

UNITED STATES PATENT OFFICE.

LUDWIG KARL BÖHM, OF JERSEY CITY, NEW JERSEY.

PROCESS OF MAKING PAPER-PULP FROM STRAW.

No. 875,315.

Specification of Letters Patent.

Patented Dec. 31, 1907.

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To all whom it may concern:

Be it known that I, LUDWIG KARL BÖHM, a citizen of the United States of America, and a resident of Jersey City, in the county of Hudson and State of New Jersey, have invented certain new and useful Improvements in Processes of Making Paper-Pulp from Straw, of which the following is a specification.

This invention has reference to certain new and useful improvements in process of making paper pulp from straw. It pertains particularly to an improvement in a novel process of making paper pulp from straw in which a new bleaching process is employed whereby straw pulp is obtained which, as well as the paper made therefrom, remains always white without becoming slightly yellow, as is the case with certain pulps and papers heretofore made.

The increasing importance of making paper pulp from straw at the present time is generally recognized. The trees from which the well known sulfite pulp is made, grow each in 30-40 years and consequently cease to be in the future such a great resource of paper material as it has been in the past. Other materials for paper pulp such as sugar cane, corn stalk, and leaves of exotic plants yield a variable percentage of pulp because when cut, some are over ripe while others have not yet fully developed. Particularly the latter are not yielding a commercial percentage of fiber because they are still fleshy. Paper manufactured wholly or partly from straw pulp possesses a high degree of snap and elasticity. Cards made of same are highly elastic, when bent they issue an agreeable crackling sound and return quickly to their original position. If suitably colored the cards resemble the well known elastic ivory cards which are very expensive.

It is a daily observance that white paper from various makes gets yellowish in the course of time. This is due to the presence of alkaline substances adhering to the fiber. In order to be useful for high grades of paper, straw pulp must not only be fine and white, but the paper made of same must remain white in the course of time.

To obtain fine and white straw pulp from which paper may be made which does not get yellowish in the course of time, I substantially proceed as follows: Half stuff of straw is first produced in accordance to the process described in my Letters Patent

#659,784 of October 16, 1900. When the required fineness for half stuff has been reached the liquid is drawn off and 3% solution of oxalid acid introduced into the hollander and the same set to work again. By this treatment the entire fiber is impregnated with oxalid acid. The purpose of this treatment will be apparent further on. The half stuff is now bleached in the bleaching tanks or the excess of liquid may be drawn off and the bleaching done directly in the hollander. The bleaching is effected by a freshly prepared solution of hypochlorite of magnesia. The fiber impregnated with oxalic acid is attacked by the bleaching solution. When the bleaching agent enters the fiber it is directly decomposed by the oxalic acid and the chlorine acts energetically in the nascent state on the fiber without practically any loss whereby a quick and effective bleaching takes place. The resulting fiber is perfectly white. Should some oxalate of magnesium be formed and remain in the fiber same does not do any harm because it is an indifferent white powder and acts as a filler, however during the subsequent breaking and washing of the fiber most of it settles and is washed out as it is slightly soluble in water. The saturation of the fiber with a weak solution of oxalic acid brings about a white product which looks shiny. At the same time all the traces of free alkali adhering to the fiber are transformed into oxalate of sodium for instance which is very easily soluble and quickly washed out. This is important because the traces of alkali sticking to the fiber produce the yellowish appearance of the paper in the course of time. In place of oxalic acid tartaric acid may be used. Oxalic acid, however, is preferable because it is composed of two carboxyl groups. The half stuff is now transferred into the fiber breaker and disintegrated to fine pulp which may be used directly or pressed into cakes and shipped.

Having thus described my invention I claim as new and desire to secure by Letters Patent:

1. The improvement in the process of making paper pulp from straw consisting in producing half stuff from straw by means of fixed alkalies, treating the half stuff with an oxalic acid solution, agitating the half stuff in the oxalic acid solution so as to completely impregnate the fiber therewith, bleaching the half stuff by a solution of hypochlorite of

magnesia, producing thereby oxalate of magnesia and producing the fine pulp by disintegrating the half stuff.

2. The improvement in the process of making paper pulp from straw consisting in producing half stuff from straw by means of fixed alkalies, treating the half stuff with an oxalic acid solution, agitating the half stuff in the oxalic acid solution so as to completely
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10 impregnate the fiber therewith, bleaching the

half stuff by a solution of hypochlorite of magnesia, producing thereby oxalate of magnesia, disintegrating the half stuff to fine pulp, and working the fine pulp up into paper.

Signed at New York, N. Y., this 11th day 15
of March, 1907.

LUDWIG KARL BÖHM.

Witnesses:

FRANK JORDAN,

LOUISE M. BOERLAGE.