(No Model.) 2 Sheets—Sheet 1.

F. A. FLATHER.

COILER FOR CARDING ENGINES.

No. 491,209. Patented Feb. 7, 1893.

Fig. 1.

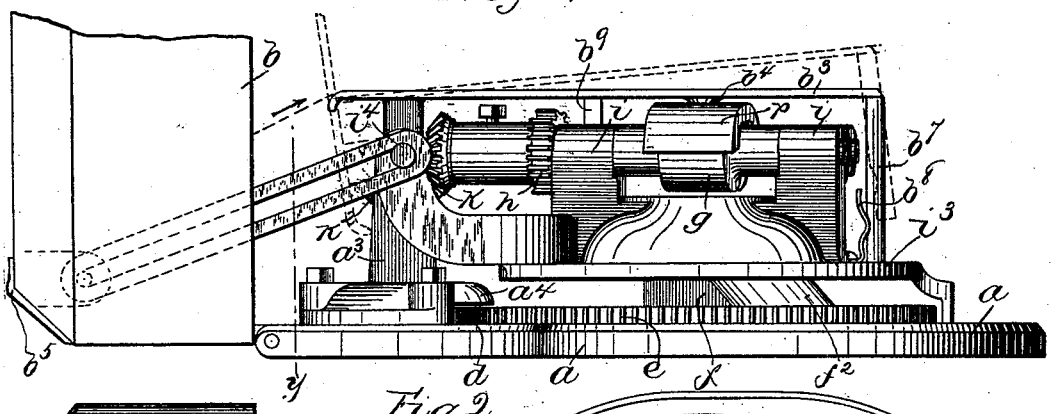


Fig 2.

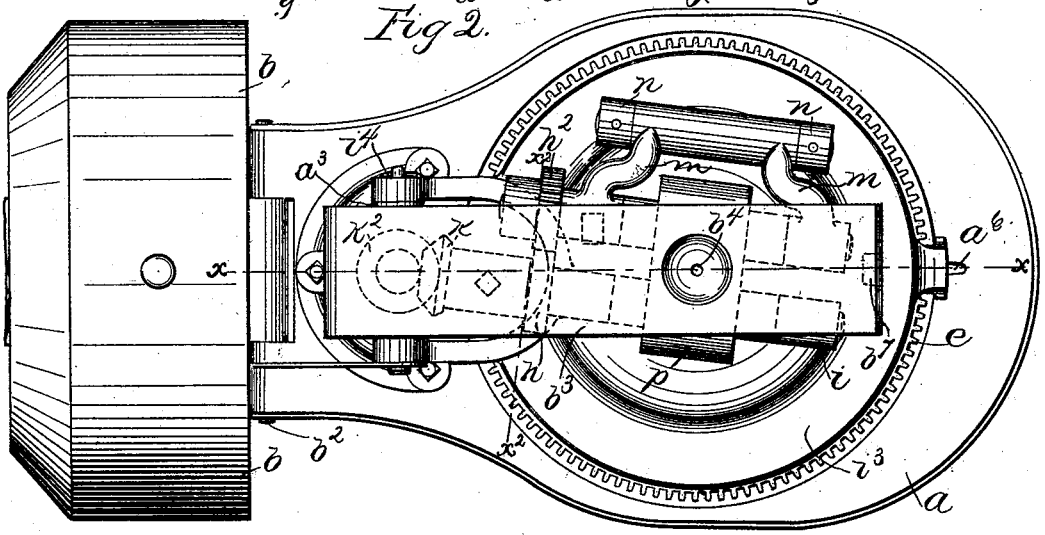
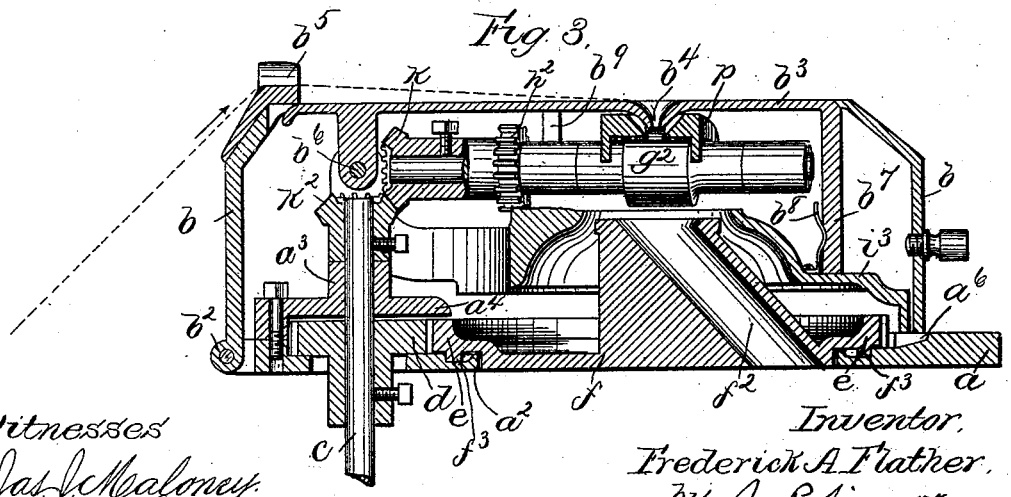


Fig. 3.



Witnesses
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(No Model.) 2 Sheets—Sheet 2.

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Fig. 4.

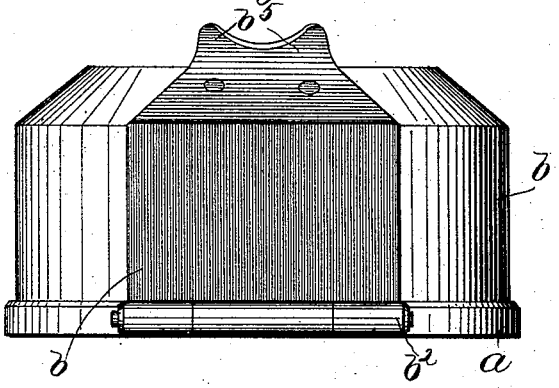


Fig. 5.

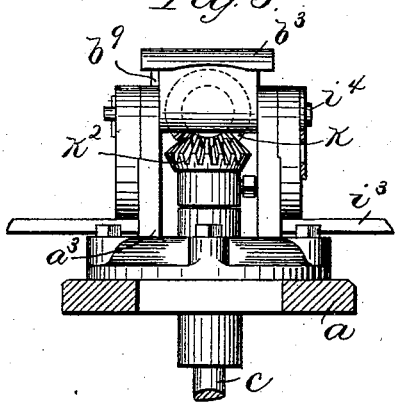


Fig. 7.

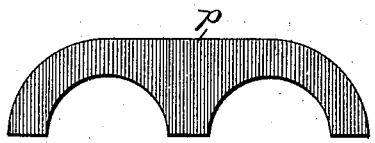


Fig. 6.

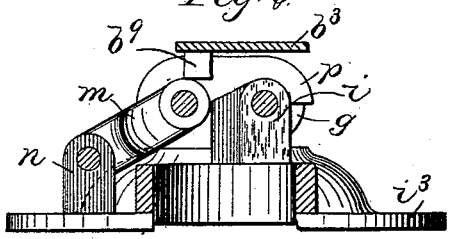
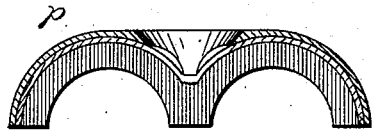


Fig. 8.



Witnesses
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UNITED STATES PATENT OFFICE.

FREDERICK A. FLATHER, OF NEWTON, MASSACHUSETTS.

COILER FOR CARDING-ENGINES.

SPECIFICATION forming part of Letters Patent No. 491,209, dated February 7, 1893.

Application filed November 5, 1891. Serial No. 410,917. (No model.)

To all whom it may concern:

Be it known that I, FREDERICK A. FLATHER, of Newton, county of Middlesex, State of Massachusetts, have invented an Improvement in Coilers for Carding-Engines, &c., of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

My invention is embodied in a coiler employed in connection with carding engines, drawing frames, and analogous apparatus, for coiling the sliver in a can or receptacle so that it may be conveyed to other apparatus and withdrawn from the can or receptacle in the subsequent process of manufacture, and the invention relates mainly to features of construction that will be hereinafter specified, that increase the convenience of operation and efficiency of the coiler.

The coiler comprises a revolving delivering head provided with a passage through which the sliver is delivered into the can, and feed rolls for carrying the sliver into the passage of the delivering head, which devices may be of the usual construction and are shown as substantially the same as in Letters Patent No. 432,132, granted July 15, 1890. The said operating parts are commonly supported on a frame plate which stands over the can or receptacle into which the sliver is coiled, and are inclosed in a movable cover provided with an opening through which the sliver is introduced, said opening being directly above the bite of the feed rolls. As commonly constructed the said cover forms practically the top and sides of a box or case, the bottom of which is the frame plate, and the cover is hinged near one end of the frame plate and is turned upward on its hinges whenever it is necessary to have access to the working parts inside of the cover, as is required from time to time for the purpose of oiling and cleaning the said parts. In as much as the sliver passes through the opening in the cover, the movement of the cover required for affording access to the interior parts, involves the breaking of the sliver and subsequent introduction of the same through the opening of the cover and to the action of the feed rolls &c., all of which is very objectionable as it consumes time on the part of the operator and injures the product of the machine.

The present invention consists partly in the combination with the frame plate and operative parts of the coiler, of a two-part cover, one part of which is provided with the guide passage through which the sliver passes to the feed rolls while the remainder of the cover forms the main inclosing case for the working parts and is so arranged that it can be raised or opened independently of the other part of the cover to afford access to the working parts for cleaning, lubrication, &c. without breaking the sliver which passes through the opening in the other part of the cover. The portion of the cover that contains the guide passage for the sliver may remain stationary, when the main or inclosing portion of the cover is opened, the said guiding portion affording but little obstruction to the attendant in the ordinary operations of cleaning or lubricating. The said guiding portion of the cover is however, itself hinged so that it can be turned upward when it is necessary to obtain more complete access to the working parts, or to move some of said working parts from their normal operative positions in order to obtain access to other parts.

The invention further consists in various improvements in details of construction that will be hereinafter pointed out.

Figure 1 is a side elevation of a coiler embodying this invention, with the main or protecting part of the cover raised while the sliver guiding part of the cover remains in normal working position, said part being shown however, in dotted lines as raised to give further access to the mechanism below, Fig. 2 is a plan view of the parts as shown in Fig. 1, Fig. 3 a longitudinal vertical section on broken line x, of Fig. 2, but with the entire cover closed, Fig. 4 an end elevation of the outer cover, Fig. 5 an end elevation of the inner cover, and a portion of the internal mechanism, being a section on line y, Fig. 1, Fig. 6 a transverse sectional detail on line x^2—x^2, Fig. 2, and Figs. 7 and 8 an end elevation and vertical section, of a movable cap or cover for the feed rolls detached.

The main frame plate or base piece a that stands above the can in which the sliver is to

be coiled may be of the usual construction and serves as the supporting frame for the working parts which are actuated by a shaft *c* provided with a spur gear *d* that meshes with a gear *e* on the revolving sliver delivering head *f* which is provided with an inclined passage f^2 see Fig. 3, extending from a point over the middle to a point near the periphery of the said head as shown, so as to deliver the sliver passing down through the said passage f^2 in a coil around the interior of the can as the said head rotates, these parts operating in the usual manner.

The delivering head *f* is composed mainly of a disk provided with gear teeth at its outer extremity and with an inclined passage f^2 the said disk entering loosely and filling a circular opening a^2 in the base plate *a* and being provided at its lower face with an annular rib f^3 that fits in a corresponding groove in the base plate *a* constituting the bearing in which the sliver delivering head rotates. The rib f^3 is of smaller diameter than the toothed part of the gear so that the teeth may be cut wholly across the periphery of the disk.

It is necessary that the portion of the delivering head that enters the opening a^2 in the base plate should fit loosely therein and should be confined to a position concentric therewith since the surface of the opening a^2 cannot be lubricated without danger of the lubricating material dropping upon and injuring the contents of the can. The rib f^3 therefore, has a working fit in the groove in the base plate which bears against the outer surface of said rib forming a joint or bearing that can be lubricated without danger of injuring the contents of the can and in which the delivering head works easily. The rib f^3 rests upon the bottom of the groove in the base plate which groove is cut away so as to afford clearance at the inner surface of the rib and thence around to the opening a^2 so that the rib bears only at its bottom and outer surfaces, which are the only parts that require lubrication, the clearance from the inner surface of the rib to the opening a^2 being sufficient to prevent the oil from being carried around to the said opening a^2 and thus dropping on the contents of the can. The said delivering head rests by gravitation in its bearings in the base piece *a* and can be lifted up therefrom if necessary to obtain access to the bearing surfaces, but in order to prevent it from being accidentally thrown out from its bearings, the bracket a^3 which is securely fastened to the base plate *a* and constitutes the bearing for the shaft *c* is provided with a forward projection or lip a^4 see Figs. 1 and 3, which projects over the periphery of the gear *e* and prevents the same from being accidentally thrown out from its bearings, by the pressure of the sliver collecting in the can when about full, it being necesary to lift the front edges of the gear first from the bearings and then to withdraw it from beneath the projection a^4 in order to remove the delivering head and gear when necessary.

The sliver is fed into the passage f^2 of the delivering head by a pair of rolls *g*, g^2, which may be constructed and operated in the usual manner, being shown in this instance as of the same construction as represented in Patent No. 432,132, herein before referred to, the shaft of said rolls being provided with gears *h*, h^2, which mesh together, and the shaft of the roll *g* being supported in stationary bearings *i* and provided with a beveled gear *k* meshing with a beveled gear k^2 on the shaft *c* which thus imparts motion to both rolls.

The bearings of the shaft of the roll g^2 are in a frame *m* pivoted in bearings *n* so as to turn on an axis parallel with that of the feed rolls, the construction and arrangement of the pivoted swinging frame *m* being the same as shown and described in said Patent No. 432,132, and causing the roll g^2 to be depressed toward the roll *g* by the force of gravity, although the said roll g^2 is yielding to pressure tending to move it from the roll *g* as when a bunch of sliver is formed on or between the rolls.

The feed rolls and their bearings are supported on a frame piece i^3 pivotally connected at i^4 with the bracket a^3 in which the shaft *c* is supported this enabling the entire feed mechanism to be turned upward on the hinge joint at i^4 when it is necessary to obtain access to the sliver delivering head *f* below the said feed mechanism.

The entire working parts are inclosed in a cover *b* the base of which fits closely upon the upper surface of the base plate *a* said cover *b* being hinged at b^2 so that it may be turned upward as shown in Figs. 1 and 2, to afford access to the working parts for the purpose of cleaning or lubricating the same, it being necessary to perform this operation frequently in the working of the coiler.

Heretofore the sliver has passed through an opening in the cover *b* to the feed rolls so that whenever the said cover was raised such operation would break the sliver and necessitate passing it again through the opening, and to the action of the feed rolls and delivering mechanism before the coiler would begin to operate upon it. In order to obviate this objection the top of the cover *b* is in accordance with this invention provided with a separate portion b^3 which is fitted carefully and tightly in a corresponding opening in the top of the main cover *b* the said portion b^3 being provided with the sliver delivering passage b^4 through which the sliver passes into the feed rolls. The portion b^3 of the cover extends to a point nearly over the hinge b^2 of the main cover but is comparatively narrow as shown in Fig. 2, so that when the main cover *b* is raised, access is afforded to the working parts for all ordinary operations of cleaning, lubricating, &c., without disturbing the position of the guide passage b^4 and con-

sequently without breaking the sliver, which passes to the said opening in the direction indicated by the dotted lines Figs. 1 and 3.

The main portion of the cover b above its hinge b^2 is provided with a guide recess or seat b^5 see Fig. 4, over which the sliver passes as indicated in Fig. 3, to the guide opening d^4 when the coiler is running, and when the cover b is open as shown in Fig. 1, the movement of the guide b^5 is so nearly in line with the direction of the sliver as to produce scarcely any strain thereon, so that the sliver is not broken or damaged by the opening of the cover b.

While the opening of the cover b affords access to the working parts as far as is generally required, it may in some casses be necessary also to move the guide portion b^3 of the cover which for this purpose is pivotally connected at b^6 with the bracket a^3 on which it turns on the same axis as the supporting plate i^3 for the feed rolls so that both the portion b^3 of the cover and the feed roll frame i^3 may be turned up together when required to obtain access to or remove the delivering head f. The portion b^3 of the cover is normally supported in working position by a projection or foot b^7 that rests on the frame piece i^3 for the feed rolls, and there is preferably a frictional catch or fastener b^8 which engages the said projection b^7 as shown in Figs. 1 and 3, and thus prevents the portion b^3 of the cover from rising when the main portion is opened, although the said catch will yield to permit the raising of the portion b^3 independently of the frame piece i^3 if required.

The feed rolls are provided with a removable cap or guard p see Figs. 7 and 8, which is lined with felt, and rests upon the periphery of the rolls and operates as a clearer to prevent the sliver from winding up on the rolls in case it fails to deliver properly into the passage f^2. The said cap is lifted off from the rolls g, g^2, in case it is necessary to have access to the rolls or to raise the movable roll g^2, and when the rolls are returned to their working positions the said cap is set back and placed upon them.

The portion b^3 of the cover is provided with a projection b^9 located just over one of the bearings of the roll g^2 in the frame m so that in case said frame m is lifted by the passage of a bunch or abnormally thick portion of sliver between the rolls, the said frame will engage the projection b^9 of the cover b^3 and lift the said cover thus preventing the gear h^2 from striking and grinding on the under surface of the cover in its rotary movement, and the added weight of the portion b^3 of the cover also tends to increase the pressure of the roll g^2 against the roll g as is desirable when the abnormally great thickness of sliver is passed between the rolls.

The base plate a is provided with a channel a^6 accessible outside of the cover b when closed as shown in Fig. 3 and leading to the guide groove in which the delivery head works so that the bearing of the delivery head and its gearing may be lubricated without raising the cover.

I claim—

1. The combination of the sliver delivering and feeding mechanism of a coiler, with a movable cover for said mechanism, composed of two separately movable parts, one containing a guide passage for the sliver, and having a support independent of the other part and the other constituting the main inclosing case or cover for the delivering mechanism, and being movable to uncover the said mechanism without movement of the part containing the sliver guide passage substantially as and, for the purpose described.

2. The combination of the supporting frame or bed plate and sliver feeding and delivering mechanism of a coiler, with a two-part cover, one part of which contains the guide passage for the sliver, and the other part of which is hinged on the base plate and provided near its hinged end with a guide seat over which the sliver passes to the guide passage in the other portion of the cover, substantially as and for the purpose described.

3. The combination of the base plate of the coiler head provided with a central opening and a groove around the same, with the revolving sliver delivering head having a portion that fits loosely in said opening and having a toothed periphery and an annular rib of less diameter than the toothed portion, which rib enters the said groove, and is engaged by the wall thereof to constitute the bearing for the said delivering head, and a bracket a^3, and main shaft having its bearing therein, provided with a gear engaging the toothed periphery of the sliver delivering head, said bracket being provided with a projection a^4, over said sliver delivering head whereby the latter is prevented from being thrown out of its bearing, substantially as described.

4. The combination of the base plate of the coiler head provided with a central opening and a groove around the same, with the revolving sliver delivering head having a portion that fits loosely in said opening and an annular rib that enters the said groove, and is engaged by the wall thereof, to constitute the bearing for said delivering head; a cover for said sliver delivering head, and co-operating mechanism, fitting closely on said base plate and an oil channel in said base plate from the outside of the cover to the bearing groove for the delivering head, substantially as described.

5. The combination with the feed rolls of a coiler, of the removable cap p supported on and co-operating with said rolls, substantially as and for the purpose described.

6. The combination of the rolls one supported in fixed bearings and the other in bearings movable with relation to the said fixed

bearings, with the movable cover, and the projection interposed between said movable bearings, and cover as described, whereby said cover is raised when the movable feed roll is forced apart from the co-operating feed roll, substantially as described.

7. The combination of the base plate and sliver delivering head having its bearing thereon, with the feed rolls and their supporting frame having a pivotal movement with relation to the base plate, and a two-part cover the portion of which that is immediately over the feed rolls being pivoted on the same axis as the feed roll frame, and supported in working position on the said frame, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

FREDERICK A. FLATHER.

Witnesses:
JOS. C. LIVERMORE,
M. E. HILL.