

J. BROWN.

Flour Bolt.

2 Sheets—Sheet 1.

No. 51,548.

Patented Dec. 19, 1865.

Fig. 1

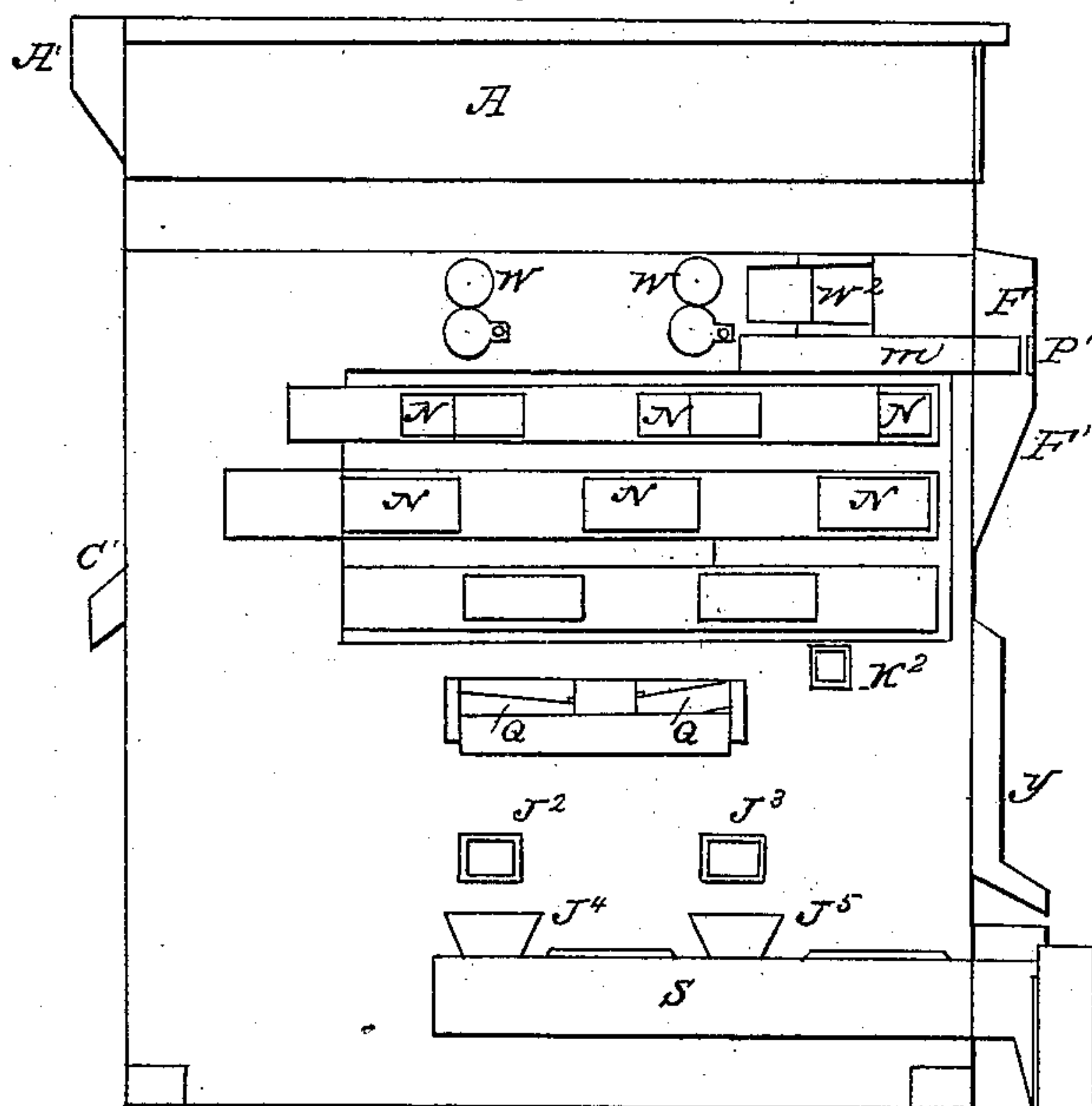


Fig. 3

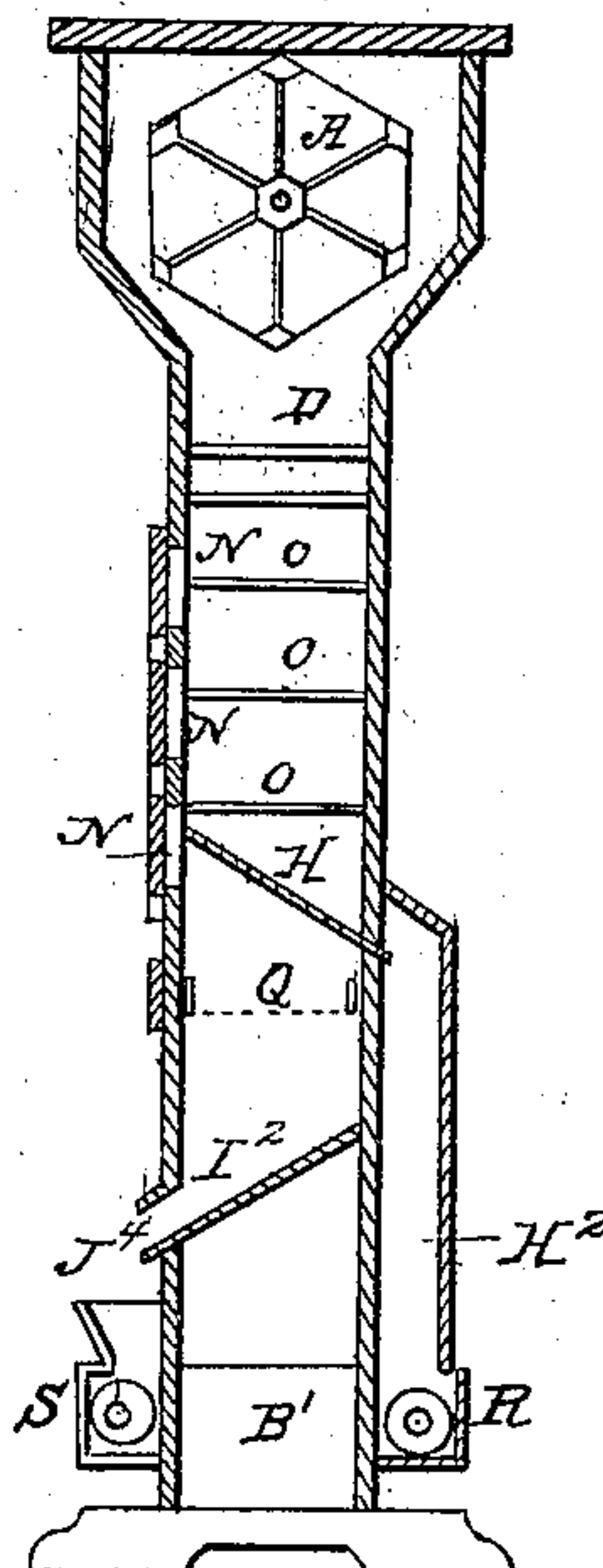
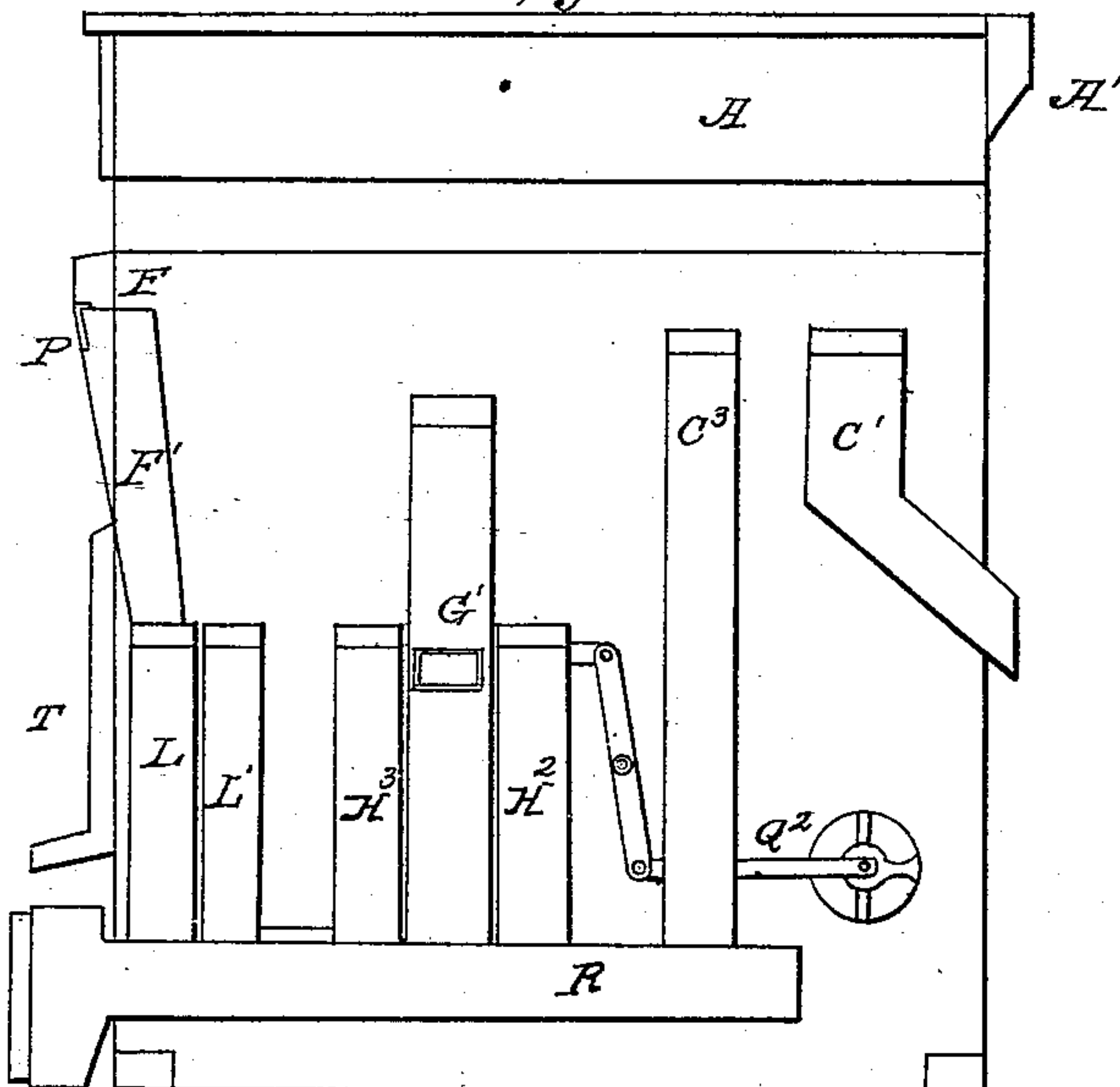


Fig. 2



Witnesses
E. Munson
J. G. Barker

Inventor
John Brown

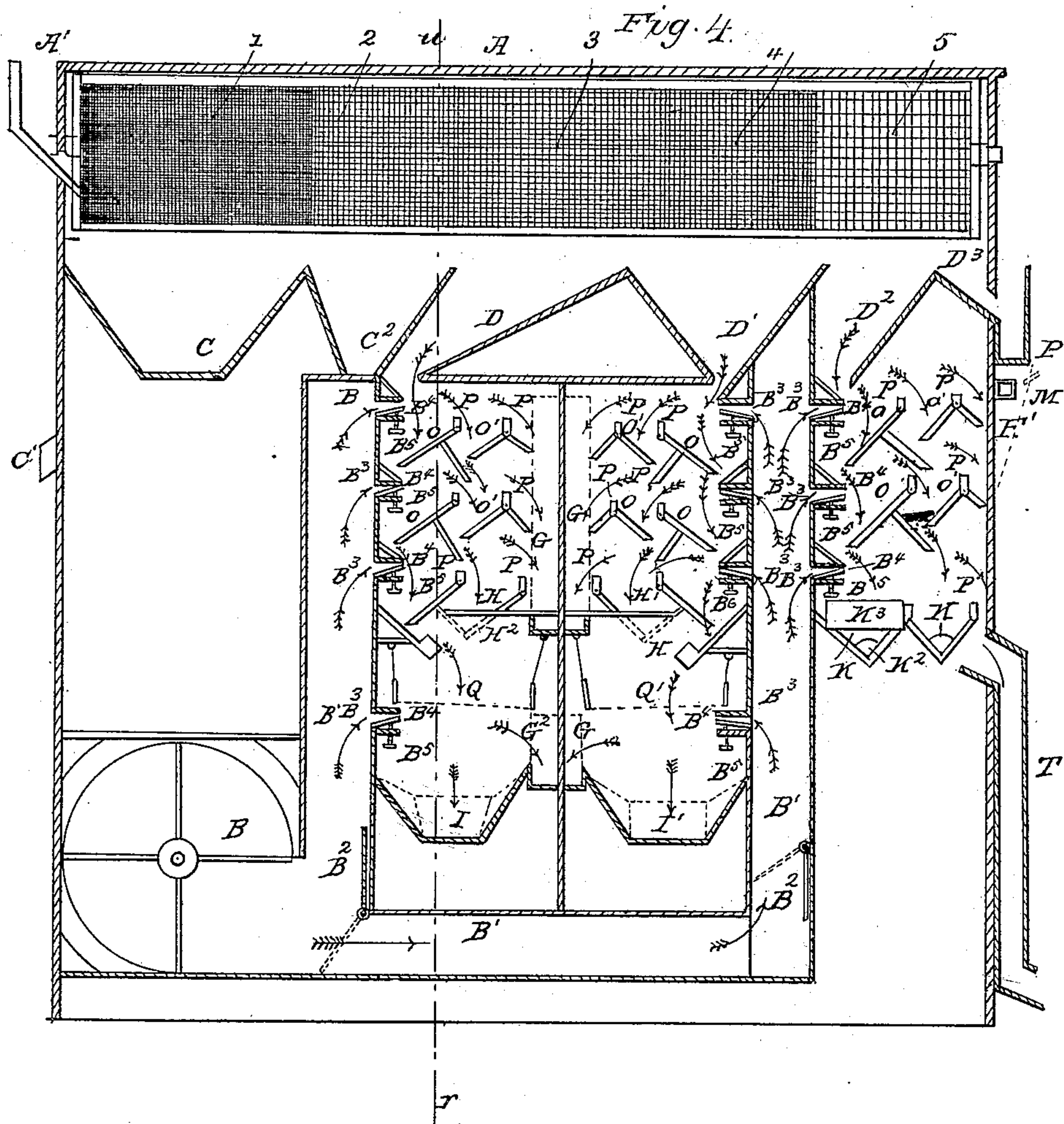
J. BROWN.

2 Sheets—Sheet 2.

Flour Bolt.

No. 51,548.

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Witnesses
C. Meunier
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Inventor
John Brown

UNITED STATES PATENT OFFICE.

JOHN BROWN, OF UTICA, NEW YORK.

IMPROVEMENT IN FLOUR-BOLTS.

Specification forming part of Letters Patent No. 51,548, dated December 19, 1865.

To all whom it may concern:

Be it known that I, JOHN BROWN, of Utica, New York, have invented a new and useful Machine or Apparatus for Preparing Wheat or other Grain for Grinding; and I do hereby declare that the following is a full and exact description of my said last-mentioned invention, reference being had to the accompanying drawings, and to the letters of reference marked thereon, in which—

Figure 1 is a front elevation; Fig. 2, a rear elevation; Fig. 3, a transverse section through the line U V, and Fig. 4 a longitudinal section through the center.

The purest and best flour is made by first crushing and hulling the grain, (instead of first grinding it,) and separating the grits from the bran and offal, and then grinding such hulled grain or grits into flour and dressing it in the ordinary way; and the nature of my invention consists in so constructing the machine of a peculiarly-formed bolt and an air apparatus that it will take the mass as it comes from the crushing and hulling mill and separate the flour necessarily formed in the process of hulling and crushing, as well as the bran and offal from the grits, which are left pure and clean, when they may be ground into flour and dressed in the ordinary way.

A is the bolt, which may be of the ordinary form and be operated in the usual way; but the cloth is required to be of different grades or degrees of fineness, the divisions of which are indicated by the Figs. 1, 2, 3, 4, and 5. The finest cloth is used on division 1, and so on. Division 1 is covered with cloth No. 7, division 2 with cloth No. 1 or 2, division 3 with cloth No. 0, division 4 with cloth No. 00, and division 5 with cloth as much coarser than No. 00 as the latter is coarser than No. 0; but other suitable grades may be used, and the bolt may be divided into a greater or less number of divisions. The hulled or crushed grain is conveyed to the bolt in the usual way, and enters by the hopper A'.

The first division of the bolt, being the finest, passes nothing but the "fine" flour necessarily made in hulling and crushing the wheat. This fine flour falls upon the hopper C, and passes out through the spout C'.

The "middlings" pass through the second

division of the bolt and fall upon the hopper C², and pass down the spout C³ to the conveyer R, to be remixed with other parts of the crushed grain for regrinding.

The hulled grain or grits pass through the other divisions of the bolt, and the bran and offal are separated therefrom in the manner now to be described.

B is a fan for forcing air into the separating apparatus through the passages B' B' B' B', (the amount and direction of which may be controlled by the valves B² B²), and thence through the apparatus B³ B³ B³, which apertures have each a valve, B⁴, therein, to regulate, by means of the adjusting-screw B⁵, the amount of air which may pass through. The course of the air is indicated by the arrows in black.

The fan may be of any form for forcing a light current of air, and may be set in motion by any suitable machinery.

D D' D² are hoppers on which the grits fall from the divisions 3, 4, and 5 of the bolt, respectively. Under these are a series of smaller hoppers, O O O O. The currents of air entering at B³ B³ B³ striking the descending grits blow over the lighter parts upon the other series of hoppers, O' O' O' O', and the still lighter or the bran and offal beyond and into the spouts G G and T, respectively. The bran or offal which enters G G passes out at the spout G'. The course of the grits and bran is indicated by the arrows in red.

The hoppers O and O' have each a regulator, P P, affixed to the upper edge in such manner as to permit of their being turned in any direction from horizontal to vertical, to regulate the quantity of light grits, bran, or offal which may pass over.

The heavier grits which fall from D and D' pass from the hoppers O O into the screens or sieves Q Q', to which a vibrating motion is given from the fan, (by means of the connecting-rod Q², or by any other suitable means,) and through which they pass into the hoppers I and I', respectively, and out by the spouts I² and I³, where they may be collected to be used in that form, or may fall into the hoppers I⁴ and I⁵, and thence into the conveyer S, to be reground. The offal or bran which passes through or out of the sieves Q and Q' is blown into the spout G² and passes down to the con-

veyer R. The grits which have been blown upon the hoppers O' O' O' O' fall into the hoppers H and H' and pass into the spouts H² and H³, and thence into the conveyer R.

The coarsest grits which fall from the hopper D are separated and cleaned in the same manner, the heaviest falling into the hopper K and the lightest into the hopper K', while the bran is blown into the spout T, as already stated. The grits in hopper K' pass into the spout L, and thence into the conveyer R.

The hopper K is divided longitudinally into two hoppers, and the mouth of either side may be closed alternately by the fly or valve K², and the grits taken out of the spout K², in order to be again passed through the hulling or crushing stones, if necessary, or they may be passed into the spout L and then to the conveyer R, to be mixed with the contents to be reground.

The bran and uncrushed or unhulled parts which pass out of the end of the bolt fall on the hopper D³, and thence into the spout F', and thence into the spout F', which connects with the spout L. The air which has been forced in by the fan, when it has performed its duty passes out by the spout M, the outer end of which is between the spout F and the top of the spout F', (which has a regulator, P', at the outer edge, like the regulator P on the hoppers O and O',) and blows off all the bran and other light stuff, and the grits pass down F' and L into the conveyer R.

W, W', and W² are openings in the case, with

movable covers to permit the interior to be examined and the parts adjusted, and N N N are like openings for the like purpose, and to permit the regulators P P P to be adjusted.

It will be seen that the apparatus separates the grits into three grades. The hopper I produces the finest, or No. 1; I', the next finest, or No. 2; and K, the coarsest, or No. 3. For the purpose of obtaining the very finest of flour the grits, either separately or all together, are ground over again by common millstones in the ordinary way and dressed in the ordinary bolts. The next grade of grits which passes the hopper K' and the "middlings," and other parts which have passed into the conveyer R are together ground over also and dressed in a similar way, and form flour No. 2, the first flour which passed through the first division of the bolt being No. 3.

The valves B² and B³ and the regulators P P and P', though adding to the perfection of the apparatus and the character of its products, may be dispensed with.

I claim—

The combination and arrangement of the bolt, constructed and operating as described, and the air apparatus, also constructed and operating as described, for the uses and purposes mentioned.

JOHN BROWN.

Witnesses:

E. MUNSON,
J. G. CROCKER.