

(No Model.)

2 Sheets—Sheet 1.

G. H. CORMACK.
OATMEAL MACHINE.

No. 297,503.

Patented Apr. 22, 1884.

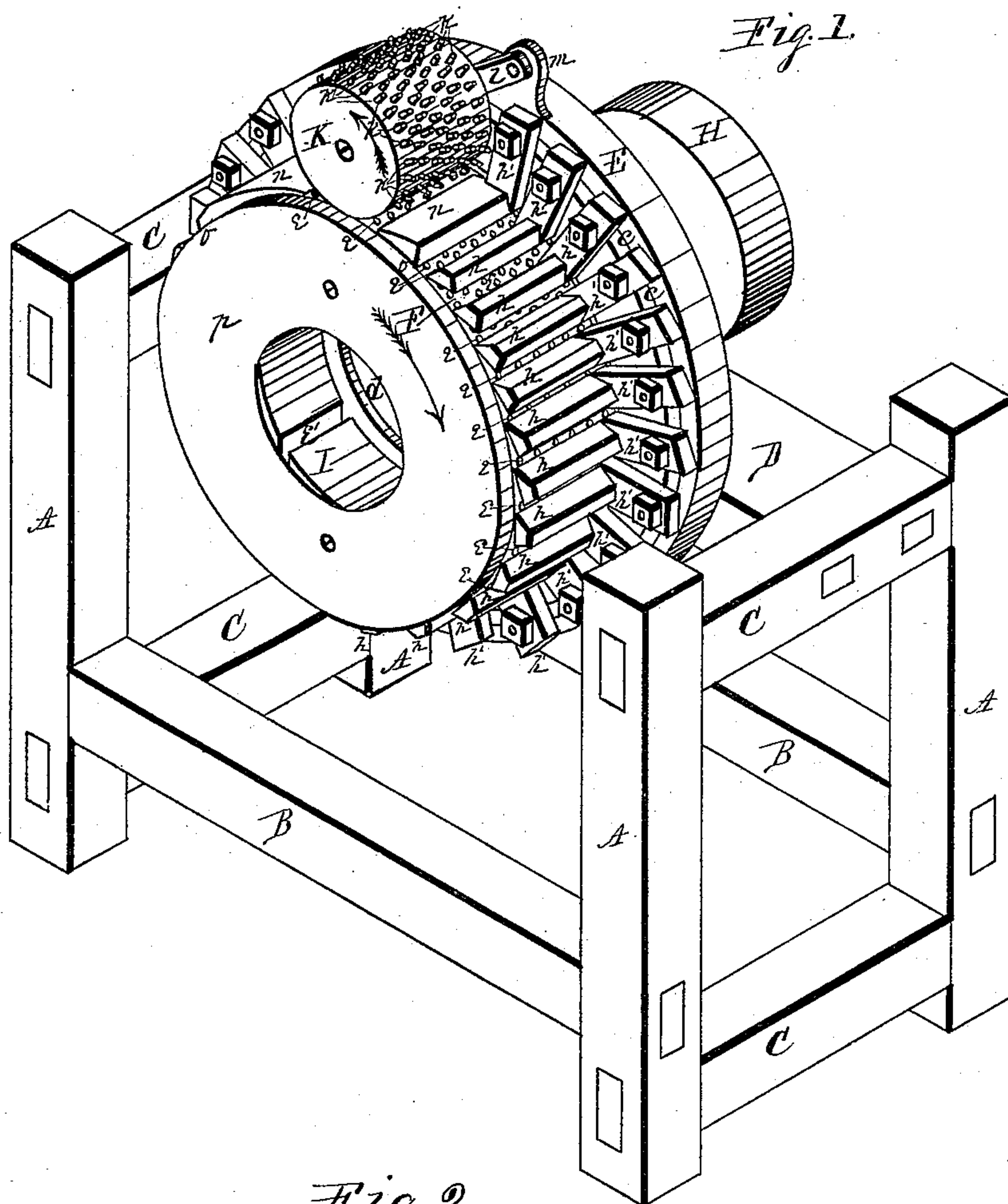
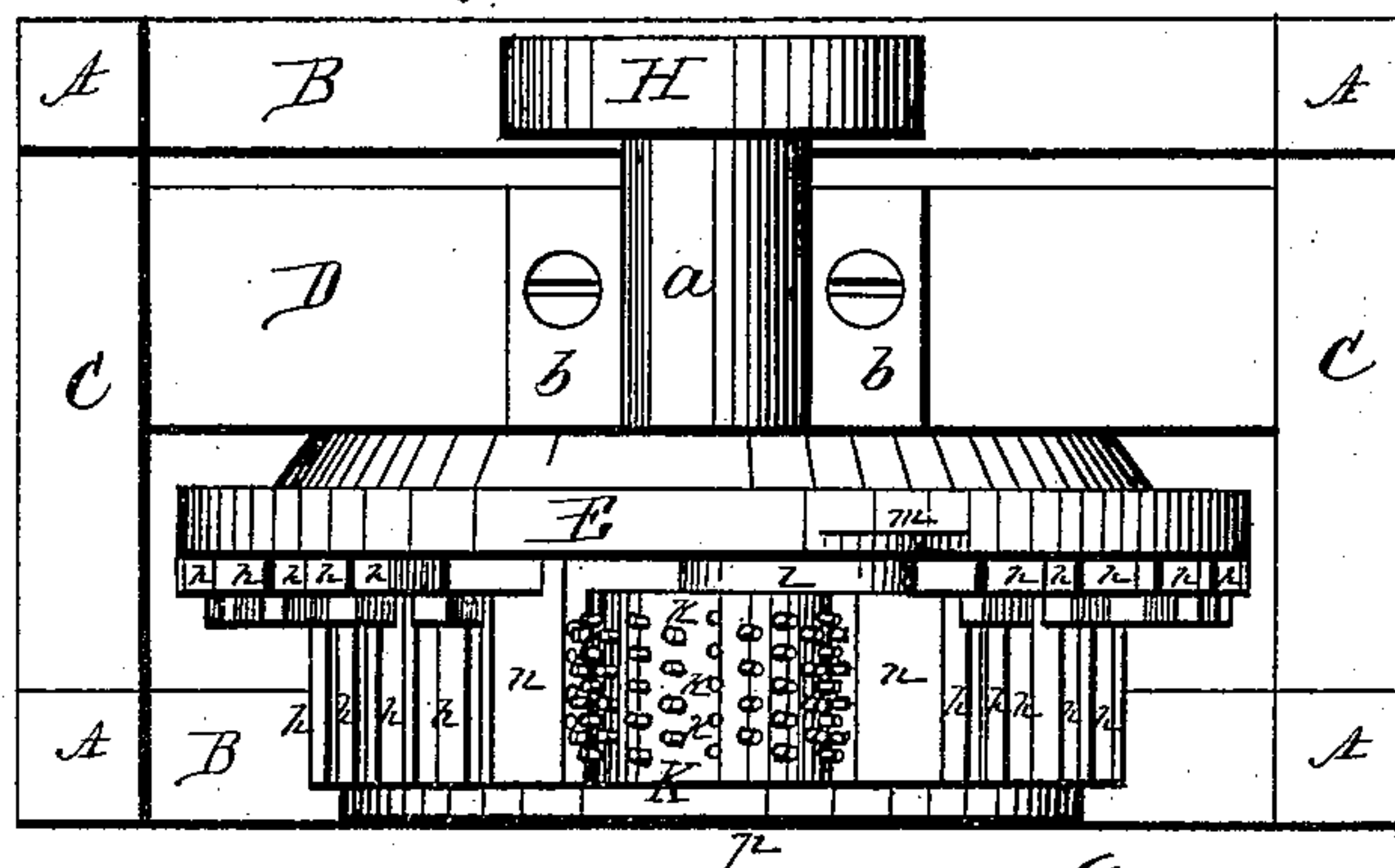


Fig. 2.



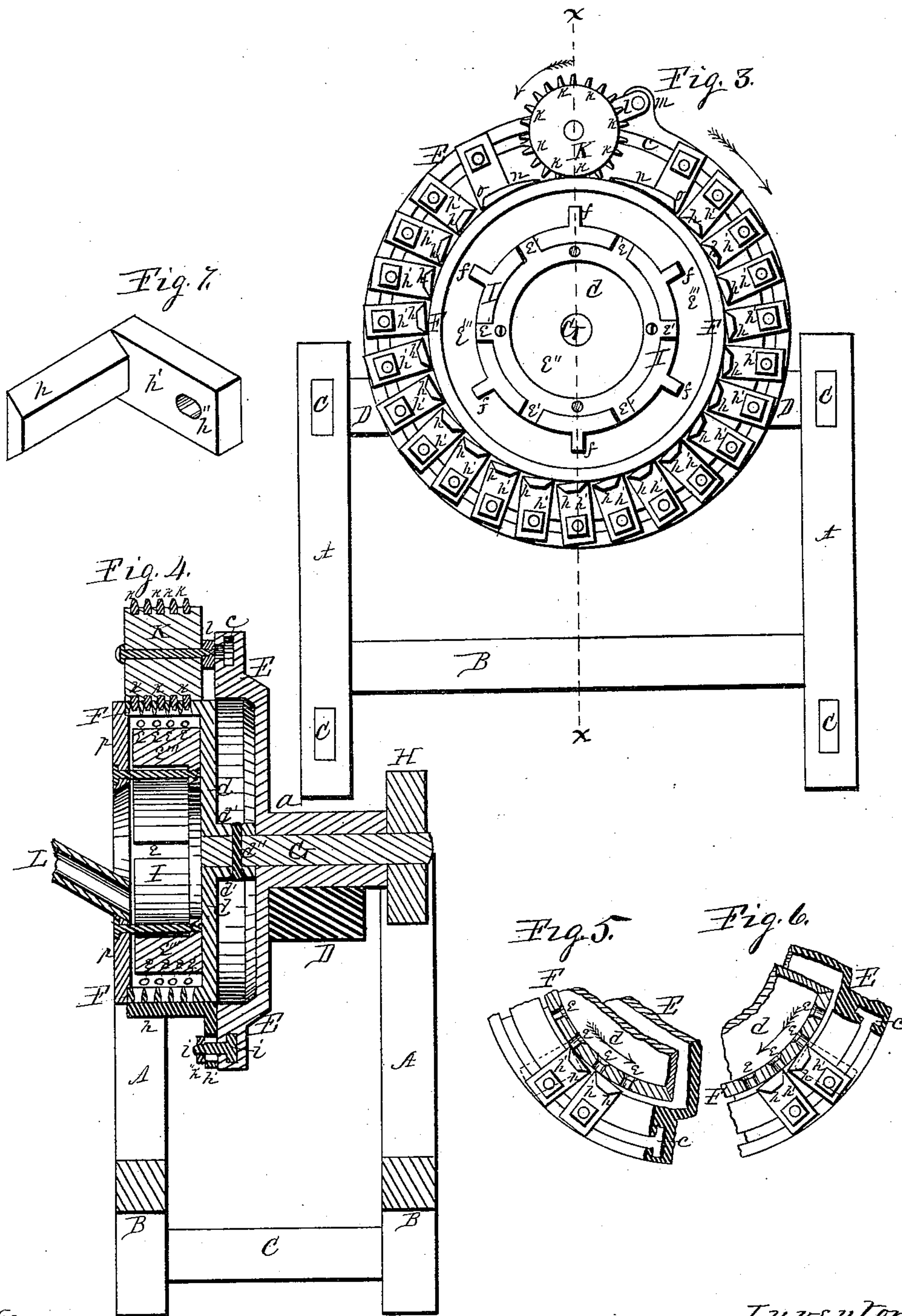
Witnesses:
A. O. Behel
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2. Sheets—Sheet 2

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UNITED STATES PATENT OFFICE.

GEORGE H. CORMACK, OF ROCKFORD, ILLINOIS.

OATMEAL-MACHINE.

SPECIFICATION forming part of Letters Patent No. 297,503, dated April 22, 1884.

Application filed April 21, 1882. (No model.)

To all whom it may concern:

Be it known that I, GEORGE H. CORMACK, a citizen of the United States, residing in the city of Rockford, in the county of Winnebago and State of Illinois, have invented a new and useful Improvement in Oatmeal-Machines, of which the following is a specification.

This invention relates to that class of machines employed in the manufacture of oatmeal in which knives or cutting-edges are employed to cut the oat-grains in sections.

The object of this invention is to produce an oat-cutting machine capable of use under varying velocities to produce oatmeal or grits. To this end I have designed and constructed the machine represented in the accompanying drawings, in which—

Figure 1 is an isometrical representation of an oatmeal-machine embodying my invention, of which Fig. 2 is a plan view; Fig. 3, a side elevation in which the end casing is omitted. Fig. 4 is a central transverse section on dotted line *xx* of Fig. 3, and Figs. 5 and 6 show the connection of the cutters with the fixed disk and their means of adjustment. Fig. 7 is an isometrical representation of one of the cutters.

In the figures, A represents posts, into which are framed lengthwise beams B and crosswise beams C, and a lengthwise beam, D, is framed into the upper crosswise beams. These parts, framed in the manner shown, form the supporting-frame, rectangular in form, on which is mounted my improved oat-mill.

At E is represented a disk provided with a tubular hub, *a*, projecting from its center, and this hub is fitted with flanges *b*, which, by means of suitable screw-bolts, serve to fix the disk in a vertical position in the supporting-frame to the lengthwise beam D. The face of this disk is provided with a T-formed groove, *c*, which is designed to receive the head-end portion of the bolts employed to fix the cutters in position on the disk.

At F is represented a cylindrical rim of pulley-like form, and in this instance is formed with a disk-like end, *d*, having its center provided with a hub, *d'*, bored to receive the end portion of a shaft, G, on which it is mounted, and is fixed in position thereon to revolve with the shaft by means of a pin, *d''*, passed transversely through the hub and shaft. The

shaft G, on which the cylindrical rim is mounted, is supported to revolve in the tubular hub of the disk, and its outward-projecting end is provided with a suitable belt-pulley, H, fixed to the shaft G. This pulley H is designed to receive a suitable belt to connect it in a suitable manner with the power employed to impart motion to the rim. The cylindrical rim is perforated at proper intervals on annular lines with radial holes, as at *e*, of a suitable size to freely receive the oat-grains endwise. The inner ends of these holes on the inside of the cylindrical rim are enlarged substantially in the form known as a countersink.

At I is represented a cylindrical rim of less diameter than the perforated rim, and is placed inside thereof concentric with the perforated rim, and is fixed in position to the disk-like end of the perforated rim. This inner rim, G, is provided with radial slots *e'* at proper intervals to connect the center chamber, *e''*, with the outer chamber, *e'''*.

At *f* are represented projecting ribs, which rise above and extend across the periphery of the rim I. In this machine I employ cutters of the construction represented in the drawings, consisting of cutter-blades *h*, beveled on both outer edges, producing a cutting-edge on both edges of its face side, and an arm, *h'*, at a right angle to the cutter-blade, provided with an elongated hole, *h''*, to receive a suitable bolt to fix the cutter in position on the fixed disk E. These cutters are placed in position on the machine having their cutting-blades *h* parallel with the peripheral face of the perforated rim F, and their perforated arms *h'* in contact with the fixed disk E.

At *i* are represented screw-bolts fitted to enter the T-formed groove in the fixed disk, and their screw-threaded end portions extend outward through the elongated holes in the arms *h'*, and, by means of suitable screw-nuts, in connection with the screw-bolts, serve to fix the cutters in position when adjusted. In use these cutters are placed relatively at equal distances, extending nearly around the perforated cylinder, having one of their cutting-edges adjusted closely to the peripheral face of the perforated rim, and the face of the cutter placed obliquely thereto. The relative angle of the faces of the cutters with respect to the face of the perforated rim will regulate the

length of the sections of grits. This angle, and consequently the length of the sections of the grits to be cut, can be regulated by means of the adjustable cutters. It will be seen that the cutters may be placed closer to or farther from each other, to give the proper clearance for the free escape or discharge of the grits as cut. It will also be seen from the construction and arrangement of the cutters that they can be set with either edge to the perforated rim, which adapts the machine to be run in either direction; and when one edge of the cutters becomes worn from use the unworn edge can be set to the perforated rim and the rim be made to revolve in the opposite direction, and the cutting action be produced on the unworn edges of the cutters, all of which will fully appear upon an inspection of the drawings.

At K is represented a pin-toothed wheel, having its periphery fitted with pins *k*, projecting therefrom. These pins are placed in annular lines on the periphery of the wheel, separated to correspond with the annular lines of holes in the perforated cylindrical rim, and the pins are placed in their annular lines at proper distances to enter the holes in the perforated rim, in such a manner that the peripheries of the pin-wheel and of the perforated rim shall engage each other, and the pins enter the perforations of the rim. This pin-wheel is supported to revolve on a journal-bearing projecting at a right angle from the free end of a lever, *l*, having a pivotal connection with an arm, *m*, rising from the periphery of the fixed disk. By means of this pivoted lever-support of the pin-wheel it will engage the perforated rim by the action of gravity, and the pins entering the holes will operate to dislodge adhering particles.

At *n* are represented guards placed in contact with the perforated rim on opposite sides of the pin-wheel, to cover that portion of the perforated rim on which it is found rather inconvenient to place cutters of the construction employed in this machine. The outer end portions, *o*, of these guards are produced in cutter-edge form, substantially the same as the cutter-edges of the cutters hereinbefore described. These guards are fixed in position on the fixed disk, and are made adjustable thereon in the same manner that the cutters are fixed and made adjustable, as hereinbefore described. The object of these guards is to prevent the oat-grains rising above the periphery of the perforated rim or being thrown therefrom by centrifugal force when the machine is employed as a centrifugal machine, or when it is run at a velocity such as to counteract the action of gravity, and by centrifugal force carry the oat-grains through the perforations to the cutters.

At *p* is represented an annular plate-ring, fixed to the outer or open end of the perforated cylinder employed to prevent the oat-grains from being thrown from the machine,

and its counter portion is opened to admit the oats to the inner cylinder.

At L is represented a portion of an induction-spout, through which the oats are conducted into the center chamber, *e''*, through the center opening in the annular plate-ring *p*, forming the casing to the open end of the rotary cylinders.

In operating my improved mill—it having been made to rotate by means of a suitable belt-connection with the prime mover—the grain from which to produce the grits is carried by the conducting-spout through the center opening in the casing *p* into the center chamber, *e''*, from which, by the rotary motion of the machine, it will be made to pass through the lengthwise radial slots in the inner rim, *e''*, into the outer chamber, *e'''*, between the inner and outer rims; and when the machine is in rapid motion the oat-grains will be carried by centrifugal force into the holes in the outer perforated rim endwise against the cutter-blades, and the onward movement of the perforated rim will carry the grains over the inclined inner face of the cutter-blades and against the cutting-edge of the adjacent cutter, against which the grains will be cut in sections about equal in length to the difference between the forward and rear edges of the adjacent cutters. After the series of holes in the perforated rim have passed the series of cutters, grains will be found to stick in some of the holes in the perforated rim, which, if permitted to remain, would accumulate and prevent the successful operation of the machine. To obviate this the crowning portion of the perforated rim passes under the pin-wheel, the pins of which, entering the holes in the rim, will dislodge such adhering grains and leave them free to receive other grains to be carried against the cutters.

When my improved machine is run at comparatively slow speed, substantially the same results will be produced, but at a less rapid rate, in which instance the grain will be carried through the perforations in the cylindrical rim by the action of gravity; and in this use of the machine the cutters on the lower portion of the machine only will be employed; but in either instance the grits produced will be substantially the same, and the operations of the pin-wheel will also be the same.

I claim as my invention—

1. In an oatmeal-machine, the combination, with a rotary cylinder, substantially as herein described, having its rim perforated, of a pin-wheel mounted to revolve on the periphery of the perforated rim, having its pins to enter the perforations in the rim, substantially as and for the purpose hereinbefore set forth.

2. The combination, with a rotary cylinder, substantially as herein described, having its rim perforated, of a pin-wheel mounted to revolve on the periphery of the perforated rim, having its pins to enter the perforations in the rim, and a pivoted lever-support for said pin-

wheel, adapting it to engage the perforated rim by the action of gravity, substantially as and for the purpose hereinbefore set forth.

3. The combination, with a rotary cylinder, 5 having its rim perforated, and a pin-wheel mounted to engage its perforated periphery, of guards overlapping the periphery of the perforated rim on opposite sides of the pin-wheel, substantially as and for the purpose 10 hereinbefore set forth.

4. The combination, with a rotary cylinder having its rim perforated, a pin-wheel mounted to engage the periphery of the perforated rim, and guards to overlap the perforated rim on 15 opposite sides of the pin-wheel, of cutters placed to engage the oat-grains and divide them in sections, substantially as and for the purpose hereinbefore set forth.

5. The combination, with a rotary cylinder having its rim perforated, a pin-wheel mounted 20 to engage the periphery of the perforated rim, and guards to overlap the perforated rim on opposite sides of the pin-wheel, of double-edged adjustable cutters capable of use, in connection with the perforated revolving rim, 25 in either direction, and at velocities dependent upon its use as a centrifugal or gravity machine, substantially as and for the purpose hereinbefore set forth.

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Witnesses:

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