A. DIETZ.

Apparatus for Mixing Plastic Compositions.

No. 196,882. Patented Nov. 6, 1877.

Fig. 1.

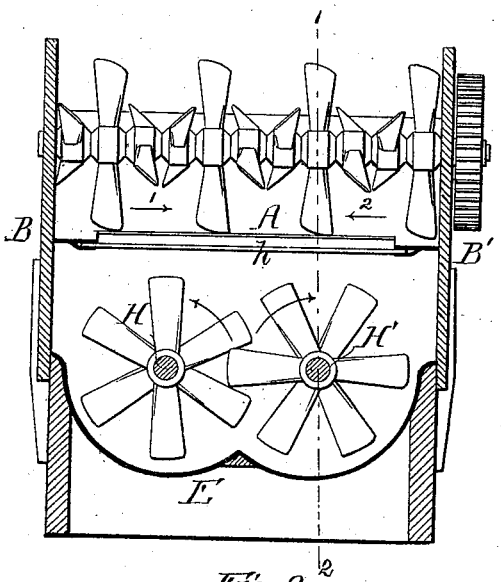


Fig. 4.

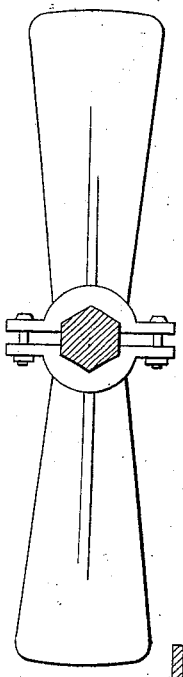


Fig. 2.

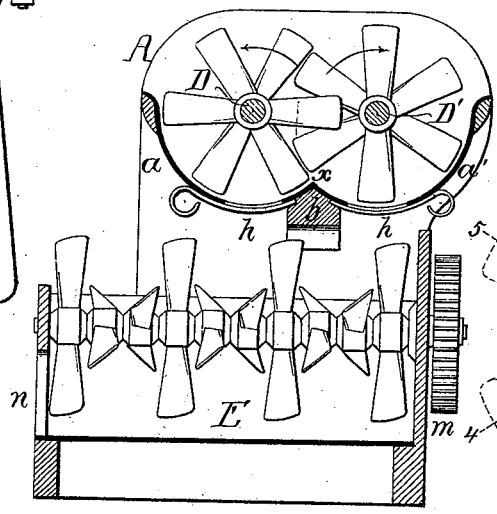
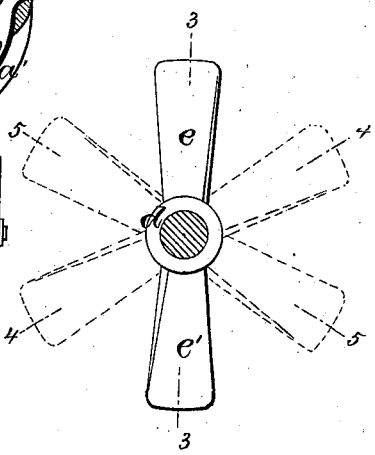


Fig. 3.



Witnesses

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UNITED STATES PATENT OFFICE.

AUGUSTUS DIETZ, OF PHILADELPHIA, PENNSYLVANIA.

IMPROVEMENT IN APPARATUS FOR MIXING PLASTIC COMPOSITIONS.

Specification forming part of Letters Patent No. **196,882**, dated November 6, 1877; application filed October 10, 1877.

To all whom it may concern:

Be it known that I, AUGUSTUS DIETZ, of Philadelphia, Pennsylvania, have invented a new and useful Improvement in Apparatus for Mixing Plastic Compositions, of which the following is a specification:

The object of my invention is to construct apparatus for thoroughly mixing asphalt composition for pavements, or for mixing concrete or other plastic or semi-fluid material or composition; and this object I attain in the manner which I will now proceed to describe, reference being had to the accompanying drawings, in which—

Figure 1 is a vertical section of the mixing-machine; Fig. 2, a transverse section on the line 1 2, Fig. 1; Fig. 3, a diagram illustrating the arrangement of the mixing-blades, and Fig. 4 a view illustrating the mode of fixing a blade to a shaft.

The upper mixing-vessel A consists of two segments, *a a'*, of a cylinder, united at *x*, and connected to and supported by the opposite end plates B B', a girder, *b*, extending from plate to plate, and serving as an additional support for the segments.

Two horizontal shafts, D and D', arranged concentrically with the segments, have their bearings in the end plates B B', and these shafts carry a series of oblique blades, which I construct and arrange in the following manner: A number of castings, of the character shown in Fig. 3, are made, each consisting of a hub, *d*, with two oblique blades, *e e'*; and a number of these castings are fitted onto and secured to each shaft, and arranged in the order shown in the said figure, one casting being on the line 3 3, the next on the line 4 4, the third on the line 5 5, and the fourth again on the line 3 3, so that, on looking toward the end of either shaft, there will be the appearance of six blades projecting radially from it. I prefer this arrangement, although the castings may be so arranged that but four blades, or eight or more blades, will appear to project from the shaft on looking toward the end of the same.

The blades of one casting must be inclined in a contrary direction to the blades of the adjoining casting throughout the series on each shaft, and the blades of one shaft should overlap and cross, but not come in actual contact with, the blades of the other shaft, as the two shafts revolve.

The material to be mixed having been placed in the vessel A, the two shafts are caused to revolve simultaneously, and at the same speed, in the direction of the arrows.

The tendency of the blades will be to raise the material in the middle, and to stir it, and direct it toward the opposite sides of the vessel. At the same time there will be a constant movement of the material to and fro in the direction of the vessel's length, for, owing to their different inclinations, one set of blades will have a tendency to move the material in the direction of the arrow 1, and the other set will have a tendency to move it in the direction of the arrow 2, Fig. 1. In other words, there will be a constant vertical displacement of the material, due to the rotation of the blades, simultaneously with a lateral agitation of the material, due to the contradictory influences of the blades. At the same time the edges of the blades of the two shafts, if properly arranged in respect to each other, will have a shearing effect on the material, and this will render important assistance in bringing about a thorough disintegration and admixture.

The above apparatus may be used alone, and heat can be applied to the under side of the vessel when necessary; but I prefer in most cases to use the mixing apparatus in connection with a lower apparatus, as shown in Fig. 2.

Each segment *a* and *a'* of the vessel A has at the bottom an opening, which can be closed or exposed by a sliding or other suitable door, *h*. After the material has been thoroughly mixed in the upper vessel, these doors are opened, and it falls onto the vessel E below.

This vessel is shaped similarly to that above, with the exception that it is closed at one end, *m*, and has openings *n* at the opposite end. It has also two shafts, H and H', situated at right angles to the shafts above, and carrying oblique blades, all of which, however, are inclined in such a direction that when the shafts are revolved in the course pointed out by the arrows, Fig. 1, the tendency of the blades will be to force the mixed material through the openings *n*.

Instead of a casting with two blades, I pro-

pose in some cases to make the blades separate, and to bolt them to a hexagonal shaft n the manner too clearly shown in Fig. 4 to need explanation.

I claim as my invention—

1. A mixing apparatus in which a vessel, A, is combined with two shafts, D and D′, caused to revolve in the direction of the arrow, each shaft carrying a series of oblique blades, some inclined in one direction, and others in a contrary direction, and the blades of one shaft crossing and co-operating with those of the other as the said shafts revolve, all substantially as set forth.

2. The combination of the upper vessel and its revolving mixers, openings, and doors, with the lower vessel, having two shafts, arranged at right angles to those above, and carrying blades, all of which are inclined in the same direction, as set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

AUGUSTUS DIETZ.

Witnesses:

HERMANN MOESSNER,

HARRY SMITH.