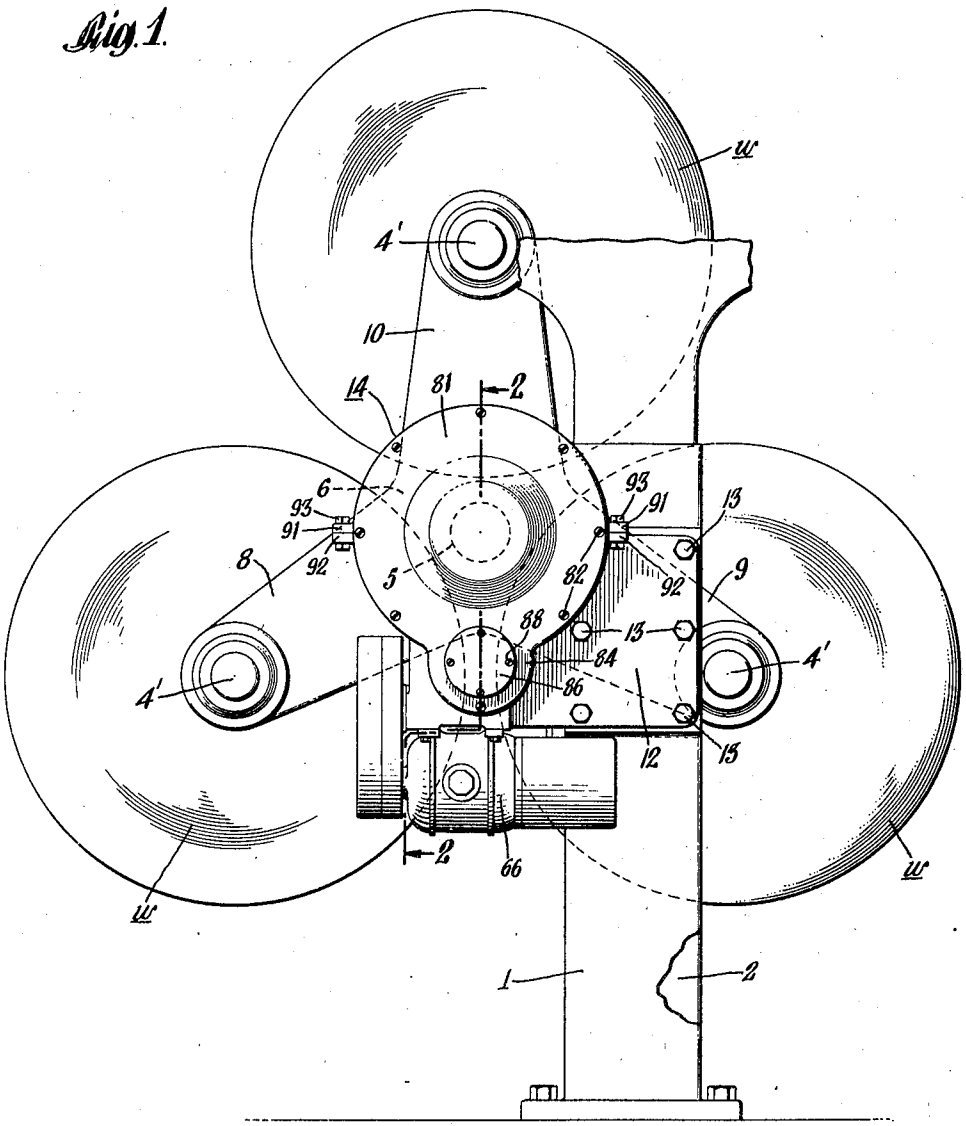
May 12, 1942. D. G. BERNARD 2,282,391

MAGAZINE REEL

Filed May 6, 1939 3 Sheets-Sheet 1

Fig. 1.



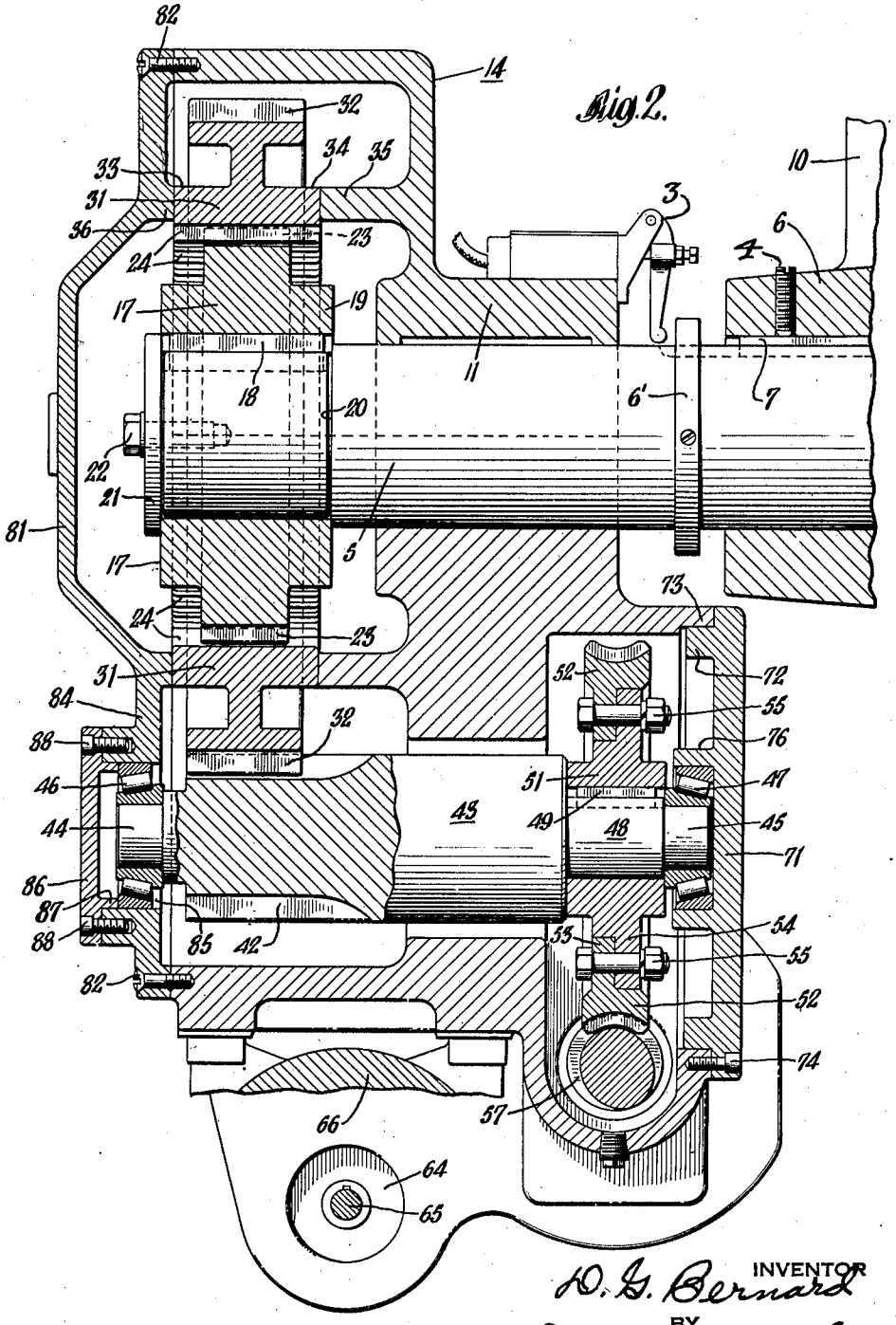
INVENTOR
D. G. Bernard
BY
Morgan Finnegan & Durham
ATTORNEYS

May 12, 1942. D. G. BERNARD 2,282,391

MAGAZINE REEL

Filed May 6, 1939 3 Sheets-Sheet 2

Fig. 2.



INVENTOR

D. G. Bernard

BY

Morgan Finnegan & Durham

ATTORNEYS

May 12, 1942. D. G. BERNARD 2,282,391

MAGAZINE REEL

Filed May 6, 1939 3 Sheets-Sheet 3

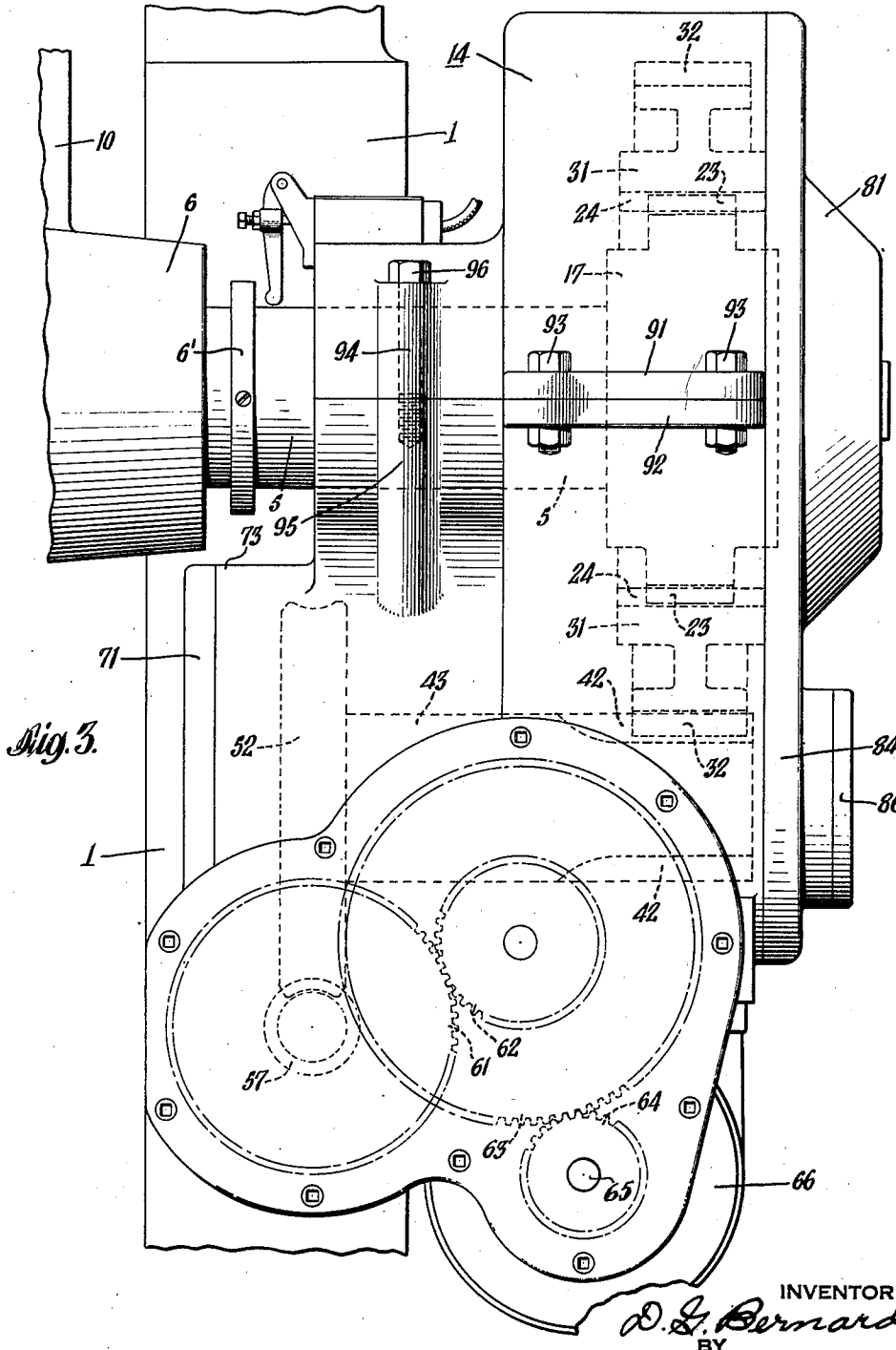


Fig. 3.

INVENTOR
D. G. Bernard
BY
Morgan Finnegan & Durham
ATTORNEYS

Patented May 12, 1942

2,282,391

UNITED STATES PATENT OFFICE

2,282,391

MAGAZINE REEL

David G. Bernard, Chicago, Ill., assignor to The Goss Printing Press Company, Chicago, Ill., a corporation of Illinois

Application May 6, 1939, Serial No. 272,079

7 Claims. (Cl. 242—64)

The invention relates to new and useful improvements in web feeding and pasting mechanisms for rotary printing presses, and more particularly to new and useful improvements in means for rotating a magazine reel to bring web rolls successively to the loading, feeding and idle or waiting stations.

Objects and advantages of the invention will be set forth in part hereinafter and in part will be obvious herefrom, or may be learned by practice with the invention, the same being realized and attained by means of the instrumentalities and combinations pointed out in the appended claims.

The invention consists in the novel parts, constructions, arrangements, combinations and improvements herein shown and described.

The accompanying drawings, referred to herein and constituting a part hereof, illustrate one embodiment of the invention, and together with the description, serve to explain the principles of the invention.

Of the drawings:

Fig. 1 is a side elevation of a magazine web roll reel embodying the invention;

Fig. 2 is an enlarged vertical section on line 2—2 of Fig. 1; and

Fig. 3 is an elevation looking at Fig. 2 from the rear.

Objects of the invention are to provide a magazine reel mechanism for fast rotary printing presses having sturdy, compact, simple and efficient means for moving the web rolls successively from the loading station to the idle or waiting station and thence to the web feeding station, and to provide therewith and therein for the axial relative movement of the shaft and spider arms carrying the web rolls, to effect registration of a web with the printing couples of the press; to provide such mechanism located compactly on the press frame adjacent to the shaft of the magazine reel, with relatively simple and direct driving gearing from a motor to the shaft, with the necessary speed reduction; to provide simple and sturdy means in said drive to allow for the required axial movement of the reel to register the web in the press; to provide such a mechanism all adjacent to the reel shaft and enclosed within a housing whereby the entire gearing may run in a lubricant bath. To this end the shaft carrying the pairs of web roll supporting arms is journaled to be axially movable and positionable for web registration, and to be driven rotatively, from time to time, to advance the web rolls from one station to another, the present invention including novel intermittently-operable driving means therefor, said means comprising a wheel fixed on the end of said shaft, this wheel having peripheral teeth engaging with the inner face of an encircling spur gear ring so that the wheel and gear ring must rotate together, the shaft and its fixed wheel having axial movement without passing out of mesh with the gear ring, the gear ring at the same time being held against axial movement. The drive is direct from a motor by a speed reduction gear train onto the spur gear ring, the entire gearing being enclosed in a lubricant-containing housing. It will be understood that the foregoing general description and the following detail description as well are exemplary and explanatory but are not restrictive of the invention.

Referring now in detail to the embodiment of the invention illustrated by way of example in the accompanying drawings, vertical supporting frame members 1 and 2 are provided, which may be part of the sub-frame of the press. Fixed to and supported by these frame members, at either side of the press, are structures in which are journaled the ends of a shaft 5, to which shaft are keyed by a key 7 hubs 6. Integral with the hubs are pairs of web roll supporting arms 8, 9 and 10, extending outwardly from the hubs 6, the web rolls being journaled between the arms of each pair of arms. The hubs 6 are movable along shaft 5 to accommodate web rolls of different lengths, and are held in position on the shaft by suitable means, such as clamping screws 4 clamping the hub to the shaft. A ring 6' is adjustably movable along shaft 5 for the purpose of operating limit switch 3. Journal mountings 4' for the web rolls w are carried on the respective pairs of arms, and these may be of any known or suitable form, so far as concerns the present invention, and usually will include web roll engaging and releasing devices, also braking or tension-regulating means, if desired. The means for axially moving and positioning the shaft 5 to effect registration of the web through the press may likewise be of any known or suitable form, so far as concerns the present invention, and may be applied to the opposite end of the shaft from the mechanism of the present invention.

The shaft 5 is shown journaled in a bearing 11, formed as part of housing 14 which encloses the driving mechanism for the shaft. The housing is supported on the frame 1 by means of an integral plate 12, fixed to the housing and fastened to frame member 1 by bolts 13. The shaft 5 extends beyond the bearing 11, and on the pro-

jecting end thereof is fixed a gear 17, by means of a key 18. Hub 19 of gear 17 on its inner side abuts against a shoulder 20 formed on shaft 5, and a flat, circular plate 21 abuts on the outer face of hub 19 and is fastened to the outer flat end of shaft 5 by a screw bolt 22. On the periphery of gear 17 are formed a plurality of teeth 23 which project into corresponding axially-disposed, elongated grooves or recesses 24 formed in the inner cylindrical face 25 of a gear ring 31 which encircles the gear 17. The grooves 24 are somewhat longer than the breadth of the gear teeth, thus permitting axial movement of gear 17 and shaft 5 without disturbing the tooth connection which causes the wheel and gear ring to rotate together. Ring 31 has on its periphery spur gear teeth 32, from which the gear ring, gear 17 and shaft 5 are rotated. Ring 31 is held against axial movement, and for this purpose it has at either side annular projections 33 and 34, having flat, circular outer faces. Abutting on the flat inner face of projecting ring 34 is the flat face of an inwardly-extending annular projection 35, which is a part of housing 14, and abutting on the outer flat face 33 of the ring 31 is the flat face of an inwardly-extending annular projection 36 which is likewise a part of cover plate 81. Thus gear ring 31 is rotatively driven from a motor, but is held against axial movement by rings 35 and 36, and by reason of the engagement of teeth 23 of inner gear 17 with the elongated grooves 24 in the ring 31, shaft 5 is rotated with gear ring 31, while inner gear 17 and shaft 5 are also axially movable relatively to gear ring 31.

Meshing with the spur gear teeth 32 of gear ring 31 is a pinion 42, formed in one end of a cylinder 43, which has reduced cylindrical ends 44 and 45 journaled, respectively, in roller bearings 46 and 47 mounted in the housing structure. Fixed on a reduced portion 48 of cylinder 43 by a key 49 is the hub 51 of a worm wheel, the wheel having a worm gear ring 52, hub 51 and gear ring 52 having side-by-side flange portions 53 and 54, clamped together by bolts 55. Meshing with worm wheel 52 is a worm 57, journaled in the housing structure 14. Fixed to rotate with worm wheel 57 is a large gear 61, which meshes with a small gear 62, fixed to rotate with a large gear 63, which meshes with a pinion 64 fixed on the shaft 65 of a motor 66. The housing casing which encloses all the gearing and the journal bearing of the shaft 5 has on its inner side a large opening closed by a circular plate 71, which has an inner annular flange 72, the edge portion of the inner face of plate 71 and the periphery of flange 72 fitting within an annular shoulder in the outwardly-extending cylindrical portion 73, formed in the housing wall, plate 71 being held in place by screw bolts 74. Integral with the inner face of plate 71 is an inwardly-extending annular projection 76, which forms the seat for the roller bearing 47. The exterior side of the housing 14 has a large opening opposite the end of the gearing which is mounted on and is concentric with shaft 5, which opening is closed by a plate 81, held in position by screw bolts 82, and integral with and as an extension of the lower part of plate 81 is a plate 84, having a cylindrical, outwardly-extending, flanged opening 85, within which is seated roller bearing 46. Opening 85 is closed by a flat end plate 86, having on its inner face an annular, projecting ring 87, which fits within the opening 85, the inner flat end of the ring constituting the abutment for the outside race ring of the roller bearing. The outer portion of the flat inner face of the plate 84 abuts against the flat outer face of the cylindrical part 84 of the housing, and plate 86 is held in position by screw bolts 88. The housing construction just described conduces to simplicity and economy of manufacture and to ease and quickness in assembling. For structural and assembly purposes, the cylindrical part of the housing 14 may be further divided horizontally into upper and lower parts, the upper part being supported on the lower, the parts having abutting flanges 91 and 92 at either side, which are bolted together by bolts 93. The inner cylindrical part of the housing, which forms the journal bearing for the shaft is integral with the main cylindrical part, just referred to, the upper and lower halves of this part have formed thereon at either side transverse protuberant lugs 94 and 95, abutting on each other, and are fastened together by screw bolts 96.

The invention in its broader aspects is not limited to the specific mechanisms shown and described but departures may be made therefrom within the scope of the accompanying claims without departing from the principles of the invention and without sacrificing its chief advantages.

What I claim is:

1. A magazine reel mechanism for rotary printing presses including in combination a supporting frame, a shaft journaled in said frame and having pairs of arms fixed thereon, said pairs of arms having means for rotatively supporting a web roll, said shaft being axially movable to effect registry of the webs in the press, means for rotating said shaft to move the web rolls from station to station, said means including a motor, gearing driven by said motor including a gear wheel concentric with said shaft, and a member fixed to said shaft and located within said gear wheel and connections between said member and gear wheel whereby they rotate together but are relatively movable axially.

2. A magazine reel mechanism for rotary printing presses including in combination a supporting frame, a shaft having pairs of arms fixed thereon, said pairs of arms having means for rotatively supporting a web roll, means for rotatively supporting the shaft on said supporting frame and permitting axial movement of the shaft to register a web in the press and means for effecting rotation of the shaft to move the roll-supporting arms from station to station, said means comprising a toothed wheel fixed to one end of the shaft, a spur gear ring about said toothed wheel, the inner surface of the gear ring having axially-disposed recesses engaging the teeth on the periphery of said wheel, means for preventing axial movement of said gear ring, whereby said toothed wheel and gear ring rotate together but the wheel is movable axially relative to the gear ring, a pinion meshing with said gear ring, a worm wheel fixed to rotate with the pinion, a worm meshing with the worm wheel, a motor and reduction gearing between said motor and worm, and a housing enclosing said gearing and the bearing for said shaft.

3. A magazine reel mechanism for rotary printing presses including in combination a supporting frame, a shaft having pairs of arms fixed thereon, said pairs of arms having means for rotatively supporting a web roll, means for rotatively supporting the shaft on said supporting frame and permitting axial movement of the shaft to register a web in the press and means

for effecting rotation of the shaft to move the roll-supporting arms from station to station, said means comprising a toothed wheel fixed to one end of the shaft, a spur gear ring about said toothed wheel, the inner surface of the gear ring having axially-disposed recesses engaging the teeth on the periphery of said wheel, means for preventing axial movement of said gear ring, whereby said toothed wheel and gear ring rotate together but the wheel is movable axially relative to the gear ring, a pinion meshing with said gear ring, a worm wheel fixed to rotate with the pinion, a worm meshing with the worm wheel, a motor and reduction gearing between said motor and worm.

4. A magazine reel mechanism for rotary printing presses including in combination a supporting frame, a shaft having pairs of arms fixed thereon, said pairs of arms having means for rotatively supporting a web roll, means for rotatively supporting the shaft on said supporting frame and permitting axial movement of the shaft to register a web in the press and means for effecting rotation of the shaft to move the roll-supporting arms from station to station, said means comprising a toothed wheel fixed to one end of the shaft, a spur gear ring about said toothed wheel, the inner surface of the gear ring having axially-disposed recesses engaging the teeth on the periphery of said wheel, means for preventing axial movement of said gear ring, whereby said toothed wheel and gear ring rotate together but the wheel is movable axially relative to the gear ring, a motor and gearing between the motor and said gear ring.

5. A magazine reel mechanism for rotary printing presses including in combination a shaft having pairs of arms fixed thereon, said shaft being axially movable to register the web in the press, said pairs of arms having means for rotatively supporting the web roll, means for effecting rotation of the shaft to move the roll-supporting arms from station to station, said means comprising a toothed wheel fixed on the shaft, a spur gear ring about said toothed wheel, the inner surface of the gear ring having axially-disposed recesses engaging the teeth on the periphery of said wheel, means for preventing axial movement of said gear ring, whereby said toothed wheel and gear ring rotate together, but the wheel is movable axially relative to the gear ring, a motor and gearing between the motor and said gear ring.

6. A magazine reel mechanism for rotary printing presses including in combination a shaft having pairs of arms fixed thereon, said shaft being axially movable to register the web in the press, said pairs of arms having means for rotatively supporting the web roll, means for effecting rotation of the shaft to move the roll-supporting arms from station to station, said means comprising a toothed wheel fixed on the shaft, a gear ring about said toothed wheel, the inner surface of the gear ring having axially-disposed recesses engaging the teeth on the periphery of said wheel, means for preventing axial movement of said gear ring, whereby said toothed wheel and gear ring rotate together, but the wheel is movable axially relative to the gear ring, a motor and gearing between the motor and said gear ring.

7. A magazine reel mechanism for rotary printing presses including in combination a supporting frame, a lubricant-containing housing supported on a member of said frame, a shaft having pairs of arms fixed thereon, said pairs of arms having means for rotatively supporting a web roll, a bearing in said housing in which said shaft is journaled, the shaft being axially movable to register the web in the press and means for effecting rotation of the shaft to move the web roll supporting arms from station to station, said means comprising a gear wheel mounted on said shaft, the shaft and wheel being connected to rotate together while permitting axial movement of the shaft, a motor and gear connections from the motor to said gear wheel, said gear connections and gear wheel being enclosed within said housing.

DAVID G. BERNARD.