

(No Model.)

F. STILLE.
GRINDING MILL.

No. 603,516.

Patented May 3, 1898.

Fig. 1.

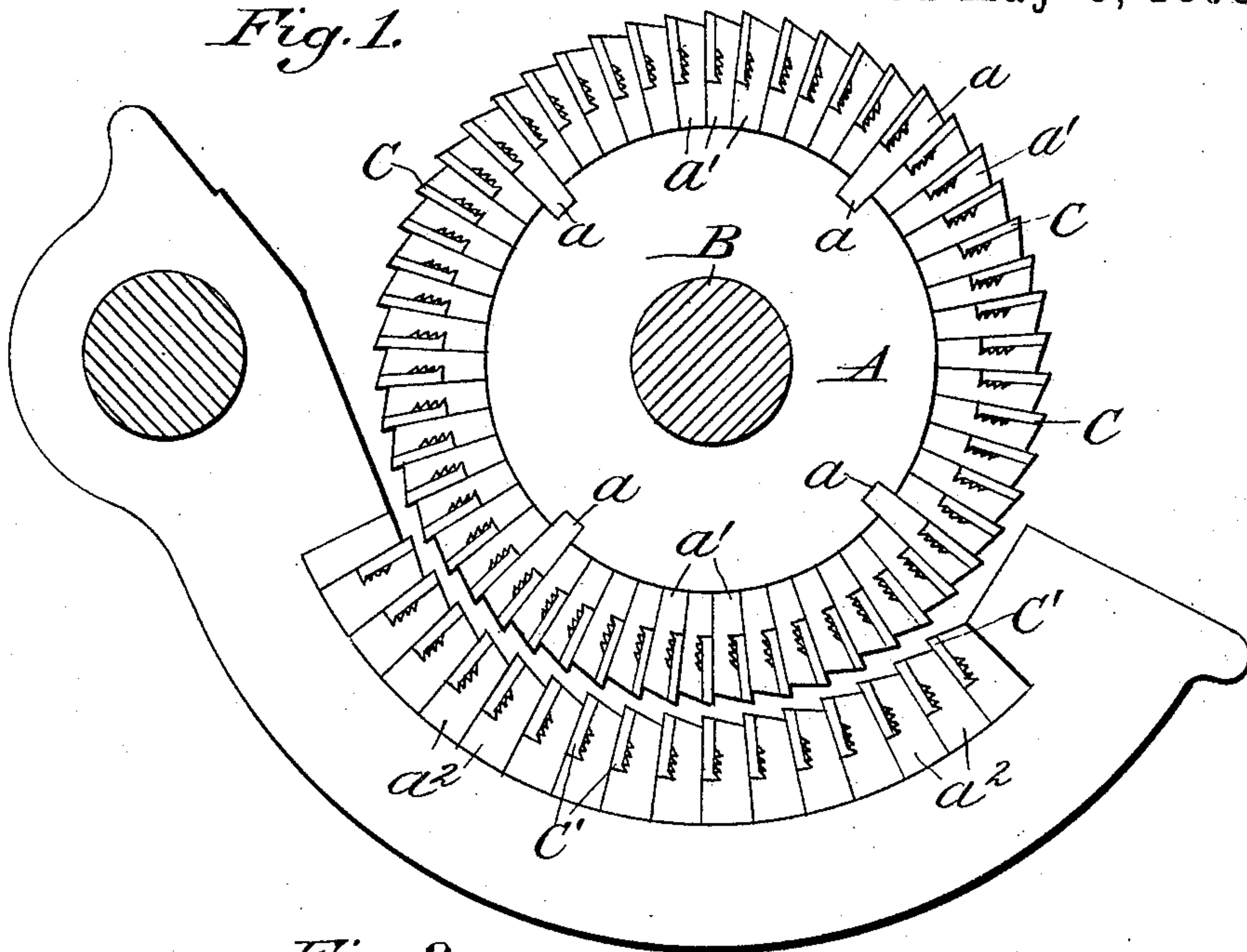


Fig. 2.

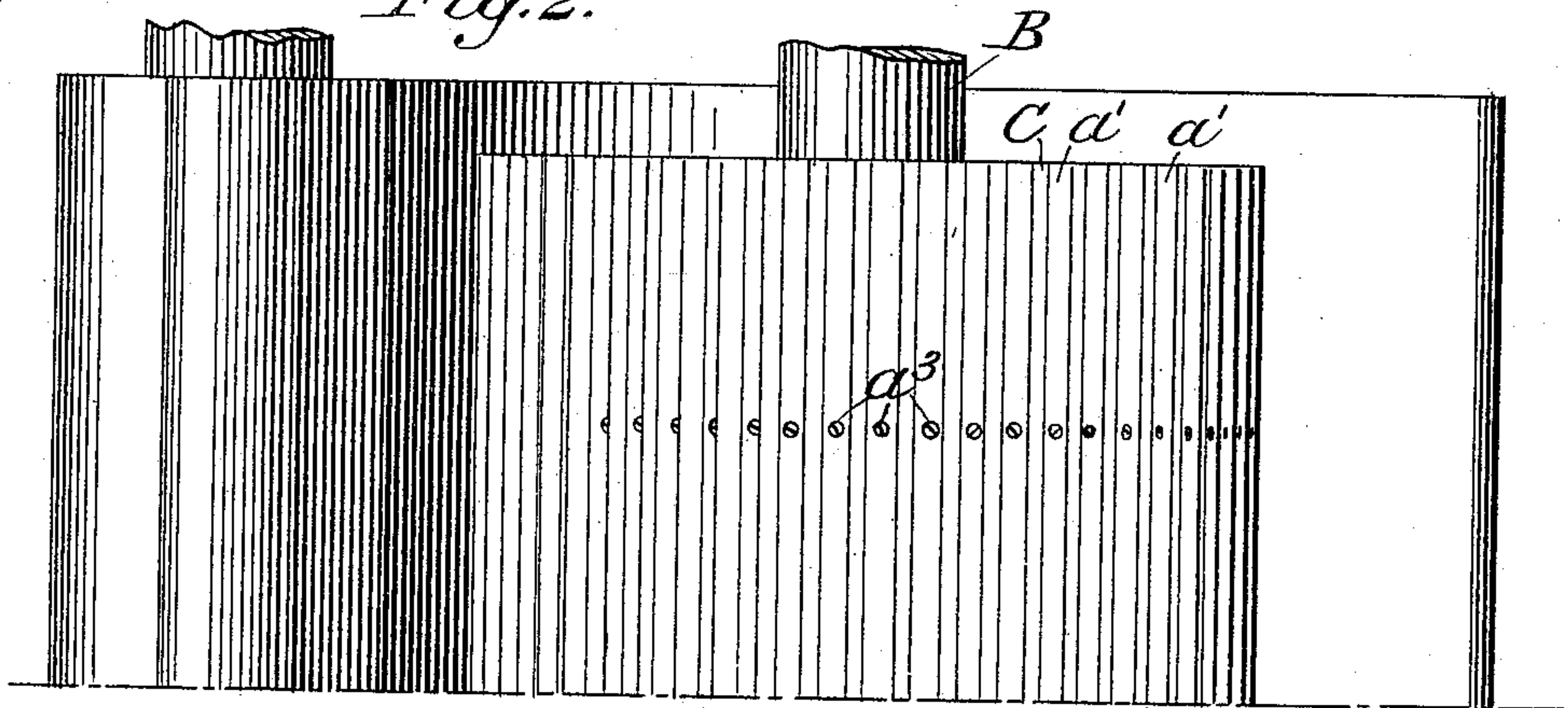
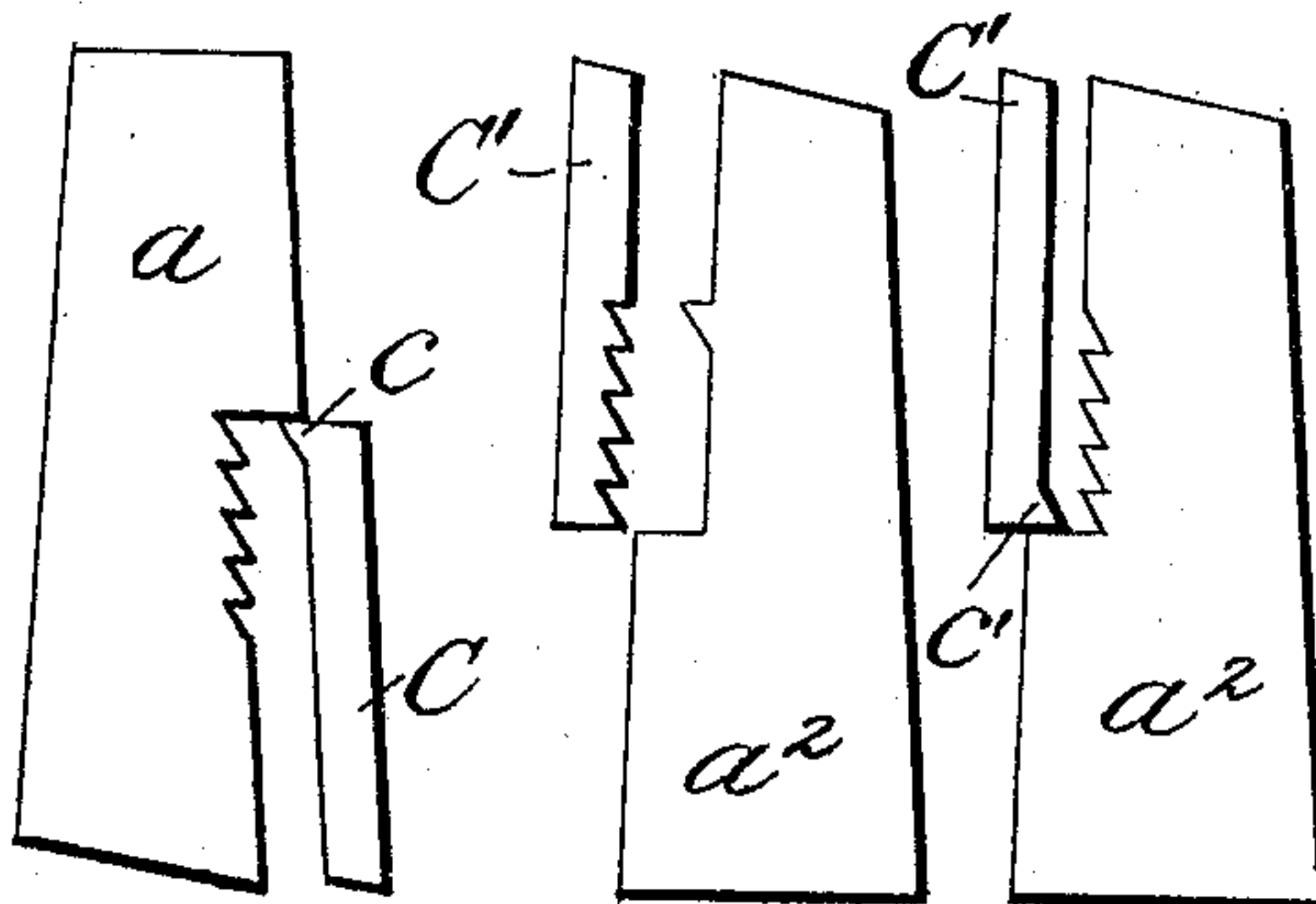


Fig. 3. Fig. 5. Fig. 4.



Witnesses
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UNITED STATES PATENT OFFICE.

FRIEDRICH STILLE, OF LENGERICH, GERMANY.

GRINDING-MILL.

SPECIFICATION forming part of Letters Patent No. 603,516, dated May 3, 1898.

Application filed February 4, 1898. Serial No. 669,089. (No model.)

To all whom it may concern:

Be it known that I, FRIEDRICH STILLE, manufacturer, a citizen of the German Empire, residing at Lengerich, in the Province of Westphalia, Germany, have invented certain new and useful Improvements in Grinding-Mills, (patent applied for in Germany July 3, 1897;) and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to improvements in grinding-mills—such, for instance, as bone-mills, feed-mills, coffee-mills, bark-mills, and the like.

The object of my invention is to provide means for rendering the component parts of grinding-surfaces capable of adjustment, so that as said surfaces wear the said parts may readily be moved out to again bring the cutting edges to their original proper condition.

With this object in view my invention consists in the features, details of construction, and combination of parts, which will first be described in connection with the accompanying drawings and then particularly pointed out in the claims.

In the drawings, Figure 1 is a sectional view of a rotary grinder and concave embodying my invention; Fig. 2, an elevation of the same; Fig. 3, a detail end elevation of one of the cutters and cutter-holders employed in the rotary grinder; Fig. 4, a similar view of a cutter-holder and cutter employed in the concave, and Fig. 5 a similar view of a modified form of my invention.

Referring to Fig. 1 of the drawings, A is a grinder-hub mounted on a central shaft B, arranged to be rotated by any suitable means. This hub is provided with a plurality of channels, four being shown in the drawings, in each of which is tightly driven an abutment cutter-holder *a*, having its outer end sloped or beveled, as shown, and provided at its rear side with a rabbet or recess which does not extend to the entire depth of the cutter-holder, the rabbet having a series of notches extending parallel to the outer face of the abutment cutter-holder.

Around the periphery of the grinder, be-

tween the abutment cutter-holders, are placed a number of cutter-holders *a'*, whose radial depth is such that when their inner faces bear against the periphery of the hub A the corresponding points in their outer faces will lie at the same distance from the axis of the shaft B as do the homologous points in the outer faces of the abutment cutter-holders *a*. The cutter-holders *a'* have rabbets or recesses and notches similar to those in the abutment cutter-holders *a*.

All the cutter-holders of the grinder are frustums of wedges in cross-section and are held to the hub A in any suitable manner, as by screws *a³*, passing radially through them into the said hub.

In the rabbets or recesses in the cutter-holders are located cutters C, which are each provided with rearward-sloping outer surfaces and with a rib or tooth *c*, arranged to enter any desired one of the notches in the cutter-holders.

The concave D may also be supplied with cutter-holders *a²*, constructed similar to those on the grinder, with the exception that the narrow parts of the wedge-frustums carry the cutters instead of the outer portions, as in the grinder, and, moreover, the wedges and cutters of the concave face in a direction opposite to those of the grinder in order that they may work one against the other in reducing the material fed between them.

As the cutters C C' wear or are ground down in sharpening they may be adjusted to project to the original extent beyond their respective cutter-holders by removing the screws which retain the cutter-holders in place and then withdrawing the said holders endwise, whereupon the respective cutters may be moved so that their teeth *c c'* enter the desired notches in the respective cutter-holders, whereupon they are again put in place endwise and the screws which hold them to the grinder or concave, respectively, are replaced.

The thickness of each cutter is equal to that of the rabbet in which it is to be inserted, so that owing to the wedge shape of the cutter-holders the latter with the cutters mutually support and lock each other in place against movement either in the direction of rotation or opposite to the same, so that the screws

which pass through the cutter-holders serve merely to prevent endwise displacement of the cutters and their holders.

5 Instead of providing each of the cutter-holders with a series of notches and the cutters each with a tooth it is obvious that I may reverse this and place the tooth on each cutter-holder and the notches in its corresponding cutter. This is shown in Fig. 5.

10 I am aware that it is old to construct grinders in which the cutters are each provided with a tooth arranged to enter any desired one of a series of notches in a cutter-holder; but in such constructions the cutter is held
15 not in a rabbet in a removable cutter-holder, but against the face of the cutter-holder by a backing-plate, which in turn is secured in place by a key or wedge which bears against one side of an adjacent fixed cutter-holder.

20 This construction, however, is more complex than the invention disclosed by me, and hence in practice results in an increased expense in original construction and subsequent repairs, more trouble in removing the additional parts,
25 and less efficient support to the cutting edges of the cutters, which in my invention are held close up to their cutting edges by the cutter-holders.

30 Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent of the United States, is—

1. In a grinding-mill, the combination, with a rotary-grinder hub, having a plurality of

channels, an abutment cutter-holder firmly secured in each channel, and a plurality of 3 cutter-holders arranged around the periphery of the grinder-hub and fitting tightly between the abutment cutter-holders, all the cutter-holders being wedge shape in cross-section and having the homologous points in their 4 outer faces equidistant from the axis of the grinder-hub, and each provided with a rabbet extending inward along one face of the respective cutter-holder and provided with a series of notches, of cutters arranged to fit snugly 4 in the rabbets, each cutter being provided with a tooth arranged to enter any desired one of the series of notches, substantially as described.

2. In a concave for grinding-mills, the combination, with a series of cutter-holders wedge shape in cross-section and arranged to fit closely against each other, said cutter-holders each having a rabbet provided with a series of notches of a cutter fitting snugly in each 5 rabbet and provided with a tooth arranged to enter any desired notch of its respective series, substantially as described.

In testimony that I claim the foregoing as my invention I have signed my name in presence of two subscribing witnesses. 6

FRIEDRICH STILLE.

Witnesses:

KIRKE LATHROP,
LEONORE KASCH.