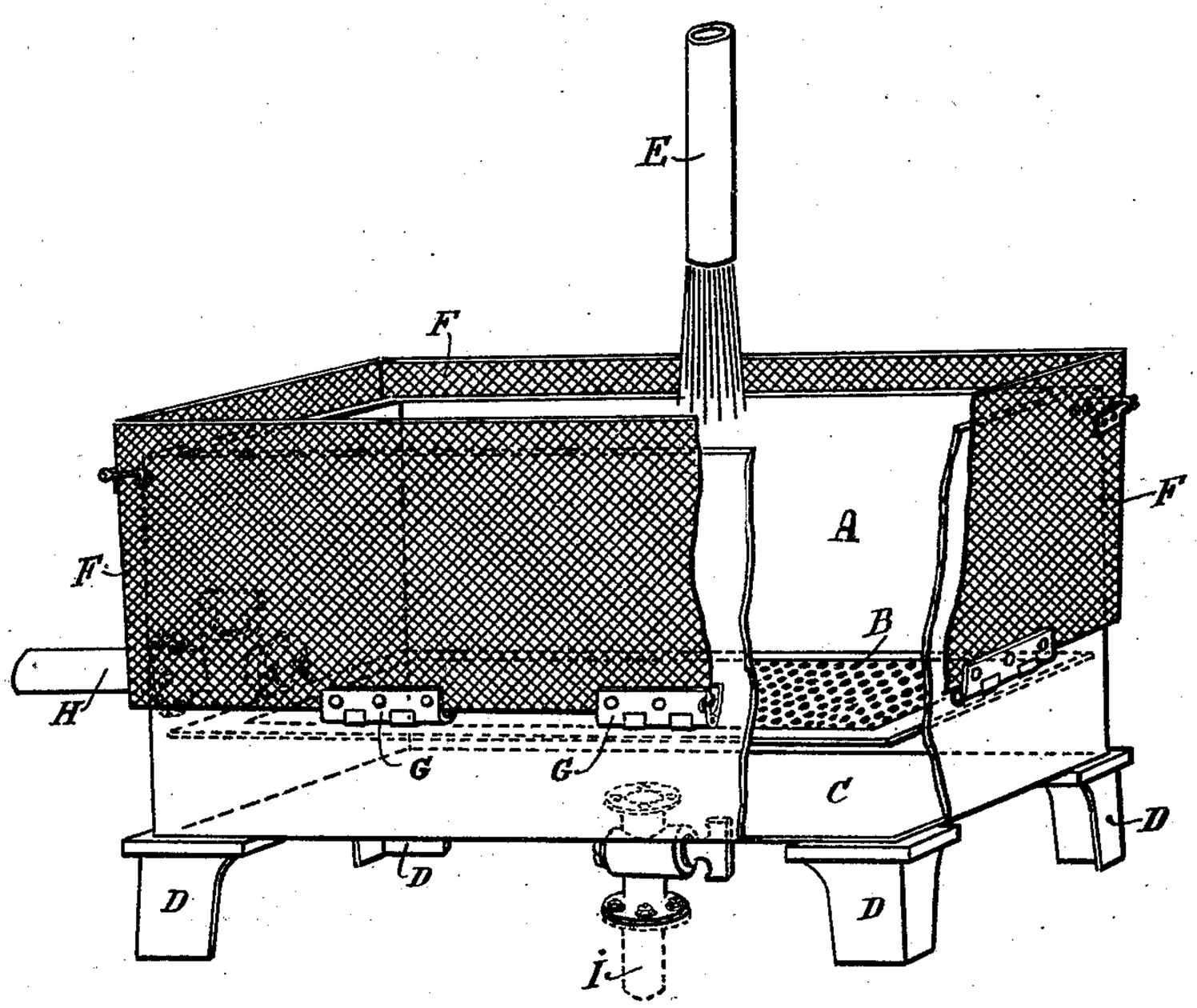
(No Model.)

J. C. W. STANLEY.

Manufacture of Paper Pulp from certain Waste Products

No. 237,920. Patented Feb. 15, 1881.



Witnesses.
Wm. A. McElwee
Wm. Lear Goodwin

Inventor
John C. W. Stanley
per Henry Orth
atty.

UNITED STATES PATENT OFFICE.

JOHN C. W. STANLEY, OF LONDON, COUNTY OF MIDDLESEX, GREAT BRITAIN.

MANUFACTURE OF PAPER-PULP FROM CERTAIN WASTE PRODUCTS.

SPECIFICATION forming part of Letters Patent No. 237,920, dated February 15, 1881.

Application filed December 16, 1880. (No model.) Patented in England April 28, 1880.

To all whom it may concern:

Be it known that I, JOHN CHARLES WILLIAM STANLEY, of the city of London, in the county of Middlesex and Kingdom of Great Britain, have invented certain new and useful Improvements in the Manufacture of Paper-Pulp from certain Waste Products, (for which I have received Letters Patent in England, No. 1,735, dated April 28, 1880;) and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same.

I take the ordinary ash-pit or dust-bin refuse of towns and other places. This I riddle (or I may take it ready riddled) to separate the light portions, such as bits of paper, straw, vegetable-stalks, and the like light materials which I propose to utilize, from the ashes and other heavy portions. The mass of lighter materials—rags, straw, paper, &c.—is passed, when found necessary, through crushing-rolls to crush any pieces of cinders, glass, or other materials that may adhere to it, and is then put through a dusting machine or apparatus to remove the crushed mineral matters. It is then passed onto a knife cutting-machine, where it is cut up small, somewhat like chaff. This "chaff" is next placed in a "washer," where it is subjected to a stream of water, preferably hot, (though cold may be used if preferred,) and agitated, and here the cut straw, wood, vegetable matter and the like rise to the surface of the water, and may be removed in the most convenient manner, the plan I prefer being to allow of an overflow of water, which carries them over the sides of the washer into a suitably-arranged wire-netting, or equivalent, through the meshes of which the water passes, leaving the chaff behind in the netting. The agitation is continued till no more matters rise to the surface. During this part of the process the paper, rags, and other heavy matters fall onto a false bottom, which is perforated to allow of the remaining mineral substances and dirt dropping through the real bottom of the washer.

The paper, rags, &c., can be run off through a cock or vent placed just above the false bottom, and the water strained from it, or it might be collected in any convenient manner, and is then boiled in a suitable boiler for a sufficient time, with a weak solution of soda or other suitable alkali to soften and remove grease, dirt, &c. The length of time during which the boiling continues must of necessity vary with the consistency and quantity of the pulp and the proportion and strength of the alkali; but in an ordinary case, with about one hundred-weight of commercial soda to the ton of pulp, &c., one hour's continuous boiling should be sufficient. The real test, however, for the length of the boiling is that the pulp, &c., is properly clean when the boiling is discontinued. After the boiling, the mass of paper, pulp, rags, &c., is placed in a beating-machine till all the paper is properly pulped, which is speedily accomplished when the particles of rags, twine, &c., are removed from the pulp by straining.

The rags can be prepared for sale by sorting or otherwise, as may be desired, and the pulp bleached or not, and run into sheets, blocks, or other convenient form for sale. A convenient way of doing this is by running it onto a travelling perforated band passing through rollers to express the water; but any of the ordinary methods used for this pupose in paper-making will do. The straw, wood, and other matters remaining after the previous separation may be converted into paper material by reducing with caustic soda in the manner usually adopted by paper-makers for the reduction of straw into pulp. The mass, when the straw which it contains is in a state of pulp, is placed in hot water, and the undissolved wood, &c., will separate from the straw-pulp, and rising to the surface of the water can be removed, and can then be pulped in the ordinary manner or otherwise dealt with, as may be desired.

With one exception the machines and apparatus mentioned herein are all well known in the paper and rag trades, and therefore do not need special description here; but the washer I have specially designed for this purpose, and therefore describe more fully.

The accompanying drawings represent the washer surrounded by the netting already mentioned. A is the tank or body of the washer; B, the perforated false bottom; C, the real bottom; D, the legs or other supports;

E, the water supply; F, the wire-netting, which is made in sections, each section being hinged, G G, or otherwise attached, and secured at top so that it can be turned down, at pleasure, for the easier removal of the straw, &c. The netting should project above the top of the tank all round. H is the outflow for the pulp after the straw has floated off over the top and the dirt fallen through the perforated bottom B; and I is the outflow for the dirt, &c., in the bottom of the washer. Both outflows H and I are provided with suitable cocks, or their equivalent, to close or open them as required.

I have described the method of using up the straw, as well as the paper-pulp, for the manufacture of paper; but when the straw is wanted for other purposes, such as packing, bedding horses, &c., it may be floated off after passing through the knife-machine.

Having now described my invention, and the method of performing the same, I wish it to be understood that I am aware that the larger pieces of rags and paper in ash-pit refuse have been already used for paper making, (the usual manner of obtaining these being to hand-pick them from the other rubbish, which is then removed to waste places to rot for manure, where it accumulates in the neighborhood of large towns in enormous heaps and is a nuisance and constant source of trouble,) and that I do not claim the use of the materials prepared or recovered in the ordinary manner for the manufacture of paper; but that

What I do claim, and desire to protect under the hereinbefore in part recited Letters Patent, is—

1. The herein-described method or process of utilizing ash-pit, dust-bin, or similar refuse (consisting chiefly of paper, rags, twine, cinders, shavings, wood, and vegetable refuse,) and converting the same into material suitable for being manufactured into paper, by the separation of the less easily reducible portions from the paper and other more easily reducible portions, substantially as set forth.

2. The herein-described method or process of separating the less easily reducible portions (such as straw, wood, and the like) of said refuse from the more easily reducible portions, which are rendered capable of separate treatment with strong and weak alkalies, respectively, substantially as set forth.

3. The herein-described treatment of the materials with water after cutting up, by which the less easily reducible portions are floated off from the other portions, and the separation of said portions is thereby effected, substantially as set forth.

4. The herein-described manufacture of pulp for paper-making from ash-pit or similar refuse, substantially as set forth.

5. In the manufacture of pulp for paper-making from ash-pit or similar refuse, the employment of the washer A, with perforated false bottom B, outflows H and I, and surrounded by netting, in sections, so attached that it can be folded back from the top, substantially as and for the purposes set forth, and shown in the accompanying drawings.

JOHN CHARLES WILLIAM STANLEY.

Witnesses:

ALFRED J. BERELT,

STEPHEN HUNT.