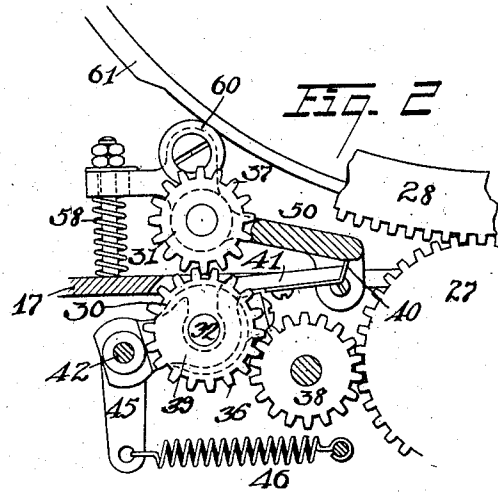
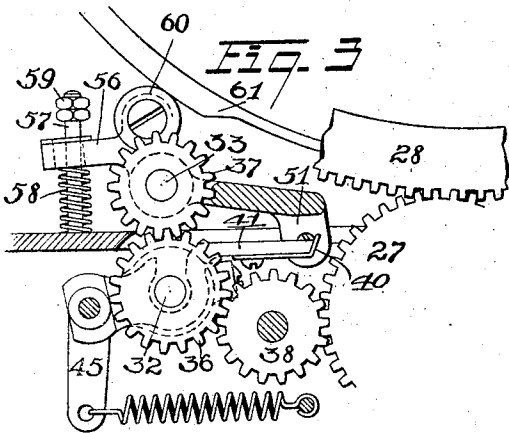
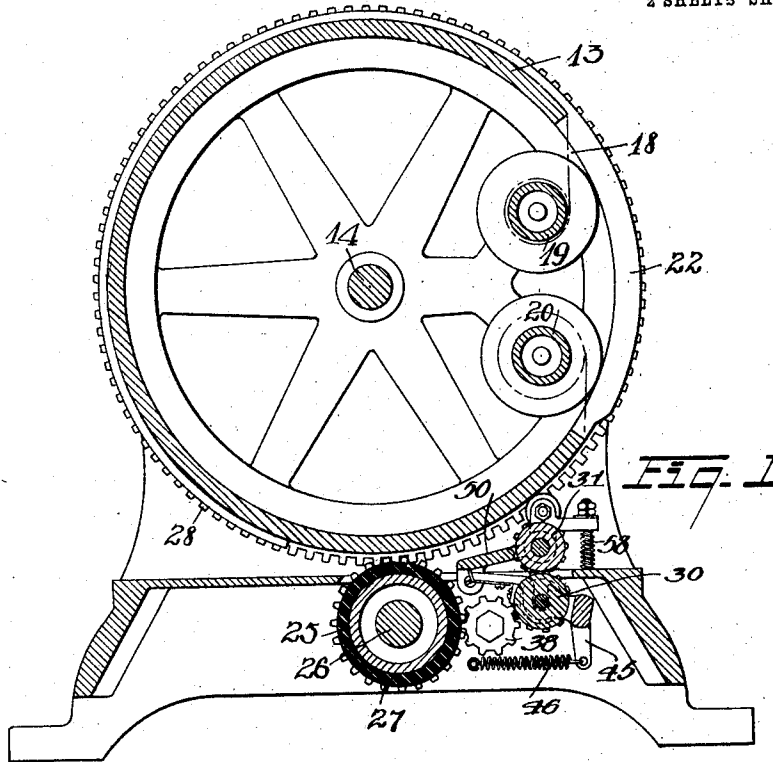


H. C. GAMMETER.
PAPER FEEDING MECHANISM.
APPLICATION FILED DEC. 4, 1909.

Patented Dec. 10, 1912.

2 SHEETS—SHEET 1.

1,047,037.



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2 SHEETS—SHEET 2.

Fig. 4

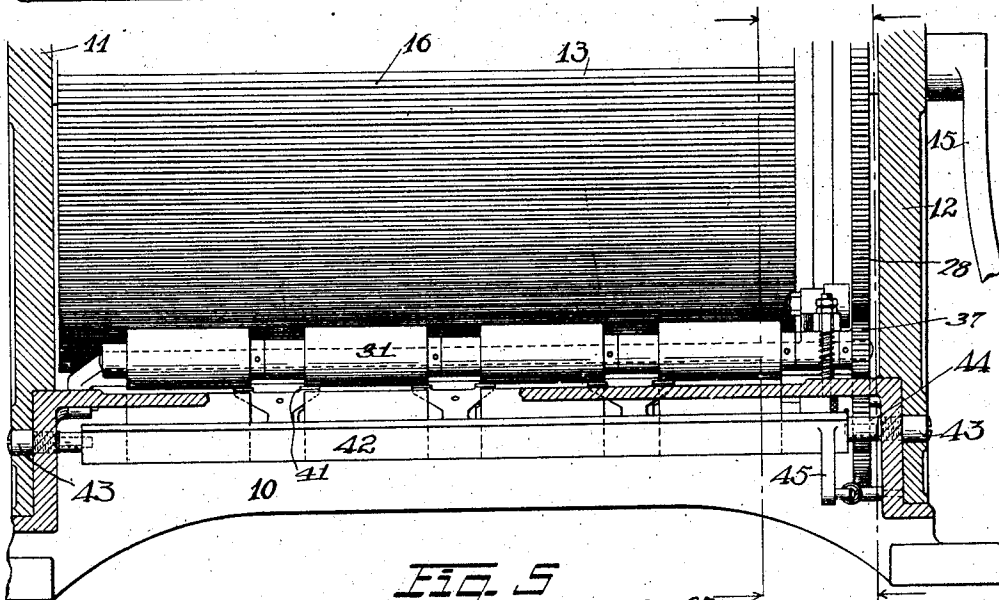
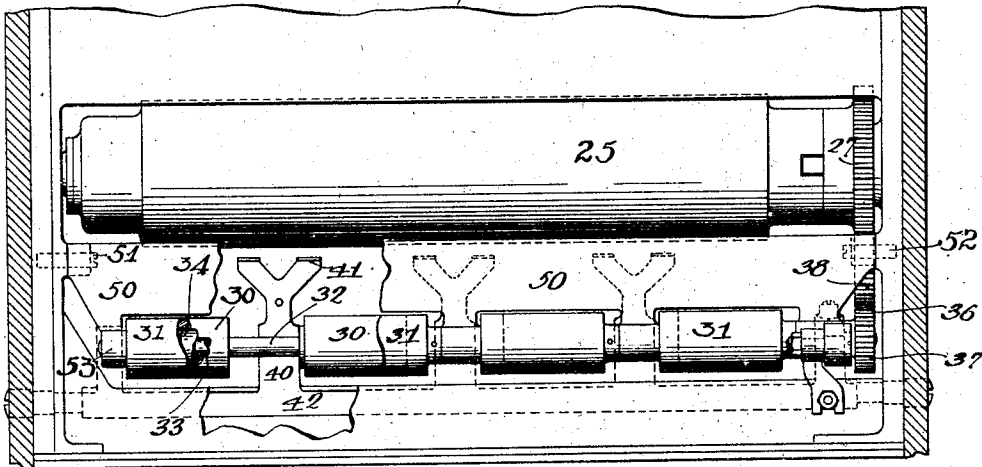
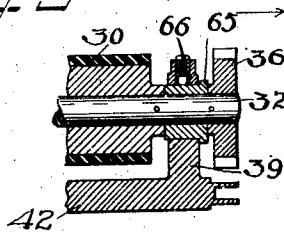


Fig. 5

Fig. 6



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UNITED STATES PATENT OFFICE.

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PAPER-FEEDING MECHANISM.

1,047,037.

Specification of Letters Patent.

Patented Dec. 10, 1912.

Application filed December 4, 1909. Serial No. 531,452.

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 Paper-Feeding 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 a powerful and accurate paper feeding device for feeding individual sheets of paper. My device may well be associated with a rotary printing machine and driven by it, and it operates to take each successive sheet and feed it exactly at the desired time to the line of contact of the printing drum and platen, so that the printing may be in accurate register. When the paper feeding mechanisms with which I am familiar are applied to rotary machines, there is more or less difficulty in the registration, one imprint being slightly differently placed on the sheet from a succeeding imprint, owing to variations in driving force, different thicknesses of paper, et cetera. The present invention is designed primarily to remedy this.

The invention consists of the means I employ for attaining the ends above referred to, as illustrated herein and hereinafter more fully described.

In the drawings,—Figure 1 is a vertical section through the rotary printing machine having my paper feeding mechanism; Figs. 2 and 3 are end views, partly sectional, of the paper feeding mechanism, looking from the opposite direction of Fig. 1,—Fig. 2 showing the normal or idle position of the parts,—Fig. 3 showing the mechanism after the operation has begun; Fig. 4 is a plan, partly sectional and partly broken away, of the feeding mechanism and the platen; and Fig. 5 is a sectional front view, not looking as far back as the platen. Fig. 6 is a substantially horizontal section through the support for the right hand end of the lower feed roll.

As shown in the drawings, the frame of the machine has a horizontal base 10 and uprights 11 and 12, the base having a horizontal top plate 17 which acts as a paper feed table, or constitutes a portion of one.

13 indicates the printing drum which is mounted between the uprights on a shaft 14 which may be driven by a crank 15, or other-

wise, as desired. The printing drum is shown as provided with longitudinal rails 16 adapted to confine type between them.

The type may be inked in any suitable manner, as, for example, by the ribbon 18 passing over the type and having its wound ends carried on spools 19 and 20 which are rotatably mounted in the interior of the drum opposite a recess or opening 22 therein. The type on the drum cooperate with a suitable platen 25 having a soft rubber exterior and mounted on a shaft 26 parallel with the shaft 14. The platen is shown as driven concurrently with the printing drum by gears 27 and 28 on the respective members.

I provide a pair of constantly driven paper feed rollers 30 and 31. Each of these rollers is preferably made sectional and consists of soft rubber separated spools mounted on shafts 32 and 33, respectively, the mounting being accomplished by intermediate sleeves 34 which may be pinned to the shaft. The shaft 32 is mounted in a frame comprising arms 39 on a rock shaft 42 and is given an upward pressure by the spring 46 connected at one end to an arm 45 depending from the rock shaft and anchored at the other end to the frame. The shaft 33 is mounted in a pivoted frame comprising a bar 50 having ears 51 by which it is pivoted at 52 to the frame, the shaft being mounted in forwardly extending ears 53 on the bar. To constantly drive both rollers, I mount on the ends of the shafts 32 and 33 meshing gears 36 and 37, and the gear 36 meshes with an idler 38 which meshes with the platen gear 27.

Though the feed rollers 30 and 31 are constantly driven in the direction to feed paper to the printing machine, they are normally ineffective to cause such feed by reason of being out of contact with each other; furthermore, the paper is positively locked against feed by the upwardly projecting lips 40 on rock arms 41 projecting rearwardly from the shaft 42 between the sections of the roller 30. As shown, the rock shaft consists of a bar 42 from which the arms integrally project, and each bar is pivotally mounted at its ends by the pivot pins 43 screwing through the frame members into bosses 44 on the bar.

The spring 46 gives the bar a constant tendency to rock in the direction to force the lips 40 upwardly against the under face of

the bar 50, which carries the feed roller 33. This latter bar has a forwardly extending arm 56 surrounding a stationary stud 57, and is pressed upwardly by a spring 58 around this stud, suitable nuts 59 on the stud forming an upward limit for the arm. This arm also carries a roller 60 which is adapted to be engaged by a cam 61 on the printing drum.

10 Normally, the position of the parts is as shown in Fig. 2, the lower portion of the cam 61 (or the absence of the cam) allowing the spring 58 to keep the feed rollers separate, though their gears 36 and 37 are in mesh. In this position the spring 46 keeps the lips 40 against the bar 50. With the parts in this position, the paper is fed by hand, or otherwise, until its rear edge abuts the lips 40. Now, when the cam 20 proper 61 strikes the roller 60, the bar 50 is swung downwardly on its pivot and the roller 31 comes into active coaction with the roller 30. This same movement depresses slightly the roller 30, swinging that roller and its supporting arms 39 downwardly about the pivots 43, thereby drawing down the lips 40 to free the paper. The play between the teeth of the gears 36 and 38 allows this movement without binding. 30 With the parts in the position shown in Fig. 3 the paper is positively gripped between the two soft rollers and fed rearwardly to the line of contact of the printing drum and platen. While the cam is in engagement, 35 the spring 46 holds the feeding rollers in proper frictional contact to effectively feed the paper.

The feed rollers may be adjusted into perfect parallelism by the eccentric bushing 65, in the arm 39, which forms the journal for the shaft 32 and is locked in adjusted position by the set screw 66.

It will be seen from the above description that my feeding mechanism provides a positive stop for the paper advanced to the feeding mechanism, and that at the proper time not only is this stop withdrawn, but the separated feed rolls approach and grip the paper. The gripping action is the thing 50 which removes the paper stop, so that the timing is necessarily effective; furthermore, the upper feed roller does not come down to a definite plane, but pushes down on the elastically-supported under-roller, so that 55 the frictional gripping of the paper is dependent upon the force of the spring 46. This enables the mechanism to grip paper of different thickness with equal positiveness, which would not be the case if the cam 60 were relied upon to force one roller into engagement with another mounted on a positive axis.

Having thus described my invention, what I claim is:

65 1. In a paper feeding mechanism, the

combination of a pair of rotatable feed rolls both bodily movable, mechanism periodically causing them to approach and both move bodily in the same direction after they have approached, and a front stop rendered inactive by such movement. 70

2. In a paper feeding mechanism, the combination of a pair of feed rolls, both mounted on movable axes and normally out of engagement, means periodically forcing one roll against the other and thereafter moving the two rolls bodily together in the same direction, and a front stop rendered inactive by such movement. 75

3. In a paper feeding mechanism having a pair of feed rolls, both mounted on movable axes and normally out of engagement, means forcing one roll against the other and two rolls bodily in the same direction against a spring resistant, and a front stop rendered inactive by such movement. 80 85

4. In a paper feeding mechanism, the combination, with a pair of feed rolls mounted parallel and both of them bodily movable and normally out of contact, means periodically and automatically forcing said rolls into contact by moving one roll toward the other and then both rolls simultaneously as a continuation of such movement, and a front stop rendered inactive by such movement. 90 95

5. In a paper feeding mechanism, the combination with a pair of feed rolls mounted parallel and both of them bodily movable and normally out of contact, means for forcing said rolls into contact by moving one roll toward the other and then both rolls simultaneously as a continuation of such movement, and gears on the two rolls meshing both when they are separated and together. 100 105

6. In a paper feeding mechanism, the combination with a pair of feed rolls mounted parallel and both of them bodily movable and normally out of contact, gears constantly connecting said rolls, means for forcing said rolls into contact by moving one roll toward the other and then both rolls simultaneously as a continuation of such movement, a spring tending to resist such continued movement, and a driving gear constantly meshing with one of the gears mentioned. 110 115

7. In a paper feeding mechanism, the combination with a pair of feed rolls mounted parallel and both of them bodily movable and normally out of contact, means periodically forcing said rolls into contact by moving one roll toward the other and then both rolls simultaneously as a continuation of such movement, and a stop for the paper which acts until after the rolls have engaged and is withdrawn by such continued movement. 120 125

8. In a paper feeding mechanism, the 130

combination with a pair of feed rolls mounted parallel and both of them bodily movable and normally out of contact, means periodically and automatically forcing said rolls into contact by moving one roll toward the other and then both rolls bodily simultaneously as a continuation of such movement, a spring tending to resist such continued movement, and a stop for the paper which acts until after the rolls have engaged and is withdrawn by such continued movement.

9. In a paper feeding mechanism, the combination of a pair of feed rolls, a spring acting on one roll and tending to move it away from the other, and a spring acting on the other roll and tending to move it toward the first, and stops for such movement.

10. In a paper feeding mechanism, the combination of a pair of feed rolls, a spring acting on the first roll and tending to move it away from the second, a spring acting on the second roll and tending to move it toward the first, a stop for the paper which acts also as a stop for such movement of the second roll, and means for automatically removing the stop consequent upon the movement of the second roll.

11. In a paper feeding mechanism, the combination of a feed roll, a pair of pivoted arms carrying the same, a spring tending to swing said arms on their pivot and move the roll, a cooperating feed roll, a spring tending to move it to separate the rolls, and means for forcing said rolls together against the action of both springs.

12. In a paper feeding mechanism, the combination of a feed roll, a frame carrying the same, a spring tending to swing said frame on its pivot and move the roll, a cooperating feed roll, a pivoted frame carrying it, and a spring tending to move said last-mentioned frame to separate the rolls.

13. In a paper feeding mechanism, the combination of a pair of feed rolls, a pair of pivoted frames carrying the same, springs acting on said frames, one of the frames being pivoted on the front side of its feed roll and the other on the rear side of its feed roll, and means for swinging the frames on their pivots.

14. In a paper feeding mechanism, the combination of a pair of feed rolls, a pair of pivoted frames carrying the same, springs acting on said frames, one of the frames being pivoted on the front side of its feed roll and the other on the rear side of its feed roll and one of the frames being stopped by having a portion abutting the other frame, and means for swinging said other frame on its pivot to change the position of both feed rolls and thereby remove the stopping portion.

15. The combination of a pair of normally separate bodily movable feed rolls, and a stop for the paper acting until after

they have come into engagement and automatically removed by the bodily movement of both rolls when in gripping engagement.

16. The combination of a pair of feed rolls both mounted on movable journals and normally out of contact, mechanism for not only moving one feed roll toward the other to bring them into effective contact, but also to continue to move the two together, a stop for the paper adapted to retain its stopping position until after the rolls have come into engagement, means whereby the continued movement withdraws the stop, and a spring resisting such continued movement.

17. The combination of a pair of constantly driven feed rolls geared together and both mounted on movable journals and normally out of contact, mechanism for moving one feed roll toward the other to bring them into effective contact and also to continue to move the two together, a stop for the paper, and means whereby the continued movement withdraws the stop.

18. In a paper feeding mechanism, the combination of a pivoted frame, a feed roller carried thereby, a cam roller carried by the frame, a spring pressing the frame in opposition to the cam roller, a second pivoted frame, a feed roller carried thereby, and a spring pressing said feed roller toward the feed roller first mentioned.

19. In a paper feeding mechanism, the combination of a pivoted frame, a feed roller carried thereby, a cam roller carried by the frame, a spring pressing the frame in opposition to the cam roller, a second pivoted frame, a feed roller carried thereby, a spring pressing said feed roller toward the feed roller first mentioned, and a stop for the paper carried by the second pivoted frame.

20. The combination, with a rotary printing machine having a drum and platen geared together, of a paper feeding mechanism having a pair of feed rollers geared with the printing mechanism, a pair of individual pivoted frames for carrying the two feed rollers, a cam on the drum adapted to act on one of the frames, and springs acting on both frames and pressing them toward the cam.

21. The combination, with a rotary printing machine having a drum and platen geared together, of a paper feeding mechanism having a pair of feed rollers geared together and an idler between one of such gears and the gear of the printing mechanism, whereby all such parts are driven in unison, a pair of individual pivoted frames for carrying the two feed rollers, a cam on the drum adapted to act on one of the frames, and springs acting on both frames and pressing them toward the cam.

22. In a paper feeding mechanism, the

combination of a pivoted frame, a feed roller carried thereby, stop lips carried by the frame, a spring acting on the frame and tending to move said lips into the path of the paper, a cooperating feed roller, and means for pressing it against the feed roller mentioned to make a gripping contact and displace the feed roller sufficiently to swing the frame to withdraw the lips from the path of the paper.

23. In a paper feeding mechanism, the combination of a pivoted frame, a feed roller carried thereby, stop lips carried by the frame, a spring acting on the frame and tending to move said lips into the path of the paper, a cooperating feed roller, a second pivoted frame carrying said cooperating feed roller mentioned, and a spring acting on that frame tending to separate the feed rollers.

24. In a paper feeding mechanism, the combination with a printing drum and a cooperating roller platen, a pair of feed rollers mounted beneath the drum and in front of the platen, a pivoted frame supporting the lowermost of said feed rollers, gearing between the latter feed roller and the platen, a pivoted frame supporting the upper feed roller, gearing between the upper feed roller and the lower feed roller, a cam on the drum, and a roller on the upper frame which said cam may engage.

25. In a paper feeding mechanism, the combination with a printing drum and a cooperating platen geared therewith, a pair of feed rollers mounted beneath the drum and in front of the platen, a pivoted frame supporting the lower feed roller, gearing

between the latter feed roller and the platen, a pivoted frame supporting the upper feed roller, gearing between the upper feed roller and the lower feed roller, a cam on the drum, a roller on the upper frame which said cam may engage, springs tending to elevate both frames, and stop lips carried by rearwardly extending arms on the lower frame, said lips in active position abutting the under-face of the upper frame.

26. In a paper feeding mechanism, the combination of a pivoted frame, a feed roller carried thereby, stop lips carried by the frame, a spring acting on the frame and tending to move said lips into the path of the paper, a second feed roller, and a second pivoted frame carrying the second feed roller mentioned, said stop lips in normal position engaging said second frame.

27. In a paper feeding mechanism, the combination of a pivoted frame, a feed roller carried thereby, stop lips carried by the frame, a second pivoted frame which said lips engage when in the path of the paper, a cooperating feed roller carried by said second pivoted frame, and means for pressing it against the feed roller mentioned to make a gripping contact and displace the feed roller sufficiently to swing the first-mentioned frame to withdraw the lips from the path of the paper.

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

HARRY C. GAMMETER.

Witnesses:

ALBERT H. BATES,
A. J. HUDSON.