(No Model.)

2 Sheets—Sheet 1.

W. E. GORTON.

BOLTING REEL FRAME.

No. 382,152.

Patented May 1, 1888.

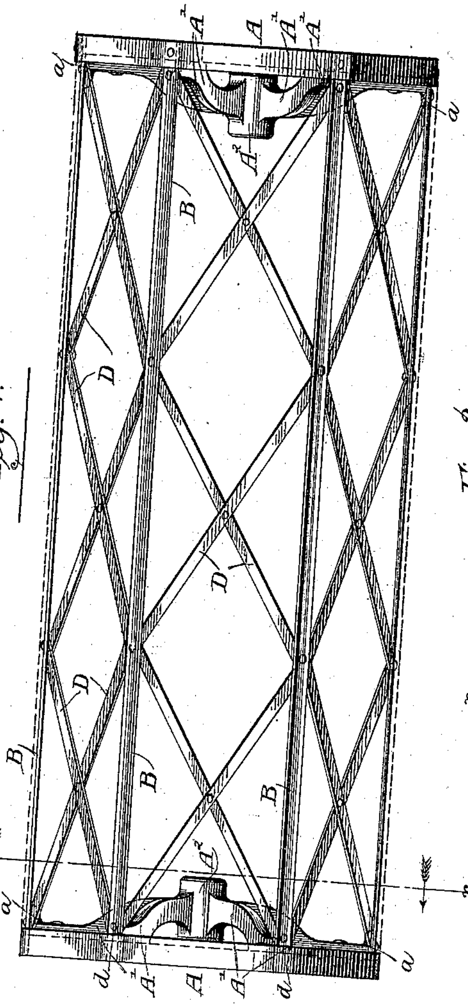

Fig. 1.

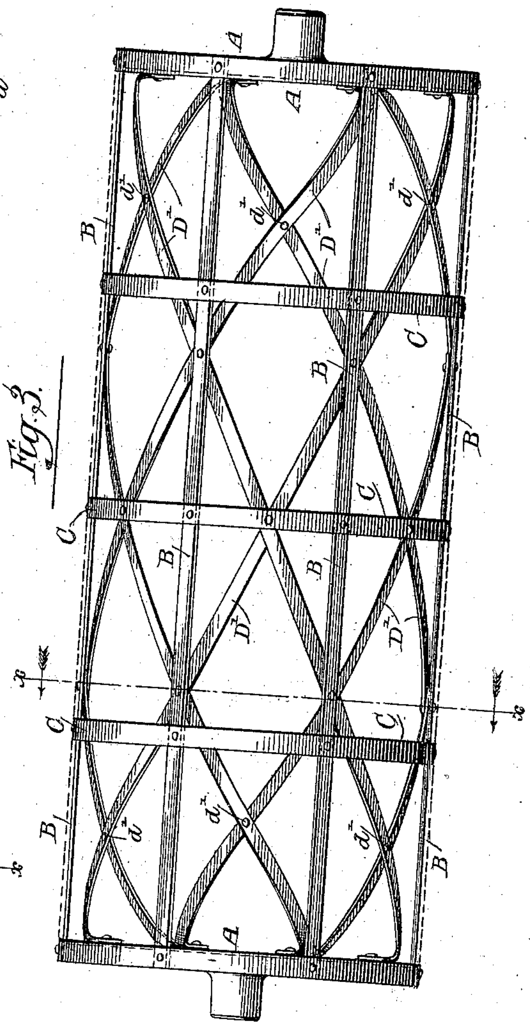

Fig. 3.

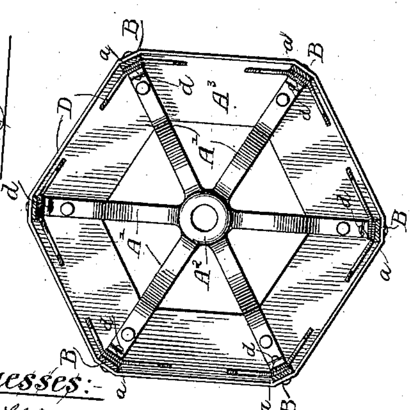

Fig. 2.

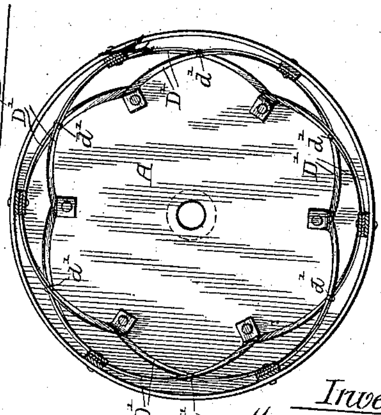

Fig. 4.

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(No Model.) 2 Sheets—Sheet 2.

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Fig. 5.

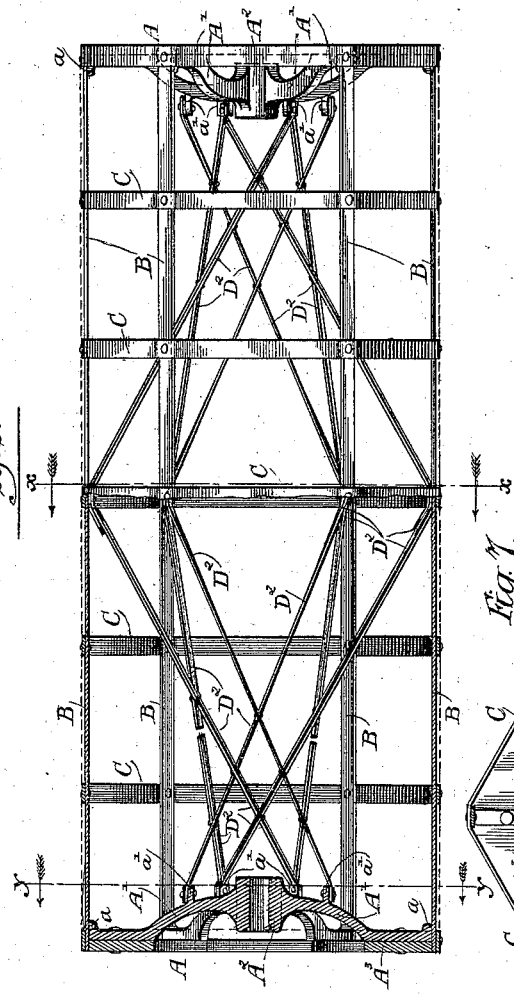


Fig. 7.

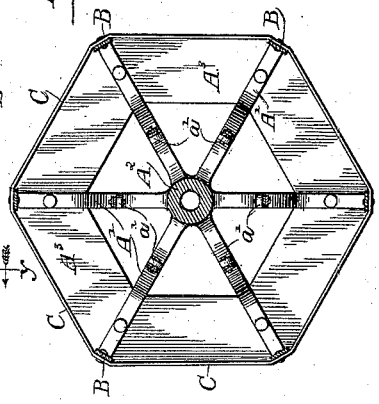
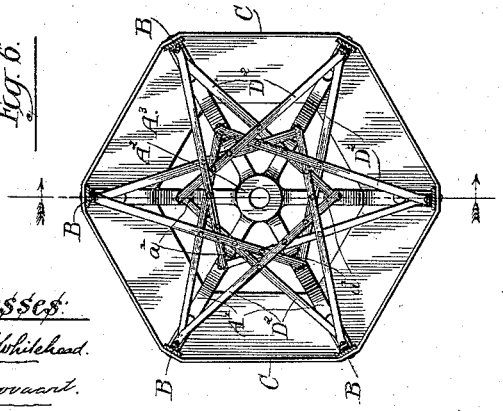


Fig. 6.



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UNITED STATES PATENT OFFICE.

WILLIAM E. GORTON, OF MOLINE, ILLINOIS.

BOLTING-REEL FRAME.

SPECIFICATION forming part of Letters Patent No. 382,152, dated May 1, 1888.

Application filed September 21, 1886. Serial No. 214,145. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM E. GORTON, of Moline, in the county of Rock Island and State of Illinois, have invented certain new and useful Improvements in Bolting-Reel Frames; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

This invention relates to improvements in the construction of the frames of bolting-reels, such as are used in milling and for other purposes.

The principal object of the invention is to provide a construction in reel-frames whereby a great degree of strength or rigidity is obtained, with a minimum of weight in the parts.

The invention consists in the matters hereinafter described, and pointed out in the appended claims.

In a prior patent, No. 304,682, granted to me upon the 2d day of September, 1884, I have described and claimed a bolting-reel the frame of which comprises spirally-directed longitudinal ribs and other transverse connecting-ribs, said ribs being connected at their intersections and forming a unitary truss calculated to give rigidity to the reel. In the patent mentioned the truss-construction above set forth is claimed broadly, but is illustrated as applied only in such manner that the truss-ribs are themselves adapted to support the cloth.

My present invention embraces a construction in which two sets of spiral or obliquely-directed truss-ribs extending the full length of the reel and arranged to cross each other, and secured together at their points of intersection to form a truss, are employed in addition to the usual exterior longitudinal cloth-supporting ribs to give rigidity to the reel structure, as will hereinafter fully appear.

The invention may be more readily understood by reference to the accompanying drawings, in which—

Figure 1 is a side elevation of a hexagonal reel, showing one form of my improvement, in which the reel-heads are connected by a single set of longitudinal ribs supporting the cloth and two sets of oppositely-inclined spiral or obliquely-directed truss-ribs, which are connected with the reel-heads, with the longitudinal ribs, and with each other. Fig. 2 is a cross-section of the same, taken upon line *x x* of Fig. 1. Fig. 3 is a side elevation of a cylindric reel having both longitudinal and circumferential ribs for supporting the cloth and inner truss-ribs, the end portions of which latter ribs are bent or deflected inwardly toward the reel-axis at both ends of the latter. Fig. 4 is a transverse section upon line *x x* of Fig. 3. Fig. 5 is a view, partially in side elevation and partially in central longitudinal section, of a hexagonal reel comprising both longitudinal and circumferential ribs and having truss-ribs connected with the middle part of the exterior ribs and with the heads. Fig. 6 is a section of the same, taken upon line *x x* of Fig. 5. Fig. 7 is a section of the same, taken upon line *y y* of Fig. 5.

A A are the reel-heads, which, as far as the main features of the improvement herein set forth are concerned, may be made either of solid disk form or with radial arms. As shown in Figs. 3 and 4, said heads are understood to be of disk or solid form, with provision for feeding or discharging through hollow gudgeons. As illustrated in the other figures, however, the heads are constructed with radial arms and adapted for the attachment of the ends of the truss ribs of the reel, as hereinafter fully set forth.

B B are longitudinal ribs of the reel arranged parallel with the axis thereof and attached to the heads A in any desired or preferred manner. In the hexagonal form of reel, Figs. 1 and 5, said ribs sustain the cloth at the corners of the reel in the usual manner.

C C are a series of circumferential hoops, shown in Figs. 3, 4, 5, 6, and 7 as attached to the longitudinal ribs B, so as to aid in sustaining the bolting-cloth.

D D, Figs. 1 and 2, are spiral or obliquely-arranged truss-ribs extending from one end to the other of the reel and crossing each other, as shown, said truss-ribs being attached to each other at their points of intersection, so as to form a rigid unitary truss structure adapted to give great strength to the reel, said truss-ribs being connected with the longitudinal ribs, so as to sustain the latter at points between the reel-heads. The spiral ribs D D are shown as passing from one side of the head

A to the opposite side of the other head in such manner as to pass half-way around the circumference of the reel in their spiral course from one end to the other thereof. The degree or pitch of the spirality of the ribs may, however, be greater or less than shown, as may be found desirable or convenient in any particular case. The truss-ribs D D, arranged spirally, as described, may be secured at their ends to the heads in any desired or preferred manner; but, as herein shown, are secured by rivets *d* to lugs *a* upon the outer ends of the radial arms A′ of the reel-heads. The reel shown in said Figs. 1 and 2 is without circumferential ribs, but the latter may be employed, when desired, in the same manner as illustrated in Figs. 5, 6, and 7.

In Figs. 3 and 4 oppositely-directed spiral ribs D′ are shown as employed in a cylindric reel. The truss-ribs are in this case arranged generally in the same manner as before described; but their end portions, instead of being extended to and secured at the outer edges of the heads A A, are bent inwardly and attached to said heads at points between the centers and peripheries of the said heads. The truss-ribs in this construction are preferably brought into contact with and attached to the outer longitudinal and circumferential ribs at the parts of the exterior ribs adjacent to the middle of the reel only, and are attached to each other at their crossing points inside of the said outer ribs, as clearly shown at *d′ d′* in the drawings. By this construction a great degree of stiffness in the reel is obtained, inasmuch as the end portions of the truss-ribs are brought into a position oblique to the axis of the reel, thereby giving the truss structure greater strength to resist strains tending to rupture or strain the reel-frame transversely. The ends of the ribs (shown in Figs. 3 and 4) are shown as bent at right angles and secured to the inner faces of the heads A thereof by bolts or rivets; but the necessary connection between the parts at these points may be otherwise made, as found convenient or desirable.

In the form of the device shown in Figs. 5, 6, and 7 truss-ribs D^2 D^2 are shown, which are attached to the exterior ribs of the reel-frame at the middle part of the reel only, and are inclined obliquely and inwardly toward the center of the reel. In the particular instance illustrated in said figures each truss-rib D^2 is extended from one corner of the hexagonal reel midway of the length of the latter to a point upon the reel-head lying in a radial line, which makes an angle of one-third of a circle with the corner of the reel to which the rib is attached, so that each truss-rib intersects and is attached to a corresponding rib which starts from the second longitudinal rib from that one to which the truss-rib first mentioned is attached, and is also attached to other ribs which cross it in the manner shown. By this means the truss-ribs are brought to a considerable obliquity, and a great degree of rigidity is obtained in the structure with a relatively-small number of said truss ribs. The ribs in this construction will usually consist of metal strips, and will be twisted at their points of intersection when necessary, so as to bring their flat faces together and there secured by bolts or rivets.

As a preferred means of attaching the truss-ribs D^2 D^2 of the reel-head, the radial arms A′ of the latter are provided with inwardly-extending lugs *a′*, which are suitably located at points intermediate between the reel-axis and the outer ends of the said arms, and to which the ends of said truss-ribs are suitably bolted or riveted, as shown.

The reel-head, made with radial arms, in the particular construction thereof herein illustrated in Figs. 1, 2, 5, 6, and 7, consists of a central hub, A^2, upon which the radial arms A′ are cast, and said arms being bent or deflected outwardly, so that the said hub is sustained by the arms in a plane inside of the general plane of the reel-head. A^3 is a flat ring, preferably of wood, attached to the outer ends of the arms A′ A′ and forming the reel-head proper, said ring consisting usually of a series of segments severally secured to the said arms A′ A′ and having a central opening through which the material may be fed to the reel. The outwardly curved or bent form of the arms described and shown obviously brings the ring A^3 outside of the hub A^2, so that a concave open space or depression is formed within the head of the reel, which concave space or depression communicates with the interior of the reel by means of the spaces or openings between the radial arms A′ of the head.

One important advantage gained by the employment of heads made in the manner described is that such heads enable the material to be operated upon to be easily conducted into the reel by bringing the exit end of a spout or conductor to a point within the vertical plane of the head A^3, it being entirely obvious that the material falling from a spout thus located will pass between the arms A′ A′ and will fall upon the cloth within the reel. This form of head is claimed in connection with truss-ribs of the character herein shown, for the reason that such form of head affords a convenient and advantageous means for supporting said truss-ribs when the latter are bent or deflected inwardly at their ends, as above set forth.

The main feature of novelty in my invention is comprised in a reel-frame embracing two sets of spiral or obliquely-directed truss-ribs extending from end to end of the reel, arranged to cross each other and secured together at their points of intersection to form a truss in the manner above set forth, together with exterior longitudinal cloth-supporting ribs sustained by said truss-ribs, and a reel-frame thus constructed is herein claimed without restriction to any of the other features of construction herein illustrated and above described.

A construction in which two sets of obliquely-

directed truss-ribs extending the full length of the reel, crossing each other and secured together at their points of intersection, are employed in connection with exterior cloth-supporting ribs, and in which said truss-ribs are converged toward the center of the reel at the ends of the latter, is also new, and is herein claimed as part of my invention, as is also a reel-frame embracing the parts last above set forth, combined with a reel-head constructed for the attachment of the ends of the inwardly-converged truss-ribs, in the manner illustrated in the accompanying drawings and above set forth.

I claim as my invention—

1. In a bolting-reel, the combination, with a frame comprising exterior longitudinal ribs for supporting the cloth, of two sets of spiral or obliquely-directed truss-ribs arranged to cross each other and secured together at their points of intersection to form a truss, said truss-ribs being extended the full length of the reel and connected with and constructed to support the exterior ribs, and means supporting the said longitudinal ribs and truss-ribs at the ends of the reel, substantially as described.

2. In a bolting-reel, the combination, with a frame comprising suitable exterior ribs for supporting the cloth, of two sets of spiral or obliquely-arranged truss-ribs arranged to cross each other and secured together at their points of intersection to form a truss, said truss-ribs being extended the full length of the reel and connected with the exterior ribs of the reel and converged toward the center of the reel at the ends of the latter, and means supporting the said exterior ribs and the truss-ribs at the ends of the reel, substantially as described.

3. In a bolting-reel, the combination, with the cloth and exterior ribs for supporting the cloth, of two sets of spiral or obliquely-directed truss-ribs arranged to cross each other and united at their intersecting points to form a truss, said truss-ribs being connected with the exterior ribs of the reel and converged toward the axis of the reel at the ends of the latter, and reel-heads comprising central hubs located inside of the planes of the heads and provided with radial arms, which are outwardly bent or deflected to form hollow or concave spaces at the ends of the reel, the inwardly-bent or converging ends of the truss-ribs being attached to the said arms near the hubs, substantially as described.

In testimony that I claim the foregoing as my invention I affix my signature in presence of two witnesses.

WILLIAM E. GORTON.

Witnesses:
EMERY C. GRAVES,
J. ROBERT SMITH.