

UNITED STATES PATENT OFFICE.

WM. GAGE AND R. B. FELTHOUSEN, OF BUFFALO, NEW YORK.

IMPROVEMENT IN DRY-SAND CORES.

Specification forming part of Letters Patent No. **17,732**, dated July 7, 1857.

To all whom it may concern:

Be it known that we, WILLIAM GAGE and RICHARD B. FELTHOUSEN, of the city of Buffalo, county of Erie, and State of New York, have invented a new and useful Improvement in the Composition of Dry-Sand Cores for Founding Purposes; and we do hereby declare that the following is a full and exact description thereof.

The nature of our invention consists in the application and use of glue and blood (or their equivalent) dissolved in water as an adhesive mixture with sand for the purpose of forming cores to be used in the art of casting melted metals into any article according to a given design or pattern.

To enable others skilled in the art to make and use our invention, we will proceed to describe the process of compounding and using the same.

We use sand cleaned and prepared in the usual way. We make a weak solution of glue in water, and then mix the sand with this glue-water to give it such a plastic nature that it may be formed into the required shape for the core. When the sand is thus prepared the core is formed in any well-known manner, and when dried it will be hard and strong enough to stand the pressure of the melted metal when it is poured around it. The glue adheres to the sharp angles of the sand and sticks them together, giving the sand an exceedingly porous nature and sufficient strength for the purposes required. Sand cores prepared in the manner described are exceedingly strong and porous, and possess a number of advantages over sand cores prepared in the common way.

First. The core requires no vent other than what it possesses from its porous character. Although the core, whether formed in the old way or according to our improvement, may be perfectly dry when it is set into the mold, yet it will absorb more or less moisture. Now, when the melted metal is poured into the mold this moisture is vaporized, which vapor must find vent or the metal will "blow." In cores made in the common way artificial vents must be made to allow the escape of this vapor. These artificial vents are liable to get stopped or closed up when the metal is poured, in which case the metal will blow and the casting be spoiled. When cores are used which are made according to our process no artificial vents are required, and there is no danger that the core will break or the metal blow.

Second. When cores are made in the old

way (by mixing flour with sand, and wetting the same with beer, molasses, or water, or otherwise) the interstices between the particles of sand are filled by the flour or other matter, and consequently when the melted metal comes in contact with it the flour, &c., consumes, and produces a gas or vapor, which must be conducted off by artificial vents or the casting will be lost. It is exceedingly difficult to proportion these vents in the core. If they are too large, they will weaken the core and cause it to break. If too small, they will not conduct off all the gas, and the metal will blow and the casting be lost. In either case they are liable to get choked in the act of pouring, and the mold and the casting will then be spoiled. By the use of glue in solution (or blood) as an incombustible cohesive mixture with sand the difficulty is remedied. The glue or blood is comparatively incombustible. Consequently there is little or no gas or vapor formed in consequence of combustion by contact with the melted metal. The interstices between the particles of sand are left open, and the particles of sand are made to cohere at their sharp angles with great tenacity, and consequently a much cheaper, stronger, and more reliable core is produced.

Third. The core can be removed after the casting has been made with much greater facility than the common material, as a few blows from a hammer will loosen the sand around the outside, when the core can be easily removed.

Fourth. It is less expensive and easier made than those made of the common ingredients, and may be used with greater safety and by less skillful workmen.

What we have already said in relation to glue will apply equally well in regard to blood, and is applicable thereto. We also use blood in mixture with glue, and where a very strong core is required we think that a solution of glue and blood is preferable.

We claim—

The application and use of glue or blood (either separately or in combination) mixed with sand for the purpose of making dry-sand cores for founding purposes, substantially as herein described.

WM. GAGE.

R. B. FELTHOUSEN.

Witnesses:

E. B. FORBUSH,
WILLIAM DAVIS,
E. B. VEDDER.