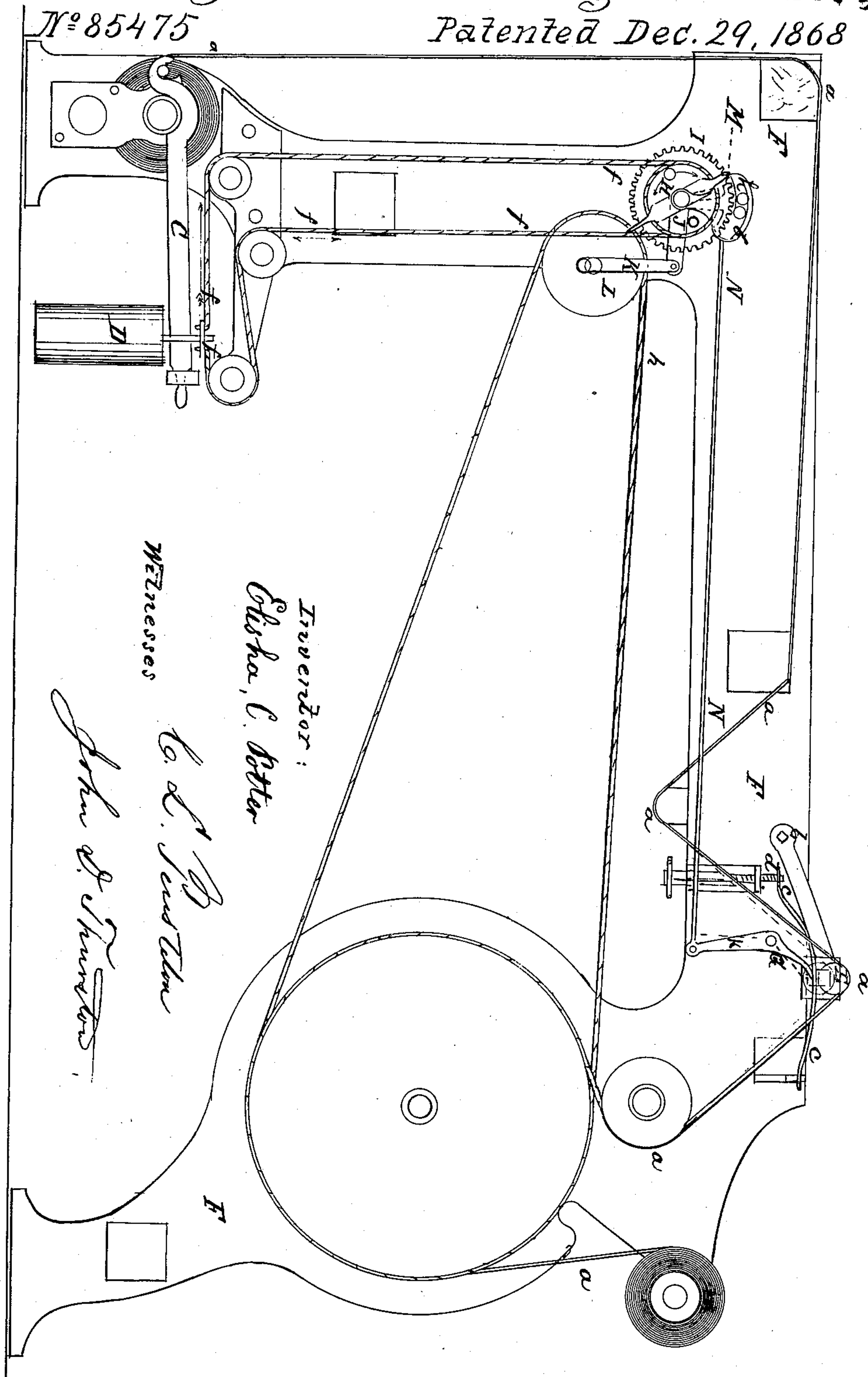


*E. O. Potter.*

## Feeding Cloth to Printing Machinery.

№ 85475

Patented Dec. 29, 1868



Inventor:

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Wetresses

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# United States Patent Office.

ELISHA O. POTTER, OF PAWTUCKET, RHODE ISLAND

*Letters Patent No. 85,475, dated December 29, 1868.*

## IMPROVEMENT IN APPARATUS FOR FEEDING CLOTH TO PRINTING-MACHINERY.

The Schedule referred to in these Letters Patent and making part of the same.

*To all whom it may concern:*

Be it known that I, ELISHA O. POTTER, of Pawtucket, in the county of Providence, and State of Rhode Island, have invented a certain new and useful Apparatus for Causing Cloth to be Delivered with a Uniform Tension to Printing and other like Machines; and I do hereby declare that the following specification, taken in connection with the drawing, making a part of the same, is a full, clear, and exact description thereof.

My invention relates to a means for securing a uniform tension upon a piece of cloth during its delivery to other machinery, when other mechanical operations are to be performed upon it.

The apparatus is especially designed for use in connection with calico-printing machines, where it is of great importance, in securing a perfect matching of the several parts of the figure, that the cloth to be printed should be presented to the printing-rollers under a uniform tension; but there are also many other arts, of a kindred character, where the invention can be usefully employed.

The drawing, therefore, represents the apparatus in combination with no particular class of machines, but exhibits the invention, as applied to a machine, unwinding a roll of cloth from one beam and simultaneously rewinding it upon another.

Any competent mechanic, acquainted with cylinder-printing machinery, or with the art in which he wishes to employ the invention, will readily understand how it is to be applied to the particular machine where it is required.

In the drawing, the piece of cloth is represented by *a*, and is supposed to be travelling from the delivery-beam *A* to the point of discharge, *B*, which may be understood, for example, to represent the main bole of a printing-machine.

*C* is the lever of a friction-brake, in common use in printing-establishments for applying friction to the delivery-beam, in order to regulate the strain upon the piece of cloth, and *D* is a weight which depends from a neck, and is arranged to slide along the lever *C*.

The piece of cloth may be made to travel in any convenient path, but at some point, before it reaches the place of discharge, it should be made to pass over and exert pressure upon a bar, *E*, placed transversely. This bar is so arranged as to be capable of being moved, within narrow limits, in a nearly vertical line.

In this instance, and for the purpose of enabling pressure upon it at any point, to depress both ends equally, it is attached to the ends of two arms pivoted, at *b*, to the opposite sides of the frame *F*. Each end of this bar rests upon a spring, *c*, the adjustments of which can be modified by the screw-rod *d*, upon which one end of such spring bears.

Upon one side of the frame *F*, and pivoted thereto, is placed a bell-crank, *G*, the top surface of whose horizontal arm bears against the under side of the spring *c*, and is held against the same by another flat spring.

Obviously, as the yielding bar *E* is depressed, and then permitted to rise, the longer arm of the bell-crank *G* will, in consequence of its arrangement therewith, as described, be made to vibrate.

Inasmuch as it is the purpose of the apparatus to effect, automatically, the shifting of the position of the weight *D* upon the brake-lever arm *C*, in order to regulate the degree of friction to be exerted upon the delivery-beam *A*, it will be proper to understand, first, the means by which such weight is made to shift its position, and secondly, how the same is put into action whenever the pressure of the cloth, in travelling over the transverse yielding bar *E*, is either greater or less than that due to the exact amount of tension required.

The cord *f* is wound twice or more times around a pulley or drum, *H*, and its ends are made fast to holding-rings upon opposite sides of the neck of the weight *D*. The pulley *H* is set upon a stud-axle projecting from the frame *F*, and if revolved, the winding up of the cord *f*, from one side or the other, as the case may be, will cause the weight *D* to slide along the lever-arm *C*.

*I* is a ratchet-wheel, in combination with which are two pawls, *g g*, set so as to work opposite to each other, as will presently be explained. This ratchet-wheel is upon the same axle as the drum *H*, and the two move together, the latter being held against the former by the friction of its face against the face of the ratchet-wheel, a spring upon the axle, between the outer face of the drum and the holding-nut, being used to create the necessary friction.

The two pawls *g g*, above referred to, are pivoted to the upright arm of the bell-crank lever *J*, whose fulcrum is the axle of the ratchet-wheel *I*.

The horizontal arm of the bell-crank is pivoted to the rod *K*, whose opposite end is connected to the wrist of a crank-pin projecting from the face of the pulley-wheel *L*.

A constant rotatory movement is communicated to this pulley-wheel by means of a belt, *h*, from any convenient source, and consequently a constant vibratory movement is given to the bell-crank lever *J*, and to the two pawls attached to the same. The result will be, if both pawls are allowed to act in alternation, that a rocking motion will be given to the drum *H*, which, through the cord *f*, will cause a to-and-fro movement along the lever-arm *C*, to be given to the weight *D*. It is designed, however, that these pawls shall only act when the weight is required to be shifted.

Accordingly, a segmental disk-plate, *M*, is set upon the axle which supports the bell-crank lever, to which the pawls are attached, upon whose periphery the tips of both pawls can rest, and in that position will be raised above the teeth of the ratchet-wheel *I*. As, however, such disk-plate is rocked towards the right or the left, the one or the other of the pawls *g g* will be brought into contact with the teeth of the ratchet-



wheel, and will cause the weight D to be shifted in its position upon the lever-arm O.

The manner in which this mechanism, described, for shifting the position of the weight, is made to act, from an influence which originates with the yielding transverse bar E, is as follows:

The vibrating arm *k* of the bell-crank G has its lower extremity jointed to a long rod, N, the other end of which rod is pivoted to the segmental disk-plate M, which has been before mentioned. The adjustment should be such that, when the length of cloth is pressing some the bar E, with a force due to the proper degree of tension decided upon, the segmental disk will stand in a position, which will enable both pawls *g g* to ride upon its periphery, and be clear of the ratchet-wheel.

Obviously, if thus adjusted, any increase of tension upon the cloth will cause the bar E to be further depressed, when the segmental disk will be rocked far enough to the left, to allow that pawl to come into action, which will give motion to the ratchet-wheel in a direction which will cause the weight D to be moved toward the cloth-beam, and relieve the strain upon the cloth.

Under opposite conditions, the bar E will rise upward by the reactionary force of the springs upon which it rests, and the ratchet-wheel being thereby turned in

the other direction, the weight D will be moved to a point nearer to the end of the lever.

Thus, the proper degree of tension upon the cloth will be automatically regulated.

I do not mean to limit myself to the precise construction or arrangement of the parts of the apparatus, as described, but I mean to include all variations of form and arrangement, accomplishing the same mode of operation by equivalent means.

What I claim as my invention, and desire to secure by Letters Patent, is—

An apparatus or combination of devices for securing a uniform amount of tension upon cloth, or other material, during its delivery to other machinery, which consists of a friction-brake, or like device, for varying the degree of friction upon the delivery-beam, operated by a pawl and ratchet-gear, *g I*, and cord, *f*, or the equivalents thereof, in combination with a yielding bar, E, controlling, through the disk-plate M, or like means, the action of the pawl-and-ratchet mechanism, such apparatus operating substantially as herein set forth.

ELISHA O. POTTER.

Witnesses:

BENJ. F. THURSTON,  
JOHN D. THURSTON.