

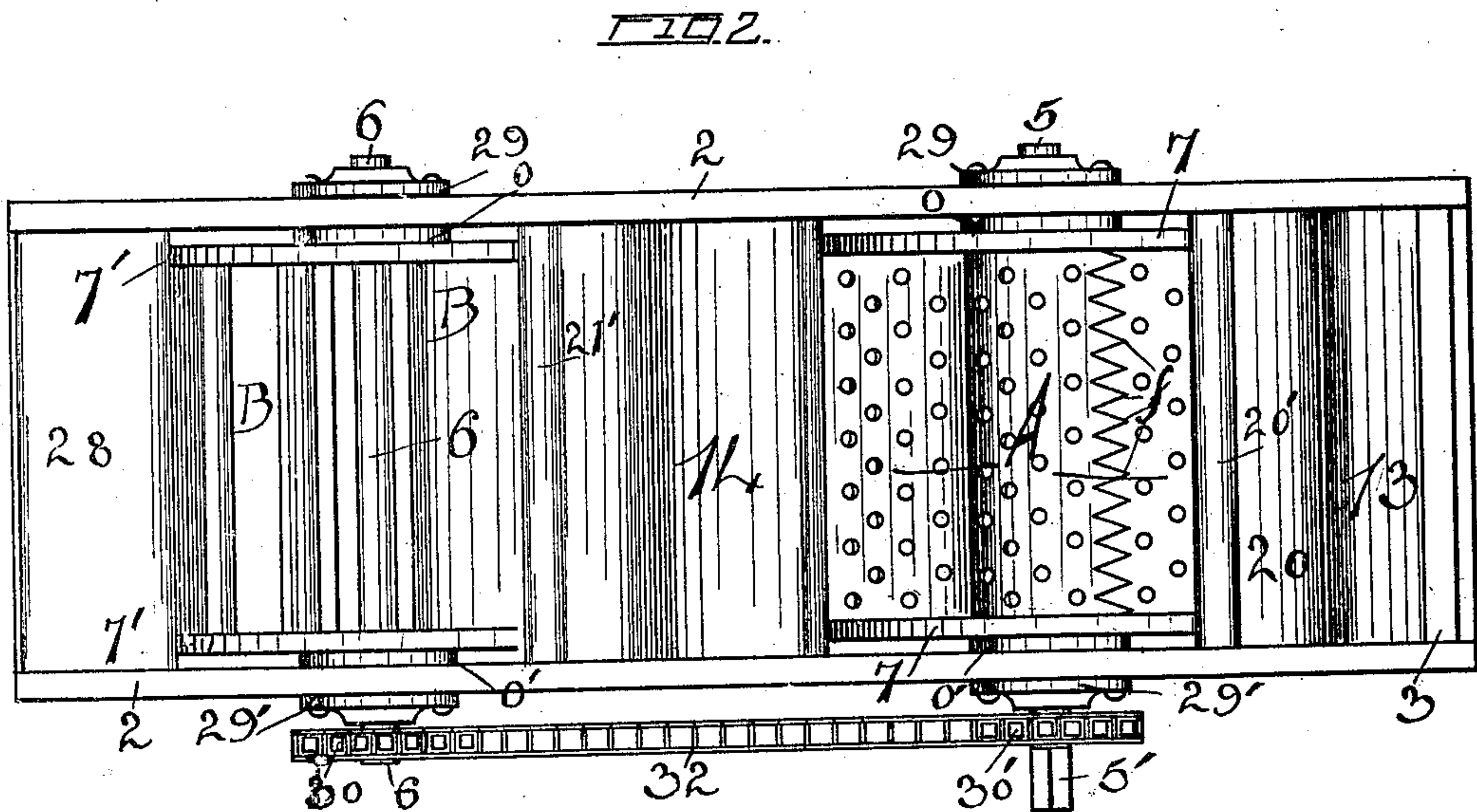
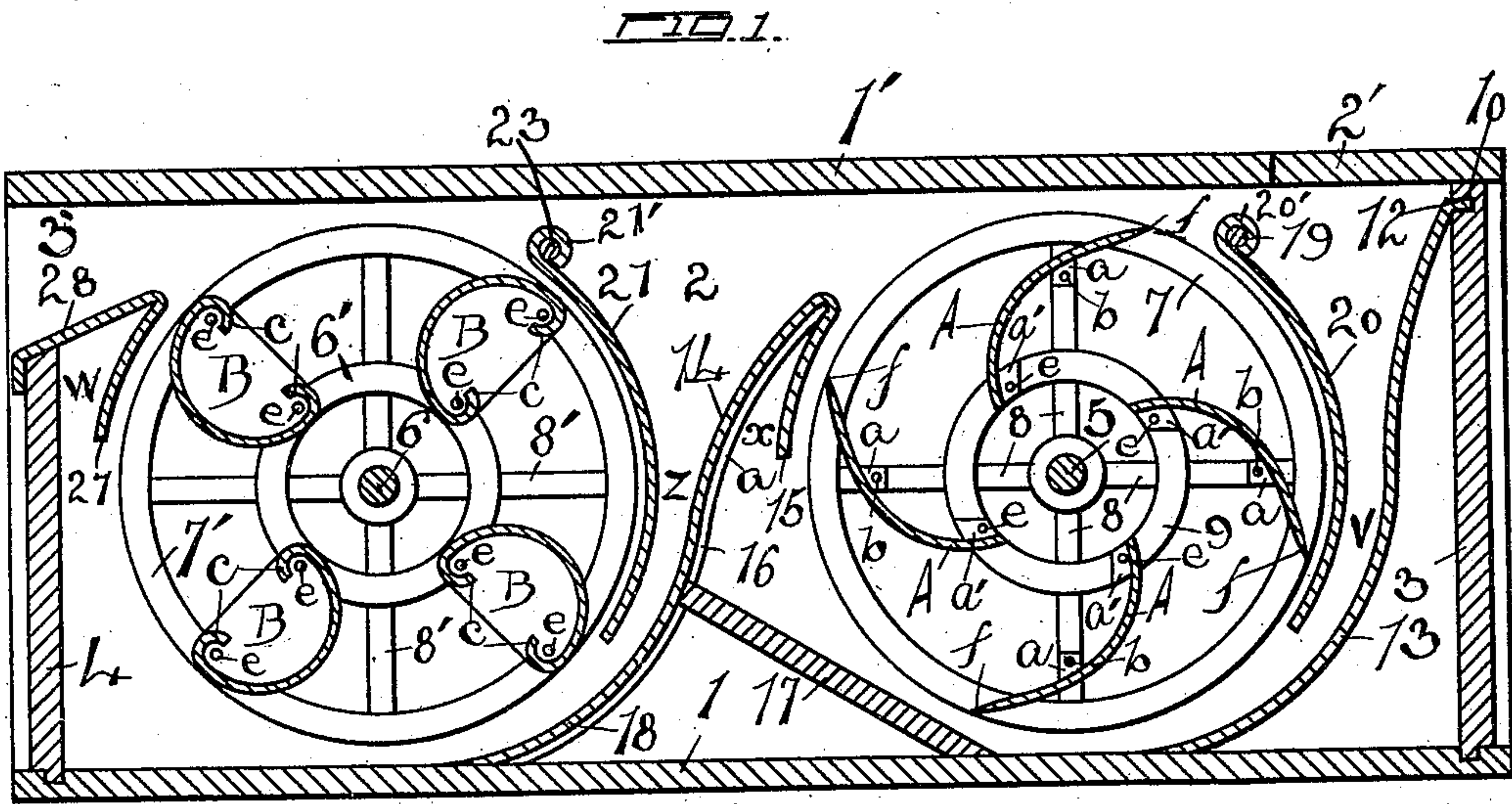
No. 820,189.

PATENTED MAY 8, 1906.

C. E. GARD & J. W. LYNN.

AMALGAMATOR.

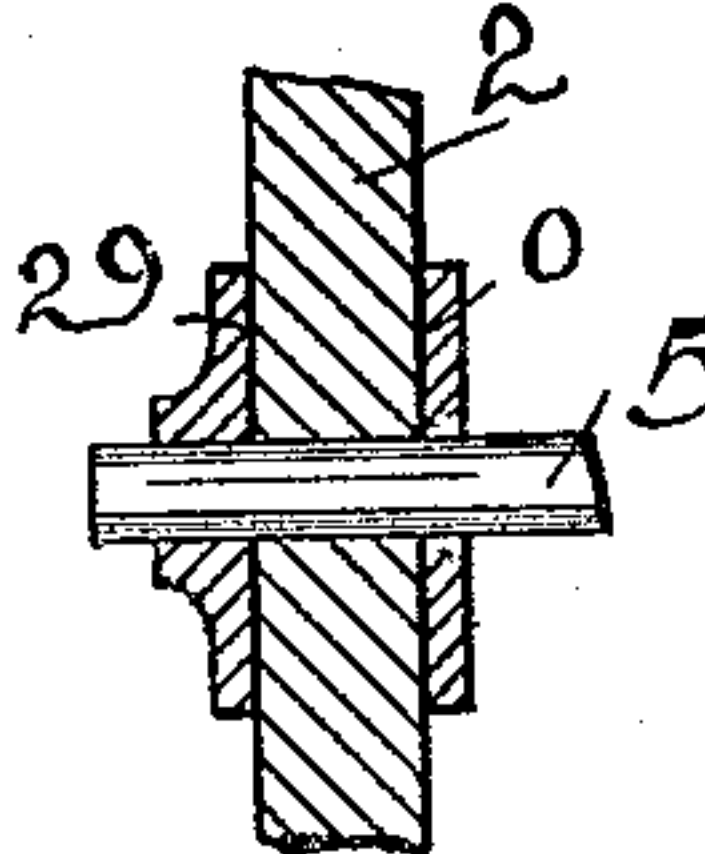
APPLICATION FILED NOV. 23, 1903.



WITNESSES:

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FIG. 3.



BY,

INVENTORS

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# UNITED STATES PATENT OFFICE.

CHARLES E. GARD, OF ORD, AND JOHN W. LYNN, OF OMAHA, NEBRASKA.

## AMALGAMATOR.

No. 820,189.

Specification of Letters Patent.

Patented May 8, 1906.

Application filed November 23, 1903. Serial No. 182,288.

*To all whom it may concern:*

Be it known that we, CHARLES E. GARD, residing at Ord, Valley county, and JOHN W. LYNN, residing at Omaha, (whose post-office address is 2525 Bristol street,) Nebraska, have invented certain useful Improvements in Amalgamators; and we do hereby declare that the following is a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification.

This invention relates to a new and useful improvement in amalgamators.

The aim of our invention is to provide a portable machine by means of which the precious metals held within gold-bearing placers may be treated to separate the gold from the baser metals, and in carrying out the object of our invention we provide a portable housing provided with an intake-opening, a plurality of concave bottoms within which are held a plurality of agitating-knives, and a plurality of self-coating collecting-troughs, and our invention embodies certain other instrumentalities described more fully hereinafter and finally pointed out in the claims.

In the accompanying drawings we have shown in Figure 1 a central sectional view of an amalgamator embodying our invention. Fig. 2 shows a top view, while Fig. 3 discloses a detail, showing the end of the supporting-shafts.

In connection with our amalgamator we provide a portable housing of suitable length, width, and depth, comprising the bottom 1, the sides 2 2, the ends 3 and 4, and the top 1', provided with the intake-opening 2'. It will be noticed that the end 4 does not quite extend to the top, so as to provide the exit-opening 3', as shown.

Held within the sides 2 of the housing is a driving-shaft 5, provided with a stem 5', to which is secured an ordinary operating-handle. This shaft 5 passes through the sides 2 2, which are reinforced by the bearing-plates 29 and 0 and 29' and 0', as shown. This shaft 5 is secured upon one side with the chain-sprocket 30' upon the outside and within with the wheel 7, having the spokes 8, and to these spokes is secured a ring 9, and fastened to the spokes 8 and the ring 9 by means of the ears *a* and *a'*, held by the pins *b* and *e*, are the curved perforated agitating-knives A, provided with the serrated edges *f*,

forming a knife-edge adapted to cut and comminute any clay and clinging earth that may be fed into the amalgamator in the process of extracting the gold.

Extending from the end 3 and curved slightly inward is the end plate 13, while extending from below the agitating-knives is the inclined bottom 17, which ends adjacent a partition in the shape of an ogee, as is shown at 14 in Fig. 1, and having the opposite edges 16 bent at an angle, so that this curved partition may be properly secured within the housing. From the upper end of this partition extends the apron 15 to form a pocket *x*, as shown. Secured to a transverse bar 19 is the guard-plate 20, the upper end 20' being recurved, and this guard-plate 20 is curved outward, so that in conjunction with the end plate 13 a narrow channel *v* is formed, as shown, so that all material fed through the opening 2' passes down this channel *v* and is engaged by the agitating-knives A. Held in alinement with the shaft 5 is a second shaft 6, provided with the wheel 7', having the sprockets 8' and the ring 6', to which ring and wheel are secured a plurality of troughs B, having their ends *c* recurved, as shown in Fig. 1, to form additional troughs or pockets along opposite edges, as shown. These troughs are also secured by means of suitable pins *e*, and within these troughs, which are made of suitable metal, is placed a quantity of quicksilver or mercury washes from end to end within these troughs, and so insures the coating of the bottoms of these troughs. These troughs in rotating pass adjacent the partition 14, and in front of these troughs upon one side and so as to form a narrow channel *z* is the shield 21, secured by means of its recurved edge 21' to the supporting-bar 23, as shown. Secured to the end 4 and extending upward is the inclined tail-plate 28, provided with the downwardly-extending apron 27, forming an upper pocket *w*, as shown in Fig. 1. This shaft 6 also passes through suitable bearing-plates 29 and 0, provided with the chain-gear 30, secured to the chain-gear 30' by means of the chain 32, so that in operating this machine these two cylinders are rotated in like direction.

In feeding the wet material into the machine the agitating-knives first engage and comminute sifted material entering the amalgamator, and the rotation of this knife keeps an upward flow, so that the particles are thrown against the upper end of the par-



tition 14 and should they move upward would be intercepted by the apron 15. The material after it would be fed through the opening 2', however, would be carried forward by the agitating-knives, which being perforated would permit the material of the greatest specific gravity sifting through the perforations and being collected within the bottom of the compartment within which the agitating-knives revolve. The remaining material feeds over the apron 15 and the partition 14 and is then engaged by the cups B where the flour-gold in coming in contact with the mercury-coated trough-bottoms B would be collected. The heavier particles of gold would collect within the bottom of the second compartment within which the troughs are held, the coarser gold being collected within the first compartment and being liberated by the agitating-knives A. The movement of the troughs B would have a tendency to wield the material upward to be checked within the compartment w, the material finally finding an exit over the inclined tail-plate 28.

In actual use it is found that where the flour-gold is covered by certain substances, as is the case in certain localities in Colorado, it is desirable to eliminate the troughs B and use a plurality of agitating-knives A, as it is found that the action of the sand scours the gold to remove the coating, actual experience showing that the flour-gold as long as coated will float, while the flour-gold will sink as soon as the lighter coating is removed. In other localities, again, where the gold is free of coating the same is advantageously collected by means of the mercury-covered troughs B. While we have shown but one shaft provided with agitating-knives and but one shaft provided with a plurality of troughs, it should be understood that in actual practice the machines may be provided with a plurality of agitating-shafts provided with agitating-blades and a plurality of shafts with the self-coating collecting-troughs.

These amalgamators are made in suitable lengths and material.

Having thus described our said invention, what we claim as new, and desire to secure by United States Letters Patent, is—

1. A housing provided with an intake-opening and an exit-opening, a curved end plate secured near the intake-opening of said housing, a curved guard-plate placed adjacent to said end plate to form a channel, a shaft passing transversely through said housing, a plurality of perforated agitating-knives secured to said shaft and rotating adjacent to the end of said channel, a curved partition provided with a downwardly-extending apron, a second curved guard-plate positioned adjacent said partition to form a second channel, a second shaft passing through said housing, a plurality of troughs

secured to said shaft, said troughs having opposite edges recurved, an inclined tail-plate secured adjacent the exit-opening within said housing provided with a downwardly-extending apron, and means to operate said shafts.

2. The combination with a sluice provided with an intake-opening and an exit-opening, a curved end plate secured near the intake-opening of said sluice, a curved guard-plate placed adjacent to said end plate to form a channel, a shaft passing transversely through said sluice, a plurality of perforated agitating-knives secured to said shaft, and a curved partition provided with a downwardly-extending apron, substantially as set forth.

3. In an amalgamator, the combination with revoluble shafts, of a plurality of plates secured thereto, a series of finger-knives on the outer edges of said plates, a sluice and mercury-holding pockets.

4. In an amalgamator, the combination with revoluble shafts, of a plurality of perforated plates secured thereto and a series of finger-knives on the outer edges of said plates and a sluice.

5. In an amalgamator, the combination with a sluice provided with an intake and an exit opening, a curved guard-plate forming a channel, a shaft passing transversely through said sluice, a plurality of perforated agitating-knives secured to said shaft, and a curved partition provided with a downwardly-extending apron.

6. A housing provided with an intake-opening, and an exit-opening, a curved end plate secured near the intake-opening of said housing, a curved guard-plate placed adjacent to said end plate to form a channel, a shaft passing transversely through said housing, and a plurality of perforated agitating-plates secured to said shaft and rotating adjacent to the end of said channel, a curved partition provided with a downwardly-extending apron, a second shaft passing through said housing, a plurality of plates secured to said shaft, and a plurality of agitating-knives secured to said plates, said plates having opposite edges recurved, an inclined tail-plate secured adjacent to the exit-opening within said housing provided with a downwardly-extending apron, and means to operate said shafts.

7. In an amalgamator, a housing provided with an intake-opening and an exit-opening, a curved end plate secured near the intake-opening of said housing, a curved guard-plate placed adjacent to said end plate to form a channel, a curved partition provided with a downward-extending apron, a second curved guard-plate positioned adjacent to said partition to form a second channel, and a plurality of shafts positioned within said housing, each shaft being provided with a plurality of perforated agitating plates and



knives secured to said shaft and rotated thereon and adjacent to said partition, and means to operate said shafts.

8. In an amalgamator, the combination  
5 with a housing provided with an intake and an exit opening, a curved end plate secured near said intake-opening, a curved guard-plate placed adjacent to said end plate to form a channel, a curved partition provided  
10 with a downwardly-extending apron, a second curved guard-plate positioned adjacent to said partition to form a second channel, a plurality of shafts passing through said housing, a plurality of plates having opposite  
15 edges recurved and secured to said shafts, an

inclined tail-plate secured adjacent to said exit-opening within said housing provided with a downwardly-extending apron, and means to operate said shaft, all arranged substantially as and for the purpose set forth. 20

In testimony whereof we affix our signatures in presence of witnesses.

CHARLES E. GARD.

JOHN W. LYNN.

Witnesses as to Charles E. Gard:

KIT CARSON,

DAVID A. GARD.

Witnesses as to John W. Lynn:

KIT CARSON,

C. L. THOMAS.