A. HUNTER.
Treatment of Flour.

No. 203,544. Patented May 14, 1878.

Fig. I.

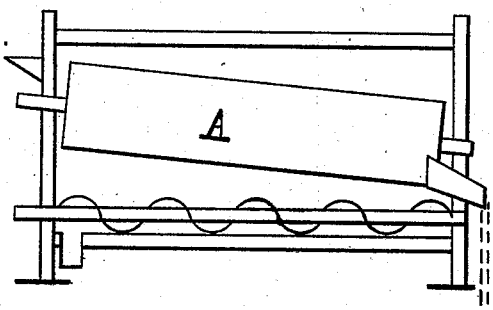


Fig. II.

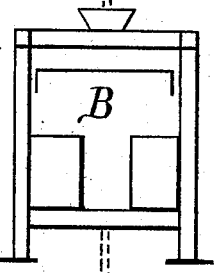


Fig. III.

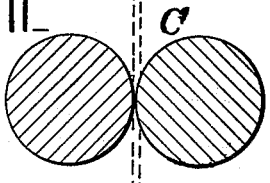
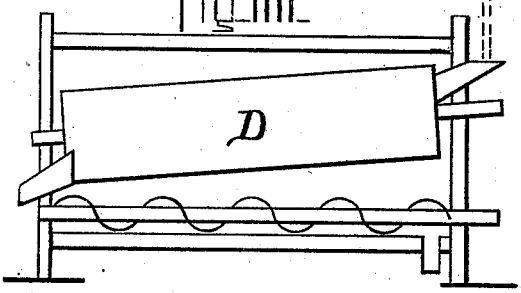


Fig. IIII.



WITNESSES.

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ANDREW HUNTER, OF ROCHESTER, NEW YORK.

IMPROVEMENT IN TREATMENT OF FLOUR.

Specification forming part of Letters Patent No. **203,544**, dated May 14, 1878; application filed March 25, 1878.

To all whom it may concern:

Be it known that I, ANDREW HUNTER, of the city of Rochester, in the county of Monroe and State of New York, have invented a new and useful Process for Purifying and Separating Impurities from Flour, which process is fully set forth in the following specification.

In the old system of milling it was the aim of millers to make as large a quantity of first flour as possible, which system was termed "low grinding." By grinding low it necessitated the pulverization of the fibrous particles and other impurities, which became so thoroughly incorporated with the flour it was impossible to make a perfect separation by the use of bolts. Said separation consisted usually in making three grades of flour.

In the new system of milling an entirely different result is produced. It is now the aim of millers to make as little first flour as possible, not averaging over one-half of the flour contained in the wheat. Therefore the first run is darker, containing more fibrous matter than the first flour made by the old system.

Since the adoption of the granulating system of grinding, about fifty per cent. of middlings is made, composed of the coarse granular particles of wheat.

In the new process of manufacturing flour it is necessary to use purifiers to remove the fiber and light specks by a blast of wind, the difference between the specific gravity of the middlings and fiber being so great that with an ordinary purifier good results are obtained. There is a coarse brown middlings, composed, in part, of the white part of the berry of the wheat and the germ and particles of bran, that requires to be reground or crushed, so as to free the white part containing flour from the brown particles. By using the ordinary stone to reduce it, so that the purifier can operate on the material properly, it has been found that the germ was reduced to the same consistency of the white particles. Therefore it was necessary to adopt rolls for the reduction of the coarse brown middlings, which has proved a success in the reduction of coarse middlings.

In making the first run of flour from high grinding it is usually coarse, and contains all the nutritious properties found in the new-process flour; but in order to bring it up to the same standard it is necessary to remove the fiber and other impurities that are incorporated in minute particles. There being so little difference in their specific gravity, it has been considered impossible to remove them, and all attempts to do so have proved futile.

The processes heretofore employed are used only in the different stages of manufacturing the flour.

Wherein my new process differs from all others: I take the manufactured product known as "low-grade and first-run flour" and purify and refine it, raising the flour in value, as I estimate, at least one dollar per barrel. The first part of the operation of purifying and refining is to mix, if desired, clean coarse middlings with the flour, in order to make it bolt freely, then pass the flour through a bolt covered with suitable cloth, for the purpose of separating the starchy part, thereby producing a white soft flour of but little value for family use. The starchy part, when separated, leaves a granular flour, composed, principally, of gluten, combined with the fiber and other impurities.

The above separation made by bolting is, to the best of my knowledge, the extent of refining as practiced by millers.

In order to separate the fiber and other impurities from the granular flour, it can only be accomplished by the action of wind by applying a pressure-blast under the cloth of the sieve, to prevent the fiber from passing through with the purified flour, said blast having sufficient force to carry the fuzzy particles to a receptacle prepared for the same.

In order to carry out this system of purifying or refining, I find it necessary to separate the fine particles of germ and other similar impurities usually composed of an oily substance by passing into or through rolls composed of porcelain, or through a set of burr-stones adapted for that purpose, the germ and other impurities will be flattened, and the coarse granular flour reduced to the proper consistency preparatory to entering a bolt. As it passes through said bolt the flour is thoroughly removed through the meshes of the cloth in a pure state, ready for mixing with the flour separated by the first bolt in the first operation of my process.

I will now describe my mode of refining and

purifying, referring to the accompanying drawings to illustrate.

Figure 1 is a sectional view, showing an ordinary bolt; Fig. 2, an end view of my purifier; Fig. 3, rolls; Fig. 4, a sectional view of a bolt.

The first run of flour or low grades are mixed, if desired, with coarse middlings and run into reel A, Fig. 1, covered with suitable cloth. The fine white flour is removed through the meshes. The coarse part runs over the end, thoroughly dusted and free from soft fine flour. The coarse part is run onto my purifier B, Fig. 2. The flour is fed evenly on the end of the screen. As it travels over, it gradually sifts through. The fiber and fuzzy particles are held in suspension and prevented from going through the cloth by a pressure of wind under the sieve, supplied by a fan or fans. The air, as it is forced through the cloth, removes and carries off with it the light impure matter, leaving the purified flour free from all light impurities. The purified flour is next run into or through rolls *c*, Fig. 3. The object of the rolls is to flatten small particles of germ and other oily substances; also to reduce the coarse particles of flour to the proper fineness, thereby whitening the same. The flour, after passing through the rolls, is run into bolt D, Fig. 4. As the bolt revolves the flour is forced through the meshes of the cloth, and the flattened particles pass off over the end. The impurities that run off over the end are fit for nothing but feed. The flour separated by bolt D is run with the flour taken from reel A, and thoroughly mixed, thereby making a fine white nutritious flour from the first run and low grades, that has always sold for a low price, on account of the impurities contained therein, which could not be removed by a reel, nor any other method, and only by the process as above described.

The following is claimed as new, namely:

The process of refining the first run or low grade of flour, consisting in first passing it through a bolt to remove fine white flour, then through a purifier to remove fiber or fuzz, then through rolls to flatten the germ and oily substances, through another bolt to remove flattened particles and impurities, and finally running the refined flour from the two bolts together.

ANDREW HUNTER.

Witnesses:

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E. A. MCMATH.