

# UNITED STATES PATENT OFFICE.

ROBERT M. McMULLEN, OF CHICAGO, ILLINOIS, ASSIGNOR OF ONE-FOURTH  
TO JAMES C. MURRAY, OF SAME PLACE.

## OAT-HULL BOARD.

SPECIFICATION forming part of Letters Patent No. 675,234, dated May 28, 1901.

Application filed March 9, 1901. Serial No. 50,896. (No specimens.)

*To all whom it may concern:*

Be it known that I, ROBERT M. McMULLEN, a resident of Chicago, in the county of Cook and State of Illinois, have invented a certain  
5 new and useful Oat-Hull Board, of which the following is a specification.

My invention pertains to box-boards; and it consists in the production of a new article of manufacture, which is a homogeneous board  
10 containing or consisting wholly of oat-hulls and forming what may be termed an "oat-hull board," useful more particularly in making boxes or cartons.

Oat-hulls are more or less a waste product  
15 at oatmeal-mills; but I have found that they possess the necessary properties for making a suitable and desirable box-board, and I have succeeded in producing a commercial board therefrom. Furthermore, I discovered  
20 that the oat-hulls possessed certain properties in the nature of gluten or gum for binding the fibers of the stock closely together and making a strong compact homogeneous board. Moreover, what has heretofore been  
25 considered a waste product at oatmeal-mills can be utilized as a cereal-board for packages or cartons for cereal foods, for instance, which board in addition to being light in weight, but with great resistance, possesses great ad-  
30 vantage over other boards, owing chiefly to the fact that whether it is in a wet or dry condition its odor, if any, is that of the oat, and therefore no flavor or taint is imparted to the contained article.

35 To obtain my product, which is formed into sheets of board, the oat-hulls are first subjected to certain treatments to reduce them to proper pulp or stock, which is afterward delivered to and run through any suitable  
40 board-making machine. I have obtained satisfactory results by employing the following process: The oat-hulls are first introduced into a digester, into which is added a sufficient amount of lime or its equivalent—say six  
45 bushels of lime to one ton of oat-hulls. The mixture is thoroughly cooked in the digester for, say, about nine hours and then run off into a tank. The stock is now pumped (being of such consistency as permits this to be  
50 done) into a beating-machine and is there beaten and washed for, say, two hours, until the lime is removed, without, however, destroying the fiber in the hulls. The pulp or

stock is afterward run through what is known as a "refining-engine," after which the pulp 55 or stock is ready to be delivered to the tanks or chests of any suitable board-making machine such as is employed for making box-board. The pulp will be found to run quite rapidly on the machine, which is a matter of 60 considerable saving in the practical art.

Instead of using practically clean oat-hulls, as above described, the oat offal or refuse as it comes from the oatmeal-mills may be utilized, thereby avoiding the necessity of a sepa- 65 ration of these hulls. This oat offal is the refuse or by-product from the oatmeal-milling and consists of oat-hulls, oat-dust, and all refuse particles generally resulting from the oatmeal-milling process, all of which are 70 usually run together.

The oat-board resulting from the foregoing treatment of the oat-hulls or of oat offal is a homogeneous board which is strong, with a good fiber, and possesses great resistance, 75 considering its lightness in weight.

Although the pulp composed wholly of oat-hulls or of oat offal will form a commercial board, it will be understood that, if desired, stock or pulp of another material or materials 80 may be mixed with the oat-hull stock to a more or less degree or run therewith and compressed together to make up a composite board, so that whether the board is composed wholly or partially of oat-hulls or of oat offal 85 or be composite it is to be considered as within the meaning and scope of one or more of my claims.

I claim—

1. As a new article of manufacture, a ho- 90 mogeneous board comprising oat-hulls, substantially as described.

2. As a new article of manufacture, a ho- 95 mogeneous board composed of oat-hulls substantially as described.

3. As a new article of manufacture, a ho- 100 mogeneous board containing oat offal, substantially as described.

4. A composite board comprising a layer or board embracing oatmeal refuse and an- 100 other layer or board, the several boards secured together, substantially as described.

ROBERT M. McMULLEN.

Witnesses:

S. E. HIBBEN,  
FLORENCE KING.