

July 11, 1939.

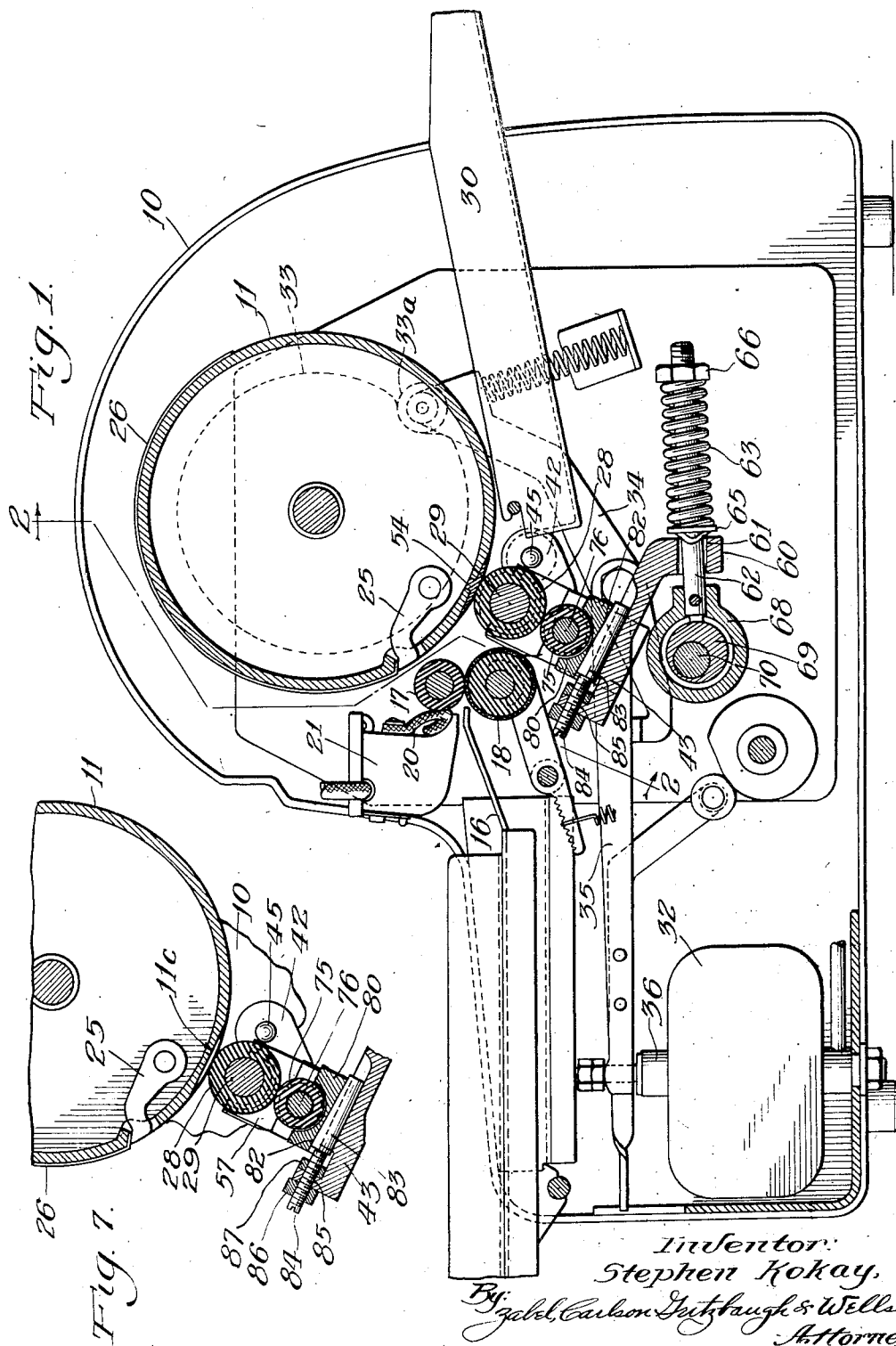
S. KOKAY

2,165,972

DUPLICATING MACHINE

Filed June 28, 1937

4 Sheets-Sheet 1



July 11, 1939.

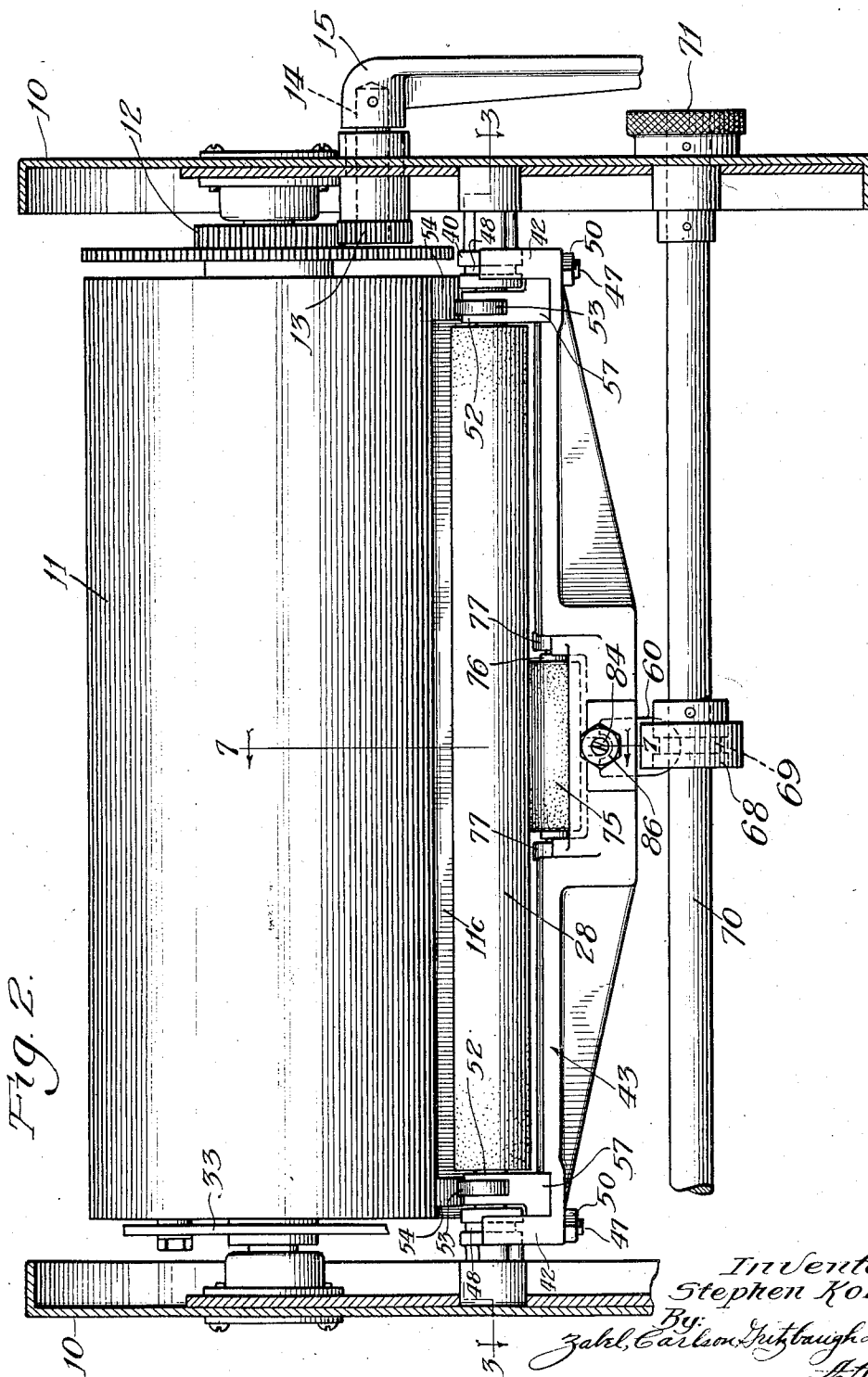
S. KOKAY

2,165,972

DUPLICATING MACHINE

Filed June 28, 1937

4 Sheets-Sheet 2



Inventor:
Stephen Kokay.

By:
Zahl, Carlson, Fitzbaugh & Wells
Attorneys

July 11, 1939.

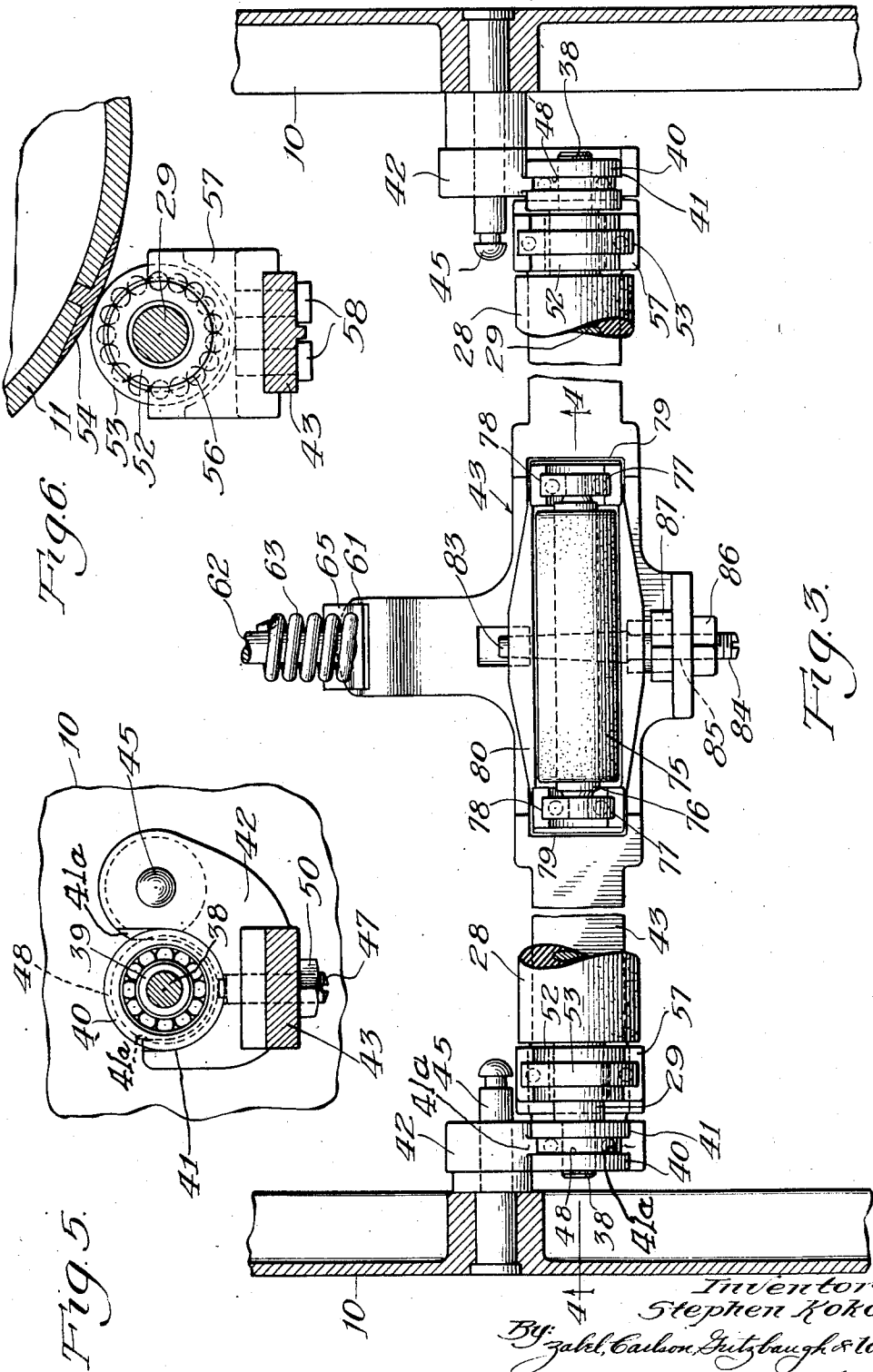
S. KOKAY

2,165,972

DUPLICATING MACHINE

Filed June 28, 1937

4 Sheets-Sheet 3



Inventor:
Stephen Kokay,
By: Zabel, Carlson, Gutzbaugh & Wells,
Attorneys.

July 11, 1939.

S. KOKAY

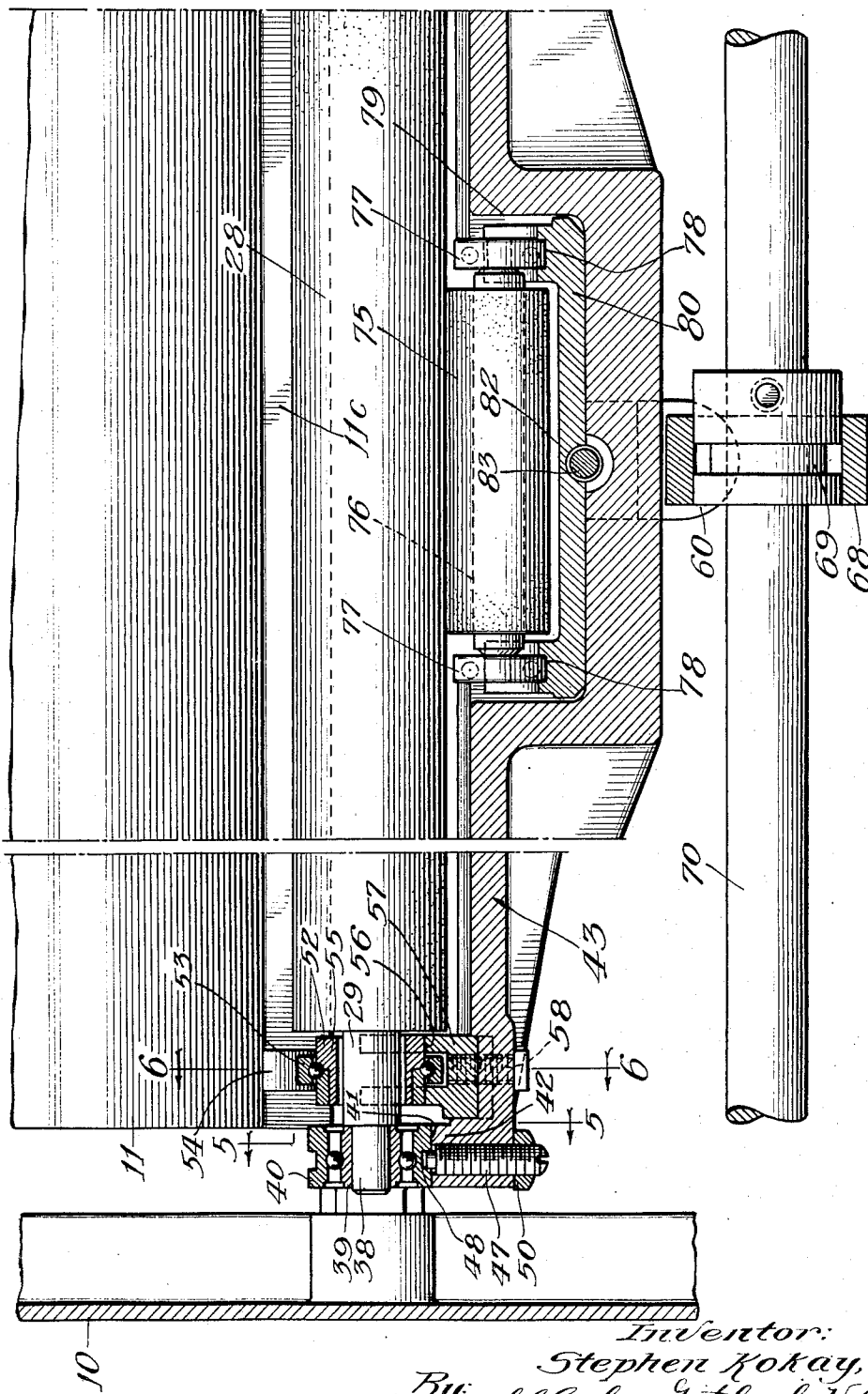
2,165,972

DUPLICATING MACHINE

Filed June 28, 1937

4 Sheets-Sheet 4

Fig. 4



Inventor:
Stephen Kokay,
By: Zahl, Carlson, Gutzbaugh & Wells
Attorneys

UNITED STATES PATENT OFFICE

2,165,972

DUPLICATING MACHINE

Stephen Kokay, Chicago, Ill., assignor to Ditto, Incorporated, Chicago, Ill., a corporation of West Virginia

Application June 28, 1937, Serial No. 150,805

13 Claims. (Cl. 101—132)

The invention relates to duplicating machines and is particularly adapted to be embodied in duplicating machines of the type that comprise printing drums against which copy sheets are pressed by platen or pressure rollers.

One form of the invention is embodied in a duplicating machine which comprises a rotary duplicating drum having means for clamping master sheets thereto, the copy sheets being pressed against the master sheets by a platen roller formed of rubber. In this form of the invention, the master sheets have the data to be duplicated, written or typewritten thereon in reverse so that when the copy sheets are applied thereto, the data appears in correct, readable form upon the copy sheets. The copy sheets are moistened with a suitable solvent for the carbon or ink forming the data upon the master sheet. The improved machine comprises means for preventing the platen roller from flexing or bending intermediate its ends. This construction insures that all portions of the copy sheets will be applied with equal pressure to the master sheets and the copies will be of uniform quality throughout. The machine also comprises means for preventing the formation of a flat spot upon the rubber platen roller, which flat spot will sometimes result from the position assumed by the platen roller each time the duplicating machine comes to rest after a cycle of operations. In other words, similar machines heretofore constructed, operated in such manner that, in each instance, the same portion of the platen roller remained in contact with the printing drum between cycles of operations and a flat spot developed.

Other objects and advantages will become apparent as the following detailed description progresses, reference being had to the accompanying drawings, wherein—

Fig. 1 is a longitudinal vertical section taken through a duplicating machine which embodies the invention.

Fig. 2 is a fragmentary transverse section taken on line 2—2 of Fig. 1.

Fig. 3 is a fragmentary plan section taken on line 3—3 of Fig. 2.

Fig. 4 is a section taken on line 4—4 of Fig. 3.

Fig. 5 is a section taken on line 5—5 of Fig. 4.

Fig. 6 is a section taken on line 6—6 of Fig. 4, and

Fig. 7 is a section taken on line 7—7 of Fig. 2.

Referring to the drawings wherein a preferred form of the invention is illustrated, the reference character 10 designates generally the frame of the improved duplicating machine. Rotatably

mounted in the frame 10 is a printing or duplicating drum 11 which is constrained to rotate with a gear 12. A pinion 13, which meshes with the gear 12, is fixed to a shaft 14 rotatably journaled in the frame 10. The shaft 14 has a crank lever 15 pinned thereto. Obviously, when the crank lever 15 is rotated, the duplicating drum 11 will also rotate.

The machine is provided with a table 16 adapted to receive a stack of copy sheets which may be advanced one by one to a pair of combined feeding and moistening rollers 17 and 18. The roller 17 is contacted by a strip of felt 20 which projects from a container 21 adapted to hold a supply of solvent. When the copy sheets (not shown) pass between the rollers 17 and 18, the upper surfaces of the copy sheets are moistened with the solvent by the roller 17 which obtains the solvent from the felt 20.

The drum 11 is provided with a plurality of gripper units 25 adapted to clamp a master sheet 26 upon the drum. When the machine is in operation, copy sheets are advanced by the rollers 17 and 18 to the drum 11 and are pressed against the master sheet 26 by a platen roller 28 which is mounted upon a shaft 29 and is preferably formed from rubber. When the copy sheets pass from between the drum 11 and the platen roller 28, they are discharged into a tray 30 mounted in the frame 10. It may be mentioned that the container 21 is supplied with fluid from a larger container 32 by means comprising a cam 33 constrained to rotate with the drum 11, which cam 33 actuates mechanism comprising lever 34 and 35 to operate a pump 36 extending into the container 32.

The shaft 29, which carries the platen roller 28, has ends 38 of reduced diameter, each end 38 being mounted in an inner race 39 of a ball bearing 40 which has its outer race disposed in a semi-circular notch 41 formed in one of the arms of a bracket 43 in the form of a yoke pivotally mounted on the frame by means of pins 45 engaging said arms.

The ball bearings 40 are retained against lateral displacement in the notches 41 by flanges 41a on the arms 42, which flanges 41a engage annular slots 48 formed in the outer cylindrical surfaces of the outer races of the ball bearings 40. Set screws 47 screw-threaded in the arms 42 engage the ball bearings 40 and may be manipulated to raise or lower them to align the roller 28 into parallelism with the drum 11. Nuts 50 may be manipulated to lock the set screws in their adjusted positions. In practice it has been

found that it is only necessary to provide a set screw 47 in one of the arms 42. It will be noted that the ball bearings 40 may be lifted bodily from the notches 41.

Intermediate the ends of the platen roller 28 and the reduced ends 38 of the shaft 29, a pair of ball bearings 52 are disposed around the shaft 29 but do not journal it as there is clearance between the surface of the shaft and the inner races of the ball bearings 52. The outer races 53 of the ball bearings 52 which are shown in the form of rings are engageable by lugs 54 projecting from the outer cylindrical surface of the drum or roller 11. Referring to Fig. 4, it will be noted that the inner races 55 of the ball bearings 52 are wider than the outer rings 53 and are seated in notches 56 formed in blocks 57, the blocks 57 being carried by the bracket 43 and being secured thereto by bolts 58. The function of the ball bearings 52 and the lugs 54 will presently appear.

As best shown in Fig. 1, the bracket 43 is provided with a downwardly extending lug 60 provided with an aperture 61. Extending through the aperture 61 is a rod 62 around which a helical compression spring 63 is disposed. One end of the spring 63 bears against a washer 65 loosely mounted on the rod 62. The washer bears, in turn, upon the lug 60. The other end of the spring 63 bears against a nut 66 screw-threaded upon the rod 62. One end of the rod 62 is secured to an eccentric strap 68 mounted upon an eccentric 69 which is secured to a shaft 70 rotatably journaled in the frame 10. At one end, the shaft 70 is provided with a knurled knob 71 whereby the operator may rotate the shaft to displace the eccentric 69 angularly. Obviously, such displacement of the eccentric 69 will cause the strap 68 to displace the rod 62 longitudinally in one direction or the other depending upon the direction in which the shaft 70 is rotated. If the rod 62 is drawn to the left (Fig. 1) it is obvious that the spring 63 will be placed under greater tension. If the rod 62 is displaced to the right (Fig. 1), the spring 63 will exert less pressure upon the lug 60. As the bracket 43 is pivoted by the pins 45 in the frame 10, it will be readily understood that the spring 63 tends to displace the bracket 43 angularly in a clockwise direction (Fig. 1) so as to urge the roller 28 against the cylindrical surface of the roller or drum 11. The force with which the roller 28 is urged against the drum 11 may be adjusted by rotating the knob 71 or by manipulating the nut 66. Ordinarily, the operator uses the knob 71 for this purpose as it is more accessible than the nut 66.

Bearing against the platen roller 28 intermediate its ends is a shorter rubber roller 75, the rubber compression in the roller 75 being preferably the same as that in the platen roller 28. The roller 75 is mounted upon a shaft 76 which has its ends mounted in ball bearings 77, the ball bearings 77 being mounted in semi-circular grooves 78 provided in a bracket member 80 which is disposed in a recess 79 formed in the bracket 43. The bracket 80 engages the sides and ends of the recess 79 so as to prevent lateral or longitudinal displacement of the roller 75 relative to the bracket 43 but it will be apparent that the bracket 80 may be raised or lowered in the recess 79 (Figs. 3 and 5). The tapered hole 82 is formed one-half in the bottom surface of the bracket 80 and one-half in the bracket 43. Disposed in the hole 82 is a tapered pin 83 which, at its larger end, has an integral screw-threaded pin 84 projecting from it. The pin 84 passes through a

hole 85 formed in the bracket 43 and nuts 86 and 87 screw-threaded upon the pin 84 abut against opposite sides of the bracket 43 to hold the tapered pin 83 in any one of a plurality of adjusted positions. It will be readily understood that the nuts 86 and 87 may be manipulated to withdraw the tapered pin 83 any desired distance from the hole 82 or they may be manipulated to urge the tapered pin 83 farther into the hole 82. This construction permits the operator to raise or lower the bracket 80 as much as it is necessary to obtain any desired pressure between the rollers 75 and 28. The tapered pin 83 is adjusted preferably to a position wherein there is substantially no pressure or relatively little pressure is exerted by the roller 75 upon the roller 28 when the roller 28 is not in contact with the duplicating drum 11 as will be described presently.

Suitable means (not shown) is provided whereby the roller 17 is driven in synchronism with the drum 11 and the roller 17, in turn, drives the roller 18. The platen roller 28 is driven by reason of its frictional engagement with the drum 11 or the master sheet 26 thereof.

In Figs. 1 and 4 the machine is shown in the condition which obtains when it is at rest between two cycles of operations. The machine is provided with detent means comprising the cam 33 and a roller 33a carried by the lever 34, which detent means indicates to the operator the end of each cycle of operations so that the operator may stop turning the crank lever 15 and insert a copy sheet between the rollers 17 and 18 whereupon the operator again turns the crank 15 to operate the machine through the next cycle of operations.

When a copy sheet is advanced to the rollers 17 and 18 and the crank lever 15 is rotated, the rollers 17 and 18 advance the copy sheet between the drum 11 and the platen roller 28 and the platen roller 28 presses the copy sheet against the master sheet 26 so that a copy is taken upon the copy sheet of the data on the master sheet. Of course, it is understood that the copy sheet has been moistened by the roller 17 with a solvent for the ink or carbon of the data on the master sheet. The number of copies that may be obtained from a master sheet and also the quality of the copies is dependent upon the pressure with which the platen roller 28 presses the copy sheets against the master sheet. This pressure may be adjusted by rotating the knob 71 as described above or by manipulating the nut 66.

In some of the machines, and particularly in machines of the larger sizes, the platen roller 28 tends to bend or bow in such manner that the central portion of the roller 28 does not press the central longitudinal portion of the copy sheets with as much force as it does the outer side marginal portions of the copy sheet. Therefore, the data will not be duplicated as clearly in the longitudinal central portions of the copy sheets as it is along the side marginal portions. It is the function of the roller 75, which is sometimes called the backing roller, to prevent this flexing or bowing of the roller 28 and to obtain this result the tapered pin 83 is adjusted to adjust the bracket 80 into a position wherein it holds the roller 75 against the roller 28 but under such conditions that when the roller 28 is not engaging the drum 11 or the master sheet 26, the roller 75 will simply touch the roller 28 and there will be little or substantially no pressure exerted by the roller 75 upon the roller 28. However, when the roller 75

28 is in contact with the drum 11, or the master sheet 26 and the roller 28 is pressing copy sheets against the master sheet 26, the roller 75 will resist any tendency of the roller 28 to flex or bend in the manner described above.

The function of the lugs 54, as described above, is to engage the outer race 53 of the ball bearings 52. When the lugs engage the race 53, they displace the ball bearings 52 outwardly with respect to the cylindrical surface of the drum 11 as shown in Fig. 6, and such displacement of the ball bearings 52 is, of course, accompanied by like displacement of the bracket 43 around the axis of the pins 45. Such displacement of the bracket 43 is accompanied by like displacement of the roller 28 so that it is brought into a position wherein it will not engage the outer cylindrical surface of the drum 11 or the master sheet 26 or at least into position in which the pressure is materially relieved between the platen roller 28 and the drum. The lugs 54 are positioned on the drum 11 in such manner that they will engage the race 53 each time the drum is brought into the position wherein it is shown in Fig. 1, in which position the drum has completed a revolution to print a copy sheet and the machine is in the condition to have the next copy sheet advance to the rollers 17 and 18. Obviously, when the last copy sheet has been duplicated and the machine is not to be used for some time, the drum 11 is left in the position wherein it is shown in Fig. 1 and if the roller 28 were not held out of contact with the drum through the action of the lugs 54, a flat spot would develop upon the roller 28, which flat spot would mar the copy sheets subsequently made.

It will be noted that if the machine is to be taken apart, or if the rollers 28 and 75 are to be replaced, the rollers together with their ball bearings, may be lifted bodily from the brackets 43 and 80 if the drum 11 is first removed, from the frame 10.

As described above, the function of the lugs 54 is to urge the roller 28 in a direction away from the drum 11 when the drum 11 comes to rest after each cycle of operation. This is to prevent the formation of a flat spot upon the roller 28. However, unless the present invention is embodied in the machine there is a greater tendency that a flat spot will develop at the point of contact or bight of the rollers 28 and 75 when the machine is idle. It will be readily understood that the greatest amount of pressure between the rollers obtains when the machine is in operation as the backing roller 75 then contacts the roller 28 firmly and both rollers are compressed, to some extent, while the roller 28 is applying the copy sheets to the master sheet 26. Then when the machine comes to rest after a cycle of operation and the apparatus is in the condition wherein it is shown in Figs. 1 and 4, so that the bracket 43 has been urged downwardly, it is obvious that then the roller 28 no longer contacts with the master sheet 26 or the cylindrical platen surface of the drum 11. The rollers 28 and 75 are then free to expand to their normal diameters as there is sufficient play in the bearings for these rollers to permit some movement of the roller 28 toward the drum 11. It will be noted that there is considerable clearance between the inner race 55 of the ball bearing 52 and the shaft 29. Also, as explained above, the ball bearings 77 simply rest in the grooves 78 and the ball bearings 40 simply rest in the notches 41 of the bracket 43. Such con-

struction leaves the rollers 28 and 75 free to expand and obviously there will be some movement of the roller 28 bodily toward the drum 11. To prevent the roller 28 from contacting the drum 11 while the drum is stationary in its idle position, as shown in Figs. 1 and 7, the wall of the drum 11 is cut away as at 11c, leaving a flattened surface of the drum. This provides ample space between the drum 11 and the roller 28 when the drum is stationary in its idle position to permit the rollers 28 and 75 to expand and assume their normal diameters without causing the roller 28 to contact the flattened surface 11c, of the drum.

In some instances, it may be desired to dispense with the lugs 54 and simply rely upon the flattened surface 11c of the drum 11 to prevent the forming of flat surfaces on the rollers 28 and 75 but in practice it has been found that unless the lugs 54 are provided, the machine becomes relatively noisy in operation and therefore it is preferable to employ both the lugs 54 and the flattened surface 11c. If the lugs 54 are employed alone, it is necessary to have them project higher from the surface of the drum than when the flattened surface 11c is also provided. This also tends to cause noisy operation and therefore, in the preferred form of the invention, both lugs 54 and the flattened surface 11c are employed.

While I have shown and described certain embodiments of my invention, it is to be understood that it is capable of many modifications. Changes, therefore in the construction and arrangement may be made without departing from the spirit and scope of the invention as disclosed in the appended claims, in which it is my intention to claim all novelty inherent in my invention as broadly as permissible, in view of the prior art.

I claim:

1. In a duplicating machine, a frame, a rotatable duplicating drum mounted in the frame, a platen roller engageable and co-operating with said drum, means pivoted in said frame for rotatably journalling said platen roller, the pivotal axis of said means being spaced from the axis of rotation of the platen roller, yielding means urging said pivoted means into a position wherein said platen roller is pressed against the drum, a member movably mounted on said pivoted means, a second roller rotatably journaled on said movably mounted member and engaging said platen roller to prevent bowing thereof as a result of the force with which the platen roller abuts against the drum, and means for bringing said movably mounted member into a plurality of adjusted positions to vary the force with which said second roller engages said platen roller.

2. In a duplicating machine of the type described, the combination of a frame, a duplicating drum rotatably mounted on said frame, a heavy bracket pivotally mounted on said frame adjacent to said drum, a platen roller rotatably mounted on said bracket eccentrically of the pivotal axis of the bracket on the drum, yielding means urging said bracket in the direction for pressing the platen against the drum, a second bracket movably mounted on said first named bracket, a second roller rotatably mounted on said second bracket in engagement with the platen roller for preventing outward bowing of said platen roller, a wedge-shaped member slidably mounted between said brackets adapted by longitudinal movement to adjust the position of said

second roller with respect to said platen roller, and means for locking said wedge-shaped member in any adjusted position longitudinally thereof.

3. In a duplicating machine of the type described, the combination of a frame, a duplicating drum rotatably mounted on said frame, a heavy bracket pivotally mounted on said frame adjacent to said drum, a platen roller rotatably mounted on said bracket eccentrically of the pivotal axis of the bracket on the drum, a second roller rotatably mounted on said bracket in engagement with the platen roller for preventing outward bowing of said platen roller, a shaft rotatably mounted in said frame adjacent to said bracket, a rod extending loosely through an opening in a part of said bracket, means comprising an eccentric for connecting said rod adjustably with said shaft whereby a rotary movement of the shaft serves to move said rod longitudinally, a spring bearing on said bracket and on said rod for urging the bracket toward the shaft so as to cause said second roller to press yieldingly against said platen roller, and means for rotating said shaft.

4. In a duplicating machine, a frame, a rotatable duplicating drum mounted in the frame, a platen roller engageable and co-operating with said drum, means pivoted in said frame for rotatably journalling said platen roller, the pivotal axis of said means being spaced from the axis of rotation of the platen roller, yielding means urging said pivoted means into a position wherein said platen roller is pressed against the drum, manually operable means for varying the force with which said yielding means urges said platen roller against the drum, a second roller carried by said pivoted means and contacting said platen roller to prevent bowing thereof as a result of the pressure with which said platen roller abuts against the drum, and means including a lug mounted on said drum for displacing said pivoted means so as to relieve the pressure between the platen roller and the drum.

5. In a duplicating machine, a rotatable duplicating cylinder having a flattened surface extending longitudinally of it in its cylindrical surface, a platen roller co-operating with said cylinder, means tending to stop the cylinder upon each revolution in a position wherein its flattened surface is opposite the platen roller so as to break contact between the roller and the cylinder to prevent formation of a flat spot on said platen roller, and a second roller engaging the platen roller to prevent bowing thereof as a result of the pressure with which the platen roller engages the cylindrical surface.

6. In a duplicating machine, a frame, a rotatable duplicating cylinder mounted in said frame and having a flattened surface in its cylindrical surface, said flattened surface extending longitudinally of said cylinder, a rubber platen roller co-operating with said cylinder, means tending to stop the cylinder upon each revolution in the position wherein its flattened surface is opposite the platen roller so as to break contact between the roller and the cylinder to prevent formation of a flat spot on said platen roller, means pivoted on said frame for rotatably journalling said platen roller, the pivotal axis of said pivoted means being spaced from the axis of rotation of the rubber platen roller, yielding means urging said pivoted means in a direction to have said platen roller contact said cylinder, a member movably mounted on said pivoted means, a second roller rotatably journaled on said movably

mounted member and engaging said platen roller to prevent bowing thereof as a result of the force with which said platen roller abuts against the cylinder, and means for bringing said movably mounted member into a plurality of adjusted positions to vary the force with which said second roller engages said platen roller.

7. In a duplicating machine of the type described, the combination of a frame, a duplicating drum rotatably mounted on said frame, a heavy bracket pivotally mounted on said frame adjacent to said drum, a shaft rotatably mounted in bearings supported by said bracket but movable thereon toward the drum, said shaft being mounted in eccentric position with respect to the pivotal axis of the bracket on the frame, a platen roller mounted on said shaft in position to engage the surface of said drum, yielding means urging said bracket in the direction for causing said platen roller to press against the face of said drum, bearing devices supported by said bracket but loose about said shaft and located adjacent to the bearings for said shaft on said bracket but normally out of engagement with said shaft, and means carried by the drum adapted by engagement with said last mentioned bearing devices at one point in the revolution of the drum to press said bracket outwardly a short distance for relieving the pressure between the drum and said platen roller and between said platen roller and its supporting parts.

8. In a duplicating machine of the type described, the combination of a frame, a duplicating drum rotatably mounted on said frame, a heavy bracket pivotally mounted on said frame adjacent to said drum, a shaft rotatably mounted in bearings supported by said bracket but movable thereon toward the drum, said shaft being mounted in eccentric position with respect to the pivotal axis of the bracket on the frame, a platen roller mounted on said shaft in position to engage the surface of said drum, yielding means urging said bracket in the direction for causing said platen roller to press against the face of said drum, a second roller rotatably mounted in bearings supported by bracket but movable thereon toward the drum in position to engage said platen roller for preventing outward bowing of said platen roller, bearing devices supported by said bracket but loose about said shaft and located adjacent to the bearings for said shaft on said bracket but normally out of engagement with said shaft, and means carried by the drum adapted by engagement with said last mentioned bearing devices at one point in the revolution of the drum to press said bracket outwardly a short distance for relieving the pressure between the drum and said platen roller and between said platen roller and said second roller.

9. In a duplicating machine of the type described, the combination of a frame, a duplicating drum rotatably mounted on said frame, a heavy bracket pivotally mounted on said frame adjacent to said drum, a shaft rotatably mounted in bearings supported by said bracket but movable thereon toward the drum, said shaft being mounted in eccentric position with respect to the pivotal axis of the bracket on the frame, a platen roller mounted on said shaft in position to engage the surface of said drum, yielding means urging said bracket in the direction for causing said platen roller to press against the face of said drum, a second roller rotatably mounted in bearings supported by said bracket but movable thereon toward the drum in position to engage

said platen roller for preventing outward bowing of said platen roller, bearing devices supported by said bracket but loose about said shaft and located adjacent to the bearings for said shaft on said bracket but normally out of engagement with said shaft, said drum having a flattened surface extending longitudinally of the drum at one point thereabout, and means carried by the drum adjacent to said flattened surface adapted by engagement with said last mentioned bearing devices when said flattened surfaces comes into position opposite said platen roller to press said bracket outwardly a short distance for moving the platen roller outwardly with respect to the drum and for relieving the pressure between the platen roller and said second roller.

10. In a duplicating machine of the type described, the combination of a frame, a duplicating drum rotatably mounted on said frame, a heavy bracket mounted on said frame adjacent to said drum and movable toward and from the drum, yielding means normally urging the bracket toward the drum, a pair of anti-friction bearing assemblies mounted on said bracket at opposite end portions thereof so as to be movable toward the drum from their normal operative positions on the bracket, a heavy shaft supported by said bearing assemblies, a platen roller on said shaft and normally held by the shaft in impression relationship to said drum, a second pair of anti-friction bearing assemblies mounted on said bracket about said shaft adjacent to said first-named bearing assemblies with an effective clearance between the bearings and the shaft, and means adapted by engagement with said second-named bearing assemblies to move said bracket outwardly with respect to the drum for relieving the pressure between said platen roller and said drum.

11. In a duplicating machine of the type described, the combination of a frame, a duplicating drum rotatably mounted on said frame, a heavy bracket mounted on said frame adjacent to said drum and movable toward and from the drum, yielding means normally urging the bracket toward the drum, a pair of anti-friction bearing assemblies mounted on said bracket at opposite end portions thereof so as to be movable toward the drum from their normal operative positions on the bracket, a heavy shaft supported by said bearing assemblies, a platen roller on said shaft and normally held by the shaft in impression relationship to said drum, a second roller rotatably mounted on said bracket in position to engage said platen roller at an intermediate point there-

along for preventing outward bowing of said platen roller, a second pair of anti-friction bearing assemblies mounted on said bracket about said platen roller shaft adjacent to said first-named bearing assemblies with an effective clearance between the bearings and the shaft, and means adapted by engagement with said second-named bearing assemblies to move said bracket outwardly with respect to the drum for relieving the pressure between said platen roller and said drum and between said platen roller and said second roller.

12. In a duplicating machine of the type described, the combination of a frame, a duplicating drum rotatably mounted on said frame and having a flattened portion at one side thereof, a heavy bracket mounted on said frame adjacent to said drum and movable toward and from the drum, yielding means normally urging the bracket toward the drum, a pair of bearings mounted on said bracket at opposite end portions thereof so as to be movable toward the drum from their normal operative positions on the bracket, a heavy shaft supported by said bearings, a platen roller on said shaft normally held by the shaft in impression relationship to the cylindrical portion of the drum, and means serving when said platen roller moves inwardly at said flattened portion of the drum to hold said bracket continuously in its normal outwardly spaced relation to the drum.

13. In a duplicating machine of the type described, the combination of a frame, a duplicating drum rotatably mounted on said frame and having a flattened portion at one side thereof, a heavy bracket mounted on said frame adjacent to said drum and movable toward and from the drum, yielding means normally urging the bracket toward the drum, a pair of bearings mounted on said bracket at opposite end portions thereof so as to be movable toward the drum from their normal operative positions on the bracket, a heavy shaft supported by said bearings, a platen roller on said shaft normally held by the shaft in impression relationship to the cylindrical portion of the drum, a second pair of bearings mounted on said bracket adjacent to said first-named bearings, and means serving by engagement with said second-named bearings to hold said bracket continuously in its normal outwardly spaced relation to the drum when the platen roller moves inwardly at said flattened portion of the drum.

STEPHEN KOKAY. 55