

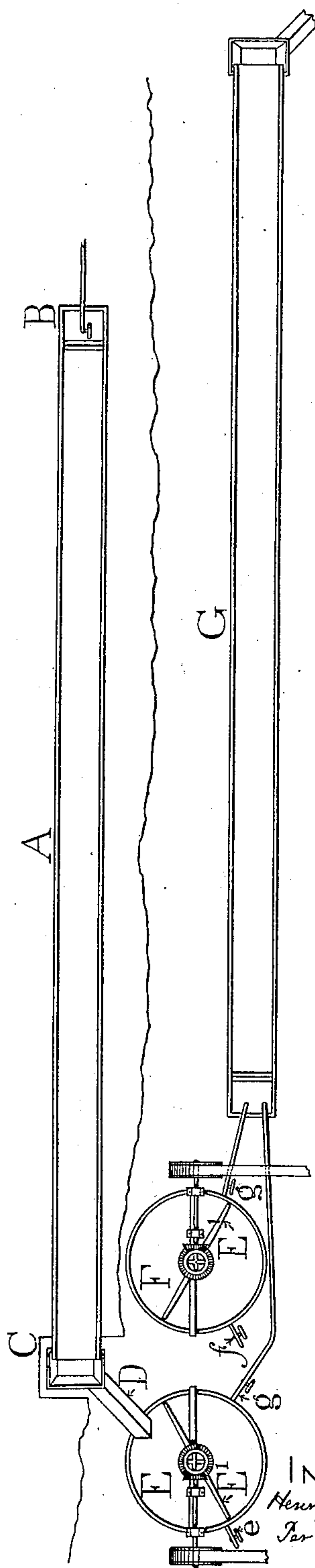
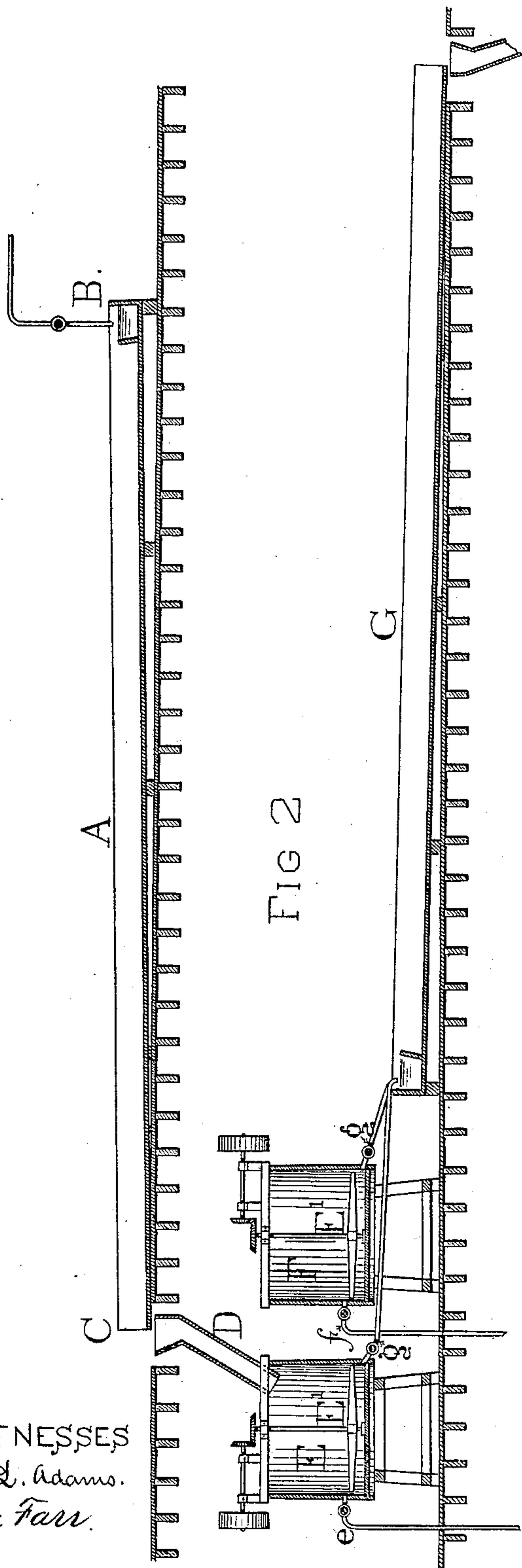
(No Model.)

H. C. HUMPHREY.

METHOD OF SETTLING STARCH LIQUOR.

No. 250,362.

Patented Dec. 6, 1881.



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METHOD OF SETTLING STARCH-LIQUOR.

SPECIFICATION forming part of Letters Patent No. 250,362, dated December 6, 1881.

Application filed September 22, 1881. (No model.)

To all whom it may concern:

Be it known that I, HENRY C. HUMPHREY, of the city and State of New York, have invented an Improved Method of Settling Starch-Liquor, of which the following is a specification.

In the ordinary method of manufacturing starch, the raw starch-liquor, having a density of, say, 5° Baumé, is run over a long trough or so-called "table," or a succession of tables, upon the bottom of which the starch is deposited. By far the greater portion of the starch is deposited upon the first thirty or forty feet of the table; but in order to secure all the starch it is customary to employ tables of great length, in some cases one hundred and twenty-five or even one hundred and fifty feet in length, or to run the starch-liquor over a series of tables of shorter length. In running a distance of sixty feet over a table the starch-liquor is lowered in density from, say, 5° Baumé to, say, 1° Baumé, and the starch deposited on the lower portion of the table is always less pure than that deposited upon the higher portion of it.

It is the threefold object of my invention to dispense with the necessity for the use of long tables, and also to increase the purity of the starch deposit, and to shorten the operation of depositing the starch. To that end I employ, in combination with a comparatively short starch-table, one or more settling-tanks, into which the overflow from the starch-table is discharged, and which, when full, I allow to stand for six hours, more or less, until the heavier materials have settled into the lower stratum of the liquid contained in the tanks. I then draw off the clear liquor, and thus have remaining a liquor containing sufficient starch to give it a density of, say, 4° or 5° Baumé, which I then stir up and run over the table. I preferably provide each table with two settling-tanks, which are filled alternately by the overflowing starch-liquor, and the table can thus be continuously employed under the most favorable conditions for obtaining the purest deposit of starch. By the use of several settling-tanks ample time is allowed for the concentration of the raw starch-liquor previously to running it a second time over the starch-table.

The apparatus required to carry out my

method of collecting the starch is of simple and well-known character, as will be seen from the accompanying drawings, which represent two starch-troughs provided with two settling-tanks.

In these drawings, Figure 1 is a top view, and Fig. 2 is a longitudinal vertical section, of the apparatus.

The trough A is constructed in the usual manner, and for the purpose of illustrating my invention may be assumed to be sixty feet in length. The raw-starch liquor is introduced at the upper end, B, into the trough, and as it flows through the trough deposits upon the bottom thereof, say, eighty per cent. of the starch which it originally contained. Assuming it to have had a density of 5° Baumé when first introduced into the upper end of the starch-trough, the liquid overflowing from the opposite end C will therefore have a density of, say, 1° Baumé. This liquid is discharged from the lower end, C, of the trough upon a chute, D, by which it is conducted either to the settling-tank E or the settling-tank F, as may be required. As often as there is a sufficient deposit of starch in the settling-trough the feeding of the raw-starch liquor is arrested, and the deposited starch is removed from the trough and the feeding of raw-starch liquor recommenced. When one of the settling-tanks is full the chute is arranged to conduct the overflowing starch-liquor to the other settling-tank. The settling-tanks are made of sufficient capacity to hold the quantity of starch overflowing from the lower end of the trough during the operation of depositing a charge of starch upon the bottom of the trough. After standing six hours, more or less, in the settling-tank, the superincumbent clear liquor is drawn off therefrom through the pipes *e* and *f*, respectively, which in the drawings are represented as being so placed as to effect the discharge of four-fifths of the contents of either tank. The remaining liquid in the tank, on being stirred by means of the stirrer *E'*, is brought to a uniform density, which will be found to be, say, 5° Baumé. Having been thus stirred, it is drawn or pumped from the tank and discharged upon the starch-table, where, by reason of its concentration, the starch it contains is deposited with the usual rapidity.

The necessity of pumping from the settling-tanks may be avoided by providing the supplemental table G, arranged on a lower level than the bottom of the settling-tanks, so that
5 the concentrated liquid may be run by its own gravity from the settling-tanks, respectively, through one of the pipes *g* to the upper end of the supplemental table G.

I claim as my invention—

- 10 1. The herein-described method of separating starch from raw-starch liquor, which consists in first running the raw liquor over a comparatively short starch-table, and in collecting and concentrating the overflow therefrom, and

in then running such concentrated liquor again 15 over a table.

2. In apparatus for separating starch from raw-starch liquor, the starch-table A, in combination with a settling-tank arranged to receive the overflow from the table A, and pro- 20 vided with a stirrer, and means for reconducting the lower stratum of its contents to a starch-table, substantially as and for the purpose set forth.

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Witnesses:

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