

F. F. WILLIAMSON & D. BRENNAN, JR.

ROAD ROLLER.

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958,346.

Patented May 17, 1910.

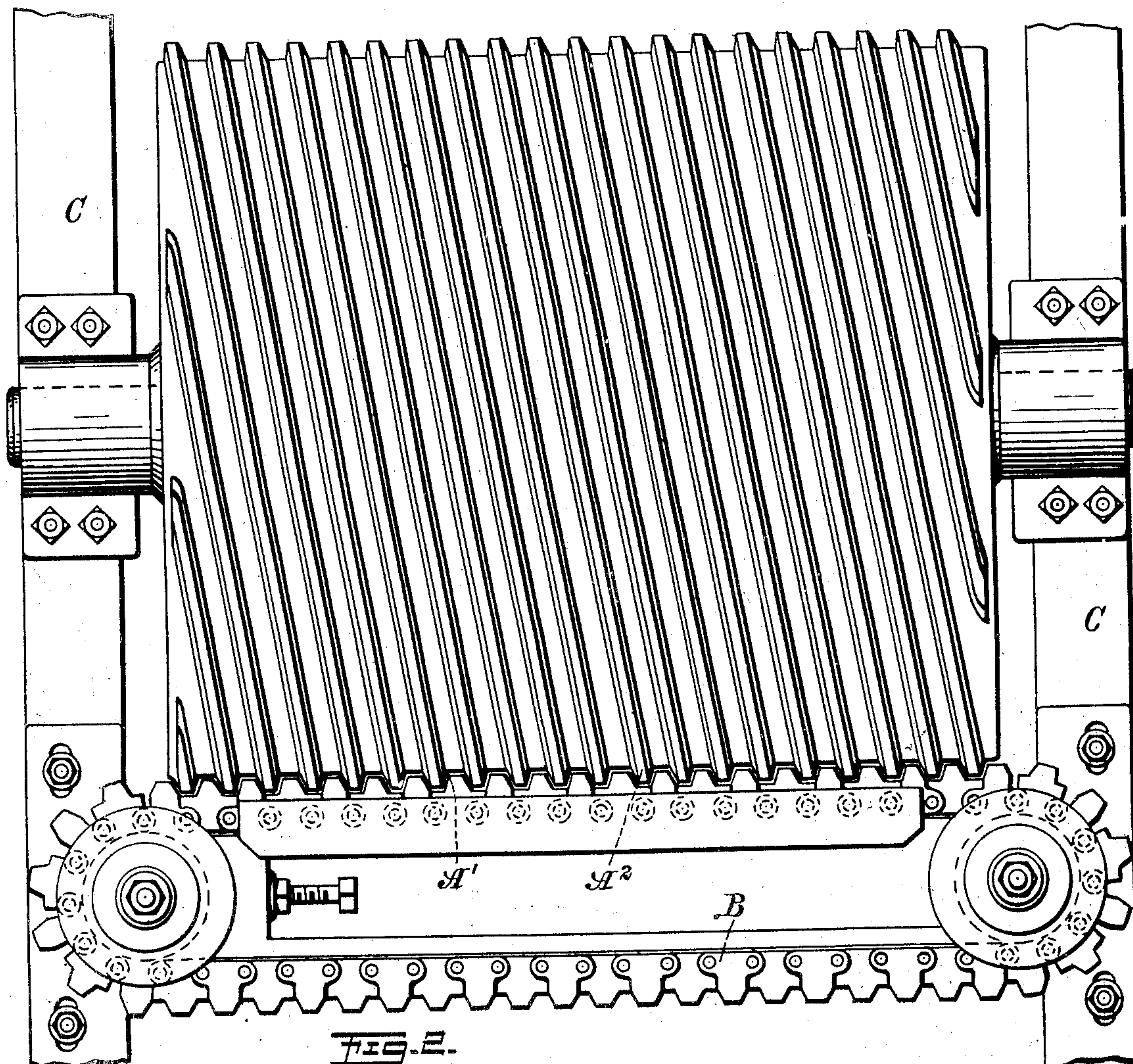


FIG. 2.

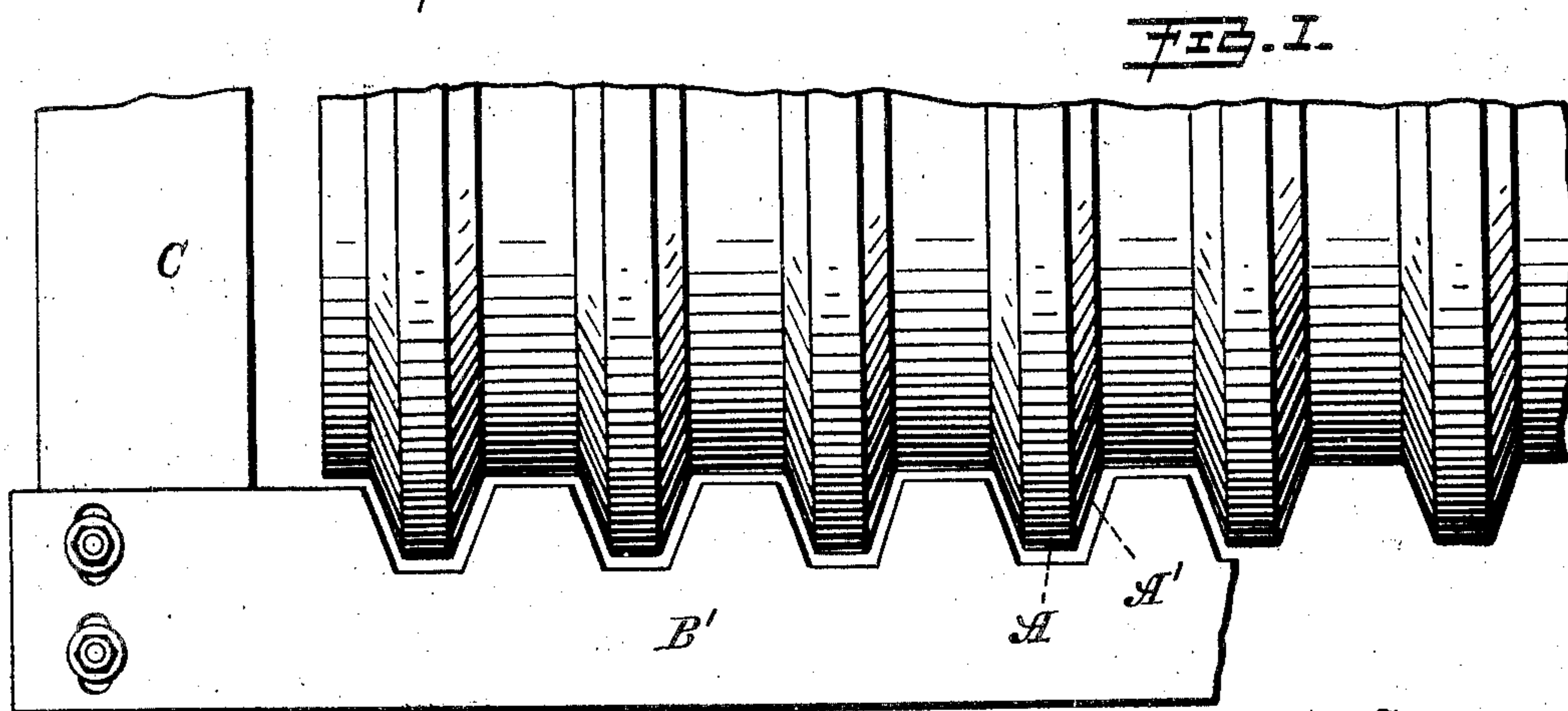


FIG. 1.

Witnesses:
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UNITED STATES PATENT OFFICE.

FREDERICK F. WILLIAMSON AND DANIEL BRENNAN, JR., OF NEW YORK, N. Y., AS-
SIGNORS TO THE SICILIAN ASPHALT PAVING COMPANY, OF NEW YORK, N. Y., A
CORPORATION OF NEW YORK.

ROAD-ROLLER.

958,346.

Specification of Letters Patent.

Patented May 17, 1910.

Original application filed May 2, 1908, Serial No. 430,463. Divided and this application filed December 24,
1908. Serial No. 469,069.

To all whom it may concern:

Be it known that we, FREDERICK F. WILLIAMSON and DANIEL BRENNAN, JR., both citizens of the United States, and residents of the borough of Manhattan, city, county, and State of New York, have invented certain new and useful Improvements in Road-Rollers, of which the following is a specification.

Our invention relates to road rollers and has for its object to enable a roller of comparatively small weight to perform work such as would usually require a roller of much greater weight and also to perform a peculiar classifying or distributing action on the stones.

In the accompanying drawings Figure 1 is a partial plan view showing one form of our improved roller and Fig. 2 is a top view showing another form of such roller.

Our present application is a division of another application filed by us in the United States Patent Office on May 2nd, 1908, Serial No. 430,463, on which Patent #909,499 was issued on Jan. 12, 1909.

Our improved roller, in the form illustrated by Fig. 1, is provided with a number of ribs or annular ridges A having inclined faces A' on the sides of each rib or ridge. The width of the cylindrical surface of a rib should be about one-third of the interval between said surfaces, or in other words, the aggregate width of these cylindrical surfaces should be about one-fourth of the roller's length. In order to obtain the best results with our roller, the depth of the groove between said ribs should not be over one-half of the intended thickness of the top layer of the road in its finished condition. When a roller of this character travels over stones laid loosely, that is without any binder, or over a layer of stones in which a binder has been incorporated, an improved result is secured by reason of the fact that the rolling operation brings about what may be called a classification of the material, that is, the larger stones are brought to the surface, while the smaller ones seek lower levels. This action may be explained as follows: If the layer of stone contains no binder, the roller at first pushes a wave of loose stones ahead of it, producing among the stones a movement which has a screening effect, allowing the small stones to get to the bottom

of the mass by gravity whereby also the coarser stones are to that extent raised; then as the pressure of the roller comes on the edge of a stone, that stone is tilted up to an extent in proportion to its size and smaller pieces get under the tilted end. By a repetition of this action the stones are soon graded the larger ones being forced to collect at the surface of the layer. As the operation comes to a finish the stones have found their best fitting places in the layer, the tilting-up action subsides and stops and the surfaces are face-up in horizontal alinement.

With a layer of stones containing a binder such as asphalt, our roller is particularly efficient and it is really the equivalent of a number of narrow rollers or disks, as it were, spaced apart, the rolling face of each disk having of course two edges. A disk roller, as we may call it, as designed for our purpose, of the same weight and general dimensions as a plain roller, would be composed for instance of 16 disks having 32 angular edges, the aggregate rolling faces of the disk having four times the pressure on the road of a plain roller of the same size and weight. The tilting effect of the edges of a ridge or ring on the stones in the layer is manifestly much greater than can be produced by the rolling face thereof, as after the stone is tilted up the roller passes by and gives time for small stuff to get under the tilted up end and very often forces smaller pieces under such raised end by reaction. This kind of a roller will not push so much of a wave in front of it as a flat roller does, but induces a complexity of movements in the mass whereby the stones soon become classified and find their best fitting places in the layer, the larger ones on top, thus with this form of roller the resistance of the soft asphalt to the classification of the stones into position is overcome and it progresses rapidly to completion. The edges or ridges of the roller cut into the mass at first to the full depth thereof, but at each succeeding time of going over they cut in less and less, and finally do not cut in at all, leaving the surface smooth with the best stones face up as described. The inclined faces A' adjacent to each of said edges or ridges, assist in crowding the stones sidewise so as to facilitate their rearrangement and classification. These inclined faces give an outward flare

to the groove formed between two adjacent ridges or ribs and thus avoid the danger of stones sticking between such ribs as they might if the ribs had parallel side surfaces perpendicular to the axis of the roller.

The machine of which the curved roller forms the working part may be a self-propelled one of the usual character. Its steering roll may be plain and not grooved so that it will flatten out the grooves made at first by the main roller.

We prefer to provide means whereby the surface of the roller may be kept clean. We have illustrated a special construction of such means in conjunction with a somewhat different form of our roller, shown in Fig. 2, which is characterized by the employment of spiral ribs A^2 in lieu of the annular ribs of Fig. 1. The cleaning device in this case consists of a chain B suitably carried by the frame C of the roller, the links of said chain being shaped to conform to the outline of the ribs A^2 . Of course, as the roller rotates, the chain will be moved slowly and the grooves between the spiral ribs as well as the faces of said ribs will be kept clean. With a roller having annular ribs, as in Fig. 1, a simple toothed bar B' secured to the

frame in such a way that its teeth would project between the ribs of the roller would be sufficient. The spirally ribbed roller of Fig. 2 has the advantage of a tendency to crowd the covering of the road toward the center, which is of assistance in giving the road the proper transverse form with the center of the road higher than the sides. Of course it is understood that to accomplish this result the roller would be made to travel on one side of the road going in one direction and on the other side coming back.

We claim as our invention:

A road roller provided with spiral working ridges separated by grooves, in combination with a chain mounted to travel substantially parallel with the roller's axis and provided with teeth fitted into the roller's grooves.

In witness whereof we have hereunto set our hands in the presence of two subscribing witnesses.

FREDERICK F. WILLIAMSON.
DANIEL BRENNAN, JR.

Witnesses:

JOHN LOTKA,
JOHN A. KEHLENBECK.