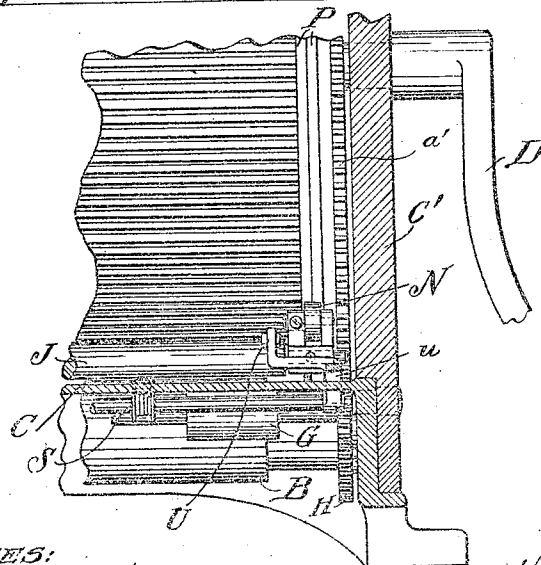
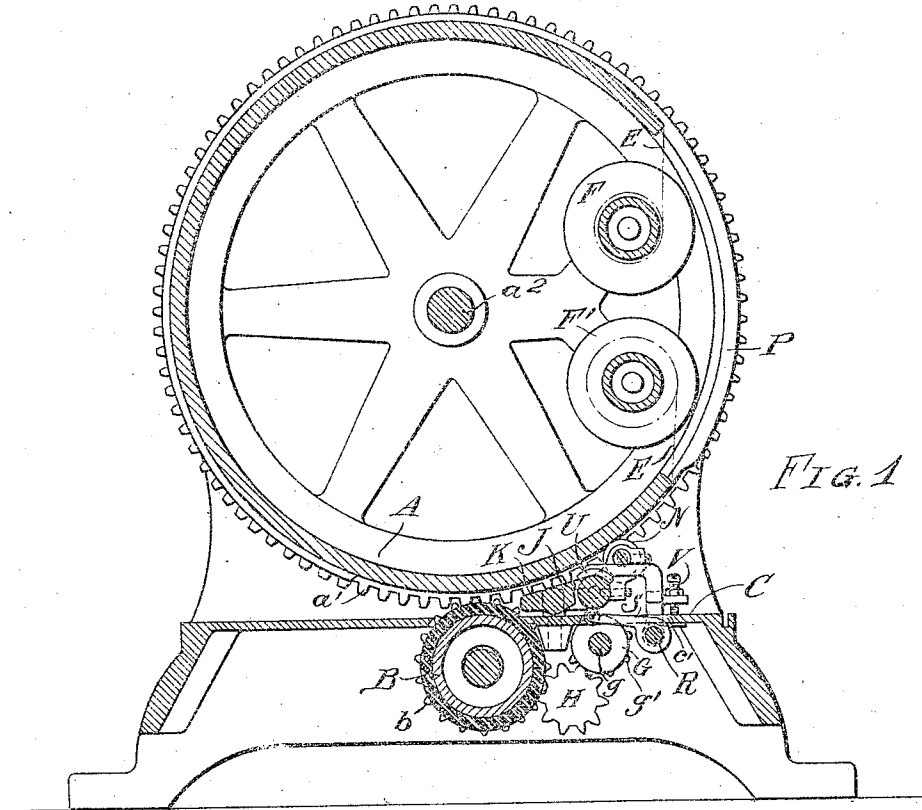


H. C. OSBORN.
PAPER FEEDING MECHANISM.
APPLICATION FILED DEC. 21, 1908.

1,023,869.

Patented Apr. 23, 1912.

2 SHEETS—SHEET 1.



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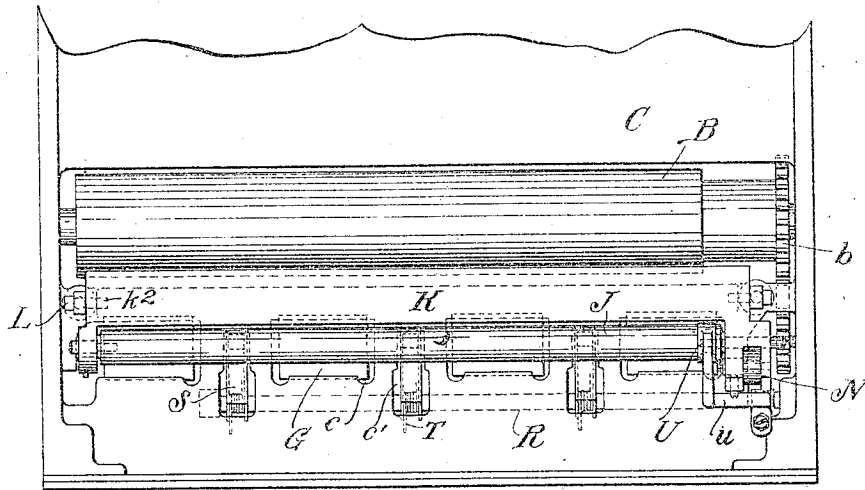


FIG. 3

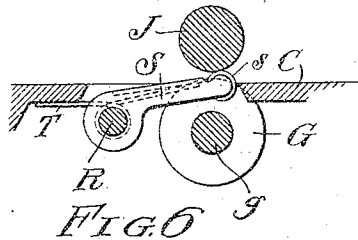


FIG. 6

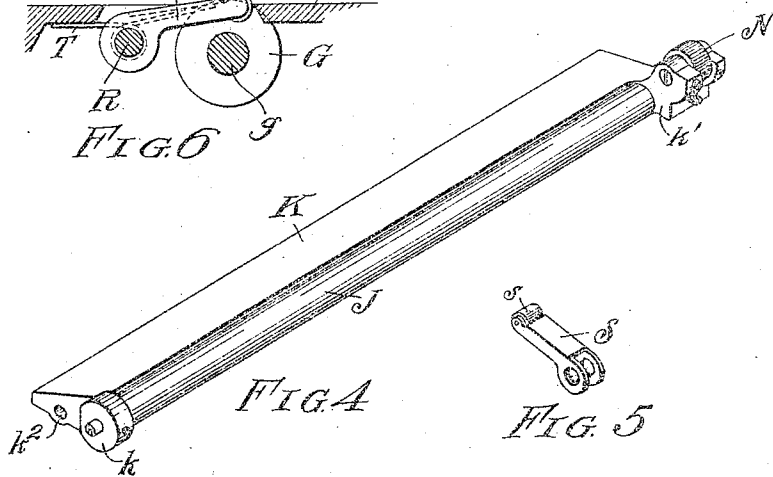


FIG. 4

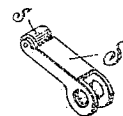


FIG. 5

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PAPER-FEEDING MECHANISM.

1,023,869.

Specification of Letters Patent.

Patented Apr. 23, 1912.

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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 Paper-Feeding Mechanism, 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 simple and effective paper feeding mechanism for printing machines.

The mechanism is well adapted for use in conjunction with rotary printing machines, using individual sheets of paper, and is shown herein as embodied in such machine, which, as illustrated, is formed to carry individual type in parallel lines and print through an inking ribbon.

One of the advantages of my invention is the absolute registration of the successive imprints, irrespective of the speed of rotation of the machine.

The invention is hereinafter more fully described and its essential characteristics set out in the claims.

In the drawings, Figure 1 is a vertical section through a rotary printing machine of the type known as the Multigraph, equipped with my paper feed; Fig. 2 is a sectional front elevation of a portion of such machine; Fig. 3 is a plan below the printing drum; Fig. 4 is a perspective of the upper feed roller; Fig. 5 is a perspective of one of the stopping fingers; Fig. 6 is a sectional detail showing the feed rollers on an enlarged scale.

Referring first to the printing couple shown; this will be seen to consist of a rotary drum A, having on its surface longitudinal rails adapted to carry parallel lines of individual type, and cooperating with its drum a platen B which is shown as geared to the drum by gears *b* and *a'*. The platen projects upwardly through a horizontal bed C which constitutes a feed table. The drum may be mounted on a shaft *a*² journaled in frame standards, one of which is shown at C', and any suitable means, as, for example, a crank D may be employed for rotating the drum. The type may be inked in any suitable manner,—the mechanism shown consisting of a ribbon E adapted to extend over the face of the type and having its wound up ends carried on spools F and F' journaled within the drum.

My invention, in the embodiment shown, provides a paper feed adapted to cooperate with the printing couple described, and feed paper thereto accurately and under perfect control. This paper feed will now be described.

Suitably journaled in the frame of the machine is a lower feed roller composed, as shown, of elastic sleeves G mounted on a shaft *g*, the sleeves being separated to allow stop fingers to stand between them, as hereinafter described. A suitable gear *g'* on a shaft *g* meshes with a gear H which meshes with the gear *b* on the platen so that the lower feed roller is constantly driven. This lower feed roller occupies an opening *c* in the feed table,—the upper surface of which is approximately tangent to the roller.

Above the roller G is an upper feed roller J which is shown as a continuous metal roller extending across the various elastic sleeves G. This roller is carried by a stiff bar K extending parallel therewith, the roller being journaled in an ear *k* extending from near one end of the bar and an arm *k'* extending from near the other end. The bar is pivoted to the frame of the machine behind the roller by studs L which enter openings *k*² in the ends of the bar. The arm *k'* at one end of the bar K extends forwardly beyond the roller J and is there bifurcated and there carries a roller N. This roller is in position to be acted upon by one or more cams P which are adjustably carried by the drum,—the cams being a portion of rings extending around the drum. Two cams are shown in Fig. 2, either of which may act on the roller N.

Loosely journaled on a shaft R parallel with the feed rollers are fingers S which extend backwardly toward the platen and lie between the elastic sections G of the under feed roller and occupy openings *c'* in the feed table. These fingers may be made of sheet metal bent into a channel shape, as shown in Fig. 5. They are pressed upwardly at their rear ends by springs T, which surround the shaft R and have their ends bearing against the under side of the fingers and the under side of the table. Each roller carries near its rear end a small roller designated *s* which projects upwardly slightly above the plane of the top of the finger. The rollers accordingly bear against the under side of the upper feed roller J. The feed roller J is normally

stationary, such effect being insured by a stationary brake shoe U held by a suitable arm *u* which is shown as loosely mounted on the shaft R and adjusted by a set screw V. The normal position of the roller is its upward position, as shown in Fig. 1. It is given this position by the force of the springs T, which are sufficient to keep the roller normally elevated.

With the parts as above described, paper may be passed by hand rearwardly over the feed table, but meets a definite stop by the rollers *s*, which rest with spring pressure against the roller J, which, as stated, is held stationary. When, however, one of the cams P engages the roller N, the roller J is thereby forced downwardly and released from its brake and brought into active coöperation with the constantly rotating sleeves G. The roller J at once begins to rotate and the rollers *s* to rotate with it, and the paper is fed rearward until it comes between the platen and printing drum and is printed. The adjustment of the cam ring or rings about the drum determines the time of beginning the paper feed, which is regulated according to the matter on the drum and according to the letter head.

It will be seen that by having the paper feed rollers caused to grip positively instead of by spring action, the feeding of the paper with each rotation of the drum starts when exactly the same point on the drum is in a given position, without regard to the speed of rotation. Thus accurate registration is obtained and work on the drum may be brought very close to the ends of the paper, if desired. The gripping of the rollers is positive, and insures the paper being fed. At the same time the small rollers *s* make perfect stops for the paper so that it is impossible by any ordinary hand pressure to force a sheet rearwardly of these rollers when they are in stopping position.

It is to be noted that the line of contact of the rollers *s* and the roller J is slightly rearward of the line of contact of the roller J and the roller G so that the sheet is invariably stopped in proper position to be gripped by the rollers J and G when the cam forces down the upper roller. As appears more clearly in Fig. 6, the upper surface of the arms S, when in normal position, is preferably slightly above the topmost line of the roller G, while the rollers *s* project slightly above the tops of the arms. The roller G preferably projects slightly above the plane of the table. Accordingly the stop rollers positively engage the paper while the roller G is normally out of engagement. The term "normal" is used herein for convenience as referring to the position or period of rest, and without regard to whether that is for the major or minor portion of the time of operation.

Having thus described my invention, what I claim is:

1. In a paper feeding device, the combination with a pair of coacting feed rollers adapted to grip paper between them, one of which rollers is adapted to be at rest or rotated, of a stop roller pressed against said one, and partaking of its condition of rest or motion.
2. In a paper feeding device, the combination with a feed roller adapted to be stationary or rotated, of a stop roller spring pressed thereagainst and partaking of its condition of rest or motion, a second feed roller, and means for bringing said feed rollers into active coöperation while preserving the spring pressed engagement between the stop roller and the first mentioned feed roller.
3. In a paper feed, the combination of a feed roller, a stop roller pressed thereagainst, means for holding the feed roller normally stationary whereby the stop roller is also normally stationary, and a second feed roller adapted to engage the first feed roller on the same side as the stop roller, and means for concurrently causing said feed rollers to bear on each other and allow the first mentioned roller to rotate.
4. The combination of two coöperating feed rollers, means for driving one, means for holding the other stationary, means for relieving the hold mentioned, and a stop roller coöperating with the normally stationary roller.
5. In a paper feeding device, the combination of a constantly driven feed roller, a feed roller normally stationary and out of contact therewith, means for moving the last mentioned roller into engagement with the first mentioned roller, and a bodily movable roller in constant engagement with the normally stationary roller and partaking of its condition of rest or motion and adapted to form with it a stop for the paper.
6. The combination with a printing couple, of a constantly driven feed roller, a shiftable feed roller adapted to coöperate therewith, and a suitable stop spring pressed into constant engagement with the shiftable feed roller and having a roller at the point of engagement.
7. The combination with a printing couple, of a constantly driven feed roller, a shiftable feed roller adapted to coöperate therewith, a cam on one member of the couple serving to shift said shiftable roller into engagement with the feed roller, a suitable stop spring pressed into constant engagement with the shiftable feed roller and comprising a roller carried by an arm.
8. The combination with a printing couple, of a pair of feed rollers, one of which is shiftable and the other of which is constantly driven and is made of a series of sec-

tions, arms occupying the space between said sections and carrying rolling stops adapted to engage the shiftable roller, and spring means acting on said arms to constantly maintain their stops in engagement with the shiftable roller.

9. The combination of a normally stationary feed roller, a stop roller spring pressed into engagement therewith and adapted to partake of its condition of rest or motion, a drive feed roller, means for bringing said feed rollers into active co-operation, and for allowing the normally stationary roller to rotate and the stop roller to rotate with it.

10. The combination of a pair of feed rollers, one of which is shiftable, means for bringing them into active co-operation or allowing them to stand separated, means for driving one of said feed rollers, an arm, a roller carried by said arm, and a spring acting on said arm to constantly press the last-mentioned roller against the shiftable one of the feed rollers.

11. The combination of a sectional feed roller, arms occupying the space between the sections, small rollers carried by said arms, a feed roller adapted to co-operate with the sectional feed roller, the small rollers on the arms being held in constant engagement with said last mentioned feed roller, and means for bringing said last mentioned feed roller and the sectional roller into contact.

12. The combination with a printing couple, of a sectional feed roller geared with the couple, a cooperating feed roller, a cam on one member of the couple adapted to move the last mentioned roller into engagement with the first mentioned roller, arms occupying the spaces between the sections of the sectional roller, small rollers carried by said arms adapted to engage the movable feed roller, and springs pressing such arms in the engaging direction.

13. The combination with a printing couple, of a pair of feed rollers, one of which is shiftable, the other of which is constantly driven, spring pressed stops adapted to engage the shiftable roller, means for moving said shiftable roller into engagement with the driven roller, and a brake acting to hold the shiftable roller stationary when in normal position.

14. The combination with a printing couple, of a pair of feed rollers, means for driving one of said rollers, means for moving the other roller into and out of co-operation therewith, a brake for the last mentioned roller when out of co-operation, and a stop roller in constant engagement with the last mentioned roller.

15. The combination with a printing

couple, of a pair of feed rollers, means for driving one of said rollers, means for moving the other roller into and out of co-operation therewith, a brake for the last mentioned roller when out of co-operation, a stop roller in constant engagement with the last mentioned roller, a shaft, and an arm thereon carrying said stop roller.

16. The combination of a printing couple, a pivoted bar, a feed roller carried thereby, a roller carried by said bar, a cam on one member of the couple adapted to operate on said last mentioned roller, a driven feed roller into co-operation with which the first mentioned feed roller may come when said cam acts on its roller, and a brake to prevent rotation of the shiftable feed roller when in its normal position.

17. The combination with a printing couple, of a pair of feed rollers, means for driving one of said rollers, means for moving the other roller into and out of co-operation therewith, a brake for the last mentioned roller when out of co-operation, stop rollers in constant engagement with the last mentioned roller, a shaft, arms thereon carrying said stop rollers, said brake comprising a shoe mounted on an arm, a set screw for adjusting said arm, and springs acting individually on the arms carrying the stop rollers.

18. The combination of a rotary printing drum, a rotary under-running impression platen, a lower feed roller geared with said platen, a shiftable upper feed roller, a cam on the drum adapted to depress the upper feed roller into co-action with the lower, a suitable stop at the rear of the line of such co-action, such stop being constantly spring pressed into engagement with the upper feed roller and shifting with it.

19. The combination of a printing couple, a pivoted bar, a feed roller carried thereby, a roller carried by said bar, a cam on one member of the couple adapted to operate on said last mentioned roller, a driven feed roller into co-operation with which the first mentioned feed roller may come when said cam acts on its roller, and a stop bearing against the shiftable feed roller under spring pressure and partaking of its condition of rest or movement.

20. The combination of a pair of feed rollers, shiftable one with reference to the other, a stop-roller adapted to bear against one and be shiftable with it, and a brake for that one.

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

HENRY C. OSBORN.

Witnesses:

C. R. BECHTOL,
CURT B. MUELLER.