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G. W. GWINN

PAPER FEED MECHANISM

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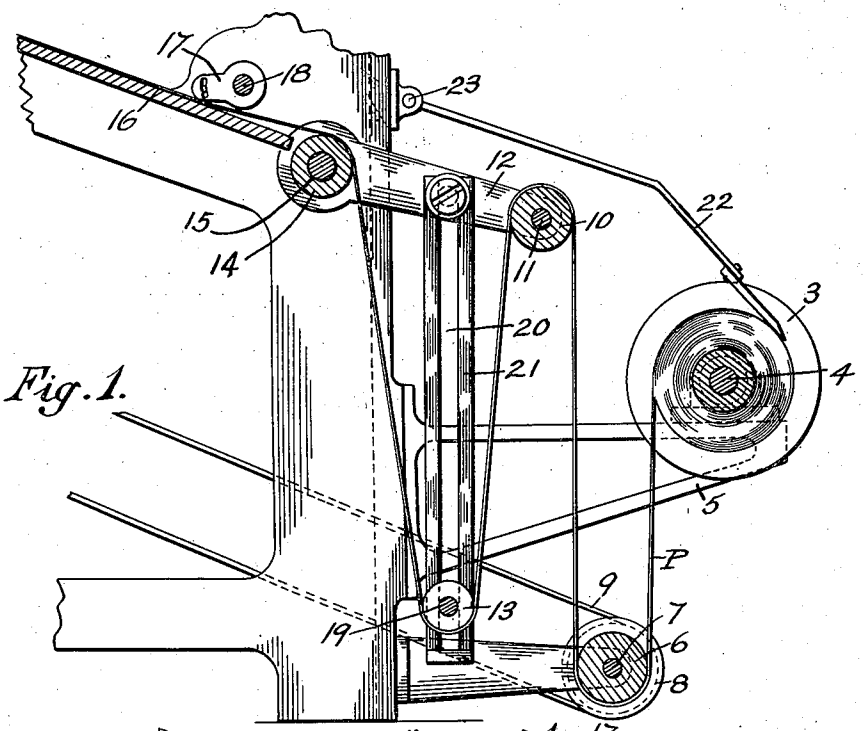


Fig. 1.

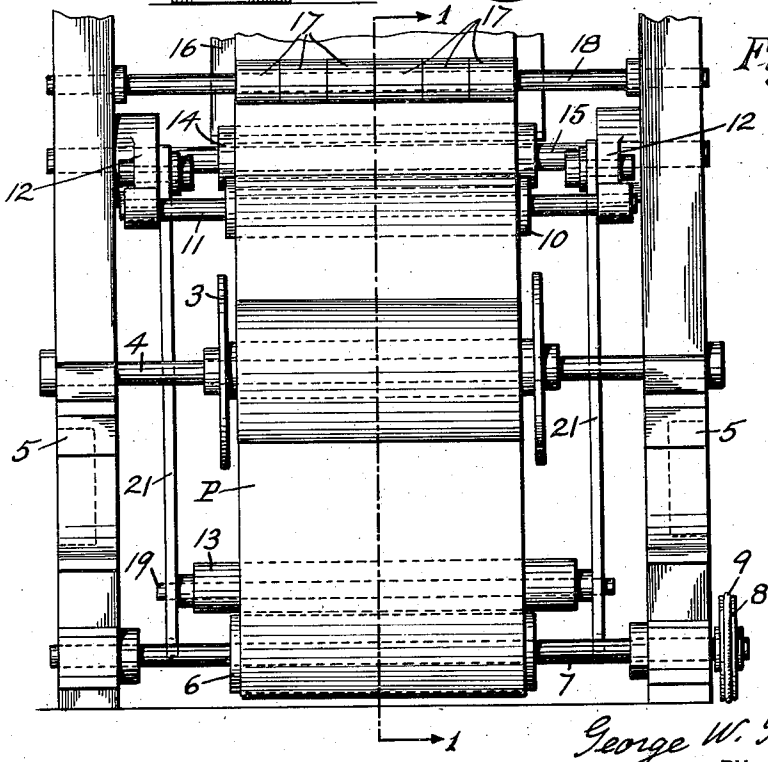


Fig. 2.

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PAPER-FEED MECHANISM.

Application filed December 8, 1925. Serial No. 74,077.

This invention relates to an improved paper feed mechanism of the type in which paper is taken from a reel and intermittently fed forward, as for wrapping articles; and its main object is the production of a mechanism which handles waxed paper and provides for conversion of continuous motion of the paper as it comes from a reel into intermittent motion as it is fed forward to wrapping mechanism, without disturbing the waxed surface of the paper. With this and other objects not specifically mentioned in view, the invention consists in certain constructions and combinations which will be hereinafter fully described and then specifically set forth in the claims hereunto appended.

In the accompanying drawings, which form a part of this specification and in which like characters of reference indicate the same or like parts, Fig. 1 is a sectional elevation of a mechanism constructed in accordance with the invention, taken on the line 1—1 in Fig. 2; and Fig. 2 is a front elevation of the same mechanism.

In carrying the invention into effect, there is provided a reel for paper in strip form, a pair of guide rollers over which the paper runs in its journey from the reel to wrapping mechanism, or other mechanism, in connection with which the invention is used. There is further provided a movable tensioning roller which engages a loop of the paper between said guide rollers, the weight of this roller being sufficient to smooth out any wrinkles or creases that may be in the paper as it comes from the paper mill where it is reeled. There is further provided a paper driving pulley engaging another loop of the paper between the guide rollers and the reel, the function of this driving pulley being to draw the paper from the reel, irrespective of what is happening to it beyond the guide rollers, where its feed is intermittent. In the best constructions contemplated, the tensioning roller and the driving pulley are so co-ordinated as to avoid slippage of the paper on said pulley, which, if permitted, would disturb its waxed surface and impair its sealing qualities which are brought into use after the present mechanism has delivered the paper to wrapping mechanism in connection with which the invention may be employed. In the best constructions contemplated also, there are provided means for avoiding overrunning of the paper as it is drawn from the reel, and means for avoiding backrunning of the paper over the guide rollers when forward feeding stops momentarily. The foregoing parts and means may be varied in construction within the scope of the claims, for the particular mechanism selected to illustrate the invention is but one of numerous possible concrete embodiments of the same. The invention, therefore, is not to be restricted to the precise details of the specific structure shown and described.

Referring to the drawings, 3 indicates a reel for paper which is mounted on a shaft 4 extending across the mechanism and journaled in side frames 5, 5. The paper, marked P, is led downwardly from the reel 3 and under a driving pulley 6 which is fast on, and driven by, a shaft 7 journaled in the side frames 5, 5, and projecting beyond one of the latter. On its projecting end, the shaft 7 carries a pulley 8 which drives it and which is driven by a belt 9 deriving its motion from one of the shafts of the wrapping or other machine in connection with which the mechanism is used.

From the driving pulley 6, the paper is led upwardly and over a guide roller 10 which is carried by a shaft 11 journaled in bearings in arms 12, 12, one on either side of the mechanism, inside the side frames 5, 5. From the guide roller 10, the paper is led downwardly and under a movable tensioning roller 13, thence upwardly and over a second guide roller 14 carried by a shaft 15 journaled in the arms 12, 12. From the second guide roller 14, the paper is led upwardly and forwardly to a table 16 over which it runs as it is delivered to the wrapping or other mechanism wherein it is used. Coacting with the table 16 are weights 17 loosely mounted on a bar 18 extending across the mechanism and supported in the side frames 5, 5. These weights are sufficiently heavy to prevent the paper from running backward, but not sufficiently heavy to interfere with the forward feeding of the same.

It will be noted that the driving pulley 6 engages a loop of the paper between the guide roller 10 and the reel 3, and that the tensioning roller 13 engages another loop of the paper between the guide rollers 10 and 14. This tensioning roller is carried

by a shaft 19 which projects beyond both ends of the roller, and the projecting ends of this shaft engage slots 20, 20, in bars 21, 21, vertically supported by the arms 12, 12, one on either side of the mechanism. These slots of course control the direction of movement of the tensioning roller. The weight of the tensioning roller not only serves to smooth out any wrinkles or creases that may be in the paper, as hereinbefore indicated, but is also serves to control the friction between the paper and driving pulley to avoid slippage of the waxed paper on said pulley, and marring of its surface.

Means are also provided for avoiding overrunning of the paper from the reel as it is drawn therefrom by the driving pulley 6; and, as shown, this means consists of a light brake 22 which is hinged to the frame of the mechanism at 23, its free end resting on the paper on the reel 3.

Assuming that the parts of the mechanism are in the positions shown in Fig. 1, and that the leading end of the strip of paper has begun to move forward over the table 16: Further forward movement of the leading end of the paper will cause said paper to lift the tensioning roller 13 without interfering with the continuous driving action of the driving pulley 6. The paper thus fed forward at a faster rate than it is being drawn from the reel comes from the loop between the guide rollers 10 and 14, previously formed. When forward feeding of the leading end of the paper stops, as when a wrapping operation is completed, the weights 17 prevent the leading end of the paper from backrunning, and the tensioning roller 13 then acts to draw the loop of paper between the guide rollers 10 and 14 down again, still maintaining the proper tension on the paper behind it and still coacting with the driving pulley 6 to maintain the proper friction between the paper and pulley to avoid marring the surface of the waxed paper. The descending tensioning roller 13 thus takes up the slack of the paper produced by the continuous but slow feeding of the paper from the reel until said roller reaches its lowermost position. It does this at the time another intermittent forward feeding movement of the leading end of the paper begins. The operation just described is then repeated.

What is claimed is:

1. In a mechanism for feeding waxed paper, the combination with a reel for supporting a strip of said paper, of a brake for said reel, a pulley for continuously pulling said strip from said reel, and means beyond said pulley and coacting with said brake to produce the required tension on said strip to cause it to be frictionally driven by said pulley without marring the waxed surface of the paper.

2. In a mechanism for feeding waxed paper, the combination with a reel for supporting a strip of said paper, of a brake for said reel, a pulley for continuously pulling said strip from said reel, and means beyond said pulley and coacting with said brake to produce the required tension on said strip to cause it to be frictionally driven by said pulley without marring the waxed surface of the paper, said means including guide rollers, a tensioning roller engaging a loop of the strip between said guide rollers, and operative connections.

3. In a mechanism for feeding waxed paper, the combination with a reel for supporting a strip of said paper, of a brake for said reel, a pulley for continuously pulling said strip from said reel, and means beyond said pulley and coacting with said brake to produce the required tension on said strip to cause it to be frictionally driven by said pulley without marring the waxed surface of the paper, said means including guide rollers, a tensioning roller engaging a loop of the strip between said guide rollers, and means for preventing back running of the strip.

4. In a mechanism for feeding waxed paper, the combination with a reel for supporting a strip of said paper, of a brake for said reel, a pulley for continuously pulling said strip from said reel, and means beyond said pulley and coacting with said brake to produce the required tension on said strip to cause it to be frictionally driven by said pulley without marring the waxed surface of the paper, said means including guide rollers, a tensioning roller engaging a loop of the strip between said guide rollers, a table over which the strip runs, and weights coacting with said table to prevent back-running of the strip.

5. In a mechanism for feeding waxed paper, the combination with a reel for supporting a strip of said paper, of a brake for said reel, a pulley for continuously pulling said strip from said reel, and means beyond said pulley and coacting with said brake to produce the required tension on said strip to cause it to be frictionally driven by said pulley without marring the waxed surface of the paper and to permit intermittent feeding of the paper beyond said means without disturbing the frictional contact of the paper with the pulley.

In testimony whereof, I have signed my name to this specification.

GEORGE W. GWINN.