

UNITED STATES PATENT OFFICE.

THOMAS ROUTLEDGE, OF FORD, NEAR SUNDERLAND, AND WILLIAM H. RICHARDSON, OF SPRINGWELL-JARROW-ON-TYNE, GREAT BRITAIN, ASSIGNORS TO WILLIAM RENNYSON, OF BRIDGEPORT, PENNSYLVANIA.

IMPROVEMENT IN UTILIZATION OF THE WASTE OF PAPER MANUFACTURE AS AN ANTI-INCRUSTATOR FOR STEAM-BOILERS.

Specification forming part of Letters Patent No. **156,103**, dated October 20, 1874 : application filed September 8, 1874.

To all whom it may concern :

Be it known that we, THOMAS ROUTLEDGE, of Ford, near Sunderland, and WILLIAM HENRY RICHARDSON, of Springwell-Jarrow-on-Tyne, both in Great Britain, have invented certain new and useful Improvements in the utilization of certain waste products of paper manufacture as an anti-incrustator; and we do hereby declare the following to be a full and exact description thereof.

In the manufacture of paper or paper-stock by treating esparto, straw, or other vegetable matters with alkali, caustic, or partly caustic and partly carbonate, there results a solution which is either thrown away or has to be evaporated down and reburnt—in the one case involving a loss, and in the other an expense.

We have discovered that the said refuse material produced in the operation of paper

making, as aforesaid, may be employed for preventing incrustation in boilers. We boil down the refuse liquid from the vegetable material in digesting of vegetable in alkali in the manufacture, until it assumes a thick or pasty condition, and in this state it can be readily introduced in steam-boilers and used as an anti-incrustator.

Having thus described our invention, what we claim, and desire to secure by Letters Patent, is—

As a new and useful anti-incrustator, the refuse produced by treating vegetable substances with alkali in the manufacture of paper-stock.

THOS. ROUTLEDGE.

WM. HENRY RICHARDSON.

Witnesses:

J. A. LOUDON,
COLLIN SMART.