

Jan. 9, 1962

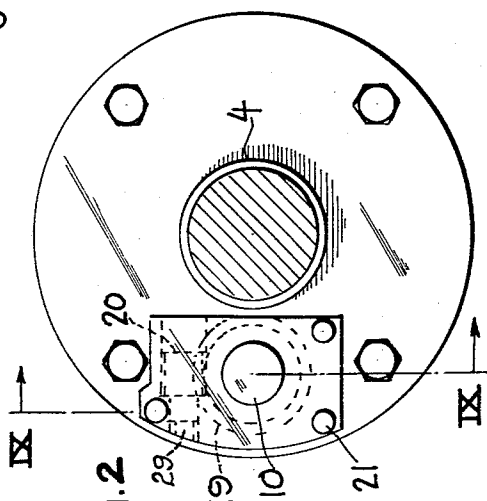
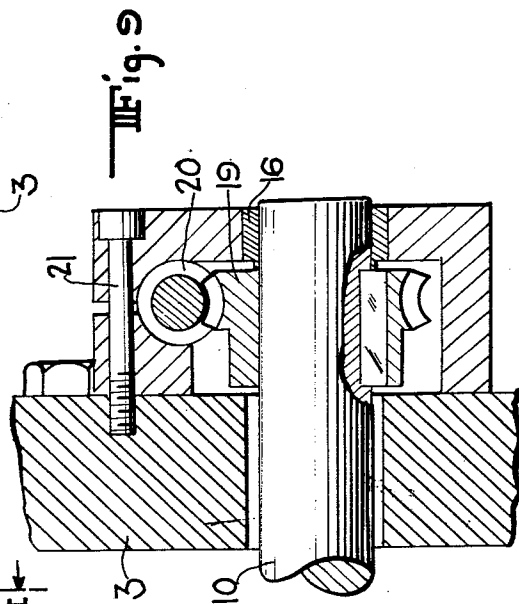
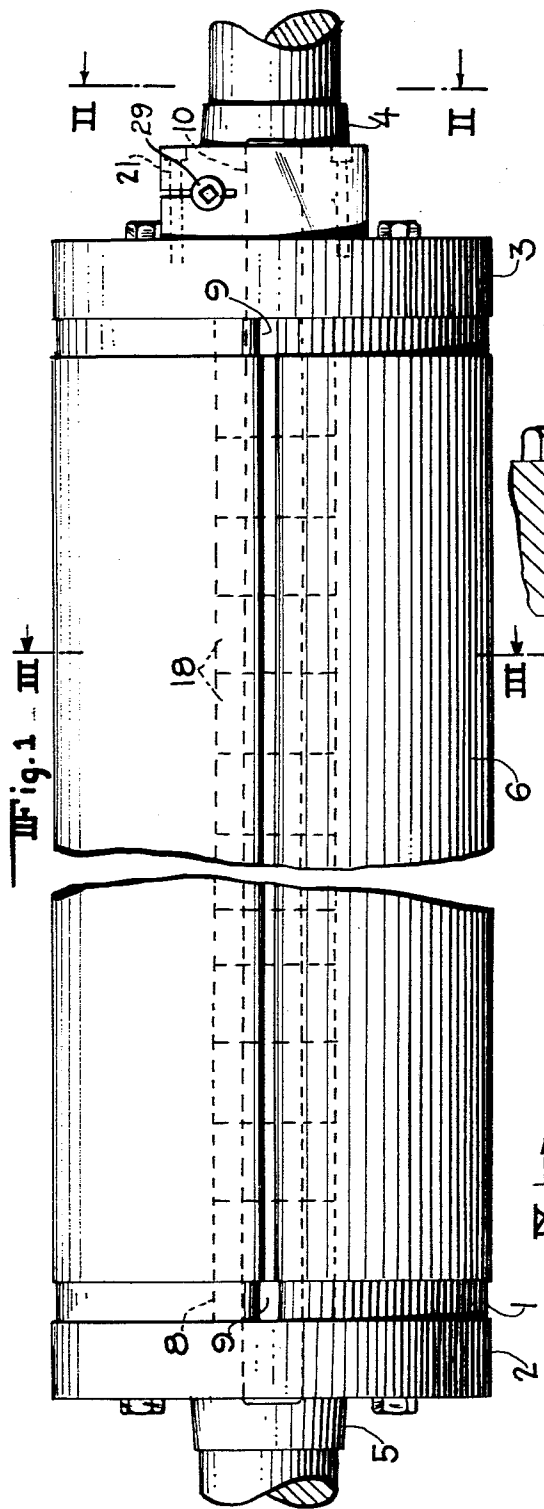
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PRINTING PRESS PLATE CLAMPING MEANS FOR PREBENT
WRAP AROUND PRINTING PLATES OF SOFT MATERIAL

Filed Aug. 20, 1959

4 Sheets-Sheet 1



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Fig. 3

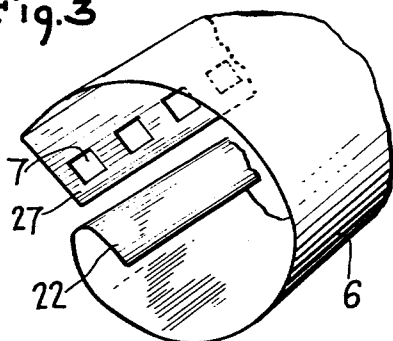


Fig. 5

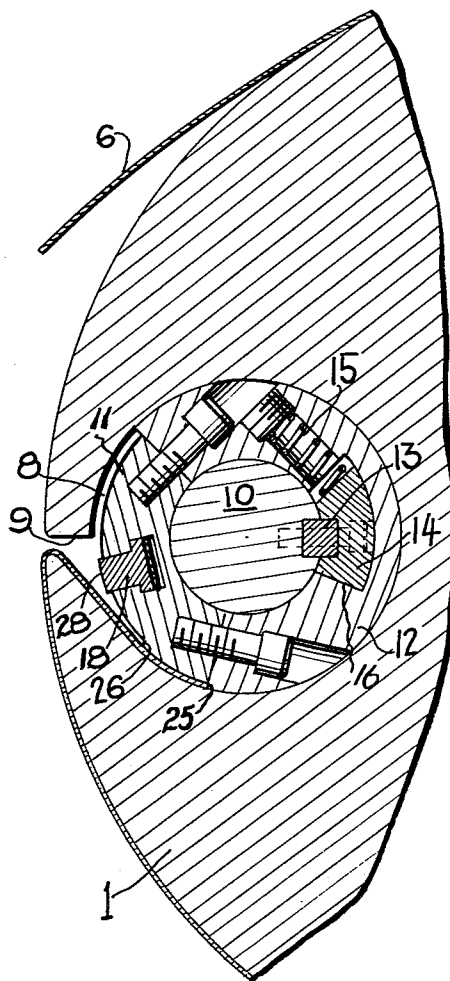
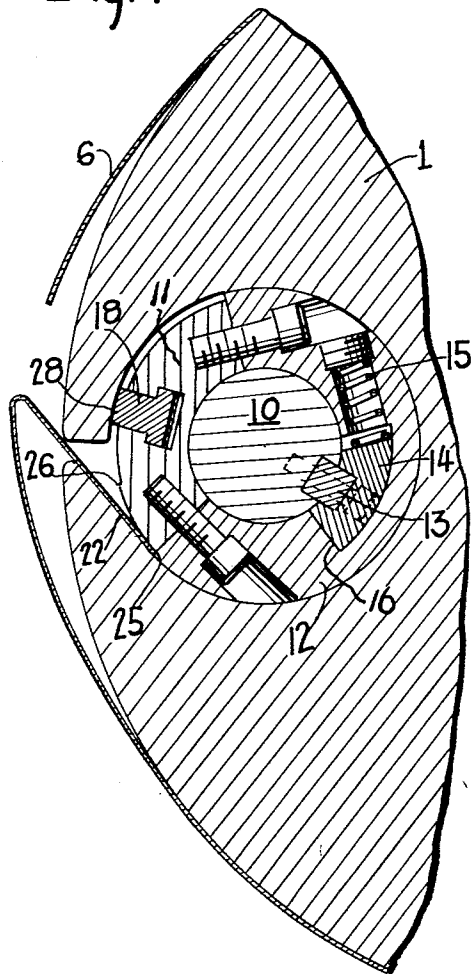


Fig. 4



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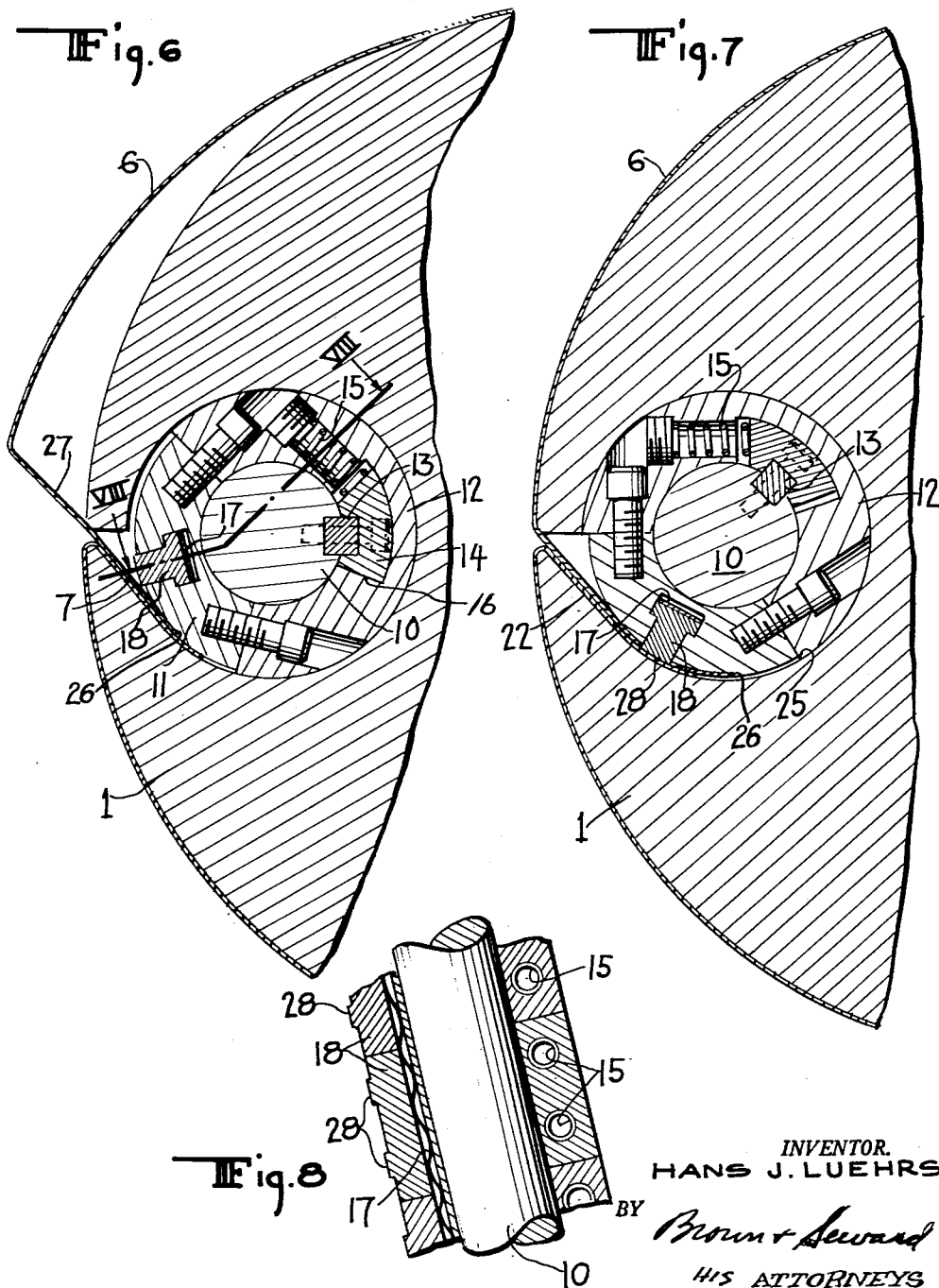
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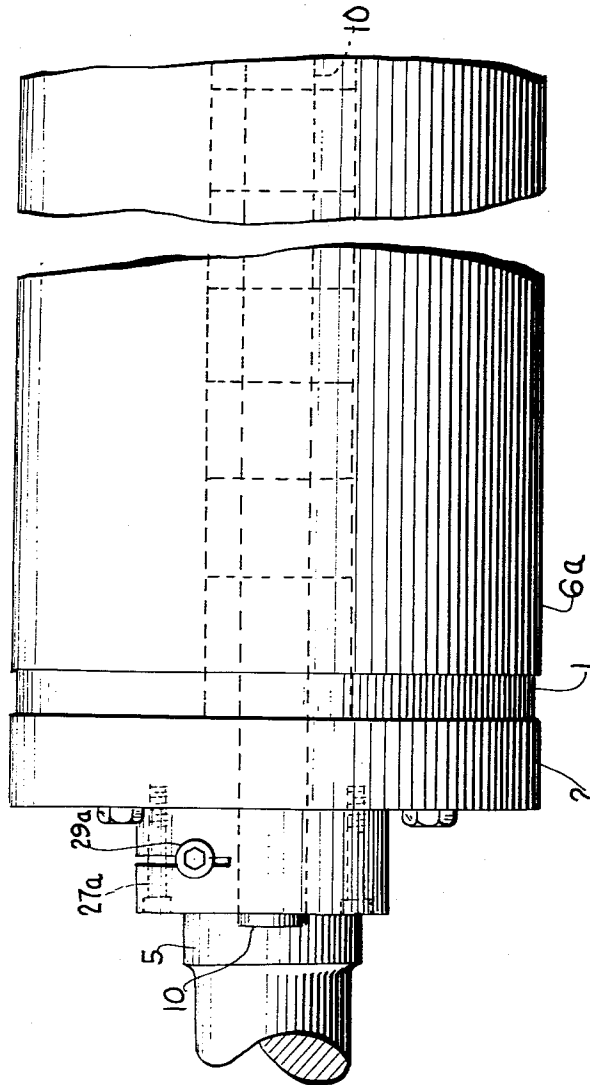
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Fig. 1a



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PRINTING PRESS PLATE CLAMPING MEANS FOR PREBENT WRAP AROUND PRINTING PLATES OF SOFT MATERIAL

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6 Claims. (Cl. 101-415.1)

The object of my invention is to provide a clamping means suitable for printing plates of relatively thin material wherein the plate clamping mechanism is adapted for location in a cylinder bore which communicates with a longitudinal circumferential cylinder slot in such a way that no overhanging bolted filling in pieces are required to round out the circumference of the cylinder.

Another object of my invention is to provide a plate clamping means of the character described by which predetermined plate tension will be maintained, under substantially all conditions, across the width of each plate.

Another object is to furnish means for quickly clamping a prebent printing plate or plates to the cylinder in predetermined circumferential location.

Another object is to provide a plate clamping means for wrap-around prebent printing plates which will secure the plates to the cylinder so as to leave a minimum lateral printing margin.

A still further object is to provide a structure of the character described wherein the plate clamping means are of a design such that the maximum rigidity and strength of the plate cylinder and its journals may effectively be retained.

Broadly, my invention comprises a printing plate clamping assembly for flexible wrap-around prebent printing plates which is arranged for partial rotation within the cylinder and which exerts both a clamping pressure on the leading end of the plate and a positive tensioning contact with a perforated tail end of said plate wherein the elements engaging the tail end of the plate and clamping the lead end of the plate are spring biased to insure a uniform predetermined tension throughout the width of the plate.

Practical embodiments of my invention are illustrated in the accompanying drawings in which:

FIG. 1 represents in plan view, partially broken away, a prebent plate tensioned on the plate cylinder.

FIG. 1a represents a plan view, partly broken away, of the left end of the plate cylinder.

FIG. 2 represents a section taken on the line II-II of FIG. 1 looking in the direction of the arrows.

FIG. 3 represents in perspective a fragment of printing plate prebent and having its tail end adapted for engagement by spring loaded plate engaging devices to tension the plate to the cylinder.

FIG. 4 represents a partially detailed section taken on the line III-III of FIG. 1, looking in the direction of the arrows, showing the leading plate edge being inserted and registered within the cylinder slot.

FIG. 5 represents a view similar to FIG. 4, except that the leading plate edge has been fitted to the cylinder and the plate clamping mechanism has been partially rotated in a counter clockwise direction.

FIG. 6 represents a view similar to FIGS. 4 and 5 but showing the plate clamping mechanism as further rotated

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in a counter clockwise direction and with the trailing edge of the plate registered in the cylinder slot.

FIG. 7 represents a view similar to FIGS. 4, 5 and 6 with the plate clamping means rotated still further in a counter clockwise direction to tension the plate on the cylinder for the printing operation and by engaging the leading plate edge through the plate tail edge perforations to clamp said leading plate edge to the cylinder.

FIG. 8 represents a detail partially in section taken on the line VIII-VIII of FIG. 6, looking in the direction of the arrows, showing the spring biased plate engaging clamps mounted on their rotatable shaft, and;

FIG. 9 represents a detail section, on an enlarged scale, partially broken away, taken on the line IX-IX of FIG. 2 looking in the direction of the arrows.

Referring to the drawings, in which the parts are given the same numerals in the respective figures in which they appear, the usual plate cylinder is denoted by 1, its bearers by 2 and 3 and the cylinder journals by 4 and 5, it being understood that this cylinder is mounted for rotation in the press frame (not shown) in the usual manner.

Prebent plate 6 which, in the present instance, is of a soft material such as zinc, is provided at its trailing edge with suitable clamp receiving means such as perforations, denoted collectively by 7, the latter being equally spaced across the plate tail to receive ends 28 of the plate engaging devices 18.

It will be noted that the cylinder 1 is circumferentially bored at 8 and slotted at 9 so that both the bore and slot lie parallel to the longitudinal axis of the cylinder 1 and extend across the circumference thereof between the bearers. Slot 9 communicates throughout its length with bore 8.

Located within the bore 8 is a plate clamping assembly consisting of actuating shaft 10 and collar assemblies 11 and 12 which are spring loaded as shown in FIG. 4 and turnably mounted on said shaft.

Said shaft 10 is provided with a key 13 and sectional pieces 14 bolted thereto as shown in FIG. 4. When the shaft 10 is in its inactive position, springs 15 urge the collar assemblies 11 and 12 against stops 16, or pieces 14 as shown in said FIG. 4.

The collar assemblies 11 and 12 are also provided with leaf springs 17 as shown in FIG. 8 which bias the plate clamping mountings denoted collectively by 18, into position where their projections 28 enter perforations 7 in the trailing edge of the plate 6 and extend therethrough into engagement with the surface of the plate leading edge 22 which was previously inserted through the cylinder slot 9 and registered against a stop 25 on collar section 12 (as shown in FIG. 4).

In order to operate the plate clamping assembly a worm and wheel drive, for shaft 10, as shown in FIGS. 2 and 9, is provided at one end of the cylinder 1 and mounted adjacent the bearer 3 (as shown in FIG. 1). This driving means consists of the turnable shaft 10 carrying the gear 19, said gear being operatively engaged by a worm 20 mounted at right angles thereto in the usual manner, as shown in FIG. 9. This assembly is mounted by suitable screw bolts denoted collectively by 21. A recess 29 to receive a hand tool (not shown) for turning the worm 20 is provided so as to be accessible at one end of the cylinder.

The operation of my device is as follows: the leading plate edge 22 is inserted through the cylinder slot 9 and

registered against the stop 25 of member 12 as shown in FIG. 4. The prebent plate 6 is then pressed by hand or other suitable means against the surface of cylinder 1 and wrapped there-around. Then, by the insertion and actuation of a wrench (not shown) the worm 20 is turned and thereby rotates the shaft 10 in a counter clockwise direction through the coaction of said worm 20 with the gear 19 mounted on said shaft. With the clamping mechanism in the position illustrated in FIG. 6 the trailing edge 27 of plate 6 is inserted through the cylinder slot 9 to a position where the plate engaging ends 28 of devices 18 will be urged by their springs to enter the recesses or perforations 7 in the trailing edge 27 of plate 6, said edge 27 being registered against stop 26. By means of a wrench or other suitable tool turning worm 20 engaged with gear 19 causes the shaft 10 to be turned further in a counter clockwise direction so that the plate is securely tensioned to the cylinder 1 by having its trailing edge 27 drawn into the cylinder slot 9 by said devices 18 to a position shown in FIG. 7. This causes the plate engaging devices to not only tension the plate to the cylinder but also to engage the available interior surface of the plate leading edge whereby the plate is held to the cylinder under tension as well as by being clamped and held, at its leading edge section, against the inner surface of the cylinder bore 8.

It will be noted that the insertion of both the leading and trailing edges into the cylinder slot is limited as by a stop 25 for the leading edge end 22, and stop 26 for the plate trailing edge 27 which stops serve to square the leading and trailing edges of the plate into parallelism with the longitudinal axis of the cylinder.

Since the leading and trailing edges of the prebent plate are squared into parallelism with the longitudinal axis of the cylinder, as above described, any subsequent adjustments must be provided by equipping the cylinder itself with lateral and circumferential adjustment (not shown in the present application) as is well known in the art.

Subsequently, all the collar assemblies by means of their springs 15, and their spring mounted plate clamping mountings will individually tension the plate throughout its entire width. It will be understood that the amount of tension applied to the plate must necessarily be within the limits of the plate.

It will be understood that when the cylinder is provided with two plates side by side, two independent clamping mechanisms may be provided, the drives therefor being located at opposite ends of the cylinder and operable therefrom.

The left-hand end of the cylinder 1 is plated as shown in FIG. 1a so that the shaft 10 may be driven from either end; the second plate 6a being clamped similarly to plate 6. A screw 27a accomplishes what screw 21 does at the other end of the cylinder and 29a is a tool receiving socket.

Since it is evident that various changes may be made in the construction, form and arrangements of the several parts without departing from the spirit and scope of my invention, I do not intend to be limited to the particular embodiment herein shown and described except as set forth in the appended claims.

What I claim is:

1. Plate clamping mechanism for flexible wrap around printing plates comprising the combination of a rotary cylinder provided with a longitudinal slot across the circumference thereof, a bore in the cylinder below, parallel to and communicating with said slot, a printing plate wrapped around said cylinder so that its leading and trailing edges enter said slot and extend into said bore, said leading edge overlapping said trailing edge substantially throughout its length and extending partly around said shaft, means located within the cylinder bore for clamping and tensioning the plate in printing position on the cylinder and means located at the end of the cylinder for

bringing the plate clamping and tensioning means into operative engagement with both plate ends, the said last named means being located in the cylinder bore for clamping and tensioning the plate to the cylinder including a turnable shaft mounted in said bore, spring biased collars turnably mounted and supported on said shaft against deflection, and spring biased plate engaging means mounted on said collars.

2. The combination according to claim 1, in which the plate tail is perforated and the clamping and tensioning means are located to enter said perforations and project therethrough into clamping engagement with the leading edge of the plate.

3. The combination according to claim 1, in which means for bringing the plate clamping and tensioning means into operative engagement with the plate ends are located at both ends of the cylinder.

4. Plate clamping mechanism for wrap around printing plates comprising the combination with a rotary printing cylinder of a longitudinal circumferential slot across the cylinder and parallel with the longitudinal axis of same, a longitudinal bore parallel to and communicating with said slot, a plate wrapped around said cylinder and means located in the cylinder bore for tensioning said plate on the cylinder in printing position, said last named means comprising a longitudinal shaft mounted in said bore, a plurality of spring biased collars mounted on said shaft, stops on said collars for registering the leading and trailing plate ends, spring biased plate engaging devices normally urged outwardly against the interior wall of the cylinder bore, and exterior means for actuating said shaft to bring said devices into plate end engagement whereby the plate is tensioned on the cylinder and the plate leading edge is pressed by said devices against an interior wall of said cylinder bore.

5. Plate clamping mechanism for wrap around printing plates comprising the combination with a rotary printing cylinder of a longitudinal circumferential slot across the cylinder and parallel with the longitudinal axis of same, a longitudinal bore parallel to and communicating with said slot, a prebent printing plate wrapped around said cylinder and means located in the cylinder bore for removably tensioning said plate on the cylinder in printing position, said last named means comprising a longitudinal shaft mounted in said bore, at least one spring biased collar mounted on said shaft, at least one stop on said collar for successively registering the leading and trailing plate ends, spring biased plate engaging devices normally urged outwardly toward the interior wall of the cylinder bore, and exterior means for actuating said shaft to bring said devices into plate end engagement whereby the plate is tensioned on the cylinder and the plate leading edge is pressed by said devices against an interior wall of said cylinder bore, said exterior means comprising a gear on said shaft, a worm in operative engagement therewith and means for actuating said worm, the latter means including a tool receiving recess adapted to receive a hand tool therein for turning said worm.

6. Plate clamping mechanism for wrap around printing plates comprising the combination with a rotary printing cylinder of a longitudinal circumferential slot across the cylinder and parallel with the longitudinal axis of same, a longitudinal bore parallel to and communicating with said slot, a prebent printing plate wrapped around said cylinder and means located in the cylinder bore for tensioning said plate on the cylinder in printing position, said last named means comprising a longitudinal shaft mounted in said bore, at least one spring biased collar mounted on said shaft, at least one stop on said collar for successively registering the leading and trailing plate ends, spring biased plate engaging devices normally urged outwardly against the interior wall of the cylinder bore, and exterior means for actuating said shaft to bring said devices into plate end engagement whereby the plate is tensioned on the cylinder and the plate leading edge is

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pressed by said devices against an interior wall of said cylinder bore, said exterior means comprising a gear on said shaft, a worm in operative engagement therewith and means for actuating said worm, the latter means including a tool receiving recess adapted to receive a hand tool 5 therein for turning said worm.

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