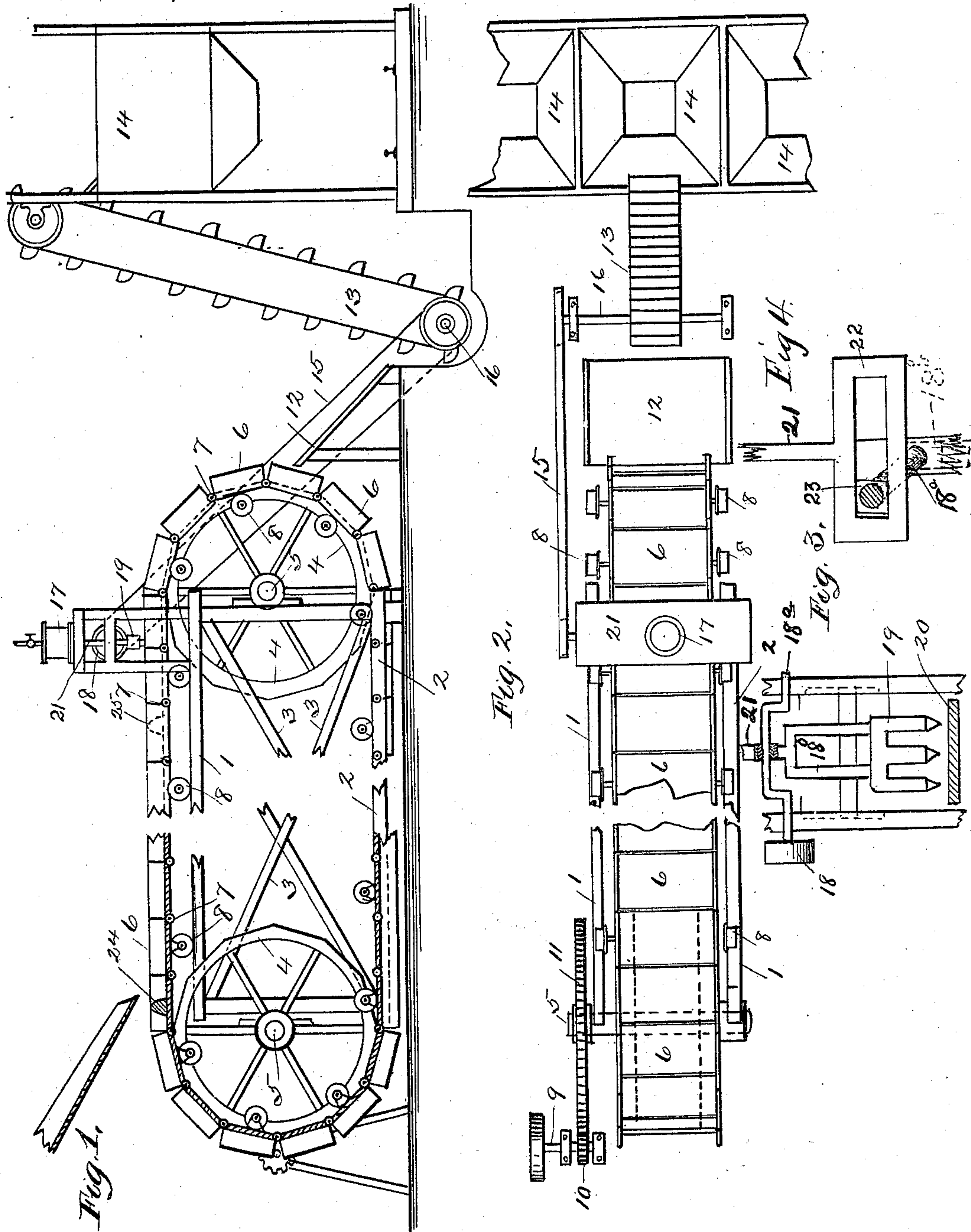


(No Model.)

J. OWEN.  
SLAG BALLAST MACHINE.

No. 542,446.

Patented July 9, 1895.



Witnesses:  
M. E. Harrison.  
E. F. Kaylor

Inventor.  
John Owen  
By his, C. D. Lewis.  
Attorneys.



# UNITED STATES PATENT OFFICE.

JOHN OWEN, OF PITTSBURG, PENNSYLVANIA.

## SLAG-BALLAST MACHINE.

SPECIFICATION forming part of Letters Patent No. 542,446, dated July 9, 1895.

Application filed September 21, 1894. Serial No. 523,729. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN OWEN, a citizen of the United States, residing at Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Slag-Ballast Machines or Hot-Metal Conveyers; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it pertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification.

My invention relates to an improved slag-ballast machine or hot-metal conveyer; and it consists in certain details of construction and combination of parts, as will be fully described hereinafter.

In the accompanying drawings, Figure 1 is a side elevation of my improved slag-ballast or hot-metal conveyer, partly in section, showing the same broken away in the middle. Fig. 2 is a plan view of the same. Fig. 3 is a front elevation of a portion of the apparatus for breaking the ballast into small pieces. Fig. 4 is a broken detailed view disclosing more especially the piston-rod connection with the crank-shaft of the slag-breaking device.

To put my invention into practice I provide a frame of any desired length and having top rails 1 and bottom rails 2 for the purpose of supporting the endless conveyer hereinafter described. This frame in practice would be from fifty to several hundred feet in length to suit the location and circumstances and is properly braced by timbers 3 in a manner well known in the art. Mounted at each end of this frame upon suitable shafts 5 are large wheels 4, over which an endless conveyer is arranged. This conveyer consists of a series of plates 6 with narrow side flanges 6<sup>a</sup>, connected the one with the other by means of hinged joints 7 in such a manner that a continuous shallow trough is formed the entire length of the apparatus.

Fitted at the front end of the apparatus on the shaft 5 is a large toothed wheel 11, which meshes with a pinion 10, mounted upon a shaft 9, to which a suitable power is applied. By means of this last-described gearing the endless conveyer may be given a movement in the direction of its length.

To properly support the plates of the conveyer, a series of friction wheels or rollers 8 are arranged beneath the same, which travel 55 along the rails 1 and 2 and keep the plates upon the same level.

Arranged at the rear of the conveyer is a device for breaking the ballast when the same reaches that point, which consists in a steam- 60 cylinder 17, fitted with a piston and rod 21, to which are rigidly connected the rods 18<sup>b</sup> of a breaker 19, and by which said rods are given a reciprocating motion.

Arranged at the discharge end of the conveyer is a chute 12, leading to a vertical conveyer 13, adapted to receive the broken slag and discharge the same into a bin or hopper 14, from which the ballast may be easily 70 loaded into railway-cars beneath.

The conveyer 13 is operated by means of a belt connection 15, leading from the pulley 18, turned by and secured on the cranked shaft 18<sup>a</sup>, which is rotated by the piston-rod 21, provided with a slotted cross-head 22, in which 75 slides a block 23, embracing the cranked shaft. (See Fig. 4.)

In operation a stop 24 is arranged at the receiving end of the conveyers 6 and another 25 some distance in the front of the first, and 80 the molten slag from the blast-furnace conducted by means of a suitable duct and discharged into the pans and permitted to flow evenly over the surface to a certain thickness. The conveyer 6 is now put in motion 85 by means of the power applied to the shaft 9 and the slag conducted toward the breaking device 19 and another stop 24 arranged in position and the same operation repeated. By this time the first cast has become cooled, and 90 in passing beneath the breaker 19 is broken into small cubes and discharged into the conveyer 13 and from there to the bin or hopper 14, to be used as ballast for railways, concrete, or in the place of broken stone. 95

It is obvious that this conveyer may be used to convey hot or molten metal from the furnace, if it is so desired.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is— 100

The herein described apparatus for manufacturing ballast, consisting of the frame of a suitable length, having rails at the top and

bottom, the plates 6 hinged together to form  
a continuous trough or conveyer, suitable  
wheels 4 compassed by and operating said  
conveyer, anti-friction rollers 8 arranged be-  
5 neath the pans 6 operating along the rails  
1—2 to support the conveyer, a breaking de-  
vice arranged at one end of the said conveyer,  
and another conveyer 13 for receiving the  
broken slag and discharging the same into  
10 suitable bins, all arranged and combined for

service, substantially as and for the purpose  
described.

In testimony that I claim the foregoing I  
hereunto affix my signature this 12th day of  
April, A. D. 1894.

JOHN OWEN. [L. S.]

In presence of—

P. B. REILLY,

M. E. HARRISON.