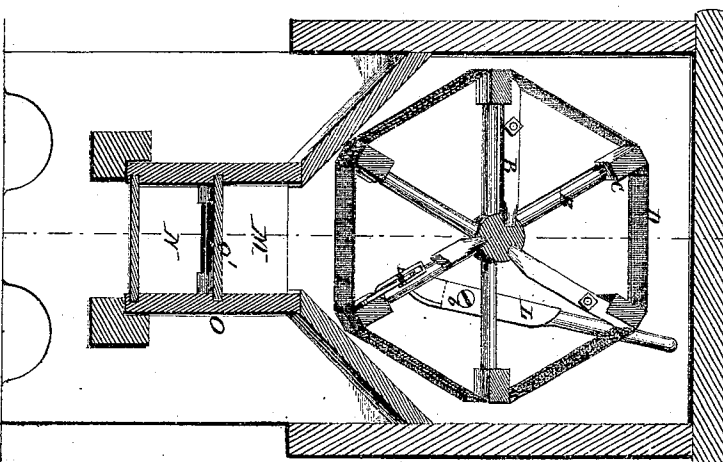
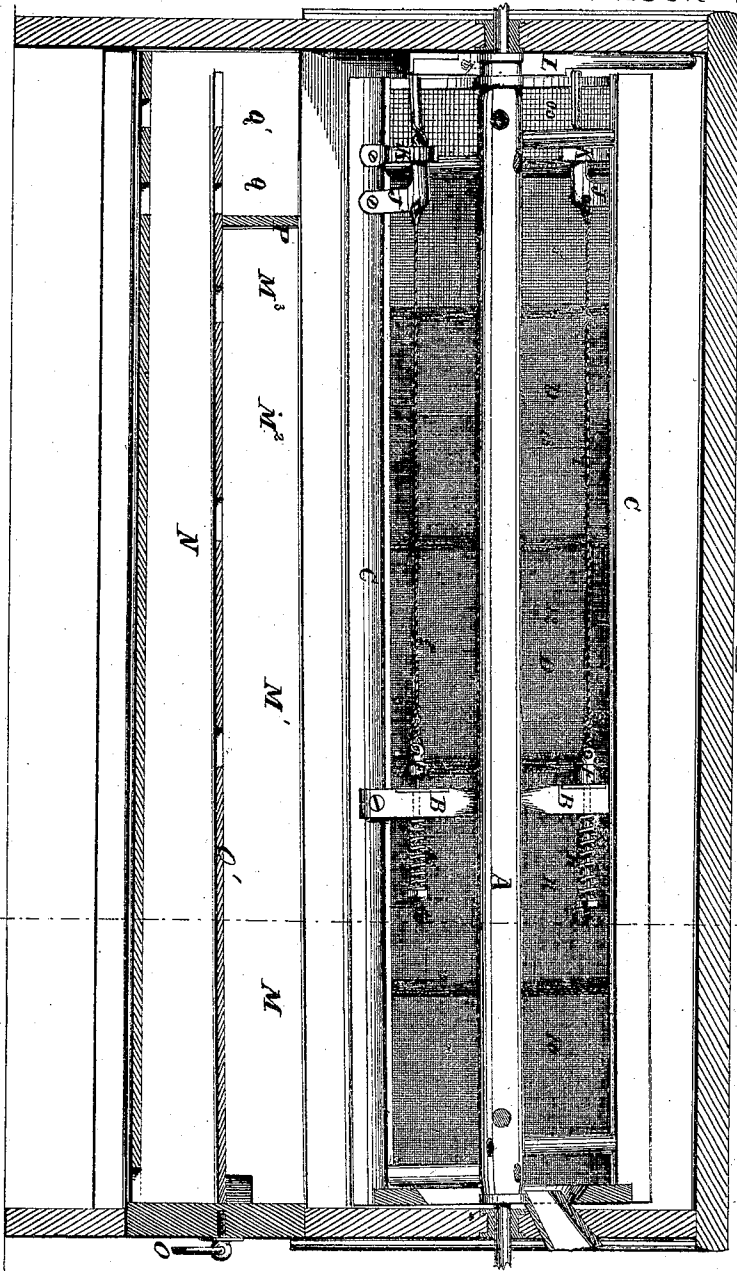
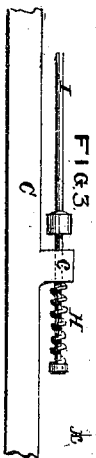


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Thy

UNITED STATES PATENT OFFICE.

JOHN CRAWFORD SMITH, OF ZANESFIELD, OHIO, ASSIGNOR TO HIMSELF,
SAMUEL BRADFORD SMITH, AND NATHANIEL STUART CREW, OF SAME
PLACE.

IMPROVEMENT IN FLOUR-BOLTS.

Specification forming part of Letters Patent No. 117,938, dated August 8, 1871.

To all whom it may concern:

Be it known that I, JOHN CRAWFORD SMITH, of Zanesfield, in the county of Logan and State of Ohio, have invented certain new and useful Improvements in Flour-Bolts, of which the following is a specification:

The invention consists: First, in the employment of a hammer or knocker having a stroke upon an attachment or projection from the rib in a direction longitudinal to the bolt, in contradistinction to radial or tangential thereto, as is usual. Second, in connecting the trigger and hammer by a twisted-wire cord. Third, in appliances for separating a portion of the offal and returning it with the return flour, as hereinafter specified.

Figure 1 is a longitudinal section of a flour-bolt illustrating my invention, the line $z z$ in Fig. 2 illustrating the plane of section. Fig. 2 is a transverse section of the same at $x x$, Fig. 1. Fig. 3 is a view of a fragment of one of the ribs, illustrating a modification of the mode of applying the hammer thereto.

The shaft A, radial arms B, ribs C, and casing E may be of common construction. The cloth D is stretched around and fastened to the ribs C in any common or suitable way, a number of different grades arranged in novel manner being employed.

This arrangement of the cloth is as follows: Commencing at the head of the reel with a section of No. 10 cloth, forty inches wide, more or less, I apply successively sections of Nos. 11, 12, and 13, each of about the same width; then a section about twenty-eight inches wide of No. 5 cloth and another of about thirteen inches of 00 cloth, as indicated in Fig. 1, or with Nos. 9, 10, 11, 12, 5, and 00 in the same proportions, to suit different burs. Sections 10 to 13, or their equivalents, will be understood as discharging flour, and sections 5 and 00 offal. Of the latter, from section 5, I propose returning a portion, say from one-fourth to two-thirds, as and for purposes hereinafter more fully described. The most approved mode of clothing reels now in use is to commence at the head of the reel with No. 8, No. 9, or No. 10 cloth running half-way, and then clothing the balance of the reel with one number finer. In double bolts the head of the second reel is clothed with the same number as the tail of the first reel, and the other half of the same with No. 6 or No.

7 cloth, and sometimes a small proportion of 000. The more chop in reels the slower they bolt. I thus, with my arrangement of four numbers of flour-cloth instead of two, obtain a more uniform bolt, from the fact that the nearer the tail of the reel proportionately the less chop there is for the bolting-surface. The finer numbers of cloth prevent specking. By this arrangement I am also enabled to return a portion of the "shorts" or "rounds," as before stated. This has a tendency to keep the cloth free and gives a portion of gluten in the flour, which adds to the quality and quantity, and which in the old method of bolting is lost.

F F are hammers, attached to rods G and provided with springs H, by which they are thrown forcibly against the arms B, if arranged as shown in Fig. 1, or against lugs c , projecting directly from the ribs C, as illustrated in Fig. 3. The retraction of the hammer necessary to produce this percussion is effected through the medium of cords I of twisted wire by means of triggers J. These may be formed as bell-cranks, working within guides K, and are operated by an adjustable tripping-cam, L, which constitutes a lever fulcrumed at l on the stationary casing E and within reach of the long arms of the triggers J, which project through the open end of the bolt-cylinder.

The adjustment of the tripping-cam back or forth determines the extent to which the successive triggers are moved, and thereby the force of the blow of the hammers. Different forms of tripping-cams may be employed, as preferred. By the arrangement illustrated in Fig. 3 I am enabled to locate the hammers in any part of the length of the rib, without placing an arm at that point. The longitudinal blow of the hammer is found much more effective in dislodging matter from the meshes of the cloth, and is less injurious to the reel or cloth than the radial or tangential blow which is commonly employed.

O represents a longitudinal drawer or equivalent provision to receive and distribute the flour, &c., as discharged by the reel. It is divided into two longitudinal compartments by a horizontal partition, O', the upper, M M' M' M' Q Q', constituting a conveyer-box, and the lower, N, a return-trough, and is supplied with a suitable arrangement of passages. P represents a cant-board, subdividing the conveyer-box.

Sections 10 and 11 of the bolting-cloth discharge flour into the conveyer-box at M, to be taken directly thence for use, while the successive sections, 12 13, discharge into the said box at M¹ and M², from whence the flour is conducted into the return-trough N to be carried back for retreatment. In order to mingle with this return flour a portion of the shorts or rounds, as stated, I employ the cant-board P to separate the offal discharged from section 5 of the bolt, so that a portion shall fall into the conveyer-box at M³, and be conducted to the return-trough N to mix with the return flour. One-third or more of the shorts from section 5 and the bran from section 00 passes through the conveyer-box at Q and Q', and through the return-trough N to an independent discharge. The cant-board P may be made adjustable, so as to divert in either direction a

larger or smaller proportion of the offal from section 5.

I claim as my invention—

1. The arrangement of the spring-hammers F with the lugs or arms B formed on or applied to the ribs, as herein described, to deliver their strokes longitudinally upon said lugs or arms.

2. The combination of the twisted-wire cords I, triggers J, and spring-hammers F, substantially as and for the purposes set forth.

3. The arrangement of the bolting-cloth D, conveyer-box M M¹ M² M³ Q Q', cant-board P, and return-trough N, constructed and operating substantially as and for the purposes set forth.

J. CRAWFORD SMITH.

Witnesses:

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