(Model.) 2 Sheets—Sheet 1.

H. B. STEVENS.

MACHINE FOR POLISHING RICE, &c.

No. 257,405. Patented May 2, 1882.

Fig. 2.

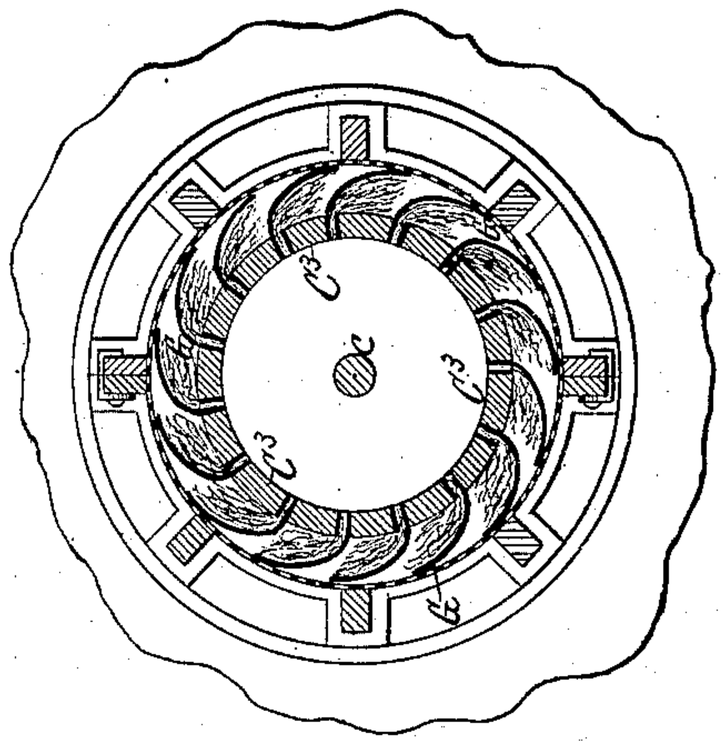
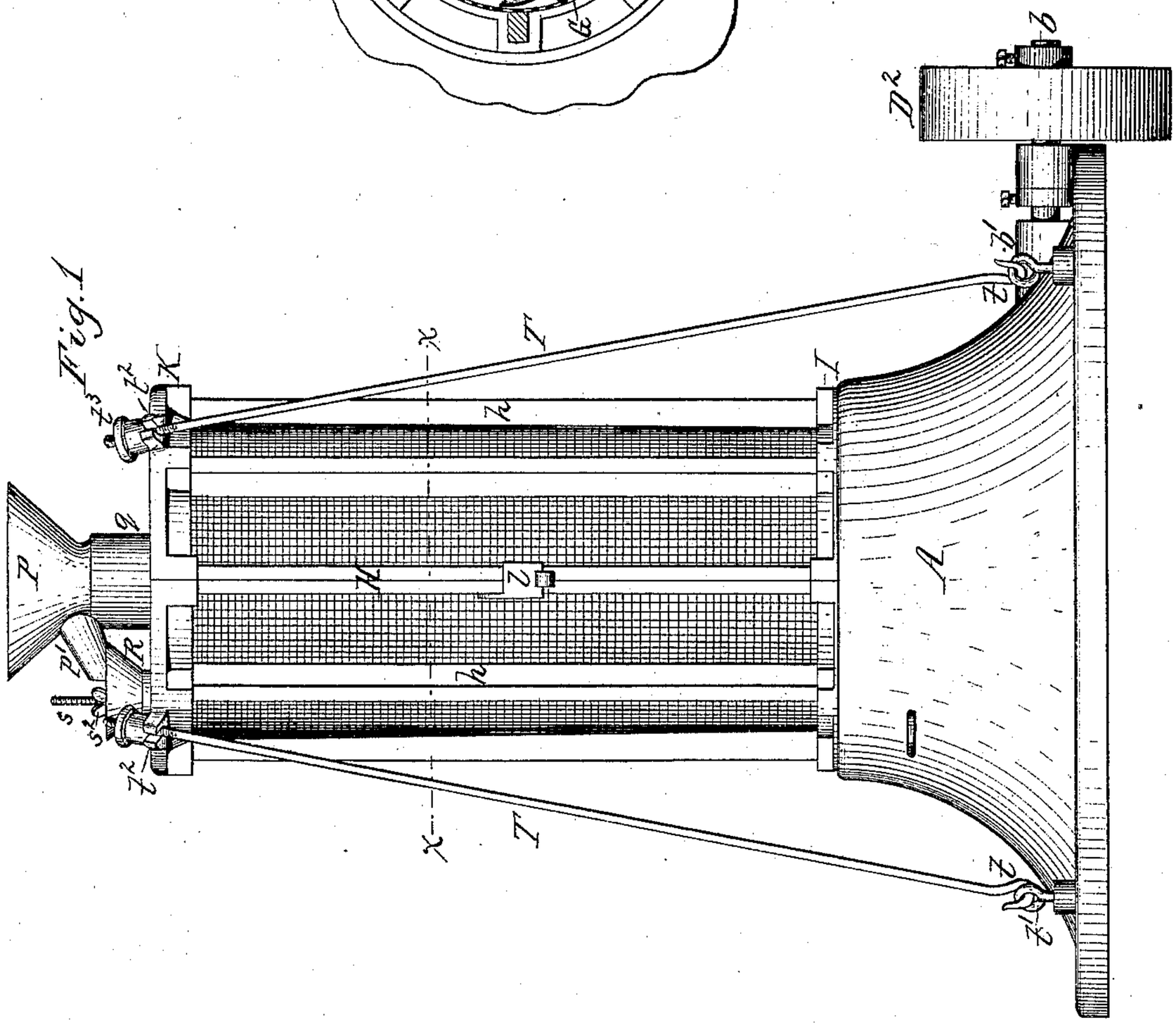


Fig. 1.



Witnesses.
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(Model.) 2 Sheets—Sheet 2.

H. B. STEVENS.

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Fig. 4.

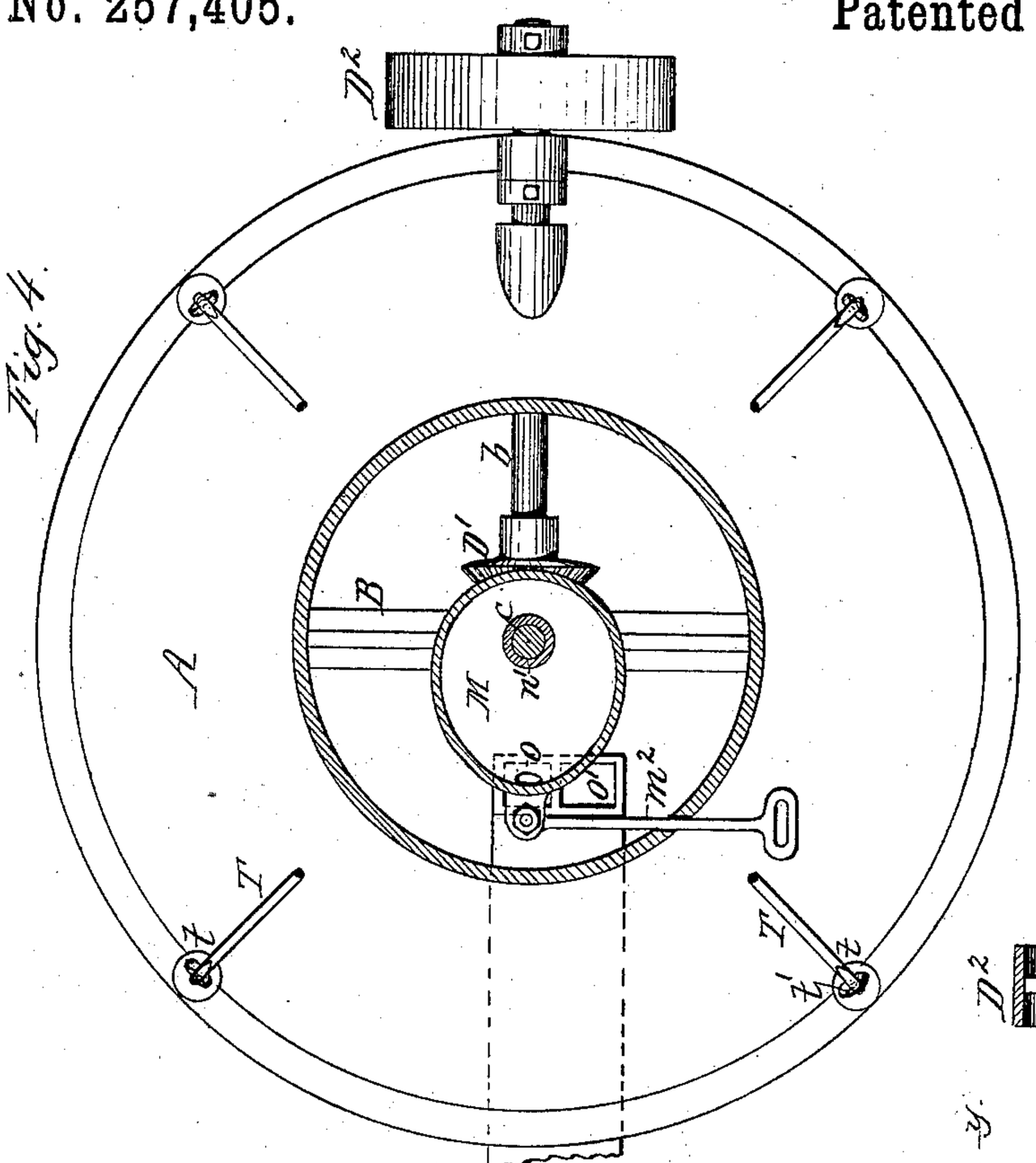
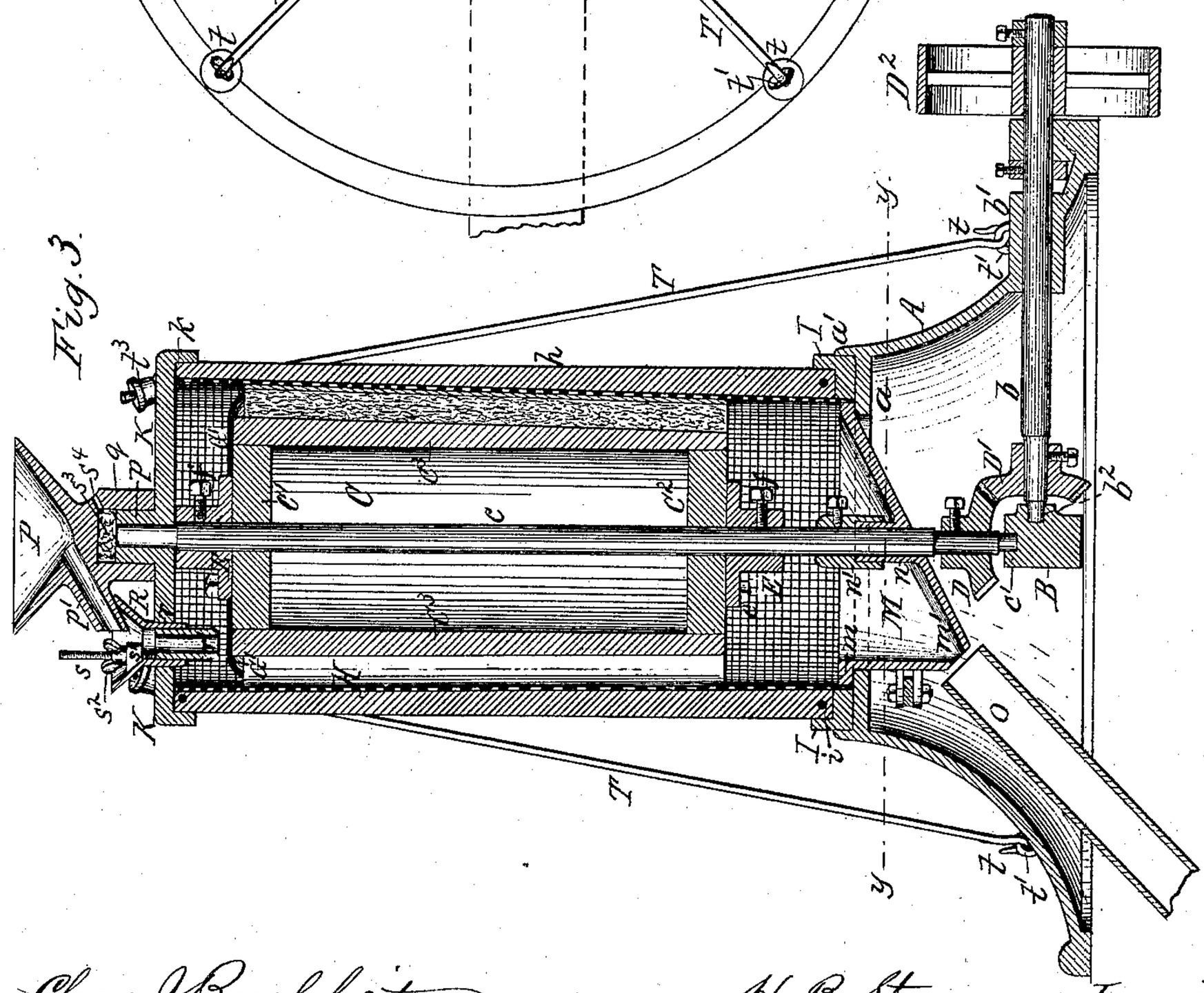


Fig. 3.



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UNITED STATES PATENT OFFICE.

HENRY B. STEVENS, OF BUFFALO, NEW YORK, ASSIGNOR TO GEORGE L. SQUIER, OF SAME PLACE.

MACHINE FOR POLISHING RICE, &c.

SPECIFICATION forming part of Letters Patent No. 257,405, dated May 2, 1882.

Application filed March 6, 1880. (Model.)

To all whom it may concern:

Be it known that I, HENRY B. STEVENS, of the city of Buffalo, in the county of Erie and State of New York, have invented new and useful Improvements in Machines for Polishing Rice and other Grains and Seeds, of which the following is a specification, reference being had to the accompanying drawings.

My invention relates to a machine for polishing rice and other grains and seeds. The rice as it comes from the hulling-machine is covered by a skin or cuticle which is not removed with the hull, and which it is necessary to remove in order to fit the rice for the market.

The object of my invention is to render the machine simple and durable in construction, efficient and convenient in its operation, and capable of being readily taken apart for repairs or transportation, and easily set up ready for operation when required for use.

My invention consists, to that end, of the particular improvements in the construction of the machine which will be hereinafter fully described.

In the accompanying drawings, Figure 1 is an elevation of my improved machine. Fig. 2 is a horizontal section in line *x x*, Fig. 1. Fig. 3 is a sectional elevation of my improved machine. Fig. 4 is a horizontal section in line *y y*, Fig. 3.

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

A represents the base of the machine, consisting of a hollow conical or curved casting having a tight outer wall, and provided at its top with an inwardly-projecting horizontal flange, *a*, and an upwardly-projecting marginal flange or ledge, *a'*.

B is a bridge-tree secured transversely in the base A near its bottom.

b is the horizontal driving-shaft, supported in a bearing, *b'*, arranged in the outer wall of the base A, and a bearing, b^2, formed in the bridge-tree B.

c is the vertical shaft carrying the polishing-drum C. The shaft *c* is supported with its lower end in a step-bearing, *c'*, formed in the bridge-tree B, and provided with a bevel-wheel, D, which meshes with a similar wheel, D', mounted on the shaft *b*. Motion is imparted to the driving-shaft *b* by a pulley, D^2, or other suitable means. The drum C is constructed in the form of a truncated cone with the largest end at the top. It consists of two circular heads, C' C^2, and connecting-staves, C^3. The heads C' C^2 are secured to hubs or sleeves E E' by screws *e*, and the sleeves E E' are secured to the shaft *c* by set-screws, *f*.

G are strips of leather secured longitudinally between the staves C^3, their outer portions overlapping one another, as clearly shown in Fig. 2. Strips of sheep-skin with the wool on are secured underneath the strips G to form a cushion or yielding backing for the strips G.

G' is an annular metallic plate secured to the upper head, C', of the drum, and having its rim turned down over the upper ends of the strips G to prevent the grain from getting behind these strips.

H represents the wire-gauze case which surrounds the drum C. It is made in two or more sections, each composed of upright ribs or bars *h*, which are secured with their lower ends to two or more sections of a ring, I, and with their upper ends to a similar number of sections of a top-plate, K. As shown in the drawings, the case H is made in two parts, the adjacent upright bars of which are secured together by clamps *l*. The ring I and plate K are provided with sockets *i k*, for the reception of the ends of the uprights *h*. The case H is made conical in form to conform to the taper of the drum C, so that the wear of the latter can be compensated for and the same close fit of the drum against the surrounding case can be maintained at all times by lowering the drum on the shaft *c*.

M is the grain-pot or receiving-hopper arranged with its circular top flange, *m*, upon the horizontal flange *a* of the base A, and having a discharge-opening, *m'*, the pot being shaped so as to receive the grain as it leaves the case H and discharge it through the opening *m'*.

n is an upwardly-projecting hub or sleeve formed on the inclined bottom of the pot M, around the opening through which the shaft *c* passes; and *n'* is a sleeve or cup secured to the shaft *c*, so as to overlap the upper end of the sleeve *n*. The latter prevents the grain from entering the opening through which the shaft passes, and the sleeve *n'* prevents the dust from entering the same opening, thereby fully pro-

tecting the parts below the grain-pot M from dust. The grain-pot M can be turned on the shaft *c* as an axis, its weight being supported by its top flange resting upon the flange *a* of the base.

O O′ represent two or more spouts, arranged below the discharge-opening *m′* of the pot M in such manner that by adjusting the pot M the grain can be discharged into either of the spouts O O′ at the pleasure of the operator. The pot M is provided with a rod, m^2, projecting through the outer wall of the base A, and having at its outer end a suitable handle for adjusting the pot M. *p* is a bearing for the reception of the upper end of the shaft *c*. It is formed centrally upon the top plate, K, of the case H and divided into as many sections as the top plate, K, two being shown in the drawings. Each section of the bearing is cast with the corresponding section of the top-plate, K.

q is a sleeve fitting over the bearing *p* and holding the sections of the same together, whereby at the same time the sections of the top plate, K, are firmly secured together.

P is the grain-hopper, cast with or otherwise secured to the sleeve *q*, and *p′* is the grain-spout leading from the hopper P to a secondary hopper, R, arranged on one side of the hopper P, and above the top plate, G′, of the drum C. The hopper R is constructed with a sleeve or tube, *r*, fitted in an opening in the top plate, K, so as to deliver the grain upon the annular plate G′ of the drum. *r′* is a sleeve arranged within the tube *r* of the hopper R and made vertically adjustable therein by means of a set-screw, *s*, passing through a lug, *s′*, formed in the hopper R, and a thumb-nut, s^2. By means of the latter the position of the sleeve *r′* above the plate G′ of the drum can be nicely adjusted and the flow of the grain from the sleeve *r′* to the plate be regulated accordingly.

s^3 represents a cavity formed in the sleeve *q* above the bearing *p*, and adapted to receive cotton waste or some other suitable capillary substance.

s^4 is a fine channel through which oil is supplied to the cavity s^3 for lubricating the bearing *p*, which latter is by this construction kept well lubricated and at the same time protected against dust.

T are tie rods or bolts for connecting the top plate, K, with the base A and tying the whole structure together. The lower ends of the bolts T are made in the form of hooks *t*, which engage in eyes *t′*, secured to the base A. The upper ends of the bolts T pass through slotted projecting lugs t^2, cast upon the top plate, K, and are secured by thumb-nuts t^3, bearing against the upper side of these lugs.

The operation of this machine is as follows: The rice to be polished is shoveled or otherwise introduced into the principal hopper P, from which it passes in a continuous stream through the tube *p′* into the secondary hopper R, whence it passes through the tube *r* and sleeve *r′* upon the top plate, G′, of the drum C. By raising or lowering the adjustable sleeve *r′* a greater or less quantity of grain is discharged upon the drum. The grain falling upon the plate G′ is carried over the edge of the plate by centrifugal force, and descends through the case H, between the latter and the leather strips G, by gravity. In its downward passage through the case H the grain is rolled over and rubbed against the wire-cloth, whereby the skin or cuticle is detached from the berry, and the latter polished. The polished grain passes into the receptacle M, and is conducted by the latter to one of the spouts O O′, which conducts the polished grain into a suitable receptacle. When this receptacle is filled the pot M is shifted to discharge into the other spout, which connects with a second receptacle which is being filled while the first receptacle is being emptied. Sometimes different qualities of grain are consecutively treated in the same machine, when it is desirable that each quality should be directed into a separate receptacle, which is readily accomplished by means of the adjustable pot M. When the machine is stopped the partially-polished grain contained in the machine descends by gravity, and this grain should be kept separate from the perfectly-polished grain. The pot M should therefore be shifted just before stopping the machine to deliver the partially-polished grain into a separate receptacle. Upon releasing the thumb-nuts t^3 of the tie-rods T the latter can be detached from the top plate, K, and the base A. Upon removing the sleeve *q* and hopper P from the top plate, and releasing the clamps *l*, which hold the sections of the case H together, the latter can be taken apart and be detached from the base A. In this manner the machine is readily taken down when the drum C or the case H are required to be repaired, or when the machine is to be prepared for transportation. The construction of the machine, in a large number of parts, which can be readily detached or connected together as circumstances may require, adapts the machine for shipment to distant parts of the world, and for transportation upon the backs of mules or other animals in countries which are not provided with cart-roads, and enables unskilled persons to put the machine together ready for operation at the places where machines of this kind are required for use. The base A being closed, except at the bottom, fully protects the gearing and bearings of the machine against the dust and dirt, which is liberated in large quantities in the operation of polishing rice.

I claim as my invention—

1. The combination, with the foraminous polishing-case H, having a base, A, provided with an annular flange, *a*, of the adjusting grain-pot M, provided with a flange, *m*, resting loosely upon the flange *a*, substantially as set forth.

2. The combination, with the shaft *c* and grain-pot M, of the sleeve *n*, formed with the

grain-pot, and the sleeve n', secured to the shaft and overlapping the sleeve n, substantially as set forth.

3. The combination, with the drum C, provided with leather strips G, of the plate G', constructed with a downwardly-curved rim overlapping the ends of the leather strips G, substantially as set forth.

4. The combination, with the top plate, K, constructed in two or more sections, each provided with a section of the bearing p, of the sleeve q, fitting over the sections of the bearing p, thereby securing the sections of the plate K together, and the hopper P, substantially as set forth.

5. In a grain-polishing machine, the combination, with the grain-receiving hopper, having a discharge-spout, p', of a secondary hopper, R, arranged to receive the grain from the spout p', and provided with a discharge-spout, r, and adjustable sleeve r', substantially as set forth.

6. The combination, with the base A, of the case H and top plate, K, made in two or more sections held together by clamps l and sleeve q, and the removable tie-rods T, connecting the top plate with the base, substantially as set forth.

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Witnesses:
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JNO. J. BONNER.