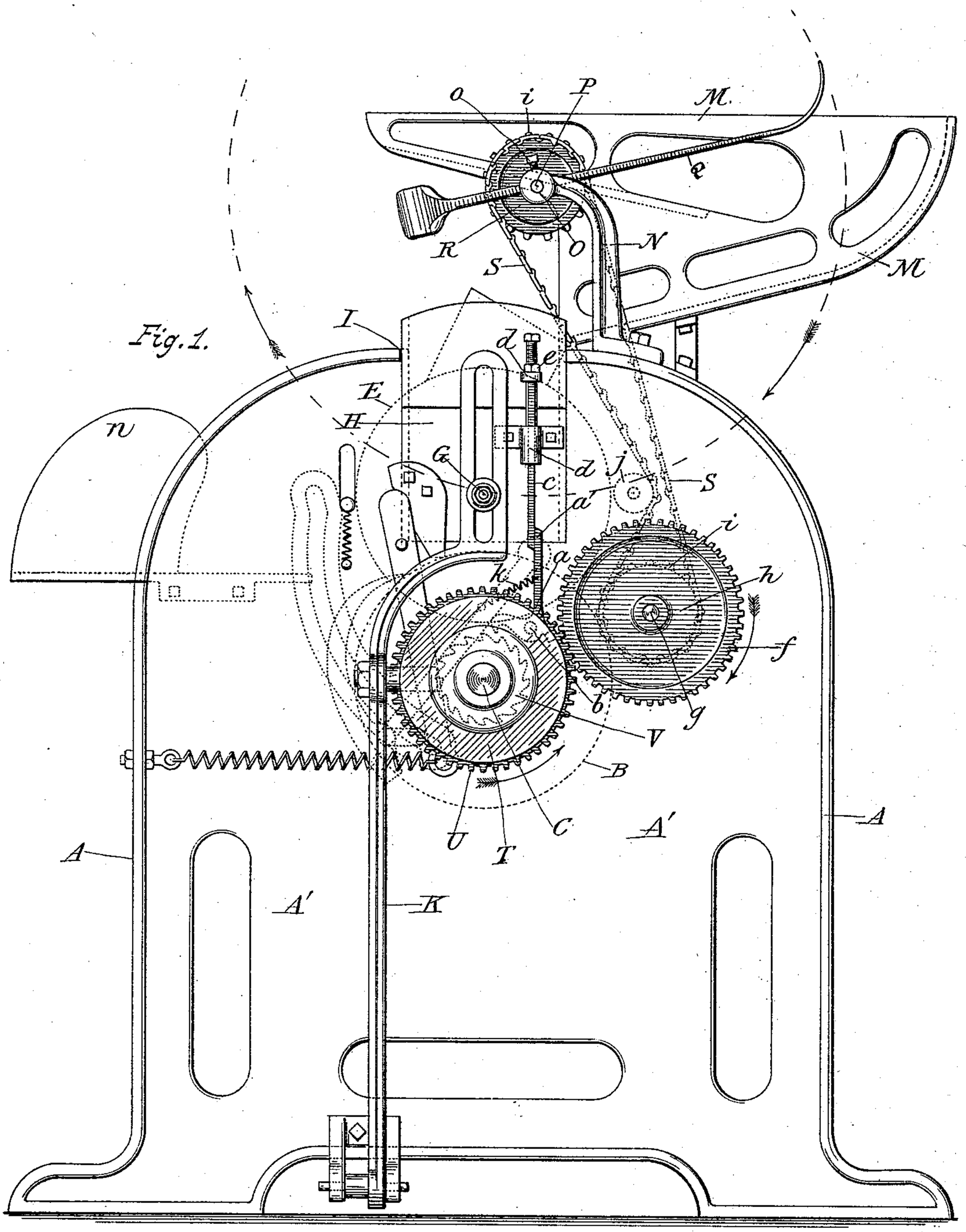
(No Model.) 2 Sheets—Sheet 1.

W. M. PAWLING.

MACHINE FOR BALLING SLIVERS.

No. 487,891. Patented Dec. 13, 1892.

Fig. 1.



Witnesses:
Charlie H. Tillon Jr.
C. H. Tillon

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

(No Model.) 2 Sheets—Sheet 2.

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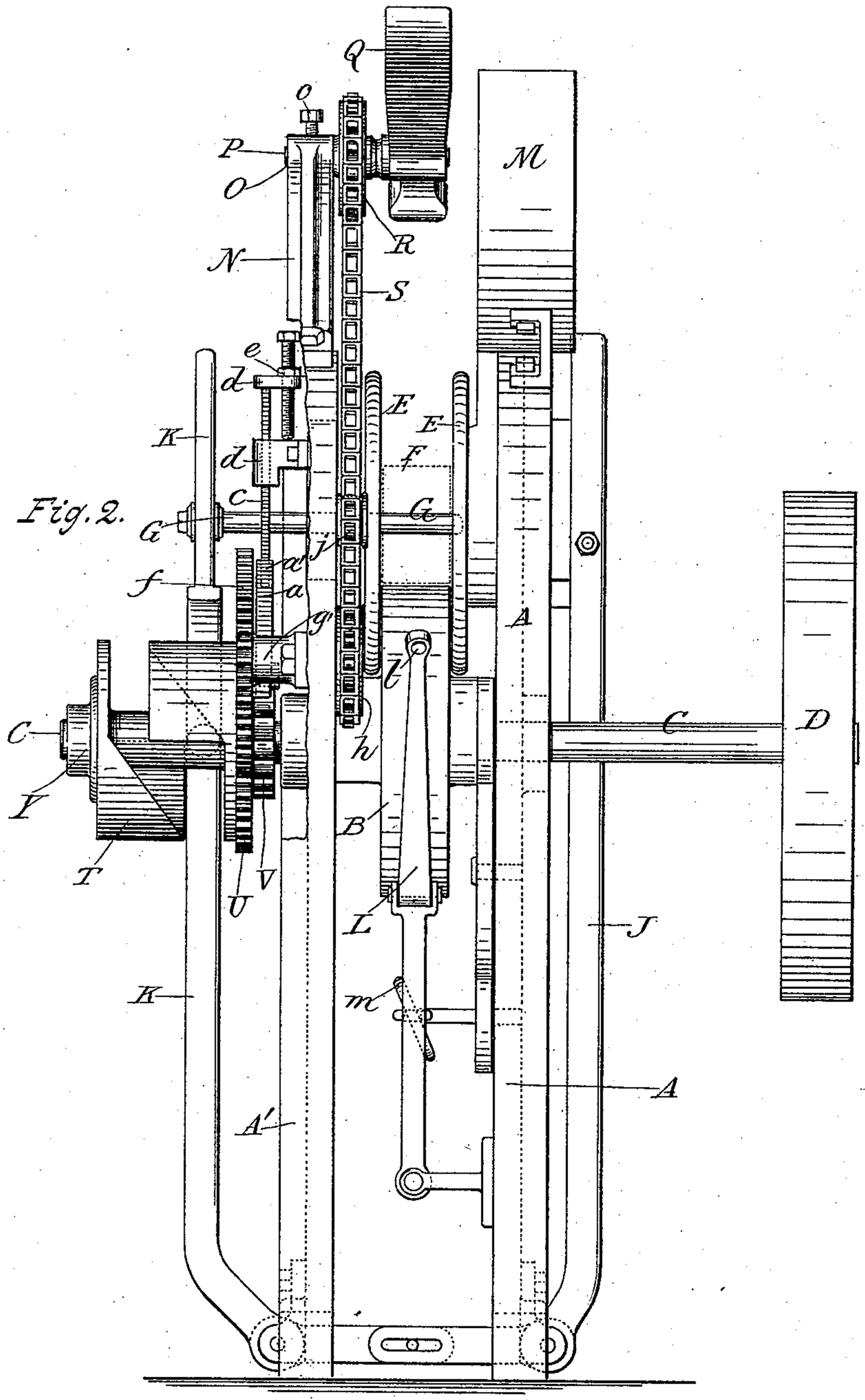
Fig. 2.



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UNITED STATES PATENT OFFICE.

WILLIAM M. PAWLING, OF HAGAMAN'S MILLS, NEW YORK, ASSIGNOR TO GEORGE J. TORRANCE, OF HARRISON, NEW JERSEY.

MACHINE FOR BALLING SLIVERS.

SPECIFICATION forming part of Letters Patent No. 487,891, dated December 13, 1892.

Application filed October 8, 1890. Serial No. 367,410. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM M. PAWLING, a citizen of the United States, residing at Hagaman's Mills, in the county of Montgomery and State of New York, have invented certain new and useful Improvements in Machines for Balling Slivers; 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.

This invention relates to certain improvements in that class of machines illustrated in United States Patent No. 370,574, dated September 27, 1887, and United State Patent No. 430,900, dated June 4, 1890, granted George James Torrance; and it consists of an improved mechanism for discharging the balls of sliver from the winding apparatus when wound to full size, entirely avoiding any concussions of the mechanism that throws out the ball, which has not, as I am aware, been heretofore attained.

The devices heretofore employed for throwing out or discharging the ball of sliver are required to do the work so rapidly by reason of the "bat" or "kicker" making in such a short space of time the movement forward to throw or kick out the ball and return to its normal position before a spool is deposited in position to receive the sliver to form a subsequent ball as to cause severe concussions and consequent breakage. To avoid these severe concussions, I employ a bat or kicker adjusted upon a revolving shaft, which bat automatically revolves smoothly at intervals, thereby discharging the completed balls of sliver, as hereinafter fully described.

I have shown my improvements in the accompanying drawings, making a part of this application, as applied to the machine shown and described in the drawings and specification of United States Letters Patent granted George J. Torrance June 24, 1890, and numbered 430,900, to which said Letters Patent reference is had; and I will here observe that my invention is an improvement upon the said Letters Patent No. 430,900.

Referring to the accompanying drawings, in which like letters of reference indicate like parts in each of the two views and the arrows the direction of motion, Figure 1 is a side elevation, and Fig. 2 is an end elevation.

In the drawings, A and A′ are side or bed plates, similar in general construction to those shown in Letters Patent No. 430,900, heretofore referred to, and B is the drum or wheel revolving between said plates A and A′, actuated by suitable driving mechanism, such as the shaft C and driving-pulley D.

E are the flanges, arranged at the upper part of the drum B at opposite sides thereof, which serve to keep the wool or sliver in place on the spool F. (Shown in broken lines in Fig. 2.)

G indicates the spindle on which the spool revolves, and F indicates the spool, which revolves by friction with the periphery of the rotating drum B at first and afterward by the engagement of the sliver wound on said spool with the surface of the drum B.

H is a vertically-sliding bearing located in a slot I (see Fig. 1) in the upper part of the side or bed plate A′ and through which the spindle G extends and engages the spool F. There is a corresponding vertically-sliding bearing located in a similar slot in the opposite side or bed plate A, which is not shown in the drawings. The said side or bed-plate A is fully shown in Letters Paten No. 430,900, heretofore referred to. The arrangements of the pushing-head for forcing the spool F laterally by the lever J to a position to receive the sliver, the mechanism to tear asunder and place the broken end of the sliver in position to be taken up and wound upon a subsequent spool when the preceding spool with the sliver is discharged, the inserting and withdrawing of the spindle G into the spool F by the lever K, operated by a system of cams, the traversing sliver-guide L for distributing the sliver evenly over the face of the drum B, and the spool-holder M, each being old and its operation so well understood, I do not consider it necessary to definitely describe except in a general manner, since their functions and operations are so definitely described in the Letters Patent Nos. 430,900 and 370,574, granted George J. Torrance, to which said several Letters Patent reference is hereby made as to their construction and operations.

My invention relates more particularly to

devices in connection and combination with these well-known devices for more successfully discharging the balls of sliver. To accomplish this object, I entirely discard all of those portions or devices described in the patents referred to for discharging the balls of sliver.

Upon the side or bed plate A′, (see Figs. 1 and 2,) I secure the bracket or standard N, of the general form therein shown, and provide it with the perforation O, into which I secure with the set-screw *o* the stud or bearing-pin P to keep in place the revolving bat Q, which discharges the ball of sliver. The sprocket-wheel R and the revolving bat Q are secured together and are constructed of the general form substantially as shown and revolve upon the stud or pin P by the linked chain belt S. (See the several figures of the drawings.)

Upon the inner end of the cam T, (see Fig. 2,) I place the gear or toothed wheel U, this gear-wheel being permanently secured to the said cam T. Upon the inside of the gear-wheel U, I secure to the shaft C by keying or otherwise the ratchet or pawl wheel V. The shaft C revolves within the hubs of the cam T and gear-wheel U, secured together, and is held longitudinally in place by the ratchet-wheel V, secured on the shaft and on the outside by the friction-plate *y*, secured firmly to the outer end of the shaft C. I secure near the periphery and upon one side of the gear-wheel U, substantially as shown, the pawl *a*, with the stud *b*, on which the pawl *a* vibrates.

c is a vertical retaining-lever secured in the lugs *d* upon the bearing H. This lever *c* is adjustable with the screw-nut *e* to regulate the size or diameter of the ball of sliver.

f is a gear or cog wheel secured upon the shaft *g*, (see Fig. 1,) with which it revolves in a bearing *g′*, secured to the piece A′. (See Fig. 2.) The gear-wheels *f* and U are of the same exact diameter and contain the same number of cogs or teeth.

h is a sprocket-wheel of the same exact diameter as sprocket-wheel R and contains the same number of pins *i*, and is secured upon the shaft *g*, which revolves in the bearing *g′*, heretofore referred to. The pins *i* on the sprocket-wheels R and *h* enter into the links of the chain belt S as the wheels R and *h* revolve.

j is a pulley to support and take up the slack of the chain S and to prevent the chain belt from interfering with other parts of the apparatus.

k (see Fig. 1) is a retaining-spring to retain and operate the pawl *a* when released by the lever *c*.

I will here remark that the ratchet-wheel V, cam T, pawl *a*, and vertical retaining-lever *c* are all described and shown in the Letters Patents heretofore referred to, and are well understood by those familiar with the art to which they belong and do not require a minute description of each part thereof.

The operation of my improvements is as follows: All the working parts of this machine, with the exception of my special invention, are supposed to be substantially the same as those described in the Letters Patents heretofore referred to, and more particularly to Letters Patent No. 430,900, with the devices therein shown and described, for discharging the balls of sliver removed. I substitute for the discarded parts of the said prior invention my invention, which I shall claim in combination, as set forth in the clauses of claim following, and which specially consist of the gear or cog wheels U and *f*, sprocket-wheels R and *h*, the belt or chain S, and the revolving bat Q or their equivalents, all constructed and operating in combination with the old parts, as shown and described. The sliver is supposed to pass through the eye *l* of the sliver-guide L, which is slowly vibrated the length of the drum B by the cam *m* through suitable connecting-gears from the main shaft C, and is pressed between the drum B and wound upon the spool F in the usual and ordinary manner, thereby forming a spool of sliver between the disks E on the spool F. As the spool increases in size the sliding bearing H, with its duplicate sliding bearing, which is not shown in the drawings, gradually rises in the slots I by the pressure of the increasing roll or spool of sliver until the lower end of the vertical retaining-lever *c* releases the shank *a′* of the pawl *a*, arranged on the side or bed plate A in the usual manner, thereby permitting the spiral spring *k* to cause the pawl to engage the ratchet-wheel V, which is, as heretofore described, firmly secured to the shaft C, thereby causing the gear-wheel U, engaging the gear-wheel *f* and the sprocket-wheel *h*, through the medium of the shaft *g*, to revolve, thereby causing the sprocket-wheel R and the bat Q to also revolve through the medium of the chain belt S. When the pawl *a* engages the ratchet-wheel V, thereby communicating motion, as just above described, the lever K, operated by the cam T, withdraws the spindle G from the spool F and immediately thereafter the revolving bat Q discharges the spool of sliver into the chute *n*, when it may be delivered into any suitable receptacle. The bearing H, with its duplicate bearing, which is not shown, falls to its original position, carrying with it, as a matter of course, the vertical retaining-lever *c* to its original position, engaging the shank *a′* of the pawl *a*, thereby disengaging the pawl *a* from the ratchet-wheel V, when the revolution of the parts just above described is complete, and the revolving bat and the connecting devices from the main shaft C rest until a subsequent spool of sliver is completed, when the operation is again repeated. The subsequent spool from the spool-holder M is introduced into position between the disks E by the action of the lever J. The spindle G is thrust into the center of the spool by the lever K. All of the above description

of operation as far as relates to the withdrawing of the spindle G, the introduction of the subsequent spool, and the falling of the bearings H to their normal position is old and fully described in the patents heretofore referred to, and I do not deem it necessary to give a minute description of these portions of the apparatus.

By the use of my special invention in a machine for winding balls of sliver I am enabled to throw out the full-wound balls with ease and without liability of breaking from the severe concussions heretofore experienced.

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

1. In a balling-machine, the revolving bat Q and means to operate the same from the main shaft at intervals to discharge the ball of sliver automatically.

2. In a balling-machine, the combination of the revolving bat and suitable means for operating the same from the main shaft, the said means consisting of a pawl, ratchet-wheel, spring *k*, gear-wheels, sprocket-wheels connected together with a chain belt, and an adjustable vertical retaining-lever adapted to release the pawl when the ball of sliver attains the desired diameter, thereby allowing the pawl through the medium of the spiral spring *k* to engage the ratchet-wheel, all operating as shown, described, and set forth.

3. In a balling-machine, the shaft C, provided with a pulley by which said shaft is driven, a drum to engage and cause the sliver to wind upon a spool, a ratchet-wheel secured upon the main shaft C, a gear-wheel and cam combined in one piece and held lengthwise upon said shaft by the ratchet-wheel, and a friction-plate Y, a pawl provided with a shank and adapted to engage the ratchet-wheel by the spring *k* when released from the retaining-lever *c*, a revolving bat operated by a chain upon sprocket-wheels, and an intermediate gear-wheel *f*, all combined and operating as described, shown, and set forth.

4. In a balling-machine, the combination of the shaft C, provided with a cam, gear-wheel, and ratchet-wheel, a lever actuated by the cam to insert and withdraw the spindle G from the spool F, flanges E, intermediate gear-wheel *f*, having attached thereto a sprocket-wheel, a revolving bat Q, and sprocket-wheel R, a chain belt S, connecting the sprocket-wheels together, and the said spindle G to receive spool F, said spindle being susceptible of a vertical movement in its bearings as the ball of sliver increases in diameter, and an adjustable vertical retaining-lever, all constructed and operating as and for the purposes set forth.

5. In a balling-machine, the combination of the revolving bat with the cam T, gear-wheel U, and means to connect the revolving bat therewith, the pawl *a*, provided with the shank *a'*, and the retaining-lever *c*, all constructed and operating as and for the purposes set forth.

6. A balling-machine combining therein the flanges E, between which the ball of sliver is wound, a chute *n* for receiving the ball from said flanges, and a revolving bat for throwing the ball of sliver from said flanges into said chute, substantially as set forth.

7. In a balling-machine, the combination of the flanges E, between which the ball of sliver is wound, combined with a revolving bat for throwing the ball from said flanges, substantially as shown, described, and set forth.

In witness whereof I have hereunto subscribed my name this the 29th day of September, 1890.

WILLIAM M. PAWLING.

Witnesses:
JOHN W. CANDEE,
JAMES M. PAWLING.