

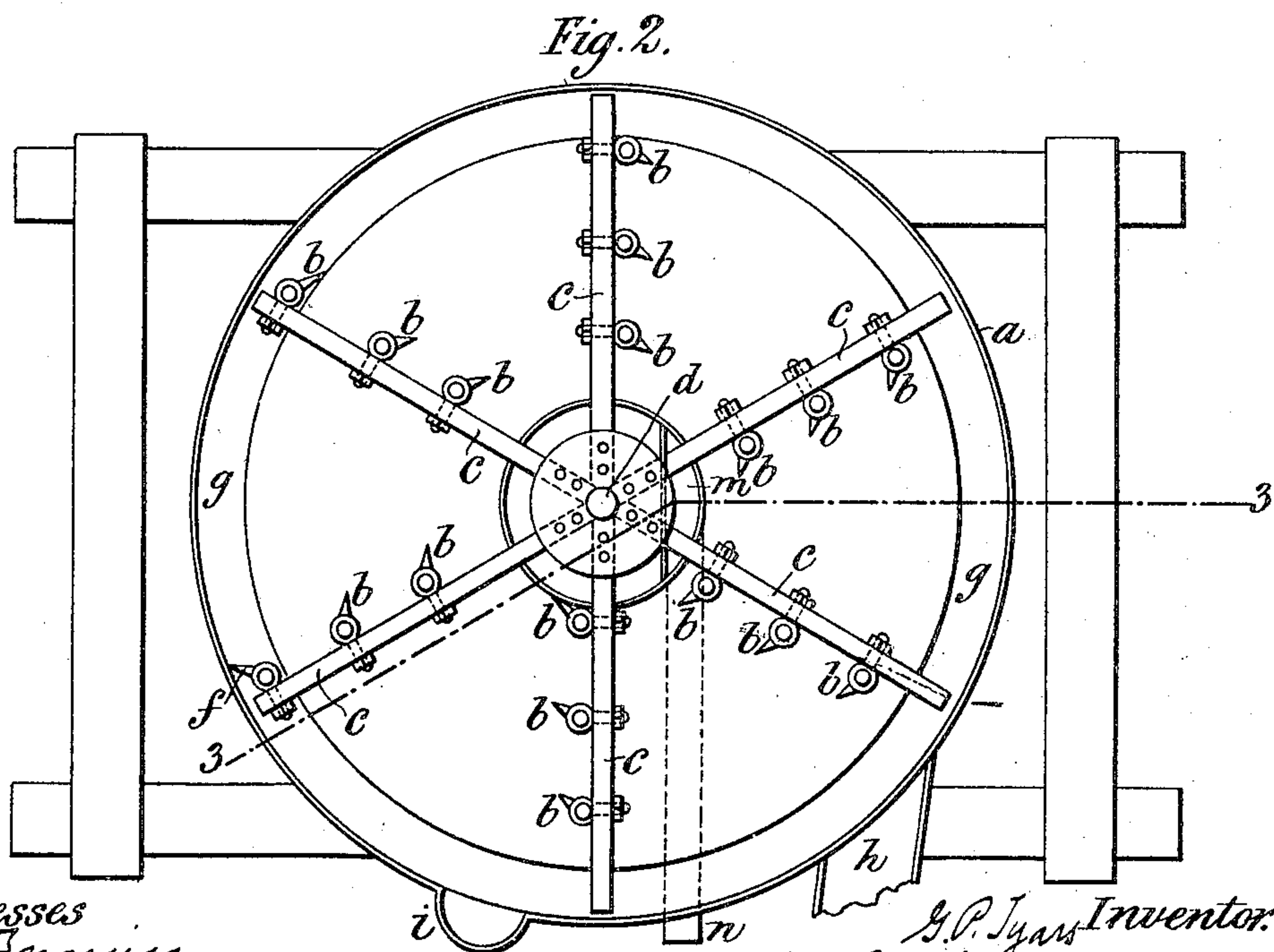
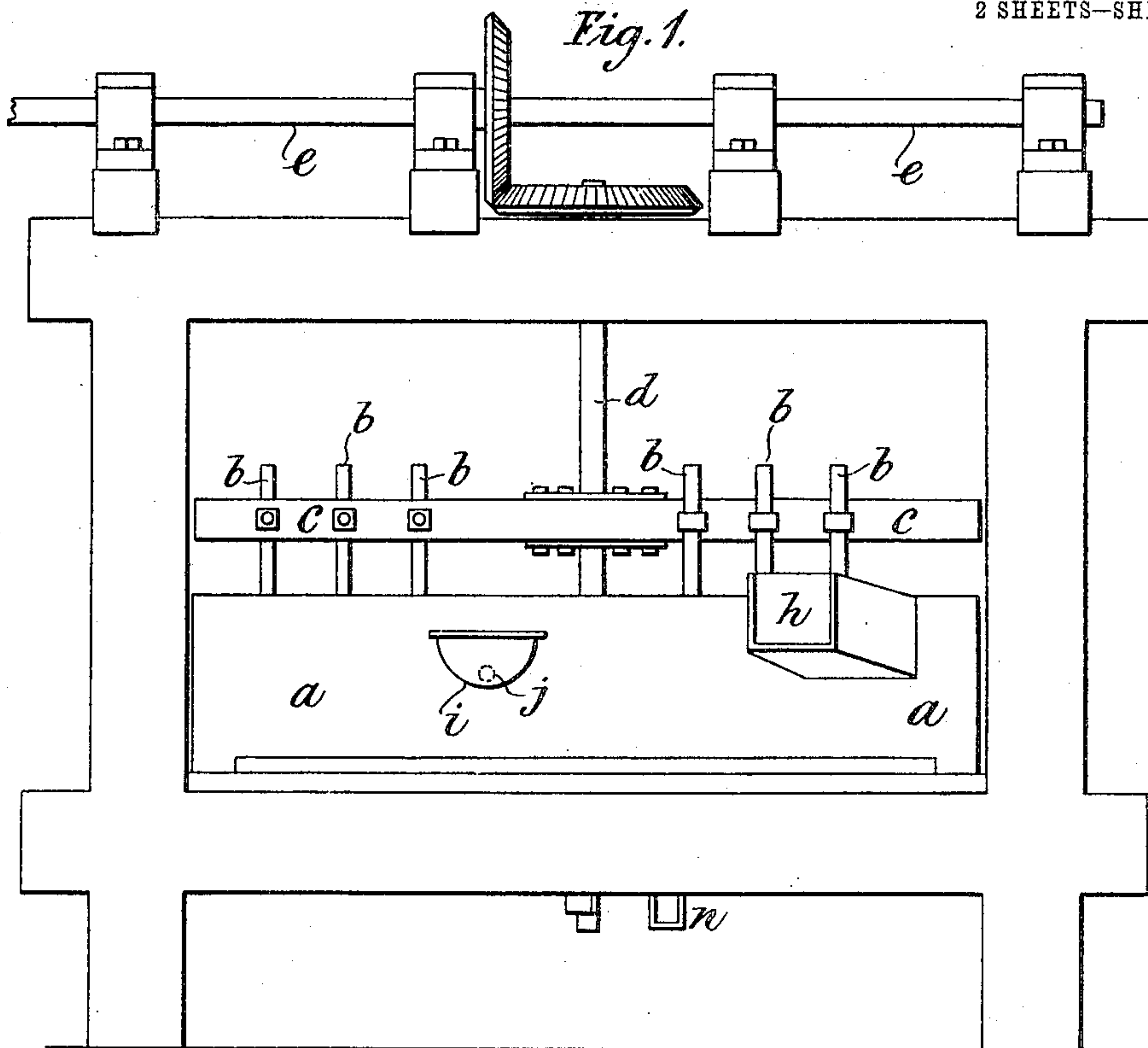
No. 808,787.

PATENTED JAN. 2, 1906.

G. P. TYARS.  
APPARATUS FOR TREATING AND AMALGAMATING METALS.

APPLICATION FILED AUG. 8, 1904.

2 SHEETS—SHEET 1.



Witnesses  
*[Signature]*  
E. B. Blum

G. P. Tyars Inventor.  
By his attorneys  
Baldwin & Wright

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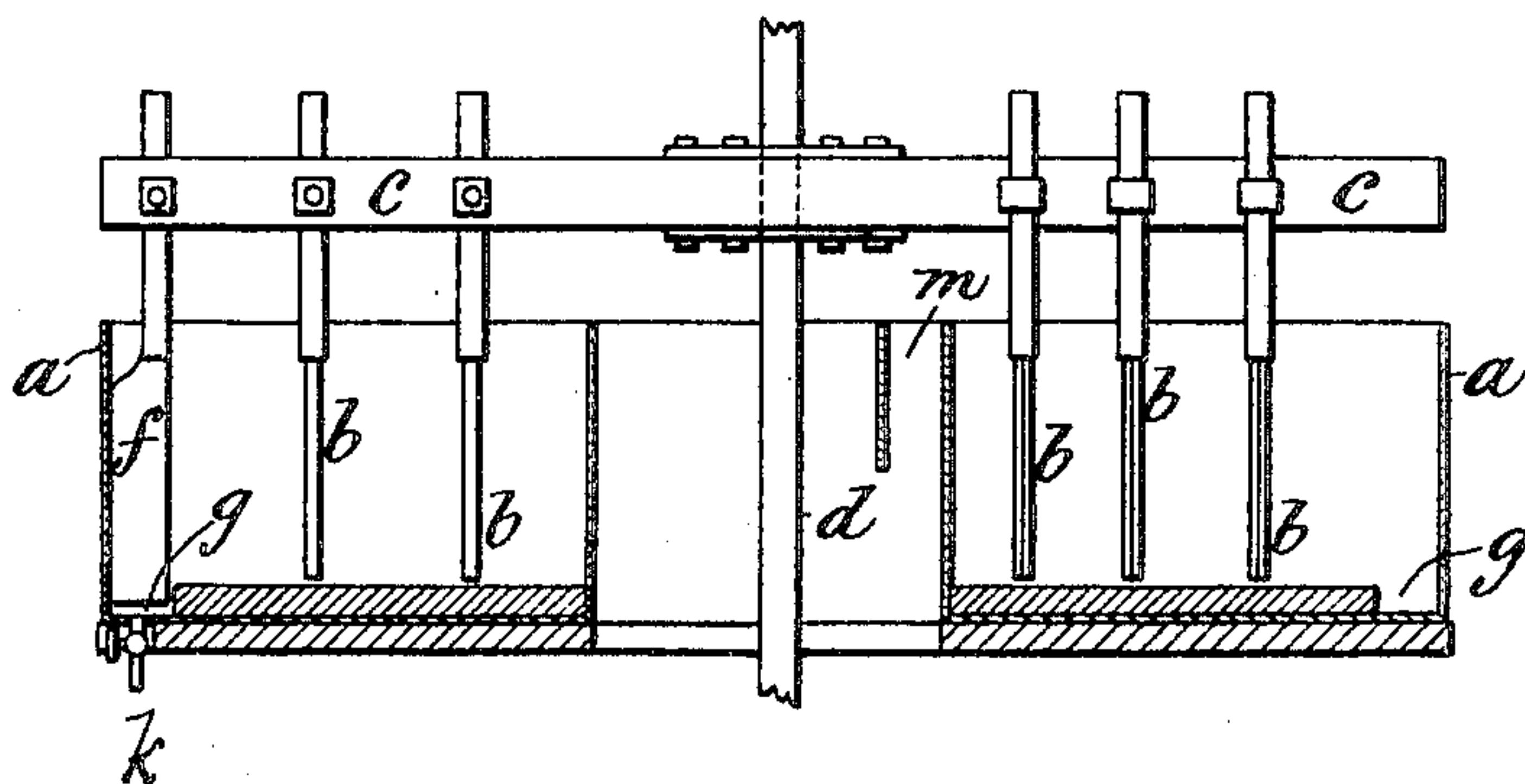
G. P. TYARS.

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2 SHEETS—SHEET 2.

*Fig. 3.*



*Witnesses.*

*S. H. Fanning*  
*E. B. Bunker*

*Inventor.*

*G. P. Tyars*  
*By his attorneys*  
*Baldwin Wright.*



# UNITED STATES PATENT OFFICE.

GEORGE PARKE TYARS, OF CAPE TOWN, CAPE COLONY.

## APPARATUS FOR TREATING AND AMALGAMATING METALS.

No. 808,787.

Specification of Letters Patent.

Patented Jan. 2, 1906.

Application filed August 8, 1904. Serial No. 219,892.

To all whom it may concern:

Be it known that I, GEORGE PARKE TYARS, mine manager, a subject of the King of Great Britain, residing at Cape Town, Cape Colony, have invented certain new and useful Improvements in Apparatus for Treating and Amalgamating Metals, of which the following is a specification.

This invention relates to improvements in apparatus for treating and amalgamating metals, and is especially applicable to the treatment of crushed gold ores.

The apparatus consists of a vessel into which mercury, together with ores and water, are kept continually in motion by a series of paddles secured to arms at the points at which a spiral drawn from the center of the vessel intersects the arms, the blades of the paddles being set at the same angle to their radii and so arranged that the leading edge of any blade traces out the same path as the outer rear edge of the preceding one except the blade of the outermost paddle, which is turned toward the outer wall of the vessel. The two outermost paddles protrude into a channel extending around the outer edge of the bottom of the vessel in which the mercury is deposited.

The drawings illustrate apparatus made in accordance with this invention.

Figure 1 is a side elevation; Fig. 2, a horizontal section; and Fig. 3 a vertical section on the line 3 3, Fig. 2.

*a* is the vessel, in which are paddles *b*, arranged as above described and secured to arms *c*, fixed to a shaft *d*. The shaft *d* is driven by the shaft *e*, connected to the main shaft of the battery, or by any other suitable means.

*f* is the outermost paddle, whose blade is turned toward the outer wall of the vessel *a*, which as it revolves prevents any deposit on the wall, while the paddle preceding it prevents deposit on the inner wall of the channel *g*, extending around the outer edge of the bottom of the vessel.

*h* is the chute for feeding the crushed ore to the vessel, and *i* is a cup on the side of the vessel having a hole *j*, by means of which the mercury is fed into the vessel.

The amalgam and concentrates are drawn off through a tap *k* in the channel *g*, the tailings flowing through the overflow-outlet *m* into the chute *n*.

The action of the apparatus is as follows: Mercury is introduced into the vessel through the cup *i*, and crushed ore and water from the screens of the battery flowing down the chute *h* meet the revolving paddles. The metallic portions of the ores being thrown toward the outer wall of the vessel will gravitate into the channel in which they amalgamate with the mercury, the amalgam and concentrates being drawn off through the tap *k*. The tailings flow through the outlet *m* into the chute *n*, from which they are delivered to second or third vessels or to waste, as desired.

What I claim is—

1. The combination of a vessel for treating and amalgamating ores, a shaft in the vessel carrying arms, paddles depending from the arms and arranged in a spiral around the vessel, the blades of the paddles being set at the same angle to the radii of the arms and so arranged that the leading edge of any blade traces out the same path as the outer rear edge of the preceding one, and a channel extending around the outer edge of the bottom of the vessel.

2. A vessel for treating and amalgamating ores, a shaft in the vessel carrying arms, paddles arranged in a spiral on the arms the blades of the paddles being set at the same angle to their radii and so arranged that the leading edge of any blade traces out the same path as the outer rear edge of the preceding one except the outermost blade which is turned toward the outer wall of the vessel, and a channel extending round the outer edge of the bottom of the vessel.

3. A vessel for treating and amalgamating ores, a shaft in the vessel carrying arms, paddles arranged in a spiral on the arms the blades of the paddles being set at the same angle to their radii and so arranged that the leading edge of any blade traces out the same path as the outer rear edge of the preceding one except the outermost blade which is turned toward the outer wall of the vessel, and a channel extending round the outer edge of the bottom of the vessel the two outermost blades protruding into the channel.

GEORGE PARKE TYARS.

Witnesses:

H. D. JAMESON,  
F. L. RAND.