

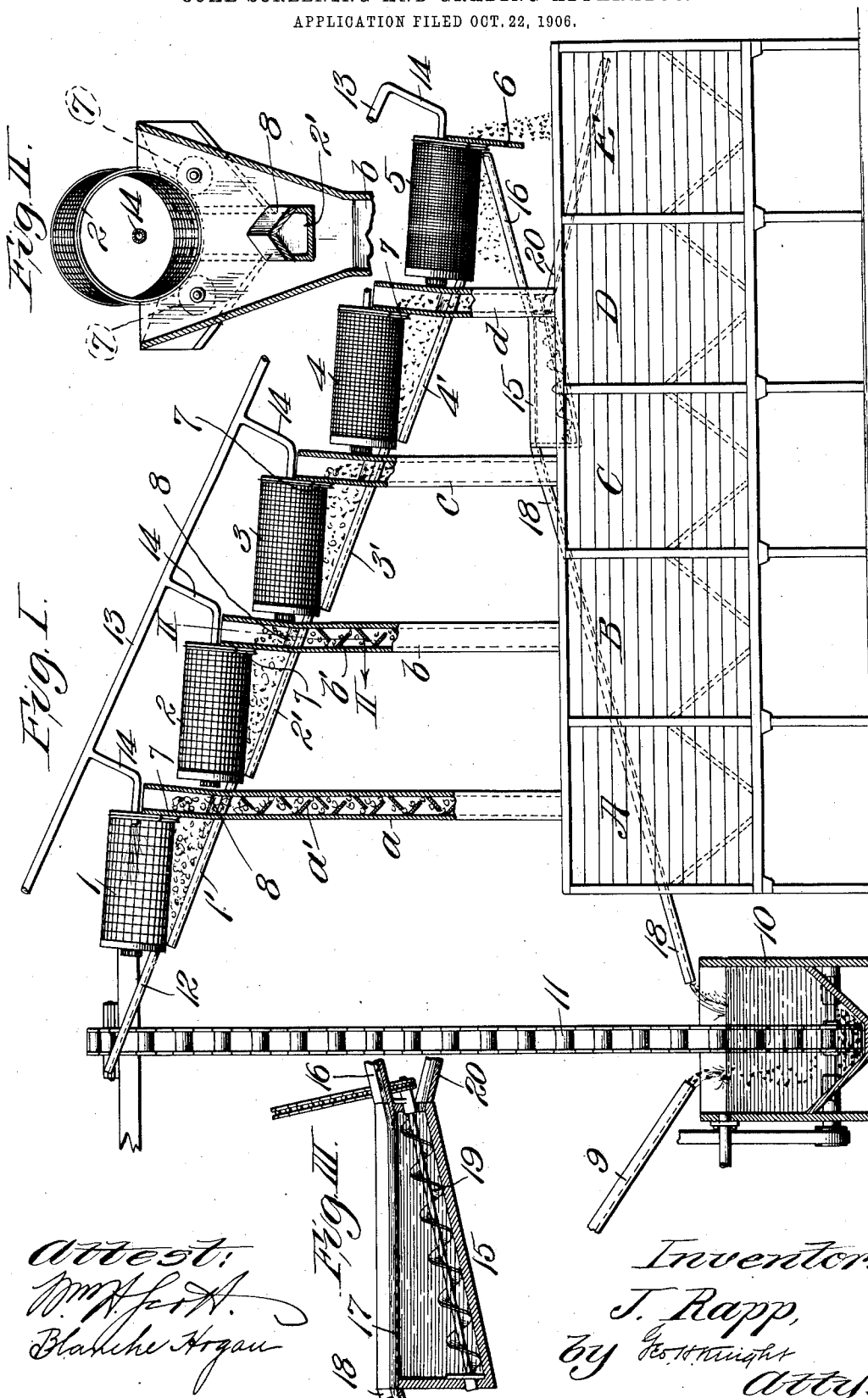
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J. RAPP.

COAL SCREENING AND GRADING APPARATUS.

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Attest:
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UNITED STATES PATENT OFFICE.

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COAL SCREENING AND GRADING APPARATUS.

No. 846,140.

Specification of Letters Patent.

Patented March 5, 1907.

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To all whom it may concern:

Be it known that I, JOSEPH RAPP, a citizen of the United States of America, residing in Collinsville, in the county of Madison and State of Illinois, have invented certain new and useful Improvements in Coal Screening and Grading Apparatuses, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification.

My invention relates to an apparatus for screening and grading coal and depositing the various grades in distinct bins or receptacles.

Figure I is a view, partly in side elevation and partly in vertical section, of my apparatus. Fig. II is an enlarged vertical cross-section taken on line II II, Fig. I. Fig. III is an enlarged longitudinal vertical section taken through the refuse-receptacle of the apparatus.

A, B, C, D, and E designate a series of bins into which the screened and graded coal is deposited, the bin A, as herein shown, being designed to receive the largest coal, the bin E the smallest, and the bins B, C, and D the intermediate sizes of coal.

a, *b*, *c*, and *d* are chutes leading to the bins A, B, C, and D, respectively, these chutes having preferably mounted therein flights on which the coal travels in its descent to the bins, as indicated at *a'* and *b'*, Fig. I.

1, 2, 3, 4, and 5 designate open-ended rotary screens located at the top of the apparatus and stepped downwardly relative to each other in the order named in order that they may successively receive the coal being screened and graded in such manner that the coal passing through the first screen will be screened and the largest-sized coal delivered into the bin A through the chute *a* from the open end of the first screen and that passing through the mesh of the screen be delivered into the second screen, and so on throughout the series of screens to provide for the largest coal being in such instance delivered to the bin to which the screen corresponds and the smaller coal being delivered to the next-succeeding screen. The screens are of gradually-decreasing mesh from the first of the series to the last of the series. The coal discharged from the final screen 5 passes over a guard-plate 6 instead of through a chute, a

chute at the location of this screen being unnecessary in view of the close proximity of the screen to the bin E, into which the coal is delivered. Each of the screens is rotated by power applied thereto in any suitable manner, and the screens are preferably supported at their forward ends at least by rollers 7, that are journaled to suitable supports—for instance, the chutes through which the coal descends to the bins and the guard-plate 6.

1', 2', 3', and 4' are runways located beneath the screens 1 to 4, inclusive, and onto which the smaller-sized coal which passes through the meshes of these screens descends to be delivered into the succeeding screens. These runways extend through the various chutes of the apparatus through which the larger-sized coal is delivered to the bins, and for the purpose of preventing the larger-sized coal from entering into the runways while descending through the chutes I provide a hood 8 above each runway within the chute through which the runway passes, as seen in Figs. I and II. The coal to be screened is first delivered through a trough 9 into a settling-tank 10, which is adapted to contain a quantity of water.

11 is an elevator, preferably of bucket type, which operates in the settling-tank 10 and is driven by power applied thereto in any suitable manner, this elevator extending upwardly to the top of the apparatus, and the coal gathered thereby from the settling-tank is delivered from the elevator to the first or topmost rotary screen 1 through a runway 12, after which it follows the course through the screens, hereinbefore described, to be screened and graded.

13 designates a water-conducting pipe, to which is connected a series of spray-pipes 14; that extend through the forward ends of the rotary screens in the opposite direction to that in which the material travels for the purpose of spraying the interior of said screens and preventing clogging thereof by clay or other adhesive substance present in the coal.

15 designates a refuse-receiving receptacle, preferably having an inclined bottom, and having the highest portion of said bottom located at its rear end. The refuse which passes through the final rotary screen 5 is delivered to the receptacle 15 through a

trough 16, located beneath said final screen. In the refuse-receptacle is a perforated screen-plate 17, onto which the fine lumps of coal which pass through the final screen are delivered from the trough 16. These fine lumps of coal are flushed across said screen-plate by the water delivered from the spray-pipes 14 and descend to and through the final rotary screen, and from the refuse-receptacle the fine lumps of coal are conducted to the settling-tank 10 through a return runway 18.

19 is a conveyer that operates in the refuse-receptacle 15. This conveyer is driven by power suitably applied thereto and acts to discharge the clay or other refuse deposited in said receptacle over the high end of the bottom of the receptacle and onto a discharge-trough 20, which leads, preferably, to one side of the apparatus.

I claim—

1. In an apparatus of the character described, the combination of a plurality of rotatable screens having open ends and arranged in a stepped series and at varying elevations, means for delivering material to the uppermost of said screens, a vertical chute for receiving the material discharged through the open end of the higher screen, and having a runway-section extending across the chamber thereof and a hood covering the runway-section for deflecting the material to opposite sides of the runway-section, a runway located beneath the higher screen for conducting the screened material from the higher

screen to the runway-section within the vertical chute, and a runway conducting the material from the runway-section within the vertical chute to a screen located at a lower level, substantially as set forth.

2. In an apparatus of the character described, the combination of a plurality of rotatable screens, means for delivering the screened material from one to another of said screens, a refuse-receptacle, means for conducting the refuse material discharged from the final one of said screens to said refuse-receptacle, a screen in said refuse-receptacle, a settling-tank, and a conducting member leading from said refuse-receptacle screen to said settling-tank, substantially as set forth.

3. In an apparatus of the character described, the combination of a plurality of rotatable screens, a settling-tank, a conveyer for conducting the material to be screened from said settling-tank to the first of said screens, means for conducting screened material from one to another of said screens, means for conducting material discharged through the mesh of the final one of said rotatable screens, a refuse-receptacle into which the material discharged from said final screen is conducted, and a trough leading from said receptacle to said settling-tank, substantially as set forth.

JOSEPH RAPP.

In presence of—

BLANCHE HOGAN,
NELLIE V. ALEXANDER.