

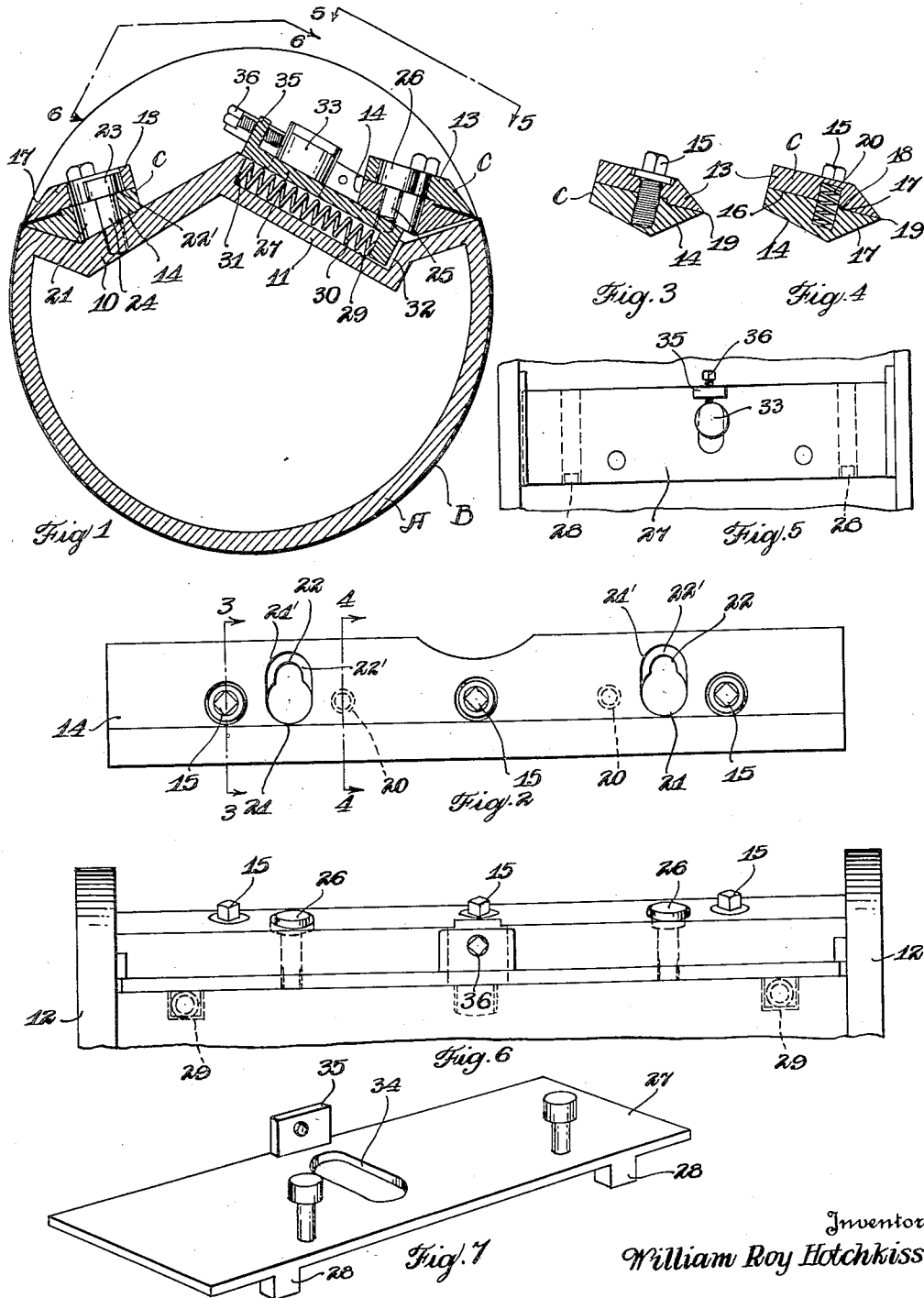
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LITHOGRAPHING PLATE CYLINDER

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LITHOGRAPHING PLATE CYLINDER

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15 Claims. (Cl. 101—415.1)

This invention relates to lithographing plate cylinders and the means of holding the plate on the cylinder in operative position. A feature resides in a lithographing press cylinder which is constructed to provide a holding means for the plate having the impression to be offset on to the blanket. The holding means includes a pair of clamp members which are adapted to be secured to the ends of the plate. The cylinder is provided with fixed lugs or hook members which engage one of the clamps secured to one end of the plate, while the other clamp is engaged by lugs which are carried by an adjustable member so that the plate may be drawn tightly over the surface of the cylinder to hold the same in operative position.

The cylinder is constructed in a manner so that the plate holding lugs or hook members are depressed below the operating surface of the cylinder and means is provided to hold the adjustable plate supporting members under spring tension and within a recess provided in the cylinder so that the cylinder may be rotated when the impression plate is removed without danger of the adjustable plate engaging members moving outward.

It is also a feature to provide an equalizing adjustment for the clamping bar of the plate which is adapted to be adjusted to tighten the plate over the cylinder. This equalizing adjustment permits the ends of the bar to be self-equalizing in drawing one end of the plate evenly over the cylinder. The impression plate is easily adjusted to fit closely over the cylinder by simply operating a set screw which operates the adjusting mechanism and draws the plate even or releases the same.

The clamping members for the end of the impression plate fit together and are held by set screws to lock the ends of the plate rigidly clamped in the same. Suitable spring means spread the jaws of the clamping members apart when the set screws are released. By these clamping units for the ends of the impression plate, the impression plate may be more easily and quickly attached or disengaged from the cylinder which supports the same in the lithographing machine. This assists materially in the make-ready and permits the plates to be more quickly and easily secured in place. This means of holding the impression plate also insures drawing of the plate evenly and tightly over the cylinder.

In the drawing forming part of the specification:

Figure 1 is a section through the plate holding cylinder.

Figure 2 is a plan view of one of the clamping units.

Figure 3 is a section on the line 3—3 of Figure 2.

Figure 4 is a section on the line 4—4 of Figure 2.

Figure 5 is a reduced detail looking toward the cylinder and clamping means, approximately on the line 5—5 of Figure 1.

Figure 6 is a view approximately on the line 6—6 of Figure 1, in the direction of the arrows.

Figure 7 is a perspective view of the slidable adjusting plate for adjusting one of the clamping units which engages the impression plate.

The plate cylinder A is adapted to form the means of supporting the plate B in a lithographing press where the impression from the plate B is transferred onto the blanket and neither the blanket or the press are illustrated in the drawing. The cylinder A may be formed of a hollow nature as illustrated in Figure 1 and is formed with the recessed shelf portions 10 and 11 which are depressed below the impression surface or outer periphery of the cylinder A and extend between the ends 12 of the cylinder.

Clamping units C are provided for clamping the ends of the plate B in the same and each unit is formed of two bar-like members 13 and 14, which are adapted to be secured together by the set screws 15. The bar members 13 and 14 fit together along the flat inner bearing surfaces 16 and are provided with offset gripping surfaces 17 so as to form a longitudinal shoulder 18 along the inside of the clamping unit C against which the end of the plate B may engage to limit the insertion of the ends of the plate B in either of the clamping units C.

The gripping jaws 17 are beveled to provide an apex 19 extending longitudinally along the gripping unit C and from this apex of the unit the plate B extends when gripped by the unit to support the same. Coil springs 20 embedded in recesses formed in the respective bar members operate to spread the gripping jaws 17 apart when the set screws 15 are released.

The bar member 14 is formed with an opening 21, one end of which is restricted at 22, while the bar member 13 is formed with an elongated opening 21' having semi-circular ends commensurate with the opening 21. These openings coincide in the two members 13 and 14 when they are clamped together by the set screws 15, as illustrated in Figure 1 and 2, to provide the shoulder 22' against which the heads 23 of a pair of studs 24 which are anchored in the shelf

10 engage. This stud may be in the form of a hook or any suitable lug fixed to the shelf 10, so as to engage the unit C which is laid upon the shelf in attaching the plate B to the cylinder A.

It will be noted that the shelf 10 is formed angular to receive the angular shape of the bar member 14 of the unit C. This permits the clamping unit C to be recessed below the operating surface of the cylinder A.

Similar studs 25 to the studs 24 are provided with heads 26 which are adapted to engage in the respective openings 21 and 22 and rest against the shoulders 22' in the other clamp unit C on the other side of the cylinder A. The studs 25 are carried by the slidable plate 27 which is formed with lugs 28 adapted to slide in the channels 29 formed in the shelf 11, while the coil springs 30 engage against the lugs 28 and the shoulders 31 in one end of the channels 29 to hold the plate 27 normally toward the end 32 of the channels 29.

A shoulder stud 33 having an enlarged head portion is adapted to extend through the slot 34 in the plate 27 to hold the same slidable and against removal from the surface of the shelf 11. The lug 35 formed on the outer edge of the slidable plate 27 carries a set screw 36 which is adapted to bear against the shoulder lug 33 to adjust the jaws of the slidable plate 27. This plate 27 carries a pair of hook studs 25 so that when the clamping unit C is engaged over these studs as illustrated in Figure 1, while the other clamping unit C is engaged over the studs 24, by operating the set screw 36, the slidable plate 27 will carry the lugs 25 in a manner to tighten the plate B around the cylinder A. When the set screw 36 is released, the springs 30 will carry the plate 27 to release the studs 25 so that the clamping unit C held thereby can be released from the studs 25 and the impression plate B removed from the cylinder A. The adjusting means carried by the shelf 11 is recessed below the operating surface of the cylinder A and provides a means of quickly attaching or disengaging the plate B from the cylinder A.

The lugs 28 engage freely in the channels 29 so as to permit the plate 27 to swing from the point of engagement of the set screw 36 against the head of the shoulder stud 33, while the slot 34 is sufficiently wide to permit the swinging of the plate 27 for this adjustment. This provides an evenness for the ends of the plate 27 which causes the clamping unit C to equalize its ends in drawing the plate B taut around the cylinder A. This evenness adjustment also compensates for any inequalities and permits the operator to more easily adjust the plate B over the cylinder A.

With this cylinder A, I provide together with the clamping unit C, a very desirable means of engaging the plate B to attach the same to the cylinder quickly and easily and with uniformity of adjustment so that the operator can more readily attach the plate to the cylinder A of a lithographing press than has been accomplished heretofore. Clamping units C are first attached to the ends of the plate B, the shoulders 18 limiting the clamping engagement of these units and acting as a gauge to properly connect with the plate B, and then it is only necessary for the operator to hook one unit C over the studs 24, while the other unit is hooked over the studs 25, and by tightening the set screw 36 the plate B is ready to be operated on the cylinder A and the operator is assured of proper adjustment as well

as evenly and securely attaching the plate over the cylinder A. This means of attachment for the plate B permits the same to be more evenly drawn over the surface of the cylinder A, thereby giving a better impression onto the offset blanket, and I have found by this method less time is required to accomplish the make-ready by the use of this cylinder and plate holding and adjusting means.

This lithographing plate holding cylinder A may be used on small lithographing presses with material advantages where the cylinder and plates are of a small nature, nevertheless has equal advantages on any size lithographing press where a cylinder is employed to secure the plate B in operative position. There is no danger in running the press with the cylinder A without the plate B attached thereto, as all of the parts on the shelves 10 and 11 are depressed and the slidable plate 27 is held firmly by the springs 30. The advantage of providing the clamping unit C for the ends of the plate B will be apparent as well as the self-adjusting plate tightening means which engages one of the units C and is carried out in the slidable plate 27 which is operated by the set screw 36.

In accordance with the patent statutes I have described the principles of operation of my lithographing plate adjusting means and while I have illustrated a particular construction and formation of the parts I desire to have it understood that the same is only suggestive of a means of carrying out the principles of the lithographing plate adjusting device which should be interpreted within the scope of the following claims.

I claim:

1. A plate support and cylinder for lithographing presses including, a cylinder having depressed portions, clamping units for the ends of the plate adapted to extend around said cylinder, fixed studs for engaging one clamping unit to hold one end of the plate, guiding means on said cylinder studs for engaging the other clamping unit which supports the other end of the plate and a slidable and pivotal plate supporting said last named studs slidable along said guiding means whereby the plate may be drawn evenly about said cylinder.

2. A lithographing plate cylinder having a recessed portion, means positioned within the same adapted to clamp the ends of the lithographing plate and a slidable and pivotal plate to which one of said means is secured to draw the same evenly about said cylinder, said pivotal plate including securing means near the side thereof next adjacent the cylinder surface to draw the lithographing plate directly from the cylinder surface.

3. A lithographing plate cylinder including, a recessed portion formed therein, a clamping unit for one end of the lithographing plate, hook lugs for engaging said unit to anchor the same in said recess, a slidable plate positioned in said recess, hook lugs carried by said slidable plate, a fixed member on said cylinder, a set screw for adjusting said plate bearing against said fixed member, and a clamping unit for the other end of said lithographing plate adapted to engage over the lugs carried by said slidable plate.

4. A clamping device for lithographing plates including, bar-like jaw units, spring means for opening said jaws, studs for clamping said jaws to the ends of the lithographing plate, openings formed in said units, a cylinder for supporting the lithographing plate, studs carried by said cylinder adapted to support one of said clamping units to anchor one end of the lithographing plate,

a slidable adjusting means having an equalizing nature to equalize the ends thereof, and studs carried by said slidable adjusting means adapted to engage in the openings formed in the other of said clamping units, whereby the lithographing plate may be drawn very taut about said cylinder with an equalized tension to uniformly clamp the same to the cylinder.

5. Clamping units for the ends of a lithograph plate including, a pair of bar-like members, beveled jaw portions having offset gripping faces, a shoulder formed by said offset against which the plate end is adapted to bear studs for clamping said jaws together, spring means for spreading said jaws apart, and openings in said units adapted to permit the same to be attached to a cylinder for supporting the lithographing plate to tightly attach the same thereto.

6. A lithographing plate supporting cylinder including, a recessed portion, stationary studs fixed within said recessed portion on one side, slidable adjusting means having an evenner adjustment with a single operating set screw, spring means for holding said slidable adjusting means in inoperative position, engaging studs carried by said slidable adjusting means, said stationary studs with said adjustable studs being adapted to draw a lithographing plate tightly about said cylinder.

7. A lithographing plate clamp including, a pair of opposed clamping members adapted to clamp the end of a lithographing plate, means for clamping said plates together, and a registering shoulder formed in one of said members to limit the insertion of said plate.

8. A lithographing plate cylinder including, a recessed bed, a plate slidable on said bed, a slot in said plate, a stud on said cylinder extending through said slot, means on said plate for engaging a lithographing plate, and adjustable means on said plate engaging against said stud to adjust the position of said slidable plate.

9. A lithographing plate cylinder including, a recessed portion, a plate slidable in said recessed portion and adapted to extend beyond the diameter of said cylinder in one extreme position, and spring means for holding said plate within the diameter of said cylinder.

10. A lithographing plate cylinder including, a recessed portion on said plate cylinder, a plate pivotal and slidable in said recessed portion, an opening in said plate, a projecting member on said cylinder extending through said opening, means

on said plate for engaging a lithographing plate, and adjustable means interposed between said plate and said projecting member to adjust the position of said slidable plate.

11. A lithographing plate cylinder including, a recessed portion, a plate slidable in said recess, guides for said plate, said plate spaced from the ends of the cylinder to permit pivoting thereof, spring means urging said plate in one direction, adjustable means drawing said plate in the other direction, and means on said plate for engaging a lithographing plate.

12. A lithographing plate clamp including, a pair of clamping members, a lithographing plate engaging surface on each of said members, a complementary bearing surface on each clamping member extending on a plane parallel to but offset from said plate engaging surface, a registering shoulder between said engaging surfaces and said bearing surfaces, and means for clamping said clamping members together.

13. A lithographing plate cylinder including, a recessed portion, a short radially extending wall in said recessed portion adjacent the diameter of said cylinder, an adjoining wall in said recessed portion extending at an oblique angle to said radially extending wall, a pair of clamping members slidable along said adjoining wall, tapered edges on said clamping member, said clamping members slidable in one extreme position to place said tapered edges closely adjacent the juncture of said radial wall and the surface of the cylinder.

14. A lithographing plate cylinder including, a recessed portion, a pair of lithographing plate clamping members, means for slidably mounting said members to pull said plate at an acute angle over the juncture of the recessed portion and the surface of the cylinder, means for clamping said clamping members together, and tapered edges on said clamping members to confine said clamping members within the diameter of the cylinder in extreme outward position.

15. In a lithographing plate cylinder having a recessed portion, means positioned within the same to clamp the ends of a lithographing plate, a slidable and pivotal plate to which one of said means is secured to draw the same evenly about the cylinder, and spring means interposed equally on either side of the pivotal center of said plate against the tension of which said lithographing plate is tightened.

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