(No Model.)

H. H. RING.

ROTARY BOLT.

No. 458,494. Patented Aug. 25, 1891.

Fig. I

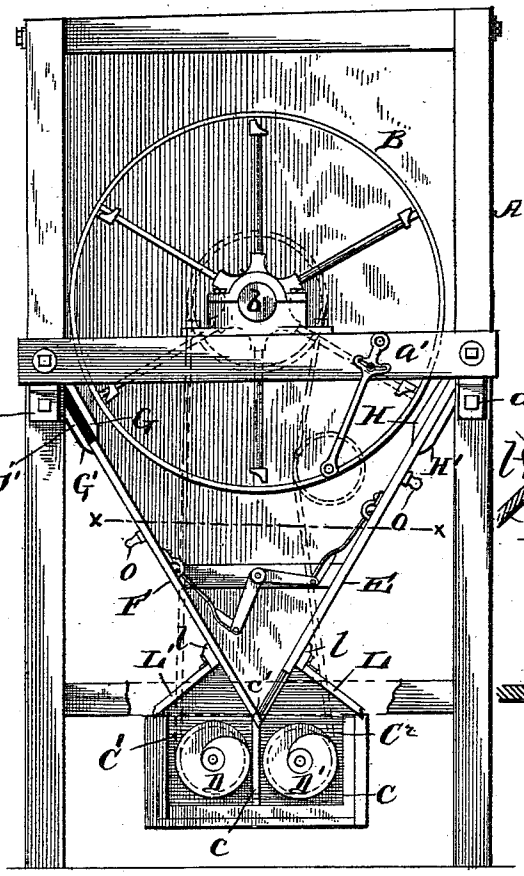


Fig. VII.

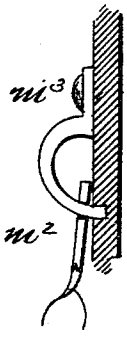


Fig. VI.

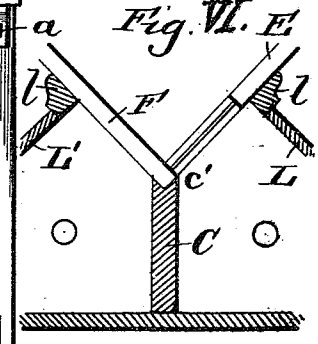


Fig. II

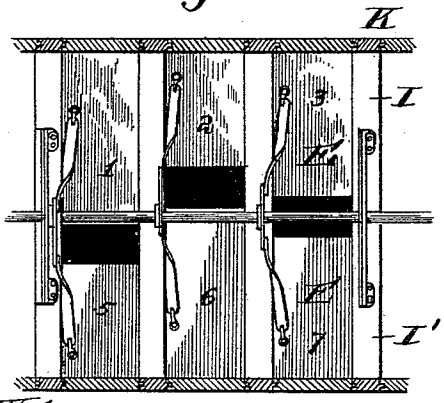


Fig. V.

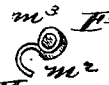


Fig. III.

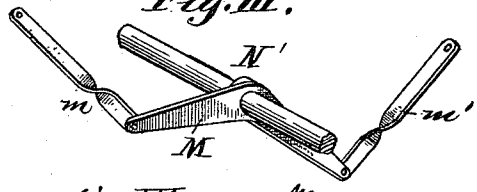
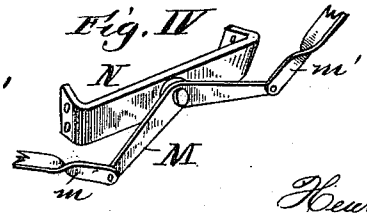


Fig. IV



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Inventor:
Henry H. Ring
By their attorneys,
Edson Bros

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

HENRY H. RING, OF LAIRDSVILLE, PENNSYLVANIA, ASSIGNOR TO WALDRON & SPROUT, OF MUNCY, PENNSYLVANIA.

ROTARY BOLT.

SPECIFICATION forming part of Letters Patent No. 458,494, dated August 25, 1891.

Application filed April 2, 1891. Serial No. 387,396. (No model.)

To all whom it may concern:

Be it known that I, HENRY H. RING, a citizen of the United States, residing at Lairdsville, in the county of Lycoming and State of Pennsylvania, have invented certain new and useful Improvements in Rotary Bolts; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to an improved construction of a cut-off for a bolting-chest having double conveyers, whereby the flow of the material into either of the two conveyers, arranged side by side, can be cut off from one to the other simultaneously at will.

The object is to produce such a construction and arrangement of said cut-off that will insure positive action and that in case the material should get clogged in one conveyer it cannot flow over into the other, wholly avoiding the liability of the two or more grades of material becoming mixed or commingled after they leave the bolt on the way to the conveyers, and to insure positive motion to the movable cant-boards or slides and to simplify and strengthen the construction.

With these ends in view my invention consists in the adjustable cant-boards or slides arranged in two series on opposite sides of a vertical line drawn through the center of the reel or bolt, and having the opposite boards or slides of the two series coupled or connected in pairs by devices which insure positive movement in opposite directions to the two boards of each pair of boards or slides, the cant-boards or slides of the two series below the receiving end of the reel or bolt being adjusted to deliver the first-quality flour or material into one compartment of the conveyer-box and the cant-boards or slides of the other series below the rear end of the bolt being adjusted to deliver the second-rate stock or material into the other compartment of the conveyer-box.

My invention further consists in a novel coupling and adjusting device for connecting the two boards or slides of each pair of cant-boards or slides; further, in the novel construction of the cut-off, and in the combination and arrangement of parts, as will be hereinafter fully described and claimed.

To enable others to more readily understand my invention, I have illustrated the same in the accompanying drawings, in which—

Figure I is an elevation of a rotary bolt, with parts of the casing or frame omitted to clearly illustrate the present improvement. Fig. II is a horizontal transverse sectional view of a part of the cut-off, the section being taken on the line $x\,x$ of Fig. I. Fig. III is a detail perspective view of one form of the coupling device for a pair of cant-boards or slides. Fig. IV is a similar view of another form of coupling device for the cant-boards or slides, and Fig. V is a detail view of the eye-hook to fasten the link to the cant-board or slide. Fig. VI is a detail sectional view of a part of the conveyer-box, showing the grooved central partition therein and the vertically-inclined guide-strip seated therein. Fig. VII is a detail view showing the position of the eye-hook for connecting the link to a cant-board or slide.

Like letters of reference denote corresponding parts in all the figures of the drawings.

As one embodiment of my invention I have shown it applied or adapted to a rotary bolt in which a series of inclined cant-boards are used; but I do not confine my coupling device and its mode of operation indicated in Figs. III and IV to cant-boards alone, as the improvement can be applied with equal efficiency to movable slides. For simplicity, durability, strength, and economy I prefer, however, to use the improvement in connection with cant-boards, as they allow a freer flow of material with less obstruction than slides.

A designates the casing or frame, which in all respects, save the cant-boards and feed or conveyer box, is similar to the ordinary bolt-casing, and B is the rotary reel, carried by a shaft b, which is suitably hung in the upper part of the casing A—as, for instance, in the manner shown in a concurrent application (Case B) filed by me even date herewith and bearing Serial No. 387,397.

C is the conveyer-box, arranged in the lower part of the casing A and fixed or secured in any preferred way to the horizontal bars a of the casing or frame, one of which bars a is shown in the end view, Fig. I, of the drawings. This box is divided into two compartments C′ C²

by a vertical partition *c*, situated in the vertical center of the bolt in a line drawn vertically through the axis of the reel B and the casing, and in the compartments C′ C² are the screw-conveyers D D′, one for conveying the first grade of flour to the desired place for storage or packing and the other for transferring the second grade of flour to the desired point for subsequent treatment, if deemed necessary or desirable. The two conveyers may be driven by a common sprocket-chain, (indicated by dotted lines in Fig. I,) which passes around sprocket-wheels on the conveyer-shafts and the reel-shaft.

E F are the series of cant-boards constituting the cut-off of my improved bolt, and the cant-boards of the series E are arranged on one side of a vertical line drawn through the reel and partition *c*, while the boards comprising the other series F are on the opposite side of the imaginary vertical line aforesaid, the two cant-boards being reversely inclined to make the lower part of the bolting-chamber substantially V shape in cross-section.

On each side of bolt casing or frame A, I provide a pair of spaced guide-boards G G′ and H H′, one pair being one side of the casing and the other pair on the opposite side. Each pair of guide-boards extends longitudinally of the casing in juxtaposition to the bars *a*′ thereof, and said pairs of guide-boards are connected with the conveyer-box C by vertically-inclined strips I I′, which extend from the guide-boards to the vertical partition *c* in said conveyer-box. These two series of vertically-inclined strips and the two pairs of guide-boards constitute a skeleton-shaped frame for supporting the cant-boards and guiding them in their adjustments, and said strips and guide-boards are inclined to correspond with the angle of the diverging cant-boards. The vertically-inclined strips of each series are spaced apart a suitable distance from each other to accommodate the cant-boards, and the guide-boards of each pair are arranged the proper distance from each other to leave an intervening space *j*′, into which the cant-boards are fitted or are adapted to fit.

The guide-boards and vertically-inclined strips comprising the skeleton-shaped frame are firmly fastened together by screws or in any other suitable manner, and after the boards and strips have been placed in the casing the conveyer-box is adjusted so that the lower ends of the vertically-inclined strips rest in a V-shaped groove *c*′, cut in the upper edge of the vertical partition *c*, after which the conveyer-box is rigidly bolted or otherwise secured to the frame or casing, whereby the sides of the skeleton frame are clamped or held in place between the conveyer-box and the casing without the employment of fastening appliances to secure the skeleton frame to the casing.

The cant-boards are fitted snugly between the opposing edges of the vertically-inclined strips of the skeleton frame, and to sustain the cant-boards in position, and at the same time secure a close joint between the strips and cant-boards, and to permit the boards to slide a limited distance between the strips, I connect the cant-boards and strips by tongue-and-groove joints K, as shown more clearly in Fig. II. The inclined cant-boards of the two series of boards diverge outwardly from the vertical central partition *c* of the conveyer-box, so that the compartments C′ C² of said box lie outside of and below the lower ends of the cant-boards, and the upper side of said compartments in the conveyer-box are closed by means of doors or flaps L L′, which are hinged at their inner upper edges to battens or strips *l*, rigidly fastened to the inclined strips or bars I I′ of the skeleton frame at lines above the uppermost limit of the lower edges of the cant-boards even when they are raised, whereby the stock or flour can pass into the compartments when the doors are raised. The opposite cant-boards of the two series are coupled in pairs by intermediate devices which insure positive movement in opposite directions to the two boards composing each pair. Thus the cant-board 1 of the series E is connected to the cant-board 5 of the series F, the cant-board 2 of the series E to the cant-board 6 of the series F, and so on throughout the two series of cant-boards extending the entire length of the reel and casing of the bolt.

The coupling device for each pair of cant-boards preferably consists of a bell-crank lever M, arranged transversely in the chamber between the cant-boards, and to the ends of said lever are pivoted the links *m m*′, which have their free ends attached to the opposite cant-boards by the hooks *m*², (shown in detail in Fig. V,) said hooks having an eye *m*³ to receive a screw which fastens it to the cant-board, and the free end of the hook is extended to penetrate or enter the cant-board a short distance to securely fasten the link to the cant-board. The bell-crank lever may be supported in the chamber in either of two ways—first, by pivoting each lever to a flat bar or iron N or fitting the whole series of bell-crank levers loosely on a rod N′, which extends longitudinally through the bolt-casing. If the flat bars or irons N are used, they should be fastened to the opposite strips I I′ of the skeleton frame, and the levers should be pivoted to one side of the bars, so as to be out of line with the bars or strips I I′, and thus adapt the links to be properly connected to the cant-boards. If, on the other hand, the single supporting-rod N′ is used, the number of bars N can be materially decreased, a number of the bars being spaced at suitable intervals through the length of the bolt to properly support the levers, one of which is connected to each pair of opposite cant-boards.

The cant-boards are each provided on the outside with a knob *o* to permit the ready manipulation or adjustment of the board by hand.

In the practical operation of the improved bolt one-half of the boards of one series E, or those which lie below the receiving end of the reel, are lifted, and likewise one-half of the boards of the other series F, or those which lie below the discharge end of the reel, are likewise lifted, it thus being seen that one-half of each series of cant-boards on opposite sides of the box and at opposite ends of the reels are lifted to provide two series of openings through which the stock or flour of different grades from both ends of the reel is free to pass into the respective compartments of the box. As the elevated cant-boards E below the receiving end of the reel are connected by the levers with the cant-boards of the series F below the same end of the reel and on the opposite side of the box, the cant-boards F below said receiving end of the reel are depressed, whereby the first-grade flour is directed into the compartment C′, and as the elevated cant-boards F below the discharge end of the reel are connected to the cant-boards E below the same end of the reel in like manner by the levers the cant-boards E below said discharge end of the reel are lowered to direct the second-grade flour into the openings provided by the elevated boards F to deliver to the compartment C^2.

Although I have shown in Fig. II the adjacent cant-boards in different positions for the purpose of illustrating the adjustments, yet I would have it understood that the boards at one end of the bolt should occupy the same relative positions—that is, all the cant-boards on two sides for one half the length of the reel should be lowered and raised, respectively, while all the cant-boards below the other half of the reel should in like manner be adjusted in reverse order.

The operation and advantages of my invention will be readily understood by those skilled in the art to which the improvement relates from the foregoing description, taken in connection with the drawings.

I am aware that changes in the form and proportion of parts and details of construction of the mechanism herein shown and described as an embodiment of my invention can be made without departing from the spirit or sacrificing the advantages of my invention. I therefore reserve the right to make such modifications as fairly fall within the scope of my invention.

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

1. In a bolting-chest, the two series of stationary guide boards or strips arranged on opposite sides of a conveyer-box, the guide boards or strips of each series being spaced at suitable distances apart, and the cant-boards or slides arranged in line with the guide-strips and connected thereto, said duplicate series of guide-boards and cant-boards by slide-joints forming the continuous flush sides to the inclosure between the conveyer-box and the reel, as and for the purpose specified.

2. In a bolting-chest, the duplicate series of vertically-inclined guide-boards spaced at suitable distances apart, and the cant-boards by slide-joints or slides connected to the guide-boards flush with the same and extending substantially from top to bottom of the same, said cant-boards and the guide-boards forming the continuous flush sides of the inclosure between the conveyer-box and the bolting-reel, in combination with the coupling devices, each of which is connected to opposite cant-boards of the two series, substantially as described.

3. In a bolting-chest, the combination, with a bolt and conveyer-box, of two series of diverging rigid guides extending from the partition between the conveyers to the bolt-casing, the two series of cant-boards or slides adjustably fitted in said guides, and the coupling devices connecting opposite boards or slides of the two series in pairs, substantially as and for the purpose set forth.

4. In a bolting-chest, the skeleton-frame comprising the spaced horizontal guide-boards and the series of inclined separated strips or bars, combined with a bolt, a conveyer-box, the two series of cant-boards adjustably fitted between the separated strips or bars of the skeleton frame, and the coupling devices intermediate of the two series of cant-boards, substantially as and for the purpose set forth.

5. In a bolting-chest, the combination, with a bolt and conveyer-box, of the two pairs of guide-boards, the vertical strips or bars intermediate of the guide-boards and the conveyer-box, the cant-boards fitted between the strips or bars and the guide-boards, and the coupling devices intermediate of the cant-boards, substantially as and for the purpose set forth.

6. In a bolting-chest, the combination, with a bolt and a conveyer-box, of the vertically-inclined bars or strips and the cant-boards fitted between said bars or strips and connected thereto by tongue-and-groove joints, substantially as and for the purpose set forth.

7. In a bolting-chest, the combination, with a bolt and the bolt casing or frame, of the skeleton frame having the two pairs of guide-boards and the attached inclined strips or bars, the conveyer-box provided with the central partition, on which the inclined bars rest, and the cant-boards fitted between the strips or bars and the guide-boards, substantially as and for the purpose set forth.

8. In a bolting-chest, the combination, with a bolt casing or frame and the bolt, of the conveyer-box, the skeleton frame constructed substantially as specified and clamped or confined in position between said conveyer-box and the bolt casing or frame, and the adjustable cant-boards, substantially as and for the purpose set forth.

9. In a bolting-chest, the combination of the bolt, the conveyer-box, the frame having

the inclined bars thereof resting on the central partition of the conveyer-box, the cant-boards fitted between said bars of the frame, and the battens or strips fixed to the bars of the frame and having the covers of the conveyer-box connected thereto, substantially as and for the purpose specified.

10. The combination, with a frame and the adjustable cant-boards, of the series of transverse bars secured to said frame, and the bell-crank levers supported by said transverse bars and connected to said cant-boards, substantially as and for the purpose set forth.

11. The combination, with a frame and the cant-boards, of the transverse bars secured to said frame, a longitudinal rod supported in said transverse bars, and the bell-crank levers supported on said longitudinal rod and connected to the cant-boards, substantially as and for the purpose specified.

12. The combination, with the frame and the cant-boards, of the transverse bars, the bell-crank levers having the links, and the hooks connected to the links and fastened to the cant-boards, the free ends of the hook extending into its cant-board, substantially as and for the purpose specified.

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

HENRY H. RING.

Witnesses:
D. B. DYKINS,
JOHN WALDRON.