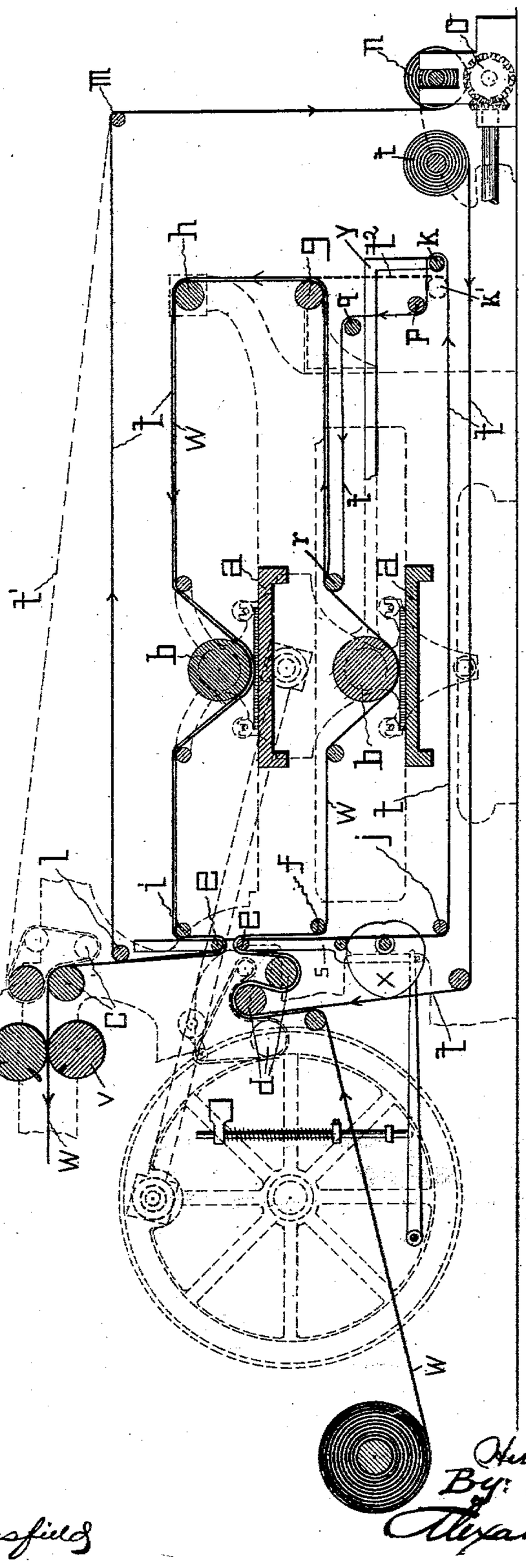
No. 694,907. Patented Mar. 4, 1902.

H. F. BECHMAN.

RUNNING OR SHIFTING TYMPAN.

(Application filed June 21, 1899.)

(No Model.)



Witnesses
H. S. Austin
James R. Mansfield

UNITED STATES PATENT OFFICE.

HENRY F. BECHMAN, OF BATTLECREEK, MICHIGAN.

RUNNING OR SHIFTING TYMPAN.

SPECIFICATION forming part of Letters Patent No. 694,907, dated March 4, 1902.

Application filed June 21, 1899. Serial No. 721,348. (No model.)

To all whom it may concern:

Be it known that I, HENRY F. BECHMAN, of Battlecreek, in the county of Calhoun and State of Michigan, have invented certain new and useful Improvements in Running or Shifting Tympans; and I hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawing, which forms part of this specification.

This invention is an improvement in type-printing web-perfecting presses, and particularly in stationary-bed reciprocating-cylinder web-perfecting presses. In order to obtain from this class of presses fine grades of work, it is necessary to provide some means for preventing offset or blurring on the printed side of the web when it passes between the second cylinder and bed to perfect the sheets. Various schemes have been devised for this purpose, but none have been entirely satisfactory prior to the present invention; but I have discovered that I can feed a continuous tympan through the press simultaneously with the web and handle this tympan as the web is handled within the press and that by so doing offset on the sheets can be satisfactorily prevented, and, furthermore, blurring or smutting of the web by the action of the second looping-roller and the feeding-out devices may also be prevented by the use of such tympan.

The object of the present invention is to provide a running or shifting tympan which will travel uniformly with the web through the second or perfecting press, stopping and starting with the web and effectually preventing offset on the printed sheets and keeping the same out of contact with the surface of the cylinder and many of the web guiding and shifting rollers and will also relieve the intermittently-shifted printed web of much of the shifting strain thereon. The tympan may be carried through and shifted in the press by the same means which are employed to handle the web, and after going through the press the tympan may be rewound, so that it can be repeatedly used.

In particular the invention is an improvement in web-perfecting presses of the kind shown in the patent to Joseph L. Cox, No. 478,503, of July 5, 1892, and in the drawing the invention is shown as applied to such a press; but of course the invention is not limited solely in its application thereto.

The accompanying drawing represents a diagrammatic elevation of a stationary-bed reciprocating-cylinder web-perfecting printing-press, such as is shown in the aforesaid patent, with my improved running tympan applied thereto.

The web of paper *w* to be printed upon is drawn from a roll at the left-hand side of the machine by the infeed-rollers *d d*, looped over the lower looping-roller *e* on the reciprocating frame *s*, then passed down under the guide *f* between the lower bed *a* and cylinder *b* and led back to the rear guide *g*, up over the upper guide *h*, back between the upper bed *a* and cylinder *b*, thence to and over the guide *i*, then down under the upper looping-roller *e* on frame *s*, and thence up to the outfeed-rollers *c* and between the cutting-cylinders *v*. These parts and their connections may be all constructed and operated, as fully shown and described in said patent, to which reference is made for further explanation of the same, it being here simply necessary to state that the web is fed in and out of the press continuously by the rollers *d c* and coacting tapes, and the portion of the web between the feed and delivery rollers and extending from the guide *f* to the guide *i* is intermittently stopped and then hurried forward by the looping-rollers *e e*, which are operated by the rising and falling frame *s* and cam *x*, as fully described in the aforesaid patent.

The continuous tympan *t* is led from a roll up through the infeed-rollers *d*, passing with the web *w* to and over the lower looping-roller *e*, the tympan *t* lying between the web *w* and said roller *e*. The tympan *t* then separates itself from the web and is carried down under a guide *j* below the level of the lower bed, thence passes forward under the bed to a movable guide *k*, and thence back under a fixed guide *p*, up over a fixed guide *q*, and back to the traveling guide-roller *r* beside the lower cylinder *b* and traveling therewith, at which point the tympan again meets the web *w* and passes with the web over the guides *g* and *h* and between the upper cylinder and bed, (the tympan, as will be observed,

lying between the upper cylinder and the web,) and thence over the roller *i* and under the upper looping-roller *e*. (It will be observed that the tympan comes between the web and the upper looping-roller *e*.) The tympan may then separate from the web and be led over a roller *l*, above the upper looping-roller *e*, back above the upper cylinder and bed, to and over a guide-roller *m*, and then down to a rewinding device *n*, upon which the tympan is rewound. The rewinder may be operated by any suitable mechanism, preferably by means of a friction-roller *o*, and is driven at a peripheral speed slightly greater than the speed of the infeed-rollers *d*, so as to insure the drawing of the tympan from the press at a speed equal to the delivery of the printed web therefrom. The roller *o* may be driven by belting or gearing from the driving mechanism of the press in a manner well understood, so that no further explanation thereof is necessary.

The web-guide rollers, mounted on the reciprocating carriage at each side of the cylinder, as shown, travel back and forth with the cylinder. Consequently the loop of tympan around roller *r* will be laternately lengthened and shortened as the roller *r* reciprocates with the cylinder, and in order to compensate the tympan *t* for such alternate contraction and expansion of the loop around *r* the roller *k* is made movable and is moved laterally like roll *r*, so that the loop of tympan around roller *k* will be lengthened when that around roller *r* is shortened, and the loop of tympan around *k* will be shortened when that around *r* is lengthened. The loops of tympan around rollers *r* and *k* thus compensate each other, and therefore an equal tension on the tympan is constantly maintained. The roller *k* may be shifted by mounting it in arms *y*, attached to the cylinder-carriage, or in any other convenient manner.

If desired, the tympan *t* instead of passing over the guide *l* may continue with the web through the delivery-rollers *c* and then be brought back over the upper rollers *c* to the guide *m* and rewinder *o*, as indicated in dotted lines *t'* in the drawing; also, if desired, the roller *k* might be fixed as indicated at *k'* and the tympan led from said roller *k'* directly up to the roller *g*, as indicated in dotted lines t^2, instead of being looped around roller *r*.

The tympan is fed in and fed out of the press exactly in accordance with and as the paper web *w* is fed therethrough, and the portion of the tympan within the press between the feed and delivery mechanisms is intermittently stopped and started exactly as and in accordance with the stopping and starting of the web, and this is best accomplished by utilizing the mechanism which feeds and delivers and loops the web to feed and deliver and loop the tympan. It will be further observed, however, that the tympan separates from the web and is looped around the first cylinder and bed, so as not to interfere with their operation in making the first impressions on the web at a point where no tympan is necessary.

The tympan roll and rewinder are simply diagrammatically illustrated in the drawing, being well known, and they will be located wherever it is found most convenient, according to the location of the press or the choice of the press-builder, it only being essential that the tympan supply and rewinding devices shall be so located that the tympan can be conveniently fed through the press with the web and taken care of after it has served its purposes therein.

When the tympan-supply roll is exhausted, the rewound tympan can be slipped into the supply-roll supports and the tympan again run through the press, and, if desired, first one side of the tympan can be used and then the other as it is successively run through the machine. By this construction a clean tympan-surface is presented to the web at each perfecting operation of the press, and the tympan-sheet may remain with the printed web until the latter has passed the delivery-rollers. Thus effectual provision against offset is attained in an economical manner, as the tympan can be repeatedly reused, and when employed, as shown, relieves the paper web of much of the strain of shifting the same, particularly in its passage under the upper looping-roller and through the delivery.

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

1. The combination of a pair of stationary beds and coacting reciprocating impression-cylinders, means for intermittently feeding a web of paper between the cylinders and beds to be printed thereby, and means for intermittently feeding a tympan through the press simultaneously and exactly in accordance with the movement of the paper web therethrough, the tympan being separated from the web and carried past the first bed and cylinder, then reunited with the web and compensating devices for looping the tympan before it reunites with the web, for the purpose and substantially as described.

2. In a printing-press, the combination of two type-beds, two traveling cylinders coacting therewith, web-guide rollers traveling with the cylinders, and means for feeding the web of paper successively between the cylinders and beds; with a tympan-web laid with the web and carried through the press by the web feeding and delivering mechanism, said tympan-web being looped around the first bed and cylinder, but reunited with the web at and looped around the second traveling guide-roller beside the first cylinder, and a looping device for the tympan to compensate it for the movement of said traveling guide-roller, for the purpose and substantially as described.

3. The combination of a pair of beds, a pair

of coacting traveling cylinders, a web-feed mechanism, a web-delivery mechanism, and mechanism for looping the web, substantially as described; with a tympan fed to the press by the web-feeding mechanism, then looped around the first web-looper, then separated from the web and carried past the first bed and cylinder, then reunited with the web and looped over a guide-roller beside and traveling with the first cylinder and carried with the web between the second bed and cylinder, under the second web-looper and then again separated from the web and carried back to a rewinding mechanism; with devices for looping the tympan while separated from the web to compensate it for the movement of the said traveling guide-roller, substantially as and for the purpose described.

In testimony that I claim the foregoing as my own I affix my signature in presence of two witnesses.

HENRY F. BECHMAN.

Witnesses:
EUGENE HIGGINS,
FRANK W. DUNNING.