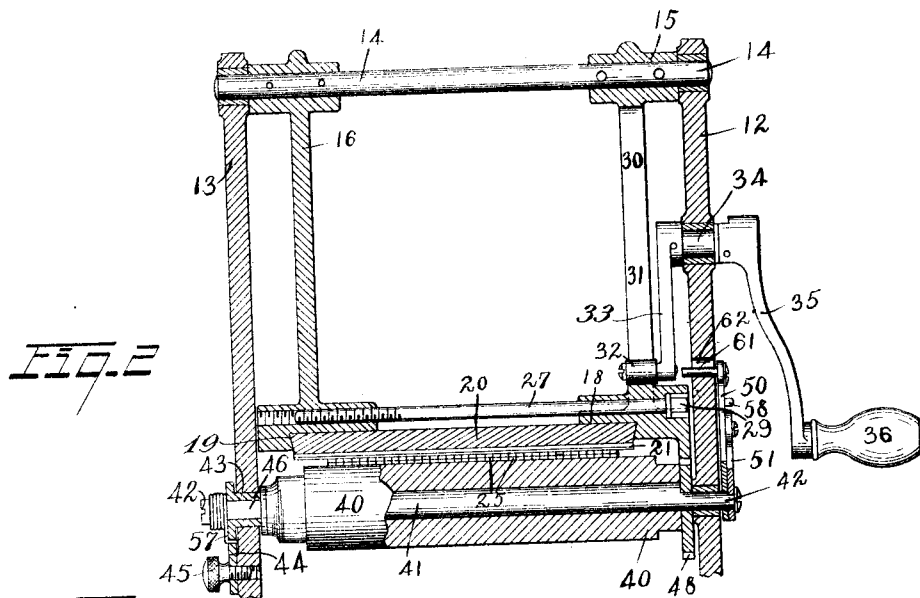
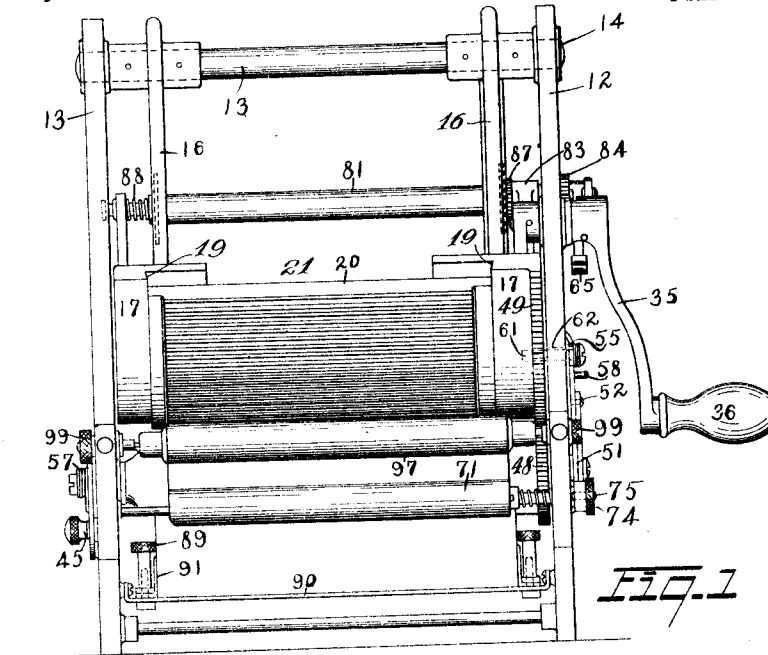


H. C. GAMMETER.
 DUPLICATING MACHINE.
 APPLICATION FILED MAY 24, 1909.

Patented Dec. 31, 1912.

2 SHEETS-SHEET 1.

1,049,323.



Witnesses:
 Nathan F. Foster
 Breman West

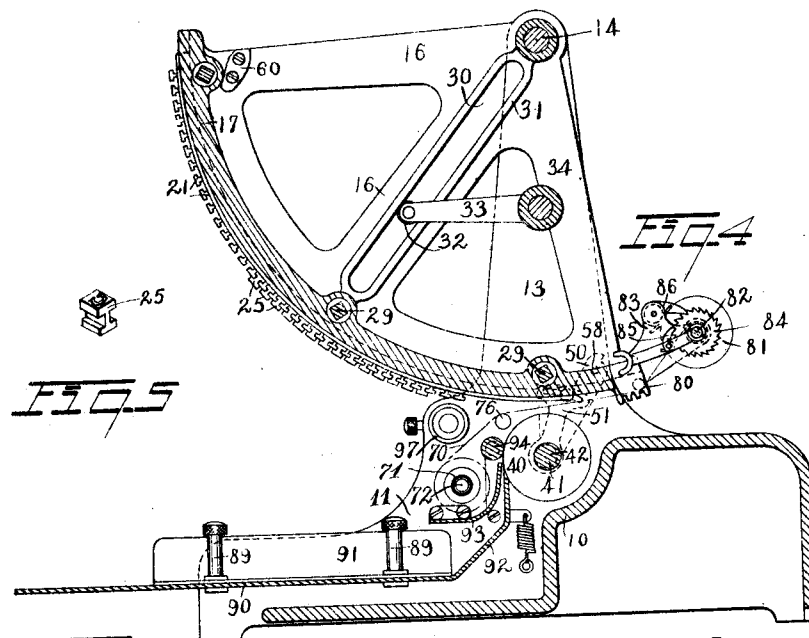
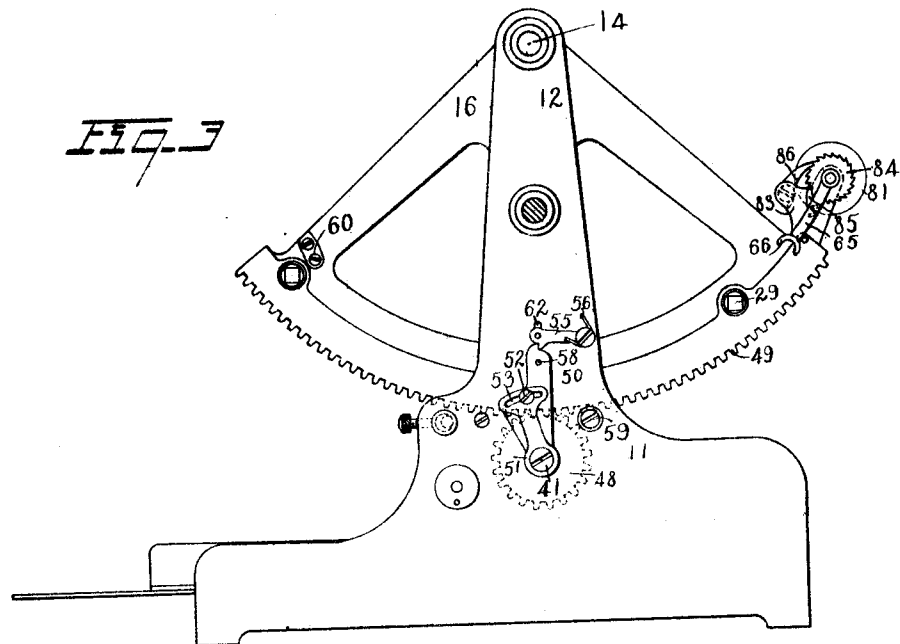
Inventor.
 Harry C. Gammeter
 By Baker, Foster & Hill
 Attys

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2 SHEETS-SHEET 2.



Witnesses:

Nathan F. Fetter.
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Inventor.
 Harry C. Gammeter,
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UNITED STATES PATENT OFFICE.

HARRY C. GAMMETER, OF BRATENAH, OHIO, ASSIGNOR TO THE AMERICAN MULTIGRAPH COMPANY, OF CLEVELAND, OHIO. A CORPORATION OF OHIO.

DUPLICATING-MACHINE.

1,049,323.

Specification of Letters Patent.

Patented Dec. 31, 1912.

Original application filed May 22, 1907, Serial No. 375,169. Divided and this application filed May 24, 1909. Serial No. 497,906.

To all whom it may concern:

Be it known that I, HARRY C. GAMMETER, a citizen of the United States, residing at Bratenahl, in the county of Cuyahoga and State of Ohio, have invented a certain new and useful Improvement in Duplicating-Machines, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings.

My prior application No. 375,169, of which this is a division, shows and claims a printing machine wherein there is an oscillating type carrying segment, an underrunning rotary impression platen and an inking ribbon passing between the segment and platen and having one end mounted on a spool carried by the segment and the other end on a stationarily mounted spring barrel.

The present application relates to the means for oscillating the type form. The means shown for carrying that form are covered in my application Serial Number 438,309, the other features of the invention being covered in the parent application above referred to.

In the drawings, Figure 1 is a front elevation of the machine; Fig. 2 is a vertical central section thereof; Fig. 3 is a side elevation; Fig. 4 is a vertical section in a plane parallel with Fig. 3; Fig. 5 is a perspective of the type employed.

Referring by reference numerals to the embodiment shown in the drawings, 10 represents a suitable base, at the opposite ends of which are vertical webs 11 which continue upward in the form of standards 12 and 13. Journaled in these two standards near their upper ends is the shaft 14. Mounted on this shaft is the oscillating frame which, with a segmental type form carried thereby, constitutes the printing member. This oscillating frame has hubs 15 surrounding and pinned to the shaft 14, and extending from the hubs are spider arms 16 which at their outer ends carry the arc-shaped rim members 17. These rim members are recessed or rabbeted, as shown at 18, the outer wall of the rabbet being inclined or under cut as at 19. The rabbets of the two rim members thus cooperate to produce in effect a wide dove-tailed recess adapted to receive the removable arc-shaped plate 20. This plate has its edge beveled correspondingly to the sides 19 of the re-

cesses. The plate carries projecting rails 21 having T-heads and thus adapted to receive between them rows of type 23 having grooves to cooperate with the T-rails, as shown in Figs. 4 and 5.

The type holding plate 20 is locked between the rim members 17 by means of the rods 27 which extend across the printing member, passing through one of the rim members and screwing into the opposite rim member, as shown in Fig. 2. The rods 27 have angular heads 29 seating in recesses in the right hand rim member 17. These recesses allow a suitable socket-wrench to be placed over the head to turn the rod, such turning loosening the plate 20 so that it may be removed, or clamping it rigidly in place.

The construction just described allows the plate 20 to be loaded with type, clamped in place by the rods 27 whereby there results a rigid locking segmental member carrying a page form of printing type. On the other hand, the loosening of the rods allows the removal of the form as a whole so that the form may be left standing whenever desired, another type carrying segment being substituted therefor. This removable type carrying segment and the means for securing it in place are covered in my application Serial Number 438,309, referred to.

Coming now to the driving mechanism which constitutes the subject matter of the present application, it will be seen that at the right hand end of the machine, the central spider arm 16 is shown as having a long radial slot 30 bounded by a reinforcing web 31. Into this slot extends a roller 32 carried by a crank arm 33 mounted on the inner end of a short shaft 34 journaled in the frame standard 12. On the outer end of this short shaft is secured a crank 35 having a handle 36. By means of this handle the crank may be rotated, the roller and slot connection thereby rocking or oscillating the swinging frame. The crank being rotated in the left hand direction, the drum surface is driven rearward comparatively slowly owing to the roller at such time being in the lower portion of the slot 30. The return stroke, however, is rapid, as the roller is in the upper portion of the slot 30 and much nearer the axis 14. The printing being accomplished on the rearward stroke of

the printing surface, it will be seen that the action is slow where the power is required, and provides a quick return for the idle movement of the printing surface. Regular rotations of the crank therefore give the printing surface just the movement desired. The quick return movement just described is an important feature, as it enables a material saving in time of operation. The machine accordingly, although it has a reciprocating member may be driven with great rapidity and a minimum amount of time is lost on the backward movement.

Located below the printing member and cooperating with it is the rotary impression platen 40, which is positively driven by a pinion 48 connected therewith and meshing with gear teeth 49 on the printing member. Between the oscillating frame and the platen extends the inking ribbon 70, the rear end of which is carried by a spool 81 mounted on such frame, while the forward end wraps around a spring barrel 71. The mechanisms for platen adjustment and for ribbon feed are not specifically a part of this application, being covered with other features in the parent application referred to. They will, however, be briefly described for the sake of completeness.

The platen is journaled on a shaft 41 which has reduced eccentrically placed extensions 42 and 46 journaled in bushings in the frame. One of these bushings 43 is preferably adjustable by means of an arm 44, shown at the left hand end of the machine. On the right hand end the shaft extensions 42 is adjustably connected with an arm 50 which extends vertically when the platen is in position to coast with the type, the arm being retained in this position by a dog 55. This is the position of the parts when the printing surface swings rearwardly, the paper being drawn between the printing surface and the platen and thereby impressed.

At the end of the rearward movement of the printing member, an inclined cam lug 60 thereon engages beneath a pin 61 projecting inward from the dog 55 through a slot 62. This raises the dog to release the arm 50, whereupon the shaft 41 is immediately rocked rearward by the spring 57 engaging its left hand end, the arm 50 coming to rest by engaging the cushioned stop pin 59. The platen is thus swung downward, out of the way of the type so that the latter may return without impressing the platen. As such return stroke is just being completed, an arm 65, carried near the rear end of the printing member and having a fork 66, engages a pin 58 on the arm 50 and returns it to upright position, thus swinging the platen into active position,—the arm 50 being held in this position by the dog 55 re-engaging its upper end.

The inking ribbon 70 is a page wide, and, as heretofore stated, is mounted at its forward end on a spool surrounding and frictionally engaging a spring barrel 71. This barrel has an internal shaft 72 connected with the tubular exterior by a helical spring, not shown. On the head of the shaft 72 is a knob 74 by which the shaft may be turned to tighten the spring.

From the spring barrel, the ribbon passes over a guide rod 76, then rearwardly between the platen and printing member and under a guide roller 80 carried near the rear end of the printing member. From this point, the ribbon passes onto the upper side of the spool 81 carried at the rear side of the printing member, this spool being held by a spring 88 with its other end in engagement with a short shaft 82 at the rear of the printing member, mounted in the lug 83. Secured on this shaft is a ratchet wheel 84, acted on by a pawl 85 on the arm 65, heretofore referred to. When this arm 65 engages the pin 58 on the arm 50, and returns that arm to normal position on the reverse stroke of the printing member, this same movement swings the arm 65 upward and thus the pawl 85 drives the ratchet 84 rearward and gives the spool a slight turn, feeding the ribbon. Such winding of the spool is held by a suitable detent pawl 86 which engages a suitable ratchet, a second ratchet 87 being shown for this purpose. The spring barrel maintains the desired tautness of the ribbon at all times. As the spring in the barrel becomes wound up, by the feeding of the ribbon, the spool slips on the barrel, thus preventing excessive tension.

The paper to be printed rests on the table 90 between guides 91, which are adjustably held thereto to set screw 89. The paper is shoved rearward by hand in the embodiment shown, and its forward edge passes upward along the guide plate 92, which is a continuation of the table 90, and behind the guide plate 93. The forward edge of the paper thus is directed between the platen and the spring-pressed feed roller 94. The paper being thus engaged is drawn upward by the platen and passes under guide rod 76 and thence rearwardly between the platen and inking ribbon and is impressed by the type through the ribbon, the printed sheet being discharged at the rear above the horizontal portion of the frame 10.

97 indicates an inking roller adjustably mounted which may be employed, if desired, either to ink the type to replenish the ribbon or for direct printing without a ribbon.

It will be seen from the above description that my invention provides a very compact and simple hand operated printing machine. The rotation of the crank feeds the printing surface during the printing at the desired speed, and when the printing is accom-

plished returns it very rapidly to initial position, the platen and ribbon being out of action. After the printing has been accomplished, to change the form it is only necessary to apply a wrench to the heads 29 of the bolts, loosening them and removing the segment, which may be replaced by a new segment or by the same segment refilled, as desired.

10 Having thus described my invention, what I claim is:

1. The combination of a pair of upright standards, an oscillatable frame mounted between them and adapted to swing about 15 an axis and comprising a shaft, radial arms thereon and a curved type form mounted on the arms, a cooperating platen, a shaft journaled in one of said standards, a crank arm on the shaft on the inner side of the standard, a pin carried by the crank arm and co- 20 operating with a radial slot in one of the

arms of the oscillatable member, and means for rotating such crank shaft.

2. The combination of a pair of upright standards, a shaft carried thereby, an oscillatable frame mounted on said shaft and 25 having end members depending between the standards and carrying a downwardly facing segmental type form, an underrunning roller platen mounted to cooperate with said 30 form, a shaft journaled in one of said standards, a driving crank on the outer end of said shaft, and a crank on the inner end of said shaft having a crank pin roller occupying a radial slot in the adjacent end mem- 35 ber of the oscillatable frame.

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

HARRY C. GAMMETER.

Witnesses:

ALBERT H. BATES,
BRENNAN B. WEST.