

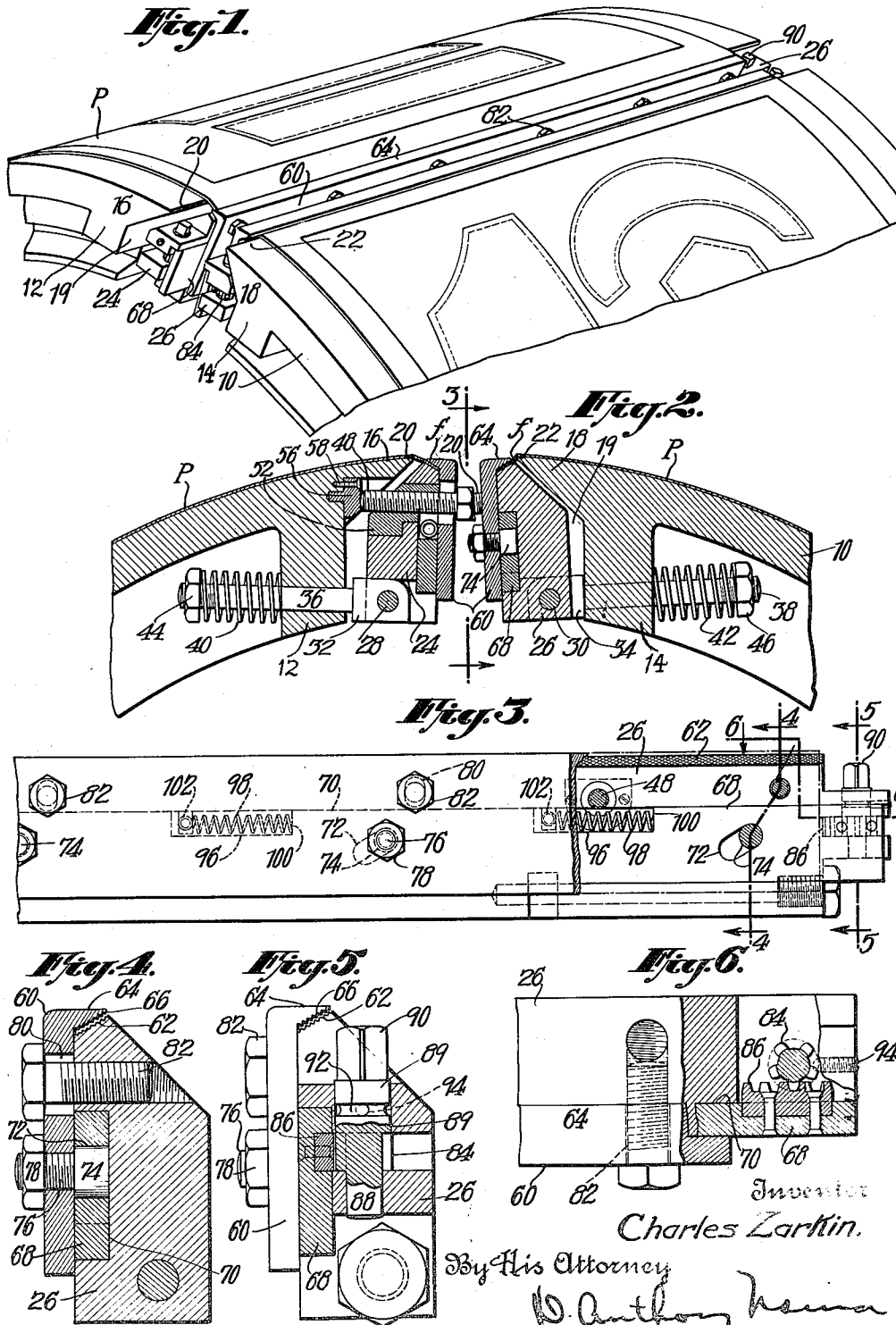
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PRINTING PRESS PLATE CLAMP

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PRINTING-PRESS PLATE CLAMP.

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The printing plates used in this type of press are wrapped around the printing cylinder and in order to form a good printing surface they must be firmly held in contact throughout their area with the surface of the cylinder. Various types of clamping devices have been heretofore used but many have proven unsatisfactory in service because of the time required to "make ready". In devices heretofore used a clamp bar has sometimes been provided which is secured by turning down a number of screws arranged longitudinally of the clamp bar. Such an arrangement while it effectively holds the plate after all of the screws have been turned down, is open to the objection that during the operation of fastening the end of the plate by such a bar, the plate is very apt to slip at the points where the clamp screws have not been screwed home.

My improved plate clamp overcomes the above objection and provides other points of improvement which will be apparent from the following specification when read in connection with the accompanying drawings in which—

Fig. 1 is a perspective view of a portion of a printing cylinder showing a flexible plate secured thereto by means of a clamp embodying my invention;

Fig. 2 is a transverse sectional view of a portion of the printing cylinder equipped with my improved clamp;

Fig. 3 is a face view of the clamping device as it would appear if viewed from the direction indicated by the section line 3—3 of Fig. 2;

Fig. 4 is a staggered section on line 4—4 of Fig. 3;

Fig. 5 is a similar section on line 5—5 of Fig. 3.

Fig. 6 is a detail partly in plan and partly in section on line 6—6 of Fig. 3.

Referring in detail to the drawings, the printing cylinder 10 is formed with longitudinally extending flanges 12 and 14 and beveled overhanging walls 16 and 18 which form a longitudinally extending pocket 19 within which my improved device is wholly located. By beveling the portions which form the walls 16 and 18 as shown, I provide a structure which requires the loss of

very little printing space on the cylinder. The edges 20 and 22 of the cylinder extend longitudinally across the same in true parallel relationship. In securing the flexible plate P to the cylinder, the ends thereof pass over the edges 20 and 22.

Located within the pocket 19 are longitudinally extending bars 24 and 26 supported at their respective ends by pivot pins 28 and 30 which pass through eyes formed in heads 32 and 34 formed on the ends of transversely extending shanks 36 and 38 which pass through suitable bores formed in the flanges 12 and 14 respectively of the cylinder. The shanks 36 and 38 are surrounded by springs 40 and 42 the tension of which may be adjusted by means of nuts 44 and 46 carried by said shanks. Each bar 24 and 26 is supported near each end by pins 28 and 30 carried by the yieldingly supported shanks 36 and 38. The springs 40 and 42 tend normally to hold the bars 24 and 26 respectively parallel to the upper edges 20 and 22 of the cylinder, but because of the yielding support of the bars they can be skewed or moved obliquely with respect to the edges 20 and 22.

The upper portions of the bars 24 and 26 are beveled off at an angle to fit the bevel of the walls 16 and 18 respectively so that said bars can be nested in the comparatively narrow pocket formed in the cylinder.

For adjusting the position of the bars 24 and 26 relatively to the edges 20 and 22 of the cylinder I provide a series of adjusting screws 48 and 50 respectively. These screws are threaded through bushing portions such as illustrated at 52 in Fig. 2. The cylinder is suitably counterbored at points opposite the several adjusting screws 48 and 50 and hardened steel wear plates or discs 56 are secured in said counter-bores against which the said adjusting screws are adapted to impinge. These wear pieces are held by screws 58 as shown in Fig. 2. The bores through which the shanks 36 and 38 extend are on an angle inclined to the horizontal shown in Fig. 2. As thus arranged when the adjusting screws 48 and 50 are manipulated, the bars 24 and 26 will be drawn slightly inward toward the center of the cylinder. In other words, the mounting of the

bars 24 and 26 is such that when they are adjusted, their movement will be inward away from the cylindrical surface.

The bars 24 and 26 are practically duplicates of one another and form part of my improved form of clamping device which also includes a clamping member 60. The bars 24 and 26 are of substantially identical construction and a detail description of one will suffice for both. Each bar 24 and 26 is bevelled off as indicated at 62 and said beveled surface is preferably knurled. Each clamping member 60 is provided with an overhanging jaw 64 the undersurface of which is knurled as indicated at 66. The knurled surfaces 62 and 66 provide means for securing a firm grip on the bent over end flange *f* of the printing plate P.

Improved means are provided for moving each clamping member 60 relatively to its supporting bar 24 or 26. These means include a member 68 which is mounted in a suitable groove or guide-way 70 formed in each bar 24 and 26. The member 68 has formed therein a plurality of inclined cam slots 72 into which project the pins 74 having threaded shanks 76 passing through suitably threaded holes in the member 60 and being rigidly secured thereto by nuts 78. Each member 60 is also formed with a plurality of vertical guide slots 80 through which extend guide studs 82, the latter being in threaded engagement with the bar 26 as best shown in Fig. 4. As thus arranged, it will be understood that when the member 68 is moved longitudinally of the bar 26 the cam grooves acting in connection with the pins 74 will force the overhanging jaw 64 of the cam member 60 toward the beveled portion 62 of the bar and thus firmly grip the end of the printing plate P throughout its length, it being remembered that there are a plurality of the cam slots 72 and pins 74 arranged throughout the length of the bar.

For sliding the member 68 longitudinally of the supporting bar 26, I provide a pinion 84 which meshes with a short rack 86 secured to one end of member 68. The pinion has an integral trunnion portion 88 formed on one end thereof which is journaled in a suitable bore in the bar 26 and the opposite end of the trunnion is in the form of a squared off head 90 adapted to be engaged by a suitable tool such as a socket wrench. The trunnion portion 89 of the pinion 84 is grooved at 92 and an end of the stud 94 projects into the groove 92 so as to prevent an endwise movement of the pinion 84.

The member 68 is cut away as indicated at 96 at several points throughout its length to accommodate compression springs 98 which are held between the portions 100 of the member 68 and abutments 102 carried by the bar 26. The several springs 98 tend to force

the bar 68 to the right in Fig. 3 and thus to serve to press the jaw 64 toward the beveled surface 62 of the bar 26. This spring arrangement permits the operator to initially engage the end of the printing plate with the clamping device in such a way that the same will not slip out. Or in other words, the bite does not depend upon turning up the clamp screws throughout the length of the member as in old forms of clamps. The plate can be pushed approximately to the proper position and is held against slipping by the spring tension. When properly positioned, the operator will turn the pinion 84 by means of a suitable wrench so as to forcibly slide the member 68 a short distance longitudinally of the supporting bar 26 in order to exert a firm grip on the end of the plate. This being done, the clamp screws 82 can be tightened up to securely lock the clamping member 60 to its supporting bar.

By beveling the edge of the bar 62 and providing an overhanging jaw 64 on the clamp bar as described, I am able to secure a firm hold on the end of the printing plate P without forming or bending over an abrupt flange on the end of the printing plate. Clamps formerly provided necessitate bending over a flange at the end of the plate which is practically at right angles to the surface of the cylindrical portion of the plate. Such acute bending tends to malform the end of the plate after repeated handlings. On the other hand, with the beveled arrangement herein shown and described, the flange end *f* of the plate forms an obtuse angle with the surface of the cylindrical portion of the plate and does not tend to form sharp creases or to malform the plate as do prior devices.

While I have described quite specifically the embodiment of the invention illustrated, it is to be understood that various modifications may be made by those skilled in the art without departing from the invention as defined in the appended claims.

What I claim is:

1. In combination with the cylinder of a printing press, means for securing a flexible plate thereto comprising a bar extending longitudinally across the cylinder and located within the cylindrical surface thereof, a clamping member guided for sliding movement on said bar and means movable longitudinally of said bar for sliding the clamping member transversely of the bar.

2. A clamping device of the character described comprising a bar having a beveled edge, a clamp member with a jaw which projects over said edge, and means movable longitudinally of said bar for forcing said jaw toward said beveled edge.

3. A clamping device of the character described comprising a bar having a beveled

edge, a clamp member with a jaw which projects over said edge, a member slidable in said bar, operatively connected with said clamp member and arranged to force the latter toward said beveled edge. 20

4. A clamping device of the character described comprising a bar having a beveled edge a clamp member with a jaw, which projects over said edge, a longitudinal guide-way formed in said bar, a member guided thereby having cam portions for actuating said clamp member, and means for moving the member along said guide. 25

5. A clamping device of the character described comprising a bar having a beveled edge, a clamp member with a jaw which projects over said edge, a cam member slid- 30

ably mounted in a guide groove in said bar, a rack secured to said cam member and a pinion journaled in said bar for moving said cam member.

6. In combination with a printing press cylinder, a bar extending longitudinally within a pocket formed in said cylinder, said pocket having a beveled wall overhanging a portion of said bar and said bar having a beveled edge beyond the overhanging wall of the cylinder and a clamp member secured to said bar having a portion which overhangs the beveled edge thereof. 30

In witness whereof, I have hereunto signed my name.

CHARLES ZARKIN.