UNITED STATES PATENT OFFICE.

GEORGE B. WALKER, OF PLACERVILLE, CALIFORNIA.

IMPROVEMENT IN PAPER-STOCKS.

Specification forming part of Letters Patent No. **154,304**, dated August 18, 1874; application filed August 8, 1874.

To all whom it may concern:

Be it known that I, GEORGE B. WALKER, of Placerville, El Dorado county and State of California, have invented certain new and useful Improvements in Paper-Stock; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to which it pertains to make and use the same.

The invention relates to a new article or production, being a fiber or mass of fibers having peculiar characteristics, which I have obtained from a tree or plant which grows in great abundance on sandy and gravelly soil in the far West. The tree has the appearance of a species of cactus, but is said to be a variety of the *Yucca*, the *Yucca draconis*, or *Yucca puberula*, or *Yucca brevifolia*, or *Sotol*.

The plant referred to attains a height of thirty feet, with a diameter of eighteen or twenty inches. It generally rises in one straight trunk or column. The green leaves or spines are chiefly confined to the last two or three feet of the tops of the plants, forming a terminal crown. The leaves are flat, about three and a half inches long, and from one-third to one-half inch wide, flat or concave above, convex below, thick-pointed with a strong spike, the broad, flat base about as long as the upper rigid or narrow portions.

The tree or plant is very fibrous, and the object of my invention is, by treatment, to produce a pulp different and distinguishable from anything so far known, and superior for certain purposes to anything of the kind at present existing in the market.

The tree is felled while green, and is allowed to dry naturally; or it may be dried by artificial means.

The wood is first shredded, cut, or broken, is then boiled under a pressure of about sixty pounds, and in an alkaline solution of a strength of about 60° Baumé, or less; in fact, some nicety and experience are required in the boiling process not to boil too strong or long enough to injure the fiber. The stock is then washed to get rid of the coloring matter and silicates. It is then bleached, and after it has remained in the bleaching-liquor about half an hour a small quantity of sulphuric acid is added to kill the bleach. This prevents the chloride of lime or other bleaching agent from injuring the minute tendrils or serrations upon the fiber, and imparts a peculiar toughness to it.

By boiling, washing, bleaching, and, finally, scouring in the manner I have described, the stock becomes of a pure dead-white appearance; becomes a long, tough, thread, string, or wick like substance, and its fiber is very fine, has great strength, and has parts of its circumference removed to leave multiple serrations or unevenness, which give the stock perfect felting qualities.

The stock may be either made into paper direct, or may be dried and baled for shipment. Its peculiar long staple adapts it well for this.

The plant from which I obtain my stock contains a much greater percentage of fiber than any other known substance; in fact, it is thought to contain seventy-five per cent. of fiber, and the fiber as I prepare it has such excellent qualities for paper, and may be so cheaply obtained, that, all considered, it will, it is thought, reduce the cost of milling nearly one-half, and hence the cost of finished paper.

My stock may be employed as a whole stock, or may be mixed with other fibrous pulps for various grades of paper.

The appearance of my fiber under the microscope is peculiar.

I am aware that paper has been made from various fibrous plants, from the *Yucca filamentosa*, *Yucca angustifolia*, bear-grass, Spanish-bayonet, and Adam's needle; but these are different from the *Yucca draconis*, while the stock made from them heretofore has not the characteristics which I have given to mine. I am also aware that the raw fiber of the *Yucca draconis* or of any other plant is not patentable any more than the tree or plant itself, as no human being could, of course, claim to have invented these. In fact, the fiber would be useless for the purpose of making paper without such treatment as would give it all or many of the characteristics enumerated, and which I have found by experiment; but

What I do claim to have invented and produced, and desire to secure by Letters Patent

of the United States, irrespective of the treatment or mode of production, which I am aware can of itself lend no novelty to the article, is—

A whole-stock paper material made from the plant described, possessing the peculiar pure dead-white appearance, being of long, tough, thread, string, or wick like substance, and the fiber of which has manifold serrations or unevenness, which give the stock perfect felting qualities, all substantially as shown and for the purpose set forth.

In testimony that I claim the foregoing as my own I hereby affix my signature in presence of two witnesses.

GEO. B. WALKER.

Witnesses:

THOS. H. HARBIN,

F. P. WRIGHT.