 at top, said bearings being mounted upon top and bottom members of the main frame or outer casing C of the machine, which is of ordinary construction, and its side walls are provided with large openings covered by screens S, of cloth or other suitable material, as usual. On this shaft A within the casing is mounted a rotary beater or scouring-cylinder composed of a series of spiders or disks 3, fixed on shaft A and provided with tangentially-projecting fingers 3^a, to which the beater-blades 9 are secured by bolts 9^a engaging slots 3^b in the fingers 3^a, as shown so as to allow a slight adjustment of the blades.

Surrounding the beater is a scouring case or cylinder which is of novel construction and is composed of a series of annular imperforate scouring-sections 4, alternating with annular perforated or screening sections 5. The imperforate sections 4 are preferably of cast-iron, and their inner surfaces are corrugated or otherwise formed to scour and clean the grain, as indicated in the drawings. They have a rabbet 4^a at top and an outwardly-flaring rabbeted flange 4^b at bottom for the purpose of making close joints with the screen-sections, as hereinafter explained. The scouring-sections 4, moreover, are provided with projecting lugs 4^c, which are perforated for the passage of tie-rods 6^a, sleeves 6 being strung on the rods 6^a intermediate the lugs 4^c to keep the sections 4 properly spaced apart and assist in upholding said sections. The perforated or screen sections 5 may be of reticulated metal or perforated sheet metal and are of larger internal diameter than the imperforate sections 4, and said screen-sections are preferably slightly conical, being larger at top than at bottom. The screen-sections 5 are arranged intermediate and alternating with the scouring-sections 4, the smaller end of a screen-section resting upon the upper end of the subjacent scouring-section, being fitted to the rabbet 4^a thereof, while the upper end of a screen-section is fitted to the rabbeted flange 5^b of the superposed scouring-section. The lowest scouring-section is supported upon a base-plate 7, forming the bottom of the scouring-case and provided with webs 7^a, by which it is secured within the outer casing. The uppermost screen-section has its upper end fitted to the lower edge of a conical-shaped hood I, the upper end of which is attached to the top *c* of the outer casing, and said hood has lugs 1^c, to which the upper ends of rods 6^a are secured. Thus the beater of scouring-cylinder is inclosed within a fixed scouring-case, consisting of alternating imperforate and perforated annular sections, and said case is inclosed in a settling-chamber formed between the case and the inclosing walls of the casing C. This settling-chamber communicates with the scouring-chamber through apertures 1^e in the upper part of hood 1, and below these apertures, within the hood, is an inverted conical sheet-metal cone or deflector 2.

Grain is admitted into the scouring-chamber through a duct 10, passing within the hood, and the scoured grain escapes through an opening 7^b in plate 7 into a chute 11 and is directed out of the machine. The screenings settling in the outer chamber are removed by the scrapers 12 and worms 13 13^a and discharged at the point D.

Shaft A is provided with a driving-pulley A′ on its lower end, and a small pulley *a* on its upper end is bolted to a pulley *e* on a counter-shaft E, provided with a small pulley *e′*,

which is bolted to a pulley *f* on the shaft 13[c] of the worm conveyers. The endless bolts 12[a], carrying scrapers 12, run over sprockets 13[d] on shaft 13[c] and over idler-sprockets 12[c], as shown.

The operation of the machine will be readily understood from the drawings. The grain is alternately scoured and screened as it passes downward through the scouring-case by the action of the beater and the alternate scouring and screening sections. The clean grain is discharged through spout 11, and the dirt and screenings are discharged from the outer chamber at the point D. No suction-fan is required, the separation of the grain and dirt being effected by the action of the beater, which produces a circuit of air from the scouring-case into the outer chamber through the screen-sections, the air returning into the scouring-case through the apertures 1[e] in the hood.

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

1. In combination, a rotary beater; with a scouring-case surrounding the beater and composed of a plurality of conical screen-sections, and a plurality of cylindrical scouring-sections alternating with the screen-sections, the scouring-sections having their inner surfaces ribbed or corrugated and having outwardly-flaring flanges at bottom to engage the tops of subjacent screen-sections, and the screen-sections being of larger diameter at top than at bottom and having their lower ends supported on the subjacent scouring-sections, and means for holding all said sections in place.

2. The combination in a grain-scourer of a rotary beater, a scouring-case inclosing the beater, composed of a plurality of conical screen-sections larger at top than at bottom and a plurality of imperforate cylindrical scouring-sections corrugated on their inner peripheries, the screening-sections being of larger diameter than the scouring-sections and alternating therewith and supported thereby, and a hood fitted to the top of the upper screen-section and closing the upper end of the case.

3. In a grain-scourer, the combination of the beater; a scouring-case inclosing the beater, composed of a plurality of annular screen-sections and a plurality of annular imperforate scouring-sections alternating with the screen-sections and supporting the latter; a conical hood supported on the upper screen-section and closing the upper end of the case, a bottom closing the lower end of the lower screen-section, and means for supporting the several scouring-sections; with a casing inclosing the scouring-case, means for conducting off the grain from the bottom of the scouring-case, and means for removing the dirt and screenings deposited in the casing exterior to the scouring-case.

4. In a grain-scourer, the combination of the casing, a scouring-case therein composed of alternate perforated or screen sections, and imperforate or scouring sections, a conical hood closing the upper end of the case, and provided with air-inlet apertures, and an inverted cone attached to and within the hood above the beater and below the apertures; with a beater in said case; means for conducting off the grain from the bottom of the case, and means for removing the dirt and screenings deposited in the casing exterior to the case, substantially as described.

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

JOHN B. CORNWALL.

In presence of—
H. S. HANSON,
M. L. EKDAHL.