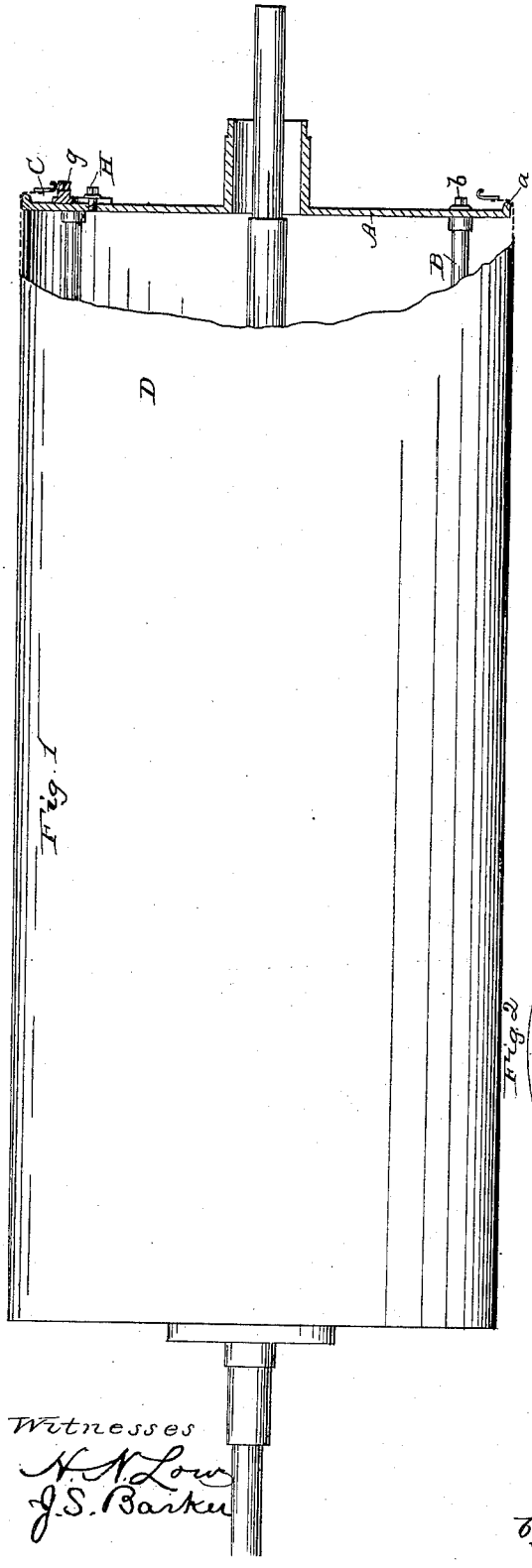
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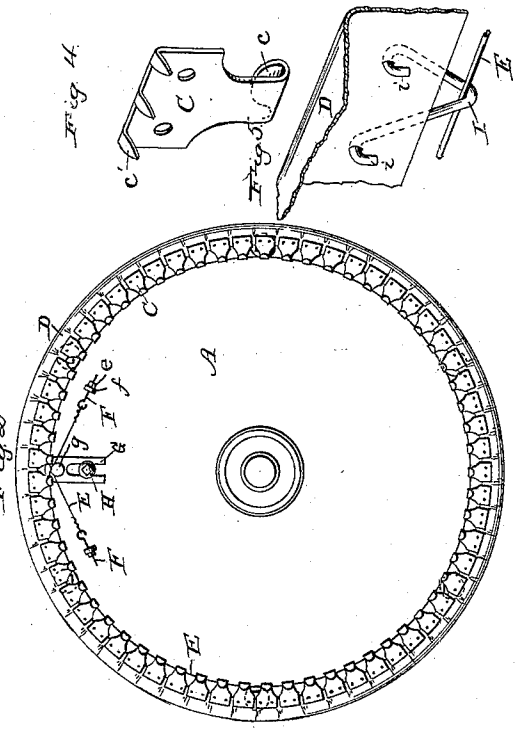
2 Sheets—Sheet 1.

G. T. SMITH.

DEVICE FOR STRETCHING BOLTING CLOTH.

No. 309,498. Patented Dec. 16, 1884.





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(No Model.)

2 Sheets—Sheet 2.

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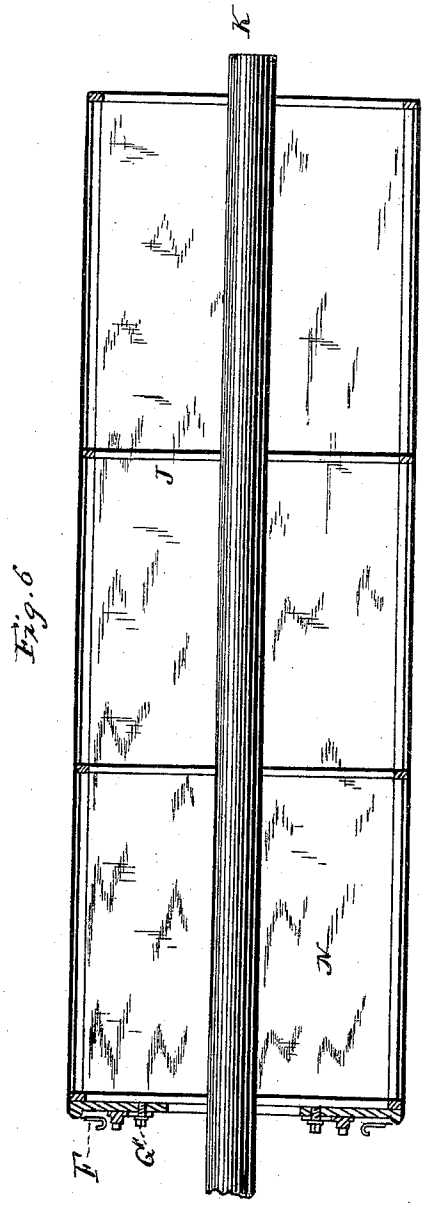


Fig. 6.

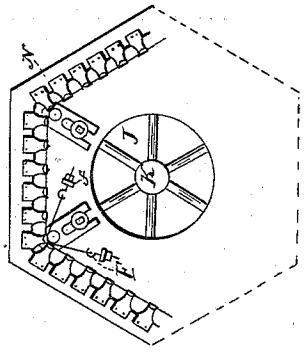


Fig. 3.

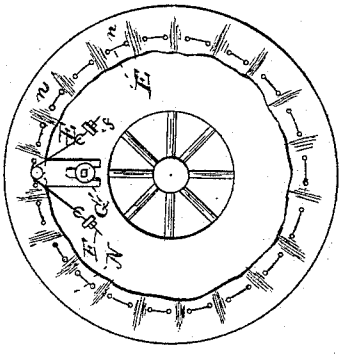


Fig. 7.

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UNITED STATES PATENT OFFICE.

GEORGE T. SMITH, OF JACKSON, MICHIGAN.

DEVICE FOR STRETCHING BOLTING-CLOTH.

SPECIFICATION forming part of Letters Patent No. 309,498, dated December 16, 1884.

Application filed April 21, 1883. (No model.)

To all whom it may concern:

Be it known that I, GEORGE T. SMITH, a citizen of the United States, residing at Jackson, in the county of Jackson and State of Michigan, have invented certain new and useful Improvements in Devices for Stretching Bolting-Cloth, of which the following is a specification, reference being had therein to the accompanying drawings.

The object of this invention is to stretch the bolt-cloth longitudinally of a cylindrical or many-sided reel; and to this end the invention consists, essentially, in the combination, with a reel-cloth having its end turned over the end of the reel and extending inward on a radial line, of mechanism adapted to move the turned-over end of the cloth inwardly toward the center of the reel, as will be hereinafter more fully explained.

Figure 1 is a side elevation of a cylindrical reel having the invention applied thereto. Fig. 2 is an end view of the same. Fig. 3 is an end view of a hexagonal reel containing the invention. Fig. 4 is a detached view of one of the cloth-clasps made of sheet metal. Fig. 5 is a detached view of one of the wire clasps, a piece of the cloth, and a short section of a circular tightener. Fig. 6 is a longitudinal section of a many-sided reel containing the invention. Fig. 7 is a detached view showing a modification.

Referring particularly to Figs. 1 and 2, A is a reel-head, which in this instance is shown mounted on a trunnion, as is common in the class of reels known as "centrifugal." *a* is a flange projecting outwardly from the periphery of the reel-head, the outer edge of the flange being in a plane, or thereabout, with the projecting ends *b* of the longitudinal ribs B, which connect the reel-heads.

C *c c'* (see Figs. 2 and 4) is a cloth-clasp, of which C is the body or main portion, consisting, essentially, of a flat plate. *c* is a hook formed at the end of the shank, and *c' c'* are teeth or tangs adapted to take hold of the cloth; or the plate may be perforated, as indicated, and secured to the cloth D by either stitches or rivets. In practice the bolt-cloth should preferably be either hemmed or have a cord sewed in at the edge, or else be attached to a strip of canvas or other suitable fabric wide enough to turn over the flange *a* and have the cloth-clasps attached thereto.

E is a tightening-wire seated in the hooks of the clasps, any desired number of clasps being used.

F F are screw-threaded rods, each having an eye at one end, to which one end of the wire or cord E is attached, the opposite end of the screw-rod being seated in a bracket or lug, *f*, and provided with a nut, *e*. Thus it will be seen that the wire or cord can be operated in such manner as to tighten the bolt-cloth by diminishing the size of the circle formed by the wire and the inner hook ends of the cloth-clasps.

G is a slotted plate, carrying at its outer end a guide-roller, *g*, and adjusted upon the head of the reel by means of a clamping set screw or bolt, H. By properly adjusting this plate G and guide pin or roller *g* the operator can prevent an undue tension upon the cloth-clasps which are adjacent to the point at which the ends of the wire E cross each other, as will be readily understood, it being apparent that were it not for the presence of this guide pin or roller any tightening of the wire would produce a much greater tension upon the clasps which are adjacent to the point of intersection of the wire than it would upon the clasps more remote therefrom.

Fig. 5 shows another form of clasp, which may be made of bent wire, in which the hook ends *i* are adapted to engage with the edge of the cloth, while the apex I is adapted to straddle the tightening cord or wire E.

In Fig. 3 the invention is shown applied to a many-sided reel, in which case the invention will operate more satisfactorily if there be a series of guiding pins or rollers, G' G', used, one at each angle of the reel, to insure, as far as may be practicable, a uniformity in the tension of the tightening cord or wire upon the cloth. Other means might be employed for thus drawing the edge of the cloth inward toward the center of the reel. The flange *a*, which projects outwardly from the periphery of the reel-head, insures that the cloth-tightening devices may be readily manipulated without being interfered with by the project-

ing ends *b* of the longitudinal ribs. In Figs. 3 and 6, however, this projecting rib is omitted, because the outer face of the reel-head there shown is flat and in a plane, as is customary with reels in which a central shaft, K, and spokes J J are employed to support the longitudinal ribs over which the cloth is stretched.

In Fig. 7 the bolt-cloth is shown as provided with a series of eyelet-holes, *n n*, through which a tightening cord or wire, E, is passed.

I do not wish to be limited to the employment of tension devices supplied to the ends of the cord or other flexible tightener, because, under some circumstances, I may secure the tightener by simply tying its ends, as has heretofore been done in cases where cords or lacings have been used, being aware that heretofore bolt-cloth has been attached to its supporting-frame by means of a lacing-cord—as, for instance, in Patent No. 173,734.

It will be seen that in both constructions of reel the outer edge of one head constitutes a peripheral rim, over which the bolt-cloth is turned in such manner that that end of the bolt-cloth is bent inward toward the center of the reel in a plane which is at right angles to the reel-axis, although in the construction shown in Figs. 1 and 2 this peripheral rim is expanded laterally into a projecting flange for the purpose of carrying the end of the bolt-cloth and the tightener beyond the ends of the longitudinal bars and their nuts. It will also be seen that in both cases the construction and arrangement of parts is such as to permit the cloth to be drawn inward toward the center of the reel, and in fact almost to the center of the reel, thus providing for a range of adjustment sufficient to meet the requirements under almost any conditions which will ordinarily be found; and it will also be seen that my construction and arrangement of parts permits a much greater range of adjustment and tension than would be possible were the end of the cloth drawn into a groove in the edge of the reel-head instead of being turned down over the outer face of the reel-head.

I do not in this case claim specifically either of the clasps shown in Fig. 4 or 5; nor do I claim specifically the construction of the frames of either of the reels, either in whole or in part, or the construction of the reel-head A with its flange *a*, over which the bolting-cloth is turned inward, nor the hollow trunnion of the reel-head which surrounds the beater-shaft; nor do I claim specifically the combination of the flexible tightener with the end of the bolt-cloth provided with eyelet-holes, as shown in Fig. 7, but reserve to myself the right to claim these features in another application, No. 102,744.

What I claim is—

1. In a flour-bolt, the combination, with the reel-frame, of a bolt-cloth surrounding the axis of the reel, and having one end turned over the outer face of the reel-head and extending inward toward the center of the reel, and a flexible tightener adapted to draw the turned-over end of the cloth toward the center of the reel, substantially as set forth.

2. In a flour-bolt, the combination, with the reel-frame, of a bolt-cloth surrounding the axis of the reel, and having one end turned over the outer face of the reel-head and extending inward toward the center of the reel, a flexible tightener arranged on the outer face of the reel-head, and means for attaching the ends of the tightener to the reel, substantially as set forth.

3. In a flour-bolt, the combination, with the reel-frame, of a bolt-cloth having one end turned over the reel-head at one end of the reel, a flexible tightener arranged on the outer face of the reel-head, and means permanently attached to the reel for increasing the tension of the tightener, substantially as set forth.

4. In a flour-bolt, the combination, with the reel-frame, of a bolt-cloth turned inward over the outer face of the reel-head toward the center of the reel, a flexible cloth-tightener having its ends crossed, and a guide arranged at the crossing-point of the tightener, substantially as set forth.

5. In a flour-bolt, the combination of the reel-frame, a bolting-cloth surrounding the reel-frame and having one end turned over the outer face of the reel-head toward the center of the reel, a flexible tightener having its ends crossed, and an adjustable guide arranged at the crossing-point of the tightener, substantially as set forth.

6. In a flour-bolt, the combination of a many-sided reel provided at one end with a many-sided peripheral rim, the angles of which coincide with the angles of the reel, a bolt-cloth which surrounds the reel and has one end turned over the many-sided rim toward the center of the reel, a flexible tightener, and a series of guide-rolls arranged near the angles of the rim, substantially as set forth.

7. A many-sided flour-bolt, in combination with a bolt-cloth surrounding the axis and turned over the outer face of the reel, and a tightener arranged upon lines parallel with the bounding lines of the periphery of the reel-head, and mechanism for moving the lines of the tightener toward the center of the reel, substantially as set forth.

8. In a flour-bolt, the combination of a central shaft, a series of spokes radiating from the shaft, longitudinal bars supported at the ends of the spokes, a flat reel-head attached to the outer faces of the spokes at one end of the reel and provided with a circular opening to receive the feed-spout, a bolt-cloth supported upon the bars and constituting a many-sided bolting-surface, and having one end turned over the outer face of the reel-head toward the center of the reel, and a flexible tightener adapted to draw the end of the bolt-cloth toward the reel-shaft, substantially as set forth.

9. In a flour-bolt, a bolting-frame and a bolting-cloth which extends longitudinally of the reel, and is at its end turned inward over the outer face of the reel-head toward its axis, in combination with a flexible tightener and a series of cloth-clasps connecting the tightener with the bolt-cloth, substantially as set forth.

10. The combination, with the bolt-cloth, of a circular tightener and a series of clasps, each adapted at one end to be attached to the cloth, and at the opposite end to receive said tightener, substantially as set forth.

11. In combination with the bolting-cloth, a series of cloth-clasps, each adapted at one end to be attached to the cloth, and at its opposite end to receive a circular tightener, substantially as set forth.

12. The combination of a bolting-reel frame, a tubular bolting-cloth secured thereto at one end and turned over the frame toward the axis of the reel at its opposite end, and a contractible ring attached to the turned-over end of the cloth, and adapted to determine the tension of the cloth, substantially as set forth.

13. A clasp for a bolt-cloth, adapted to be attached to the cloth, and at the opposite end to receive a circular tightener, substantially as set forth.

14. In a flour-bolt, the combination, with a reel-head having an outwardly-projecting peripheral rib or flange, *a*, of a bolt-cloth extending longitudinally of the reel, and having its end turned over the flange *a* and extending inward toward the axis of the reel, and tightening devices adapted to draw the end of the cloth toward the center of the reel, substantially as set forth.

15. In a flour-bolt, the combination, with the reel-heads, of the longitudinal bars, nuts applied to the ends of the bars outside of the reel-head, a flange, *a*, projecting outwardly from the reel-head, a bolt-cloth extending longitudinally of the reel and turned over the outer face of the flange *a* toward the center of the reel, and devices for attaching the end of the reel-cloth to the head of the reel inside of the flange *a*, substantially as set forth.

In testimony whereof I affix my signature in presence of two witnesses.

GEORGE T. SMITH.

Witnesses:
W. K. GIBSON,
JAMES A. PARKINSON.