(No Model.) 2 Sheets—Sheet 1.

J. BEALL.

CLEANING OR SCOURING GRAIN.

No. 568,125. Patented Sept. 22, 1896.

Fig. 1.

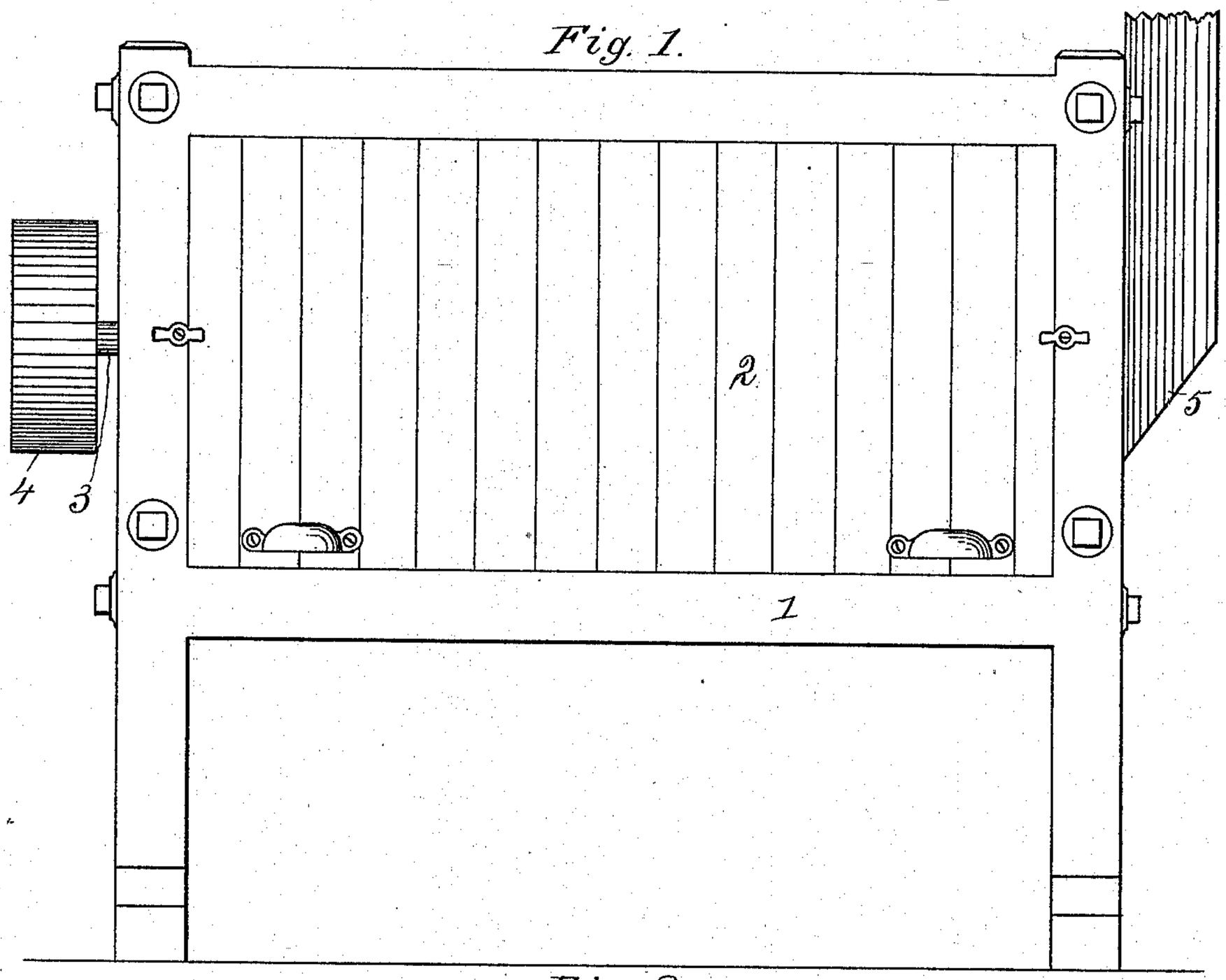
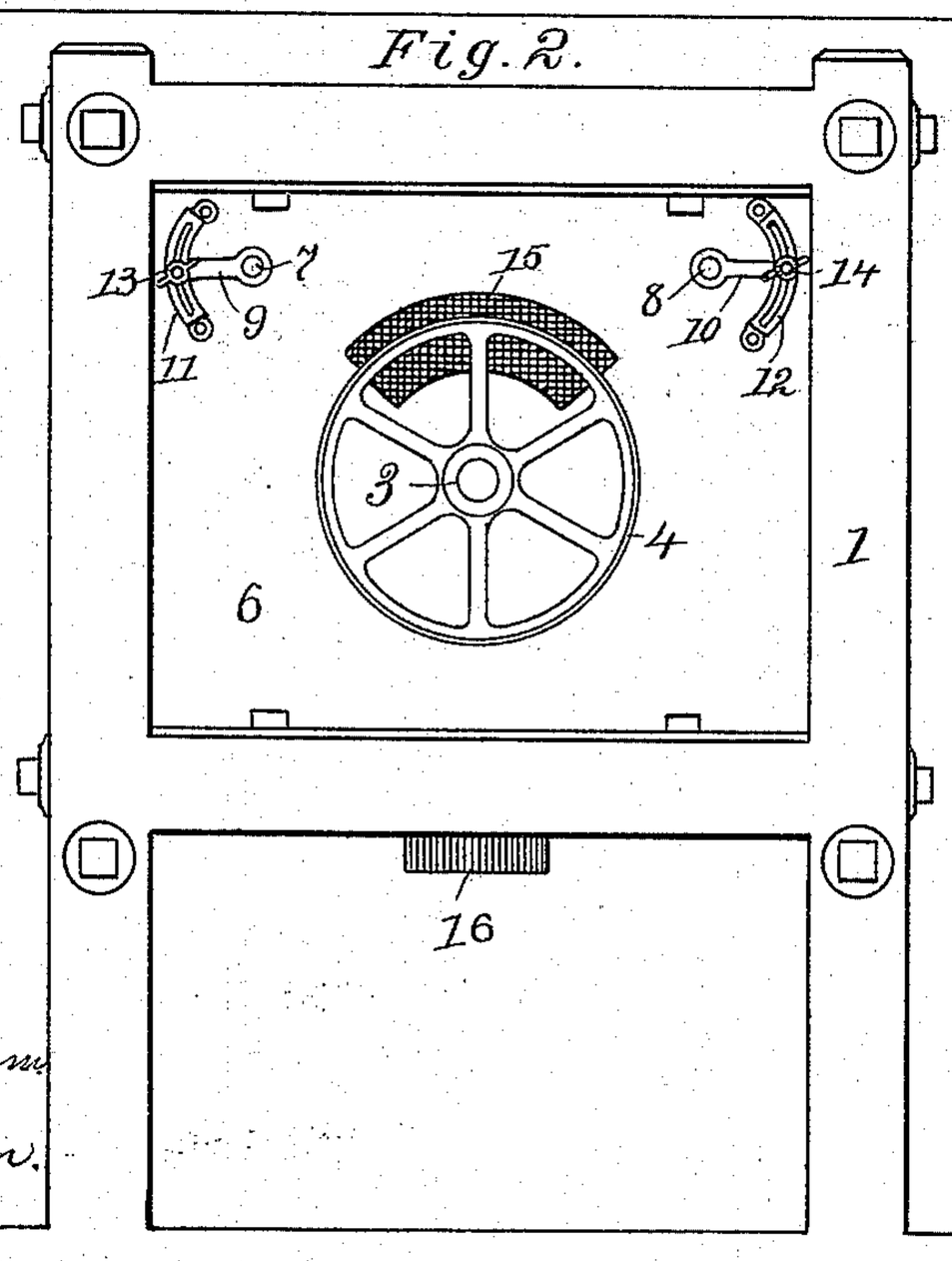


Fig. 2.



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(No Model.) 2 Sheets—Sheet 2.

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Fig. 3.

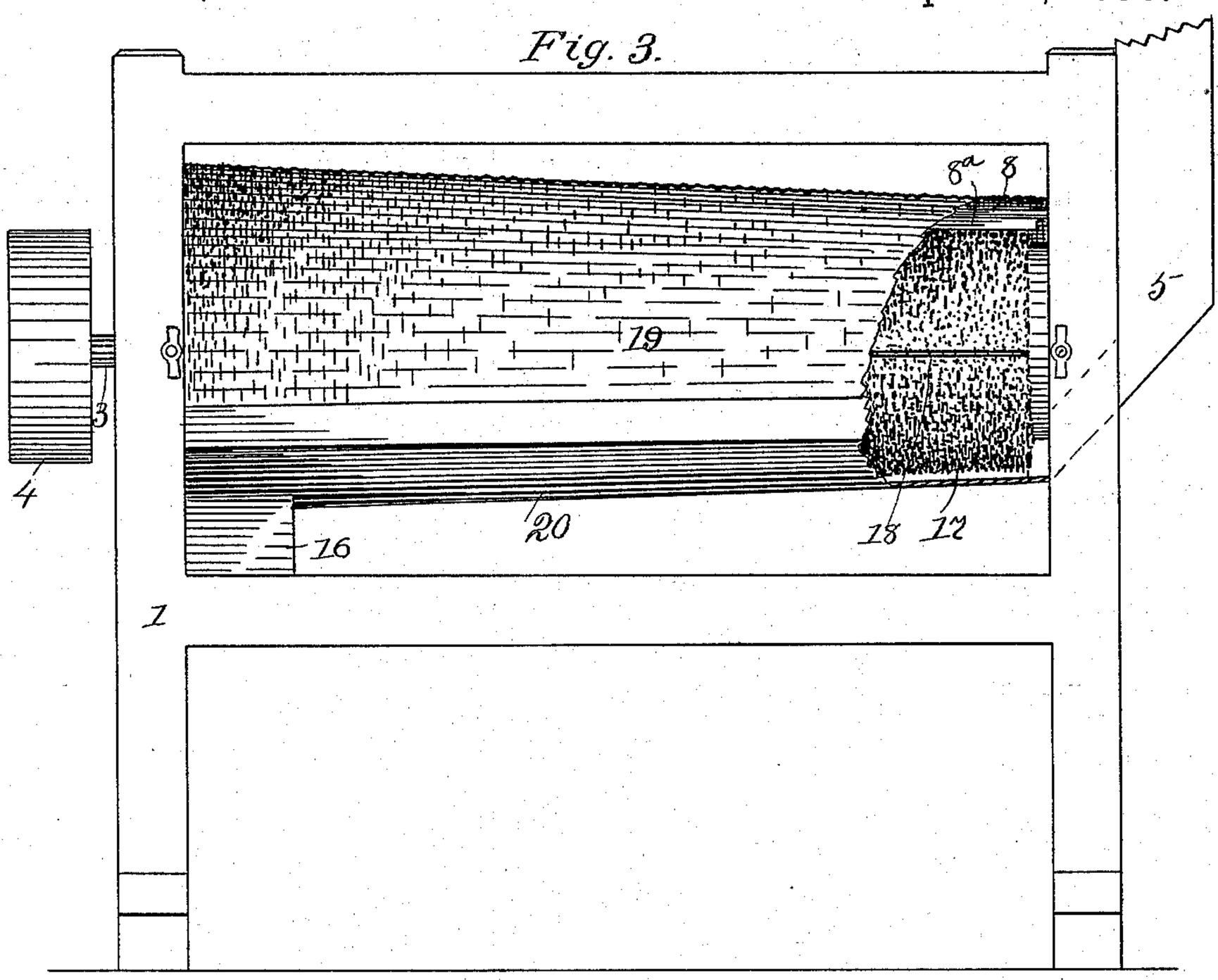
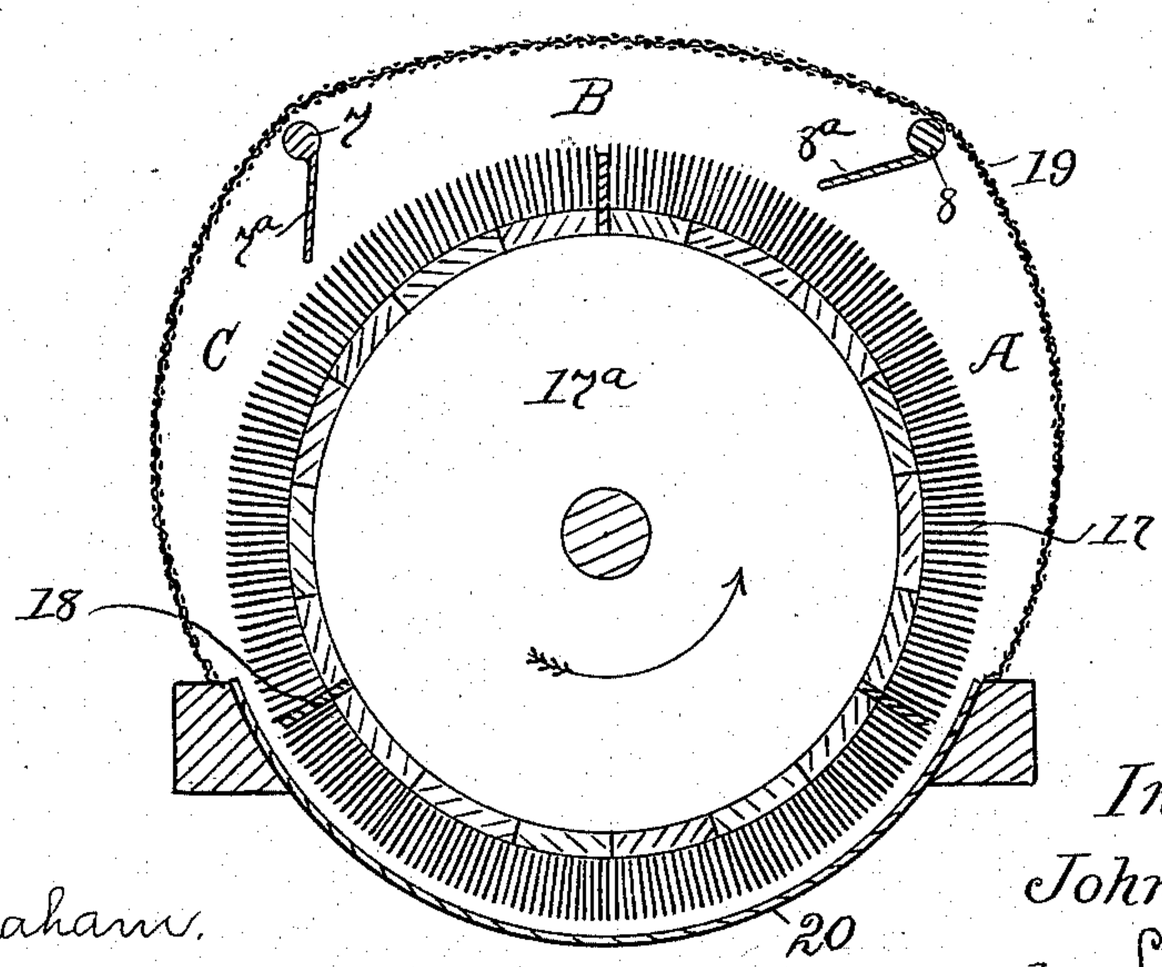


Fig. 4.



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UNITED STATES PATENT OFFICE.

JOHN BEALL, OF DECATUR, ILLINOIS.

CLEANING OR SCOURING GRAIN.

SPECIFICATION forming part of Letters Patent No. 568,125, dated September 22, 1896.

Application filed February 13, 1896. Serial No. 579,123. (No model.)

To all whom it may concern:

Be it known that I, JOHN BEALL, of Decatur, in the county of Macon and State of Illinois, have invented certain new and useful Improvements in Cleaning or Scouring Grain, of which the following is a specification.

This invention is designed to provide improved means for cleaning or scouring grain. It is particularly applicable to corn or Indian maize. It is exemplified in the structure hereinafter described, and it is defined in the appended claims.

The invention is based on the discovery that a superior cleaning effect can be produced by subjecting grain in a free condition to a succession of strokes with ends of elastic strips of metal sufficiently hard to cut the outer skin or bran of the grain, and on the further discovery that such operation may be practically performed by arranging the scouring-strips radially on a rotating cylinder or cone and submitting the grain to the action of the strips in compartments sufficiently large to permit free tumbling action of the grains.

In the drawings forming part of this specification, Figure 1 is a side elevation of a cleaner embodying my invention. Fig. 2 is an end elevation of the same. Fig. 3 is a side elevation of the cleaner with one of the sides of the casing removed and a portion of the wall of the tumbling-compartments broken away. Fig. 4 is a vertical cross-section of the cleaner at any point between its ends.

In constructing a cleaner in accordance with my invention a frame, as 1, is built of any desired size and proportion and is preferably incased, as indicated at 2. In the end walls of the frame, one of which is shown at 6 in Fig. 2, a shaft 3 is journaled. A drive-pulley 4 is mounted on the outer end of the shaft, and the part of the shaft inside the frame is supplied with a cylinder or frustum of a cone, as 17ª in Fig. 4. To the periphery of the cylinder are fastened a great number of elastic strips, as 17, which extend radially from the cylinder and are made of steel or an equivalent substance. The brush, made in the manner described, is incased throughout its length as follows: A preferably imperforate portion of casing, as 20, extends close to and concentric with the periphery of the brush, and above the edges of part 20 a preferably perforate portion 19 extends over the brush, at a greater distance from the same. The space inclosed by casing 19 constitutes the operative part of the device, *i. e.*, the tumbling-compartment, and it is in this instance subdivided into three compartments A, B, and C by swinging valves or partitions 7ª and 8ª. The swinging valves are supplied with shafts 7 and 8, respectively, and such shafts extend beyond one of the end walls 6 of the outer casing and are provided on their protruding ends with means for governing the positions of the valves relative to the brush. In this particular case such means comprise slotted arcs 11 and 12, arms 9 and 10 on shafts 7 and 8, respectively, pins 13 and 14, extending upward from the arms through the slots of the arcs, and finger-nuts to clamp the arms against the arcs.

Grain is supplied to the small end of the brush through chute 5. It is discharged through opening 16 at the large end of the brush, and it is supplied with air while in process of cleaning through openings, as 15, in the ends of the casing.

The brush is preferably reinforced at intervals by means of strips, as 18, that extend lengthwise of the brush, that are securely fastened to the frame thereof, and that are set back slightly below the ends of the metallic strips or bristles. The effect of the rigid strips is to prevent the elastic bristles from bending out of operative position, or, in other words, to compel the elastic strips to present their ends to the corn.

In operating the device the grain is, in this instance at least, delivered to the lower imperforate part 20 of the casing, but is immediately carried out of the same by the action of the brush, which may be supposed to be rotating in the direction indicated by the arrow in Fig. 4. As soon as the grain reaches compartment A it flies off at a tangent, is arrested by the wall 19, is returned to the brush by gravity and reaction, is struck sharply by an end of an elastic strip and thrown off again at a tangent, and so the operation is repeated again and again until by an accidental move, or by an accumulation in the compartment sufficient to compel the brush to rub against the grain, it is finally carried to compartment B. In this compartment the described op-

eration is repeated, though to a smaller extent, probably owing to the more nearly horizontal direction of the motion of the grain and the consequently less effect of gravity as a reactionary force. In compartment C there is also opportunity for the scouring process to be continued to some extent, and when the grain finally returns to the lower part of the casing it is immediately carried to the opposite side and again made to pass through the cleaning-compartments. This is continued until the conical shape of the brush, or, in lieu of that, other obvious means, carries the grain to the discharge-opening, and the duration of the operation may be prolonged or curtailed almost at will by varying the distance between the inner edges of the valves and the brush. A grain of corn, for instance, passing through the cleaner is struck a great many times on different parts of its surface with force sufficient to cut the skin without breaking the grain, such result being attained by using metal bristles and thereby concentrating the force of the stroke on a small portion of the surface of the grain. The strokes impinge against concave surfaces of the grain as well as against convex surfaces, a result dependent on the use of the ends of the bristles for contacting-surfaces, and the tumbling-spaces enable all surfaces of a grain to be presented to the action of the bristles.

The mode of operation described is particularly useful in removing black tips that form at the base of the embryo of corn, though I do not confine it solely to that use nor to the cleaning of corn alone.

The strips of the brush require some elasticity in order to avoid breaking the grain, and the degree varies with other circumstances. I advise the use of strips for ordinary use about two inches long and one-sixteenth by one thirty-second of an inch in cross-section.

With a brush fourteen inches or thereabout in diameter good results may be attained by developing a speed of about five hundred revolutions per minute.

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

1. In a cleaner or scourer for grain, the combination of a cylindrical, rotatable approximately horizontal brush, the bristles of which are elastic steel strips, and a non-concentric inclosing casing forming enlargements or tumbling-compartments, substantially as set forth.

2. In a cleaner or scourer for grain, the combination of a rotatable brush, a non-concentric inclosing casing forming enlargements or tumbling-compartments above the lower part of said brush and longitudinal adjustable valves in the casing between the compartments, substantially as set forth.

3. In a cleaner or scourer for grain, the combination of a rotatable inclosed brush, a portion of casing comparatively close to the under side of the brush, a complement of casing farther from the sides and top of the brush and a longitudinal valve, or valves, dividing the space above and to the sides of the brush into compartments, substantially as set forth.

In testimony whereof I sign my name in the presence of two subscribing witnesses.

JOHN BEALL.

Attest:
GEORGE HARPSTRITE,
L. P. GRAHAM.