A. KRAUTH.

PROPELLING MECHANISM FOR PAPER FEEDING APPARATUS.

APPLICATION FILED FEB. 27, 1913.

1,098,509. Patented June 2, 1914.

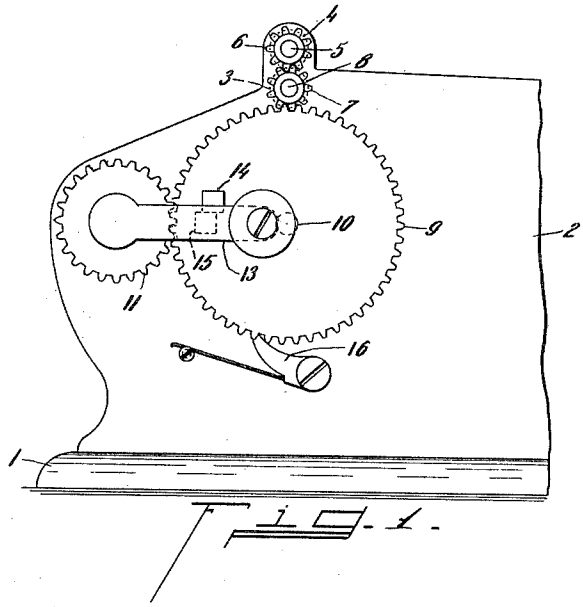

Fig. 1.

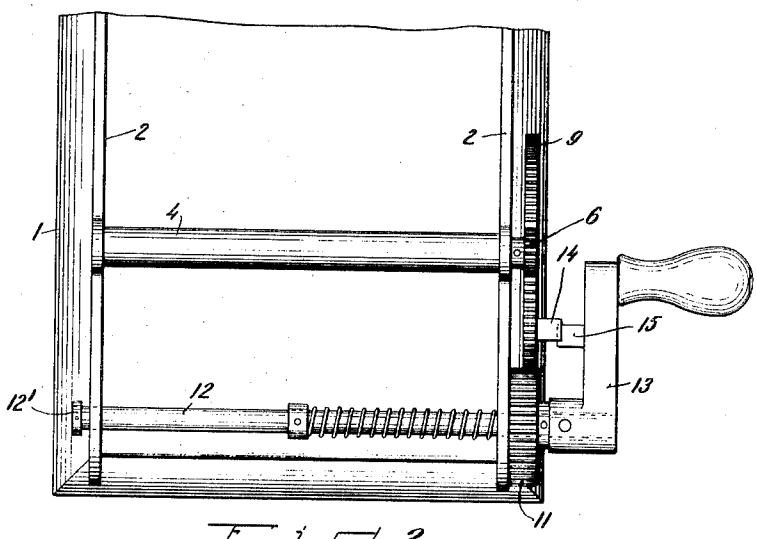

Fig. 2.

Witnesses

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PROPELLING MECHANISM FOR PAPER-FEEDING APPARATUS.

1,098,509. Specification of Letters Patent. Patented June 2, 1914.

Application filed February 27, 1913. Serial No. 751,047.

To all whom it may concern:

Be it known that I, ALBERT KRAUTH, a citizen of the United States, residing at Hamilton, in the county of Butler and State of Ohio, have invented certain new and useful Improvements in Propelling Mechanism for Paper-Feeding Apparatus, of which the following is a specification.

My invention relates to an improvement in mechanism for feeding paper or the like in the form of a continuous sheet or strip to advance the same in invariable constant lengths, with the feeding mechanism arrested after a cycle determining the length of sheet or interval delivery in relation to the fixed text arrangement comprised in an interval length, and to means for releasing the mechanism for a successive operation.

The invention herein is primarily directed to the mechanism for effecting such release, with the broader aspect of the invention comprised in a separate application filed February 27, 1913, Serial No. 751,046.

An object therefore of my invention is to provide a pair of intermeshing gears as the primary driving elements for paper feeding mechanism, said gears provided with stop elements connected or unitarily rotative therewith having a point of tangency in their orbits for relative interception or engagement to interrupt or arrest the rotation of the gears to define a cycle or limit of operation, and released for a successive operation by moving some of said elements laterally without disturbing the intermesh of the gears.

The features of my invention will be more fully disclosed in the description of the accompanying drawings, forming a part of this specification, in which:—

Figure 1 is a side elevation of the forward portion of an autographic manifolding device with the gearing exteriorly exposed and rotated by a crank handle. Fig. 2 is a top plan view of the same.

As my invention is primarily applicable to a manifolding apparatus, the description thereof will be directed to its use in such type of machines although it is obvious that it has a wide range of usefulness in manually operated apparatus wherein a prescribed movement of the crank handle results in a complete operation of the device and beyond such limit prematurely functions for a successive operation, it is desirable to arrest the movement of the mechanism at the limit of such prescribed interval, so that manual observation or delicate manipulation is obviated, or to make provision beyond the control of the operator for determining the length of sheet delivery in successive equal lengths.

In manifolding apparatus, one or more continuous sheets of paper are simultaneously advanced, the sheets usually containing a preprinted form or text in multiple numbers subdividing the sheet into interval lengths which are successively issued or advanced to a point of deliverance from the machine and severance from the continuous sheet. With my improvement such interval advance is obtained with accuracy and without delicate manipulation of the machine and accomplished by the following mechanism: 1 represents the base of the machine, having the side frames 2—2 secured thereto upon and between which the various parts of the machine are mounted and supported. The continuous sheets of paper are supplied into the machine usually in a web, journaled between yielding supports, with the paper fed and passing over a writing table to the feeding rolls 3, 4, shown in dotted line, Fig. 1. These rolls are supported so that their peripheries yieldingly engage each other, which is usually accomplished by journaling the axle of the upper roll in a pair of slide blocks slidably mounted in the side frames with a spring for each slide block engaging the same for exerting its tension toward the companion roller. Such yielding engagement of the rolls is not shown, but as the same is well-known in the art as well as other forms of construction for producing the same result, it is deemed that the disclosure for the purposes herein is sufficient. The axle 5 of the upper roll is provided with a pinion 6 in mesh with a pinion 7 fixed to the axle 8 of the lower feeding roll 4, with said latter pinion in mesh with a gear 9 fixed upon the shaft 10. The shaft 10 extends across the side frames so as to journal in both thereof to more efficiently support the axle, and enable the use of thin side frames. The gear 9 is in mesh with a gear 11 of smaller diameter, preferably establishing a 2 to 1 ratio, with the circumference of the pitch diameter of the larger gear or gear 9 of a length equal to the length of traverse desired for an interval length of paper for a corresponding feed thereof, and with the differential rotation of the

gears 9 and 11 established for the purpose of requiring a multiple number of rotations of the crank handle for each complete interval advance. The advantages thereof having been fully explained in the aforementioned separate application. The gear 11 has a wider face than gear 9 to permit longitudinal movements of the shaft 12 carrying gear 11 for releasing the stop elements.

The shaft 12 is journaled in both of the side frames 2, and projects slightly beyond the same with the gear end provided with a crank handle 13 for rotating the shaft and feed transmission members, the opposite end of the shaft 12 is provided with a collar 12′ to prevent displacement and limit the longitudinal movement of the shaft in one direction, that of releasing the stop elements, and also serves as a push button for moving the shaft. The gear 9 is provided with a stop lug 14 projecting from one side thereof and the crank handle 13 is likewise provided with a stop lug 15 projecting from the crank arm, and adapted to engage at a point in its rotation with the stop lug 14 for locking or arresting further rotation of the various rotating parts, driving the feeding mechanism. In this respect the functions of this invention are analogous to that shown and described in the aforesaid application, and therefore, further comment thereon is not made herein, reference being had to said application. The face of gear 11 is preferably made wider than that of gear 9 and preferably of such width accommodating for the longitudinal movement of shaft 12 sufficient to effect a release of the stop elements without disturbing the toothed intermesh of gears 9 and 11. To interlock the stop elements must simultaneously intercept the tangent plane in their rotative orbits, and it is therefore essential not to disturb the toothed intermesh between gears 9 and 11. 16 represents a spring-controlled pawl engaging with the teeth of said gear 9 to prevent reverse rotation of the transmission elements. In this form, a rigid or integral crank handle is employed requiring the handle to be moved transversely to its direction of rotation for releasing the same instead of movement in a diametric plane required in the type of mechanism shown in my aforesaid application.

It is obvious that the gear 11 could be laterally confined, with only its shaft and crank handle laterally movable to accomplish the same result as particular form illustrated and the same is regarded as the mechanical equivalent, and the invention herein being specific as to structure only in the lateral movement of one or both of the intercepting or stop elements to effect their release.

Having described my invention, I claim:—

1. A device of the nature disclosed combining paper feeding mechanism, a rotative member for propelling the same, a pair of opposing stop elements, one thereof unitarily rotative with said propelling member adapted to intercept the second stop member after a predetermined cycle of said propelling member to arrest the same, and means for laterally disengaging said stop elements for a successive propelling cycle.

2. A device of the nature disclosed combining a pair of coacting paper feeding rolls, a master gear for positively rotating said rolls, rotative opposing stop elements, one thereof unitary with said master gear adapted to intercept and interrupt the continuity of rotation of said master gear for intervally propelling said rolls to deliver invariable constant lengths of paper, and means for moving one of said stop elements laterally for stop element release.

3. A device of the nature disclosed, combining a paper feeding mechanism, a gear for propelling said feeding mechanism, each cycle thereof determining a length of paper delivery, means for limiting the continuity of rotation of said gear to one cycle, comprising a pair of opposingly rotative stop elements, one thereof unitary with said gear, adapted to engage each other at the limit of said gear cycle and means for laterally moving one of said stops to release the same for a successive operation.

4. A device of the nature disclosed combining a pair of coacting paper feeding rolls, positively rotated, a master gear for rotating said rolls, a driving gear intermeshed with said master gear for rotating the same, and a pair of stop elements one unitarily rotatable with said master gear and the second with said driving gear, adapted to intercept at a tangent plane in the orbits of rotation to arrest the rotation of said gears, and means for moving said driving gear laterally to release said stop engagement.

5. A device of the nature disclosed combining a pair of coacting paper feeding rolls, a master gear for positively rotating said rolls, of a pitch diameter circumference equal to a prescribed interval length of paper to be fed upon a complete rotation of said gear, a driving gear intermeshed with said master gear, a crank handle connected to said driving gear, stop elements respectively on said master gear and crank handle adapted to intercept each other after a complete rotation of said master gear to arrest the same, and means for releasing said stop elements for a successive operation.

6. A device of the nature disclosed combining a pair of coacting paper feeding rolls, a master gear for positively operating said rolls, the circumference at the pitch diameter corresponding to the length of a pre-

scribed interval length of paper to be advanced at each rotation of said master gear, a wide-faced driving gear intermeshed with said master gear, a crank handle therefor, stop elements respectively on said master gear and crank handle adapted to intercept each other after each prescribed length of paper advance to deliver invariable constant lengths of paper, said driving gear adapted to be moved laterally to release said stop for a successive operation without disturbing the intermesh of the gears, and means for restoring the laterally movable elements automatically to normal.

7. A device of the nature disclosed combining a pair of coacting paper feeding rolls, a master gear for positively operating said rolls, the circumference at the pitch diameter corresponding to the length of a prescribed interval length of paper to be advanced at each rotation of said master gear, a wide-faced driving gear intermeshed with said master gear of a different diameter than the master gear for relative variable rotation thereof for a prescribed interval of paper advance, and stop elements carried by both of said gears adapted to intercept each other and releasable by moving said wide faced gear laterally.

8. In combination with paper delivery rolls, intermeshing driving and driven gears, laterally disposed members respectively rotative with said gears intercepting at a junction point as said gears are reversely rotated, to predetermine the length of paper delivery and releasable by moving one of said gears laterally.

9. A device of the nature disclosed combining a pair of intermeshing gears, each having an element rigid therewith adapted to intercept each other at a relative point in the rotation cycle or cycles of said gears to arrest the rotation thereof and releasable by lateral movement of one of said gears.

10. A device of the nature disclosed combining a pair of intermeshing gears, each having an element rigid therewith adapted to intercept each other at a relative point in the rotation cycle or cycles of said gears to arrest the rotation thereof and manually releasable laterally.

In testimony whereof, I have hereunto set my hand.

ALBERT KRAUTH.

Witnesses:
OLIVER B. KAISER,
CLARENCE B. FOSTER.