July 30, 1940.

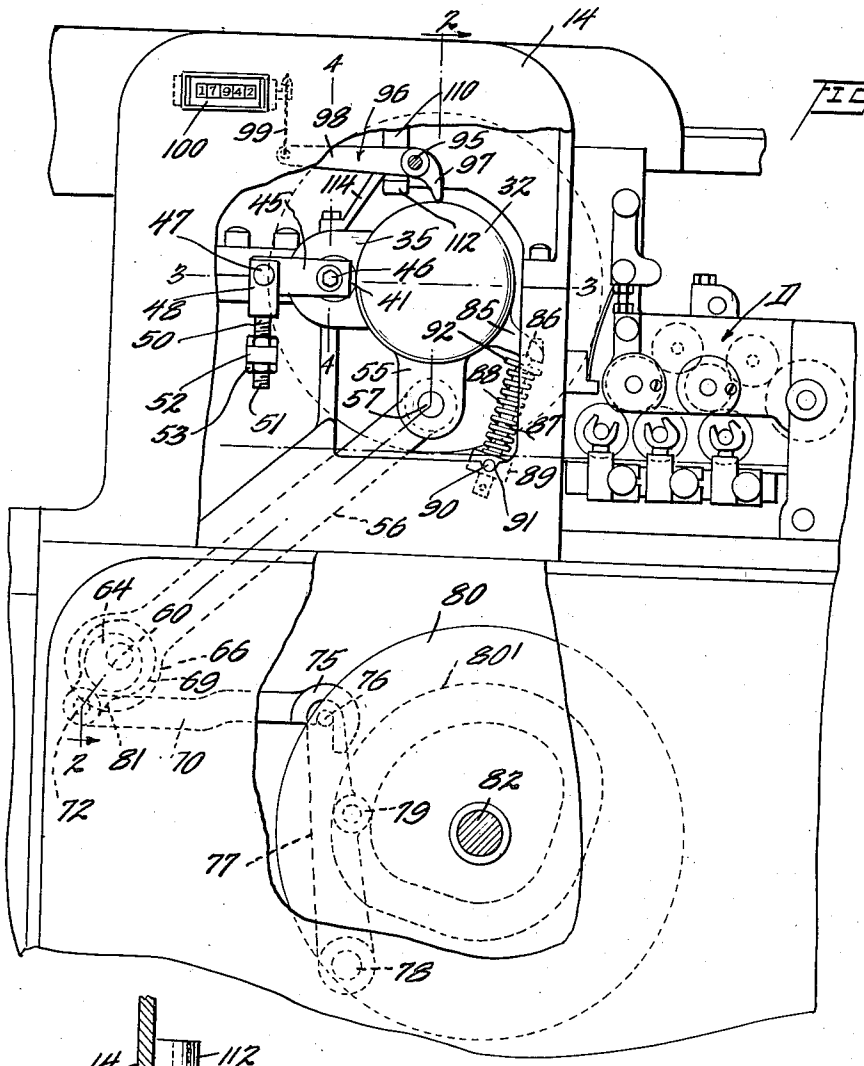
A. STOBB

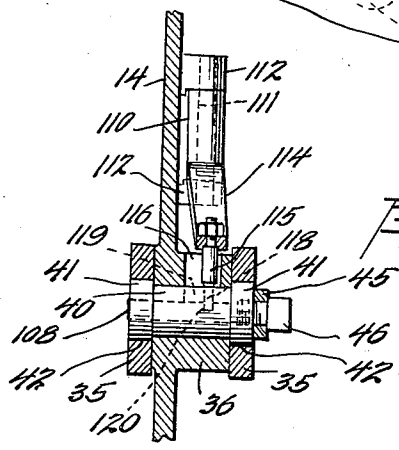
2,209,482

PRINTING PRESS

Filed Feb. 10, 1939

2 Sheets-Sheet 1





Inventor

Anton Stobb

By Watson, Cole, Grindle & Watson

Attorney

July 30, 1940. A. STOBB 2,209,482

PRINTING PRESS

Filed Feb. 10, 1939 2 Sheets-Sheet 2

FIG. 2.

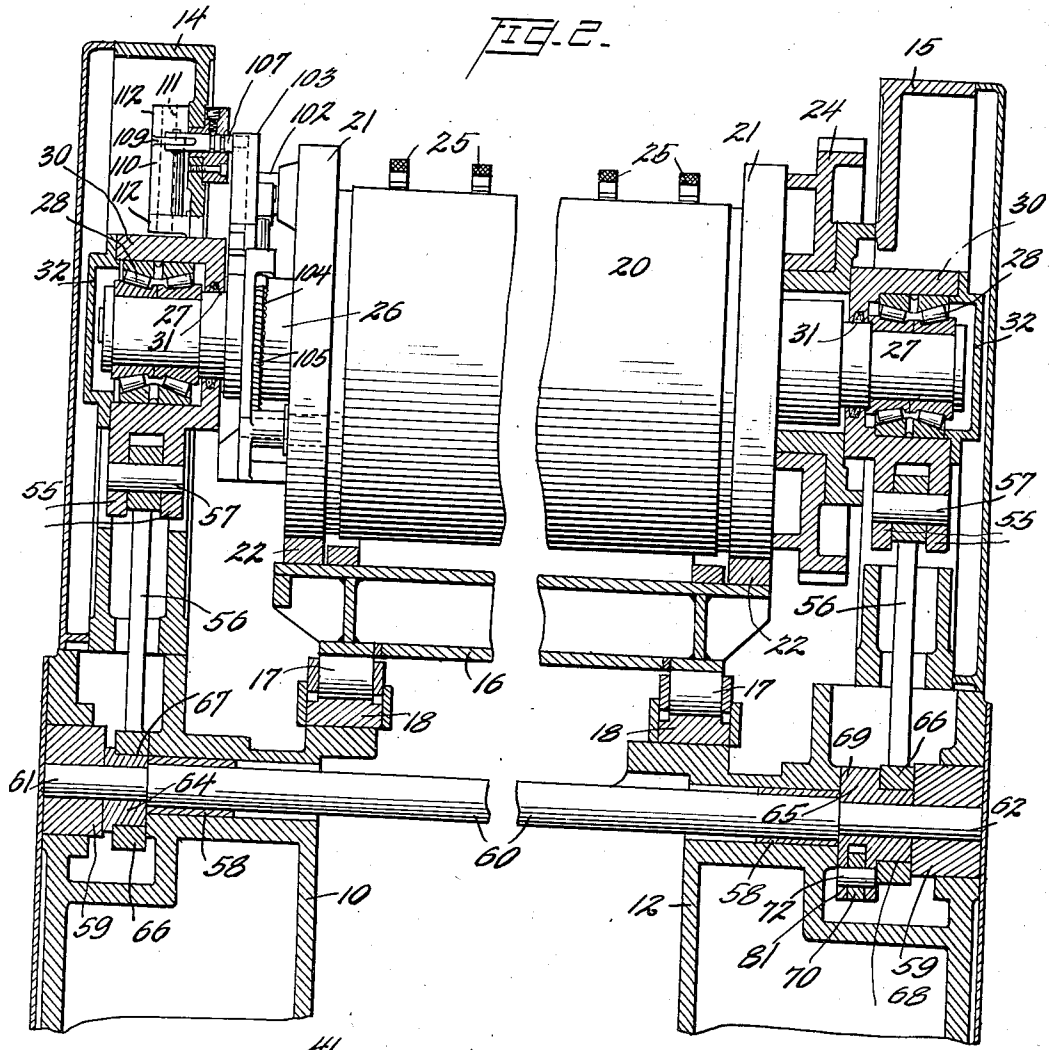
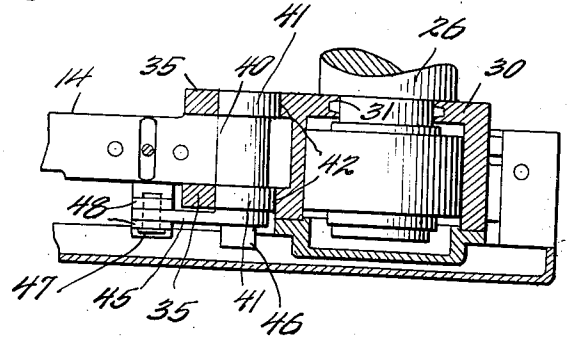


FIG. 3.



Inventor

Anton Stobb

By Watson, Cole, Grindle & Watson

Attorney

Patented July 30, 1940 2,209,482

UNITED STATES PATENT OFFICE

2,209,482

PRINTING PRESS

Anton Stobb, Elizabeth, N. J., assignor to American Type Founders, Incorporated, Elizabeth, N. J., a corporation of New Jersey

Application February 10, 1939, Serial No. 255,746

13 Claims. (Cl. 101—283)

This invention relates to printing presses and more particularly to printing presses of the type in which a rotary cylinder is employed, for example, as one member of the printing couple.

The general object of the invention is to provide novel and improved mechanism for raising and lowering a cylinder in a press of this character. The invention is particularly adapted for use in connection with the raising and lowering of the impression cylinder of a bed and cylinder press, during the return stroke of the reciprocating bed or during the delivery portion of the cycle of rotation of the cylinder, and has been described in connection with such a press in the present specification. It will be readily perceived that the invention is applicable to bed and cylinder presses of either the one-revolution or the two-revolution types.

The present invention is characterized by its simplicity of design, its low cost of manufacture, capability of fine adjustments, and low power requirements for operation; and in its preferred embodiment, the invention contemplates the provision of adjustable supporting brackets for the two ends of the cylinder, which are pivotally mounted on the press frame at points offset substantially horizontally from the axis of the cylinder. These brackets are operatively connected by means of linkages and eccentric cranks with a cam which is rotated by mechanism operated by the main driving means for the press.

The weight moment of the cylinder and the brackets is largely, if not entirely, balanced by spring supporting means, so that the operating mechanism is relieved of the necessity of lifting the entire weight of the parts during each cycle of movement of the press.

One important feature of the invention is the provision of eccentric mounting devices for the cylinder supporting brackets, and means for rotating and securing the mounting devices, whereby very fine adjustment of contact between the impression cylinder and the form bed may be obtained.

Other features include the provision of a detachable connection embodied in the cam operated lifting means and of a novel arrangement whereby a revolution counter may be operatively connected with the cylinder supporting means in order to register the number of impressions effected by the press in a given length of time or on any particular job.

Other objects and features of novelty will be apparent from the following specification when read in connection with the accompanying drawings in which one embodiment of my invention is illustrated by way of example.

In the drawings,

Figure 1 is a view in side elevation of an intermediate portion of a bed and cylinder press embodying the principles of my invention, certain parts of the press being broken away for the sake of clearness of illustration;

Figure 2 is a view on a somewhat enlarged scale of a transverse vertical section taken substantially on line 2—2 of Figure 1;

Figure 3 is a fragmentary horizontal section through one of the cylinder mounting brackets and taken on line 3—3 of Figure 1; and

Figure 4 is a fragmentary vertical sectional view through the pivot of the cylinder supporting bracket and taken on line 4—4 of Figure 1.

The general type of printing press comprising the illustrated exemplary embodiment is well known in the art and only the central portion thereof is shown in the accompanying drawings. The supporting framework of the press comprises the two side frames 10 and 12, each having upper extensions designated 14 and 15 respectively and which serve to support the impression cylinder and associated mechanism. A reciprocating bed 16 is carried upon the roller carriages 17 adapted to run upon the tracks 18 supported upon the framework or base of the press. The impression cylinder 20 is provided with the end discs or plates 21 which are normally in rolling contact with the side bearers 22 on the bed 16. The reciprocating form bed 16 is operated by conventional mechanism, not shown, and the impression cylinder 20 is rotated through suitable synchronized driving mechanism of which only the impression cylinder gear 24 is shown. The impression cylinder may be provided with the usual gripper devices indicated at 25, which are actuated by mechanism which will be briefly described at a later point in the present specification.

The impression cylinder is provided with an axle or shaft 26, the ends 27 of which are of somewhat smaller diameter than the main portion thereof and are rotatably mounted as by means of the roller bearing assemblies 28 in the pivoted supporting brackets 30. These brackets are in the form of hollow substantially cylindrical casings provided with packed openings 31 through which shaft 26 extends, and a substantially cylindrical central portion within which the roller bearing races are seated, the open outer side of the brackets being provided with the cover plates 32.

A pair of spaced ears or lugs 35 extends from one side of each of the brackets 30 and embraces a portion 36 of the upper side frame members 14 and 15 respectively. A pintle member 40 has an intermediate cylindrical portion rotatably mounted in the frame part 36, and is provided with eccentric end portions 41 which are rotatably mounted within the openings 42 in the ears 35. A lever or arm 45 is rigidly secured to the pintle member 40 as by means of bolt 46 threaded into the end of the pintle member. The opposite end of the arm 45 is pivotally connected as by means of the pin 47 with the upper bifurcated end 48 of a downwardly extending link 50. The link 50 has a threaded portion 51 which extends through the eye of a post 52 rigidly disposed upon each of the respective side frames 14 and 15. The position of the link with respect to the frame may be adjusted by means of the nuts 53 threaded upon the link and adapted to embrace the member 52. Thus it will be seen that the pintle 40, providing the pivotal support of the brackets 30, may be rotated and set in adjusted positions of rotation by the means just described and for the purpose to be hereinafter set forth.

Depending from the lower portion of each of the brackets 30 are two spaced ears 55 between which is received the upper end of the lever 56 which is pivotally connected thereto as by means of the pin 57. Rotatably mounted in the upper portions of the lower frames 10 and 12, as by means of the bearing sleeves 58 and the blocks 59, is the transversely extending rock shaft 60. The shaft 60 is provided with reduced end portions 61 and 62 to which are respectively secured the eccentric members 64 and 65. The lower ends of each of the levers 56 are provided with link portions 66 which surround the cylindrical eccentric bearing surfaces 67 and 68 of the members 64 and 65 respectively. These surfaces 68 are eccentric to the shaft 60, and obviously when the shaft is rotated, this will give rise to a substantially longitudinal movement of the levers 56.

In order to provide means for rocking the shaft 60 and the associated eccentric members 64 and 65, the member 65 is widened considerably and provided with a concentric portion 69 to which is pivoted the substantially horizontal link 70, as by means of the bifurcated downwardly extending projection 81 and the pivot pin 72. The opposite end of the lever 70 is provided with a hooked portion 75 which is adapted to receive the pivot pin 76 carried by the end of a rocking lever 77 pivoted to the frame as at 78 and provided intermediate its length with a roller 79 adapted to follow the cam groove 80' in the cam member 80 mounted upon the drive shaft 82. The drive shaft is appropriately connected with a source of power and is driven synchronously with the operating mechanism for the bed and cylinder of the press.

A short arm or lug 85 projects from each of the brackets 30 upon the side thereof opposite the pivot 40. The underside of the abutment 85 is notched for the reception of a cylindrical element 86 which provides a rocking seat arrangement for the pin 87 about which is disposed the coil spring 88. The lower end of the pin 87 passes freely through a spring seat element 89 provided with the trunnions 90 seated within a notch 91 formed in a portion of the side frame of the press. An upper spring seat is shown at 92.

It will be readily understood from the mechanism described that upon the periodic rotation of the cam 80, the rock shaft 60 will be oscillated together with its eccentric crank elements 64 and 65 by means of the link 70 and lever 77 which are detachably connected as at 75, 76. Upon oscillating of the eccentrics 64 and 65, the impression cylinder bearing brackets 30 will be swung about their pintles 40 so that the impression cylinder 20 will be raised and lowered at the proper times to clear the reciprocating bed during its return movements and to make impression contact therewith during the printing stroke.

The strength and compression of the spring 88 is so selected that these springs upon each side of the press will substantially support the weight of the impression cylinder and the bearing brackets 30 and prevent the cylinder dropping when the connection 75, 76 is broken.

The impression contact between the cylinder and the bed or other cooperating member of the printing couple may be given a very fine adjustment by means of the nuts 53 on the threaded link 51. An upward movement of the link 51 with respect to the press frame will rotate the pintle 40 in a clockwise direction as seen in Figure 1, and will thus lower the fulcrum of the brackets 30 with respect to the bed of the press and an opposite adjustment of the link 51 will raise this fulcrum point.

Suitably pivoted in the upper side frame 14 as at 95 is the rocking lever 96 having a downturned nose 97 disposed in contact with an upper surface of one of the impression cylinder bearing brackets 30. The horizontal arm 98 of the lever is considerably longer than the effective length of the nose 97 so as to multiply the vertical movement of the brackets 30, and this arm is operatively connected as by means of linkage 99 with a counting device 100, which may be of any suitable type, such as the well-known revolution counter. By this means an accurate record of the output of the press may be obtained, since for every delivery cycle of the impression cylinder the supporting brackets 30 will be raised and the register actuated accordingly.

The inking mechanism of the press is indicated generally by the reference character D and will not be described in detail since it forms no part of the present invention.

Another feature of the illustrated embodiment, and which is shown in Figures 2 and 4 of the drawings, relates to the actuating mechanism for the grippers 25. The grippers are carried upon a rock shaft 102 upon the end of which is secured a slotted tumbler element 103 which is biased toward its extreme limits of movement by means of the spring 104 guided upon the shaft 105. As more clearly illustrated in my copending application, Serial No. 255,747, filed February 10, 1939, in which this mechanism is claimed, the tumbler member 103 is actuated by the alternate engagement thereof, during the rotation of the impression cylinder, with the studs 107 and 108 (see Figure 4). The upper stud 107 is pivotally connected to horizontal arm 109 carried by the oscillating member 110 mounted upon the pin 111 carried by the bracket 112 on the side frame. An oppositely projecting arm 114 is formed upon the member 110, and this arm is provided with a downwardly extending pin 115, which passes through the slot 116 in the side frame portion 36. The pin 115 has an attenuated lower portion 118 which enters a slot 119 formed in the pintle member 40 and also

has its ends seated in a recess 120 formed in the pin 108 which is adapted to slide axially within the member 40. There is thus provided an ingenious means for combining two features of the novel press mechanism by locating one of the stop pins for the gripper actuating mechanism coincidentally with the pivotal support for the impression cylinder bearing brackets. Further detailed showings and descriptions of the gripper actuating mechanism will be found in my copending application referred to above.

It is understood that the novel features of the invention may be applied to other types of presses, and to other working parts than the impression cylinder, and further, that various changes and modifications may be made in the embodiment illustrated and described herein without departing from the scope of the invention as defined by the following claims.

Having thus described the invention, what is claimed as new and desired to be secured by Letters Patent is:

1. In a printing press of the class described, a supporting frame, a form bed, and an impression cylinder cooperating with said bed to provide the printing couple, a supporting bracket for an end of said impression cylinder, and means for pivotally connecting said bracket to said frame at a point on said bracket which is spaced transversely of the axis of said impression cylinder, whereby upon pivotal movement of said bracket about said point the impression cylinder is swung toward and from said bed, and means for effecting an adjustment of said pivot point in a direction toward and from said bed to attain the proper impression contact between said cylinder and said bed.

2. In a printing press of the class described, a supporting frame, a form bed, and an impression cylinder cooperating with said bed to provide the printing couple, a supporting bracket for an end of said impression cylinder, and means for pivotally connecting said bracket to said frame at a point on said bracket which is spaced transversely of the axis of said impression cylinder, whereby upon pivotal movement of said bracket about said point the impression cylinder is swung toward and from said bed, said pivoting means for said bracket comprising an eccentric element having portions rotatably mounted in said frame and in said bracket, and means for rotating said element and securing it in a plurality of rotated positions, whereby the proper limits of swinging movement of said bracket and impression cylinder may be set to insure the correct impression contact between said bed and said cylinder.

3. In a printing press of the class described, a supporting frame, a form bed, and an impression cylinder cooperating with said bed to provide the printing couple, a pair of bearing brackets each disposed at one end of said impression cylinder and rotatably supporting the cylinder shaft, each bearing bracket pivotally supported on said frame at points spaced substantially horizontally from the axis of said cylinder shaft, and means for pivotally supporting said brackets in the frames comprising a pair of pintles rotatably mounted in said frames, each having an eccentric portion upon which one of said bearing brackets is pivotally mounted, an arm projecting from each of said pintles, and a link pivoted to said arm and means for securing said link to said frame in a plurality of different positions of adjustment, whereby the proper limits of swinging movement of said brackets and impression cylinder may be set to insure the correct impression contact between said bed and cylinder, and means for swinging the brackets and cylinder about said pivot points to raise and lower the impression cylinder with respect to said form bed.

4. In a printing press of the class described, a supporting frame, a form bed, and an impression cylinder cooperating with said bed to provide the printing couple, a pair of bearing brackets each disposed at one end of said impression cylinder and rotatably supporting the cylinder shaft, each bearing bracket pivotally supported on said frame at points spaced substantially horizontally from the axis of said cylinder shaft, and means for pivotally supporting said brackets in the frames comprising a pair of pintles rotatably mounted in said frames, each having an eccentric portion upon which one of said bearing brackets is pivotally mounted, an arm projecting from each of said pintles, a link pivoted to said arm, and means for securing said link to said frame in a plurality of different positions of adjustment whereby the proper limits of swinging movement of said brackets and impression cylinder may be set to insure the correct impression contact between said bed and cylinder, and means for swinging the brackets and cylinder about said pivot points to raise and lower the impression cylinder with respect to said form bed, an arm projecting from each of said brackets on opposite sides thereof from the pivoted supports, a compression spring disposed between each of said arms and portions of the frame for supporting the weight of the impression cylinder.

5. In a printing press of the class described, a supporting frame, a form bed, and an impression cylinder cooperating with said bed to provide the printing couple, a pair of bearing brackets each disposed at one end of said impression cylinder and rotatably supporting the cylinder shaft, each bearing bracket pivotally supported on said frame at points spaced substantially horizontally from the axis of said cylinder shaft, and means for pivotally supporting said brackets in the frames comprising a pair of pintles rotatably mounted in said frames, each having an eccentric portion upon which one of said bearing brackets is pivotally mounted, an arm projecting from each of said pintles, and a link pivoted to said arm and means for securing said link to said frame, a plurality of different positions of adjustment whereby the proper limits of swinging movement of said brackets and impression cylinder may be set to insure the correct impression contact between said bed and cylinder, and means for swinging the brackets and cylinder about said pivot points to raise and lower the impression cylinder with respect to said form bed, an arm projecting from each of said brackets on opposite sides thereof from the pivoted supports, a compression spring disposed between each of said arms and portions of the frame for supporting the weight of the impression cylinder, a transverse shaft rotatably mounted in said frame, an eccentric element fixed upon each end of said shaft, cam actuated means for oscillating said shaft and eccentric elements in synchronism with the operation of said press, and a pair of links respectively connecting the eccentric elements with said brackets for swinging them about their pivot points to raise and lower the impression cylinder with respect to said form bed.

6. In a printing press of the class described, a supporting frame, a form bed, and an impression cylinder cooperating with said bed to provide the printing couple, a supporting bracket for an end

of said impression cylinder, and means for pivotally connecting said bracket to said fame at a point on said backet which is spaced transversely of the axis of said impression cylinder, whereby upon pivotal movement of said bracket about said point the impression cylinder is swung toward and from said bed, a lever pivoted to said frame adjacent said bracket and having one portion thereof in contact therewith, another portion of said lever operatively connected with a counting machine, whereby the number of cycles of movement of said impression cylinder may be registered and thus the number of impressions in a given period of operation determined.

7. In a printing press of the class described, a supporting frame, a form bed, and an impression cylinder cooperating with said bed to provide the printing couple, a supporting bracket for an end of said impression cylinder, and means for pivotally connecting said bracket to said frame at a point on said bracket which is spaced transversely of the axis of said impression cylinder, whereby upon pivotal movement of said bracket about said point the impression cylinder is swung toward and from said bed, an L-shaped lever pivoted to said frame above said bracket and having a downturned end thereof in contact therewith, the other end of said lever operatively connected with a counting machine, whereby the number of cycles of movement of said impression cylinder may be registered and thus the number of impressions in a given period of operation determined.

8. In a printing press of the class described, a supporting frame, a form bed, and an impression cylinder cooperating with said bed to provide a printing couple, a supporting bracket for an end of said impression cylinder, a substantially cylindrical main portion of said bracket containing bearings for the shaft of the impression cylinder, a substantially horizontal projection upon said bracket and means for pivotally connecting said projection to said frame, a downwardly extending projection on said bracket, means pivotally connected to said downward projection for oscillating said bracket about said first named pivotal connection, a third substantially horizontal projection extending from said bracket in the opposite direction from said first named horizontal projection, and spring means seated against said last named projection for counter-balancing the weight of the bracket and impression cylinder, whereby upon pivotal movement of said bracket about its pivot point the impression cylinder is readily swung toward and from said bed.

9. In a printing press of the class described, a supporting frame, a form bed, and an impression cylinder cooperating with said bed to provide the printing couple, a supporting bracket for an end of said impression cylinder, and means for pivotally connecting said bracket to said frame at a point on said bracket which is spaced transversely of the axis of said impression cylinder, whereby upon pivotal movement of said bracket about said point the impression cylinder is swung in a substantially vertical direction toward and from said bed, means for moving said bracket and thus said impression cylinder intermittently during the operation of the press, and adjustment means for predetermining the limits of movement of the cylinder toward and from said bed to attain the proper impression contact between said cylinder and said bed.

10. In a printing press of the class described, a supporting frame, a printing couple including at least one rotary cylinder, a supporting bracket for an end of said cylinder, and means for pivotally connecting said bracket to said frame at a point on said bracket which is spaced transversely of the axis of said cylinder, whereby upon pivotal movement of said bracket about said point the cylinder is swung toward and from the other member of the printing couple, and means for effecting an adjustment of said pivot point in a direction toward and from said other member to attain the proper impression contact between said cylinder and said other member.

11. In a printing press of the class described, a supporting frame, a printing couple including at least one rotary cylinder, a supporting bracket for an end of said cylinder, and means for pivotally connecting said bracket to said frame at a point on said bracket which is spaced transversely of the axis of said cylinder, whereby upon pivotal movement of said bracket about said point the cylinder is swung toward and from the other member of the printing couple, said pivoting means for said bracket comprising an eccentric element having portions rotatably mounted in said frame and in said bracket, and means for rotating said element and securing it in a plurality of rotated positions, whereby the proper limits of swinging movement of said bracket and cylinder may be set to insure the correct impression contact between said cylinder and said other member.

12. In a printing press of the class described, a supporting frame, a printing couple including at least one rotary cylinder, a pair of bearing brackets each disposed at one end of said cylinder and rotatably supporting the cylinder shaft, each bearing bracket pivotally supported on said frame at points spaced substantially horizontally from the axis of said cylinder shaft, and means for pivotally supporting said brackets in the frames comprising a pair of pintles rotatably mounted in said frames, each having an eccentric portion upon which one of said bearing brackets is pivotally mounted, an arm projecting from each of said pintles, and a link pivoted to said arm and means for securing said link to said frame in a plurality of different positions of adjustment, whereby the proper limits of swinging movement of said brackets and cylinder may be set to insure the correct impression contact between said cylinder and the other member of the printing couple, and means for swinging the brackets and cylinder about said pivot points to raise and lower the impression cylinder with respect to said other member.

13. In a printing press of the class described, a supporting frame, a printing couple including at least one rotary cylinder, a supporting bracket for an end of said cylinder, and means for pivotally connecting said bracket to said frame at a point on said bracket which is spaced transversely of the axis of said cylinder, whereby upon pivotal movement of said bracket about said point the cylinder is swung toward and from the other member of the printing couple, a lever pivoted to said frame adjacent said bracket and having one portion thereof in contact therewith, another portion of said lever operatively connected with a counting machine, whereby the number of cycles of movement of said cylinder may be registered and thus the number of impressions in a given period of operation determined.

ANTON STOBB.