

SPENCER LEWIS.  
Improvement in Flour-Bolts.

No. 127,617.

Patented June 4, 1872.

Fig. 1

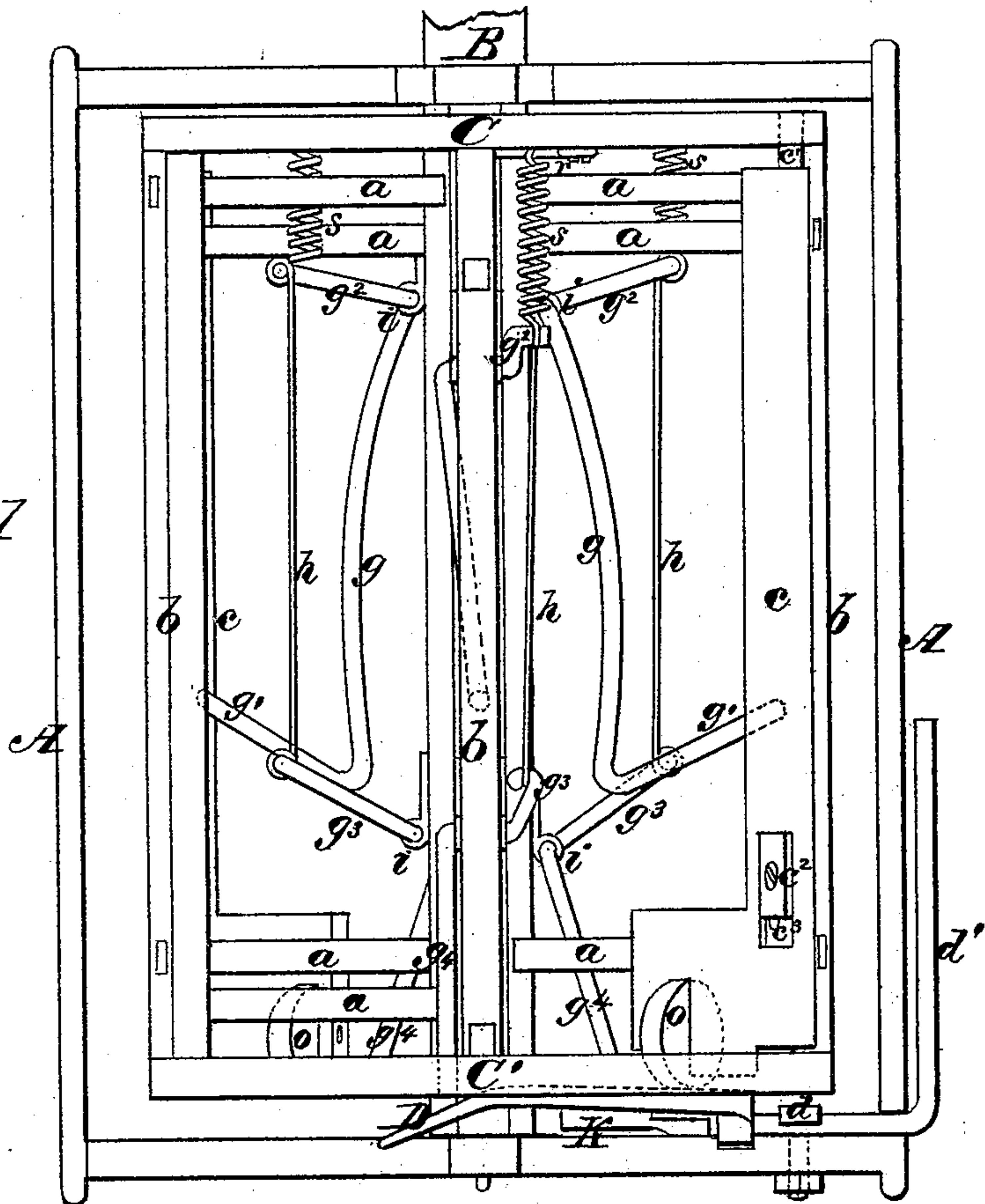
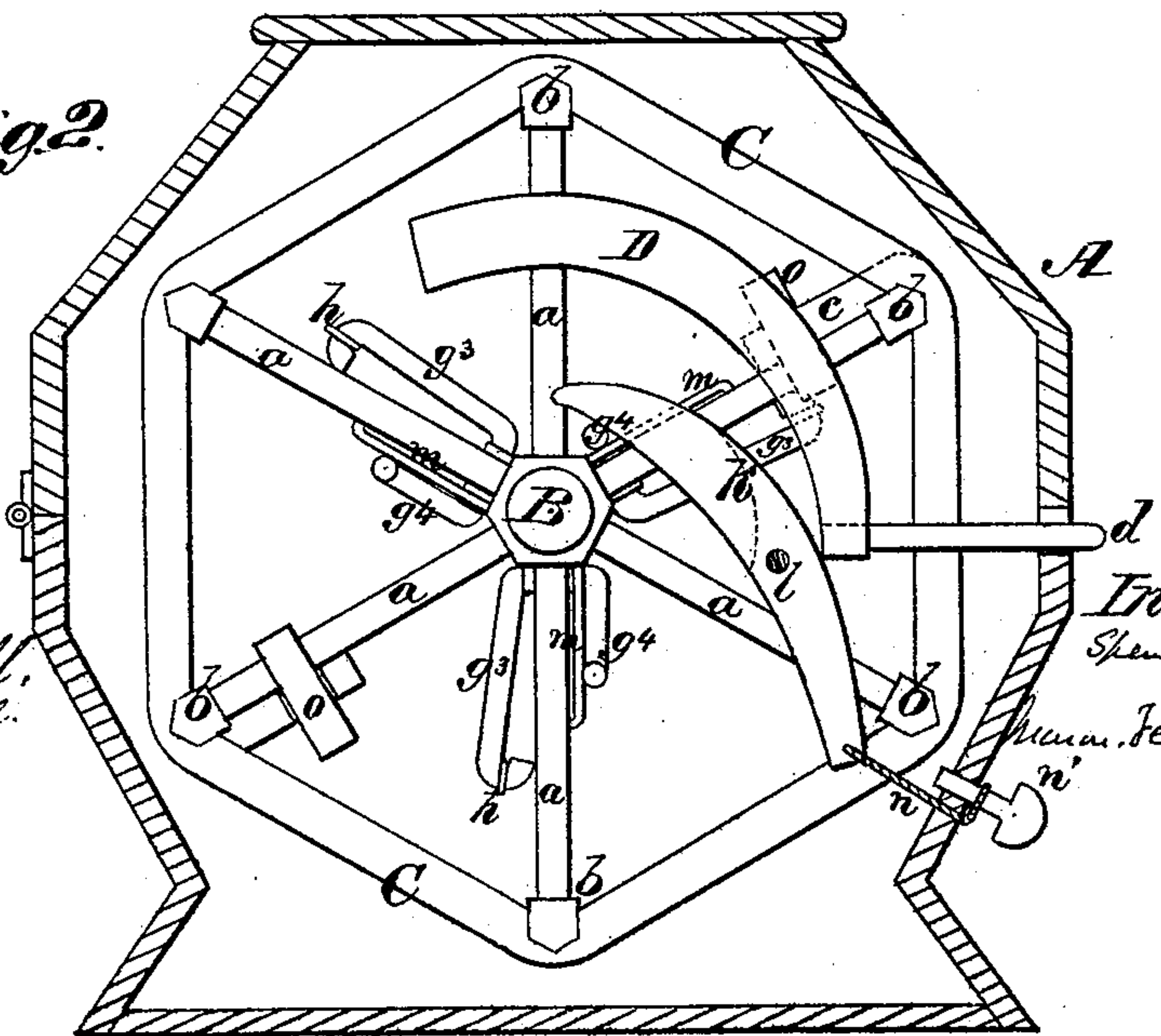


Fig. 2



Witnesses,  
R. T. Campbell,  
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Munroe, Fenner & Co. Attorneys

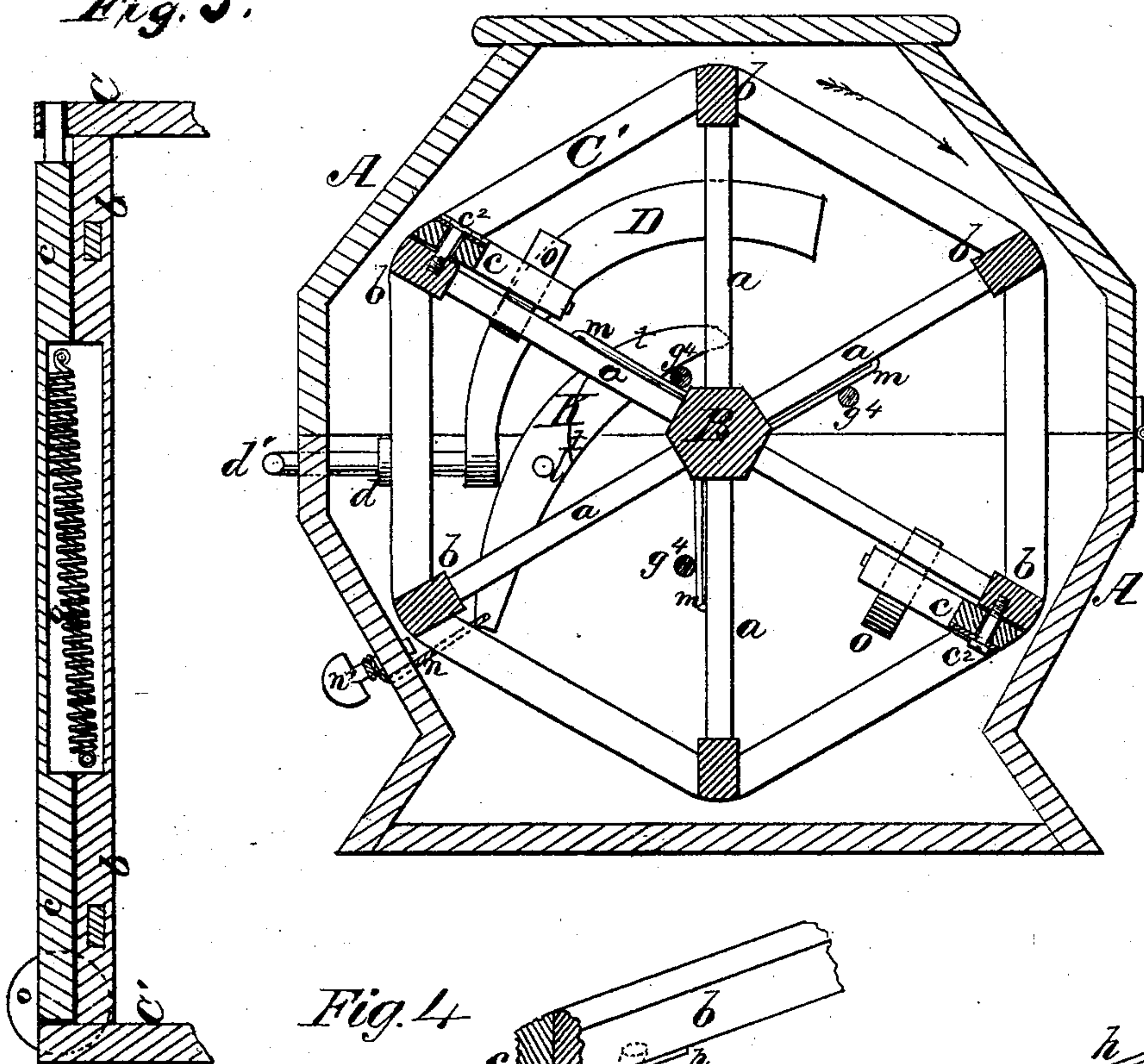
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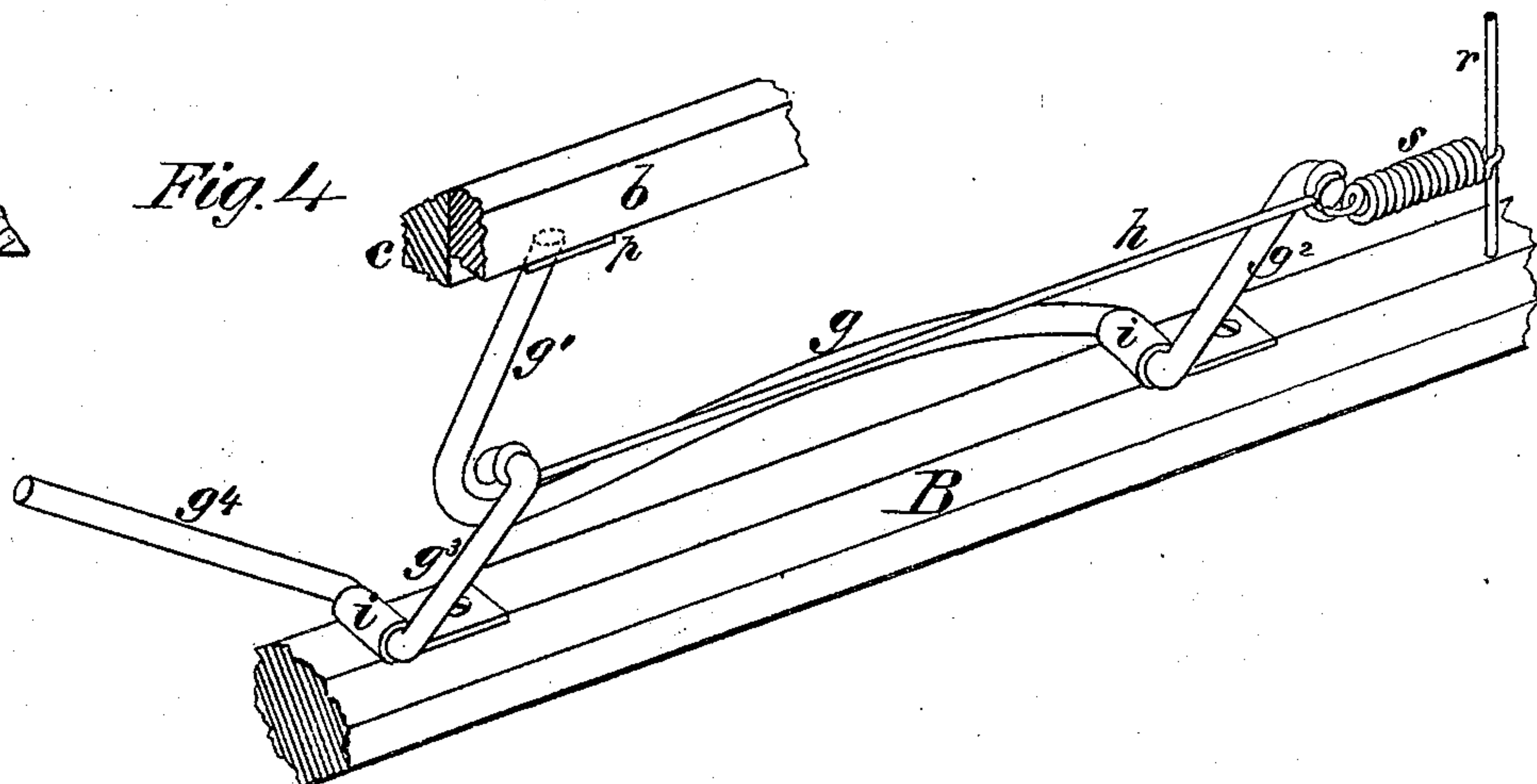
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*Fig. 3*

*Fig. 5.*



*Fig. 4*



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# UNITED STATES PATENT OFFICE.

SPENCER LEWIS, OF TIFFIN, OHIO.

## IMPROVEMENT IN FLOUR-BOLTS.

Specification forming part of Letters Patent No. 127,617, dated June 4, 1872.

*To all whom it may concern:*

Be it known that I, SPENCER LEWIS, of Tiffin, in the county of Seneca and State of Ohio, have invented certain new and useful Improvements on Flour-Bolts; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawing making part of this specification, in which—

Figure 1, Plate 1, is a top view of the bolt and lower half of the case, the cloth being removed from the reel. Fig. 2, Plate 1, is a view of the reel, its case, and the cams for operating the regulating slats and knockers, as seen by removing one end of the reel-case. Fig. 3, Plate 2, is a section taken vertically and transversely through the reel and its case, looking toward that end of the latter in which the cams are arranged. Fig. 4, Plate 2, is a perspective view, showing one of the knockers applied to the reel-shaft. Fig. 5, Plate 2, is a section of a reel-rib and movable slat.

Similar letters of reference indicate corresponding parts in the several figures.

The objects of my invention are, first, to employ inside of a bolting-reel one or more devices which will successively elevate the material being bolted, and at the same time that it is elevated move it a greater or less distance backward; thereby, when the flour will not pass freely through the bolting-cloth on account of damp weather or from any other cause, the material can be retained longer inside of the bolt and subjected to a greater number of revolutions therein than would be required under ordinary circumstances, as will be hereinafter explained; second, to construct the device by which the said slats are moved, so that they may be given longer or shorter strokes, or so that their endwise motion may be stopped, without stopping the revolution of the reel; third, to employ knockers of a single piece of wire bent in the proper shape to form striking portions and crank-arms, and combined with springs, cam-strikers, and connecting-rods, as will be hereinafter explained; fourth, to so construct the adjustable cam which actuates the knockers that the reel may be rotated backward without injury to these knockers, as will be hereinafter explained.

The following description will enable others skilled in the art to understand my invention:

In the accompanying drawing, A represents the reel-case, which incloses the reel and affords journal-bearings for the ends of its shaft B. The reel, like others which are well known, consists of two open heads, C C', which are connected together at a suitable distance apart by means of slats or ribs *b*, which latter are connected to the shaft B by arms *a* radiating therefrom. The bolting-cloth around this reel is fastened in the usual well-known manner. To one, two, or more of the ribs *b* I apply the following device: *c* represents a narrow slot or strip of wood or other material, which is made to slide endwise upon one of the ribs *b*, and which is kept in place on this rib by means of a screw, *c*<sup>2</sup>, and a pin, *c*<sup>1</sup>, shown in Fig. 1. The screw *c*<sup>2</sup> passes through an oblong slot, *c*<sup>3</sup>, made through the strip *c* and enters the rib, and the pin *c*<sup>1</sup> plays freely in a hole made through the end ring C. The strip *c* receives endwise movements during the revolutions of the reel from a long curved cam, D, and from a spring, *q*. The cam D is concentric to the axis of the shaft B, and is secured fast at its lower end to a horizontal transverse rock-shaft, *d*'. This shaft *d*' extends outside of the case A, and is bent at right angles to itself, as shown in Fig. 1. The bearing *d* of this rock-shaft *d*' allows it to be oscillated. That end of the strip *c* nearest the cam D is enlarged and provided with an anti-friction wheel, *o*, which presses, by the action of the spring *q*, against the cam D, when the latter is brought within its range. The spring *q* is recessed into the abutting surfaces of the strip *c* and slat *b*, so as to be completely inclosed, as shown in Fig. 5. The devices for jarring the reel during its revolutions consist of vibrating knockers which strike against anvils *p* secured on the inner edges of the slats and cranked arms, which are acted on by a curved cam, K. Each knocker is composed of a round or prismatic rod of suitable gauge, which is bent so as to form a striking arm, *g*<sup>1</sup>, a shank, *g*, a pivotal portion and a crank-arm, *g*<sup>2</sup>. This device is connected by an eye-bearing to the reel-shaft, as clearly represented in Fig. 4. To the bent end of the arm *g*<sup>2</sup> one end of a spring, *s*, is connected, the other end of which is connected (under tension) to a rod, *r*, which is secured to the reel-shaft and to the head C. The end of the striking-arm *g*<sup>1</sup> is thus held by spring



s in contact with its anvil *p* on rib *b*. To the bent end of arm  $g^2$  one end of a rod, *h*, is also connected, the other end of which rod is connected to the bent end of a crank-arm,  $g^3$ , which is attached, by an eye-bearing, *i*, to the reel-shaft near the discharging-end of the reel. The rod of which the arm  $g^3$  is formed is extended through the eye-bearing and bent forward and downward so as to form an arm,  $g^4$ , as shown in Figs. 1 and 2 and 4, the end of which is within range of the cam K.

It will be seen that when the arm  $g^4$  is pressed toward the shaft B the striking-arm  $g^1$  will be drawn away from its anvil, and that when the arm  $g^4$  is suddenly released the spring *s* will forcibly throw the arm  $g^1$  against its anvil and jar the reel.

This knocking device is wholly made up of bent wire, and is not only perfect in its operation, but it is durable and cheap. It may be applied to every other reel-rib or to all of the ribs of the reel. The cam for actuating the knockers is made adjustable—that is to say, it is pivoted to the case A at *l*—and its lower end is connected by a cord or chain to a key or other adjusting device outside of the reel, so that the miller can regulate the force of the blows of the knockers or stop their action altogether, as circumstances may require. This cam K is curved eccentrically to the axis of the shaft B, and as the arms  $g^4$  are moved around with the reel in the direction indicated by the arrow in Fig. 3 the ends of these arms are successively brought in contact with the under surface of cam K, (the latter being in the position shown in Figs. 2 and 3.) They are thus depressed, and, on leaving the cam, are suddenly thrown out by the springs *s*. This operation produces the knocking and jarring of the reel. Should the reel be rotated backward from any cause, such as usually occurs in the starting of an engine if steam be employed as the motive power of a mill, the arms  $g^4$  will pass freely over the upper convex surface *t* of the cam K, and will not meet with any obstruction whatever.

The greatest feature of my invention is that of regulating the escape of the material being bolted from the discharge end of the reel—that is to say, preventing its discharge until it is thoroughly bolted—by means of the movable elevating-slats *c*, which, as they successively raise the material from the lowest to the highest point of the reel, move it backward toward the ring C a greater or less distance

according to the inclination given to cam D. This causes the material to be acted on a greater number of times on its way through the reel than would be the case were the slats *c* not employed. In dry weather, when the flour will pass more freely through the bolting-cloth, the cam D may be moved so that the rollers *o o* will not impinge against it in their revolution about the axis of the reel-shaft; thus the slats *c* will not receive an endwise motion; and should it not be desired to actuate the knockers the key *n'* is turned back so as to unwind the cord *n* from it and allow the cam K to recede from the arms  $g^4$ .

I do not limit my invention to the precise arrangement and construction of the regulating elevating-slats *c*, nor to any definite number of them in a reel, as the successive moving back of the material being bolted may be accomplished by means equivalent to that described for this purpose.

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

1. One or more elevating slats or devices, *c*, arranged within a bolting-reel and receiving endwise movements during the revolution of the reel, said device or devices operating so as to retard the passage of the material being bolted from one end to the other of the reel, substantially as described.

2. The adjustable cam D, combined with one or more reciprocating retarding slats, *c*, whereby the strokes of the latter can be lengthened or shortened at pleasure or can be made to cease altogether, substantially as described.

3. The slats *c* applied on the ribs *b*, and operating substantially as described.

4. A knocker, which is composed of an arm,  $g^2$ , a shank, *g*, and a striking portion,  $g^1$ , composed of a single piece, in combination with spring *s*, rod *h*, and the cranked portion  $g^3 g^4$ , substantially as described.

5. The concavo-convex cam K, when combined with the knocking devices of a reel, substantially in the manner described, to permit the reel to revolve backward without obstruction and without stopping its motion or requiring an adjustment of the cam, as set forth.

Witness my hand in matter of my application for a patent for improvement in flour-bolts.

SPENCER LEWIS.

Witnesses:

EDM. F. BROWN,  
JAMES MARTIN, Jr.