

(No Model.)

3 Sheets—Sheet 1.

D. BRENNAN, Jr.  
APPARATUS FOR MIXING MORTAR.

No. 584,849.

Patented June 22, 1897.

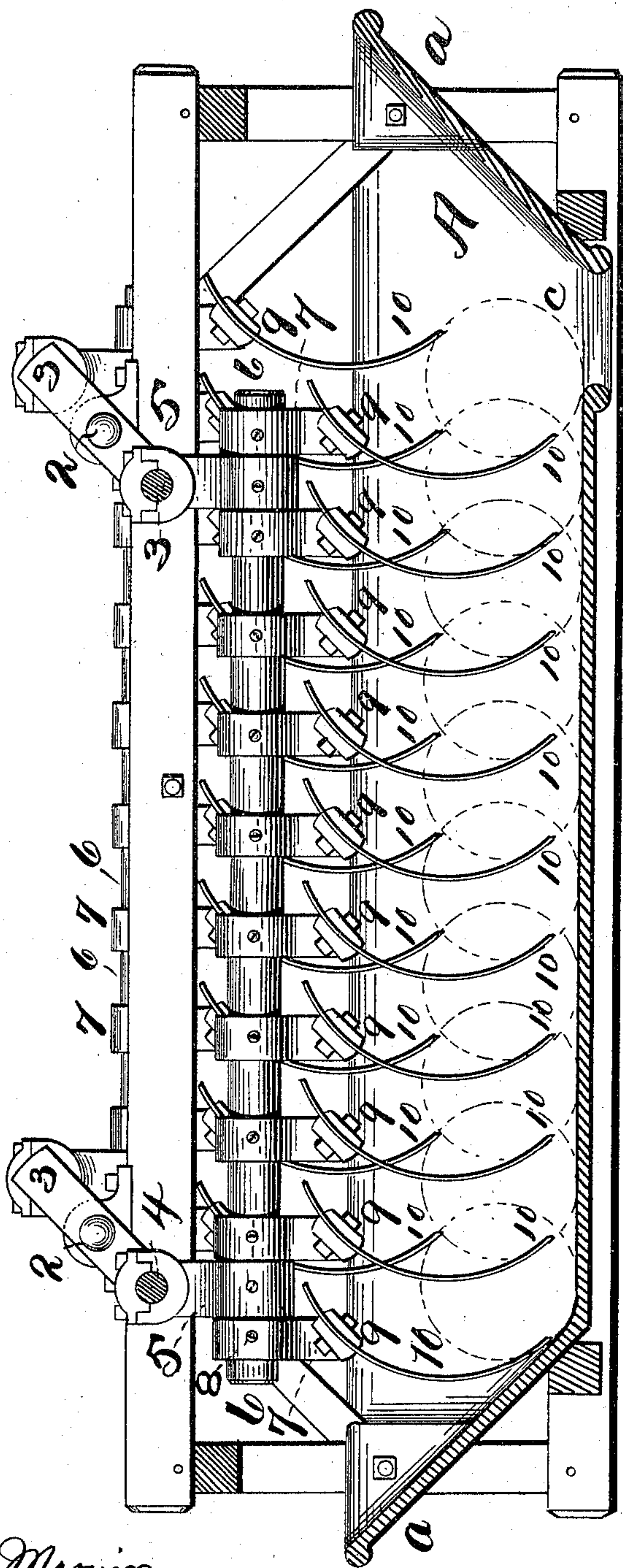


Fig. 1.

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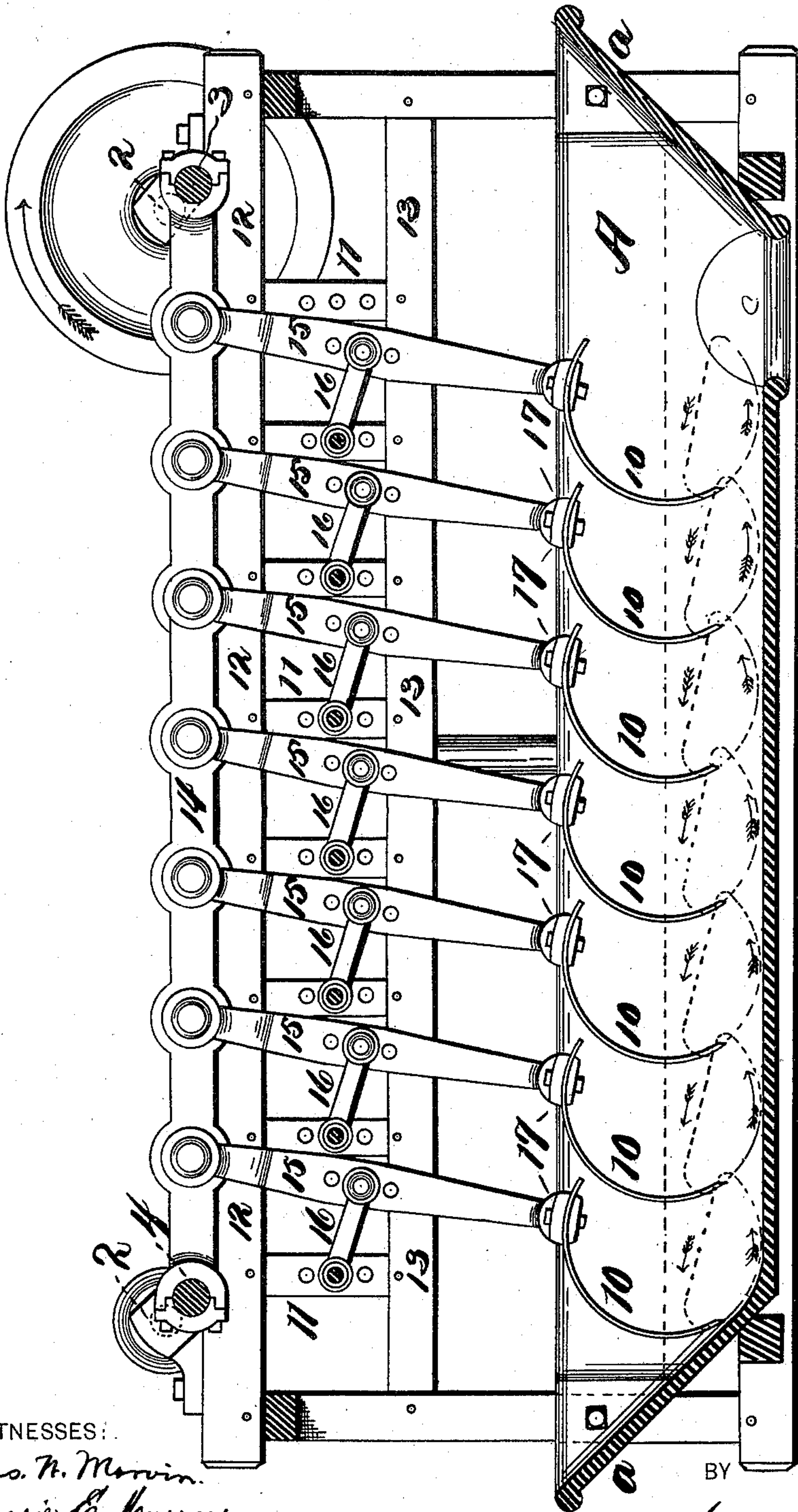


Fig. 2.

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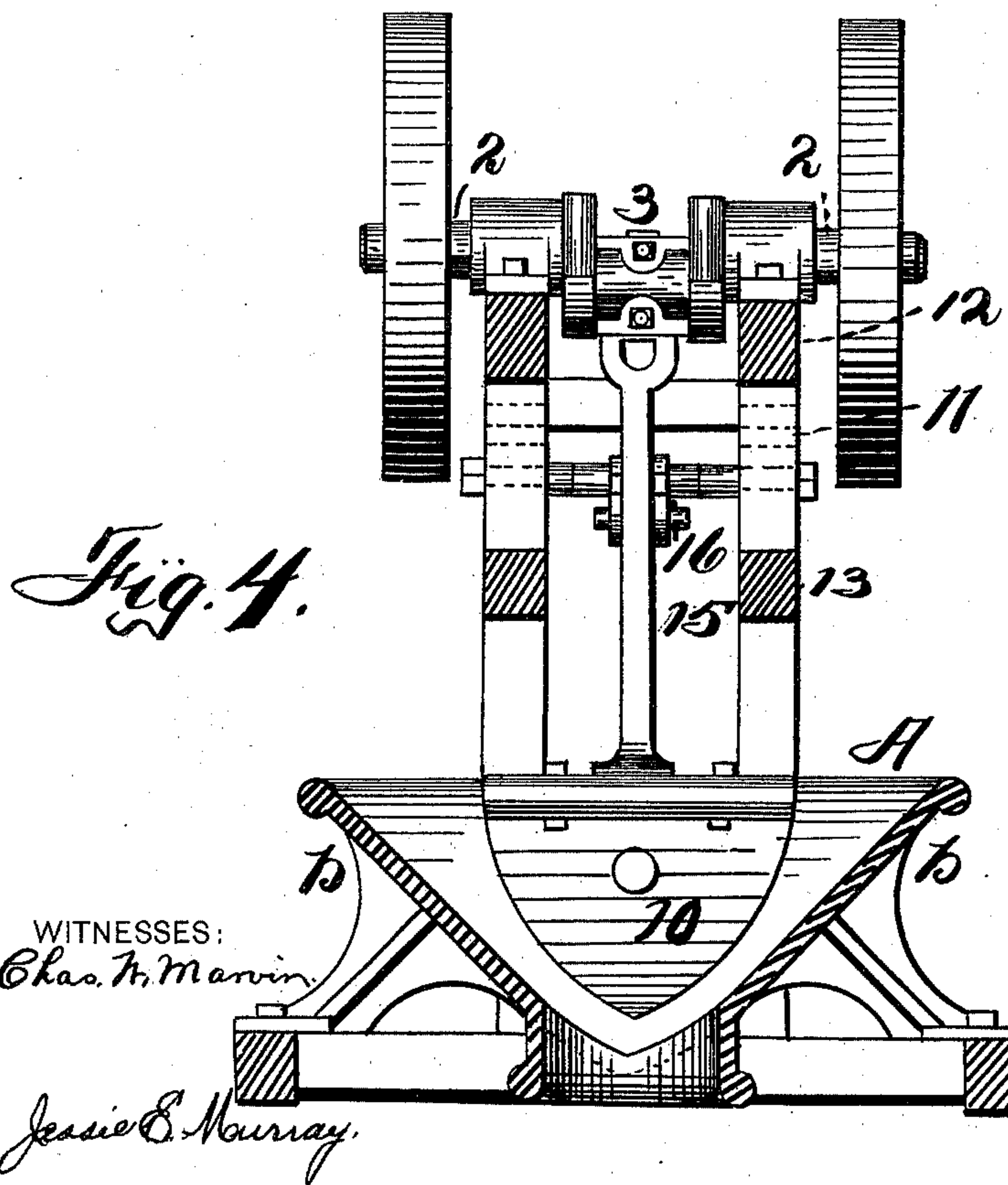
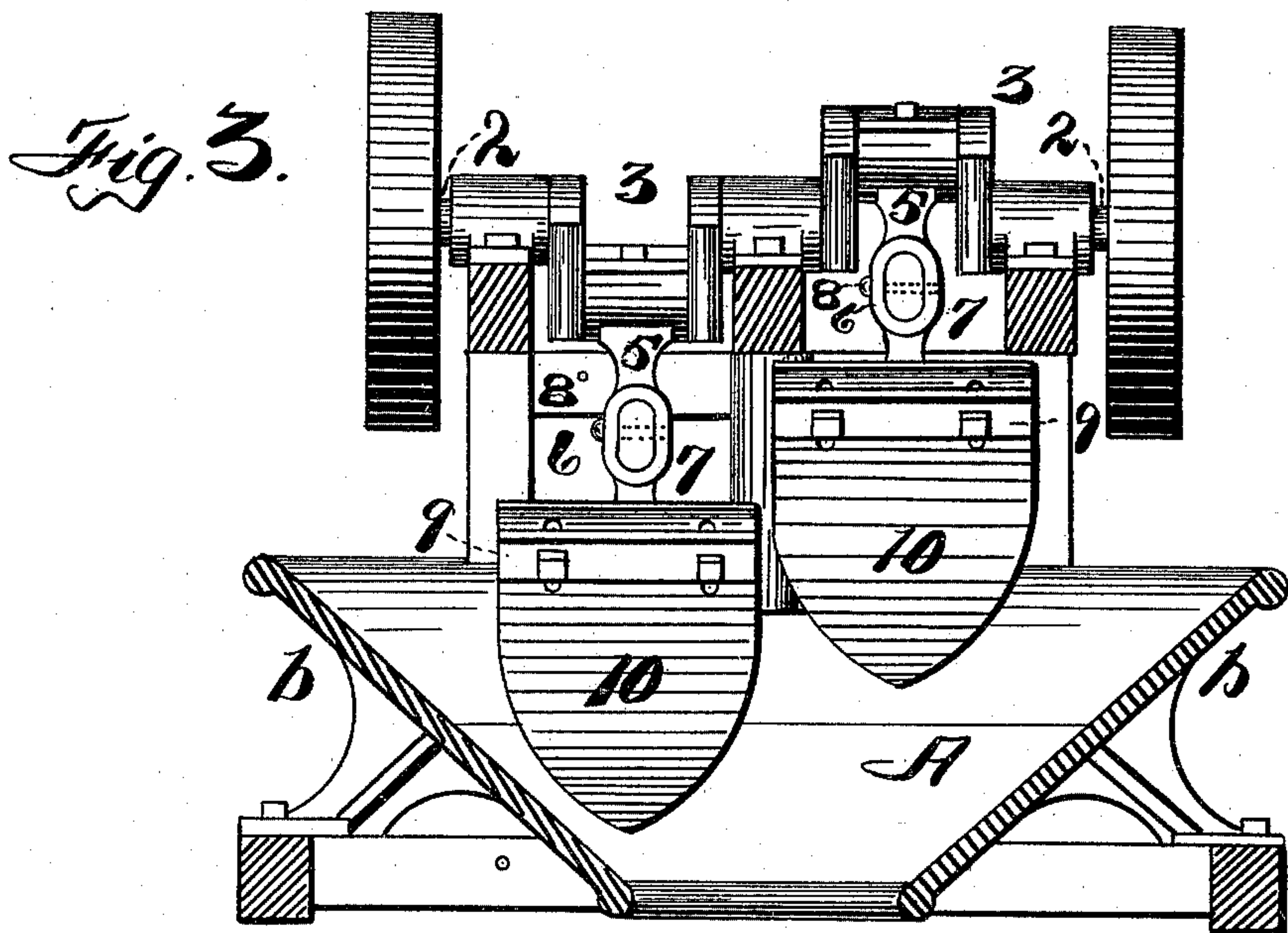
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WITNESSES:  
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# UNITED STATES PATENT OFFICE.

DANIEL BRENNAN, JR., OF NEW YORK, N. Y.

## APPARATUS FOR MIXING MORTAR.

SPECIFICATION forming part of Letters Patent No. 584,849, dated June 22, 1897.

Application filed September 16, 1895. Serial No. 562,609. (No model.)

*To all whom it may concern:*

Be it known that I, DANIEL BRENNAN, Jr., of New York, in the county of New York, in the State of New York, have invented new and useful Improvements in Machines and Apparatus for Mixing Mortar, &c., of which the following, taken in connection with the accompanying drawings, is a full, clear, and exact description.

My invention relates to machines and apparatus for mixing mortars, cements, or grouting in large quantities as a commercial industry or upon contract work.

My object is to produce a machine in which the materials are mixed and thoroughly incorporated in a suitable "wet-box" or trough by a series of mechanically-operated hoes with suitable means and mountings whereby they are given a compound motion both vertically and horizontally, so that the points either describe a complete circle in their forward and return movements or describe an arc of a circle in their forward movements and their return movements are upon the lines of chords to said arcs; in which also suitable means are provided, when the hoes are arranged in rows, whereby while those in one row are moving forward those in the next row are returning, all in order to more thoroughly agitate and commingle the materials into a homogeneous whole, the hoe-blades having points of any desired form which may be deemed best for the purpose, and the sides or ends, or both, of the box or trough being inclined or vertical, as may be desired or considered best for the results to be accomplished. It is constructed as follows, reference being had to the accompanying drawings, in which—

Figure 1 is a sectional side elevation of a mixer in which the hoes are so mounted that their points describe a circle when operated. Fig. 2 is a like view of a mixer in which the points each describe an arc of a circle in their forward movements and move back or return upon the line of a chord to said arc. Fig. 3 is a transverse sectional elevation of a mixer having two rows of hoes having alternate movements. Fig. 4 is a like view of a mixer employing a single row of hoes mounted as shown in Fig. 2.

A is a suitable wet-box or trough having a suitable bottom and shown as having sloping

ends *a* and sloping sides *b*, but I do not limit myself to this style of construction. This is also shown as mounted in a suitable frame and as provided with a suitable discharge-opening *c* at one end. Upon this frame a crank-shaft 2 is suitably journaled, Figs. 1 and 3, having a crank 3 and 4, there being a shaft adjacent to each end. Suitable links 5 are journaled upon said cranks, and a rod 6 is suitably connected to and carried by said links. Upon this rod hangers 7 are suitably mounted and adjustably secured, as by the set-screws 8, both to prevent any longitudinal shifting as also any twisting laterally. Upon these hangers suitable grip-blocks 9 are secured, consisting of sections, one secured to the hanger and the other detachably secured to said section, and the hoe or shovel blades 10 are secured between them by suitable bolts in any ordinary manner, as by providing said blades with slots, (not shown,) through which the bolts pass. These blades are curved in arcs of circles, substantially as shown, and are preferably of springy material and when one (or both) of the crank-shafts is driven by power one row of hoes will be carried forward, then upward, then over back, and then down into the material, the points of each describing a circle. During all this movement each hoe maintains the same vertical alinement and any material readily falls from it as the hoe is raised.

In Fig. 2 the crank-shafts are mounted upon the frame in the same manner as in Fig. 1, and uprights 11 are secured between the bars 12 and 13. A suitable bar 14 is journaled upon said cranks, and levers 15 are pivotally connected thereto and fulcrumed upon links 16, which are pivotally mounted upon said uprights 11. Upon the lower ends of said levers are the grips 17, analogous to or like those shown in Fig. 1, and the blades are secured therein. When these crank-shafts are rotated, the hoe-blades are swung downward, then forward, then upward upon an arc of a circle, substantially as shown by the dotted lines and arrows, and then backward and more or less upward upon the line of a chord to the arc aforesaid. In either case the spring of the blades enables them not only to more readily enter, but more thoroughly agitate the materials, especially where



gravel or broken stone are being used, as for  
grouting. The operation of these hoes or  
shovels is to thoroughly mix, commingle, and  
incorporate the materials by digging down  
5 into them, more or less raising them, pouring  
them off from the hoes, and at the same time  
gradually feeding them forward to the dis-  
charge, through which they pass ready for  
use.

10 By the use of sloping sides the materials  
will more readily slide down and fill the  
spaces behind and under the shovels, and  
this also aids in mixing them together.

Having described my invention, what I  
15 claim, and desire to secure by Letters Patent,  
is—

1. In a mortar-mixer, a trough or box to  
hold the material, a suitable framework ex-  
tending above the trough, a crank-shaft  
20 mounted upon each end of the framework, a  
link suspended from each crank, and a rod  
which connects the cranks and extends hori-  
zontally over the top of the trough, combined  
with a series of hangers rigidly secured to the

rod, clamping devices secured to the lower 25  
ends of the hangers, and curved blades se-  
cured to the clamps, substantially as shown.

2. In a mortar-mixer, a suitable box or  
trough to hold the material, a framework  
raised above the trough, two crank-shafts 30  
that extend entirely across the framework,  
one at each end, and a single connecting-rod  
that unites the two cranks, combined with  
operating-hangers suspended from the con-  
necting-rod and receiving motion therefrom, 35  
and curved blades secured to the lower ends  
of the hangers, whereby the material to form  
the mortar is fed in at one end of the box, is  
mixed in its passage through it, and dis-  
charged therefrom at its opposite end, sub- 40  
stantially as described.

In witness whereof I have hereunto set my  
hand on this 16th day of August, 1895.

DANIEL BRENNAN, JR.

In presence of—

F. M. PEIRCE,

EDWIN II. LUDEMAN.