No. 676,982.

Patented June 25, 1901.

O. ERFURTH.

EDGE MILL.

(Application filed Apr. 21, 1900.)

(No Model.)

3 Sheets—Sheet 1.

Fig. 1

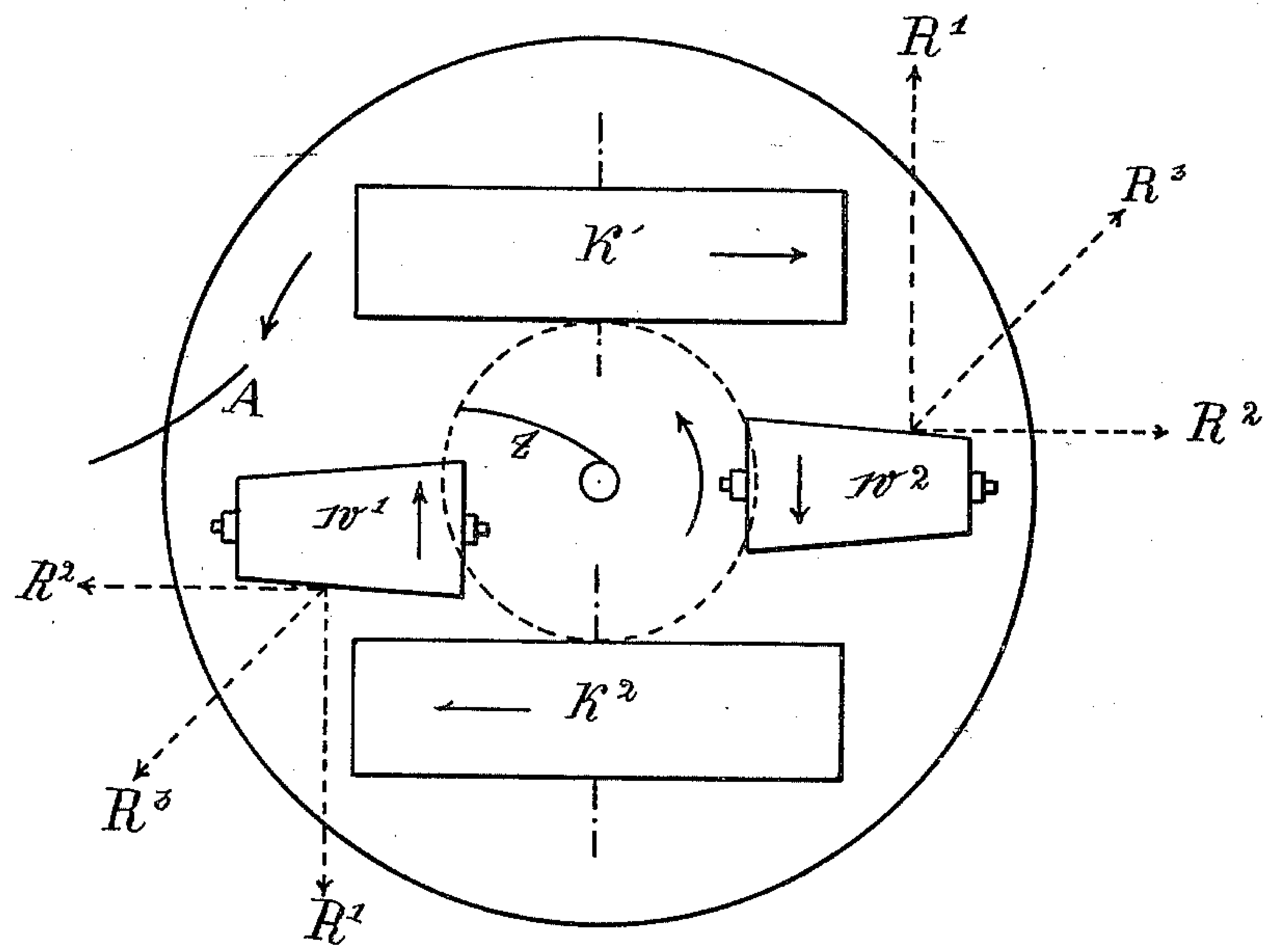
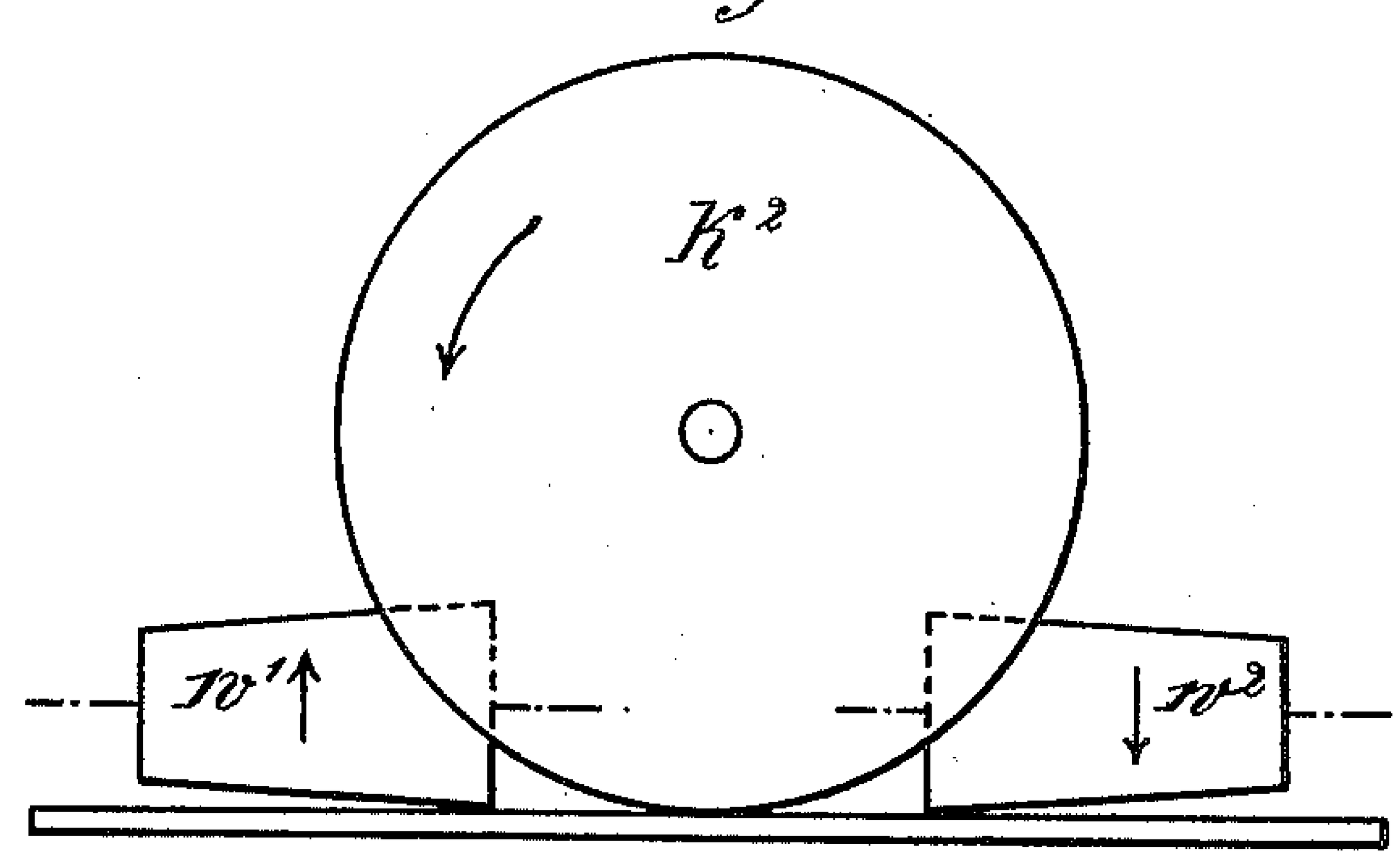


Fig. 2.



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THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

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(No Model.) 3 Sheets—Sheet 2.

Fig. 3.

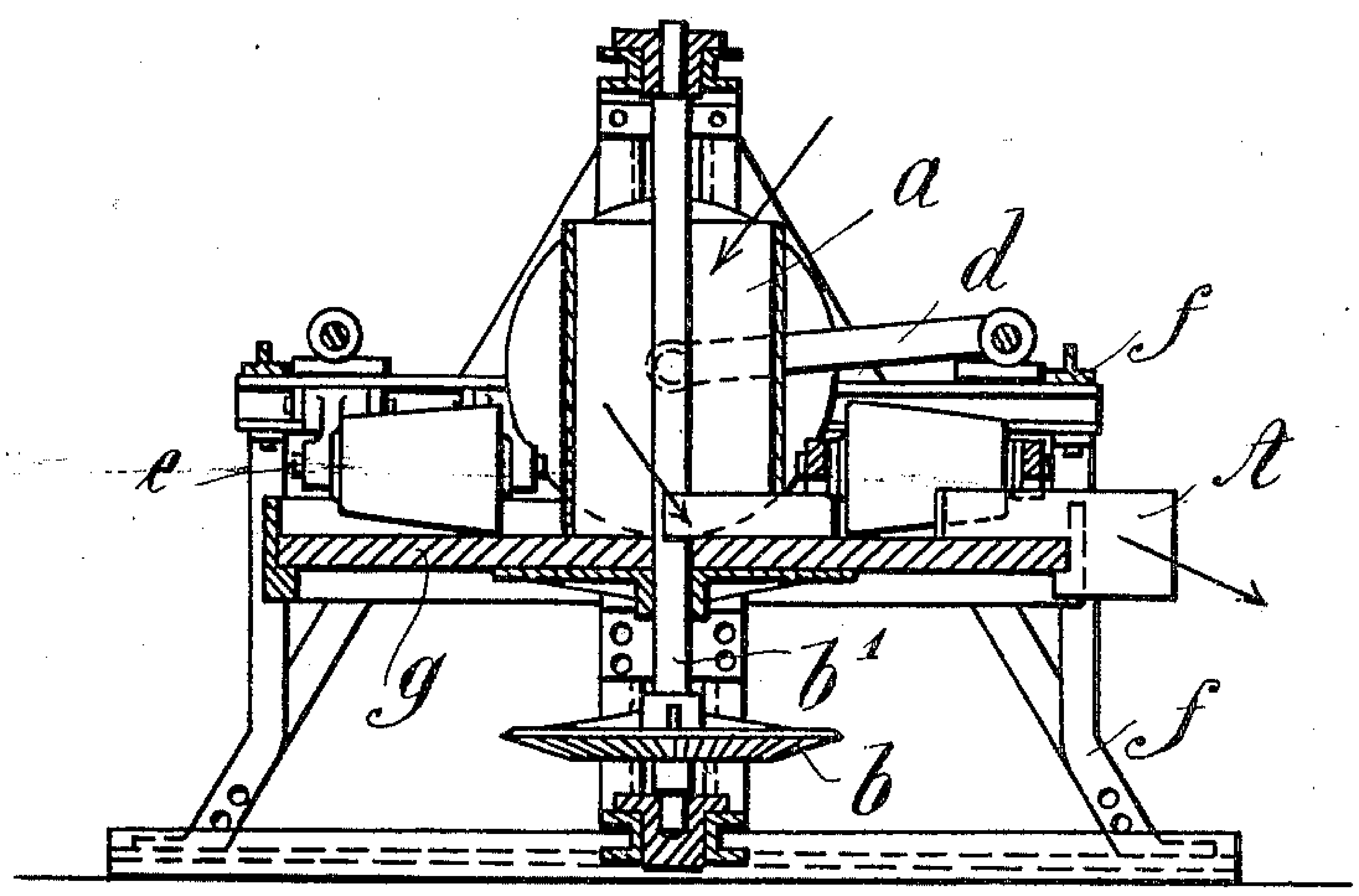
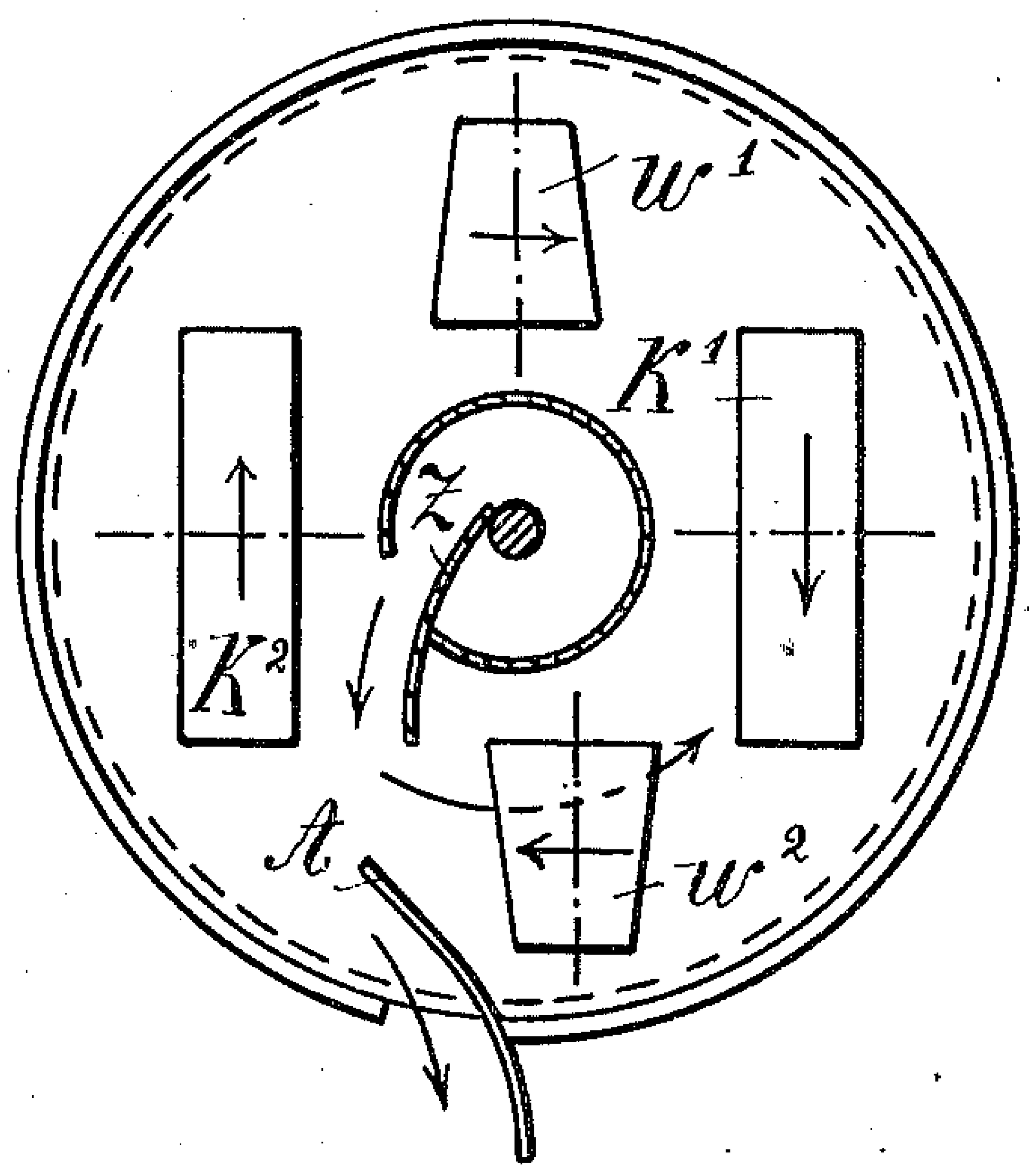


Fig. 4.



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No. 676,982.

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3 Sheets—Sheet 3.

Fig. 5

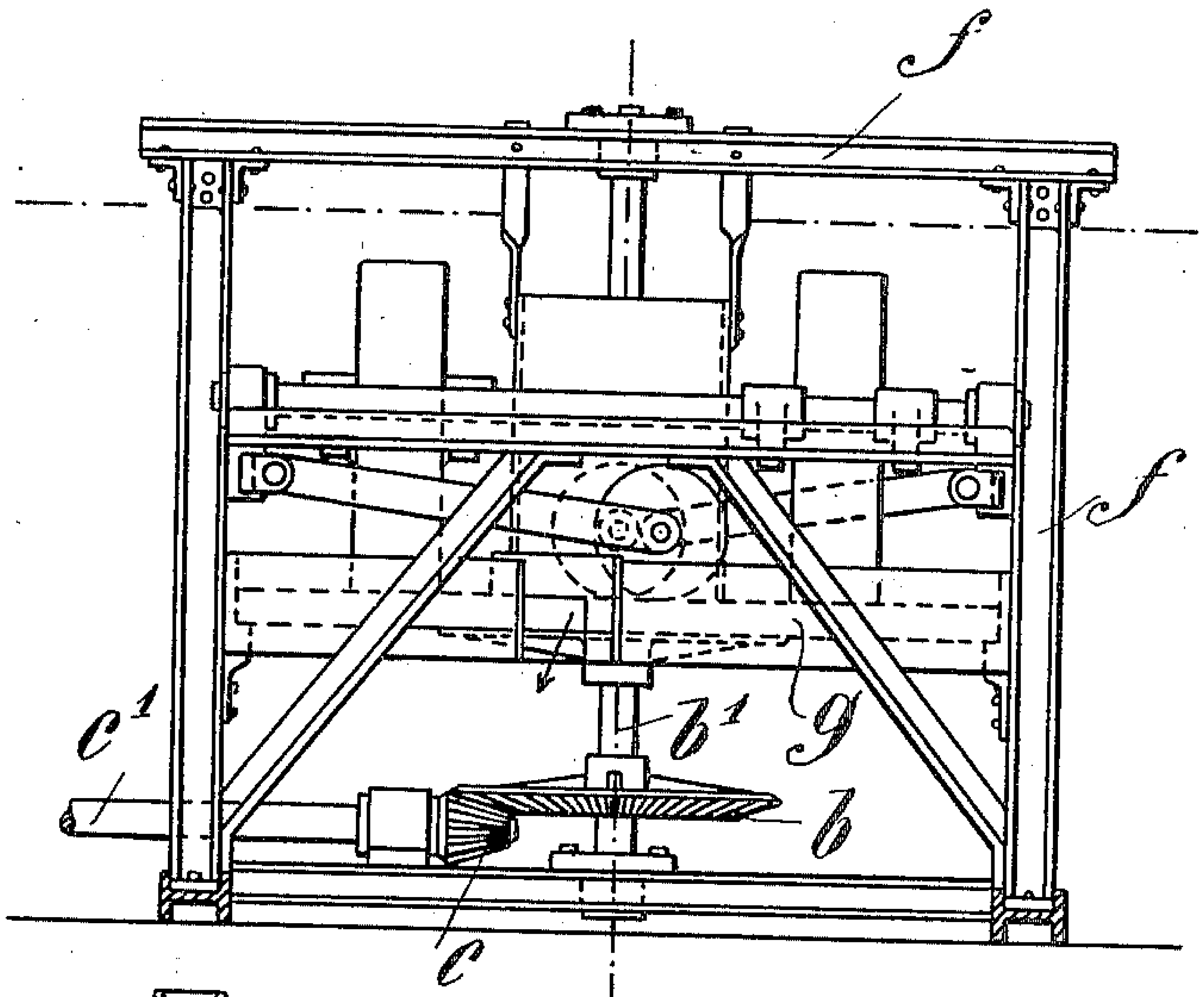
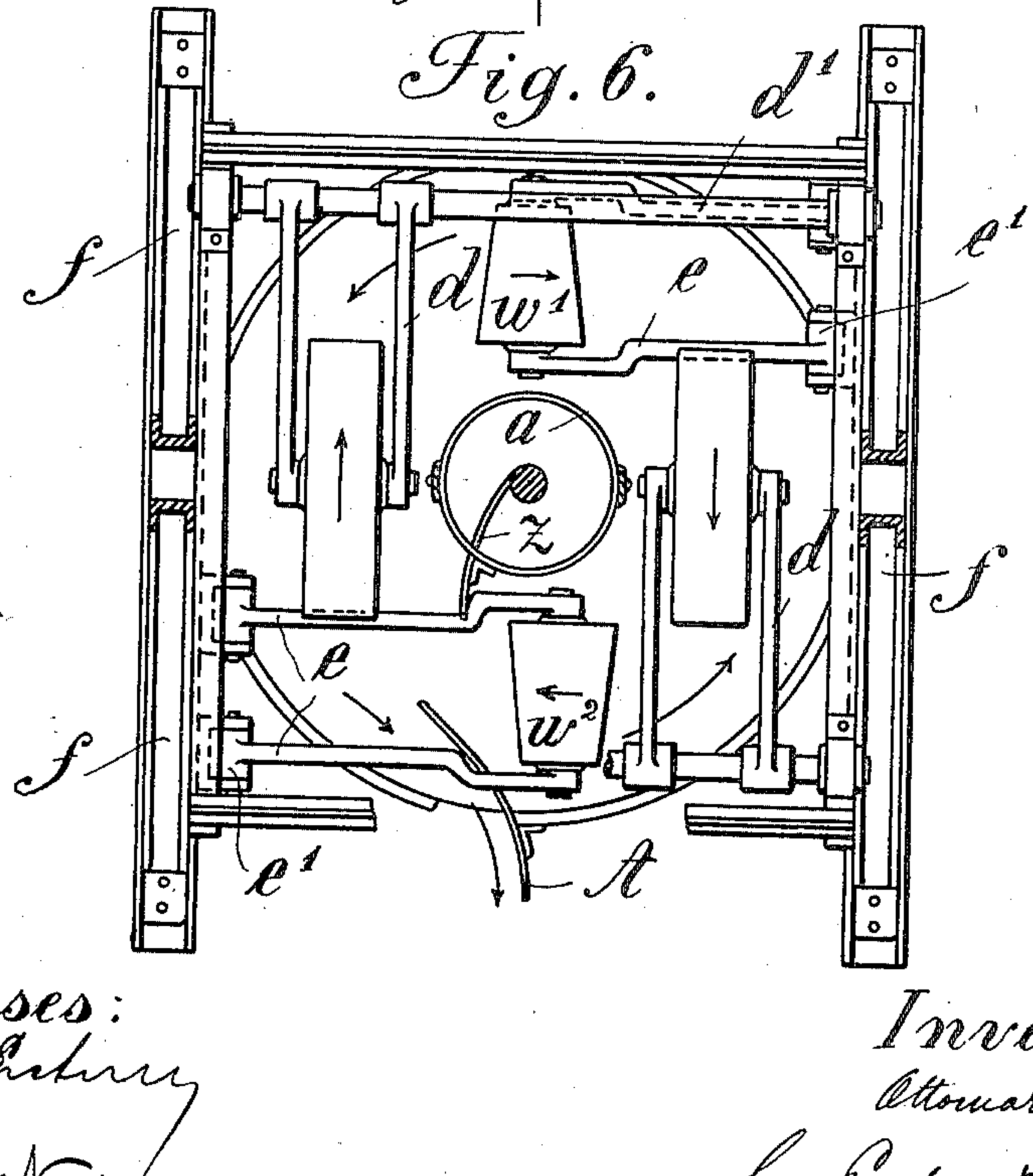


Fig. 6.



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UNITED STATES PATENT OFFICE.

OTTOMAR ERFURTH, OF TEUCHERN, GERMANY.

EDGE-MILL.

SPECIFICATION forming part of Letters Patent No. 676,982, dated June 25, 1901.

Application filed April 21, 1900. Serial No. 13,776. (No model.)

To all whom it may concern:

Be it known that I, OTTOMAR ERFURTH, a subject of the King of Saxony, residing at Teuchern, Kingdom of Saxony, Germany, have invented certain new and useful Improvements in Edge-Mills, of which the following is a full, clear, and exact description.

The present invention relates to edge-mills, and more particularly to that class of edge-mill employed in working moist clay in the manufacture of bricks and tiles and the like; and the invention comprises the details of construction hereinafter set forth, and particularly pointed out in the claims.

The employment of edge-mills for working moist clay is comparatively limited, owing to the fact that for very fine work they are too expensive, and when employed for comparatively coarse work the material has to be again ground subsequently. This is due to the fact that wholly or partially perforated plates on which the runners work have to be employed, and if the material is to be very finely and evenly ground the slots of the runner-plate have to be but a few millimeters in width and the adhesion of the moist clay to the sides of the deep slots is so great that the output of the machine is very seriously reduced.

The object of the present invention is to construct an edge-mill which will work moist clay or other like materials evenly, will grind the same to any desired degree of fineness, and will work economically. This object is attained by employing transport-rolls between the runners, the surfaces of which form an angle with the runner-plate from a point near the center of the latter opening outwardly. These transport-rolls may be radially disposed or laterally as regards a radius of the plate. The inner edge only of the roll contacts with the plate, the outer edge being raised a suitable distance above the same. This may be effected either by employing conical rolls or cylindrical rolls arranged at an angle to the runner-plate.

In order to render the present specification easily intelligible, reference is had to the accompanying drawings, in which similar letters of reference denote similar parts throughout the several views.

Figure 1 is a diagram in plan of one form of carrying out the invention, and Fig. 2 is a diagrammatical elevation of Fig. 1. Fig. 3 is a central vertical section through one form of device embodying the invention. Fig. 4 is a plan of Fig. 3 with the gearing omitted. Fig. 5 is a front elevation, and Fig. 6 a complete plan, of the device.

In the form illustrated the runner-plate is adapted to rotate the runners K′ K^2, being rotary, but axially stationary. Between the two runners the transport-rolls w' w^2 are arranged. In the drawings conical rolls are illustrated, and they are mounted to rotate in any suitable known manner. The inner edge only of these rolls contacts with the runner-plate, as will be clearly seen from Fig. 2, the angle between the roll-mantle and the plate gradually increasing toward the edge of the plate. These transport-rolls may either be arranged radially, as shown at w^2, or they may be slightly out of the radial line, as shown at w'. This latter construction is generally employed when it is required to work the material with greater rapidity. The material is fed to the transport-rolls by the guide-plate z as the runner-plate rotates, and the finished material is passed out of the drum by the guide-plate A.

The device operates in the following manner: The material coming from the guide-plate z passes under the transport-roll w', which by means of the angle it forms with the runner-plate will push the material slightly outwardly under the runner K^2, the next transport-roll w^2 pushing it gradually a little farther out for the runner K′. Thus it will be evident that according to the angle which the transport-rolls form with the plate the material will be pushed out more or less far at each revolution of the plate, and will consequently be subjected to more or fewer passages under the runners. The direction of push exercised by the transport-rolls is as follows: The rotation of the said rolls tends to force the material in the direction of the line R′, and the conicity of the same tends to force it in the direction R^2, the resultant motion thus being in the direction R^3. After it has been sufficiently treated the material is guided off the plate by the guide-plate A.

In the embodiment of the device illustrated

in Figs. 3 to 6 the runners K' K² are mounted on swinging arms *d*, supported on shafts *d'*, mounted in the frames F of the machine, while the intermediate feed or transport rolls *w'* and *w²* are carried in arms *e*, mounted in suitable bearings *e'*, fast in the machine-frame F. The runner-plate *g* is keyed to a central shaft *b'*, on which is also keyed a bevel-gear *b*. The latter meshes with a bevel-pinion *c*, fast on the driving-shaft *c'*, which may be driven by any suitable known means. The material to be treated is fed into the cylinder or hopper *a* and fed to the runner and transport-rolls by means of the plate *z*, as previously mentioned.

Since the motion of the material may be accelerated or slowed by the amount of fresh material fed to the apparatus, it will also be evident that the number of times the same passes under the runners may be increased or decreased—*i. e.*, the degree of fineness of the work may be regulated to a certain extent by the rate of feed of fresh material as well as by the angle formed between the transport-rolls and the plate.

If the rolls are disposed laterally of the radius of the plate, the motion of the material toward the rim of the same will be somewhat quicker. The friction and slip caused at the contacting edge of the roll in this case will be very slight because the point of contact is very small.

Instead of a rotary runner-plate the runners and transport-rolls might be made to rotate, as will be quite clear, mechanism for effecting this result being generally known.

One great advantage of the present construction is that the movement of the material is a continuous one.

I claim as my invention—

1. In an edge-mill for working moist clay and the like having vertical runners and a runner-plate, the combination of transport-rolls the mantles or exterior surfaces of which form an angle with the runner-plate said angle opening outwardly toward the edge of the plate in the manner and for the purpose substantially as described.

2. In an edge-mill of the class specified, the combination of transport-rolls arranged between the runners said rolls having a conical exterior and contacting with the runner-plate at their greatest diameter only substantially as described.

In witness whereof I have hereunto set my hand in presence of two witnesses.

OTTOMAR ERFURTH.

Witnesses:

HERM. SACK,

RUDOLPH FRICKE.