No. 887,188. PATENTED MAY 12, 1908.

J. F. BURN.

PROCESS OF PRODUCING ROAD METAL.

APPLICATION FILED JUNE 25, 1906.

FIG. 1.

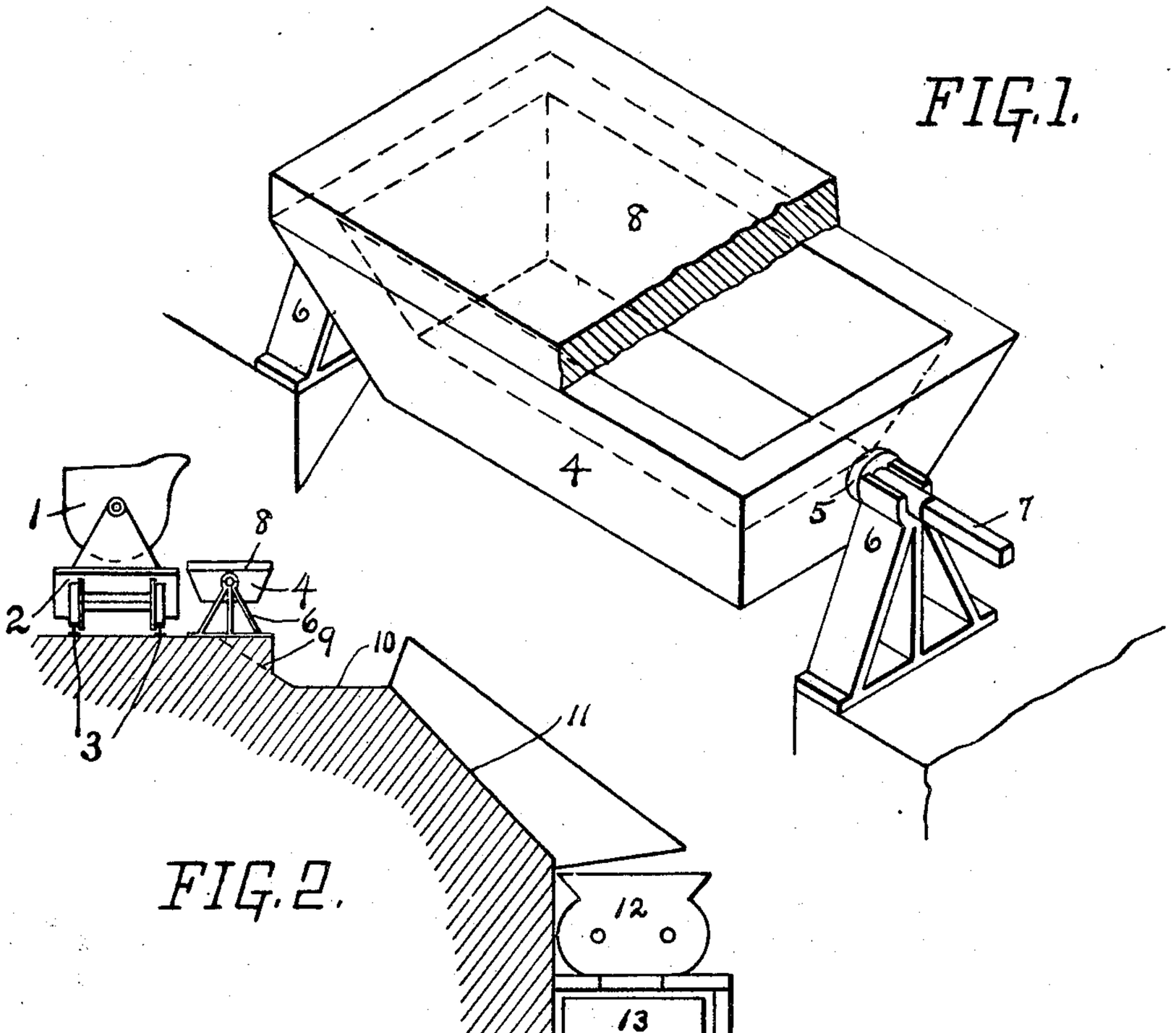

FIG. 2.

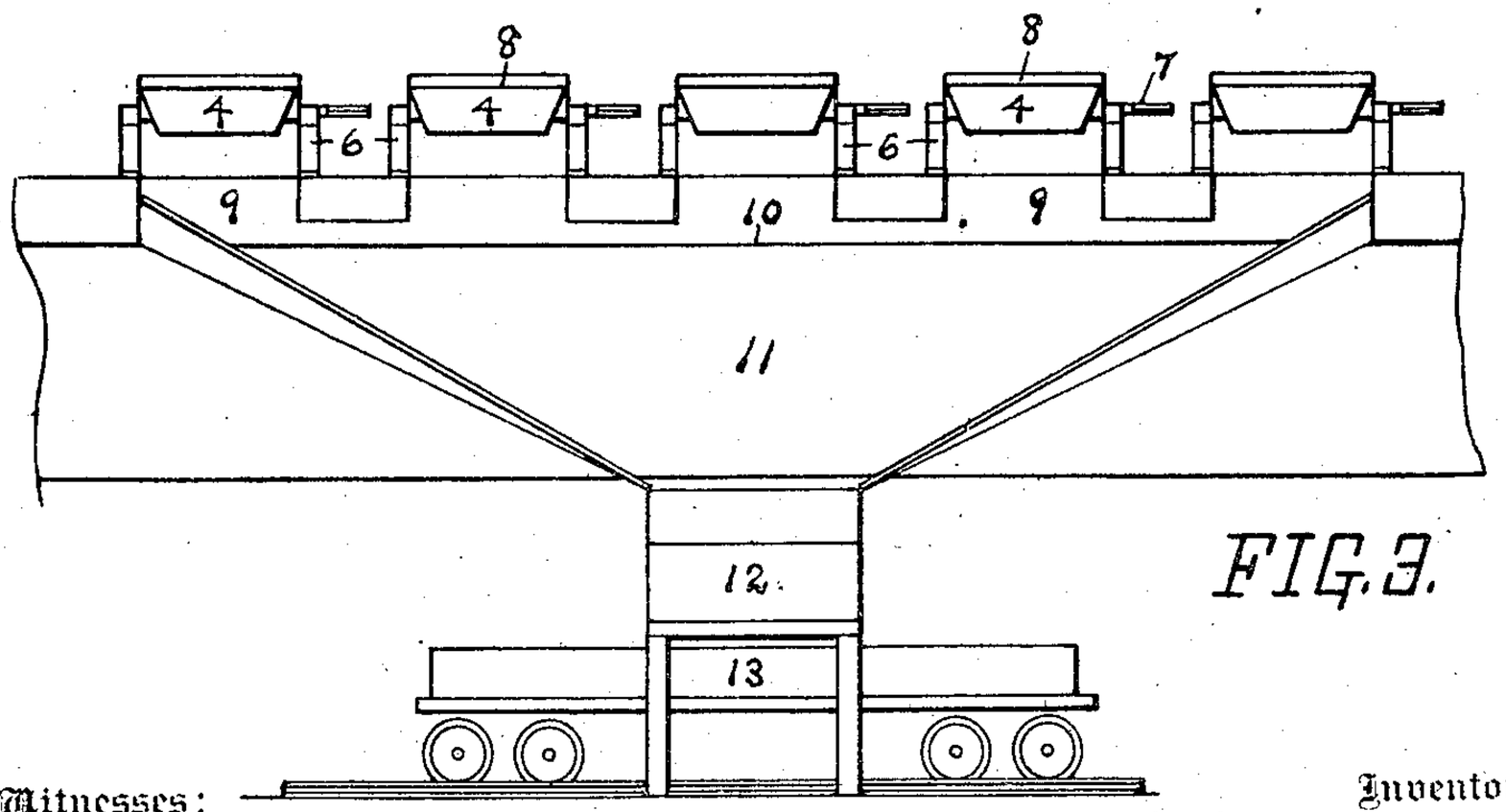

FIG. 3.

Witnesses:
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PROCESS OF PRODUCING ROAD METAL.

No. 887,188. Specification of Letters Patent. Patented May 12, 1908.

Application filed June 25, 1906. Serial No. 323,191.

To all whom it may concern:

Be it known that I, JOHN FAULDER BURN, a subject of the King of Great Britain and Ireland, and residing in Detroit, in the county of Wayne and State of Michigan, have invented a new and Improved Process of Producing Road Metal, of which the following is a specification.

My invention relates to a new and useful process of producing metal for high-ways of the macadam type, and consists in treating blast furnace slag so as to obviate porosity and extreme brittleness, while at the same time preserving its extreme hardness.

The apparatus which may be employed in the process is illustrated in the accompanying drawings, in which,—

Figure 1 is a view of the annealing receiver. Fig. 2 is a diagrammatic cross section of a complete installation of apparatus for preparing road metal. Fig. 3 is an elevation of the same.

Similar reference characters refer to like parts throughout the several views.

Crushed rock is usually employed for road metal and its wearing qualities depend upon its hardness and toughness. Brittleness is objectionable as the blows of the steel shoes of horses tend to break up the material into a fine dust which is blown away. Blast furnace slag is extremely hard, but when poured out on the ground the greater portion becomes very porous and brittle. By causing it to cool slowly, a dense, tough, mass is formed which when crushed forms a most desirable material for the surfacing of roads.

In the drawings, 1 is a ladle mounted on the truck 2, which is adapted to run on the rails 3. The ladle is filled at the furnace and on its way to the annealing receivers much of the gas in the liquid slag escapes.

The annealing receiver is formed of the shallow body portion 4 having sloping sides so that the cooled cake of slag may be easily dumped out. The body 4 has trunnions 5 which rest in the bearings 6. One of the trunnions has a squared end 7 upon which means may be fitted to turn the receiver and discharge the cake of slag. A cover 8 is provided to prevent the too rapid escape of the heat of the molten slag. When in operation, the receivers do not become cold, as they are refilled at once after a charge of slag has cooled the desired amount and been discharged. The body and cover of the receiver are preferably very thick and permit the slag to retain its initial heat for some time. Both body and cover of the receivers are preferably of cast iron. The gradual cooling of the slag permits the gases within the molten mass to escape and causes the slag to become very dense and tough, losing its brittleness but not its hardness. When cooled to the desired temperature, which is between two hundred and three hundred degrees Fahrenheit, the cover 8 is removed and the body of the receiver is turned over, permitting the cake of slag to fall out and down the incline 9 to the platform 10. Here water is thrown over the cake causing it to break into moderate sized pieces which are pushed down the incline or chute 11 to the crusher 12 where the slag is broken into as small sizes as may be desired. From the crusher the broken material falls into the railway cars 13.

The above described installation may be varied as desired by those skilled in preparing ballast and road metal.

The crushed slag may be dropped into liquid gas tar while hot and then placed on high-ways and rolled down, forming an excellent substitute for asphaltic macadam. When annealed in the manner described, the crushed slag is much harder, is fully as strong, and has greater wearing qualities than any natural stone which can be employed for this purpose. It is also well adapted for ballast of railway road-beds.

Having now explained my improvements, what I claim as my invention and desire to secure by Letters Patent, is—

1. The process of producing a non-friable road metal which consists in slowly cooling masses of initially molten furnace slag to thoroughly anneal the solidified slag, and utilizing the residuary heat in said masses to produce chunks of tenacious material through the action of water impinging thereon.

2. The process of producing a non-friable road metal which consists in slowly cooling masses of initially molten furnace slag in a heavy, closed receptacle, to thoroughly anneal the solidified slag, and utilizing the residuary heat in said masses to produce chunks of tenacious material through the action of water impinging thereon.

3. The process of producing a non-friable road metal which consists in slowly cooling

masses of initially molten furnace slag to thoroughly anneal the solidified slag, and utilizing the residuary heat in said masses to produce chunks of tenacious material through the action of water impinging thereon and subsequently crushing said chunks to road metal size.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

J. FAULDER BURN.

Witnesses:

EDWARD N. PAGELSEN,

GEO. L. WILSON.