

(No Model.)

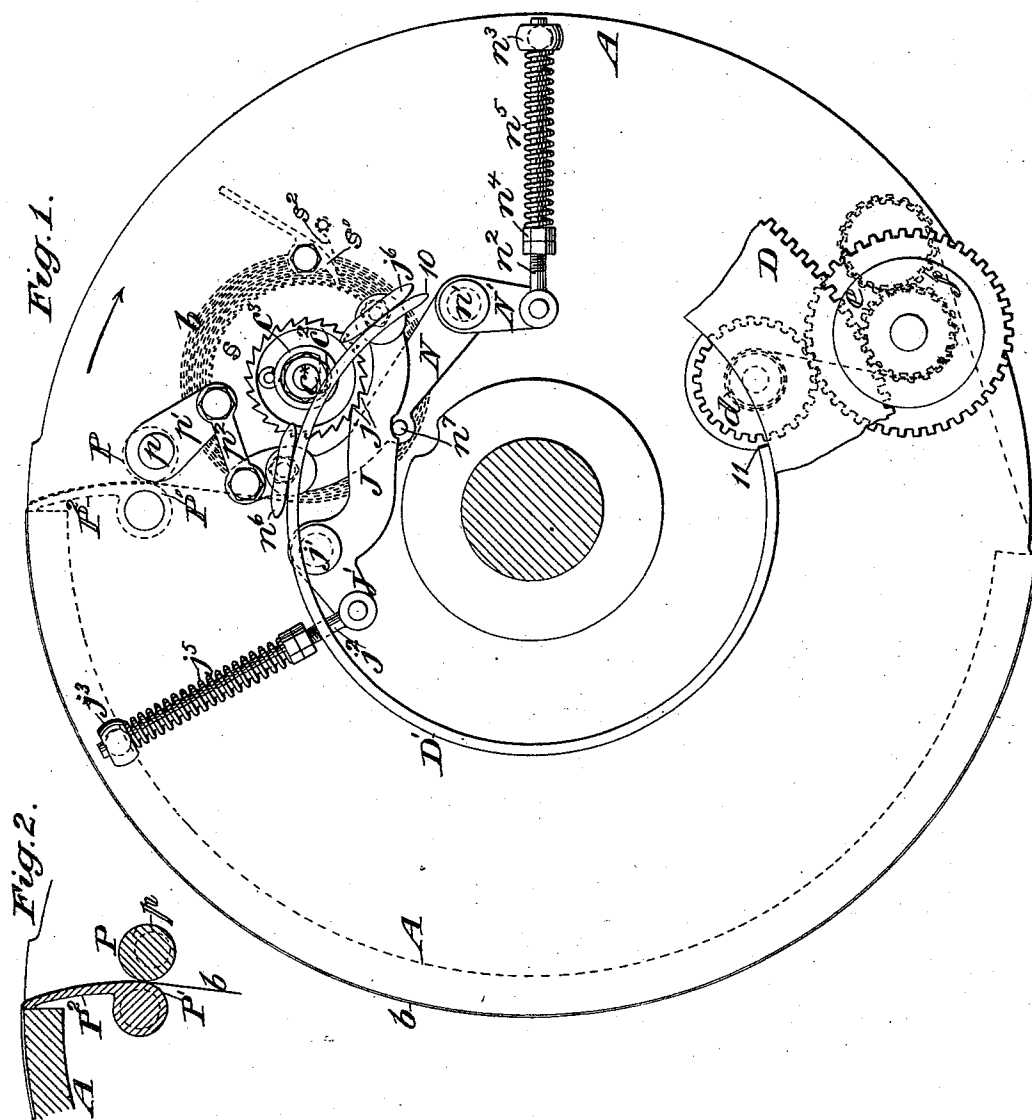
2 Sheets—Sheet 1.

E. H. COTTRELL.

OFFSET MECHANISM FOR PRINTING MACHINES.

No. 527,775.

Patented Oct. 23, 1894.



Witnesses:  
C. Sundgren  
George Barry.

Inventor:  
Edgar H. Cottrell  
by attorneys  
Frown Howard

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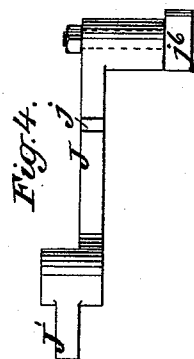
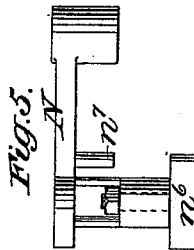
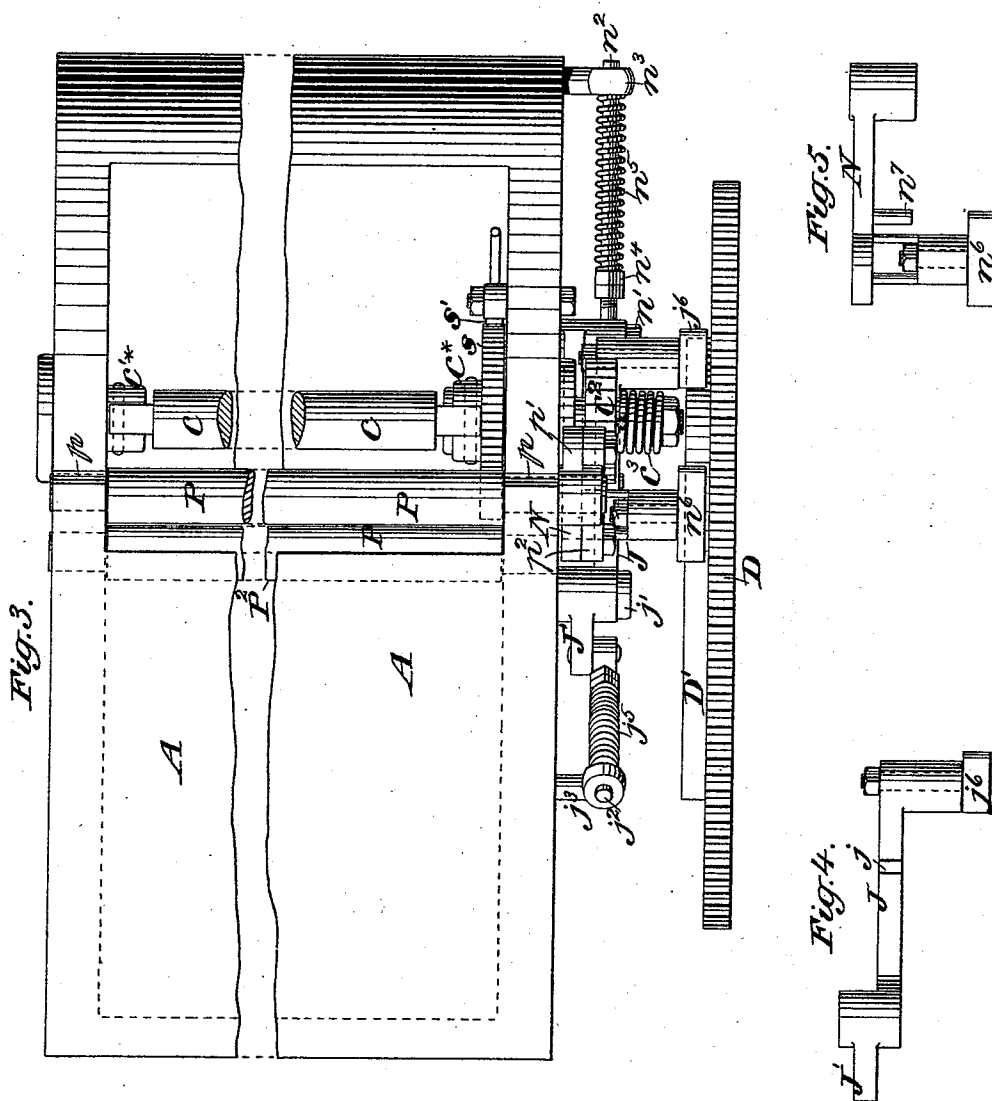
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# OFFSET MECHANISM FOR PRINTING MACHINES.

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# UNITED STATES PATENT OFFICE.

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## OFFSET MECHANISM FOR PRINTING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 527,775, dated October 23, 1894.

Application filed April 5, 1894. Serial No. 506,370. (No model.)

*To all whom it may concern:*

Be it known that I, EDGAR H. 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 mechanism for automatically shifting the tympan on the impression cylinder of a printing machine while the machine is in operation, such mechanism including a supply roller and feed and take-up mechanism by which the tympan is taken from said roller. An example of such mechanism is illustrated in Patent No. 467,637, dated January 26, 1892.

The object of the improvement is to more effectually secure the tympan against any tendency to be shifted by the drag of the impression in printing and against any tendency to draw it from the supply roller at any time but when it is intended to be shifted to present a new surface outside of the cylinder.

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

Figure 1 represents an end view of an impression cylinder and parts attached and contiguous thereto necessary to illustrate my invention. Fig. 2 represents a section parallel with the view shown in Fig. 1, of the tympan holding clamp which constitutes the principal feature of my invention. Fig. 3 is a plan view of the cylinder and attached and adjacent parts corresponding with Fig. 1, portions of the body of the cylinder and of its tympan supply roller and holding clamp being broken away to save space in the drawings. Figs. 4 and 5 are top views of some of the details of Fig. 2 which are partly obscured in that figure.

Similar letters and numerals of reference designate corresponding parts in all the figures.

A (Figs. 1, 2 and 3) is the impression cylinder.

b (Figs. 1 and 2) is the tympan.

c is the supply roller on which is the clean

portion of the tympan which has not yet been delivered to the exterior of the cylinder. The journals  $c^*$   $c^*$  of this roller are fitted to bearings in the ends of the cylinder.

d is the take-up roller on which the soiled portion of the tympan is taken up.

e f are the feed rollers.

The several rollers are only shown in Fig. 1 in dotted outline.

$c^2$  is a ratchet-wheel loose on the supply roller 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 form of this lever is shown in Figs. 1 and 4, the latter being a top view of it. The arm J of the said lever has teeth  $j$  which engage with the said ratchet-wheel  $c^2$ , the 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. Between the said ratchet-wheel and the said journal  $c^*$ , there is interposed a spring  $c^3$ , said spring having one end secured to the said journal and the other end secured to said ratchet wheel and being so coiled that when the said ratchet-wheel is locked by the teeth  $j$  of the pawl J J', the said spring will tend to turn the journal and the supply roller in a direction to wind or hold back the tympan on the supply roller, said ratchet-wheel and pawl lever thus constituting a yielding stop to hold back the tympan. The arm J' of said lever J J' has connected with it a rod  $j^2$  which passes through a guide  $j^3$  on the cylinder and to which is applied a coiled spring  $j^5$  which operates to press the lever into engagement with the ratchet-wheel  $c^2$ . The arm J of the pawl lever has pivoted to its outer end a switch-piece  $j^6$  which is capable of running against either the inner or outer periphery of a stationary interrupted circular track D' which projects from a stationary gear D with which the feed and take-up rollers are geared to receive motion through the revolution of the cylinder, the said track D' being concentric with the cylinder. When the switch-piece  $j^6$  is on the outer periphery of the track D' as shown in Fig. 1, the pawl lever J J' is in engagement

with the ratchet-wheel  $c^2$ . When the said switch piece is against the inner surface of the track  $D'$ , the pawl lever is held positively out of engagement with the ratchet-wheel.

5 The said ratchet-wheel, spring, 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 the present improvement may be understood.

The feed and take-up devices of which the rollers  $d e f$  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.

15  $s$  is a ratchet-wheel fast on the supply roller inside of the cylinder. This ratchet-wheel  $s$  has teeth set in an opposite direction to the teeth of the ratchet-wheel  $c^2$  and it has applied to it a pawl  $s'$  which is held in engagement with it by a spring  $s^2$ . The pawl  $s'$  is always in engagement with the ratchet wheel  $s$  when the printing machine is in operation and they constitute a positive stop to prevent the spring  $c^3$  from turning the supply roller backward and pulling the tympan back from the feeding apparatus.

30  $P$  (Figs. 1, 2 and 3) is an eccentric roller constituting one member of a clamp  $PP'$  for clamping the tympan positively to the cylinder at a point between the supply roller and the periphery of the cylinder and so holding back the tympan independently of the ratchet-wheel  $c^2$  and pawl lever  $J J'$ . The other member  $P'$  of this clamp may consist of any bearing provided within the cylinder but is represented as consisting of the hub or stock of the clamping fingers  $P^2$  such as are commonly employed for securing the blanket to the cylinder under the tympan. The eccentric journals  $p$  of the said roller or clamp member  $P$  are fitted to turn in bearings in the ends of the cylinder. On one of these journals  $p$  is firmly secured an arm  $p'$  which is connected by a short rod or link  $p^2$  with one arm  $N$  of a clamping lever  $NN'$  which is pivoted to the same end of the cylinder with the lever  $J J'$  by a pivot  $n'$ . That arm  $N$  of the said lever  $NN'$  which is connected by the link  $p^2$  and arm  $p'$  with the clamp member  $P$  is furnished with a switch-piece  $n^6$  which is capable of running either on the inside or on the outside of the stationary interrupted track  $D'$ . To the other arm  $N'$  of the said lever  $NN'$  is secured a rod  $n^2$  which works through a guide  $n^3$  fast on the end of the cylinder. This rod  $n^2$  is furnished with a nut or adjustable collar  $n^4$  between 60 which and the said guide  $n^3$  a spiral spring  $n^5$  is coiled around said rod. The spring  $n^5$  exerts a tendency to throw the arm  $N$  of the lever  $NN'$  outward from the center of the cylinder toward a position in which the switch-piece  $n^6$  may run on the outside of the track  $D'$  as shown in Fig. 1, in which position the lever acting through the link  $p^2$

and arm  $p$  of the clamp member  $P$ , holds said member in a position to clamp the tympan. The lever arm  $N$  is furnished with a stud or projection  $n^7$  which projects under the lower edge of the arm  $J$  of the pawl lever  $J J'$  for the purpose of keeping the teeth  $j$  of the pawl lever in engagement with the ratchet-wheel  $c^2$  at certain times and afterward causing the clamping lever to be operated by the pawl lever to open the clamp.

In carrying out this invention any suitable means may be employed for throwing the switch-piece  $j^6$  into the opening 10, 11, of the circular track  $D'$  at the proper time for disengaging the pawl lever  $J J'$  from the ratchet-wheel  $c^2$  and liberating the supply roller preparatory to the shifting of the tympan and for re-engaging the said lever with the ratchet-wheel for stopping said roller after shifting, but I propose generally to employ the mechanism which is fully described in the Letters Patent hereinbefore mentioned and which therefore need not be herein described. No additional or other mechanism beyond that is required to operate the lever  $NN'$  and the clamp member  $P$ , the latter lever being operated by or through the pawl lever  $J J'$  as I will now proceed to describe.

The cylinder rotating in the direction of the arrow shown upon it in Fig. 1, I will first suppose the pawl lever  $J J'$  and the clamping lever  $NN'$  to be held by their respective springs  $j^5$  and  $n^5$  in such positions that their switch-pieces  $j^6$  and  $n^6$  may run on the outside of the circular track  $D'$  as shown in Fig. 1, the teeth  $j$  of the pawl lever  $J J'$  stopping the ratchet-wheel  $c^2$  and the clamping lever  $NN'$  holding the clamp member  $P$  in action on the tympan until the time arrives for shifting the tympan when the pawl lever will be automatically disengaged from the ratchet-wheel  $c^2$  and the clamp  $PP'$  loosened, the said disengagement and automatically loosening being permitted by the opening 10, 11 in the track which allows the switch-pieces  $j^6$  and  $n^6$  to enter and run on the interior of the said track.

The pawl lever  $J J'$  is disengaged by the same means described in Letters Patent No. 467,637 hereinbefore mentioned, but that disengagement does not occur until the switch-piece  $n^6$  of the clamping lever  $NN'$  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 projection  $n^7$  on the clamping lever; but as soon as the switch-piece  $n^6$  has passed the point 10 the clamping lever is left free to be moved to open the clamp by the action of the pawl lever on its projection or stud  $n^7$ . The switch-pieces both having arrived opposite the opening 10, 11, in the track  $D'$  may both pass into the interior thereof. As long as they run inside the track, the ratchet-wheel  $c^2$  remains free and the pawl lever holds the eccentric roller  $P$  or clamping member in a position to leave the tympan free so that the turning of

the supply roller is permitted while the feed and take-up rollers operate to shift the tympan, but just before the shifting of the tympan is completed, the switch-piece  $j^6$  running on the inside of the track  $D'$  passes the point 10 of the opening and permits the spring  $j^5$  to produce automatically the re-engagement of the pawl lever  $J J'$  with the loose ratchet-wheel  $c^2$ . A short interval of time then elapses before the switch-piece  $n^6$  passes the point 10 and permits the clamping lever to be actuated by the spring  $n^5$  to produce the turning of the eccentric roller or clamp member  $P$  to a position to clamp the tympan. The stoppage of the feed and take-up occurs during this interval, but during the first part of the interval and before the stoppage occurs, the draft produced on the tympan causes the supply roller to wind up the spring  $c^3$  between the ratchet-wheel  $c^2$  and the supply roller. This winding up of the spring gives it a tension which, while it permits a slight further movement of the supply roller, so holds back the said roller as to produce and maintain a tension on the tympan until the latter is positively clamped by the action of the clamp  $P P'$  produced automatically by the lever  $N N'$  under the influence of the spring  $n^5$  and maintained by the switch-piece  $n^6$  having again arrived on the outside of the track  $D'$ . The clamp  $P P'$  operating positively on the tympan independently of the supply roller prevents any such slight shifting of the tympan as has been liable to be produced by the drag of the impression not meeting with sufficient resistance from the spring  $c^3$  applied between the ratchet-wheel  $c^2$  and the supply roller journal.

What I claim as my invention is—

1. The combination with the impression cylinder, a supply roller in said cylinder for supplying clean portions of a tympan, a take-up roller in said cylinder for taking up the soiled portions of the tympan and automatic means for operating said take-up roller, of a tympan clamp independent of said supply roller arranged between the said supply roller and the periphery of the cylinder, substantially as and for the purpose herein set forth.
2. The combination with the impression

cylinder, a supply roller in said cylinder for supplying clean portions of a tympan, a take-up roller in said cylinder for taking up the soiled portions of the tympan and automatic means for operating said take-up roller, of a tympan clamp independent of said supply roller arranged between the said supply roller and the periphery of the cylinder and automatic means for closing and loosening said clamp, substantially as herein described.

3. The combination with the impression cylinder and a tympan supply roller therein, of a yielding stop applied to said supply roller to control the letting off and tension of the tympan, and a positive tympan clamp independent of said roller and yielding stop arranged between said roller and the periphery of the cylinder, substantially as and for the purpose herein set forth.

4. The combination with the impression cylinder and a roller therein for supplying a tympan sheet, of a positive tympan clamp independent of said roller arranged within the cylinder, a lever having its fulcrum on one end of the cylinder and connected with a movable member of said clamp, a stationary circular track outside of the cylinder and a switch-piece on said lever for running on the inside or outside of said circular track to hold said movable clamp member in or out of operation, substantially as herein set forth.

5. The combination with the cylinder and a tympan supply roller therein furnished with a spring-controlled ratchet-wheel, of a tympan clamping device arranged within said cylinder, a pawl lever on said cylinder for engaging with said ratchet-wheel, a clamping lever on said cylinder for operating on a movable member of said clamping device, one of said levers having a projection through which each is capable of acting on the other for the engagement and disengagement of the ratchet-wheel and the closing and opening of the clamping device, substantially as herein set forth.

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Witnesses:

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