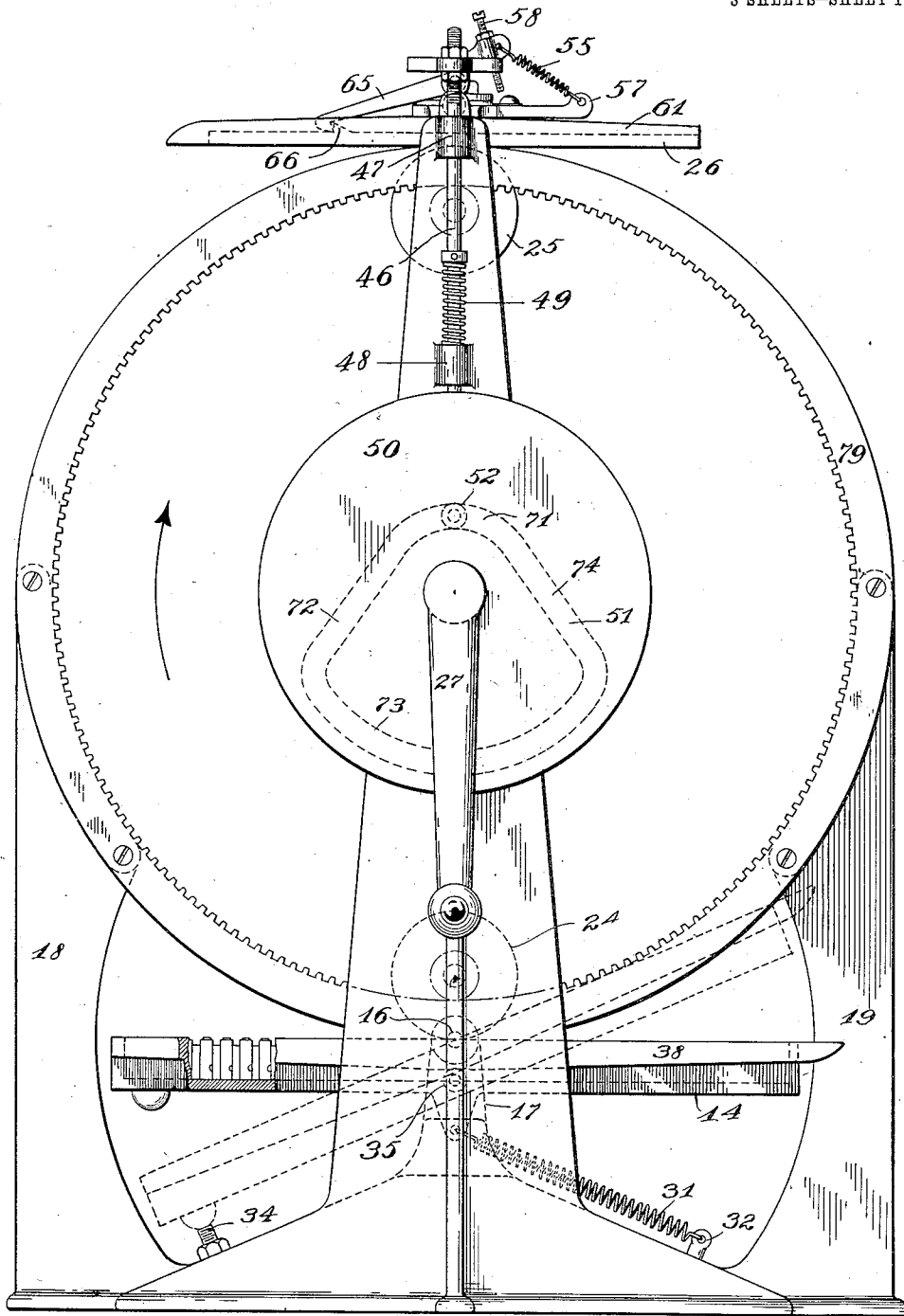


H. C. OSBORN.
 PRINTING MECHANISM.
 APPLICATION FILED JUNE 1, 1909.

1,049,907.

Patented Jan. 7, 1913.

3 SHEETS-SHEET 1.



WITNESSES:

Brennan B. West.
 Nathan F. Fretter.

FIG. 1

INVENTOR,

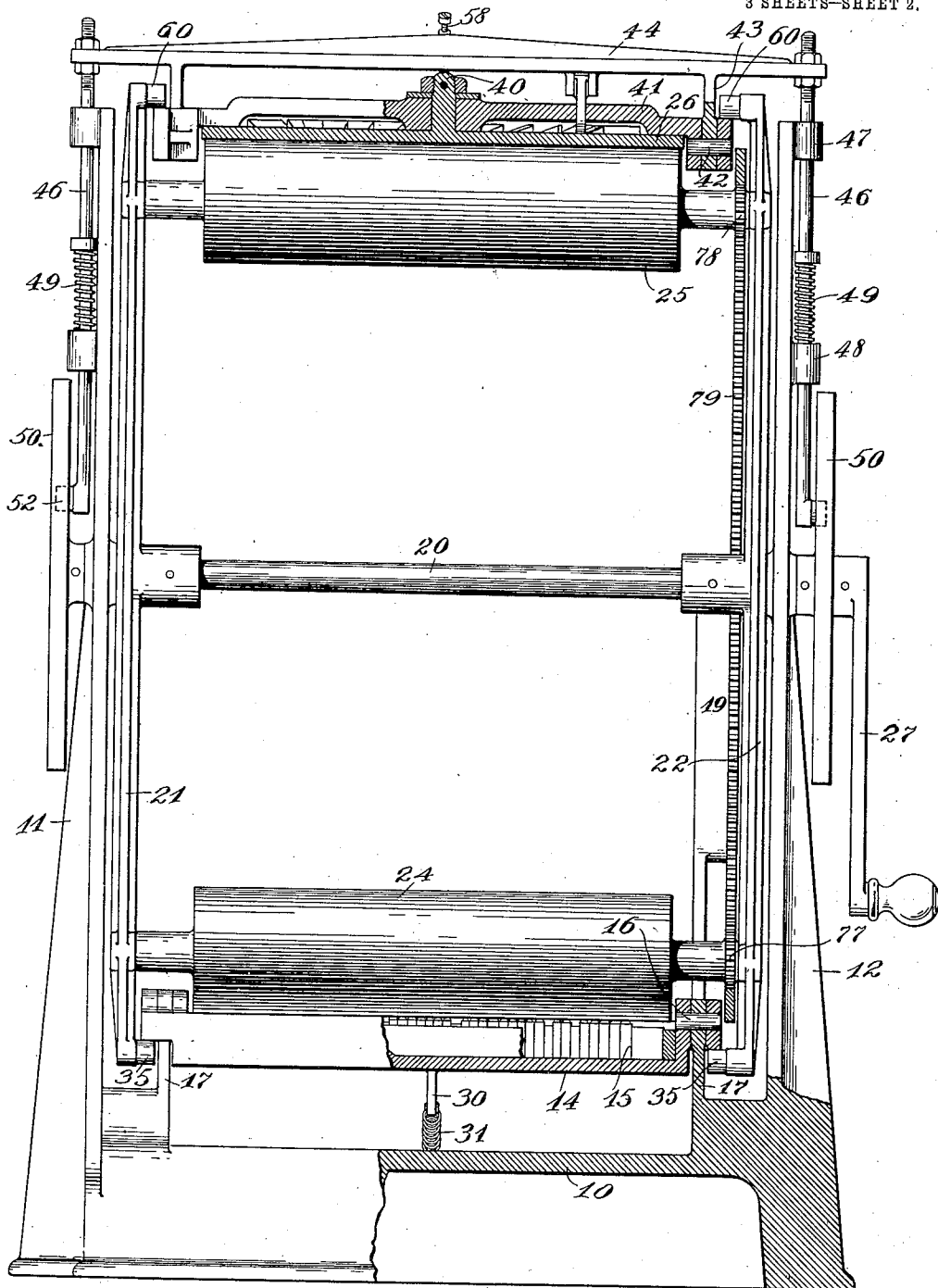
Henry C. Osborn,
 BY R. L. Ford & Hull
 ATTYS.

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3 SHEETS—SHEET 2.



WITNESSES:

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FIG. 2

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3 SHEETS-SHEET 3.

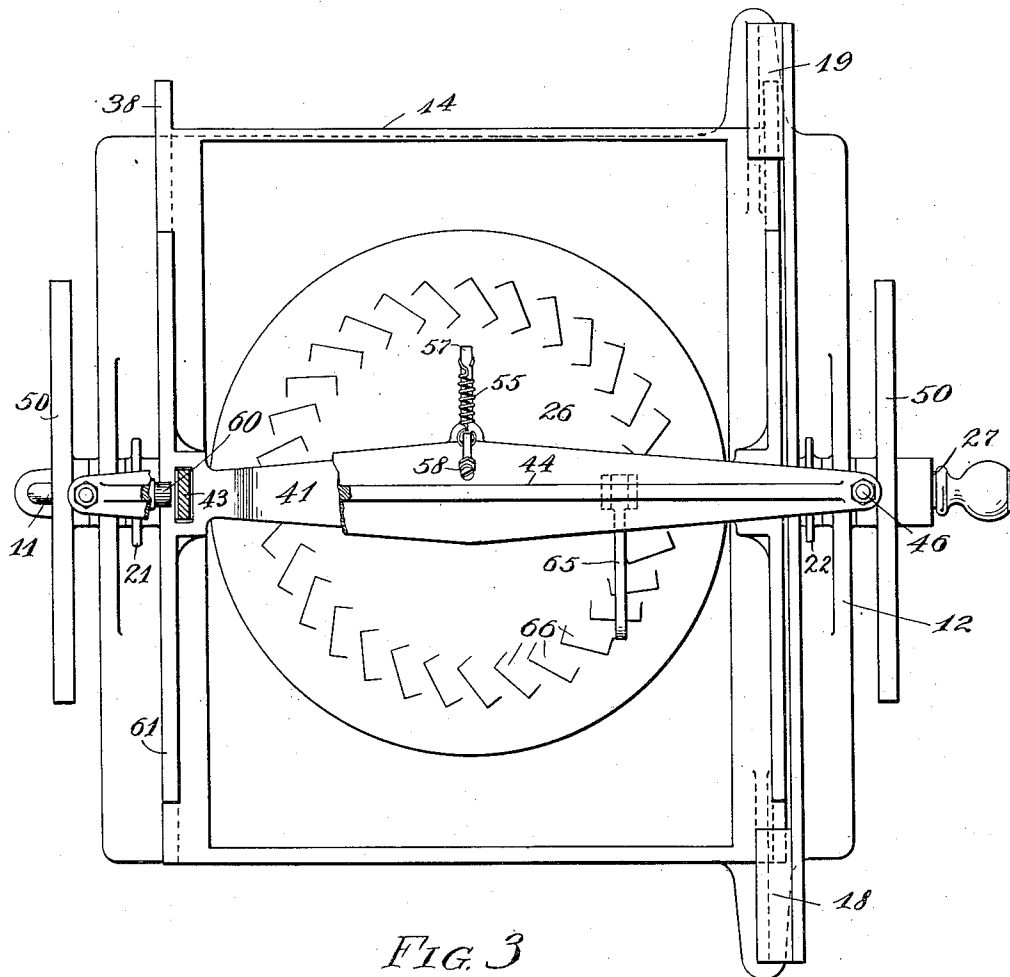


FIG. 3

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UNITED STATES PATENT OFFICE.

HENRY C. OSBORN, OF CLEVELAND, OHIO, ASSIGNOR TO THE AMERICAN MULTI-GRAPH COMPANY, OF CLEVELAND, OHIO, A CORPORATION OF OHIO.

PRINTING MECHANISM.

1,049,907.

Specification of Letters Patent.

Patented Jan. 7, 1913.

Application filed June 1, 1909. Serial No. 499,338.

To all whom it may concern:

Be it known that I, HENRY C. OSBORN, a citizen of the United States, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented a certain new and useful Improvement in Printing Mechanisms, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings.

The object of this invention is to provide in a simple and efficient form, a printing machine of a rotary type wherein the printing form is planular. By this combination, I obtain the continuous drive which is characteristic of rotary machines and also the ability to use ordinary printer's type or flat electrotypes. I accomplish the desired result by moving the platen in a circuit and swinging the type bed correspondingly, whereby the platen rolls over the bed in contact from end to end and causes the proper impression. This broad feature and other features contributing to the efficiency and simplicity are comprised within my invention, and are illustrated in the drawings and hereinafter more fully explained.

In the drawings Figure 1 is a side elevation; Fig. 2 is a front view partly sectional; and Fig. 3 is a plan.

The frame of the machine, as shown, comprises a suitable base 10 from which rise standards 11 and 12. Mounted above the base is the type bed 14. This bed may consist of a tray, as shown, adapted to carry type 15 locked therein in the usual manner to make a page form, as shown in Figs. 1 and 2. The bed is pivoted by studs 16, in suitable ears 17 constituting a portion of the frame. The axis of these studs aligns with the face of the type.

Journaled in the standards 11 and 12 is a shaft 20, on which are rigidly mounted arms 21 and 22. These arms carry near one end the rotary platen 24 and near the other the corresponding ink roller 25. In the upper part of the machine is a suitable inking disk 26 adapted to carry ink on its under face. The shaft 20 is provided with a crank 27, and when this crank is driven, the two rollers travel through a circuit and in doing so the inking roller 25 takes ink from the disk 26 and applies it to the type and thereafter the platen roller impresses paper laid on the form onto the same. Both the inking disk and the type bed swing to

cause proper contact of the rollers and means are provided to prevent the platen roller being inked by the disk. The mechanisms for controlling these operations will now be described.

Depending from the type bed 14 is an ear 30 to which is secured a spring 31, the other end of which is anchored to the base as at 32. The effect of this spring is to give the type bed a tendency to assume an inclined position shown by the dotted lines in Fig. 1, being adjusted by the stop screw 34 mounted in the frame. This inclined position of the bed is such that as the platen roller comes downwardly toward the bed, before it engages the type, rolls 35 on the arms 21 and 22 pass under the ribs 38 on the side of the type bed. The under sides of these ribs are so formed (in a curve which approximates a straight line, as shown) that as the rollers travel along under them, the face of the contacting line of type is maintained thereby at a constant distance from the platen axis. This action causes the platen and the inking roller to maintain the desired contact with the type in the bed. As soon as the rolls have cleared the ribs 38, the type bed swings back into position shown in dotted lines in Fig. 1.

The inking disk is mounted by means of a swivel stud 40 in the rocking frame 41 which is pivotally mounted on studs 42 in ears 43 depending from a cross bar 44. This cross bar is supported by means of rods 46 vertically slidable in ears 47 and 48 on the standards 11 and 12; the cross bar is pressed upwardly sufficiently to counterbalance its weight, by springs 49, and cams 50 on the shaft 20 operated at the proper time move the cross bar up or down. The cams are shown as disks having grooves 51 in which take contact rollers 52 on the lower ends of the rods 46.

The disk 26 is normally held in inclined position approximately parallel with the bed 14 by the spring 55, which is anchored at its upper end to the cross bar 44 and at its lower end to an arm 57 projecting from the swinging frame 41. A suitable stop screw 58 limits the movement of the disk. In this position of the parts, when the inking roller approaches the disk the rolls 60 on the arms 21 and 22 engage the upper edges of ribs 61, (similar to the ribs 38) on the sides of the swinging frame 41 and

accordingly swing that frame to cause the line of contact of the disk to be maintained a constant distance from the axis of the inking roller, whereby the roller is properly inked as it travels across the disk. As the inking roller is clearing the disk, the right hand portion of the same in Fig. 1 is depressed, and as the disk comes into this position, the elevation of its left hand portion causes the pawl 65 pivoted to the cross bar 44 to click over the next tooth of a series of ratchet teeth 66 arranged in a circle about the upper face of the inking disk. Then when the inking roller clears the disk and the latter swings back into position under the influence of the spring 55, the pawl anchoring the engaged ratchet tooth causes the disk to turn on its swivel 40. Accordingly, the disk is periodically fed to present the ink thereon differently to the inking roller giving a proper distribution, as will be well understood. While the inking roller is traveling past the disk 26, the rolls 52 are each in a concentric portion 71, of the cam groove 51, which has a comparatively small radius whereby the disk is held down to the position throughout this portion of the travel of the inking roller. After the inking roller is moved beyond the disk, the portion 72 of the cam groove engages the roll 52 and elevates the cross bar 44, the frame 41 and the inking disk so that the platen 24 and the rolls 35 may pass idly beneath the same without contact therewith,—this idle passage being while the concentric portion 73 of larger radius of the cam groove is coöperative with the roll 52. After the platen has moved past the inking disk the decreasing portion 74 of the cam groove brings the disk back to position for engagement.

In order that the inking roller may properly take its ink and ink the form and in order that the platen roller may properly impress the form, it is desirable that these rollers be positively rotated as they come into action. Accordingly, I provide the rollers 24 and 25 with pinions 77 and 78 rigid therewith which constantly mesh with an internal gear 79 carried by suitable standards 18 and 19 rising from the base. This gearing causes the rollers to turn on their axis as they travel.

In the operation of my machine, the type form is made up and locked in the bed in the usual manner and the ink is supplied to the disk by an ink knife or otherwise in the usual way, and by means of the crank 27, the frame carrying the rollers is rotated. After the inking roller has inked and cleared the type bed and before the platen roller engages it, a sheet of paper is laid on the form which it at this time occupies the position shown in dotted lines in Fig. 1. Owing to the open space above the type bed when

the two rollers are approximately in a horizontal plane over the shaft 20 there is plenty of room and time for supplying the paper by hand, even though the machine be driven with comparative rapidity.

It is to be understood also that numerous adjustments for the various parts to cause and maintain the proper presentation of the rollers and other coöperating parts will be supplied by the skilled mechanic in constructing the machine shown, and are omitted from the illustration for the sake of simplicity.

Having thus described my invention, what I claim is:

1. The combination of a base, standards rising therefrom, a shaft mounted in said standards, a frame secured on said shaft, a platen and an inking roller mounted on said frame, a pivoted type bed adapted to swing on its pivot during printing and inking, to coöperate with both the platen and the inking roller, and means for positively rotating both the platen and the inking roller.

2. The combination of a crank, a rotary frame driven thereby to make continuous rotations, an inking roller carried by said frame, means separated from the bed for inking the roller, and a flat bed with which such roller may coöperate, said bed being mounted on a pivot exterior to the path of movement of the roller, and means for positively swinging the bed during the contact of the roller therewith.

3. The combination, with an intermediately pivoted flat type bed and an intermediately pivoted inking disk, of a frame mounted to rotate between them, and a platen roller and an inking roller carried by said frame.

4. The combination of a flat pivoted type bed, a rotary carrier, an inking roller mounted in said carrier and moving in a circle tangent to the bed and adapted to coöperate with the bed while the latter is swinging on its pivot, and an ink supply device independent of the bed coöperating with the inking roller.

5. The combination of a rotary shaft, a roller platen, means mounted on the shaft for carrying the platen, whereby it may be caused to travel around a circle, a pinion connected to the platen, a stationary internal gear with which said pinion meshes, a flat pivoted type bed adapted to swing on its pivot while the platen is co-acting with the bed, a spring tending to hold said bed in one extreme position, and an adjustable stop to define such position.

6. The combination, with a pivoted flat type bed and an inking disk mounted to rotate on its own axis and rock on a transverse axis parallel with the axis of rotation of the frame, of a frame mounted to rotate between them, a platen roller and an inking roller

carried by said frame, and means for preventing the platen roller being inked when it moves past the inking disk.

7. The combination, with an intermediately pivoted flat type bed and a rocking flat inking disk, of a frame mounted to rotate between them, a platen roller and an inking roller carried by said frame, means for holding both rollers in contact with the type bed when they are moving past it, and means for moving the disk bodily to idle position when the platen is moving past it.

8. The combination of a flat type bed facing upwardly, an inking disk facing downwardly, a platen roller and an inking roller mounted in a rotary frame and adapted to revolve between the disk and type bed, means for causing said rollers to rotate and means for independently tipping the type bed and inking disk.

9. The combination of a flat pivoted type bed, an inking disk, a platen roller and an inking roller mounted in a rotary frame and adapted to revolve between the disk and type bed, means for causing said rollers to rotate while in active position, and means for holding the bed and rollers in presentation and means for tipping the bed and disk while the corresponding roller is moving across it.

10. The combination of a type bed, an inking disk, a platen roller and an inking roller mounted in a rotary frame and adapted to revolve in the space between the disk and type bed, means for periodically feeding said disk to properly present the ink to the inking roller, and means for tipping both the type bed and disk.

11. The combination of a pivoted flat type bed, an inking disk, a platen roller and an inking roller mounted in a rotary frame and adapted to revolve between the disk and type bed, means for causing said rollers to rotate while in active position, means for periodically feeding said disk to properly present the link to the inking roller and means for independently tipping both the bed and disk.

12. The combination of a base, standards rising therefrom, a rotary frame mounted between said standards and carrying two diametrically opposed rollers, an intermediately pivoted flat type bed between the standards and outside of said frame with which the outermost portions of both of said rollers are adapted to cooperate, an intermediately pivoted swiveled inking disk with which one of said rollers may cooperate,

both of such pivoting axes being parallel with the axis of rotation of said rotary frame, and means for automatically turning the inking disk on its swivel.

13. The combination of base, standards rising therefrom, a rotary frame mounted between said standards and carrying an inking roller and a platen roller, a pivoted type bed with which both rollers are adapted to cooperate, and a pivoted frame carrying a swiveled ink disk with which the inking roller is adapted to cooperate.

14. The combination of an inking roller, and a platen roller, a pivoted type bed with which both rollers are adapted to cooperate, a pivoted frame carrying a swiveled ink disk with which the inking roller is adapted to cooperate, and means for swinging the type bed and the frame carrying the swiveled ink disk to maintain contact between the respective members and the rollers.

15. The combination of base, standards rising therefrom, a rotary frame mounted between said standards and carrying an inking roller and a platen roller, a pivoted type bed with which both rollers are adapted to cooperate, a pivoted frame carrying a swiveled ink disk with which the inking roller is adapted to cooperate, and means for swinging the type bed and the frame carrying the swiveled ink disk to maintain contact between the respective members and the rollers, means for partially rotating the inking disk on its swivel, and means for moving the same to idle position to allow the platen to move past it.

16. The combination, with a pair of frame standards, of a shaft journaled therein, a pair of arms mounted intermediately on said shaft, a platen roller carried by said arms near one end, an inking roller carried by said arms near their other end, said arms being adapted to turn about the axis of the shaft and thereby sweep the rollers through an annular pathway, an oscillating type bed outside of the sweep of said rollers with which both of said rollers cooperate on the outermost portion of their periphery and an ink-carrying member with which the inking roller cooperates.

In testimony whereof, I hereunto affix my signature in the presence of two witnesses.

HENRY C. OSBORN.

Witnesses:

ALBERT H. BATES,
BRENNAN B. WEST.