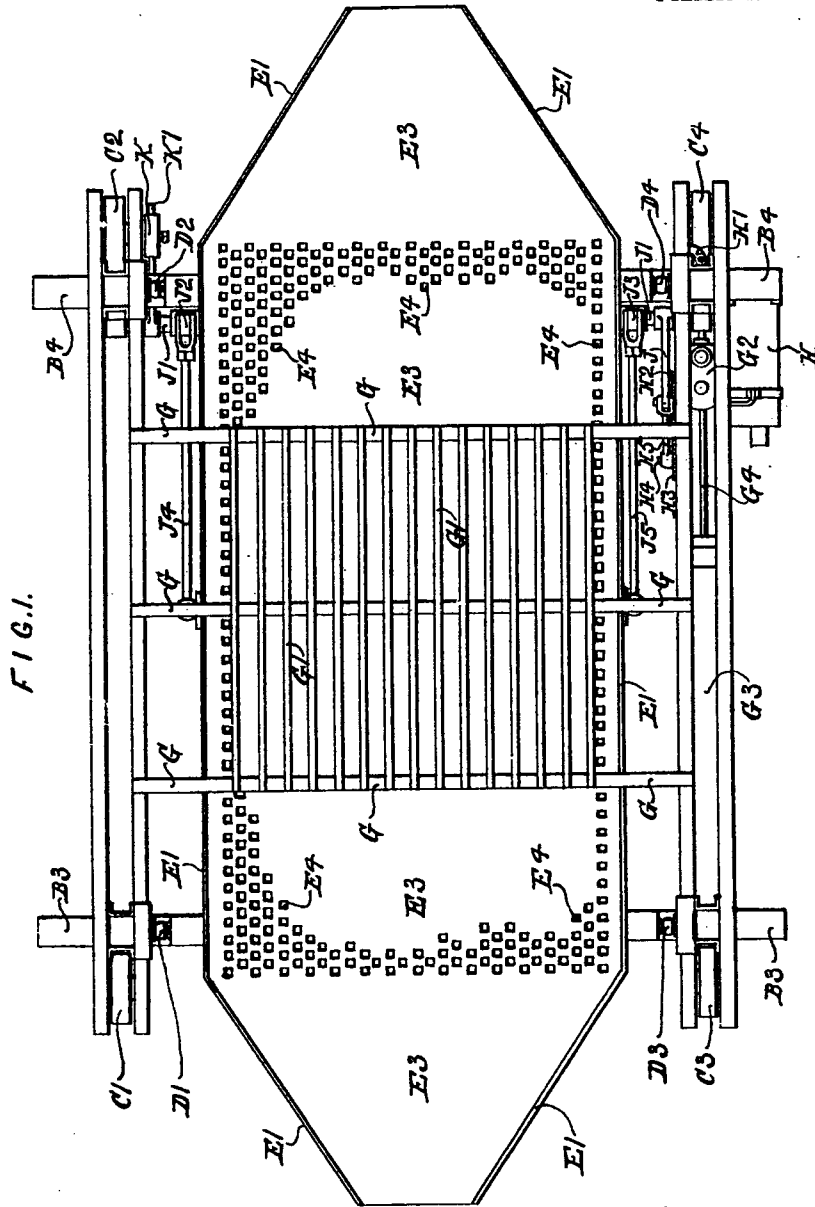


J. DONALDSON.  
 RIDDLING MACHINE.  
 APPLICATION FILED AUG. 28, 1911.

1,052,434.

Patented Feb. 4, 1913.

2 SHEETS—SHEET 1.



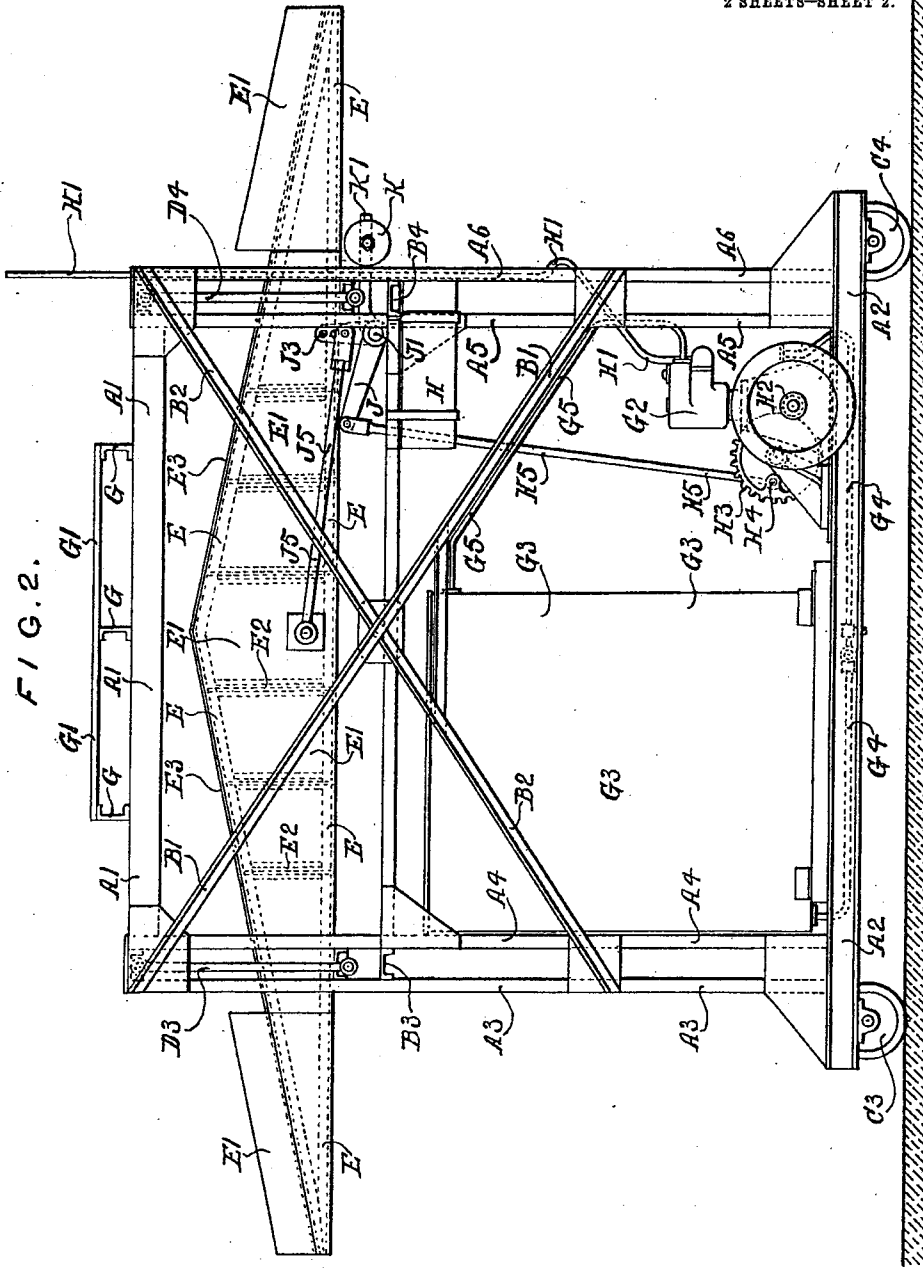
WITNESSES  
*L. H. Grote*  
*William Abbe*

INVENTOR  
 JOHN DONALDSON  
 By *Howard and Howard*  
 his Attorneys

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# UNITED STATES PATENT OFFICE.

JOHN DONALDSON, OF GLASGOW, SCOTLAND.

RIDDLING-MACHINE.

1,052,434.

Specification of Letters Patent.

Patented Feb. 4, 1913.

Application filed August 28, 1911. Serial No. 646,319.

*To all whom it may concern:*

Be it known that I, JOHN DONALDSON, a subject of the King of Great Britain and Ireland, and a resident of Glasgow, Scotland, have invented a certain new and useful Improved Riddling-Machine, of which the following is the specification.

Certain ironmasters require that ore delivered to them must be in a condition such that it will pass through a given mesh. This necessitates that each tub of ore taken from the ship be first discharged onto the quay then riddled and finally loaded into the railway wagons which are to convey it to its destination. To save the labor and consequently lessen the time and expense which this procedure entails, according to this invention there is provided a riddle of an improved construction such that it will receive without damage to itself the weight of ore contained in each tub load taken from the ship's hold, and so carried that while it extends over the railway wagons into which the material is to be loaded, the wagons may be readily moved without its being necessary to handle the riddle.

The improved construction of riddle may also be used to discharge coal or the like from ships direct to railway wagons in a riddled condition.

In carrying out the invention there is provided a gauntree running on wheels and beneath which the wagons can pass. Above this gauntree a riddle is suspended by links from the side members of the gauntree, the riddle being of a length and breadth such that while it extends entirely over one wagon its ends extend more or less over the wagons at each end of the one covered by the riddle. Means are provided to impart an oscillating motion to the riddle, and a horizontal grating is preferably secured on the gauntree above the center of the riddle onto which grating the load is first discharged to break its fall. The riddle is preferably so made that its surface slopes from the middle downward toward the ends.

An example of the improved riddle is shown on two accompanying sheets of explanatory drawings, Figure 1, Sheet 1, being a plan and Fig. 2, Sheet 2, a side elevation.

As shown in the drawings there is provided a gauntree comprising top and bottom longitudinal members  $A^1$ ,  $A^2$  of angle

iron on each side, the members on each side being connected together by vertical angle iron end members  $A^3$ ,  $A^4$ ,  $A^5$ ,  $A^6$ . These end members are braced together by diagonal members  $B^1$ ,  $B^2$  and transverse members  $B^3$ ,  $B^4$ , the latter being at such a height and of such a length that the side members are so spaced apart as to enable the gauntree to straddle a railway wagon. The gauntree thus formed runs on wheels  $C^1$ ,  $C^2$ ,  $C^3$ ,  $C^4$ , and above the transverse members  $B^3$ ,  $B^4$  there is suspended by links  $D^1$ ,  $D^2$ ,  $D^3$ ,  $D^4$ , a riddle of a length and breadth such that while it extends entirely over one wagon its ends extend more or less over the wagons at each end of the one covered by the riddle.

The riddle consists of an angle-iron frame  $E$  carrying side plates  $E^1$  and angle-iron cross members  $E^2$  supporting a top plate  $E^3$ , the side and cross members being highest at the center so that the top plate slopes from the middle downward toward the ends. Apertures  $E^4$  (some of which only are shown) are formed through the part of the top plate which extends over a wagon, these apertures being of such dimensions and so spaced apart as may be required by the mesh decided upon. The top plate  $E^3$  is removably secured in place so that other plates having apertures of different size may be substituted when desired.

Above the center part of the riddle the gauntree carries a grating consisting of angle-iron bars  $G$  extending between the upper side members  $A^1$  and carrying bars  $G^1$  so spaced apart that while they act to break the fall of a load when it is discharged they do not prevent any of the material reaching the riddle.

The gauntree carries an internal combustion engine  $G^2$ , a cooling-water tank  $G^3$  connected with the engine by circulating pipes  $G^4$ ,  $G^5$ , a tank  $H$  holding petrol to be supplied to the engine by a pipe (not shown) and an engine exhaust pipe  $H^1$ . A pinion  $H^2$  (shown by a dotted circle in Fig. 2) on the engine crank shaft drives a spur-wheel  $H^3$  carrying a crank pin  $H^4$  connected to the lower end of a rod  $H^5$  the upper end of which is connected to a lever  $J$  on a transverse shaft  $J^1$  carrying levers  $J^2$ ,  $J^3$ , one on each side of the riddle and connected thereto by rods  $J^4$ ,  $J^5$ . The engine acts through this gearing to impart an oscillating motion to

the riddle, the weight of the gearing being counterbalanced by a weight K on a lever K<sup>1</sup> secured to the transverse shaft J<sup>1</sup>.

When a wagon is underneath the riddle and the contents of a tub have been discharged onto the grating, the material falls through the grating onto the center of the riddle which is then being oscillated as described. Attendants with rakes, standing on adjacent wagons, can quickly draw any ore which does not pass through the perforations in the plates E<sup>2</sup> forming the surface of the riddle toward and into the wagons on which they stand, this operation being facilitated owing to the surface of the riddle sloping from the middle downward toward the ends, and owing to the oscillation imparted to the riddle. In some cases owing to the sloped surface of the riddle the oscillation imparted to it is sufficient to cause the material which does not pass through the riddle to be speedily shot off into the adjacent wagons without raking.

When a wagon has been filled with the ore which has passed through the riddle, the two adjacent wagons will be filled more or less with the ore in larger pieces, and the train of wagons is then moved to bring the next three wagons into position so that the center one is beneath the riddle. Further, when one hold of a ship has been discharged, the gauntree may be moved so as to bring it into position where the crane lifting the tubs out of the next hold can empty these tubs onto the gauntree grating as hereinbefore described.

What I claim is:—

1. Improved riddling machine comprising a gauntree beneath which wagons can pass, a riddle suspended transversely by links to the gauntree, the latter being shaped to admit a train of wagons longitudinally of the riddle, the riddle being of a length and breadth such that while it extends entirely over one wagon its ends extend more or less over the wagons at each end of the one covered by the riddle, and means to impart an oscillating motion to the riddle.

2. Improved riddling machine comprising a gauntree beneath which wagons can pass, a riddle consisting of removably secured apertured plates so carried that the surface of the riddle slopes from the middle downward toward the ends, the riddle being of a length and breadth such that while it extends longitudinally entirely over one wagon its ends extend more or less over the wagons at each end of the one covered by the riddle, links suspending the riddle transversely from the gauntree, and means to impart an oscillating motion to the riddle.

3. Improved riddling machine comprising a gauntree beneath which wagons can

pass, a riddle consisting of removably secured apertured plates so carried that the surface of the riddle slopes from the middle downward toward the ends, the riddle being of a length and breadth such that while it extends longitudinally entirely over one wagon its ends extend more or less over the wagons at each end of the one covered by the riddle, links suspending the riddle transversely from the gauntree, means to impart an oscillating motion to the riddle and a horizontal grating secured on the gauntree above the riddle.

4. Improved riddling machine comprising a traveling gauntree beneath which wagons can pass, a riddle transversely suspended by links hinged to the traveling gauntree, the riddle being of a length and breadth such that while it extends longitudinally entirely over one wagon its ends extend more or less over the wagons at each end of the one covered by the riddle, a motor carried by the traveling gauntree and gearing enabling the motor to impart an oscillating motion to the riddle.

5. A self-contained, traveling gauntree and riddle for use on quays and the like, comprising side frames supported on traction wheels, cross frame members above the height of the wagons to be served and spacing said side frames apart sufficiently to transversely straddle a single wagon, a riddle movably suspended from said gauntree longitudinally of the wagons to be served, said riddle being of a length sufficient to extend longitudinally over more than a single wagon, substantially as described.

6. A self-contained, traveling gauntree and riddle for use on quays and the like, comprising side frames supported on traction wheels, cross frame members above the height of the wagons to be served and spacing said side frames apart sufficiently to transversely straddle a single wagon, a riddle movably suspended from said gauntree longitudinally of the wagons to be served, said riddle being of a length sufficient to extend longitudinally over more than a single wagon, and having a central riddle portion and discharge chutes at each end thereof whereby the material failing to pass through the riddle to the wagon directly beneath the same is discharged to the cars longitudinally adjacent at each end thereof, substantially as described.

7. A self-contained, traveling gauntree and riddle for use on quays and the like, comprising side frames supported on traction wheels, cross frame members above the height of the wagons to be served and spacing said side frames apart sufficiently to transversely straddle a single wagon, a riddle movably suspended from said gauntree longitudinally of the wagons to be served, said riddle being of a length sufficient to ex-

tend longitudinally over more than a single wagon, together with a receiving grating arranged in fixed position on said gauntree centrally above the riddle to break the fall  
5 of material on the latter, substantially as described.

In testimony whereof I have signed my

name to this specification, in the presence of two subscribing witnesses.

JOHN DONALDSON.

. Witnesses:

DAVID FERGUSON,  
WILFRED HUNT.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents,  
Washington, D. C."