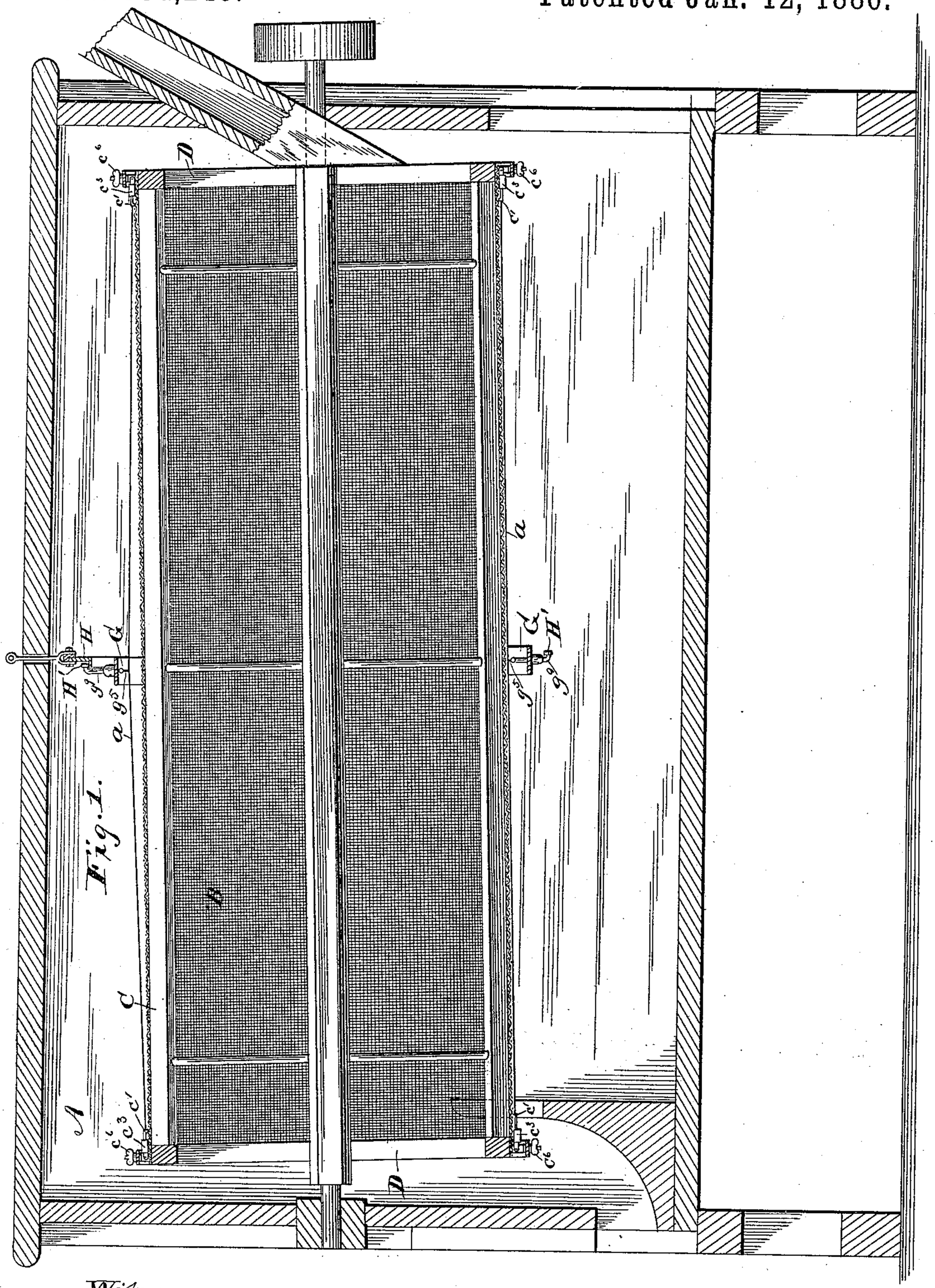
(No Model.)

3 Sheets—Sheet 1.

A. Y. LEAKE.

FLOUR BOLT.

No. 334,246. Patented Jan. 12, 1886.



Witnesses.

Chas. R. Burr

A. J. Stewart.

Inventor.

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by Church & Church

his Attorneys.

N. PETERS, Photo-Lithographer, Washington, D. C.

(No Model.) 3 Sheets—Sheet 2.

A. Y. LEAKE.

FLOUR BOLT.

No. 334,246. Patented Jan. 12, 1886.

Fig. 2.

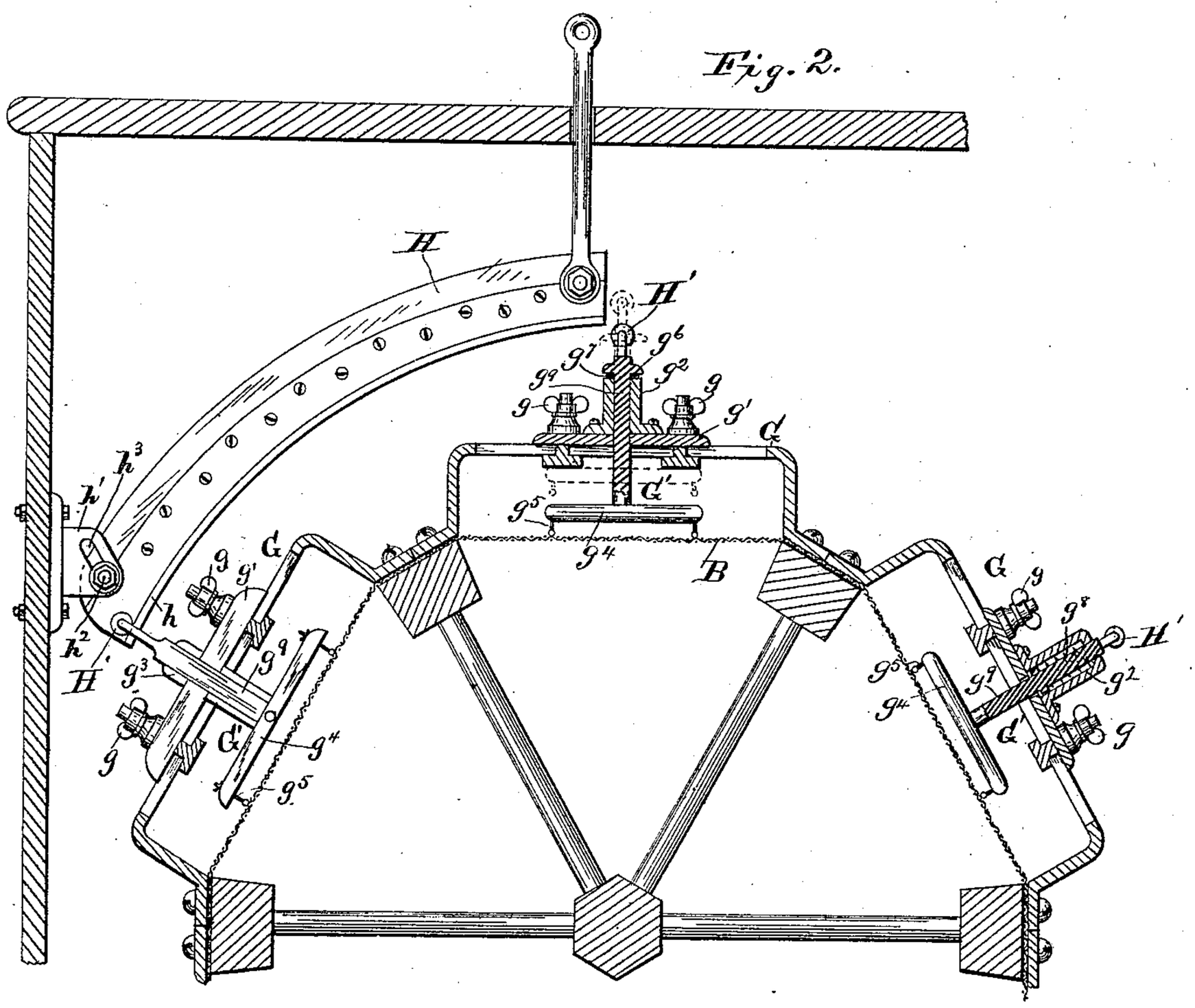


Fig. 3.

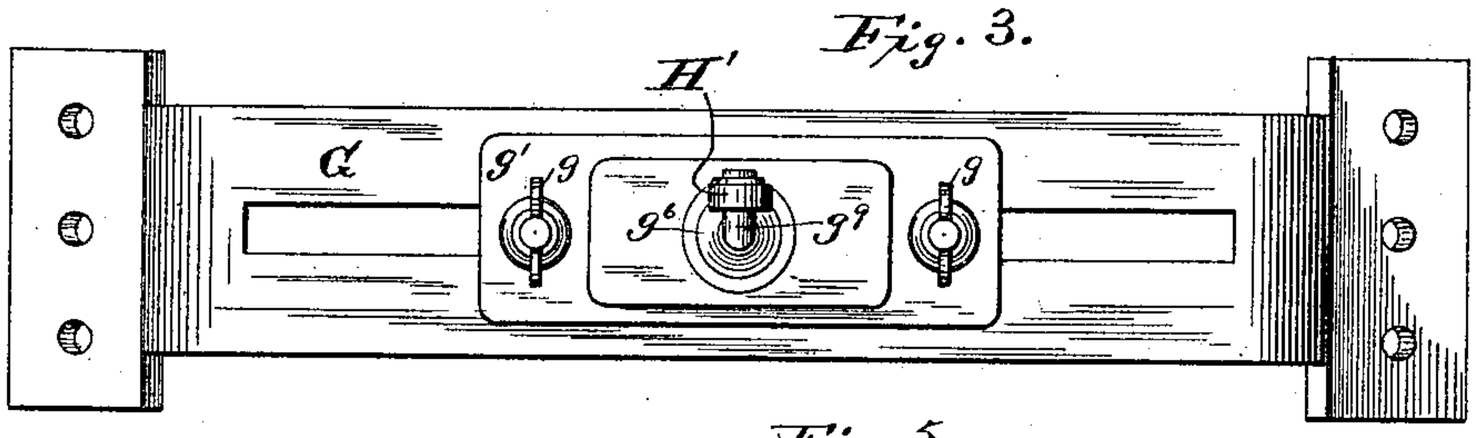


Fig. 4.

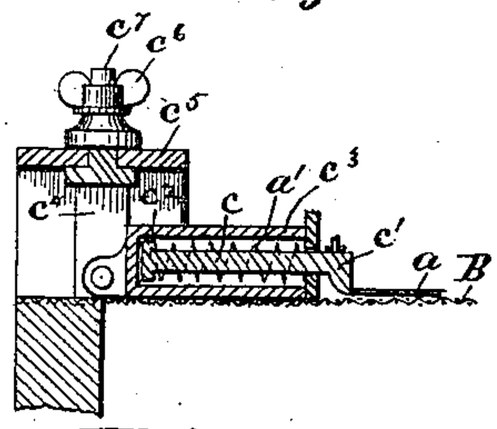


Fig. 5.

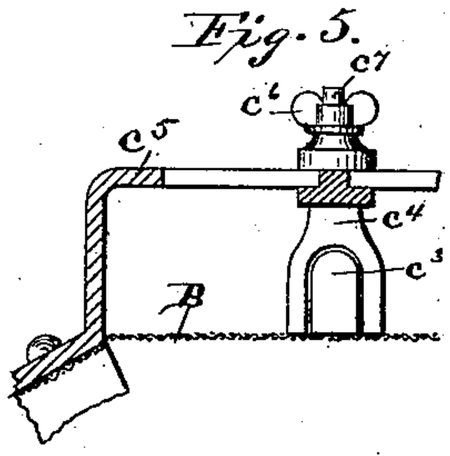
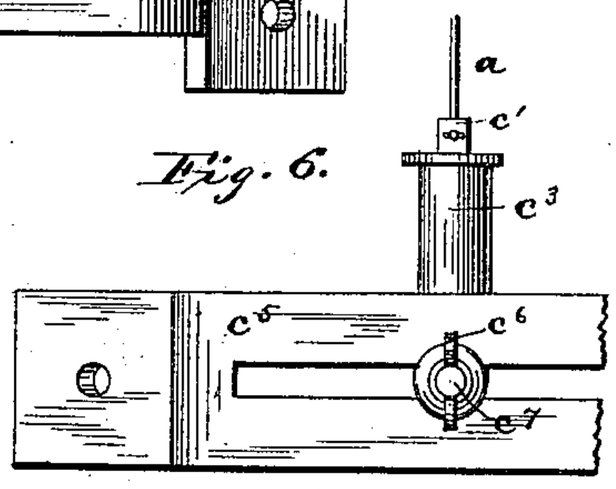


Fig. 6.



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(No Model.)

3 Sheets—Sheet 3.

A. Y. LEAKE.

FLOUR BOLT.

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Fig. 7.

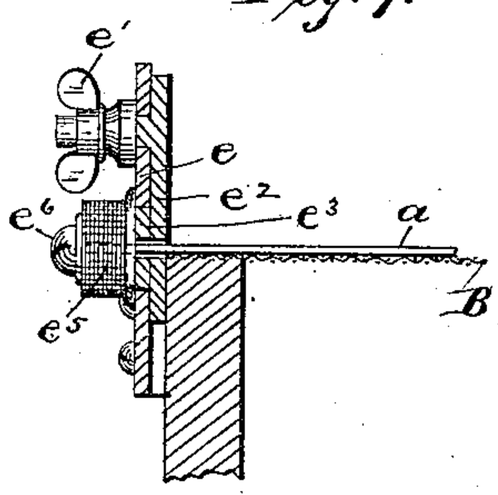


Fig. 8.

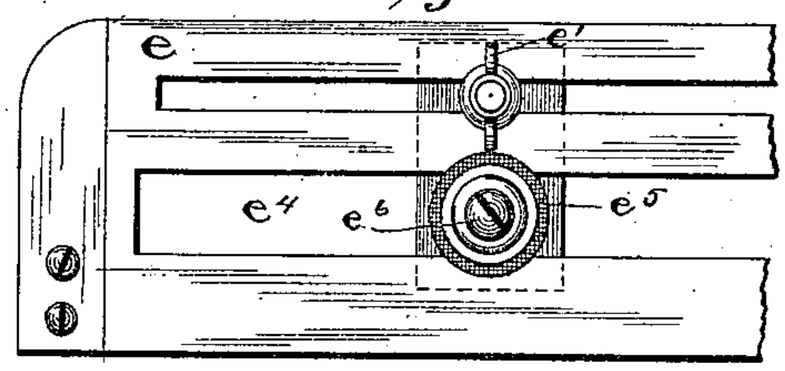


Fig. 9.

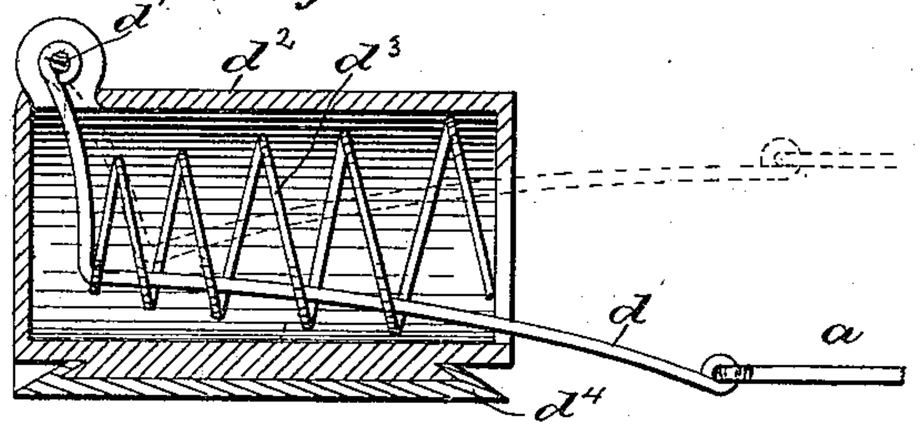


Fig. 10.

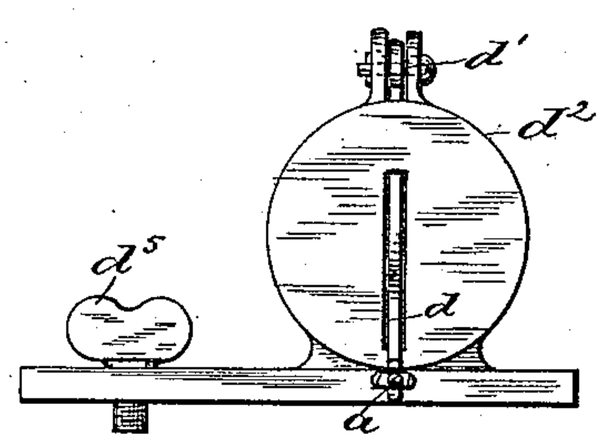


Fig. 11.

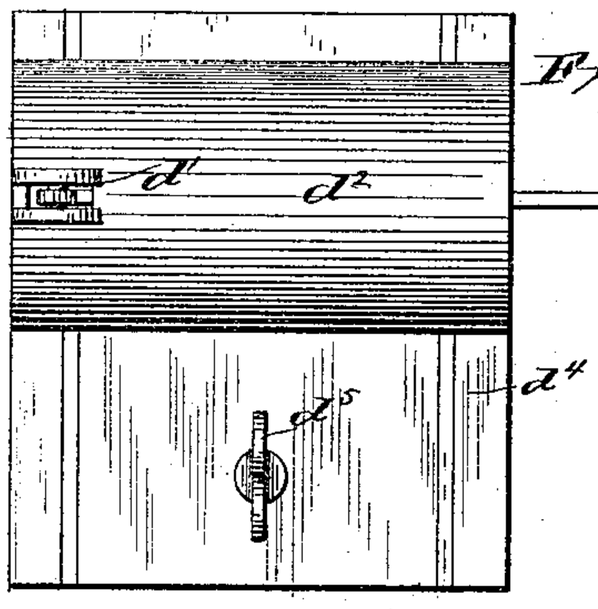


Fig. 12.

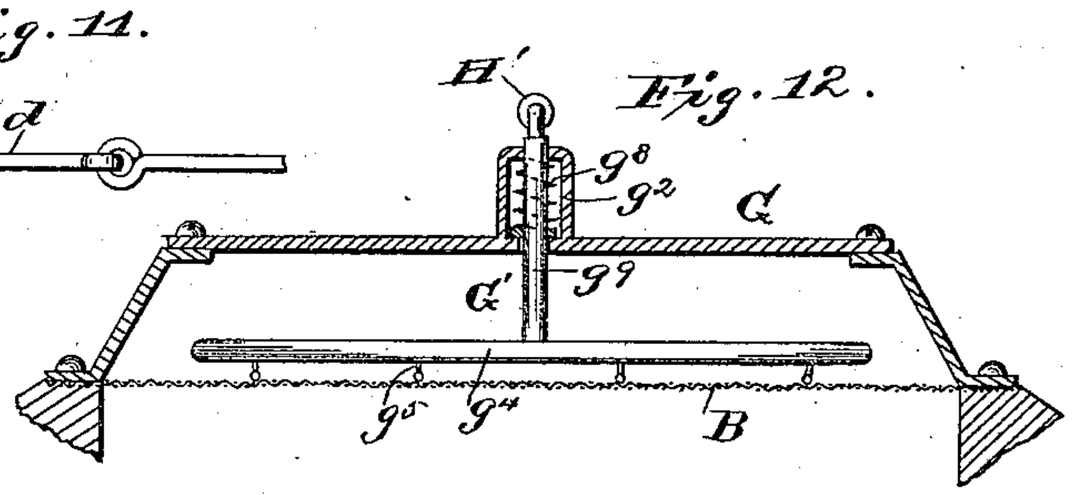
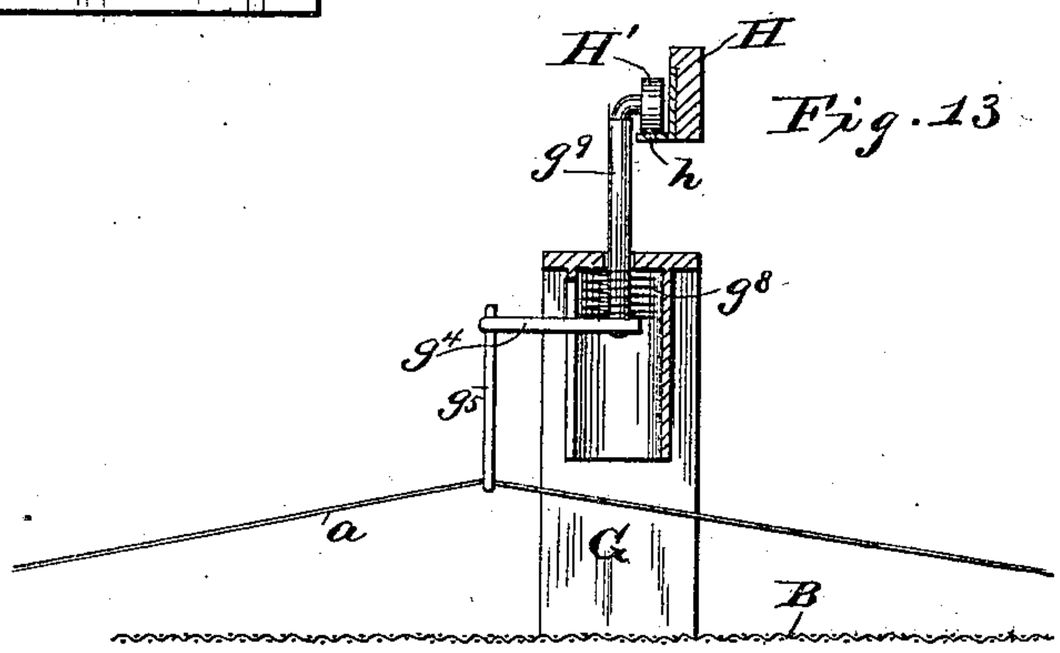


Fig. 13



Witnesses.
Chas. R. Burr
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Inventor.
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by Church & Church
his Attorneys.

N. PETERS, Photo-Lithographer, Washington, D. C.

UNITED STATES PATENT OFFICE.

ALBERT Y. LEAKE, OF MARIETTA, GEORGIA, ASSIGNOR OF ONE-HALF TO GAIUS C. BURNAP AND GEORGE S. BURNAP, OF SAME PLACE.

FLOUR-BOLT.

SPECIFICATION forming part of Letters Patent No. 334,246, dated January 12, 1886.

Application filed May 1, 1885. Serial No. 164,098. (No model.)

To all whom it may concern:

Be it known that I, ALBERT Y. LEAKE, of Marietta, in the county of Cobb and State of Georgia, have invented 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 same, reference being had to the accompanying drawings, forming a part of this specification, and to the figures and letters of reference marked thereon.

This invention relates to certain improvements in the construction of whippers or cloth-cleaners, and the manner of applying and operating the same in connection with the reels of flour-bolts; and it consists, broadly and generically, in the combination, with the sections of bolting-cloth, of one or more cords, wires, or chains maintained under tension and located upon the exterior of the reel in proximity to the bolting material, with devices for automatically raising or stretching and releasing said cords, wires, or chains, whereby the latter are caused to strike the surface of the bolting material with a sharp blow, making contact throughout their entire length, and effectually removing the material lodged in the interstices of the bolting material, and without seriously abrading or otherwise injuriously affecting the latter.

It likewise consists in the means devised for supporting, applying, and actuating the devices for alternately raising and releasing the cords, wires, or chains, whereby the latter are caused to impinge upon the surface of the bolting-cloth, said devices being mounted upon a bridge-piece or support attached to and revolving with the reel-frame and rendered operative by contact with actuating devices mounted upon the casing in the line of movement; and it also consists in certain novel constructions, arrangements, and combinations of the special parts, as hereinafter described, and pointed out in the claims.

In the accompanying drawings, which serve to illustrate one mode of applying my said invention, Figure 1 represents a longitudinal section of a bolting-chest and its reel, showing the application thereto of my invention. Fig. 2 is a transverse section through the reel. Fig. 3 is a top plan view of the bridge-piece and devices for actuating the whippers, &c. Fig. 4 is a longitudinal section of one form of elastic holder for sustaining the ends of the whippers. Fig. 5 is an end view, and Fig. 6 a top plan view, of the holder, Fig. 4. Figs. 7, 8, 9, 10 and 11 illustrate modifications of the elastic holder, Fig. 4. Figs. 12 and 13 illustrate modifications of the bridge-piece and devices for actuating the whippers.

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

The letter A designates the main casing; B, the bolting-cloth, of wire or other suitable material; C, the longitudinal ribs of the reel, and D the reel-heads, all these parts being of any well-known and approved form and construction.

As usual, the bolting-cloth B is stretched and confined upon the ribs C, forming sections or panels, through which the flour or other material falls or is driven. Along each section or panel thus formed are disposed the cleaners or whipping devices, preferably two or more to each section, supported at each end and lying in contact with the bolting-cloth from end to end. The cleaners or whipping devices referred to are composed of cords, wires, or chains *a a*, resting normally upon the outer surface of the bolting-cloth, and held thereon under tension by springs *a'*, interposed between their ends and the supports fastened to the heads of the reel.

It is desirable, in order that the whipping-cords shall operate upon the entire surface of the bolting-cloth, that they be not only held taut and with an elastic pressure, but also that they shall be so arranged and supported as to strike the cloth near the heads of the reel, as well as all intermediate portions.

As illustrating the method of supporting the whippers referred to above, I have shown in Figs. 4, 5, and 6 a device arranged for application to the periphery of the head, or upon the ribs of the reel, said arrangement being more especially designed for use on bolting-machines wherein little or no available space exists between the head and casing, or other parts of the machine. In said figures, *c* represents a bolt provided with a downwardly-bent head or projection, *c'*, to receive the end of the whipping cord or wire *a*, and with a head or collar, c^2, against which latter the

spring a' is arranged to press in a direction to draw the cord or wire a toward the head of the reel. The bolt c is arranged to reciprocate within a casing, c^3, pivotally supported at its rear end upon a stud or bracket, c^4, the latter adjustably secured to a bridge-piece, c^5, fastened to the head or ribs of the reel, as shown. The pivot uniting the casing c^3 and bracket c^4 is arranged at or near the junction of the cloth with the head of the reel, and so that the under surface of the casing will rest upon or make contact with the bolting-cloth, thereby forming a continuation of the whipping cord or wire. The bracket c^4 can be adjusted transversely of the bolting section or panel through the medium of the thumb-nut c^6, applied to the threaded stem c^7, passing through the slot in the bridge-piece c^5, whereby the position of the whipping cord or wire can be changed, as desired.

Instead of employing a pivoted case and reciprocating bolt, as described, I may use other devices, (shown in Figs. 9, 10, and 11,) wherein the whipping cord or wire a is fastened to the end of a bent lever, d, pivoted, as at d', in a casing, d^2, above the plane of the bolting-surface. A spring, d^3, is arranged within the casing d^2, and operates to hold the lever down and retracted, the end of said lever to which the cord or wire is attached being free to vibrate in a slot formed in the end of the casing. The casing d^2, carrying the tension device, is adjustably mounted upon a plate, d^4, secured to the head of the reel, the two being united by a dovetailed joint, and held in adjustable position by a set-screw, d^5, passing through the base of the casing d^2, and bearing against the plate d^4.

A similar result as to the action of the whipping cords or wires may be obtained, though in a less perfect manner, by attaching the ends of the cords or wires to the heads of the reel in the manner indicated in Figs. 7 and 8, wherein e represents a slotted plate fastened to the outer face of the head and projecting beyond the latter. To the face of this plate e is adjustably secured, as by the thumb-nut e', a plate, e^2, provided with a stud or projection, e^3, resting in the slot e^4 in plate e. The end of the whipping cord or wire passes through a slot or projection in the stud e^3, and through a spring, e^5, preferably of rubber, beyond which latter it is formed or provided with a head, e^6, resting against a washer in the outer face of the spring e^5. The opening in the plate e^2, through which the whipping cord or wire is passed, is at or about the level of the outer face of the bolting-cloth, and when the cord or wire is raised in delivering a blow upon the bolting-cloth the spring will be compressed and the whipper raised at each end.

The whipping cords or wires are suspended at each end upon an elastic holder, such as described, or one having similar functions and capacities, whereby they are held under tension and in contact with the bolting-cloth throughout its entire length.

It will be observed as incident to the constructions described that provision is made for permitting the whipping-cord to be elevated throughout the entire length of the bolting-surface, and be again brought in contact therewith, that the elastic pressure is applied to the ends and longitudinally of the cords or wires, and that the compression takes place at both ends of the cord or wire, thereby equalizing the strain and diminishing the friction or drag upon the bolting-cloth. The whipping cords or wires being thus arranged and applied to the exterior of the reel, it becomes necessary to provide means for automatically raising and releasing them, and by so doing cause them to impinge upon the bolting-cloth throughout its entire length, the shock thereby produced being sufficient to dislodge the particles remaining in the meshes or interstices. The essentials of a mechanism for effecting this object are, first, a bridge-piece or support fastened to and revolving with the reel; second, a reciprocating carrier to which the whipping cords or wires are attached; and, third, an arm, cam, or equivalent device located in the part traversed by the said carrier, and serving to reciprocate the latter to elevate and release the whippers.

In the example shown in the drawings, G represents the bridge-piece fastened to the ribs of the reel; G′, the reciprocating carrier, and G^2 the arms or cam for actuating the carrier. The bridge-piece G is elevated above the surface of the cloth and slotted to receive clamping-screws g, for retaining the frame or socket g' of the carrier G′ in adjustable position. The frame or socket g', which serves as the guide for the carrier G′, may consist of a metal tube, g^2, or a wooden bar, g^3, the latter provided with a grooved way to receive the stem of the carrier. The carrier G′ is formed with a transverse bar or head, g^4, from which depend connections g^5, of wire, cord, or chain, for uniting the whippers a to the carrier, and with a stem, g^5, passing through the guide g^2 or bar g^3, as shown.

The downward or inward thrust of the carrier is limited by a collar or stop, g^6, applied to the stem g^5 thereof, which makes contact with the guide frame or socket g', a rubber washer, g^7, being preferably interposed between the points of contact.

The strain exerted upon the whipping cords or wires by the elastic connections at each end is sufficient to hold the carriers G′ retracted; but, if desired, this may be supplemented by the application of a spring, g^8, to the stem of the carrier, as shown in Fig. 2.

With the carriers and whippers arranged and applied to the reel in the manner described, it is only necessary to apply a mechanism, located in the path traversed by the carrier, which shall reciprocate the carrier in its guiding frame or socket, to raise the whipping cords or wires and compress their supporting-springs, and then release the same while elevated, when the whippers will be

brought suddenly down and in contact with the bolting-cloth. Various combinations and arrangements of mechanism for thus actuating the carriers to elevate and release the whippers can be employed in carrying out this part of my invention without departing from the spirit thereof.

One such arrangement is illustrated in Figs. 1 and 2, consisting, essentially, of a flanged way or segment, H, supported upon the main casing, and an arm or roller, H′, applied to the side of the spindle or stem g^5 of the carrier. The segment H is set eccentric to the circle traversed by the roller H′, with one end of its flange *h* below and the other above the line of movement of the roller, whereby as the reel is revolved the roller H′ of each carrier is caught upon the flange *h*, and as they traverse the latter the carriers G′ are drawn out and the whippers held elevated until the roller passes off the end of the segment H.

The cam or segment H, for actuating the carriers, may be attached to the frame in any convenient manner—as, for example, by an adjustable hanger, *h*′, at the upper end, and a bolt, h^2, mounted in a bracket and passing through a slot, h^3, near the lower end of the segment.

By raising or lowering the upper end of the segment the throw of the carrier may be adjusted and the whippers caused to impinge with more or less force upon the bolting-surface.

The slotted connection at the lower end of the segment is designed to allow the latter to be raised and permit the carrier to pass freely beneath it should the motion of the reel be reversed.

Any number of whipping cords or wires can be applied to each section or panel of bolting-cloth, as desired.

As hereinbefore indicated, the essential features of my invention are comprehended in the method of supporting and applying the whippers to the exterior of the reel, mounting the devices for actuating the whippers upon a support or bridge-piece applied to the reel at a point intermediate the heads thereof, and operating said actuating devices from a fixed cam, all of which features may be embodied in various forms and modifications of the devices shown without departing from the spirit of my invention, as will be evident to those skilled in the art.

Having thus described my invention, what I claim as new is—

1. In a flour-bolting machine such as described, and in combination with the reel thereof, a series of whipping-cords applied upon the exterior of the bolting-cloth, and elastic supports at each end thereof upon the heads of the reel, substantially as described.

2. In combination with the reel and the series of whipping-cords applied to the exterior surface of the bolting-cloth, means whereby they are maintained under tension, as described, a bridge-piece or support attached to the ribs of the reel, and a carrier mounted upon said bridge-piece and connected to the whippers, to alternately raise and release the latter, substantially as described.

3. In a flour-bolt, and in combination with the reel thereof, the series of whipping-cords, means whereby they are maintained under tension in proximity to the bolting-cloth, the bridge-piece applied to the ribs of the reel, a reciprocating carrier mounted upon said bridge-piece and connected to the whippers, and a stationary segment or cam for actuating the said carrier, and thereby alternately raising and releasing the whipping-cords, substantially as described.

4. In combination with the rotary reel and the whippers applied to the bolting-cloth thereon, a bridge-piece mounted upon the ribs of the reel and a carrier supported thereon for actuating the whippers, substantially as described.

5. In combination with the reel of a flour-bolt, a series of flexible whipping-cords applied to the exterior of the bolting-cloth and elastic holders therefor at each end, applied to the heads of the reel beyond the junction of the bolting-cloth and reel-head, substantially as described, whereby the whippers may be raised above and caused to impinge upon the bolting-surface throughout its entire length.

6. In a flour-bolt, and in combination with the reel thereof, a series of whippers, means whereby they are elastically supported and maintained in contact with the exterior surface of the bolting-cloth, a reciprocating carrier with flexible connections extending to the whippers, a bridge-piece applied to the ribs of the reel, and a support for the said carrier adjustably mounted thereon, substantially as described.

7. In combination with the reel of a flour-bolt, a series of whippers, elastic and adjustable holders therefor at each end, mounted upon the heads of the reel, a bridge-piece secured to the ribs and extending over the bolting-section, and a reciprocating carrier adjustably mounted upon the bridge-piece and connected to the whippers, substantially as described.

8. In combination with the reel, the flexible whippers applied to the bolting-surface, and means whereby they are maintained under tension, the reciprocating carrier, and a support therefor fastened to the ribs of the reel, and connected to the whippers at a point intermediate of their supports, substantially as described.

9. The combination of the reel, the whipping-cord, a holder for the end of the whipping-cord pivotally supported on the head of the reel, and a spring for retracting the said holder, substantially as described.

10. In combination with the flexible whippers and the bridge-piece applied to the exterior of the reel, the reciprocating carrier mounted on the bridge-piece and attached to

the whippers by flexible connections, and a cam or segment mounted up on the casing and adapted to reciprocate the carrier, substantially as and for the purpose set forth.

11. In a flour-bolt, and in combination with the flexible whippers and reciprocating carrier therefor, mounted on the reel, the fixed cam or segment loosely suspended at its lower end for operating upon the carrier, substantially as described.

12. In combination with the bolting-surface of a reel, a series of whippers applied to the exterior thereof and means for sustaining said whippers in position upon the reel, substantially as described.

13. In combination with the reel and its bolting-sections, whippers, supports therefor outside the reel, and means for operating said whippers to cause them to impinge against the outer surface of the bolting material, substantially as described.

ALBERT Y. LEAKE.

Witnesses:
G. C. BURNAP,
W. E. MYERS.