(No Model.) 2 Sheets—Sheet 1.

M. F. FIELD.

LET-OFF DEVICE FOR DELIVERY ROLLS.

No. 345,677. Patented July 20, 1886.

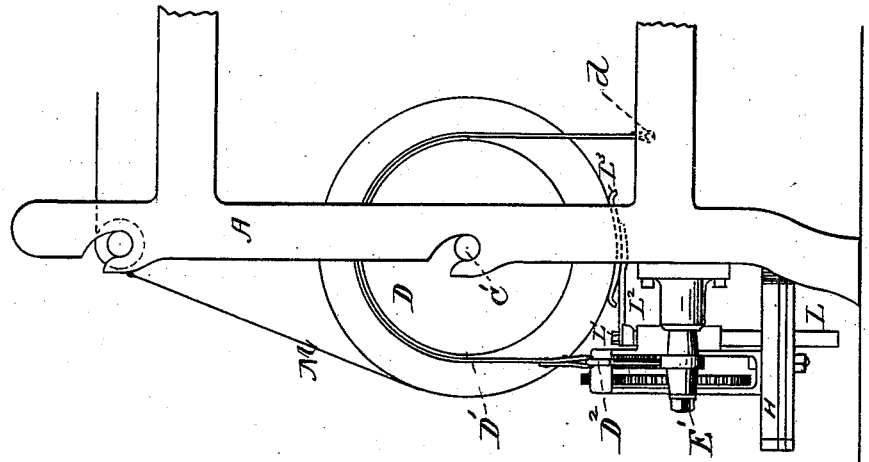

Fig. 2.

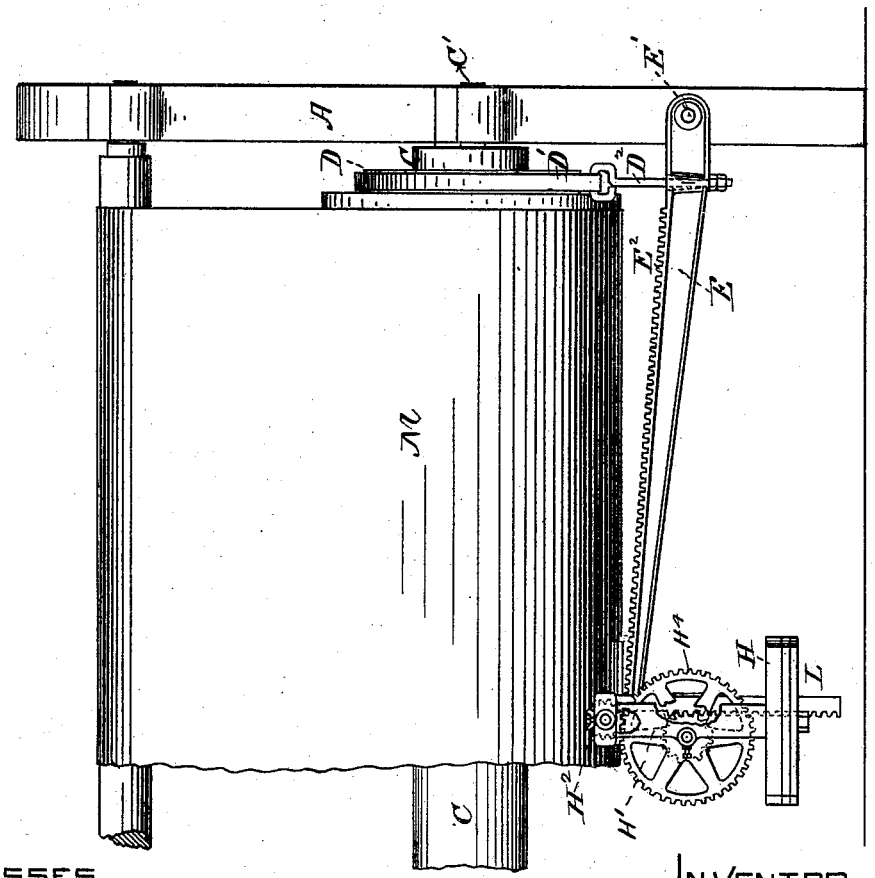

Fig. 1.

WITNESSES

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INVENTOR

Millard F. Field

(No Model.) 2 Sheets—Sheet 2.

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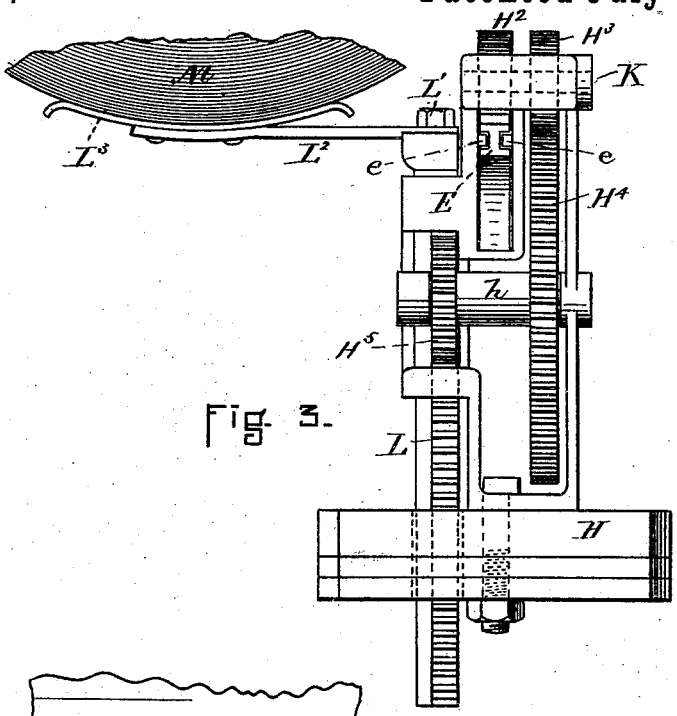

Fig. 3.

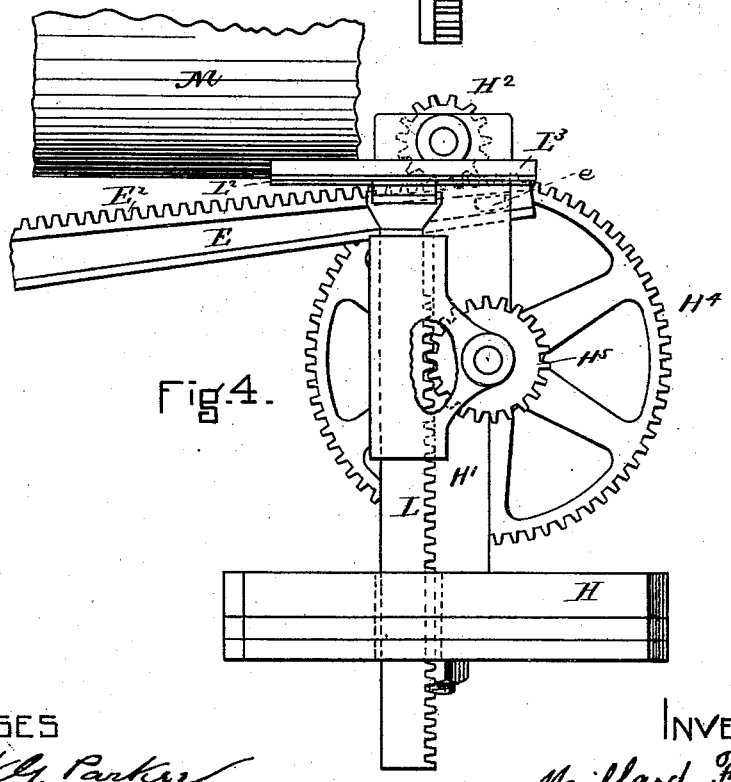

Fig. 4.

WITNESSES

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UNITED STATES PATENT OFFICE.

MILLARD F. FIELD, OF CHELSEA, ASSIGNOR TO GEORGE W. LINSCOTT, TRUSTEE, OF BOSTON, MASSACHUSETTS.

LET-OFF DEVICE FOR DELIVERY-ROLLS.

SPECIFICATION forming part of Letters Patent No. 345,677, dated July 20, 1886.

Application filed August 1, 1885. Serial No. 173,287. (No model.)

To all whom it may concern:

Be it known that I, MILLARD F. FIELD, of Chelsea, in the county of Suffolk and State of Massachusetts, have invented a new and useful Improvement in Let-Off Devices for Delivery-Rolls, of which the following, taken in connection with the accompanying drawings, is a specification.

My invention relates to means for regulating the tension of filaments or sheets that are wound upon rolls from which they are to be delivered, for treatment, to a mechanism which requires that the said filaments or sheets shall, when acted upon, be under a fixed and constant strain.

The object is to so construct the mechanism that it shall be automatic in its working, and shall adjust the power applied to the friction device in such a manner that it shall always exert an equal tension on the filaments or sheets delivered from the roll, whether the roll is full or otherwise. I attain this object by the mechanism shown in the accompanying drawings, in which—

Figure 1 is an elevation showing my let-off devices, a part of the delivering-roll only being shown. Fig. 2 is an end elevation of the same. Fig. 3 is an end elevation showing parts much enlarged, the point of view being opposite from that of Fig. 2 and representing a portion of the delivery-roll in section. Fig. 4 is a side elevation of a part of my let-off devices, showing parts much enlarged, the point of view being opposite from that of Fig. 1.

In the drawings I have shown my invention as applied to a roll, from which a sheet is delivered; but my invention is equally adapted for use on thread, yarn, tape, wire, or chain delivering rolls.

In the drawings, Figs. 1 and 2, A represents the frame of the machine, and C′ the axle of the delivering-roll, the roll itself being indicated by C, Fig. 1. Upon this roll C is wound the filaments or sheets which are to be paid out and operated upon.

D, Figs. 1 and 2, is a friction-pulley, upon the periphery of which the friction-strap D′ operates. This friction-strap D′ is attached at one end to the frame of the machine, as shown at *d*, Fig. 2, while the other end is connected to the lever E by means of the link D^2, Fig. 2.

The lever E is pivoted to the frame of the machine at E′, Figs. 1 and 2, and is inclined and provided with a rack, E^2, on its upper edge, as shown at Fig. 1. The friction-brake lever E is inclined, so that the weight H, hung upon it by the housing H′, and a rolling-pinion, H^2, may have a tendency to roll down—that is, to approach the fulcrum-point E′. This action of the weight H will have a tendency to lessen the power exerted upon the friction-strap D′, and thus lessen the friction on the pulley D, and, as a consequence, diminish the tension on the filaments or sheet M.

To regulate the movement of the weight H and its adjuncts on the lever E, I have adopted the following device: The rolling-pinion H^2 (see Figs. 1 and 3) has a companion pinion, H^3, Fig. 3, both pinions being attached to the same shaft K, Fig. 3, so that one cannot revolve without the other, and, as the pinion H^3 engages with the gear H^4, the said gear H^4 must revolve with the rolling-pinion H^2. From the above it may be seen that the movement of the weight H in approaching the fulcrum E′ of the lever E must cause the said pinions H^2 H^3 and gear H^4 to revolve, and that unless the said pinions and gear are allowed to revolve no movement of the weight H can take place.

To regulate the revolutions of the above gears I have invented the following device. I attach to the gear H^4 by means of a quill, *h*, a pinion, H^5. This pinion H^5 engages with a rack, L, upon the upper end of which I place an arm, L^2, made fast to the said rack L by means of the nut and screw L′, Figs. 2 and 3. On the arm L^2, I place a curved piece, L^3, which serves as an indicator and gage for the size of the roll of filaments or sheets M. As the roll diminishes the gage-piece L^3 can pass upward, thus allowing the rack L to ascend and the pinion H^5 to revolve, so as to admit of the revolution of the gear H^4 and the pinions H^3 H^2, and through them admit the weight H and its adjuncts to pass down on the lever E, and thus diminish the pressure of the friction-strap D′ on the pulley D, and consequently retain the even tension required. The end of the lever E is made in section in the form of the letter **I**, thus, and is so connected to the housing H′ that the bosses *e e* on said housing may slide

in the grooves of the lever, so that it (the lever) cannot be raised or lowered or tampered with in any way by the operator.

The leading idea of my invention is to arrange a kinematic chain, one end of which shall rest upon the diminishing roll of delivery, while the other end shall rest upon and govern the tension by means of a friction-strap or its equivalent.

I claim—

The combination of the gage L^3 L^2 L' L, the housing H', gearing H^5 H^4 H^3 H^2, and weight H, with the lever E, friction-strap D', pulley D, and delivering-roll C, all operating together substantially as described, and for the purpose set forth.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, on this 29th day of July, A. D. 1885.

MILLARD F. FIELD.

Witnesses:

FRANK G. PARKER,

CHAS. SPAULDING.