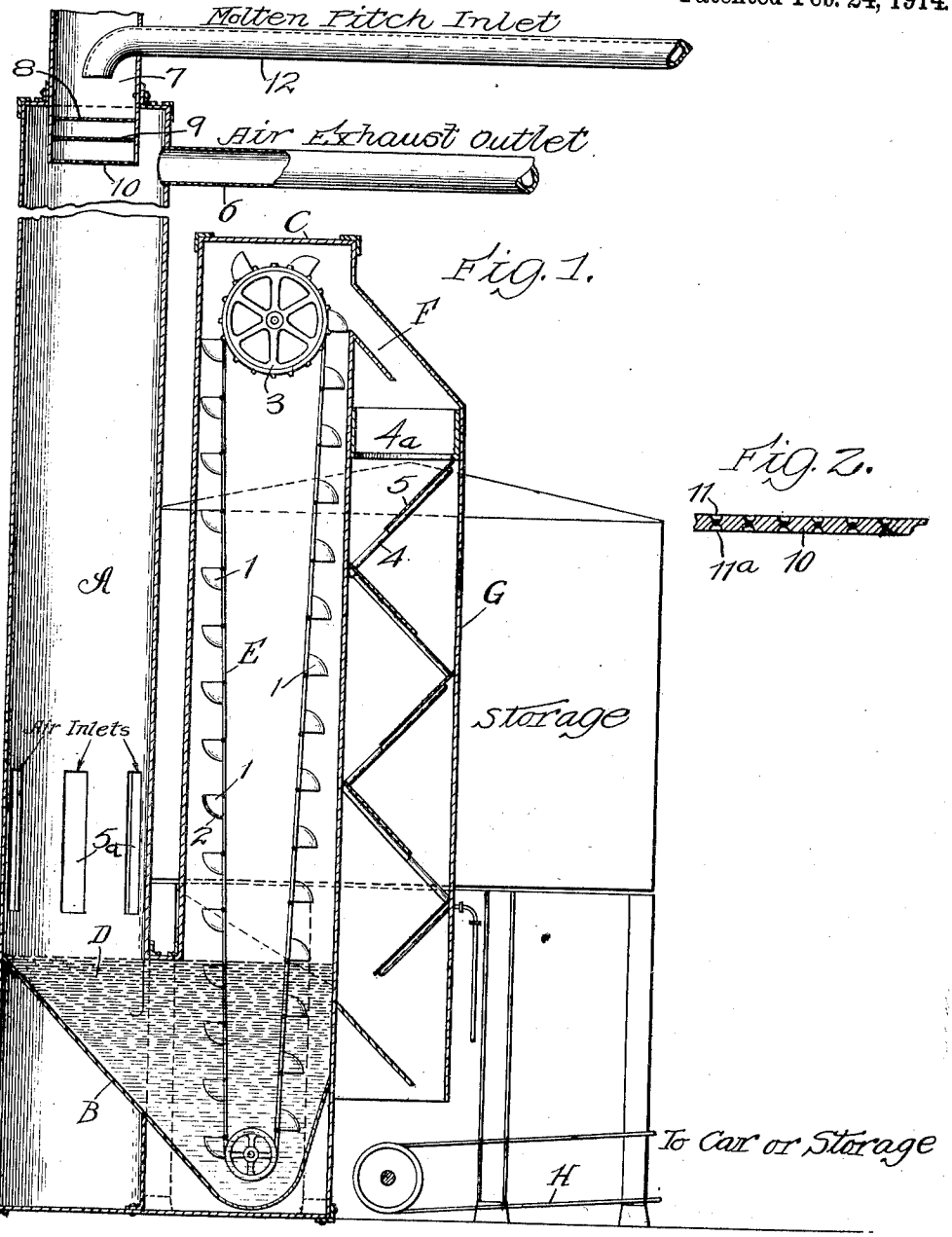
C. N. STEVENS.

HARD COMMERCIAL PITCH AND METHOD OF PREPARING THE SAME.

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1,088,635.

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UNITED STATES PATENT OFFICE.

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HARD COMMERCIAL PITCH AND METHOD OF PREPARING THE SAME.

1,088,635. Specification of Letters Patent. Patented Feb. 24, 1914.

Application filed April 10, 1913. Serial No. 760,325.

To all whom it may concern:

Be it known that I, CHESTER N. STEVENS, a citizen of the United States, and a resident of the town of Kenilworth, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Hard Commercial Pitch and Method of Preparing the Same; and I do hereby declare that the following description of my said invention, taken in connection with the accompanying sheet of drawings, forms a full, clear, and exact specification, which will enable others skilled in the art to which it appertains to make and use the same.

My present invention relates to improvements in hard commercial pitch, and it consists, essentially, in the novel and peculiar combination of parts and methods of procedure, as hereinafter first fully set forth and described and then pointed out in the claims.

In the drawing already mentioned, Figure 1 is a vertical section of an apparatus employed in the practice of my invention and Fig. 2 a section of a fragment of a detail of construction.

Like parts are designated by corresponding characters or symbols of reference in all the figures of the drawing.

This invention relates particularly to hard commercial pitch, and has for its especial object, first, certain improvements in methods of preparing the same for transportation or the market, so as to eliminate the present excessive freight and demurrage charges, and second to produce an article the use of which will be much cheaper and more economical for the ultimate user.

The commercial hard pitch of today is poured into heavy pitch barrels in a more or less molten condition, and allowed to cool therein into a solid mass. An average pitch barrel and its contents weigh at an average 550 lbs., making it both a heavy and unwieldy package to handle. In shipping these barrels in carload lots they are set vertically upon the car floor, one tier in height only; it not being safe to stack them higher. Again, pitch barrels are constantly increasing in cost as lumber becomes scarcer, and their present price is in the neighborhood of seventy-five cents each. The barrels can only be used once, as it is necessary for the ultimate user to chop every barrel piecemeal from its contained solid 500 lb. chunk of pitch. Therefore the barrel is a total loss, and there is an additional loss to the ultimate consumer in the flying chips of pitch occasioned and lost by chopping the original bulk to proper size for use in the pitch kettles and the like, to say nothing of the labor cost of chopping off the barrel. The pitch loss due to flying chips from the chopping and from material adhering to the barrel staves amounts to, at an average, twenty-five pounds per barrel. In order to practically eliminate this waste, my invention contemplates the preparation of hard commercial pitch in small particles, granules, or globules of fine mesh, the largest of which is about equal in size to one-eighth inch screened gravel, containing a total of voids of considerably less than ten per cent.

Pitch prepared under my invention loses none of the peculiarities or advantages of the standard hard pitch of commerce, but, it may be fed into bags in the same manner that cement is bagged and the bags may be used over and over again, a rebate for returned bags being allowed by the manufacturer, in the same way that cement mills rebate for returned bags.

As prepared under my invention, the pitch may be fed directly into barges, scows, boats, or cars, like coal, grain and the like by means of hoppers, loaders, coal conveyers or similar devices; and, a car capable of containing twenty-two tons of barreled pitch will be able to hold from 44 to 45 tons of my prepared pitch.

By the use of pitch prepared under my invention, it will not be necessary for the roofing contractor to cart around a large bulk of pitch on a small job. He will also save time in the melting of the material, as he can start a fire under the boiling kettle and shovel in a small quantity of the material, which will be quickly melted, when another shovel full may be thrown in, and still another added until the required amount is melted and ready to be used.

Many coal mines are now converting their culm banks into coal briquets, employing a certain percentage of melted hard pitch as a binder and then pressing the resultant mass into briquet form by means of massive

presses. The hard pitch now supplied for this purpose is delivered in large chunks, not barreled, and fed into huge grinders to be ground into minute form before melting the same. By the use of my prepared pitch the same can be fed into so-called pulverizers which are light, small machines, requiring but little power, and the heavy grinders eliminated entirely.

To better understand my invention, I now refer to the drawing already mentioned, in which A represents a circular tower of suitable height, having at its lower end a hopper B, which hopper has an outwardly inclined bottom, and extends without the tower and into a so-called head-house C, placed parallel to said tower, and of a height slightly less than the same. Said hopper B is constantly filled with water D or similar cooling liquid, and the head-house C has within the same a vertical bucket elevator E, the lower end of which extends to the bottom of the hopper B, and, the upper extremity, to the top of the head-house C. The buckets 1 of said elevator have their walls punctured with tiny perforations 2, so that all liquid picked up by the buckets will be drained therefrom in their upward travel. Near the upper end of the head-house C is provided a discharge chute F, into which the contents of the buckets 1 are dumped or discharged as they pass over the upper sprocket 3. Chute F leads to a hopper 4_a located near the upper end of a dry house G, which has on its interior a series of downwardly inclined drying pipes 4 and baffle plates 5, the former of which may be fed by steam or hot air. The material to be dried may gravitate from the hopper 4_a over the various dry pipes and baffle plates 4 and 5 to the foot of the dry house, whence it may be conveyed to cars or storage by means of a suitable conveyer H.

In the circular wall of the tower A, a distance slightly above the level of the water D, are a series of openings 5_a, forming air inlets to the interior of said tower. Near the upper end of this tower is located, and leads away therefrom, an air exhaust pipe 6, the far end of which is connected to a suitable air exhaust pump (not shown). The object of this construction is to create an upflowing current of air throughout the height of the tower to extract heat from particles permitted to drop from the top of the said tower.

The upper end of tower C is closed by a cylindrical shell 7, which shell has triple bottoms 8, 9, and 10, each of which bottoms is perforated with holes of a suitable size, which holes are staggered with respect to each other in each bottom, and also staggered with respect to the holes in the other bottom. The holes in the lowermost, or bottom 10, are provided with comparatively large rounded countersinks 11 and 11_a, as indicated in Fig. 2, for purposes hereinafter indicated. Into the shell 7 leads a melted pitch pipe 12, which pipe is connected to the usual pitch boiling steels, (not shown) suitable pumps being connected into the line to force the molten pitch through the pipe 12 and into the shell 7.

The preferred method of preparing hard pitch according to my invention may now be described as follows:—Assuming that the pipe 12 is supplying molten pitch to the shell 7 in proper quantity, the material will percolate through the perforations in bottom 8 in a more or less stringy stream onto the bottom 9. It will then similarly flow through its openings upon the bottom 10. The holes in this latter bottom are of a precise spacing which has been determined by actual experiment, and are of relatively small area with comparatively large rounded countersinks as described above. The pitch percolating through these openings, fills, as it were, the underside countersinks 11_a, forming a globule or granule, and when the weight of this particle exceeds the tensile strength of the thin streams above, it separates itself therefrom and drops down through the tower A. Meeting the upflowing current of air already referred to, some of the contained heat is extracted from the falling body. When the multitude of particles reach the lower end of the tower A, they plunge into the water filled hopper B and gravitate to the lowest point therein, whence the elevator buckets 1 elevate the now cooled but wet particles to the top of the head house C, where they are dumped into the drier G, so that when the material issues upon the conveyer H under the foot of the drier, it is perfectly dry, hard, and ready for storage, packaging in bags, or shipment in bulk.

I desire it distinctly understood that I do not confine myself to the particular form of mechanical apparatus herein described, but may employ any form of mechanical devices to produce the desired result without departing from the spirit or scope of this invention.

I now call attention to the fact that natural or artificial asphalts may be prepared in like manner as above described, and it is intended that this process applies to last named materials as well as hard commercial pitch, all of which are deemed as analogous materials. Rosin, also, may be treated in the same manner, and, also belongs to the pitch family.

Having thus fully described my invention, I claim as new and desire to secure to myself by Letters Patent of the United States:—

1. As a new article of manufacture, hard pitch and the like, prepared in globular form.

2. As a new article of manufacture, hard pitch and the like, prepared in granular and globular form.

3. As a new article of manufacture, hard commercial pitch and the like comprising a mass consisting of small bodies devoid of sharp, angular parts such as would be produced by fracture.

4. The new method of preparing hard pitch and the like, which consists in separating the molten material into a plurality of small particles, dropping the same from an elevation into a cooling bath, and then removing the said particles from said bath and drying the same.

5. The new method of preparing hard pitch and the like, which consists in separating the molten material into a plurality of small particles, dropping the same from an elevation through an upflowing atmospheric current into a cooling bath below, and then removing said particles from said bath and drying the same.

6. The new method of preparing hard pitch and the like, which consists in separating the molten material into a plurality of small particles, dropping the same from an elevation into a cooling bath, elevating these cooled particles to an elevation and mechanically drying the same, and then mechanically removing the same from the drier.

7. The new method of preparing hard pitch and the like, which consists in separating the molten material into a plurality of small particles, dropping the same from an elevation into a cooling bath, elevating these cooled particles to an elevation and discharging the same into a gravity drier, and removing said particles from the outlet of the drier.

8. The new method of preparing hard commerical pitch and the like which consists in separating the molten material into a plurality of small particles and then causing said particles to cool and harden.

9. The new method of preparing hard commercial pitch and the like which consists in separating the molten material into a plurality of small particles prior to the cooling thereof.

In testimony whereof, I have hereunto set my hand in the presence of two subscribing witnesses.

CHESTER N. STEVENS.

In the presence of—
W. HARDING,
WILLIAM O. STARK.