M. H. MANN

WEB FEEDING MECHANISM.

APPLICATION FILED APR. 21, 1909.

954,751.

Patented Apr. 12, 1910.

4 SHEETS—SHEET 1.

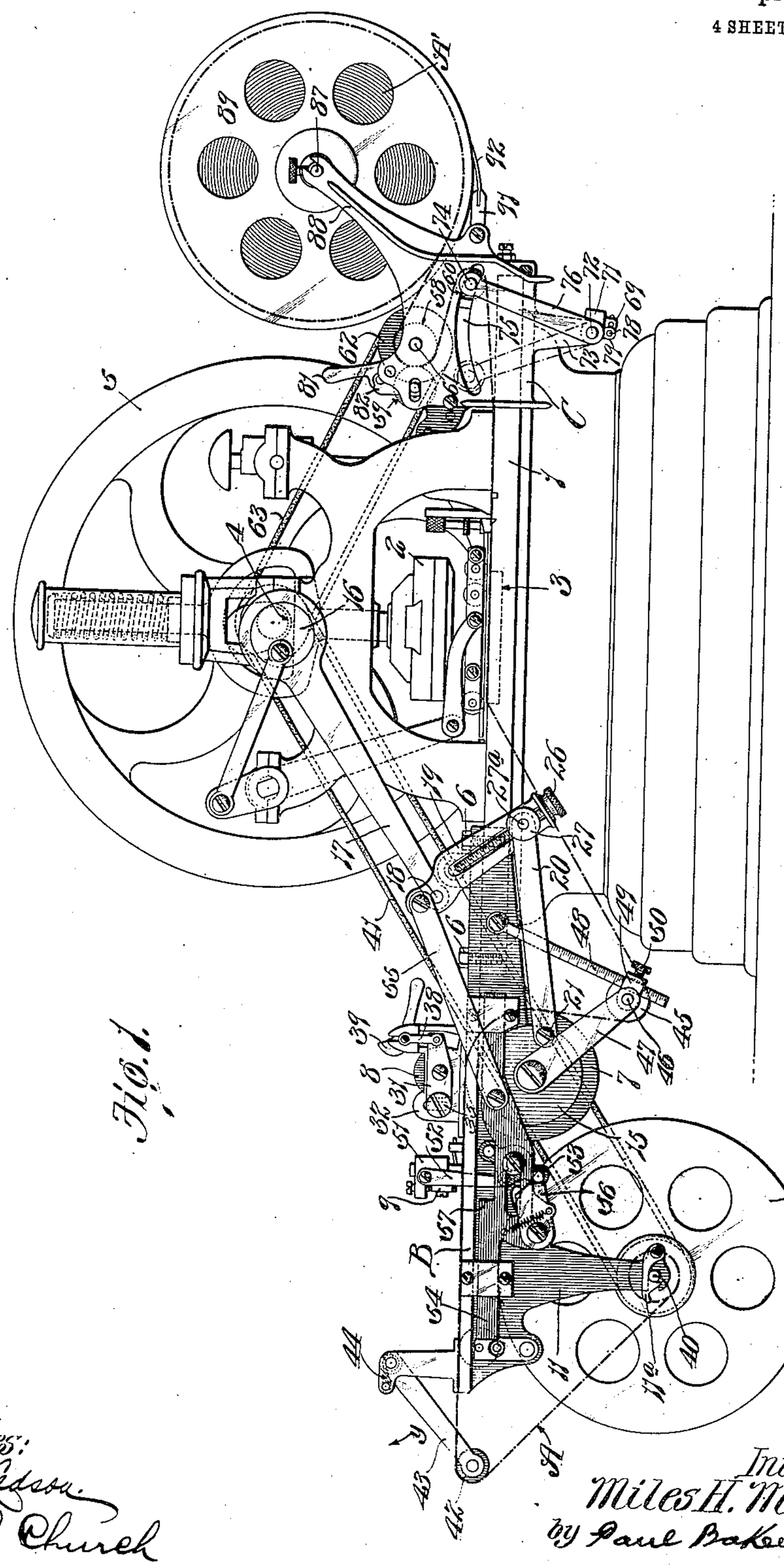

Fig. 1.

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4 SHEETS—SHEET 2.

Fig. 3.

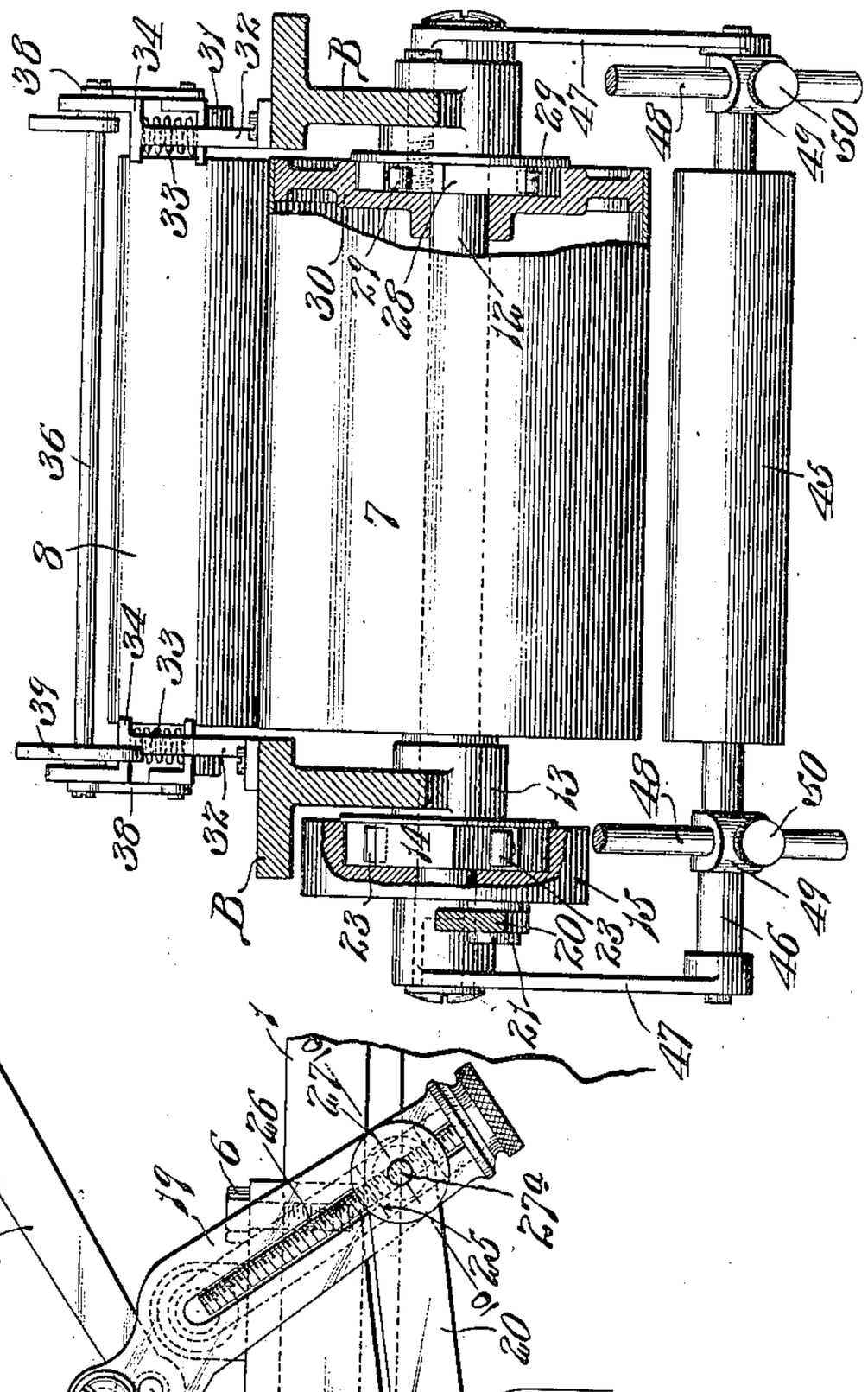


Fig. 2.

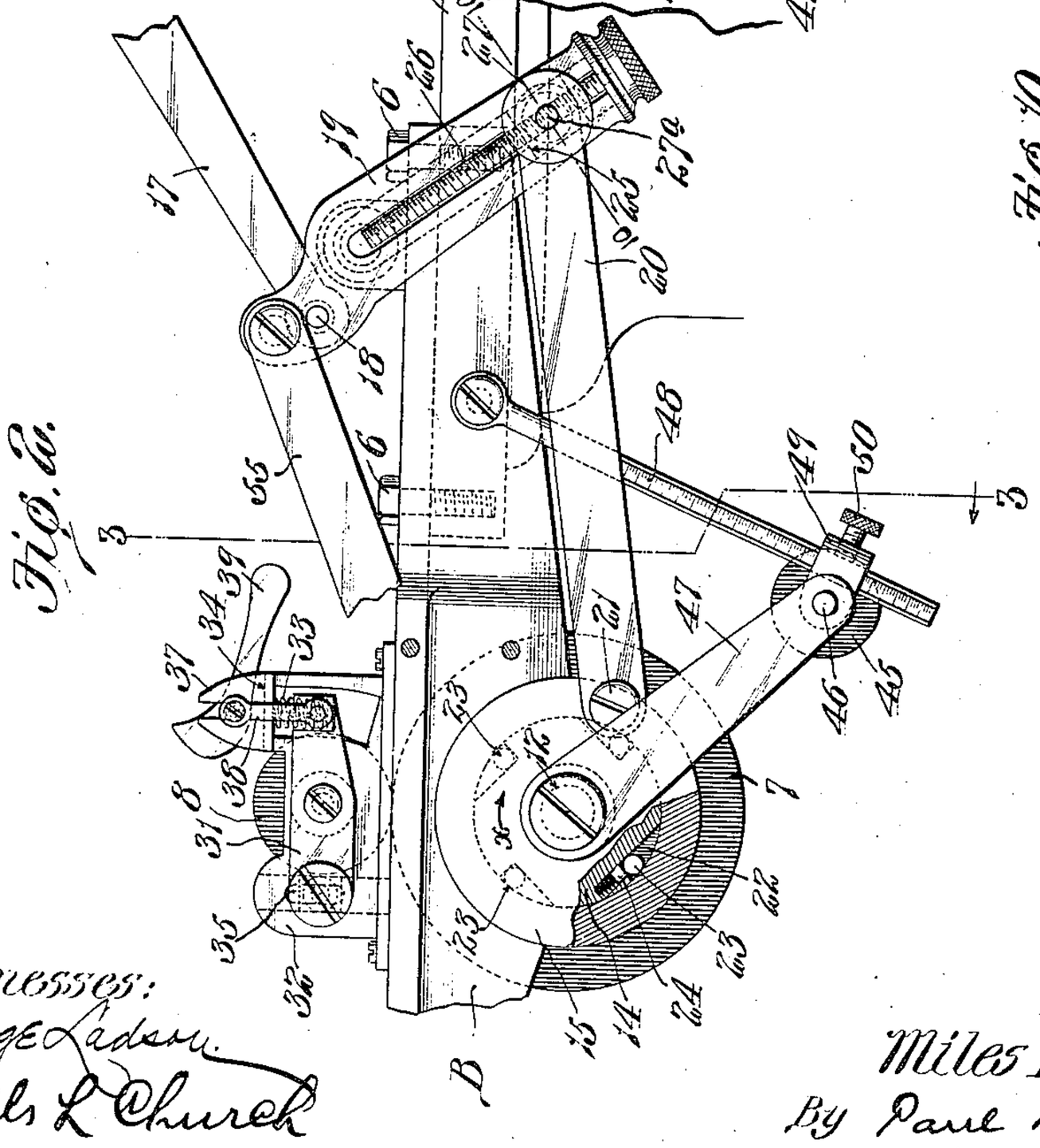
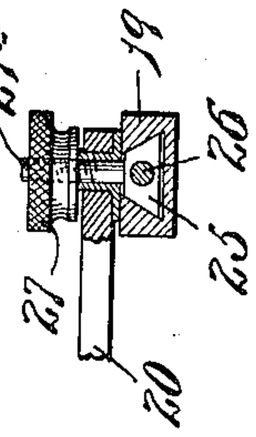


Fig. 10.



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4 SHEETS—SHEET 3.

Fig. 4.

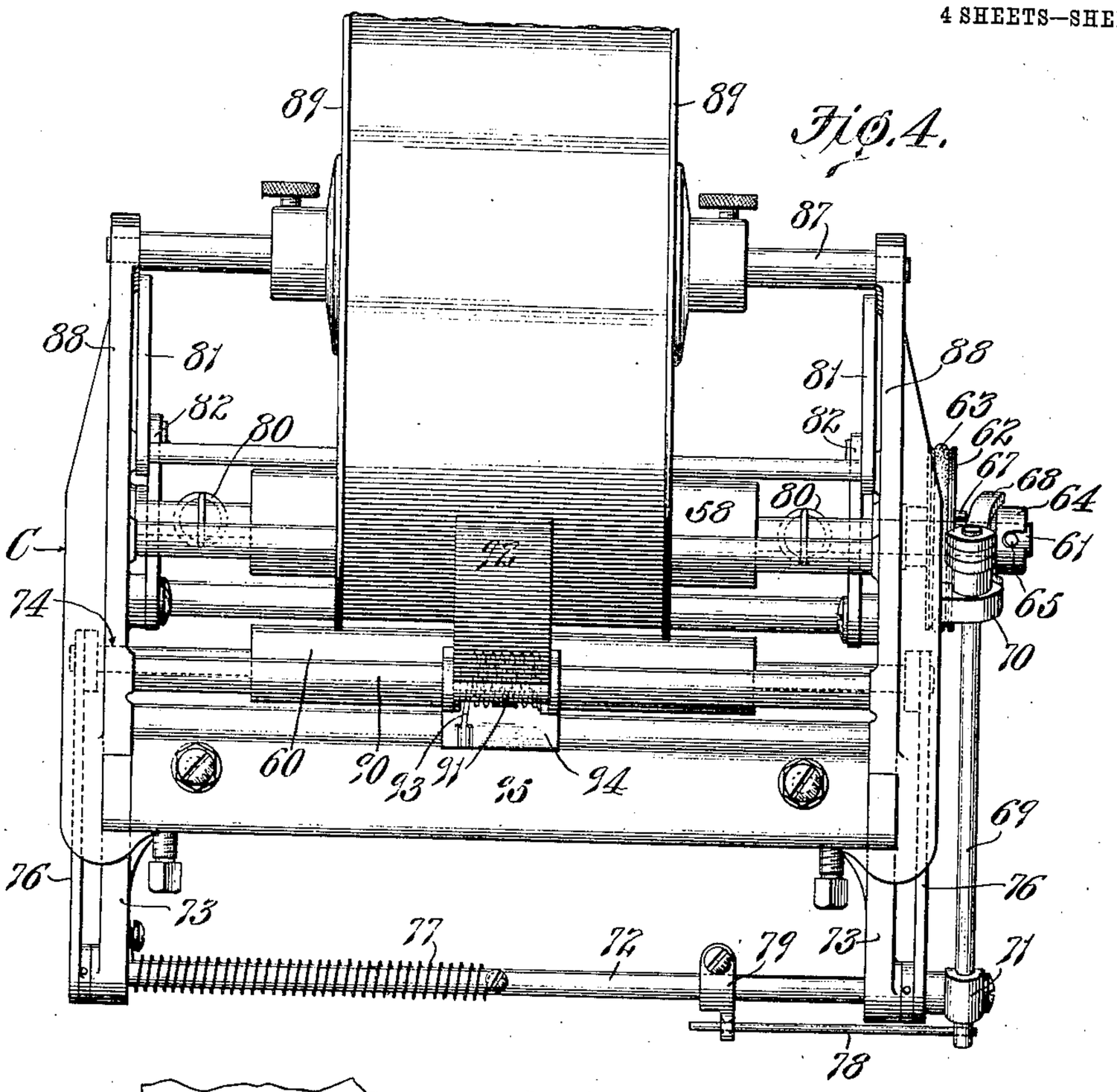
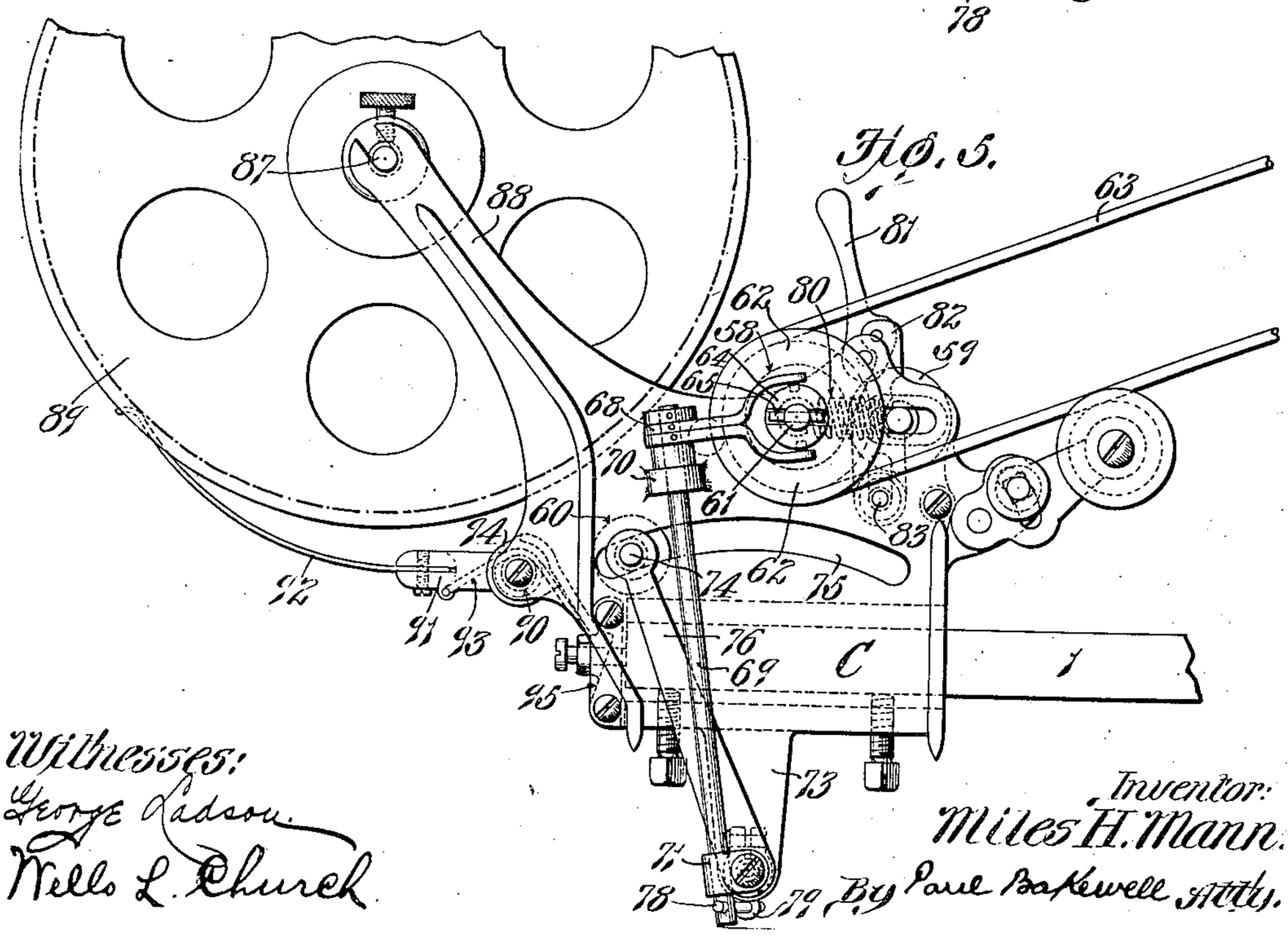


Fig. 5.



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4 SHEETS—SHEET 4.

Fig. 6.

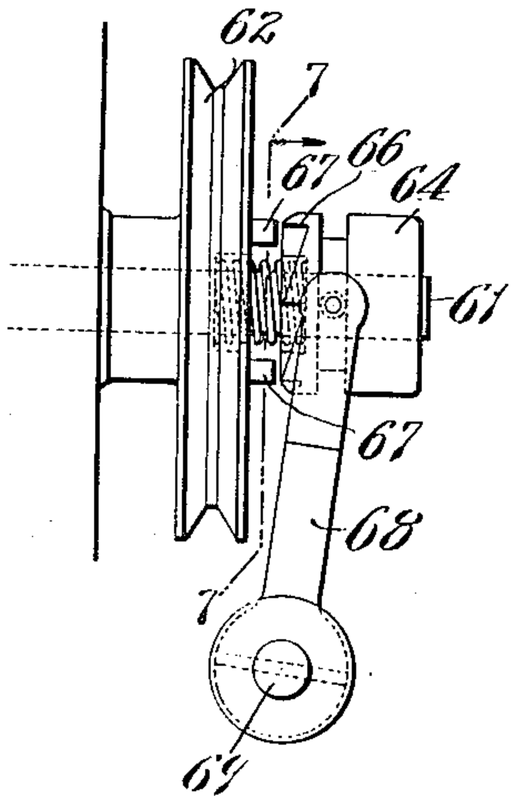
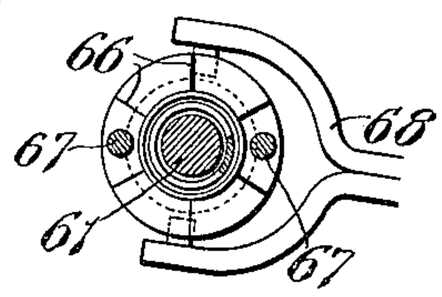


Fig. 7.



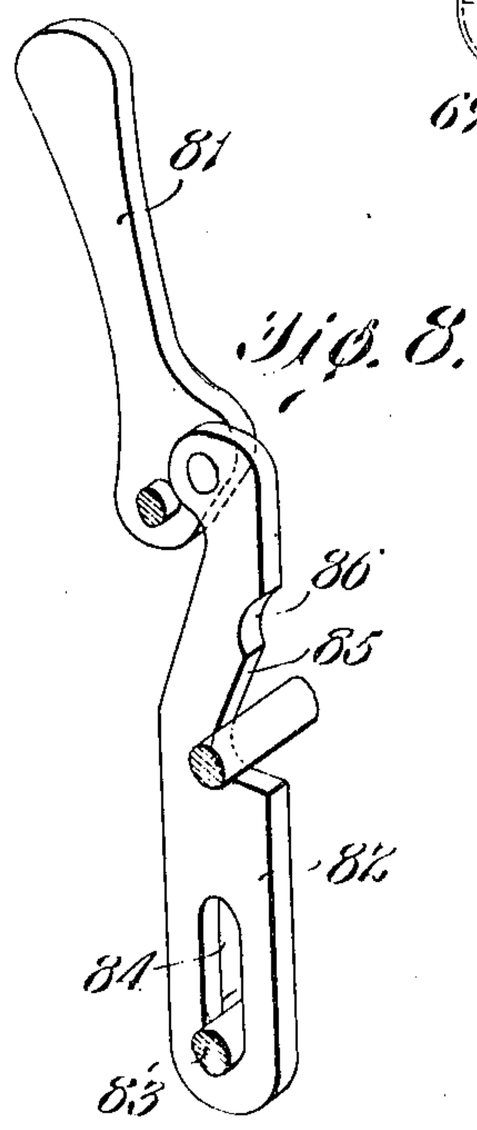
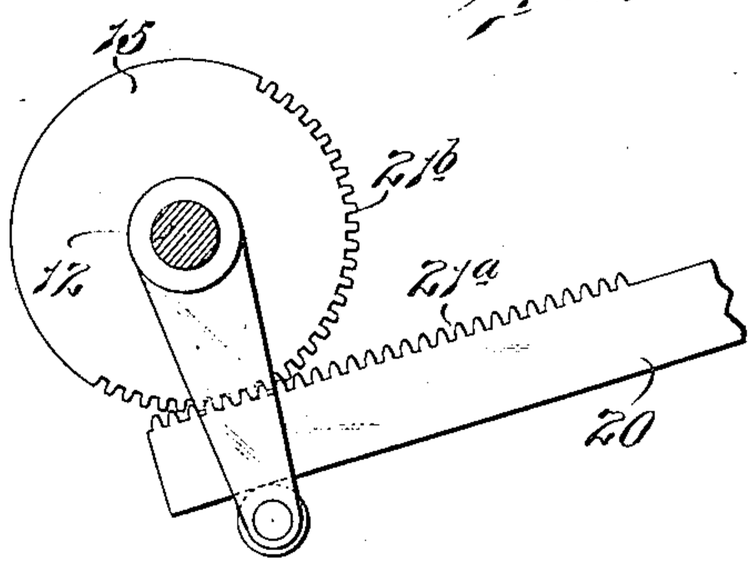


Fig. 8.

Fig. 9.



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UNITED STATES PATENT OFFICE.

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WEB-FEEDING MECHANISM.

954,751. Specification of Letters Patent. Patented Apr. 12, 1910.

Application filed April 21, 1909. Serial No. 491,265.

To all whom it may concern:

Be it known that I, MILES H. MANN, a citizen of the United States, residing at Louisiana, Missouri, have invented a certain new and useful Improvement in Web-Feeding Mechanism, of which the following is a full, clear, and exact description, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to web feeding mechanisms, and particularly to that type which is used in printing machines for feeding a web or continuous strip of paper or other material from a supply roll to the printing mechanism.

The main object of my invention is to provide a mechanism that will feed the web or continuous strip intermittently from a supply roll without liability of breaking or tearing the web from the source of supply.

Another object of my invention is to provide a web-feeding mechanism which is so designed that the web will always be taut or under sufficient tension to prevent it from buckling or forming into loose loops.

Another object of my invention is to provide an intermittent web-feeding mechanism that can be adjusted accurately so as to obtain very fine variations of the feeding movement of the web. And still another object of my invention is to provide a web-feeding mechanism of simple construction that can be applied easily to small printing machines, such, for example, as those used for printing cards and envelops.

Other objects and desirable features of my invention will be hereinafter pointed out.

Briefly described, my improved web-feeding mechanism comprises an auxiliary feed mechanism arranged between a supply roll and a printing device or other device that acts upon the web so as to draw short lengths of the web intermittently from the supply roll, an independent feed mechanism or primary feed mechanism for taking up the web that has been drawn from the supply roll and feeding the web past the printing mechanism, and means for keeping the web taut or under tension.

Figure 1 of the drawings is a side elevation of a printing machine provided with my improved web-feeding mechanism; Fig. 2 is an enlarged side elevation of a portion of the main feed mechanism or primary feed; Fig. 3 is a vertical-sectional view taken on approximately the line 3—3 of Fig. 2; Fig. 4 is a front elevational view of the auxiliary feed mechanism and take-up mechanism arranged adjacent the front end of the printing machine; Fig. 5 is a side elevational view of the part shown in Fig. 4; Fig. 6 is a detail view of the clutch that drives the positively driven roll of the auxiliary feed mechanism; Fig. 7 is a sectional view taken on approximately the line 7—7 of Fig. 6, looking in the direction indicated by the arrow; Fig. 8 is a detail perspective view of part of the means employed for separating the rolls of the auxiliary feed mechanism; Fig. 9 is a detail view of a slightly modified form of device for actuating the driving clutch member of the primary feed mechanism; and Fig. 10 is a detail sectional view taken on the line 10—10 of Fig. 2.

Referring to the drawings which illustrate the preferred form of my invention, 1 designates the bed plate of a printing machine provided with a reciprocating type-carrier 2, arranged above the platen 3 on said bed plate and adapted to be actuated by a cam on a main drive shaft 4 which can be operated either manually or by means of a belt, not shown, that passes over a pulley 5 on said drive shaft. The particular type of printing machine with which my improved web-feeding mechanism is used, however, is immaterial so far as my broad idea is concerned, and therefore I do not wish it to be understood that my invention is limited in its use to a printing machine of the type herein shown.

The paper or other material on which the type in the type-carrier of the printing machine operates consists of a web or continuous strip A that leads from a web-supply roll A′ over the platen on the bed plate of the printing machine, as shown in Fig. 1, an auxiliary feed mechanism being arranged between the platen and the supply roll A′ for drawing short lengths intermittently from the supply roll, and a primary feed mechanism being arranged at the opposite end of the bed plate of the machine for drawing the web across the platen. The primary feed mechanism is carried by a frame B which is detachably connected to the rear end of the bed plate 1 of the printing machine by means of screws 6, and the auxiliary feed mechanism is carried by a support C which is detachably connected to

the front end of the bed plate 1. The primary feed mechanism consists of a driven roller 7 over which the web A passes and a coöperating spring-pressed roller 8 arranged above the roller 7 for forcing the web tightly against the same.

When the printing machine is being used for some classes of work, such, for example, as forming labels, the web is severed into short lengths or strips by means of a reciprocating cutter 9 located at the rear of the feed rollers 7 and 8. In other classes of work the web is merely printed and then re-wound onto a reel 10 which is carried by arms 11 on the frame B, the severing mechanism, of course, being adjusted into an inoperative position when the web is merely printed and then re-wound into roll form. The driven feed roller 7 of the primary feed mechanism is secured to a horizontally disposed shaft 12 which is journaled in bearings 13 on the frame B, as shown in Fig. 3, and an intermittent movement is imparted to said shaft by means of a clutch which consists of a driven member 14 secured to said shaft and a driving member 15 that is oscillated intermittently by mechanism which receives its movement from the main drive shaft 4 of the printing machine.

In the preferred form of my invention, as illustrated in Figs. 1, 2 and 3 of the drawings, the drive shaft 4 of the printing machine is provided with an eccentric 16 that is surrounded by a strap on the upper end of a link 17 which is pivotally connected at 18 to a lever 19, said lever being connected to a link 20 which is eccentrically connected by a pin 21 to the driving clutch member 15. The driven member 14 of said clutch consists of a disk which is securely connected to the shaft 12 of the feed roller 7, and said clutch member is provided in its periphery with a plurality of tapered pockets 22 in which roller bearings 23 are arranged, as shown in Fig. 2. The driving member 15 of said clutch consists of a disk having a recess formed in its inner face for receiving the driven clutch member 14 and the roller bearings carried thereby, the driving clutch member thus forming practically a sleeve which surrounds the periphery of the driven clutch member. Spring-pressed plungers 24 are mounted in the driven clutch member so as to normally force the roller bearings 23 toward the shallow ends of the pockets 22 in which they are mounted, and thus cause said roller bearings to be wedged between the driven member and the driving member of the clutch. When the link 20 oscillates the driving clutch member 15 in the direction indicated by the arrow *x* in Fig. 2, the frictional engagement of said driving member on said roller bearings will force said bearings toward the deep ends of the pockets 22, and thus permit the driven member 14 to remain at rest. When the link 20 oscillates said driving clutch member in the opposite direction, however, the roller bearings 23 will be forced toward the shallow ends of the pockets 22 and into intimate engagement with both the driven clutch member and the driving clutch member, thereby causing the driven clutch member to turn with the driving clutch member and thus rotate the feed roller 7 in a direction to feed the web A rearwardly over the bed plate of the printing machine. The lever 19, to which the links 17 and 20 are fastened, is pivotally connected to an arm on the frame B, and the link 20 is connected to said lever in such a manner that it can be adjusted relatively thereto so as to vary the degree of movement imparted to the driving member 15 of the clutch. In the construction herein shown the lever 19 is provided with an adjustable block 25 to which the link 20 is pivotally connected, said block being substantially wedge-shaped in cross section and adapted to be moved longitudinally of a slot in the lever 19 by means of an adjusting screw 26 journaled in said lever and passing through a screw-threaded opening in said block 25. By turning the screw 26 in one direction the block 25 will be moved toward the lower end of the lever 19 and thus increase the throw of the link 20, and by turning said screw in the opposite direction said block will be moved closer to the fulcrum of the lever 19 and thus diminish the throw of said link. It will thus be seen that I can vary the degree of movement imparted to the feed roller 7 by simply adjusting the screw 26 so as to change the pivotal connection between the link 20 and lever 19, the block 25 being locked in its adjusted position by means of a clamping nut 27 mounted on a screw-threaded shank 27ª on said block, as shown in Fig. 10.

I prefer to employ a clutch of similar construction to that just described for overcoming any tendency of the feed roller 7 to turn rearwardly when the driving clutch member 15 oscillates in the direction indicated by the arrow in Fig. 2, preparatory to feeding the roller 7 forwardly. This clutch comprises a stationary clutch member 28 provided in its periphery with tapered pockets in which roller bearings 29 are arranged, and a movable clutch member 30 connected to the feed roller shaft 12 and provided with a recess inside of which the stationary clutch member 28 and roller bearings are arranged, as shown in Fig. 3. The pockets in this stationary clutch member 28 taper in an opposite direction to the pockets 22 in the driven clutch member 14, previously described, so that if the feed roller should attempt to turn backwardly the roller bearings 29 will become wedged between the stationary clutch member 28 and the co-

operating clutch member 30 on the feed roller and thus prevent retrograde movement of said feed roller.

Instead of having the link 20 eccentrically connected to the driving clutch member 15, as shown in Figs. 1, 2 and 3, said link could be provided on one edge with rack teeth 21^a that mesh with teeth 21^b on the peripheral edge of the driving clutch member 15 so as to impart an oscillatory movement thereto, as shown in Fig. 9.

The spring-pressed roller 8 which coöperates with the driven feed roller 7 is mounted on a shaft that is carried by arms 31 which are pivotally connected to brackets 32 on the frame B, each of said arms being provided at its front end with a pocket that receives a coiled expansion spring 33 which bears against the under side of a lug or shoulder 34 on the bracket 32 and thus forces the roller 8 downwardly toward the driven roller 7. Each of these arms 31 is journaled on a screw 35 that passes through an elongated slot in the bracket 32, as shown in Fig. 2, the inner end of said screw being tapped into a block which is seated in a groove on the inner face of said bracket. By turning the screw in one direction said block will be clamped tightly against the bracket and thus hold said screw in its adjusted position, and by turning the screw in the opposite direction it will be released so that it can be adjusted into a different position and thus vary the tension of the spring which tends to force the front end of the arm 31 downwardly.

A horizontal shaft 36, which is mounted in slotted ears 37 on the brackets 32, is connected by means of links 38 to the arms 31, said shaft being provided with arms 39 having cam-shaped ends that are adapted to engage stationary portions of the brackets 32 when said arms are moved rearwardly and thus elevate the shaft 36 so as to move the roller 8 away from the driven roller 7.

The shaft 40 of the re-winding reel or roll 10 is mounted in open-ended slots in arms 11, and said arms are provided with pivotally mounted latches or dogs 11^a that engage said shaft and retain it in position. The re-winding roll is driven by a belt 41 that passes over a grooved pulley on the shaft 40 and over a grooved pulley on the main drive shaft 4 of the printing machine, and a tension roll 42 is arranged adjacent the rear end of the frame B so as to keep the web taut between the feed rollers 7 and 8 and the re-winding roll or reel 10. This tension roll 42 is carried by pivotally mounted arms 43 which are acted upon by springs 44, shown in dotted lines in Fig. 1, that tend to move said arms upwardly, or in the direction indicated by the arrow *y* in Fig. 1, so as to keep the web under tension. In view of the fact that the re-winding roll 10 is driven continuously and the feed roller 7 is driven intermittently the pull or tension which the re-winding roll exerts on the web will cause the tension roll 42 to be drawn downwardly toward the re-winding roll between the operations of the positively driven feed roller 7. As soon as said driven roller 7 commences to rotate, however, it will feed the web rearwardly and the tension roll 42 will then start to move upwardly, thus taking up the slack in the web and keeping it perfectly taut.

An adjustable guide roller 45 is arranged between the primary feed mechanism and the platen of the printing machine so as to enable the web to be positioned properly relatively to the cutting member 9 which is employed for certain classes of work. In the construction herein shown the shaft 46 of the guide roller 45 is journaled in the lower ends of arms 47 which are fulcrumed or loosely mounted on the ends of the feed roller shaft 12. Guide rods 48, which are pivotally connected at their upper ends to the frame B, pass through blocks 49 which are loosely mounted on the shaft 46, said guide rods being secured to said blocks by means of set screws 50. By changing the position of this guide roller 45 I am enabled to increase or diminish the length of that portion of the web which extends from the platen of the printing machine to the cutter 9 and thus cause said cutter to engage the web at the proper point. For example, if the machine is being used for printing labels and it is found that the cutter does not sever the web at the proper point; namely, between two impressions or groups of printed matter on the web, the clamping screws 50 can be loosened so as to move the blocks 49 upwardly or downwardly on the guide rods 48 and thus change the position of the roller 45. I prefer to provide the guide rods 48 with graduations, as shown in Figs. 1 and 2, so as to enable the blocks 49 to be adjusted accurately.

The cutting member 9, which severs the web into short lengths, is carried by a cross-head 51 to which links 52 are connected, the lower ends of said links being fastened by some suitable means to a rock shaft which is provided on one end with a tappet 53, shown in Fig. 1, one of the links being connected to said tappet. A reciprocating member 54, which is connected by a link 55 to the upper end of the arm 19, is provided with a pawl 56 that engages a pin on the tappet 53 so as to depress the cross-head 51, and a shoulder 57 on said reciprocating member engages another pin on said tappet so as to elevate the cross-head which carries the cutter 9. As this cutting mechanism forms no part of my present invention I have not considered it necessary to more fully describe the construction and operation of same, it

being understood, of course, that the cutting mechanism is thrown out of operation when the machine is being used for merely printing and re-winding the web.

The auxiliary feed mechanism which is carried by the support C at the front end of the bed plate of the printing machine, comprises a positively driven feed roll 58 and a coöperating spring-pressed roll 59 that clamps the web tightly against the roll 58. The function of these rolls is to intermittently draw short lengths of web from the supply roll A′ and thus prevent the web from tearing or breaking as might occur if the primary feed mechanism was depended upon to draw the web from the supply roll. A take-up roll 60 is arranged between the platen of the printing machine and the auxiliary feed rolls so as to take up the slack in the web and thus keep it perfectly taut between the feed rolls and the point where the printing type acts upon the web. The shaft 61 of the driven feed roll 58 is journaled in the side pieces of the support C, and a grooved pulley 62 is loosely mounted on one end of said shaft, as shown clearly in Figs. 4 and 5, said pulley being driven continuously by a belt 63 that passes over a pulley on the main drive shaft 4 of the printing machine. A clutch member 64 is mounted on the shaft 61 in such a manner that it can be moved longitudinally of said shaft so as to connect said shaft to the continuously rotating pulley 62 and thus cause the roll 58 to rotate, a coiled expansion spring being interposed between 62 and 64. I have herein shown the shaft 61 as provided with a cross pin 65 that projects into open-ended slots in the clutch member 64 so as to cause said clutch member and shaft to rotate together but still permit the clutch member to be moved longitudinally of said shaft to bring the teeth 66 on said clutch member into engagement with coöperating teeth or projections 67 on the outside face of the pulley 62, as shown clearly in Fig. 6. The means for moving the clutch member 64 into and out of engagement with said pulley consists of a yoke 68 which is connected to the upper end of a vertically disposed shaft 69 that is journaled in a bearing 70 on one of the side pieces of the support C, and in a bearing 71 loosely mounted on the outer end of a horizontal shaft 72 which is journaled in arms 73 that depend from the support C, as shown in Figs. 4 and 5. The shaft 74 of the take-up roll 60 passes through elongated slots 75 in the side pieces of the support C and is connected to the upper ends of arms 76 which are rigidly fastened to the horizontal rock shaft 72, previously mentioned. A coiled spring 77 which surrounds the shaft 72 and is connected at one end to said shaft and at its opposite end to one of the arms 73, tends to turn the shaft 72 in a direction to force the take-up roll 60 away from the auxiliary feed rolls 58 and 59. The movement of this shaft 72 is utilized to throw the clutch member 64 into and out of engagement with the driven pulley 63, and in the embodiment of my invention herein shown, the rotary movement of the shaft 72 is transmitted to the vertical shaft 69 by means of a spring rod 78 which passes through a hole in the lower end of the shaft 69 and through a hole in an arm 79 that is clamped to the shaft 72, the rotary movement of the shaft 72 placing the spring rod 78 under tension and thus causing said rod to turn the shaft 69 to which the clutch-shifting yoke 68 is connected. The tendency of the spring 77 is to hold the shaft 72 in such a position that the clutch member 64 will be out of engagement with the drive pulley 62, and the take-up roll 60 will be at the front ends of the slots 75 in the side pieces of the support C. When the shaft 72 is moved in the opposite direction the clutch will be thrown into engagement with the pulley 62 and thus cause the roll 58 to rotate, the movement of the shaft 72 in this direction being effected by the pull or tension which the web exerts on the take-up roll 60 when said web is being fed rearwardly by the primary feed mechanism arranged adjacent the rear end of the bed plate.

When the machine is first started the end of the web A is inserted between the auxiliary feed rolls 58 and 59, and the web is then drawn around the take-up roll 60 over the platen 3 to the primary feed rolls 7 and 8, the take-up roll 60 being arranged in the position shown in dotted lines in Fig. 1, so that the clutch member 64 will be in engagement with the pulley 62, and thus cause the auxiliary feed rolls to draw the web from the supply roll when the machine is started. The tension of the spring 77, of course, tends to move the take-up roll 60 away from the auxiliary feed rolls, and consequently, said take-up roll takes up the slack that is produced by drawing off the portion of the web from the supply roll. When the take-up roll reaches the forward ends of the slots 75 the vertical shaft 69 will have moved far enough to disengage the clutch member 64 from the driven pulley 62 and thus permit the auxiliary feed rolls to come to rest. The primary feed mechanism now comes into operation and draws the web forwardly over the platen, the pull of the web on the take-up roll 60 moving said roll in the opposite direction or toward the auxiliary feed rolls, and thus causing said auxiliary feed rolls to come into operation as soon as the shaft 72 has been moved into such a position that the clutch member 64 is again thrown into engagement with the driven pulley 62. These operations are repeated so long as the drive shaft of the

printing machine continues in operation, the auxiliary feed rolls first drawing off a short length of web from the supply roll and the primary feed mechanism then feeding the portion of the web that has been drawn off from the supply roll, the take-up roll 60 and the tension roll 42 taking up all slack in the web and keeping it perfectly taut.

The roll 59, which coöperates with the auxiliary feed roll 58, is drawn toward same by coiled springs 80 which are connected to the shafts of said rolls, as shown in Fig. 5, and means is provided for separating said rolls. The means herein shown for disengaging the rolls 58 and 59 consists of a horizontally disposed rock shaft journaled in the side pieces of the support C and provided with handles 81, each of which has a reciprocating bar 82 pivotally connected thereto, as shown clearly in Fig. 8, said bars being guided in a vertical path by means of pins 83 that pass through elongated slots 84 in said bars. These reciprocating bars 82 are provided with inclined faces 85 which engage the shaft of the roll 59 and thus move said roller away from the roller 58 when said bars are moved downwardly, said bars also being provided with notches 86 that receive the shaft of the roller 59 when the bars 82 have reached the limit of their downward stroke so as to lock said bars in position and thus hold the rollers 58 and 59 separated.

The web-supply roll A′ is carried by a horizontal shaft 87 which is journaled in open-ended slots in arms 88 on the support C, and said shaft is provided with adjustable disk-shaped members 89 that prevent the web-supply roll from shifting longitudinally of the shaft 87. A shaft 90 that serves as a tie rod for the arms 88 supports a member 91 having a spring arm 92 which bears upon the web-supply roll and prevents it from rotating too freely, the member 91 being acted upon by one end of a coiled spring 93 which surrounds the rod 90, the opposite end of said spring bearing against a member 94 which is pivotally mounted on the rod 90 and thus forcing said member 94 against the end piece 95 of the support C. The member 91 which carries the spring arm 92 is arranged between ears on the member 94 so that the spring arm 92 will be moved transversely of the supply roll whenever the member 94 is shifted longitudinally of the rod 90, said member 94 being retained in its adjusted position by the frictional engagement between same and the end piece 95 of the support C.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent is:

1. A web-feeding apparatus comprising an auxiliary feed mechanism for drawing a web from a source of supply, a primary feed mechanism for taking up the web that the auxiliary feed mechanism draws from the source of supply, and a web take-up mechanism which causes said auxiliary feed mechanism to operate intermittently.

2. A web-feeding apparatus comprising an intermittently operating auxiliary feed mechanism for drawing a web from a source of supply, a primary feed mechanism for taking up the web that the auxiliary feed mechanism draws from the source of supply, a device for keeping the web taut, and means controlled by said device for governing the time of operation of said auxiliary feed mechanism.

3. A web-feeding mechanism comprising an auxiliary feed mechanism that draws the web from a source of supply intermittently, an intermittently operating primary feed mechanism for feeding the web that said auxiliary feed mechanism draws from the source of supply, and a web-tightening means separate and distinct from the auxiliary feed mechanism which governs the time of operation of said auxiliary feed mechanism.

4. A web-feeding mechanism comprising an intermittently operating auxiliary feed mechanism that draws a web from a source of supply, a primary feed mechanism for feeding the web in a certain direction, a take-up device arranged intermediate said feed mechanisms for keeping the web taut, a re-winding roll onto which the web is wound, means for driving said re-winding roll, and a tension device arranged intermediate said re-winding roll and the primary feed mechanism for keeping the web taut.

5. In a web-feeding mechanism, a feed roll provided with a clutch member, a driving clutch member, friction devices interposed between said members, an actuated lever, a link connected to said actuated lever for rotating the driving clutch member in one direction, means for varying the throw of said link, and mechanical means for imparting an intermittent movement to said lever.

6. In a web-feeding mechanism, a feed roll, a driven clutch member adapted to move with said roll, a coöperating driving clutch member, friction devices interposed between said members, an actuated lever, an adjustable device on said actuated lever, a member connected to said adjustable device for oscillating the driving clutch member, and means for rocking said lever intermittently.

7. In a web feeding mechanism, a driven feed roll, a coöperating idle roll, pivotally mounted arms which carry said idle roll, a shaft extending longitudinally of said idle roll, links connecting said shaft to the ends of said arms, stationary brackets, springs interposed between said arms and

said brackets for forcing said idle roll into engagement with the driven roll, and handles connected to said shaft and provided with cam-shaped ends that engage said brackets and thus move the idle roll away from the driven roll when said handles are moved in one direction.

8. In a web-feeding mechanism, a guide roller around which the web passes, pivotally mounted arms carrying said guide roller, pivotally mounted guide rods, and adjustable devices mounted on said guide rods for retaining said roller in a certain position.

9. In a web-feeding mechanism, a guide roller, pivotally mounted arms in which the shaft of said guide roller is journaled, pivotally mounted guide rods, and adjustable devices mounted on said guide rods and connected to the shaft of said roller for retaining the roller in a certain position.

10. In a web-feeding mechanism, a guide roller, pivotally mounted arms in which the shaft of said guide roller is journaled, blocks loosely mounted on said shaft, pivotally mounted guide rods passing through openings in said blocks, and means for adjustably connecting said blocks to said guide rods, the guide rods being provided with graduations for enabling the operator to accurately adjust the blocks thereon.

11. In a web-feeding mechanism, intermittently operated feed rolls, means for varying the degree of movement imparted to said rolls, a re-winding roll, means for driving the re-winding roll continuously, a tension roll over which the web passes, and spring-actuated arms carrying said tension roll.

12. In a web-feeding mechanism, a supporting frame that is adapted to be connected to the bed plate of a printing machine, intermittently operated feed rolls carried by said frame, arms depending from said frame, a re-winding roll shaft carried by said arms, spring-actuated arms arranged adjacent one end of said frame, and a tension roll carried by said arms.

13. In a web-feeding mechanism, a feed roll, a continuously rotating member, a clutch member slidingly mounted on the shaft of the feed roll for connecting and disconnecting said roll from said continuously rotating member, a take-up roll around which the web passes, and means controlled by said take-up roll for governing the movement of said clutch member.

14. In a web-feeding mechanism, a feed roll, a continuously rotating member, a clutch member for connecting and disconnecting said roll from said continuously rotating member so as to draw the web from the source of supply intermittently, a take-up roll around which the web passes, yielding means for moving said take-up roll in one direction, independent means for feeding the web so as to move the take-up roll in the opposite direction, and means for causing the clutch member to become operative and inoperative according to the position of said take-up roll.

15. In a web-feeding mechanism, a feed roll, a driving member, a clutch member for connecting and disconnecting said roll from said driving member, a shaft provided with arms that support a take-up roll around which the web passes, means whereby said shaft is rocked in opposite directions during the operation of feeding the web so as to cause said take-up roll to keep the web taut, and means for transmitting the movement of said shaft to said clutch member.

16. In a web-feeding mechanism, a feed roll, a driving member, a clutch member for connecting and disconnecting said roll from said driving member, a shaft provided with arms that support a take-up roll around which the web passes, means whereby said shaft is rocked in opposite directions during the operation of feeding the web so as to cause said take-up roll to keep the web taut, a vertical shaft provided with a device for actuating said clutch member, and a spring rod connected to said vertical shaft and to the shaft which carries said take-up roll supporting arms.

17. In a web-feeding mechanism, a feed roll, a drive member, a clutch member for connecting and disconnecting said roll from said drive member, a vertical shaft provided with a device for actuating said clutch member, a spring-actuated shaft arranged at approximately right angles to said vertical shaft, a spring rod connected to said vertical shaft and to an arm on said spring-actuated shaft, and a take-up roll carried by arms which are secured to said spring-actuated shaft.

18. In a web-feeding mechanism, a driven feed roll, a coöperating spring-pressed roll, reciprocating devices having inclined faces that engage the shaft of the spring-pressed roll for moving it away from the shaft of the driven roll so as to enable the web to be inserted between said rolls, and manually operated means for actuating said reciprocating devices.

19. In a web-feeding mechanism, a driven feed roll, a coöperating spring-pressed roll, reciprocating devices having inclined faces that engage the shaft of the spring-pressed roll for moving it away from the shaft of the driven roll so as to enable the web to be inserted between said rolls, and manually operated means for actuating said reciprocating devices, said devices having notches which receive the shaft of said spring-pressed roll so as to retain it in its adjusted position.

20. In a web-feeding mechanism, a sup-

port provided with arms, a web-supply roll shaft mounted in said arms, a rod extending between said arms, a device loosely mounted on said rod and provided with a yielding arm that bears upon the exterior of the web-supply roll, a member loosely mounted on said rod and provided with portions that embrace said device, and a spring for holding said member in frictional engagement with said support and for exerting upward pressure on said device.

21. A web-feeding mechanism comprising a support that is adapted to be connected to the bed plate of a printing machine, an auxiliary feed mechanism carried by said support for drawing a web intermittently from a supply roll, a take-up roll carried by said support, a frame adapted to be connected to the opposite end of the bed plate of the printing machine, an intermittently operating primary feed mechanism carried by said frame, a rewinding roll carried by said frame, and a tension roll mounted in spring-actuated arms that are connected to said frame.

22. A web-feeding apparatus comprising auxiliary feed rolls, a drive member for one of said rolls, a take-up roll around which the web passes, means controlled by said take-up roll for causing said drive member to be connected to and disconnected from said feed roll so as to draw a web from a source of supply intermittently, and independent means for feeding the web which said auxiliary rolls draw from the source of supply.

23. In a printing machine, printing mechanism, an auxiliary feed mechanism arranged between said printing mechanism and a web supply roll for drawing the web from said supply roll, a primary feed mechanism for feeding the web past said printing mechanism, a take-up roll arranged between the auxiliary feed mechanism and the printing mechanism, and means controlled by said take-up roll for causing the auxiliary feed mechanism to operate intermittently.

24. In a printing machine, printing mechanism, an auxiliary feed mechanism arranged between said printing mechanism and a web supply roll for drawing the web from said supply roll, a primary feed mechanism for feeding the web past said printing mechanism, a take-up roll arranged between the auxiliary feed mechanism and the printing mechanism, and means controlled by said take-up roll for causing the auxiliary feed mechanism to become operative after the primary feed mechanism has fed the web which said auxiliary feed mechanism draws off the supply roll, said take-up roll also causing the auxiliary feed mechanism to become inoperative after it has drawn a portion of the web from the supply roll.

25. In a printing machine, printing mechanism, an intermittently operating auxiliary feed mechanism arranged between said printing mechanism and a web supply roll for drawing short lengths of web therefrom, a take-up roll around which the web passes, a rock-shaft provided with arms that carry said take-up roll, means controlled by said rock shaft for causing said auxiliary feed mechanism to become operative and inoperative, and an intermittently operating primary feed mechanism for feeding the web past the printing mechanism, the pulling force which the web exerts on said take-up roll operating to turn said rock shaft into such a position that the auxiliary feed mechanism becomes operative.

26. In a printing machine, printing mechanism, an intermittently operating auxiliary feed mechanism arranged between said printing mechanism and a web supply roll for drawing short lengths of web therefrom, a take-up roll around which the web passes, a rock shaft provided with arms that carry said take-up roll, means controlled by said rock shaft for causing said auxiliary feed mechanism to become operative and inoperative, and an intermittently operating primary feed mechanism for feeding the web past the printing mechanism, the pulling force which the web exerts on said take-up roll operating to turn said rock shaft into such a position that the auxiliary feed mechanism becomes operative, and means for turning said rock shaft in the opposite direction so as to cause said auxiliary feed mechanism to become inoperative.

27. A printing machine provided with a bed plate, a support detachably connected to one end of said bed plate, means on said support for carrying a web supply roll, an auxiliary web feeding mechanism and a web take-up mechanism carried by said support, a frame detachably connected to the opposite end of the bed plate of the machine, a primary web feeding mechanism carried by said frame, and a tension roll and a web-re-winding roll carried by said frame.

In testimony whereof I hereunto affix my signature in the presence of two witnesses, this 17th day of April 1909.

MILES H. MANN.

Witnesses:
EUGENE PEARSON,
WILLIAM H. MILLER.