

(No Model.)

3 Sheets—Sheet 1.

G. SUMMERTON. ROTARY BOLT.

No. 395,680.

Patented Jan. 1, 1889.

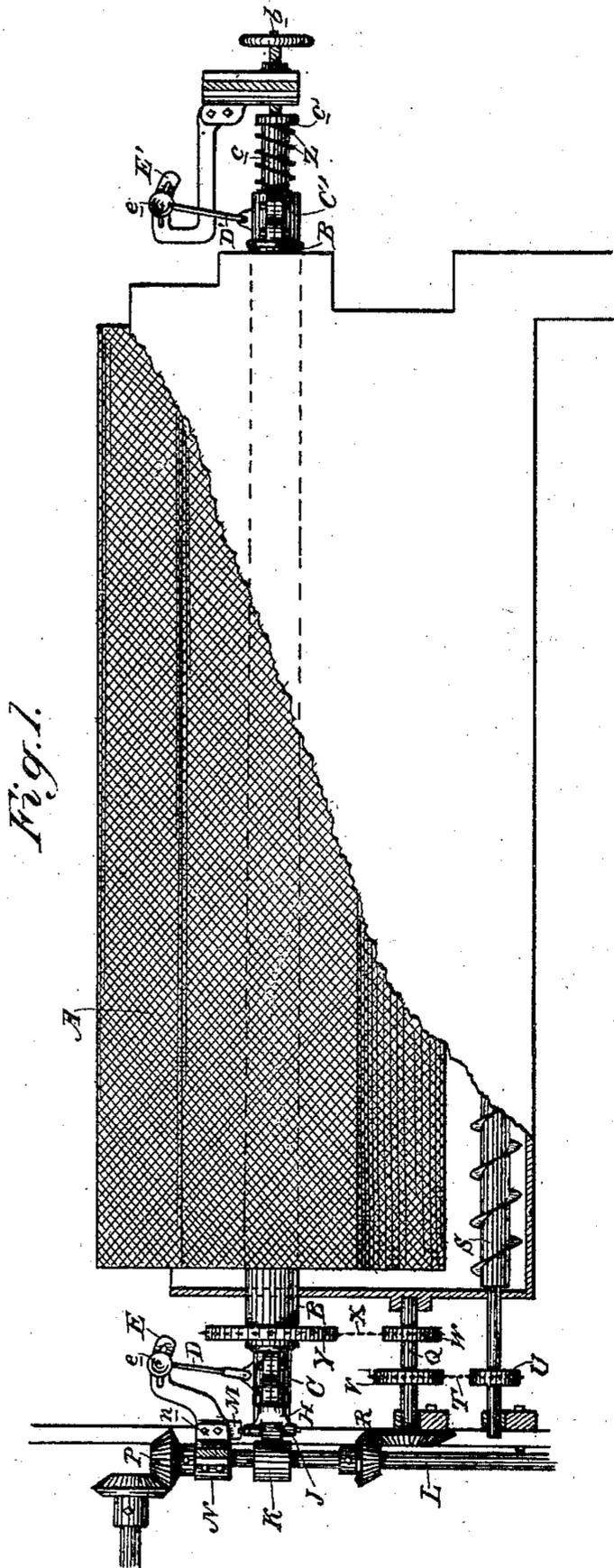


Fig. 1.

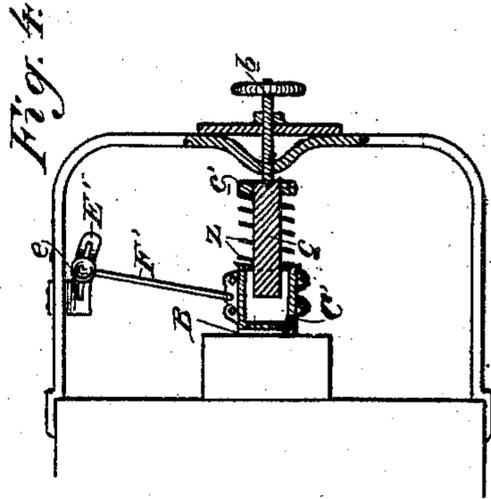


Fig. 4.

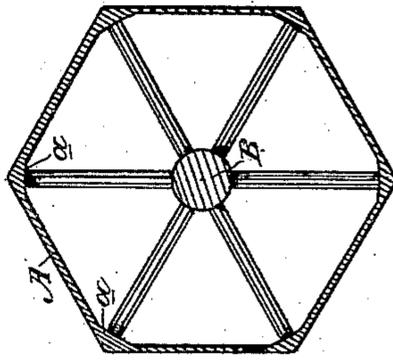


Fig. 2.

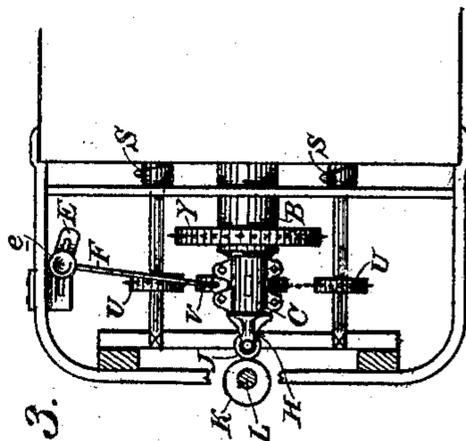


Fig. 3.

Witnesses,
Geo. H. Strong
J. H. House

Inventor,
Geo. Summerton
By
Dewey Co.
attys

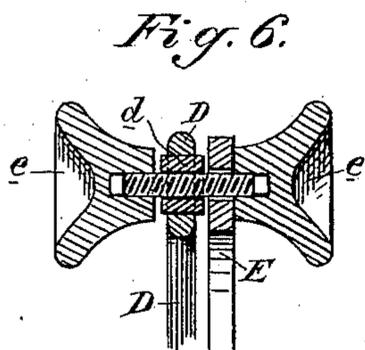
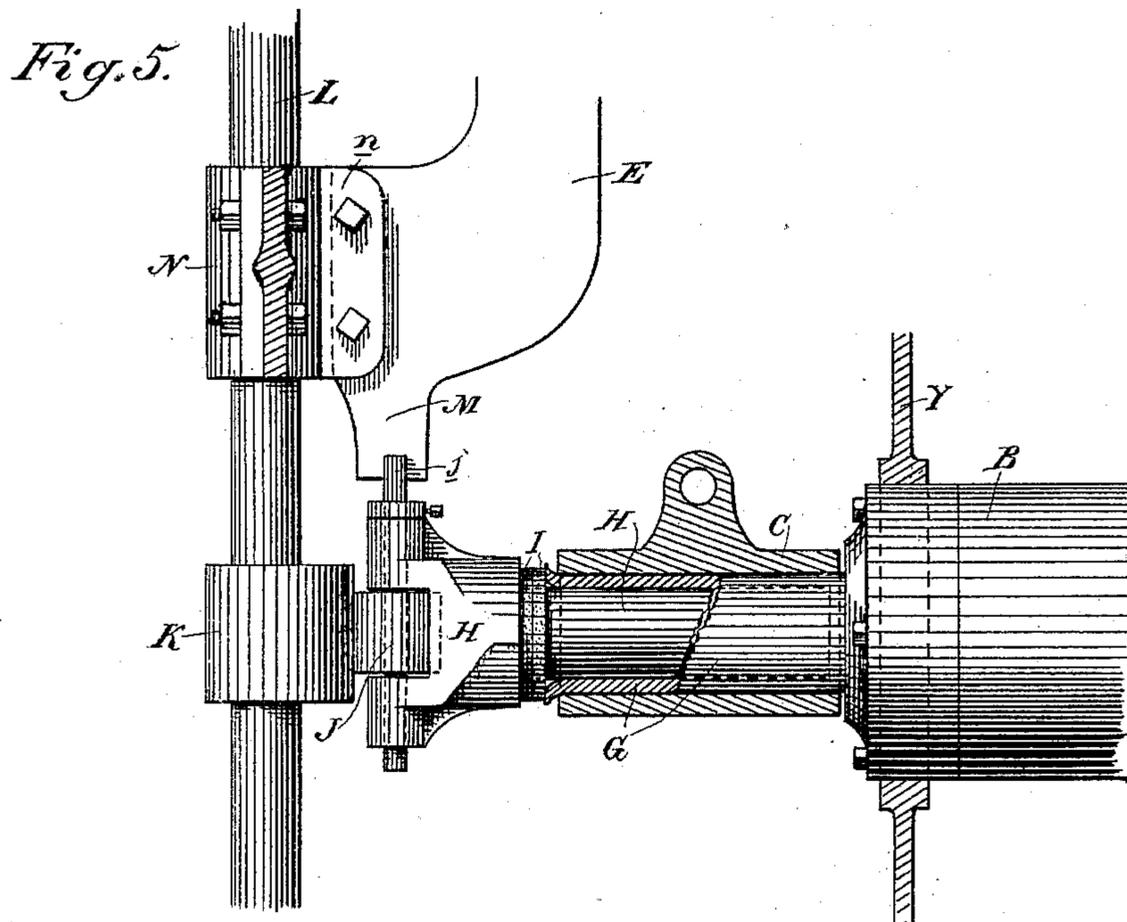
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By Dewey & Co.
attys

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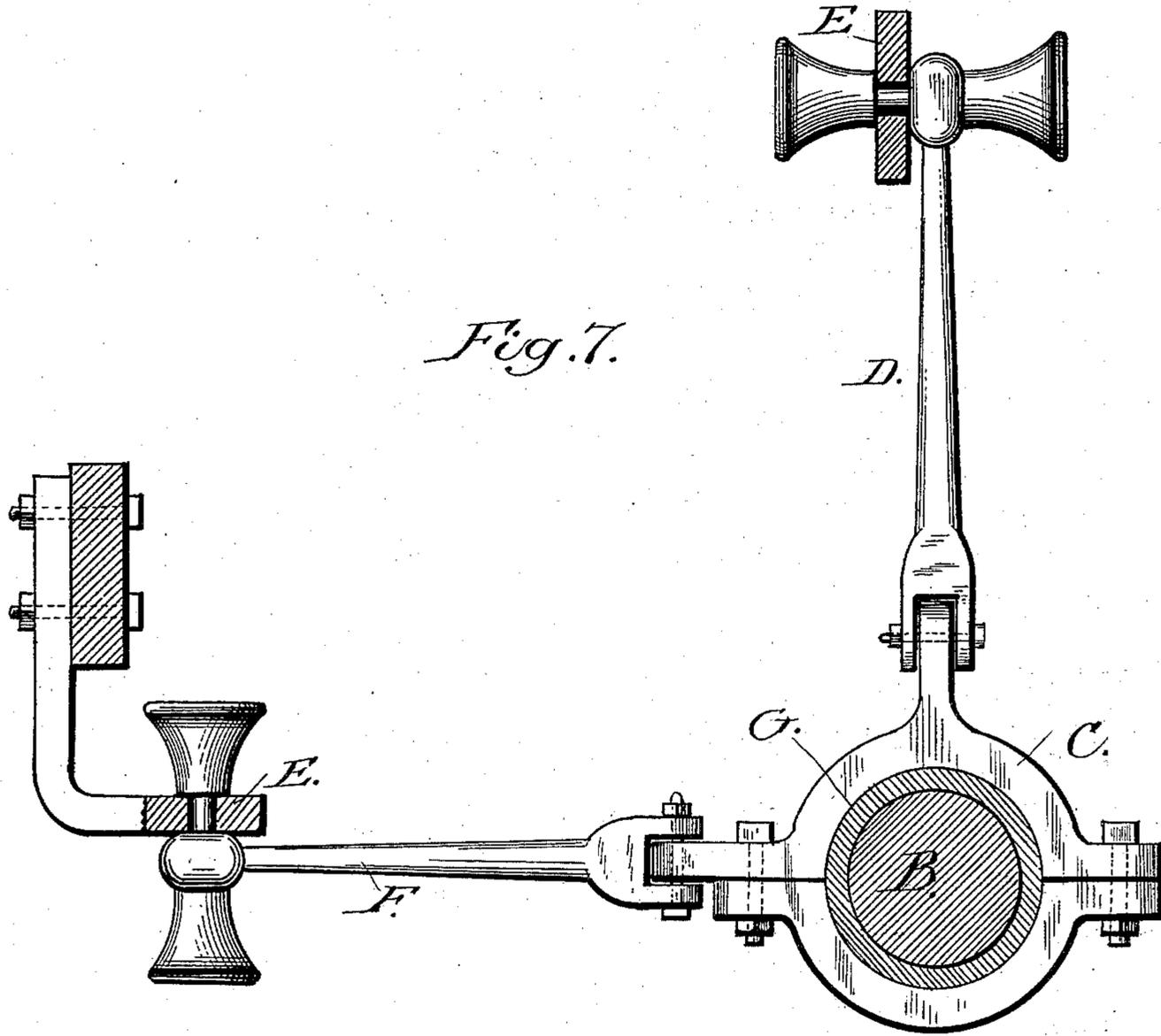
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WITNESSES.
J. W. Fowler,
W. H. Patterson

INVENTOR,
Geo. Summerton,
by Dewey & Co
his Attorneys.

UNITED STATES PATENT OFFICE.

GEORGE SUMMERTON, OF SAN FRANCISCO, CALIFORNIA.

ROTARY BOLT.

SPECIFICATION forming part of Letters Patent No. 395,680, dated January 1, 1889.

Application filed March 15, 1888. Serial No. 267,270. (No model.) Patented in England September 15, 1887, No. 12,532.

To all whom it may concern:

Be it known that I, GEORGE SUMMERTON, of the city and county of San Francisco, State of California, have invented an Improvement in Bolting-Machines, (for which I have obtained English Patent No. 12,532, dated September 15, 1887;) and I hereby declare the following to be a full, clear, and exact description of the same.

My invention relates to improvements in bolting-machines for flour and other materials; and it consists in the constructions and combinations of devices which I shall hereinafter fully describe and claim.

Figure 1 is a side elevation of the bolt and connected mechanism. Fig. 2 is a transverse section of the bolt. Figs. 3 and 4 are plan views of the front and rear ends, showing the connected mechanism. Fig. 5 is a detail view of the end shaking device. Fig. 6 shows the manner of suspending the boxes of the bolt-shaft. Fig. 7 is a detail illustrating the shaft of one of the journal-boxes, the vertical and horizontal links connected therewith, and the slotted hangers and the locking-nuts.

A is a bolt, which is made hexagonal or any suitable form; but instead of having inwardly-projecting ribs at the angles, as in the usual form of construction, I make an interior of flat plates *a* in each of the angles, so that a transverse section of the interior will present six wide and six narrow surfaces. This bolt is suspended in a horizontal position, instead of at an incline, as in ordinary use, and in the following manner: B is the shaft by which it is rotated, the ends of the shaft extending into the journal boxes or supports C, within which the shaft turns. These journal-boxes are suspended by links D from the hanger E, and they have other arms, F, extending horizontally from their sides, the arms being connected with the boxes by means of lugs projecting from the latter. The arms D and F are made adjustable in slots in the hangers or points of connection, so as to vary the angle of suspension and support. This regulates the travel of the material through the bolt and causes it to travel faster or slower at will. The bolt, being suspended in this manner, is caused to rotate, and has also an end shaking motion produced by mechan-

ism hereinafter described, so that it swings endwise about its vertical suspending-rods, moving in a small arc of a circle, and also having a slight side motion in a small arc of a circle, on account of the horizontal rods F.

The shaft B has a hollow trunnion, G, extending from one end into the journal-boxes C, and the bracket H has a pin, which extends into the trunnion G, within which it is supported without turning, while the trunnion turns with the bolt and its shaft. Washers I are introduced between the end of the rotating sleeve G and the shoulder of the bracket H to relieve friction. The bracket H carries the roller J, and this turns in contact with the eccentric K upon the vertical driving-shaft L, so that by the rotation of the shaft L and the eccentric an end reciprocating motion is produced, the bolt swinging upon its suspending-links D, as above described.

In order to prevent the bracket H, in which the roller J is journaled, from turning around by reason of the rotary motion of the shaft-trunnion G, within which it is supported, the upper end of the bracket, or the journal-pin *j* of the roller J, lies against a downwardly-projecting extension, M, of the hanger E, which prevents its turning over in the direction of the rotation of the shaft B.

The hanger E is bolted upon a vertical flange, *n*, cast on the upper journal-box, N, of the vertical shaft L. This shaft L receives motion from the horizontal driving-shaft by means of the bevel-gear P, and in turn communicates motion to the counter-shaft Q by means of the bevel-gearing R. The conveying-screws S below the bolt are driven by means of the chain T, passing around the sprocket-wheels U upon the screw-shafts and V upon the counter-shaft Q. Another sprocket-wheel, W, upon the counter-shaft Q gives motion to a chain, X, which in turn drives the sprocket-wheel Y upon the shaft B, and in this manner the rotation of the bolt is effected.

The end motion of the bolt is produced, as above described, by the action of the cam or eccentric K upon the vertical shaft L, and as the opposite end of the bolt is suspended by links F' and D' from the bracket E' in the same manner both ends will swing alike. In

order to return the bolt as the eccentric recedes, I employ a spiral spring, Z, which is fixed at the opposite end of the bolt from the eccentric and presses against the journal-box at that end. This spring has its tension regulated by means of the screw *b*, passing through a bracket and into the guide-rod *c* of the spring Z, the latter acting against a collar, *c'*, on one end of the rod *c*, and the other end presses against the edge of the box C'. This rod extends into the trunnion formed by the box C', and is guided therein. By this the spring may be more or less compressed, so as to cause a quicker action of the bolt.

The links D have a hole in the upper end, and this hole fits a sleeve or collar, *d*, upon the pin which passes through the slot in the bracket E. Nuts *e* upon the end of the screw-pin serve to lock it at any desired position within the slot, and as they screw up against the ends of the collar *d* they do not bind or press upon the rod D, so as to prevent its swinging freely.

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

1. A bolting-machine comprising a bolt having a shaft, mechanism for rotating said bolt, journal-boxes in which the journals of the shaft turn at opposite ends of the bolt, horizontal and vertical links loosely connected with the journal-boxes, and slotted hangers, in which the outer ends of said links are adjustably secured, substantially as herein described.

2. A bolting-machine comprising a bolt, a shaft, suspended journal-boxes at opposite ends of said shaft, vertical and horizontal links loosely connected with said boxes, slotted hangers, to which the outer ends of the links are adjustably connected, whereby the

angle of suspension of said bolt may be varied, and means for imparting a reciprocation to the shaft and a rotary movement to the bolt, substantially as herein described.

3. The suspended journal-boxes at opposite ends of the rotary bolt, the shaft having hollow trunnions extending into said boxes, in combination with the bracket having a stem or spindle extending into the hollow trunnion, and having the roller J journaled vertically in its outer end, and the cam or eccentric K, mounted upon the vertical driving-shaft and turning in contact with the roller J, so as to produce an end oscillation or shake of the bolt, substantially as herein described.

4. The horizontal rotary bolt having the ends of its shaft journaled in boxes suspended by links from above, the bracket carrying the anti-friction roller J, and the eccentric or cam from which an end shaking motion is transmitted through the bracket and journal-boxes to the bolt, in combination with the depending plate, against which the upper end of the shaft of the roller J travels, and by which the bracket is retained in its upright position, substantially as herein described.

5. A bolting-machine comprising the horizontal rotary bolt, the suspended swinging boxes at the ends thereof, a shaft journaled in said boxes, horizontal links connected with the boxes and with a fixed support, a cam or eccentric at one end of said bolt, and a spring at the opposite end, whereby an end shaking or oscillating motion of the bolt is produced, substantially as described.

In witness whereof I have hereunto set my hand.

GEORGE SUMMERTON.

Witnesses:

S. H. NOURSE,
H. C. LEE.