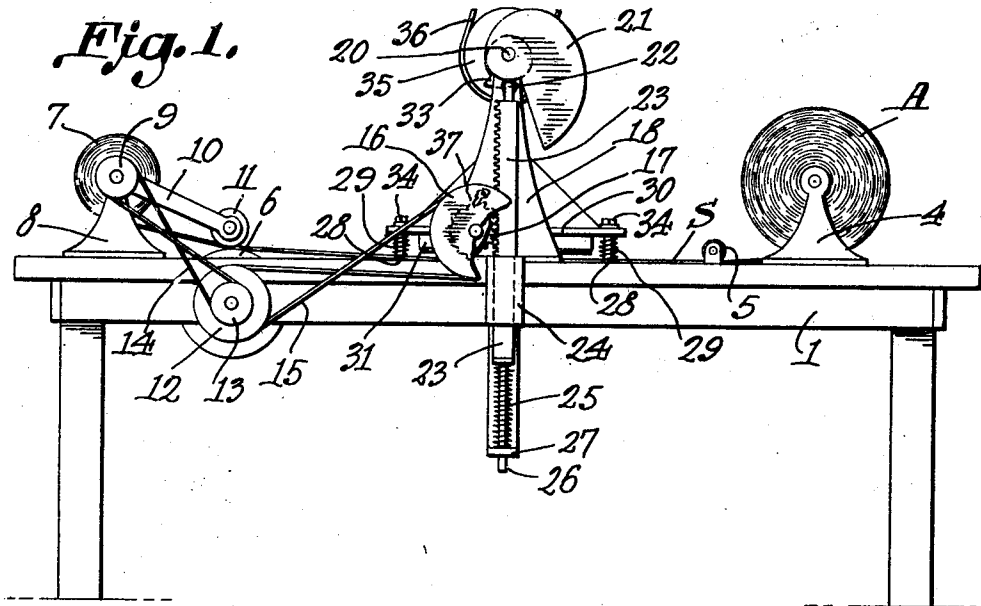
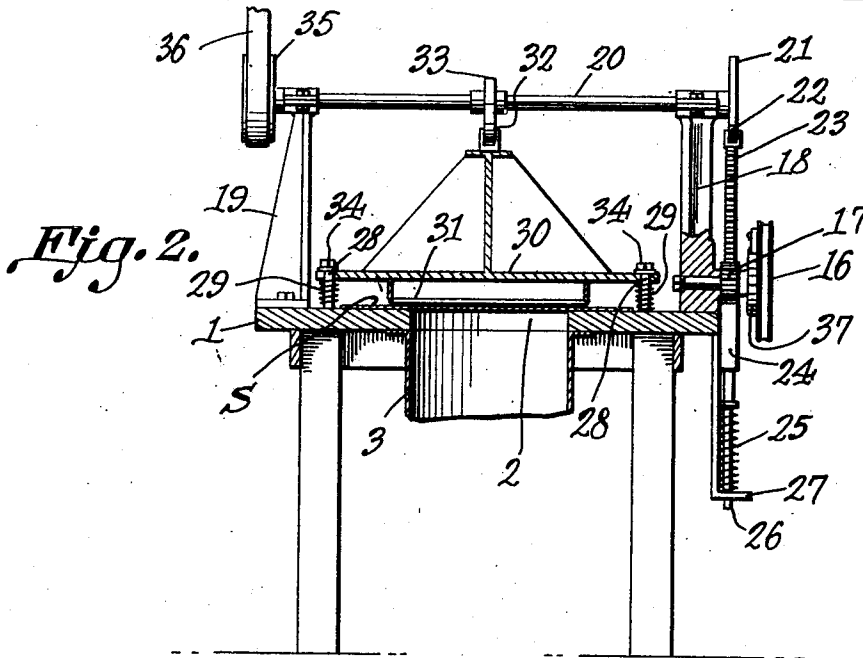
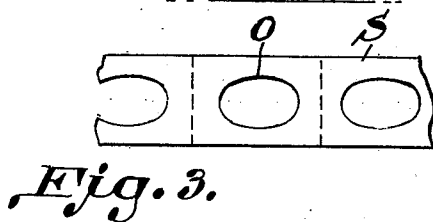


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F. H. PATTERSON
PAPER CUTTING MACHINE

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UNITED STATES PATENT OFFICE

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PAPER-CUTTING MACHINE

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This invention relates to a machine for cutting a strip of paper, being inserted there-through, the primary purpose of the machine being to cut out portions of the strip of paper at regular intervals so as to leave relatively large openings therein between which the paper forming the strip can subsequently be separated into separate sheets, each sheet having an opening.

One of the objects is to provide a cutting apparatus having simple and efficient means for properly timing the movement of the cutter with the longitudinal movement of the strip being acted upon.

With the foregoing and other objects in view which will appear as the description proceeds the invention resides in the combination and arrangement of parts and in the details of construction hereinafter described and claimed it being understood that changes in the precise embodiment of the invention herein disclosed may be made within the scope of what is claimed without departing from the spirit of the invention.

In the accompanying drawings the preferred form of the invention has been shown.

In said drawings,

Figure 1 is a side elevation of the machine, a portion of the operating mechanism being broken away.

Figure 2 is a vertical transverse section.

Figure 3 is a plan view of a portion of a strip of paper after it has been cut by the apparatus.

Referring to the figures by characters of reference 1 designates a table of any suitable proportions provided, between its ends, with an opening 2 from which is extended a suction flue 3. Bearing members 4 are mounted on the table adjacent one end for supporting a roll of paper indicated at A. The strip of paper as it is taken from this roll is extended under a guide roll 5 extending transversely across the table close to the bearing members 4. From this guide roll the strip of paper extends over the opening 2 and thence over a feed roll 6 to a take-up roll 7 journaled in bearing members 8 arranged on that end of the table remote from the members 4. The take-up roll has a pulley 9 ro-

tatable therewith and mounted to swing relative to the take-up roll and extending from the end portions thereof are arms 10 carrying a pressure roll 11 adapted to bear firmly on the strip of paper at a point directly above the feed roll 6 so as to tightly grip the paper between the rolls 6 and 11. Feed roll 6 has pulleys 12 and 13 secured to the shaft thereof and a loose belt 14 serves to transmit motion from pulley 13 to pulley 9. Another belt 15 is used for transmitting motion to the pulley 12 from a pulley 16 which rotates with a gear 17 journaled at one side of a standard 18. This standard is extended upwardly from the table and is disposed directly opposite to another standard 19. The opening 2 is located in the table between the two standards 18 and 19.

A transverse shaft 20 is journaled on the standards 18 and 19 and is provided, at one end, with a cam 21 which exerts a thrust against a roller 22 carried by the upper end of a rack 23. This rack is slidable in a guide 24 provided therefor at one side of the table 1 and constantly meshes with the gear 17. A spring 25 yieldingly supports the rack and is mounted on a stem 26 extending downwardly from the rack through a guide hanger 27 depending from standard 18.

Guide pins 28 extend upwardly from the top of table 1 and are spaced about the opening 2 so that the paper strip can lie flat on the table between these pins. On the pins are mounted springs 29 which yieldingly support a cutter head 30 from which depends a cutting blade 31 which is continuous and adapted to cut out from the strip of paper a portion thereof which will leave an opening of the desired contour and proportions. Normally the cutting edge of the blade 31 is supported above the path of the strip of paper so that said strip can slide freely thereunder.

The cutter head has a roller 32 at its upper end adapted to be engaged and actuated by a cam 33 secured to the shaft 20. Springs 29 hold the cutter head normally pressed upwardly against enlargements or heads 34 on the pins 28. Shaft 20 can be actuated by any suitable means. For example a pulley 35

can be secured thereto, this pulley being driven by a belt 36 receiving motion from any suitable source.

In practice a strip of tissue paper or the like is unwrapped from the roll A and extended along the table as shown at S, this strip passing under the guide roll 5, the cutting blade 31, and the pressure roll 11 to the take-up roll 7. When shaft 20 is rotated the cam 21 will first come against the roller 22 and thrust the rack 23 downwardly. This will cause the gear 17 and pulley 16 to rotate and motion will be transmitted through the belts and pulleys to the feed roll 6 and the take-up roll 7. As the strip is pressed against the feed roll 6 by the roll 11, the rotation of roll 6 will cause the strip S to move longitudinally a predetermined distance and at the same time that portion of the strip payed out from the roll 6 will be wound on the take-up roll 7. As belt 14 is loose, it will slip on pulley 9 to compensate for any variations in length of material to be wound on the take-up roll.

Each downward thrust of the rack 23 will act to move the strip S a predetermined distance. Following each movement of the strip S and while said strip is at rest during the return of the rack 23 to its raised or normal position, the cam 33 comes against roller 32 and thrusts the cutter head 30 downwardly. This will cause the blade 31 to cut through that portion of the strip S thereunder, thereby separating a piece of paper which is round, oval, or any other desired shape, from the balance of the strip. There is a constant light suction downwardly through the flue 3 and, therefore, when this piece has been cut from the strip S it will be carried downwardly through the flue 3. In Figure 3 openings formed in the strip S have been shown at O.

It might be added to the foregoing that, in order to permit return of the rack 23 to its raised or normal position without actuating the feeding mechanism, a suitable pawl and ratchet connection is provided between gear 17 and the pulley 16, this connection being indicated generally at 37. In other words when the rack 23 is thrust downwardly the feeding mechanism will be actuated to feed the strip S in one direction but when the rack 23 moves back to its raised or normal position, the feed mechanism will not be actuated.

What is claimed is:

1. A machine of the class described including a supporting structure having an opening, a cutting blade yieldably supported thereabove and extending around the opening, a feed roll, a take-up roll, an operating shaft, means actuated by said shaft for intermittently driving the feed and take-up rolls to convey a strip of paper or the like intermittently along the supporting structure and over the aperture, and blade operating means

actuated by said shaft during pauses in the movement of the strip for cutting out that portion of the strip supported over the opening in the supporting structure.

2. A machine of the class described including a supporting structure having an opening therethrough, a yielding supported cutting head above said structure, a cutting blade depending from said head and adapted to surround but spaced normally from the opening, a feed roll, a pressure roll cooperating therewith, a take-up roll, a belt and pulley mechanism for actuating the feed and take-up rolls, a rack yieldingly supported, pawl and ratchet mechanism for transmitting motion from the rack to the belt and pulley mechanism when the rack is moved in one direction, a drive shaft, and separate means carried by said shaft for successively actuating the rack and the cutter head to successively shift a strip of paper or the like longitudinally of the supporting structure and cut out a portion of said strip during each pause in the movement thereof.

In testimony that I claim the foregoing as my own, I have hereto affixed my signature.

FRANK HOWARD PATTERSON.