UNITED STATES PATENT OFFICE.

WILLIAM GOLDIE, OF WILKINSBURG, PENNSYLVANIA.

CORE-FLOUR.

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To all whom it may concern:

Be it known that I, WILLIAM GOLDIE, a resident of Wilkinsburg, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Core-Flour; and I do hereby declare the following to be a full, clear, and exact description thereof.

My invention relates to core flour; that is the flour used in the manufacture of sand cores for foundry use to bind together the sand and hold the core to shape in handling and during casting. The necessity for such a core flour has been proven because of the necessity of binding together the particles of sand as they are molded to shape in the core box and giving sufficient adhesion to the particles of sand in the withdrawal of the core from the box, its subsequent drying of the baking, and its insertion in the mold. It has also been found extremely desirable that the core body shall be sufficiently porous to give escape or vent to any of the gases generated within the mold in the casting of the metal therein. The most approved material for this purpose has been wheat flour, but on account of the cost of the same various ingredients have been employed therewith to reduce such cost with more or less success. It is of course important to provide a core flour at as low cost as practicable. It is believed that the present invention meets practically all the requirements giving a very cheap core flour having good binding power, and one which produces a core which is sufficiently porous to give full and free vent to the gases generated in the mold.

It consists, generally stated, in a core flour having as one of its ingredients corn cob flour; this corn cob flour being combined with any suitable binding material, preferably with a suitable portion of wheat flour to provide the necessary glutinous matter to bind the particles of sand together.

In the production of a cheap core flour it is of course important to employ therefor a material of very low cost. Corn cob is to a large extent a waste material, and I have found that by properly grinding the same and reducing the same to flour condition, I obtain a basis for the core flour which is not only cheap but possesses peculiar advantages suiting it to this particular use. The flour produced is of a soft fuzzy character which assists materially in holding together the particles of sand. However, to produce a good core flour a stronger binding material should be added to the corn cob flour and for this purpose I prefer to use wheat flour on account of its well known binding qualities obtained through the glutinous material contained therein. Experiment has shown that good core flours have been produced by the combination of the corn cob flour in proportions of from fifty (50) to seventy (70) parts and the wheat flour in proportions of from fifty (50) to thirty (30) parts. Any other suitable binding material may of course be employed in connection with the corn cob flour, for example, a sufficient proportion of sugar to raise its binding power to sufficient height for efficient use.

In the use of the core flour embodying the invention it is mixed with the sand in the ordinary way, and in about the same proportions, the only difference noticeable being that it requires a greater proportion of water, as the corn cob flour has a great affinity therefor, and apparently swells in absorbing the water. As a result the corn cob flour occupies greater space between the sand particles in the forming of the core; but in the subsequent drying of the core it apparently contracts without reducing the volume of the core itself, and it therefore produces a core which while well bound together is extremely porous and provides freest vent for the escape of the gases from the mold, and thereby enables the metal to lie close to the surface of the core, so producing a casting having its core surfaces practically perfect. It is also found that the core body formed by the use of this core flour has sufficient solidity to resist the washing action of the fluid metal when it comes in contact with the core so that the sharp corners which are often present and essential in many of the cores used are preserved. Another advantage found in the use of the core flour is that the vapors arising from the combustion of the core flour are of a pleasant nature, of sweetish smell and are not disagreeable to the workmen.

What I claim is:

1. A core flour having as an ingredient corn cob flour.

2. A core flour having as ingredients corn cob flour and a suitable binding material.

3. A core flour having as ingredients corn cob flour and a suitable glutinous binding material.

4. A core flour having as ingredients corn cob flour and wheat flour.

5. A core flour having as ingredients from fifty (50) to seventy (70) parts of corn cob flour and from fifty (50) to thirty (30) parts of wheat flour.

In testimony whereof, I the said WILLIAM GOLDIE have hereunto set my hand.

WILLIAM GOLDIE.

Witnesses:

ROBERT C. TOTTEN,

JOHN F. WILL.