S. HEFLEBOWER.

Flour Bolt.

No. 48,684. Patented July 11, 1865.

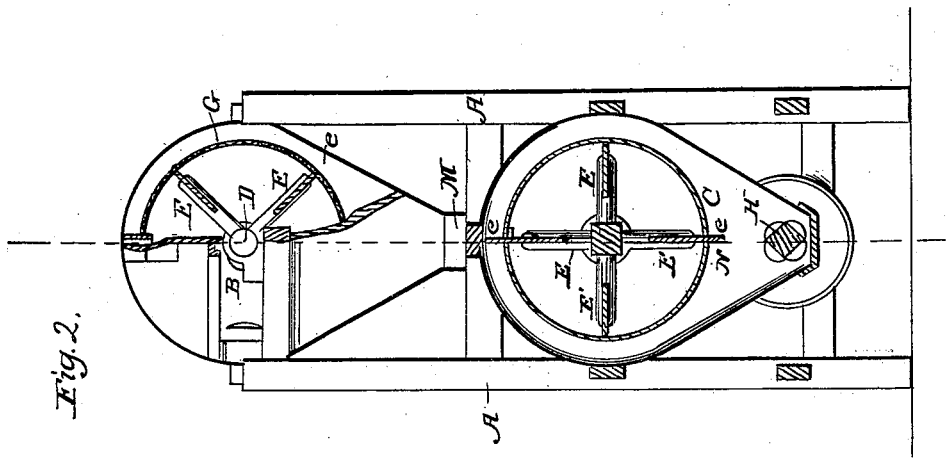

Fig. 2.

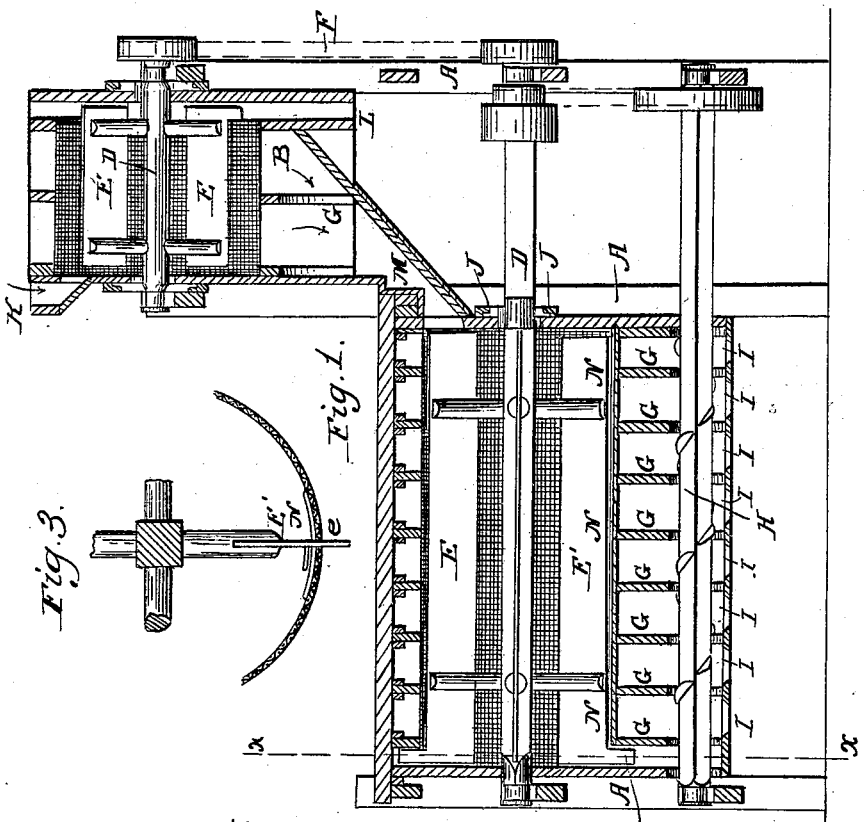

Fig. 1.

Fig. 3.

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UNITED STATES PATENT OFFICE.

SAMUEL HEFLEBOWER, OF ALEXANDRIA, VIRGINIA.

IMPROVEMENT IN FLOUR-BOLTS.

Specification forming part of Letters Patent No. **48,684**, dated July 11, 1865.

To all whom it may concern:

Be it known that I, SAMUEL HEFLEBOWER, of the city and county of Alexandria, and State of Virginia, have made certain new and useful Improvements in Flour-Bolts; and I do hereby declare the following to be a full, clear, and exact description of the nature, construction, and operation of the same, reference being had to the annexed drawings, making part of this specification, in which—

Figure 1 represents a longitudinal vertical section, and Fig. 2 is a transverse vertical section on the line *x x*, Fig. 1. Fig. 3 is an enlarged view of a portion of the fan and bolting-surface.

Similar letters in each figure refer to like parts.

My invention principally consists of a suction-fan or a set of wings placed at the tail end of a bolt upon the fan or frame which revolves inside of the casing, to which the bolting-cloth is attached. These wings, fans, or projections *e* extend outwardly beyond the periphery of the fans, which revolve in immediate proximity to the bolting-cloth, so as to cause an outward or centrifugal blast and a motion of air through the bolt toward the tail end, and assist in the removal of the contents of the bolt, thus preventing clogging. There are some other points which will be apparent as the description is more fully made out.

To enable one skilled in the branch of industry to which my invention belongs to fully understand and use the same, I will describe it in detail.

A is a frame, in which are secured two inclosed chambers, B C, which constitute what I term a "separator" and a "bolt," respectively. Each of these is furnished with a shaft, D, on which are wings E E′, the under ends of which, or some of which wings, are curved, so as to dip up the material exposed to their action. The shafts are driven by a belt, F, and the fans revolve within cylindrical spaces bounded by wire-cloth or bolting-cloth, the annular space around the cloth of chamber C being divided by partitions G, so that the various qualities passing through the meshes, which decrease in fineness from the head to the tail of the bolt, are separated, and by means of the conveyer H are discharged from the orifices I. At the tail end of the bolt the wings E′ are prolonged radially, *e*, and occupy the last of the spaces in that direction, the effect of which is to constitute them blowers, giving a determination of the air within the bolt toward that end and feeding the material along, so as to assist in preventing choking. Some air will come into the machine with the meal. More is admitted as may be necessary by opening the shutters J at the head end of the bolt. The red arrows will indicate the course of the meal, which enters at the opening K, passing into the separator or upper portion of the apparatus, which is used for removing all large or foreign matter which may pass from the meal-spout—such as dough-balls, bugs, &c.—before the meal passes to the bolt proper, where the flour is removed from the remaining offal. The separation of the above matters in this primary process very much facilitates the work, and also preserves the bolting-cloth from injury which may arise from foreign matters or from the depredations of the bugs, as well as from being clogged up by the contact with the dough-balls, which are occasionally aggregated in the meal inside of the hoop and sprout. The extraneous matter or accumulations are discharged at the opening L and received in any suitable manner, while the meal passes by the chute M to the bolt proper, where it is separated into the various grades, from fine flour to coarse offal, having by the means already adverted to a determinate inclination toward the tail of the bolt by means of the current of air in that direction. The air will—some of it—come down with the meal; but beyond this amount the quantity may be gaged by means of the shutters at the head end of the bolt, according to the state of the grain, the weather, or other circumstances which will retard or expedite the passage of the meal and offal. Such portions of the meal as fall to the lower surface of the bolt are caught upon a plate, N, Fig. 3, which is placed in immediate proximity to the bolting-cloth, and serves to prevent the injury of said cloth by the scrapers on the wings as they elevate the meal which may have settled to the bottom.

The bolting-cloth with which the frame is lined is of different degrees of fineness, as is usual, the fine grade being at the point at

which the meal is first introduced, and gradually becoming coarser toward the tail of the bolt. This is the ordinary plan, and not peculiar to my invention.

By using the apparatus which I am describing, the object of which is to facilitate the operation of bolting, I am able, in place of the bolting-cloth of fabric, to use a wire-cloth, which has heretofore been difficult of accomplishment, from the tendency of the flour to hang upon the meshes of the cloth. As a remedy for this, brushes are extensively used; but I aim in this improvement to render them unnecessary, as by the blast I introduce, in connection with the revolving fan and lifters, the whole circumference of the bolting-cloth is used, and the flour and finer offal blown through their appropriate cloths.

I am aware that a blast of air has been introduced into the interior of bolts before my application, and I make no claim to introducing a blast of air; but the gist of this part of my invention consists in the manner in which I induce and regulate the current of air to prevent the lodging of the contents of the bolt, and compel them, after having been successively exhibited to each of the grades of cloth which are employed to separate the respective qualities of flour and offal, to find their way to the tail of the bolt, when the remainder, which is too coarse to pass through the meshes, is discharged at the end. This remainder may be the bran, or bran mixed with another grade of offal, as desired, which will depend upon the fineness of the cloth, and this is a question of convenience, and will depend upon the requirements of the market or convenience of customers, or other matters which I need not attempt to anticipate.

The separator above may be made, in addition to the removal of extraneous matters, to separate the bran as well, leaving only the finer offal to pass with the flour to the bolt. This is a question of adjustment which may be arranged to suit the convenience.

The wings may be made spiral, instead of having the form represented, if so required.

The above-described apparatus, or either section of it, the meshes of the surrounding cloth being suitably proportioned, may be used as a bran-duster.

Having thus described my invention, what I claim therein as new, and desire to secure by Letters Patent, is—

1. Making a radial prolongation, *e*, to the wings of the fan at the tail end of the horizontal or nearly horizontal bolt, the said radial extension of the wing or wings beyond the periphery of the main portion of the fan being adapted to cause a current of air to be drawn through the bolt, in the manner and for the purpose described.

2. The plate N, Fig. 3, in combination with the scoop-shaped dippers.

To the above specification of my improvements in flour-bolts I have signed my hand this 15th day of March, 1865.

SAML. HEFLEBOWER.

Witnesses:

EDWARD H. KNIGHT,

JOHN C. COOKSON.