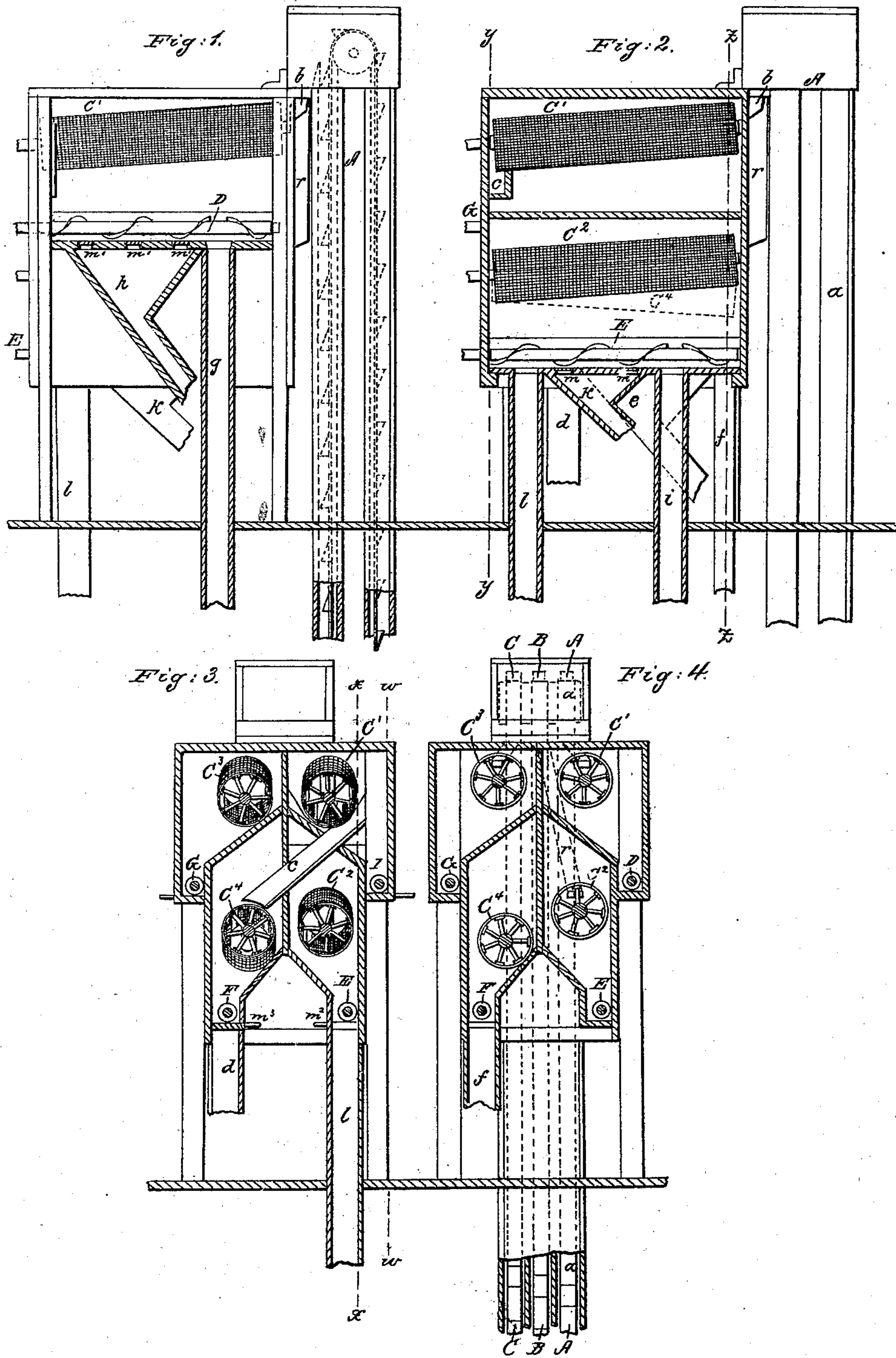


B. D. SANDERS.  
Manufacture of Flour.

No. 21,277.

Patented Aug. 24, 1858.





# UNITED STATES PATENT OFFICE.

BENJAMIN D. SANDERS, OF HOLLIDAYS COVE, VIRGINIA.

## MACHINERY FOR BOLTING FLOUR.

Specification of Letters Patent No. 21,277, dated August 24, 1858.

*To all whom it may concern:*

Be it known that I, BENJAMIN D. SANDERS, of Hollidays Cove, in the county of Brook and State of Virginia, have invented  
5 a new and useful Improvement in the Manufacture of Flour, of which the following is a full, clear, and exact description, reference being had to the accompanying drawing, which forms part of this specification, and  
10 in which—

Figure 1 represents a longitudinal vertical section of a flour bolting apparatus, taken as indicated by the line *w, w*, in Fig. 3; Fig. 2 a similar view, taken as indicated  
15 by the line *x, x*, in Fig. 3; Fig. 3 represents a transverse vertical section of said apparatus, taken as denoted by the line *y, y*, in Fig. 2; and Fig. 4 also a transverse vertical section, taken as indicated by the line *z, z*, in  
20 Fig. 2.

While, in this my improvement, not confining myself to any particular arrangement or number of bolts, for such may be varied or extended at pleasure, and two or more  
25 bolts or rolls hung on the same shaft if desired, I show in the accompanying drawing four distinct bolting reels by way of explaining or as a means for carrying out into practice my improvement in the manufacture of flour.  
30

In a mere combination of bolts for making flour of different grades or qualities, and in passing the tailings of one bolt into another bolt and in returning flour to pass a second  
35 time through the main or same bolt, and in the use of conveyers and slides for regulating and separating or admixing stuff passed through different portions of the bolting cloth relatively of its length, and, in the use  
40 of an elevator or its equivalent, I am aware there is nothing new, nor is my improvement, though shown in connection with such parts or arrangements, and action or actions, designed to include such as new of them-  
45 selves; which remark is here made to prevent misconception as to the character of my improvement.

Referring to the accompanying drawing, the meal from the mill is passed up (say)  
50 one line (*a*) of elevator (A) and discharged by spout (*b*) into the head of a reel or bolt (*C*<sup>1</sup>), there to be bolted.

In ordinary practice, flour of different grades is obtained from the first bolt at different portions of its length partly by reason  
55 of a varying grade of cloth, fine at the head

of the bolt but coarse as approaching the tail, and partly by reason of the well known fact that more offal in proportion passes or is worked off with the flour the longer the two  
60 are in contact, and supposing the grade of cloth to be the same throughout the whole length of the bolt, as is here shown to be or may be the case for the first bolt (*C*<sup>1</sup>) in the drawing, the flour sifted at the head of  
65 the bolt will be found freer from offal than the flour which has been bolted lower down the bolt. This fact it is necessary to bear in mind for the perfect understanding of my improvement; but before fully explaining  
70 the result I accomplish, or its advantages, and in order to do so more clearly, I will here briefly describe the use made of the four bolts shown in the arrangement represented in the accompanying drawing, com-  
75 mencing with the passage of the meal from and through the first bolt (*C*<sup>1</sup>) to which I have already traced it. What passes over the tail of this first bolt (*C*<sup>1</sup>) is offal with a  
80 portion of fine meal not sufficiently fine to pass through the superfine cloth of said bolt or which has failed to pass therethrough. This offal and meal is passed by a spout (*c*) into the head of what I shall term a fourth  
85 reel (*C*<sup>4</sup>). What sifts through the head of this fourth reel may be passed by a spout (*d*) to the mill for re-grinding, and that that sifts through the cloth of this reel (*C*<sup>4</sup>) at or toward its lower end being "shipstuff" or  
90 a rich quality of offal may be passed off by a spout (*e*) anywhere. That that falls over the tail end of said reel (*C*<sup>4</sup>) is bran and passed off by spout (*f*). Such combined  
95 use of these reels and their actions will be readily recognized as old. The flour that sifts through the head of the first bolt (*C*<sup>1</sup>), and which is ordinarily passed off and barreled as a finished superfine article, I re-  
100 sift, apart from the main body or quantity and average quality of offal contained in the first reel, for reasons hereinafter given, by passing it off by a spout (*g*) and conveying it in any suitable manner to and up  
105 a second line of elevator (B) into the head of a second reel (*C*<sup>2</sup>) by spout (*r*). What sifts through the cloth toward the lower end of the first reel (*C*<sup>1</sup>) is passed by spout (*h*) as "return flour" to be conveyed into the head of the same reel to be rebolted, as customary in the manufacture of flour.  
110

As previously described, the meal bolted from the head of the first reel (*C*<sup>1</sup>) and



passed into the head of the second reel ( $C^2$ ) is a superfine quality free from coarse offal. That portion of this superfine flour which is bolted at the head of the second reel ( $C^2$ ) is freed from fine offal contained in it, by being thus rebolted, and is passed off by spout ( $i$ ) to "the barrel." That that sifts through a portion of the cloth at the lower end of the second reel ( $C^2$ ) is passed by spout ( $k$ ) as "return flour" to be conveyed into the head of the same reel to be rebolted. The remainder that passes through the extreme lower end of the second reel cloth, and the tailings that fall over said reel or over tail end thereof, is or are passed off, by spout ( $l$ ), to be conveyed in any suitable manner to and up a third line of elevator ( $C$ ) into the head of a third reel ( $C^3$ ), and what, of this quality, is sifted at the head of this latter reel ( $C^3$ ) is passed off by spout to be conveyed to and up the elevator as "return flour," back into the head of the second reel ( $C^2$ ) to be rebolted and where it mixes with the very superfine flour from the first reel ( $C^1$ ). What passes through the rear portion of the third reel and over the tail end of it is a superfine quality of offal to be carried off by spout provided for its escape.

I have not deemed it advisable here to refer to particularly the several conveyers ( $D, E, F, G$ ) provided the bolts, nor yet the regulating slides ( $m, m^1, m^2, m^3$ ) provided certain of the spouts for adjusting the discharge or admixture of offal at different points, as such are well understood and common to bolting arrangements generally.

Wherein my process differs from others in use is, firstly, in taking the superfine flour which is bolted at the head of the first reel ( $C^1$ ) and rebolting it, apart from all grosser offal contained in the body of meal in the first reel, by sifting it through the head of the second reel ( $C^2$ ). It matters not how fine the cloth at the head of the first reel, the superfine flour bolted therefrom is found to contain an amount of small offal which may be in the form of splinters or of no larger diameter in their one section than the particles of flour bolted with them, but which, passing through the cloth and admixing with the flour, darken and depreciate it. The larger offal forces out the smaller, and merely "returning" the flour for admixture again with the main body of meal, to be rebolted, will not deprive the superfine flour of this fine offal, and ordinarily both are put into barrel together and branded as superfine flour. But, by rebolting this superfine flour as it comes from the head of the first reel, by or from the head of a second reel ( $C^2$ ), apart from admixture with large or much offal as contained in the head of the

first reel, an extra superfine flour is produced free from much, most or all of the fine offal that not being forced out by large offal and having room to pass without much obstruction down the second reel facilitates the escape only of the very superfine flour from the head of said second reel, and my improvement, it will be seen, is not in the mere use of a second reel which for working tailings, and so forth, is old—a totally different process and effect,—but my improvement, as I have proved by practice, deprives superfine flour of those fine particles of offal or "grays" which millers heretofore, no matter how fine the cloth they employed at the head of the bolt nor whether they "returned" said flour or not, have been unable to do; and mainly or wholly for the reasons before given. Again, without so much regard to number of reels as to their relative actions and the qualities of flour and offal operated on by them, what passes into the head of the third reel ( $C^3$ ), it will be seen, is a coarser quality of the "fine" offal extracted from the superfine flour, admixed with much that is not offal and stuff that escaped passing through the main lower portion of the body of the second reel and which to prevent being lost as offal, or to extract from it what belongs to the very superfine flour, is rebolted at the head of the third reel to be conveyed back to the second reel for admixture with the superfine flour from the first reel, by which nothing that is superfine is lost, while what is really a superfine quality of offal, and which has heretofore been admixed with superfine flour, is separately carried off at and near the tail of this third reel ( $C^3$ ).

What I here claim as my improvement in the manufacture of flour, and desire to secure by Letters Patent, is—

1. Depriving superfine flour of fine offal or impurities, by rebolting it, after escape from the head of the first reel ( $C^1$ ), in or by a second reel ( $C^2$ ), apart from the main body of meal or coarse meal and coarse offal in the first reel, substantially as specified.

2. And I further claim rebolting the coarser grades of fine offal and material admixed therewith, passing off at the tail end of the second reel, by or in a third reel ( $C^3$ ), for restoring to the superfine flour that which belongs to it and for the more perfect separation, without waste, of impurities therefrom.

In testimony whereof, I have hereunto subscribed my name.

B. D. SANDERS.

Witnesses:

J. F. CALLAN,  
A. GREGORY.