D. BALDWIN.

4 Sheets—Sheet 1.

Smut Machine.

No. 2,390.

Patented Dec. 14, 1841.

Fig: 1.

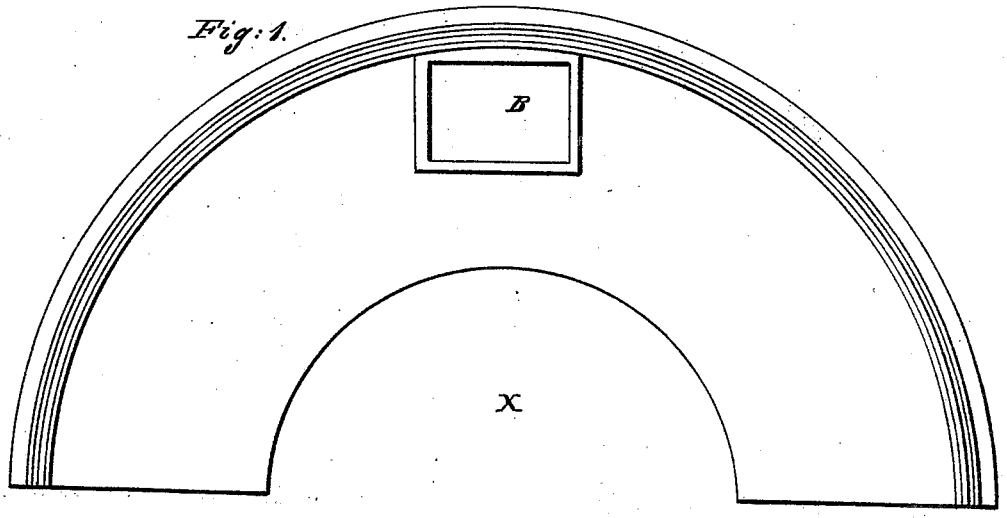
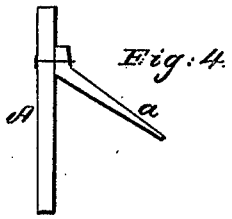


Fig: 2.

Fig: 4.



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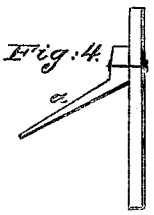

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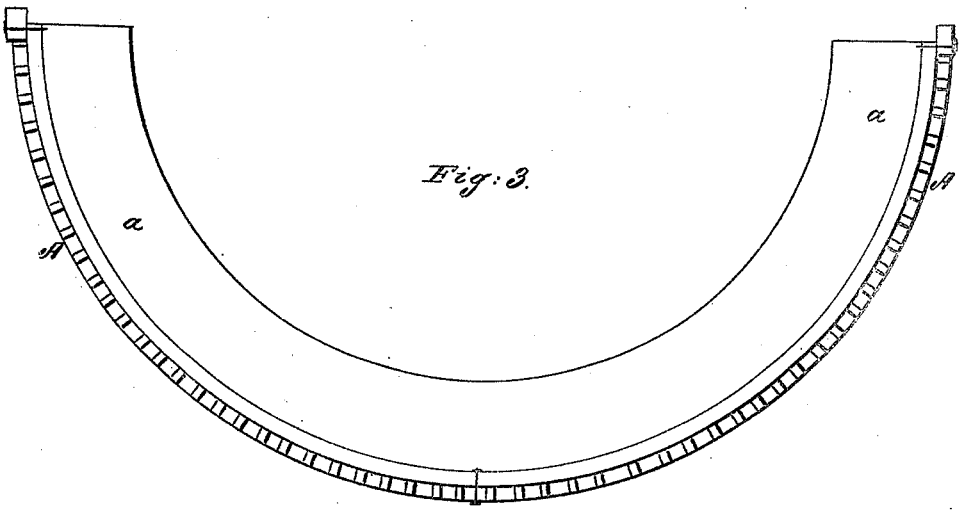

4 Sheets—Sheet 2.

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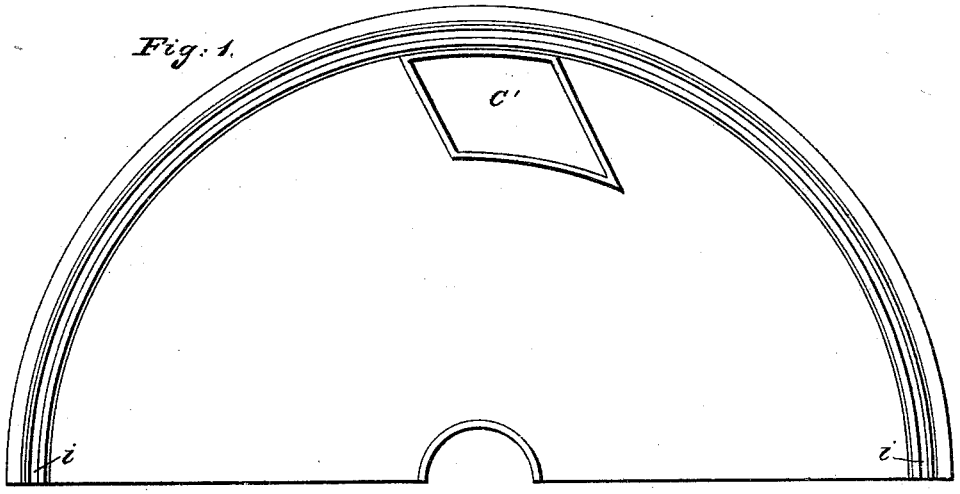
No. 2,390. Patented Dec. 14, 1841.

Fig: 1.



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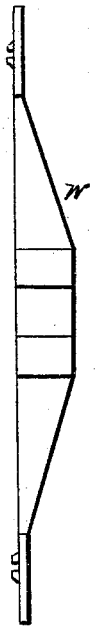
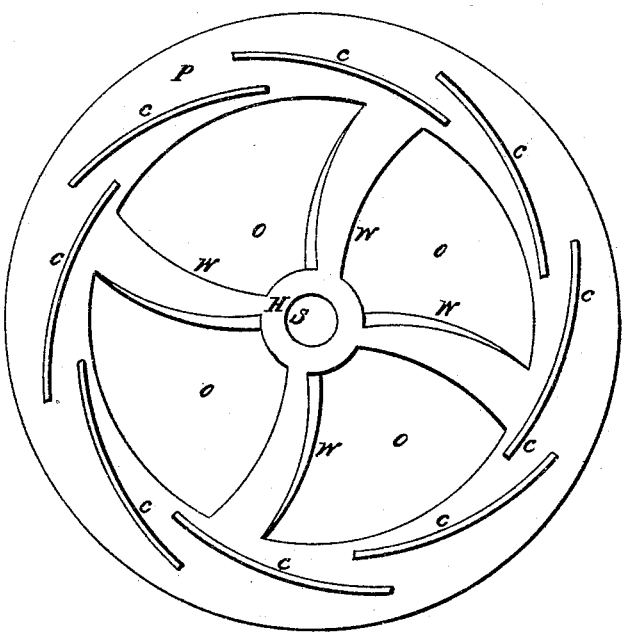


Fig: 3.



4 Sheets—Sheet 3.

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No. 2,390.

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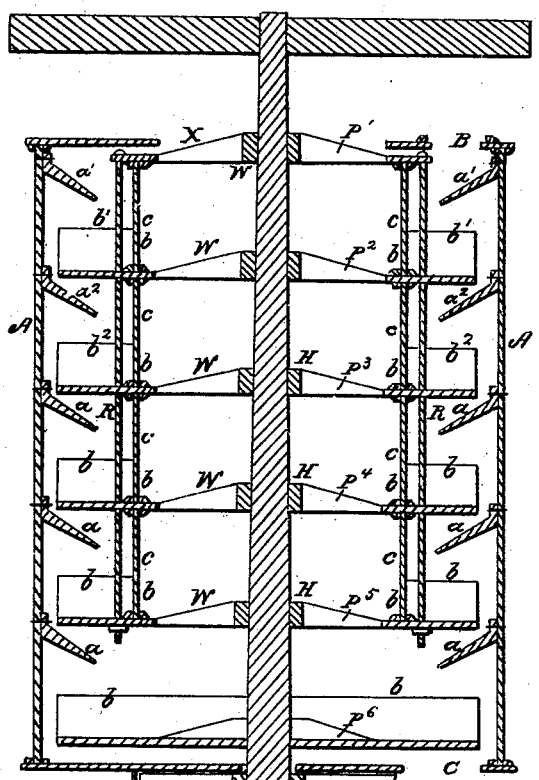
Fig: 1.



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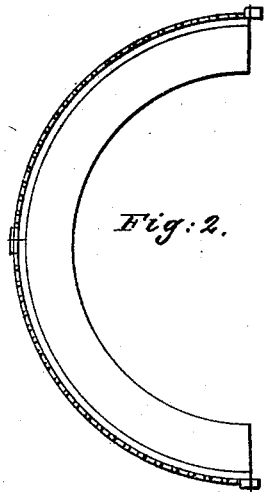

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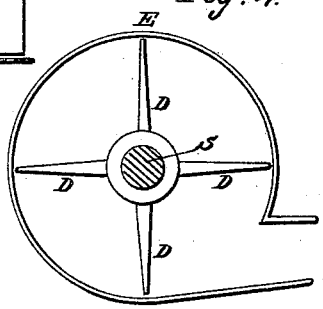

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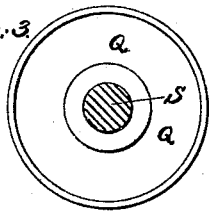

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Fig: 1.

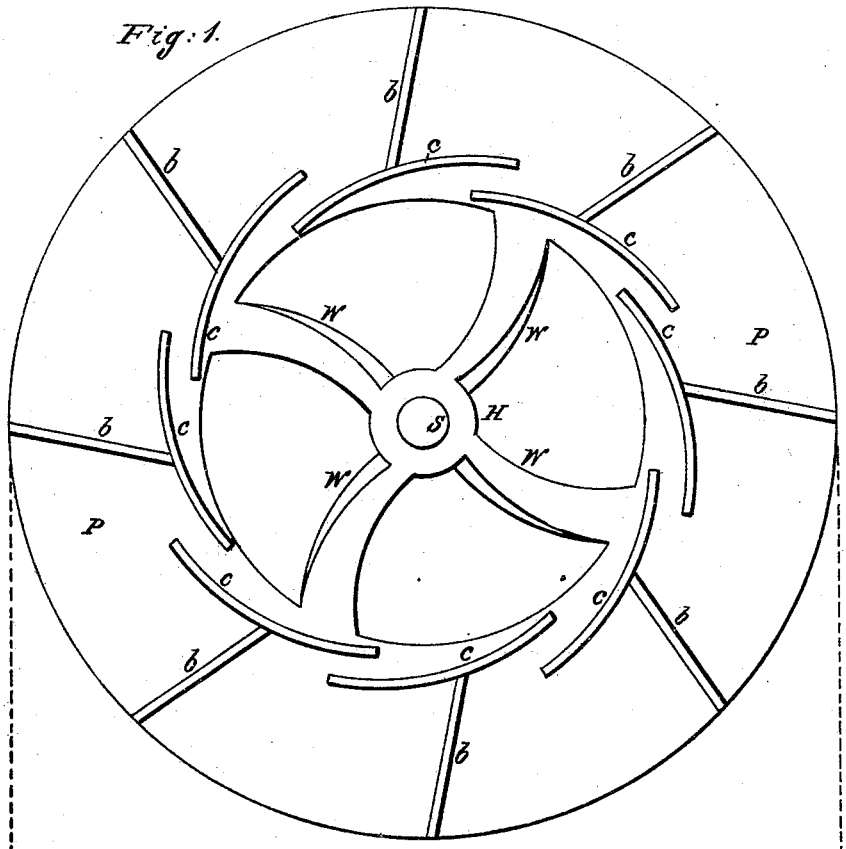
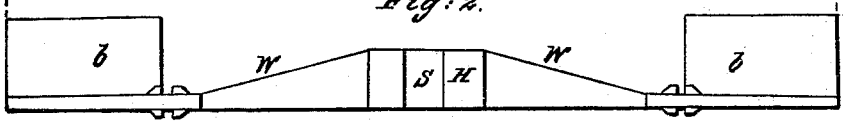


Fig: 2.



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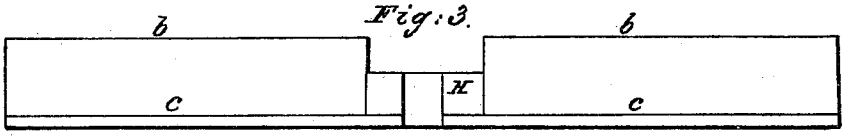

UNITED STATES PATENT OFFICE.

DAVID BALDWIN, OF WHITEHALL, NEW YORK.

SMUT-MACHINE.

Specification of Letters Patent No. 2,390, dated December 14, 1841.

To all whom it may concern:

Be it known that I, DAVID BALDWIN, of Whitehall, Washington county, State of New York, have invented a new and useful Machine for Cleaning Grain, called "Baldwin's Improved Smut-Machine," which is described as follows, reference being had to the annexed drawings of the same, making part of this specification.

Figure 1 Plate 1 is a vertical section through the center of the machine. Fig. 2 Plate 1 is a plan of one half of one of the circular inclined planes and of the staves to which it is bolted. Fig. 3 Plate 1 plan of the pulley on the vertical shaft. Fig. 4 Plate 1 plan of a common fan and spout arranged below the case for cleaning the grain. Fig. 1 Plate 2 plan or top view of one of the circular revolving plates, hub, spiral wings, segment staves and straight beaters. Fig. 2 Plate 2 elevation or vertical cross section of ditto. Fig. 3 Plate 2 elevation or vertical cross section of the bottom revolving plate and straight beaters. Fig. 1 Plate 3 plan of one half the bottom plate of the cylindrical stationary case showing the outlet through which the grain is discharged and the grooves to receive the vertical staves forming the case. Fig. 2 Plate 3 edge view of ditto. Fig. 3 Plate 3 view of the under side of the top revolving circular plate and spiral wings showing the grooves to receive the upper ends of the upper series of the segment staves. Fig. 4 Plate 3 vertical section of ditto. Fig. 1 Plate 4 view of the under side of one half of the top plate showing the inlet for the admission of the grain and the grooves for the vertical parallel staves. Fig. 2 Plate 4 vertical cross section of ditto. Fig. 3 Plate 4 top view of one half of one of the circular inclined planes and flange by which it is bolted to the staves. Fig. 4 Plate 4 vertical cross section of ditto.

Similar letters refer to corresponding parts.

The external cylindrical stationary perforated case A in which the beaters *b* and *c* revolve and the stand on which it is supported and the vertical revolving shafts pulley Q fan D, and fan case E being made in the usual manner need not therefore be particularly described.

The main feature of this invention and improvement consists in affixing to the revolving shaft S a series of circular plates P with spiral wings W segment buckets C, straight beaters *b* and in constructing the interior of the case A with parallel horizontal inclined plane rings *a* in such a manner that the air will be drawn in through the aperture X in the center of the head of the case to the interior thereof, where it is compressed by said spiral wings W which draw in the air through said aperture and force it through the spaces between the segment buckets C, in the manner of a reaction water wheel and out at the vertical parallel slits in the external case carrying with it the dust and broken smut separated from the grain by the beaters *b* which drive it by centrifugal force against the interior of the case A; the grain being returned toward the center of the machine by the circular inclined plane plates *a* to undergo several similar operations in passing from the top to the bottom of the machine.

The machine is made entirely of iron of any suitable size and proportion variable at pleasure and is operated in the usual manner by band and pulley—the grain passing into the machine through an aperture B in the head of the case A, and being discharged through an aperture *c* in the bottom thereof and in descending passes through a horizontal column of air created by the fan D in the case E which separates whatever remaining dirt falls down with the grain. There are six circular plates P fixed to and revolving with the shaft S connected together by vertical screw rods R having segment staves or buckets C placed between said plates in the manner of the buckets of some reaction water wheels or wind wheels being let into grooves of corresponding shape made in the upper and under sides of the said plates (except the top plate and the plate P^5), which are grooved on one side only leaving space between said buckets C or segment staves for the passage of the air. The circular plate P^1 P^2 P^3 P^4 P^5 have each four spaces O around the center hub H to admit the air which hub is perforated to correspond with the shaft S inserted therein. There are four spiral wings W to each of said plates dividing the center space and forming the aforesaid spaces O said wings radiating from the outer diameter of the hub H to the inner diameter of the circular plate for gathering in the air and forcing it downward and compressing it within the

revolving segment staves *c*. Four of the said plates have straight rectangular beaters *b* extending from the convex sides of the segment staves *c* to the inner peripheries of the plate P the upper plate P′ has no beaters, being made of less diameter than the other plates P to allow the grain to pass down into the machine. The beaters *b* of the lower plate P⁶ extend from the hub to the circumference of the plate, said plate having no segment staves or buckets. There are five circular inclined plane conducting plates *a* Fig. 1 Plate 1 for conducting the grain from the inside of the case back toward the center thereof to be successively operated upon by the beaters *b* which plates are fastened by flanges and screw bolts to the inside of the vertical staves of the case A one between each pair of plates P the flanges and bolts being on a horizontal line with the said revolving circular plates P.

The operation of the machine is as follows—The machine being put in motion, the smutty or foul grain is admitted into the machine through the aperture B in the head of the stationary case A Fig. 1 Plate 1 and striking upon the upper inclined circular conducting plate *a′* is directed by it to the beaters *b′* which strike it and force it outward against the staves of the case A from whence it falls down upon the second inclined plane plate a^2 which conducts it to the next series of beaters b^2 which act upon the grain in the manner before described and so on until the grain passes out at the discharging aperture C′ in the bottom plate of the case A where it is met by a horizontal current of air from the fan D which cleans it of all remaining dust and dirt. While the grain is undergoing this beating, blowing and returning operation the spiral wings W are gathering in air at the center, compressing it and forcing it over the surfaces of the segment beaters or staves *c* and out through the vertical parallel apertures in the case A carrying off the smut, dirt and other impurities in particles smaller than the grain which is not allowed to pass through said apertures being smaller than the grain.

I do not claim constructing a smut-machine with circular inclined planes for returning the grain nor constructing the revolving cylinder with circular plates with segment pieces and beaters arranged between them as set forth but—

What I do claim as my invention and which I desire to secure by Letters Patent is—

The employment of the spiral wings W for connecting the circular plates P to the hubs H and shaft S and compressing the air in the case in combination with the segment buckets *c* and radiating beaters *b*, as herein set forth.

DAVID BALDWIN.

Witnesses:
JOHN C. PARKE,
WM. H. FLEEMAN.