

964,000.

J. DEELEN.
GRINDING ROLL.
APPLICATION FILED APR. 5, 1909.

Patented July 12, 1910.

Fig. 1.

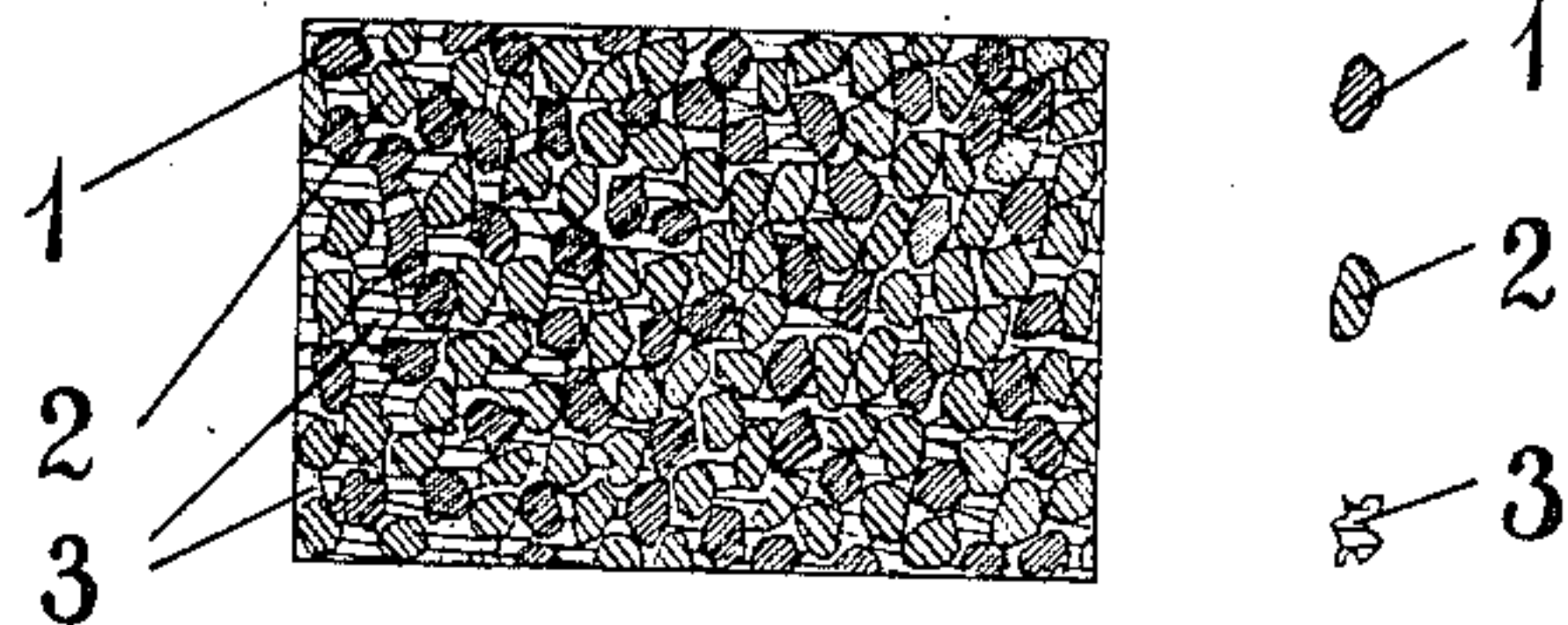


Fig. 2.

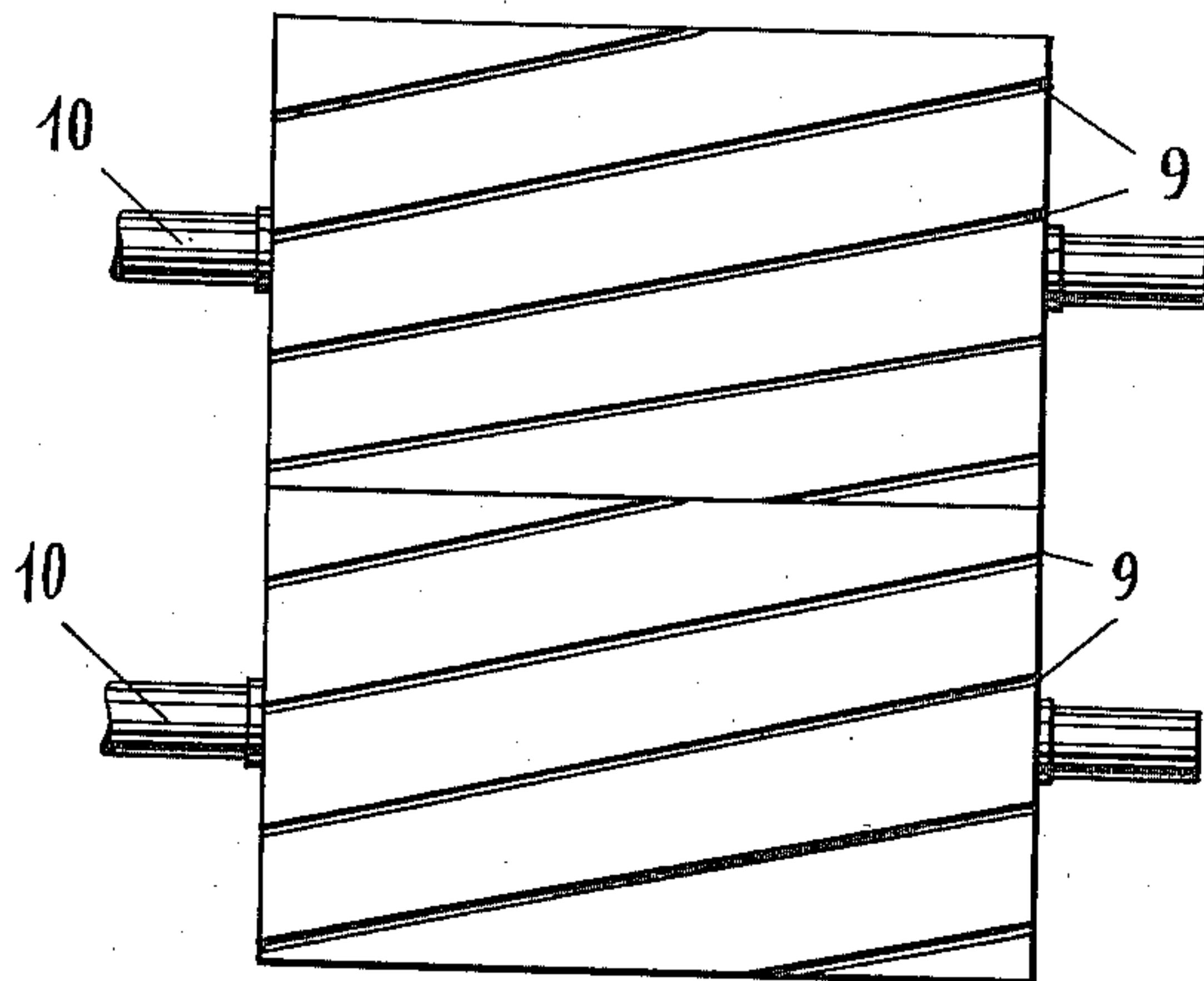


Fig. 3.

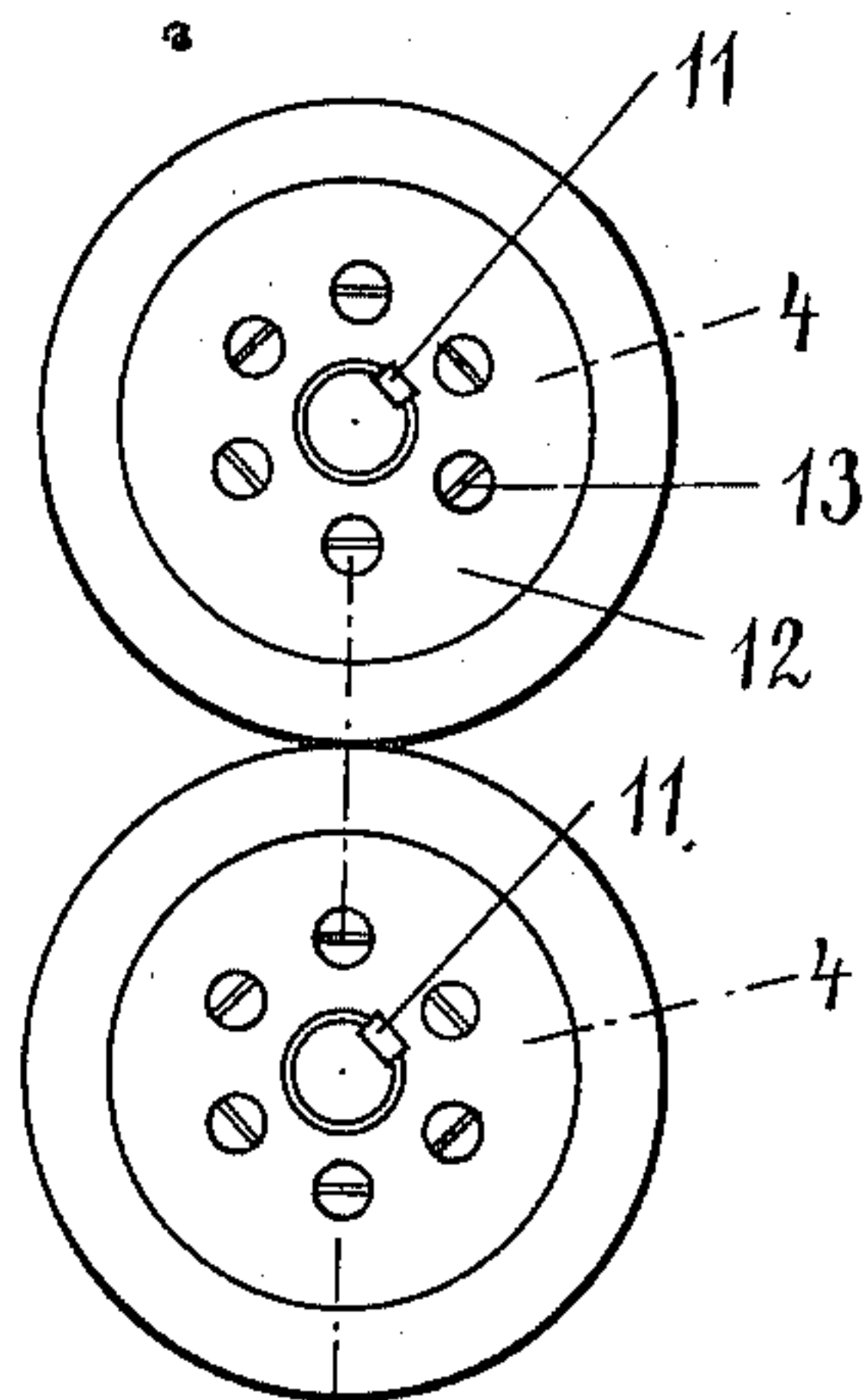


Fig. 4.

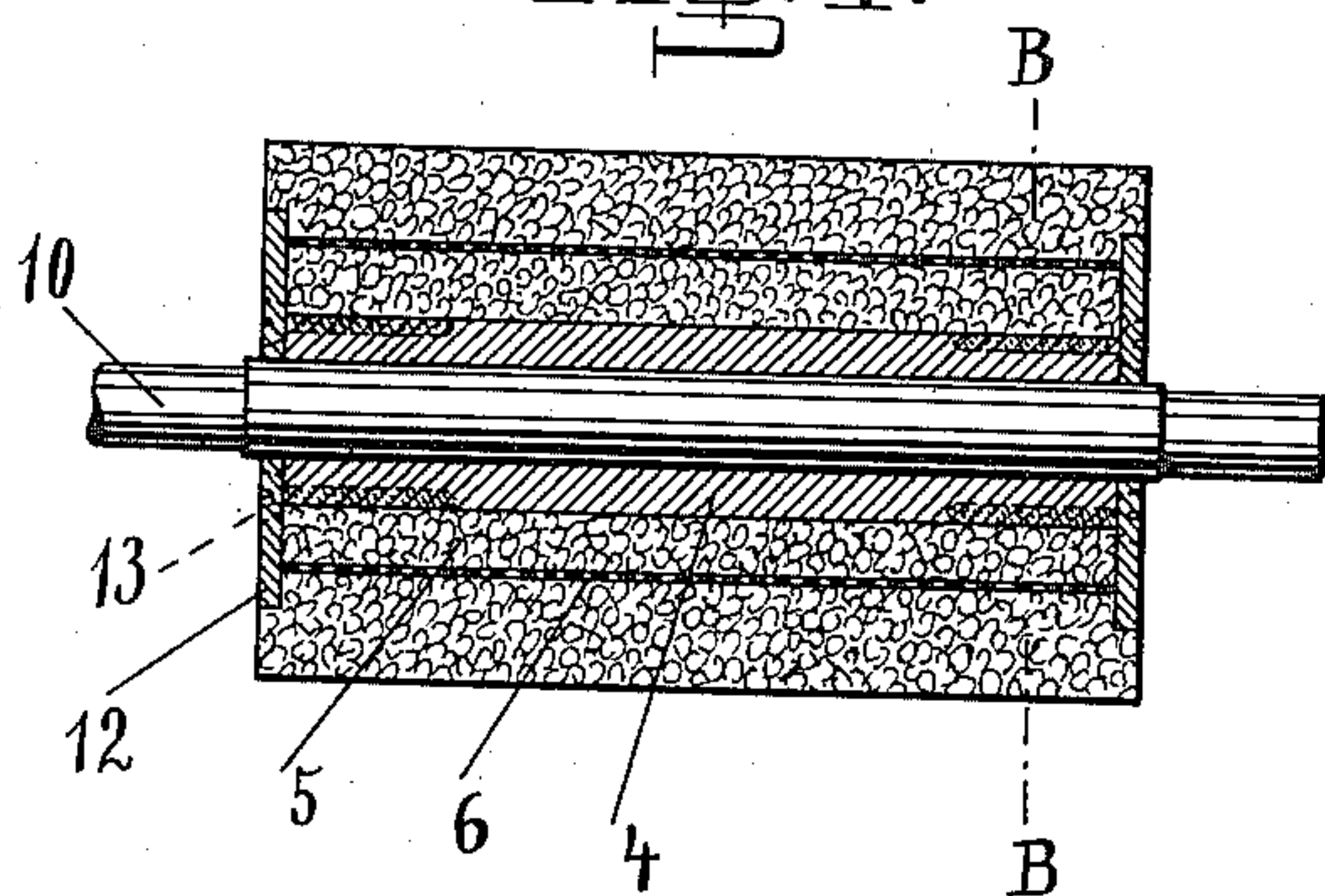
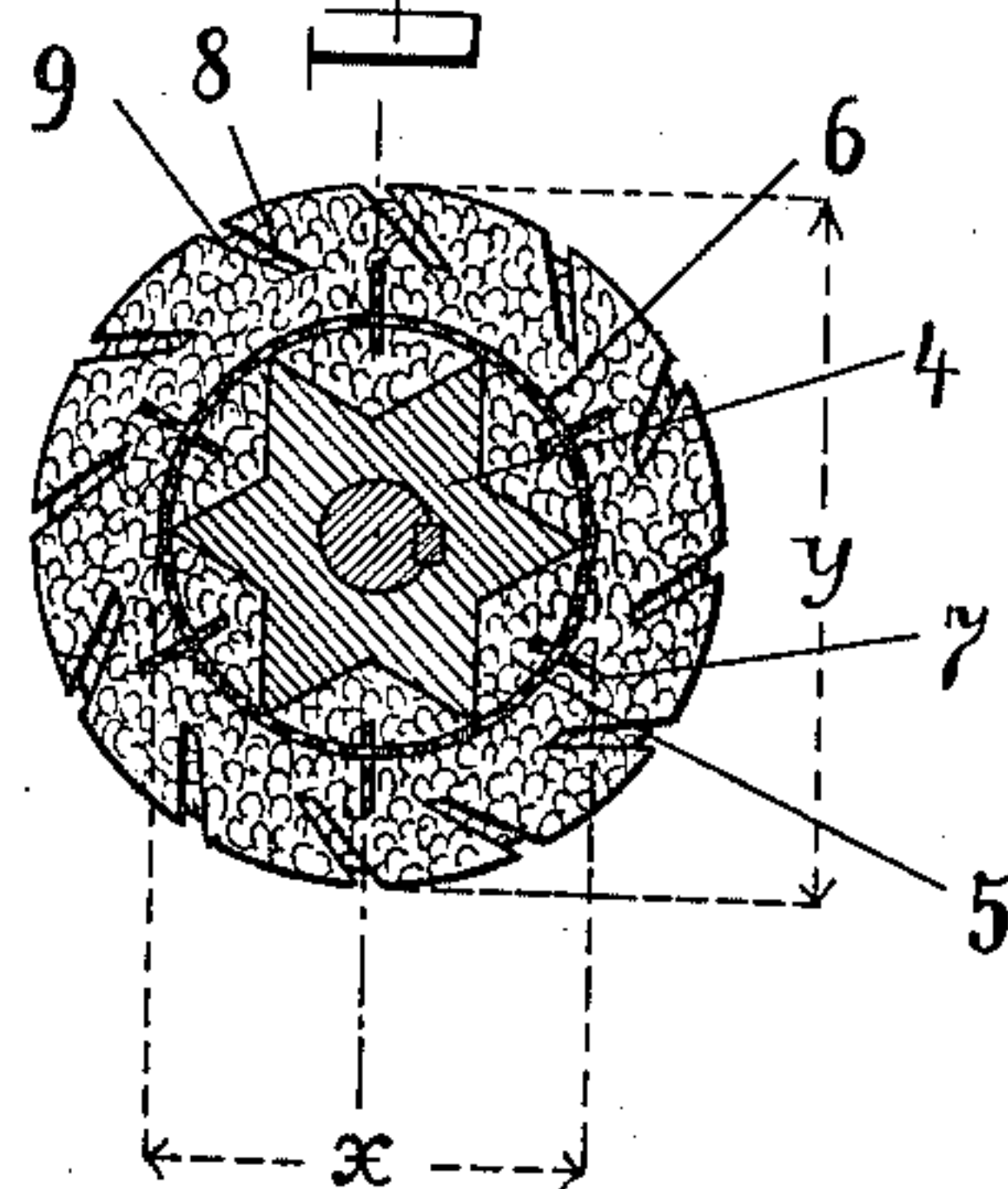


Fig. 5.



Witnesses.
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UNITED STATES PATENT OFFICE.

JAN DEELEN, OF HEEZE, NETHERLANDS.

GRINDING-ROLL.

964,000.

Specification of Letters Patent.

Patented July 12, 1910.

Application filed April 5, 1909. Serial No. 488,023.

To all whom it may concern:

Be it known that I, JAN DEELEN, a subject of the Queen of the Netherlands, and resident of Heeze, in the Province of North Brabant, Netherlands, have invented a new and useful Grinding-Roll, of which the following is a specification.

This invention relates to improvements in grinding and bruising rollers, made of artificial stone.

Objects of the invention are to manufacture a roller, wherein grinding material of high degree of hardness is mixed with some material which is less hard, so that the brittleness of the finished roller is considerably reduced in view of the rollers now in existence.

Another object is to manufacture a roller, wherein the grinding material and material which binds the grinding material together are applied to a core, and said core is arranged so that through its shape alone it is adapted to improve the connection between the particles of the entire mass.

Another object is to manufacture a roller which is provided with a plurality of recesses or channels, resembling the rollers made of steel or other metal and to fill these channels with a material of low degrees of hardness. The advantage of this construction rests in the fact that the slight depth of these channels can be very easily regained, after the outer and harder circumference of the roller is worn off.

In the accompanying drawing:—Figure 1, is an illustration of the various elements constituting the mass of the stone. Fig. 2, is a front elevation of a pair of rollers. Fig. 3, is a side elevation of the pair of rollers. Fig. 4, is a sectional view of one roller. Fig. 5, is a section on line C—D of Fig. 4.

The mass of the artificial stone is composed of minerals of at least three different degrees of hardness. By way of example two minerals of a different degree of hardness with respect to each other are mixed together in crushed condition, and the size of the single particles may be chosen so, as it seems of advantage for the purpose for which the roller is to be used. Such minerals preferably are quartz, bauxites, waste marble or waste fire-stone. To this mixture a mineral in crushed condition of a less degree of hardness than the aforementioned minerals is added, said last named mineral serving as a binding means for the entire mass.

Magnesite or chlorid of magnesium may thus be used as the mineral of the lowest degree of hardness.

In the known grinding and bruising rollers made of artificial stone, the very hard mass of stones was combined with some very soft mineral, said last named mineral forming the binding means. The disadvantage of this composition was that the wear and tear mainly affected the binding means, so that the grain of the roller after some use lost its uniformity and changed the porosity which the roller had originally. By adding at least one mineral of an intermediate degree of hardness between the hardest and the softest minerals, the grain is preserved and the wear and tear of the stone are made uniform over the entire circumference and through the entire mass of the roller.

The manufacturing process of the grinding or bruising roller according to this invention is about the following:

In Fig. 1 the particles indicated with 1, designate the material of the highest degree of hardness, the particles indicated with 3, designate the material which forms the binding means and the particles indicated with 2, designate the material which is combined with the hardest mineral and with the binding means. By adding water or some other suitable liquid, the entire mass is rendered plastic. For the purpose of securing the mass intimately to the shaft 10, a core 4 preferably of cast iron is supported on the shaft 10 and held in its place by means of the key 11. The core 4 advisably is of a cross section which forms a number of projections; as indicated in Fig. 5, the core is of a star-shape cross section, so that the mass may be disposed in the interspaces between the projections of this core. Furthermore, it is advisable to surround the core 4 by a metal cylinder 6 made of perforated or corrugated sheet metal which may be reinforced by a number of ribs 7. In Fig. 5, the diameter of the metal cylinder is designated with x while the diameter of the finished roller is indicated with y . The mass in its plastic state is filled in between the cylinder and the interspaces between the projections of the core and the balance of the plastic mass is then molded in its final shape. The lateral faces of the roller advisably are protected by the covers 12 which are fastened to the core by means of bolts 13.

As indicated in Figs. 2 and 5, the rollers

may be provided with preferably helical
flutes 9, which are filled almost in their en-
tire depth with the material of the lowest
degree of hardness, leaving a plurality of
5 helical notches on the circumference of the
roller. When the hardened circumference
of the roller is then used up until the outer
diameter of the roller is in one smooth sur-
face with the binding material 8 in the
10 notches, then these notches may be repaired
again by moving the binding material to a
certain depth and the rollers then present
again a circumference provided with helical
grooves.

15 I claim:

A grinding and bruising roller of the class
described, comprising in combination, a
metal core of star-shaped cross-sections, a

cylindrical mantle inclosing said core, a roll-
ing layer consisting of a solidified mixture 20
of minerals of different degrees of hardness,
said mixture being disposed in the inter-
space between said core and said mantle
and inclosing said mantle, and said layer
being provided with a plurality of helical 25
grooves on its circumferential surface, said
grooves being filled with the mineral of the
lowest degree of hardness, a superficial mar-
ginal portion of said grooves being left un-
filled. 30

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

JAN DEELEN.

Witnesses:

W. H. AKERS,

W. A. MANICE.