

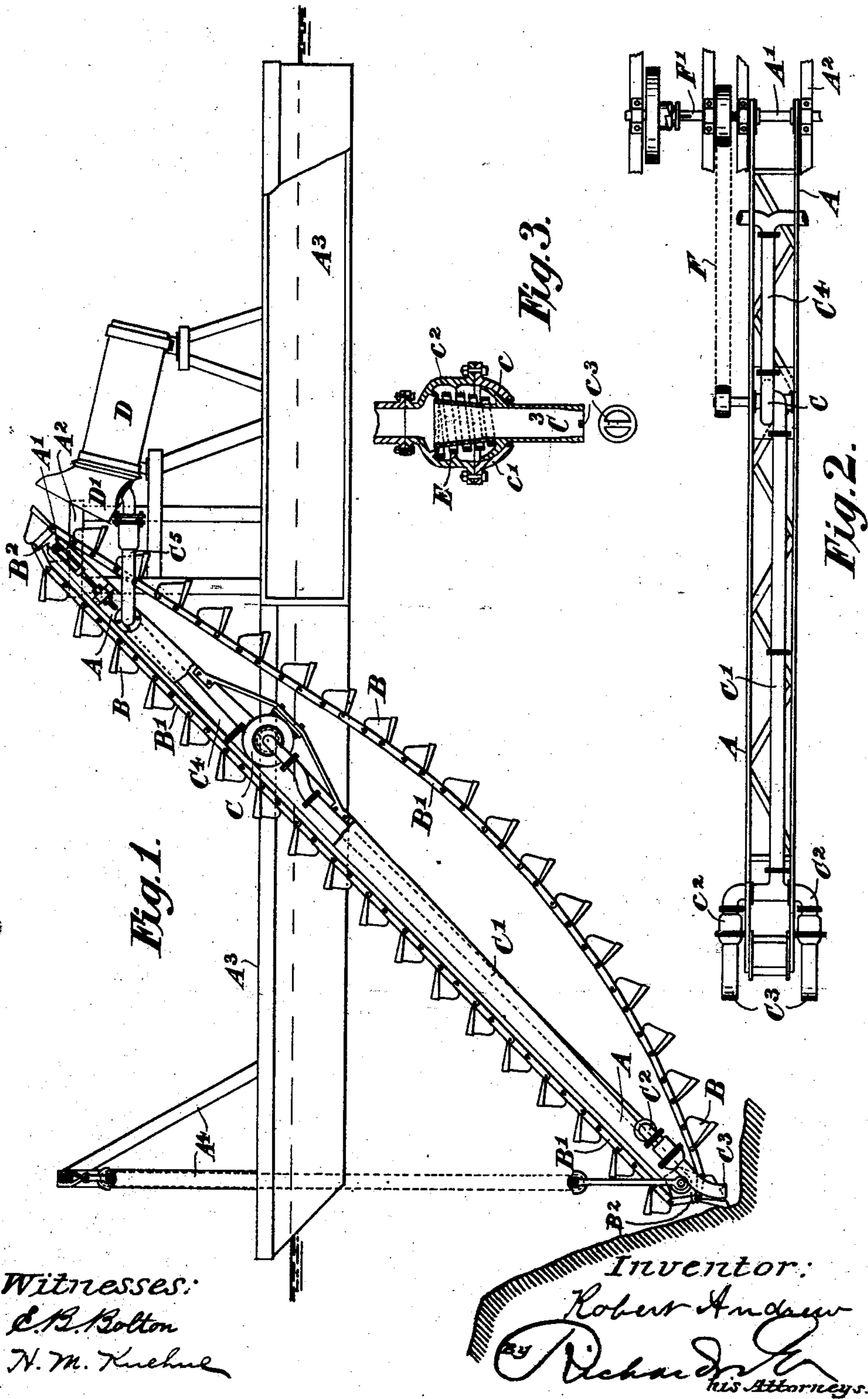
No. 758,608.

PATENTED MAY 3, 1904.

R. ANDREW.  
COMBINED BUCKET AND SUCTION DREDGE.

APPLICATION FILED MAY 12, 1903.

NO MODEL.





# UNITED STATES PATENT OFFICE.

ROBERT ANDREW, OF MELBOURNE, VICTORIA, AUSTRALIA.

## COMBINED BUCKET AND SUCTION DREDGE.

SPECIFICATION forming part of Letters Patent No. 758,608, dated May 3, 1904.

Application filed May 12, 1903. Serial No. 156,813. (No model.)

*To all whom it may concern:*

Be it known that I, ROBERT ANDREW, mining engineer, a subject of the King of Great Britain and Ireland, residing at Victoria Buildings, No. 80 Swanston street, Melbourne, in the British State of Victoria, Commonwealth of Australia, have invented a new and useful Combined Bucket and Suction Dredge for Recovering Gold, Tin, and other Minerals from River-Beds and the Like, of which the following is a specification.

This invention relates to a combined bucket and suction dredge for recovering gold, tin, and other minerals from river-beds and the like.

It comprises a ladder supported, as usual, by a shaft and a derrick on a pontoon, and said ladder carrying an endless bucket elevator supported and worked in the ordinary manner, while at about the deck-line between the cheeks of the ladder a centrifugal pump is supported. From the suction branch of the pump there descends a pipe, which at the lower end of ladder takes the form of a breeches-pipe, the lower end of each branch thereof having a spherical-jointed spring-cushioned nozzle and which nozzles when at work are designed to lie one at each end of the buckets and just behind the lips of same. The suction-pump is intended for use mostly when the bucket is working at or near the bottom of the river. The delivery branch of pump is led to a rotary screen on the deck of pontoon or to any other separating or gold, tin, or mineral saving appliance.

The attached drawings illustrate the invention.

Figure 1 shows a sectional side view of it, and Fig. 2 a plan of the ladder with the centrifugal pump and its pipe connections, while Fig. 3 is central section, drawn to larger scale, of the lower nozzle end of suction-pipe.

A is the ladder, supported at its upper end on a shaft A', carried in suitable bearings upon frames or horses A<sup>2</sup>, built up upon the pontoon or dredge vessel A<sup>3</sup>, while the lower

end of ladder is carried by block and chain or wire rope from a derrick or other frame A<sup>4</sup> near the end of pontoon.

B represents the buckets, carried by endless bucket chain-links B', supported on the ladder and at its upper and lower ends by the tumblers B<sup>2</sup>.

C is the centrifugal pump, supported at about the deck-line between the sides or cheeks of ladder, and C' its suction-pipe leading to the breeches-pipe C<sup>2</sup>, each branch of said pipe C<sup>2</sup> being furnished with a spring-cushioned nozzle C<sup>3</sup>, the lower part of which when at work is designed to lie one at each end of bucket just behind its lip or cutting edge. The pump delivery-pipe C<sup>4</sup> is shown connected to a branch pipe C<sup>5</sup>, furnished with an expansion or telescopic joint to provide for the movement of ladder, the end of branch pipe delivering to the stationary hopper D' of a revolving screen D, although the delivery-pipe may lead to any other gold, tin, or other mineral saving appliance.

Each nozzle C<sup>3</sup> has a hemispherical flange c fitting on the spherical cover or cap c', which is bolted to a socket-piece c<sup>2</sup>, within which the tapered part of the nozzle is located.

E is a coiled spring, the lower end of which presses on the back flange c, while its upper end is seated in an annular recess formed in the socket-piece c<sup>2</sup>, and thus the nozzle can move slightly should it contact with any obstruction in the river in order to clear it without being so liable to be broken. The mouth of nozzle has a cross-bar c<sup>3</sup> in it to reduce the area of opening and to prevent the inflow of large stones and the like which may injure the pump.

The pump is shown driven by a belt F from a lay-shaft F', which must be in a direct line with the shaft of upper tumbler in order that the radial center of pump will not vary when the position of ladder is altered.

When the dredge is in operation, the buckets cut and elevate the material, as usual, while the pump through its suction-nozzle sucks or pumps in any material which has been dis-

turbed and left free by the buckets or any material which may be in a hole or crevice and which cannot be reached by the buckets.

Having now described my invention, what  
5 I claim as new, and desire to secure by Letters Patent, is—

1. In a combined bucket and suction dredge the spring-cushioned nozzle formed with a hemispherical flange, combined with a spherical cap, a socket-piece and a spring substantially as described and shown.  
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2. In a combined bucket and suction dredge a pump arranged between the cheeks of the ladder and having a suction-pipe which terminates in a breeches-pipe, the ends of which  
15 lie one at each end of and immediately behind the lips of the bucket substantially as described and shown.

3. In a combined bucket and suction dredge the pump whereof lies between the cheeks of  
20 ladder and has a breeches-pipe at lower end of

its suction-pipe, a lay-shaft for driving said pump and which shaft lies in a direct line with the upper tumbler-shaft as and for the purpose described and as shown.

4. A combined bucket and suction dredge comprising a pontoon, a ladder, an endless link chain and buckets, a pump arranged between the cheeks of ladder a suction-pipe terminating in a breeches-pipe, the ends of which  
25 are furnished with spring-cushioned nozzles, and a delivery-pipe connected by a telescopic branch with a sieve or other gold, tin or minerals saving appliance substantially as described and shown.  
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In witness whereof I have hereunto set my hand in presence of two witnesses.  
35

ROBERT ANDREW.

Witnesses:

BEDLINGTON BODYCOMB,  
W. J. S. THOMPSON.