

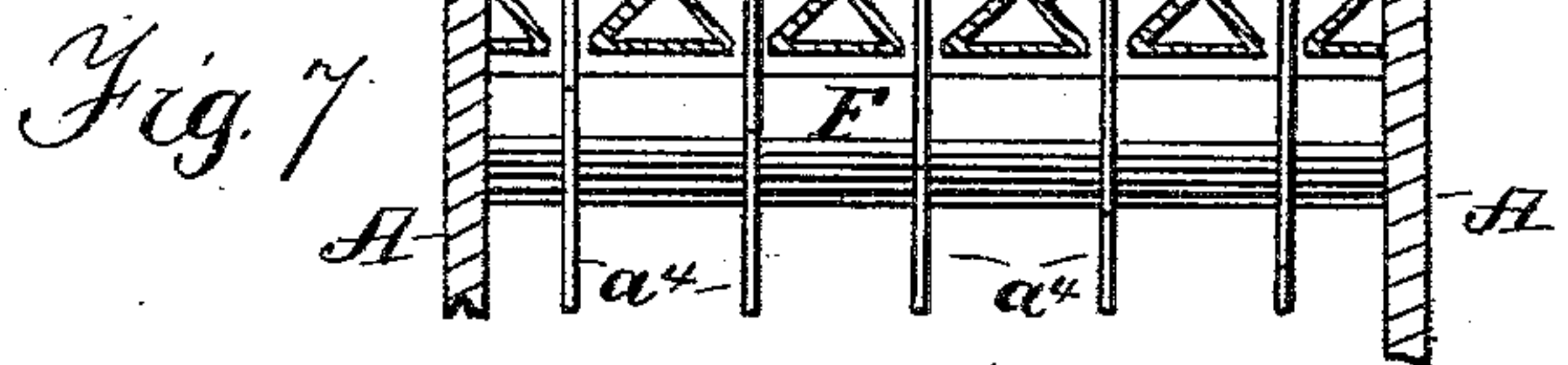
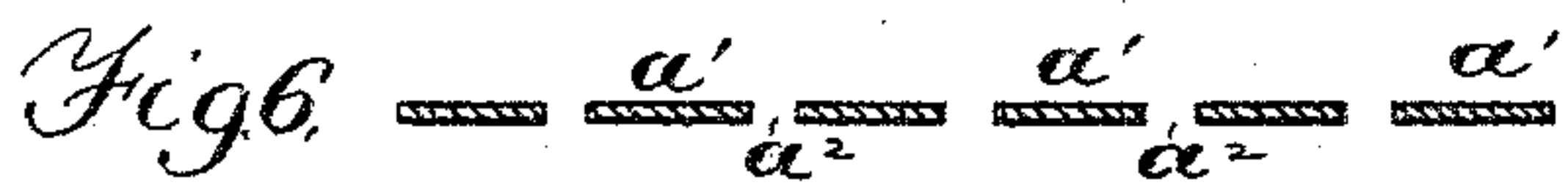
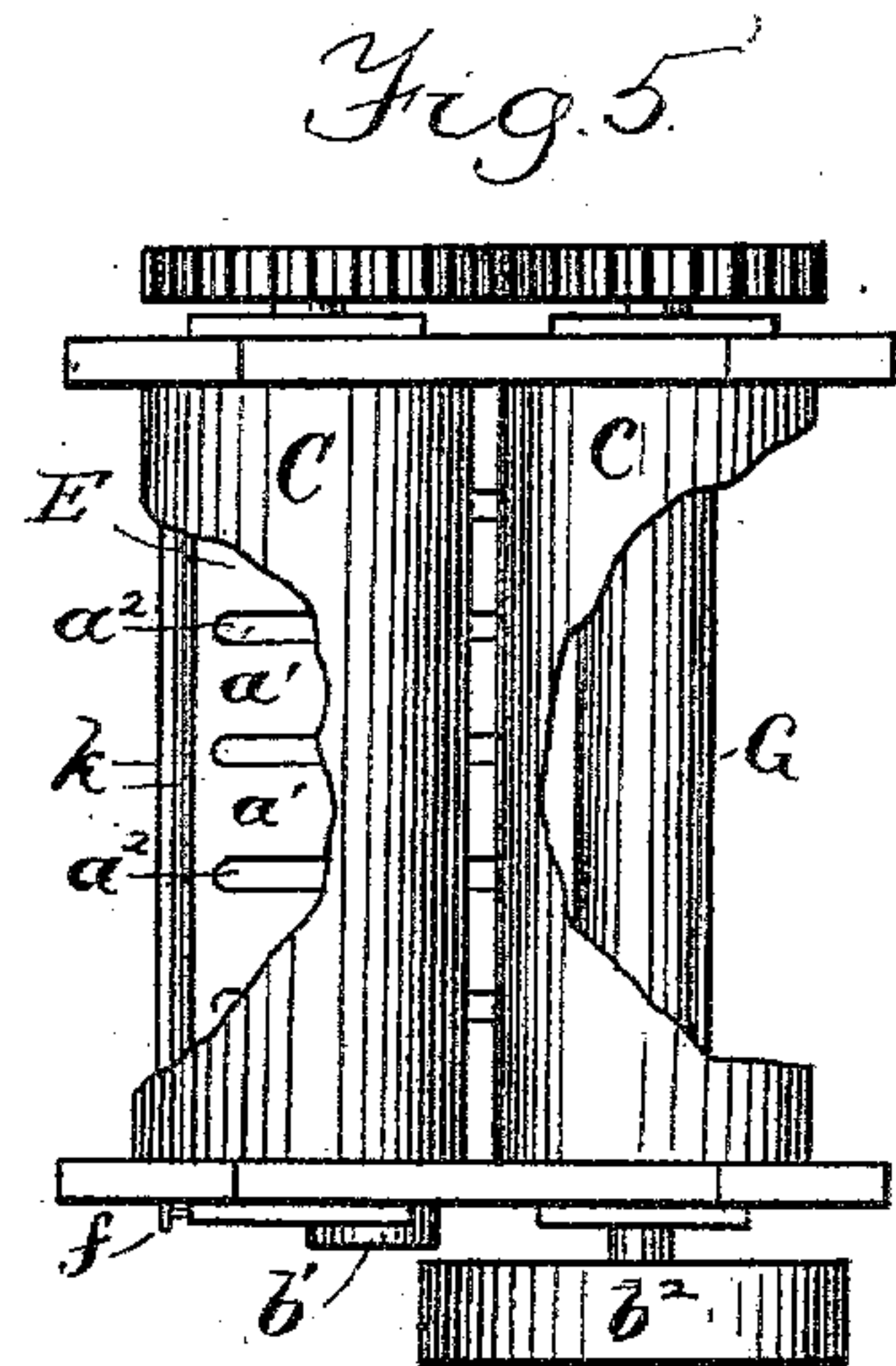
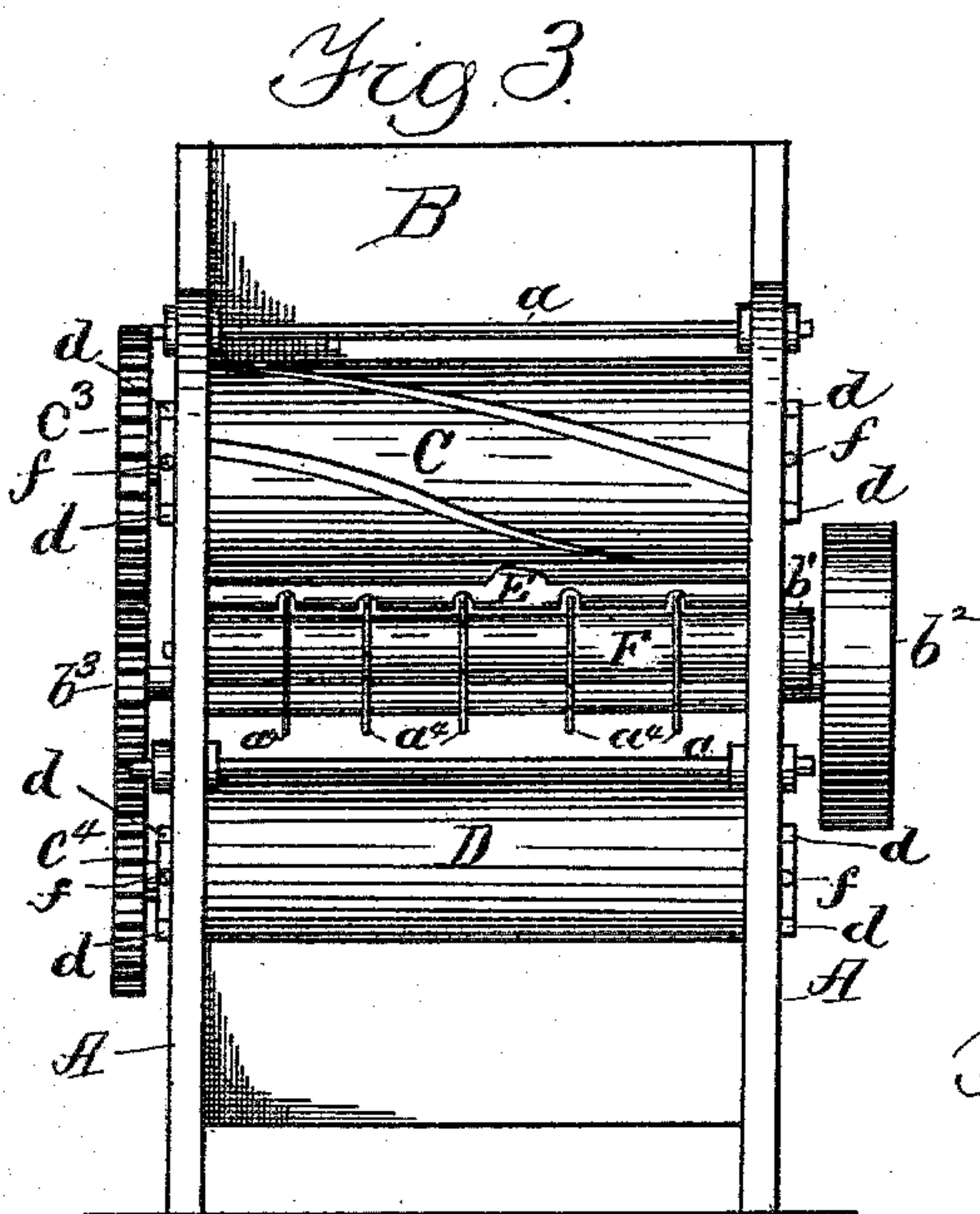
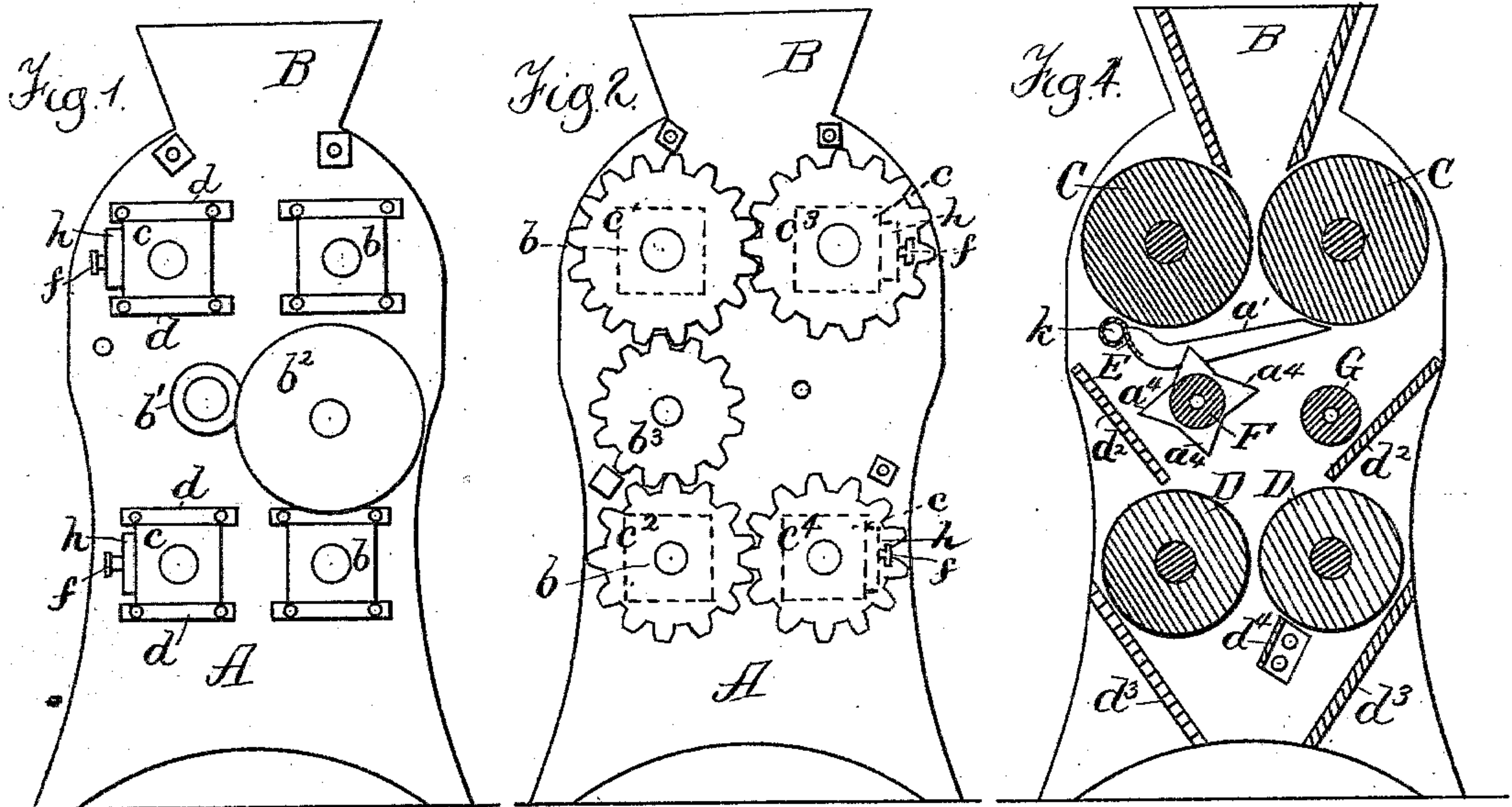
(No Model.)

J. A. JONES.

GRAIN CRUSHER AND DISINTEGRATOR.

No. 296,838.

Patented Apr. 15, 1884.



Witnesses:
Wm. A. Rosenbaum
H. A. Daniels

Inventor:
Jesse A. Jones
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UNITED STATES PATENT OFFICE.

JESSE ARTHUR JONES, OF RALEIGH, NORTH CAROLINA.

GRAIN CRUSHER AND DISINTEGRATOR.

SPECIFICATION forming part of Letters Patent No. 296,838, dated April 15, 1884.

Application filed February 16, 1884. (No model.)

To all whom it may concern:

Be it known that I, JESSE A. JONES, a citizen of the United States of America, residing at Raleigh, in the county of Wake and State of North Carolina, have invented certain new and useful Improvements in Grain Crushers and Disintegrators, of which the following is a specification, reference being had therein to the accompanying drawings.

My invention relates to improvements in that class of grinding-mills in which the grain is crushed between revolving rollers. My mill is designed and constructed more especially for crushing corn for feed for stock and preparatory for further reduction into meal for bread, and it is provided with two sets of crushing-rollers, arranged one set above the other, and with disintegrating devices consisting of a slotted and ribbed diaphragm and a bladed cylinder arranged between the two sets of rollers.

The invention consists of the crushing-rollers and the disintegrating devices, constructed, arranged, and combined as hereinafter fully described and as claimed.

In the drawings, Figures 1 and 2 are end elevations. Fig. 3 is a side elevation. Fig. 4 is a vertical transverse section. Fig. 5 is a top view with the hopper removed and the upper rollers partly broken away. Fig. 6 is a transverse section of a diaphragm detached, showing the ribs flat. Fig. 7 is a transverse section of the diaphragm, showing in elevation the bladed cylinder and the points of the blades extended through the slots between ribs having inclined upper surfaces.

A designates the end plates of the mill-frame, secured in place by the stay-rods *a*.

B is the hopper, located at the top of the machine over the upper rollers.

C C and D D designate, respectively, the upper and lower sets of crushing-rollers, mounted in bearings *b c*, attached to the plates A. The upper rollers may be provided with spiral grooves, as shown, and the two rollers of each set are arranged side by side, and the bearings *c* of one roller of each set are adjustably arranged in guides *d*, and are connected with set-screws *f*, placed in bearings *h*, attached to the plates A for the purpose of adjusting the relative position of the rollers to crush the grain finer or coarser, as required.

E designates a diaphragm attached to and supported by a bar, *k*, the ends of which are extended through and have bearings in holes in the plates A. This diaphragm is provided with the ribs *a'*, which are separated from each other by the slots *a''*, and are curved downward and extended under the upper rollers. The ribs may be constructed with flat upper surfaces, or they may be provided with the inclined surfaces *a'''* for conducting the crushed grain to the slots and preventing it from lodging on the ribs.

F designates a cylinder located below the diaphragm, and having its bearings in or attached to the end plates, A, and it is provided with a series of blades, *a'*, fastened upon the cylinder in position to extend through the slots *a''* of the diaphragm, as shown. The bladed cylinder is revolved at a rapid speed by means of a belt driven by any suitable power, (not shown,) and running over the pulley *b'* on an extended end of the cylinder-shaft.

G designates a roller mounted in bearings attached to the end plates, A. Both ends of the shaft of this roller are extended beyond their bearings, and one of the ends is provided with a fixed pulley, *b''*, and the other end is provided with a fixed cog-wheel, *b'''*, which cog-wheel is arranged between and so as to gear with the cog-wheels *c'* *c''*, which gear with the cog-wheels *c'''* *c''''*, all mounted on the extended ends of the shafts of the crushing-rollers. These crushing-rollers are revolved less rapidly than the bladed cylinder by means of a belt driven by power (not shown) and running over the pulley *b''*.

Inclined aprons *d'* *d''* are removably arranged in grooves in the plates A. The inner edges of the aprons *d'* are extended downward over the lower set of rollers, to receive the crushed disintegrated grain which may be dashed against them by the revolving blades and conduct it to the lower rollers. The inner edges of the aprons *d''* are extended downward and inward under the lower rollers, to receive and convey the crushed grain which may fall upon them from the lower rollers to a receptacle. (Not shown.)

Each of the crushing-rollers may be provided with a scraper, as shown at *d'*, arranged to remove from the roller the adhering particles of the crushed grain.

The grain placed into the hopper is automatically fed between the upper rollers, which are set by the adjustable bearings *c* the required distance apart to effect the desired preliminary crushing of the grain. The crushed grain, passing through these rollers, falls upon the diaphragm *E*, and is conducted to the slots *a*², where it comes in contact with and is thoroughly disintegrated by the rapidly-revolving blades *a*⁴, and, thence descending, is conducted to and between the lower rollers. These rollers being set closer together than the upper rollers, the crushed grain is still further reduced, and is then deposited in the receptacle (not shown) in condition for feed for stock, or to be still further reduced into meal for bread. More meal may be produced from the same quantity of corn and the meal will be less heated in grinding, and it will be freer from sharp particles, and hence superior in quality, and it can be produced faster and with less wear upon the stones, and hence at less cost, when it is ground from the crushed

and disintegrated grain than when the meal is ground from the whole grain. 25

I am aware that the method of crushing grain by revolving rollers and disintegrating the crushed grain by revolving brushes, fans, and other devices is not new, and I do not claim such method, rollers, or disintegrating devices, broadly; but 30

What I claim as new, and desire to secure by Letters Patent, is—

In a machine for crushing and disintegrating grain, the combination of the two sets of rollers *C C* and *D D*, the slotted and ribbed diaphragm *E*, and the cylinder *F*, provided with the blades *a*⁴, extended through the slots of the diaphragm, all constructed and arranged substantially as and for the purposes described. 35 40

In testimony whereof I affix my signature in presence of two witnesses.

JESSE ARTHUR JONES.

Witnesses:

A. M. POWELL,
THOS. PESQUÉ.