

(No Model.)

2 Sheets—Sheet 1.

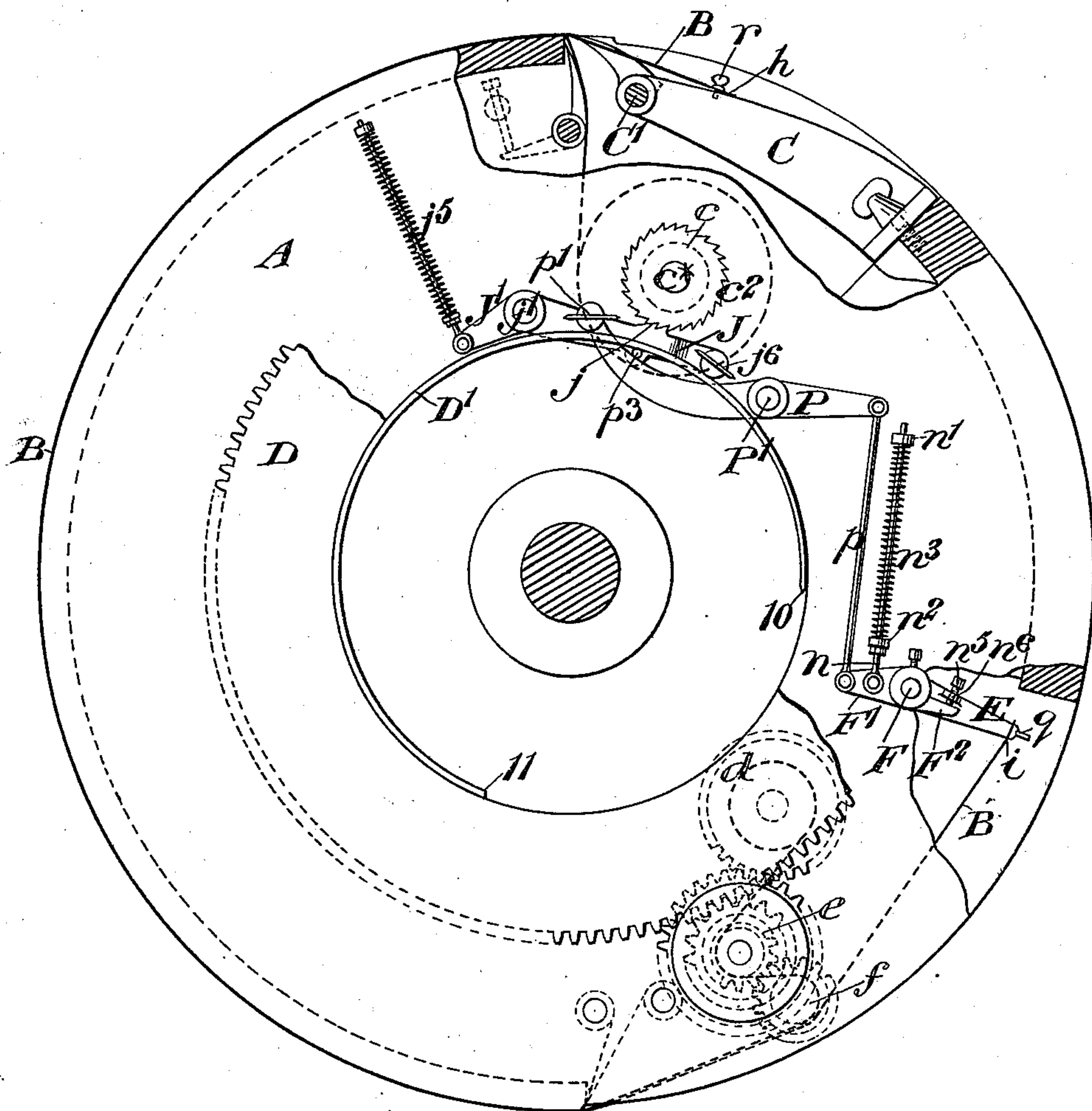
C. P. COTTRELL.

OFFSET MECHANISM FOR PRINTING MACHINES.

No. 560,345.

Patented May 19, 1896.

Fig. 1.



Witnesses:

Fred Haynes
George Barry Jr.

Inventor:

Charles P. Cottrell.
by attorneys:
Rowntree & Howard

(No Model.)

2 Sheets—Sheet 2.

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Fig. 2.

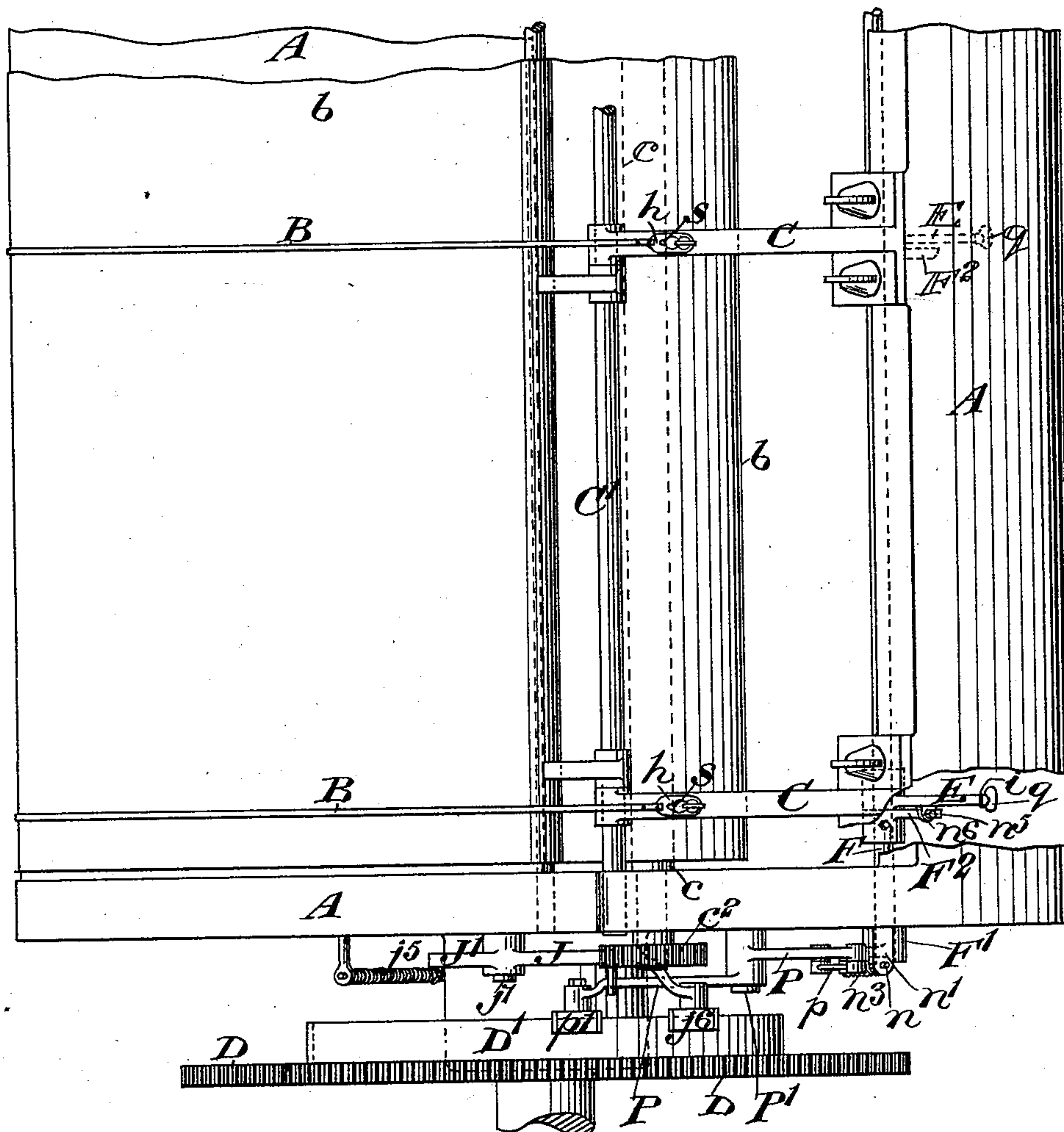


Fig. 3.



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UNITED STATES PATENT OFFICE.

CHARLES P. COTTRELL, OF STONINGTON, CONNECTICUT.

OFFSET MECHANISM FOR PRINTING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 560,345, dated May 19, 1896.

Application filed December 20, 1895. Serial No. 572,730. (No model.)

To all whom it may concern:

Be it known that I, CHARLES P. COTTRELL, of Stonington, in the county of New London and State of Connecticut, have invented a new and useful Improvement in Offset Mechanism for Printing-Machines, of which the following is a specification.

This invention relates to tympan which are shifted on the impression-cylinders of printing-machines as often as it may be desired to present a clean tympan-surface on the operative portion of the cylinder.

The object of the improvement is to provide for clamping the tympan to the cylinder throughout as much of the circumference of the latter as includes the impression-surface, and thereby to more effectually counteract all tendency of the tympan to creep or be slightly shifted upon the cylinder by any drag produced upon it in the act of printing.

The invention is illustrated in the accompanying drawings as applied in connection with a shifting tympan and such mechanism for shifting it as is illustrated and described in United States Patent No. 467,637, dated January 26, 1892, such mechanism including a supply-roller and feed and take-up mechanism by which the tympan, consisting of a

I will proceed to describe my invention in detail with reference to the drawings, and afterward point out its novelty in claims.

Figure 1 represents an end view of an impression-cylinder and such parts attached and contiguous thereto as are necessary to illustrate my invention, the head of the cylinder being represented as having parts broken out to expose the parts within. Fig. 2 is a plan view of a portion of the said cylinder and parts. Fig. 3 represents, on a larger scale, a plan view of one of said parts which will be hereinafter explained.

A is the impression-cylinder; b, the tympan; c, the supply-roller on which is the clean portion of the tympan which has not yet been delivered to the exterior of the cylinder; d, the take-up roller on which the soiled portion of the tympan is taken up; e f, the feed-rollers. These rollers, which are all within the cylinder and are shown in Fig. 1 in dotted outlines only, have their several journals fitted to bearings in or attached to the cylinder ends.

c² is a ratchet-wheel on the supply-roller journal c*. This ratchet-wheel might be mounted loosely on the journal under the control of a spring, as described in the herein above-mentioned Letters Patent No. 467,637; but for the purpose of the present invention this mounting of the ratchet-wheel is not material and the said wheel may be considered as fast upon the journal c*.

J J' designate a locking-pawl consisting of a lever working on a fulcrum-pin j' on one end of the cylinder. The arm J of the said lever has teeth j, which engage with the said ratchet-wheel c², said teeth and those of the said ratchet-wheel being set in a direction to hold the supply-roller against any tendency to unwind the tympan. The arm J' of the said lever has applied to it a spring j⁵, which operates to press the teeth j of the lever into engagement with the ratchet-wheel c². The arm J of the said lever has pivoted to its outer end a slide j⁶, which is capable of running against either the inner or outer periphery of the stationary interrupted circular track D', which projects from the stationary gear D, with which the feed and take-up rollers are geared to derive motion through the revolution of the cylinder. When the teeth j of the locking pawl or lever J J' are in engagement with the ratchet-wheel c², the slide j⁶ is in position to run outside of the track D'; but when the said slide runs on the inner periphery of the track D' it holds the locking-pawl out of engagement with the said ratchet-wheel. The said ratchet-wheel, locking-pawl, and circular track are like the corresponding parts described in Letters Patent No. 467,637, hereinbefore referred to; but I have found it necessary to so far describe them here in order that it may be understood how the present invention may be applied in connection with automatic tympan-shifting mechanism.

The feed and take-up devices, of which the rollers e f constitute essential parts, are not involved in the present invention, and therefore need no further description beyond saying that they may be and are represented the same as in said Letters Patent.

B B are clamping-bands which constitute the principal feature of my invention for clamping the tympan to the cylinder at as many lateral intervals as may be desirable

throughout as much of its circumference as includes the impression-surface. There may be, for example, one of these bands just within each edge of the tympan and one at the middle of the width thereof. The said bands are preferably of metal of great tensile strength—steel, for instance—and I prefer to make them of flat ribbon or tape form. They are severally attached at their opposite ends to and within the cylinder and extend all the way over the portion of the tympan which is exposed outside of the cylinder. They are represented as attached at one end h to the brackets C , which contain the bearings of the gripper-rod C' , and as connected at the other end i with levers E , one for each band, which are fulcrumed on a rod F , which is arranged lengthwise within the cylinder in suitable bearings in the ends thereof and at such intervals as may be necessary between the ends. On one end of the fulcrum rod or shaft F outside of the cylinder there is fast a lever-arm F' , with which is connected a rod n , working through a guide n' , fast on the end of the cylinder. Between this guide n' and a collar n^2 on the rod a spring n^3 is coiled upon the said rod, the said spring acting on the lever-arm F' with a constant tendency to tighten up all the tympan-clamping bands. The lever-arms F' are loose on the fulcrum-rod F ; but for each one of them there is fast on the said rod an arm F^2 , upon which bears an adjusting-screw n^5 , which is screwed through a lug n^6 on the arm E . By screwing up these set-screws the several bands may all be adjusted to a uniform tension. The lever-arm F' is connected by a rod p with one arm of a lever P , which works on a fulcrum P' on the end of the cylinder, the opposite arm of the said lever having pivoted to it a slide p' , which may run either inside or outside of the track D' . When the lever P is in position for the slide p' to run on the outside of the track, the said lever acting through the rod p on the lever-arm F' causes the lever-arms $F^2 E$ to hold the tympan-clamping bands B tight upon the tympan, so that the latter is immovable; but when the said lever P is in position for the slide p' to run on the inside of the track the rod p overcomes the force of the spring n^3 and leaves the said bands slack, so that the tympan can be shifted on the cylinder by the means provided for the purpose. The arm J' of the lever $J J'$ has on one side of it a stud or projection p^3 , which projects over the lever P for the purpose of producing the action of the said levers the one upon the other, as will be presently described.

In carrying out this invention there may be employed any suitable means for engaging the tympan feed and take-up rollers with and disengaging them from their operating mechanism and any suitable means for throwing the slide j^6 of the locking pawl or lever $J J'$ into the opening 10 11 of the circular track D' at the proper time for disengaging the said pawl or lever from the ratchet-wheel c^2 and

liberating the supply-roller preparatory to the shifting of the tympan and for reengaging the said pawl or lever with the ratchet-wheel for stopping said roller after shifting; but I propose generally to employ for both of the above purposes the mechanism which is fully described in the Letters Patent hereinbefore referred to, and which therefore need not be herein described. No additional or other mechanism beyond that, except the stud or projection p^3 hereinabove mentioned on the said pawl or lever, is required to operate the lever P , which controls the operation of the clamping-bands B . This operation of the pawl-lever and the band-operating lever P , I will now describe.

The cylinder rotating in the direction of the arrow shown upon it in Fig. 1, I will suppose the pawl-lever $J J'$ and the band-operating lever P to be in such positions that their slides j^6 and p' may run on the outside of the circular track D' , as shown in the said figure, the teeth j of the pawl-lever stopping the ratchet-wheel c^2 and the band-operating lever P holding the bands B in action on the tympan until the time arrives for shifting the latter, when the pawl-lever will be automatically disengaged from the ratchet-wheel c^2 and the bands B loosened, the said disengagement and automatic loosening being permitted by the opening 10 11 in the track, which allows the slides j^6 and p' to enter and run on the interior of the said track.

The pawl-lever $J J'$ is or may be disengaged by the same means described in the Letters Patent hereinbefore referred to; but that disengagement does not take place until the slide p' of the band-operating lever P has passed the point 10 of the opening in the track, because up to that time the pawl-lever has been held in engagement by the stud or projection p^3 on the band-operating lever P ; but as soon as the slide p' has passed the said point 10 the band-operating lever is left free to be moved to slacken the bands B by the action upon it of the stud or projection p^3 on the band-lever. The slides j^6 and p' both having arrived opposite the opening 10 11 in the track D' may both pass into the interior of the track. As long as the slides both run inside the track the ratchet-wheel c^2 remains free, and the pawl-lever holds the band-operating lever in a position to slacken the bands B and leave the tympan free to be shifted by the movement of the feed and take-up rollers which then takes place; but just before the shifting of the tympan is completed the slide j^6 , running on the inside of the track, passes the point 10 of the opening in the latter and permits the spring j^5 to produce automatically the reengagement of the pawl-lever with the ratchet-wheel c^2 . A short interval of time then elapses before the slide p' of the band-operating lever passes the point 10 and permits the lever-arm F' on the rod F to be operated upon by the spring n^3 for the purpose of tightening the bands

upon the tympan by the action of the lever-arms F² E. After this the continued revolution of the cylinder carries first the slide *j*⁶ and afterward the slide *p*⁷ past the point or end 11 of the opening in the track and allows the said slides to run on the outside of the track, so that during successive printing operations both the pawl-lever J J' and the band-operating lever P are positively locked, and the supply-roller being thus secured against letting off the tympan and the tympan being positively clamped to the cylinder until the proper time for again shifting the tympan.

15 In "making ready" and when it is desired to change the tympan the bands B must be disconnected at one end, so that they may be taken off the tympan. I have represented the bands as clamped to the ends of the lever-arms E by screws *q* and as clamped to the brackets C by screws *r*. To provide for the disconnection, the bands are provided at the ends *h*, as shown in the enlarged plan view Fig. 3, with slotted clasps B', the fasten- 25 screws *r*, which may have their heads so formed as to be operated by hand, passing through the slots *s* in the clasps, and the said slots being enlarged at one point in their length sufficiently to allow them to be slipped over the heads of the screws *r* when the screws are unscrewed and the bands are slackened. In some cases a single clamping-band might be sufficient, and in such a case I should apply the band at the middle of the width of 35 the tympan.

What I claim as my invention is—

1. The combination with the impression-cylinder and a tympan applied thereto, of a clamping-band extending over that portion of the tympan which is exposed outside of the cylinder, means for securing the said band at one end to the cylinder and automatic means connected with the other end of said band for tightening and loosening said band, substan- 45 tially as herein described.

2. The combination with the impression-cylinder, a supply-roller in said cylinder for supplying clean portions of the tympan, a take-up roller in said cylinder for taking up the soiled portions of the tympan and auto- 50 matic means for operating said take-up roller, of a clamping-band extending over that portion of the exterior of the cylinder which receives the tympan and automatic means for tightening and loosening said band, substan- 55 tially as herein described.

3. The combination with the impression-cylinder, and a tympan applied thereto, of a plurality of clamping-bands extending over the portion of the tympan which is exposed 60 outside of the cylinder, means of attaching the ends of said bands to the cylinder, means of tightening and loosening the several bands

together and means for separately adjusting the tension of the several bands, substantially 65 as herein described.

4. The combination with the impression-cylinder and a tympan applied thereto, of a clamping-band extending over that portion of the tympan which is exposed outside of the 70 cylinder, means for securing the said band at one end to the cylinder, a device connected with the other end of the said band for tightening the said band, a lever having its fulcrum on one end of the cylinder and con- 75 nected with said tightening device, a stationary circular track outside of the cylinder and a slide on said lever for running inside or outside of the said circular track to hold said tightening device in or out of operation, sub- 80 stantially as herein described.

5. The combination with the impression-cylinder and a tympan supply-roller therein furnished with a toothed wheel, of a tympan-clamping band extending over that portion 85 of the exterior of the cylinder which receives the tympan, a pawl-lever on said cylinder for engaging with said toothed wheel, a lever on said cylinder and connections between said lever and band for tightening and slackening 90 said band, one of said levers having a projection through which each is capable of acting on the other for the engagement and disengagement of the toothed wheel and the tightening and slackening of the band, sub- 95 stantially as herein described.

6. The combination with the cylinder and a tympan-clamping band having one end secured within the cylinder, of a fulcrum rod or shaft and bearings therefor within the cylin- 100 der, a lever-arm on said rod or shaft connected with the other end of the said band, and a spring applied to the said rod or shaft for producing the tightening of said band, substan- 105 tially as herein described.

7. The combination with the cylinder and a tympan-clamping band having one end secured within the cylinder, of a fulcrum rod or shaft and bearings therefor within the cylin- 110 der, an arm on said rod or shaft located within the cylinder and connected with the other end of the said band for tightening and slackening it, a second arm on said rod or shaft outside of said cylinder, a stationary circular track outside the cylinder, a lever on and out- 115 side of the cylinder, a connection between the said second arm and the said lever and a slide attached to said lever for running on the inside or outside of said circular track for maintaining the tightness or slackness of 120 the clamping-band, substantially as herein described.

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Witnesses:

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B. F. LAKE.