Sept. 16, 1947. A. E. LANE 2,427,611

SHEET SEVERING MEANS

Filed Dec. 21, 1942 2 Sheets-Sheet 1

Fig. 1.

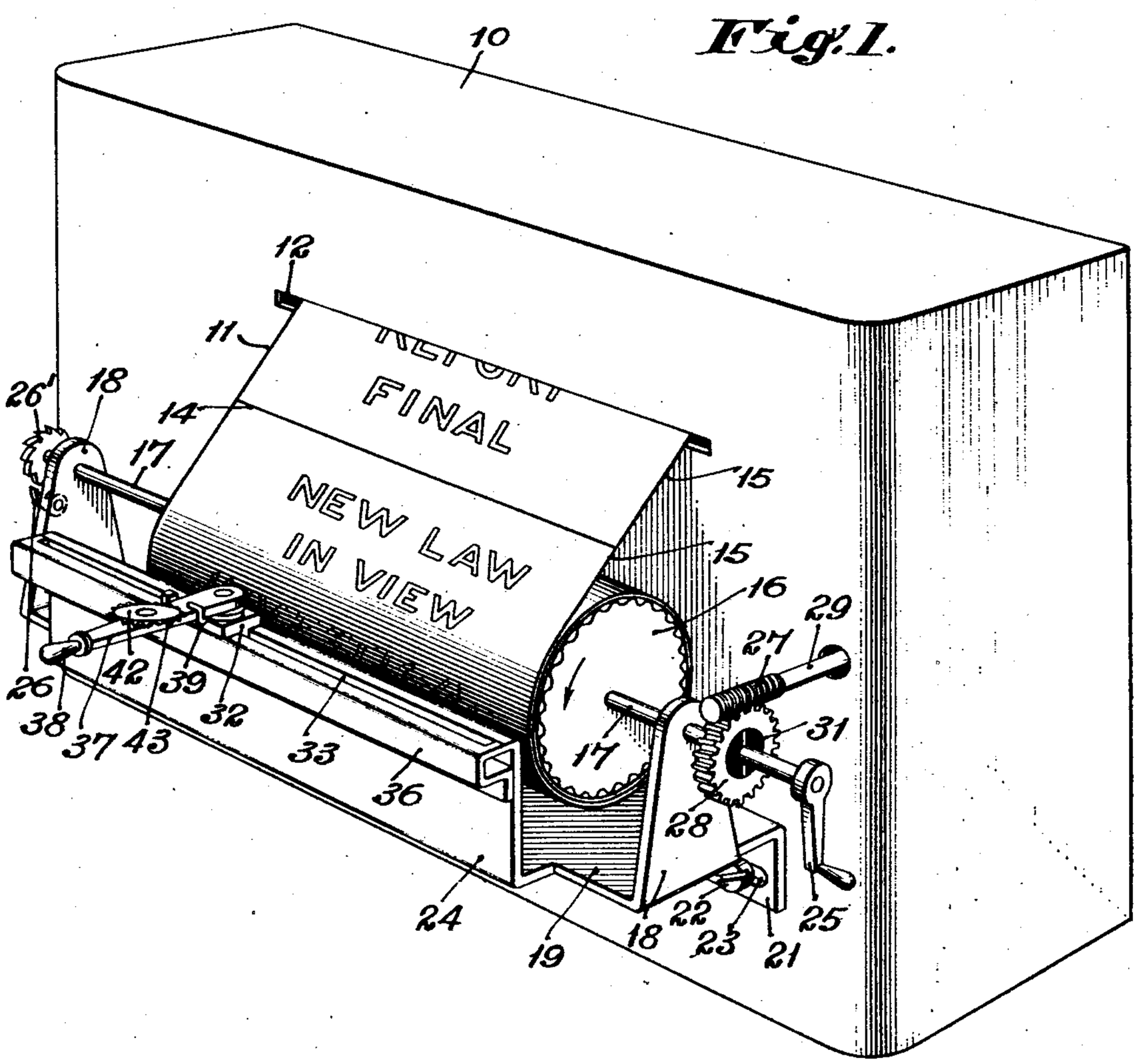

Fig. 2.

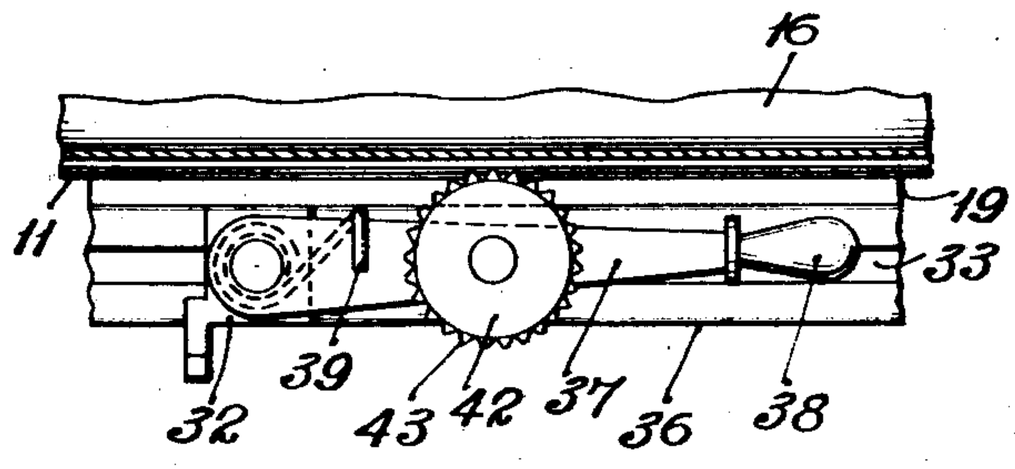

Fig. 3.

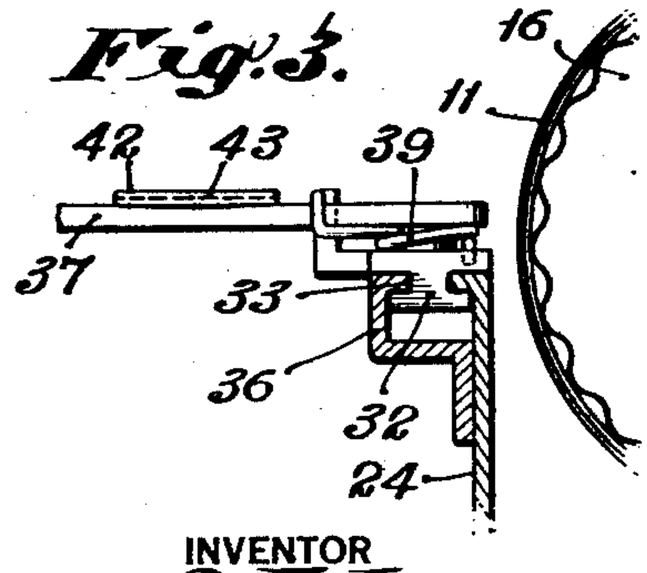

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Fig. 4.

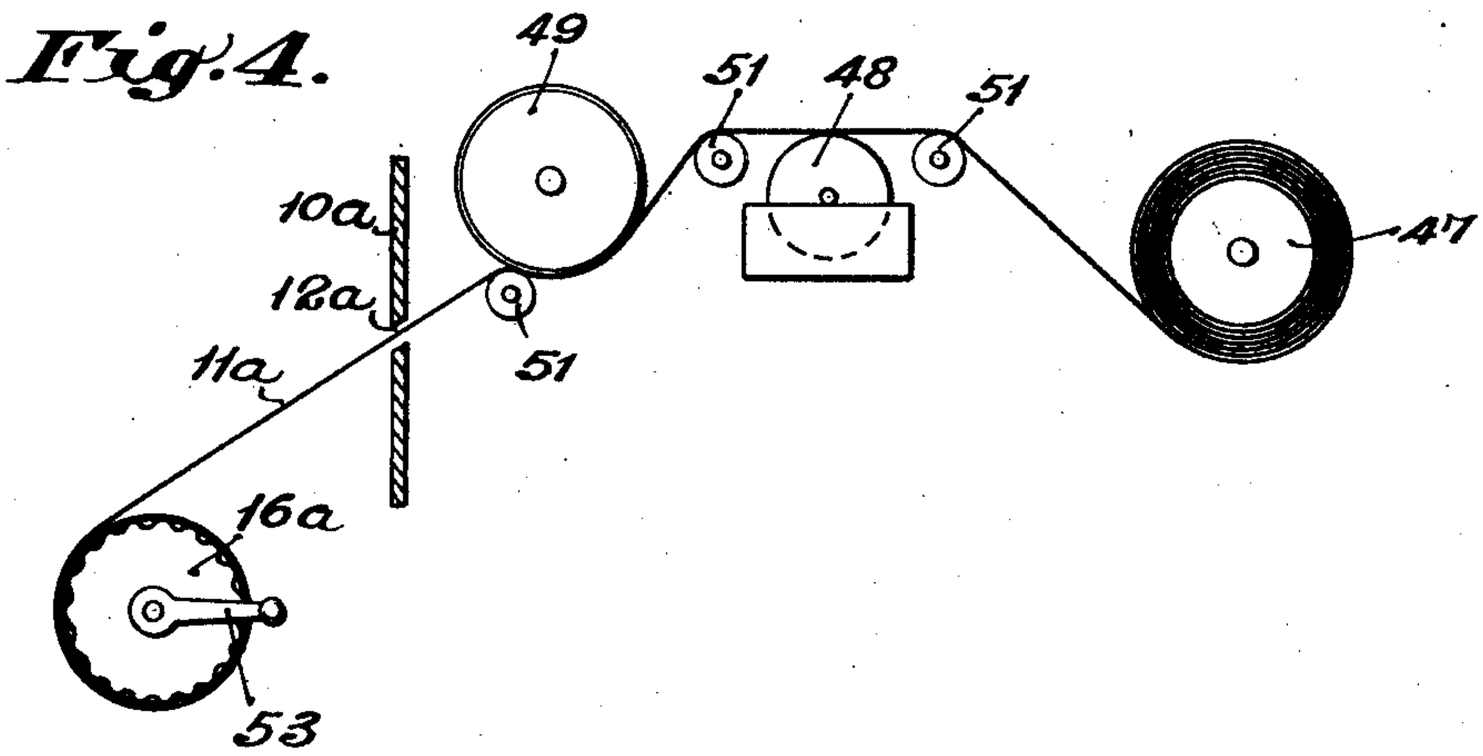


Fig. 5.

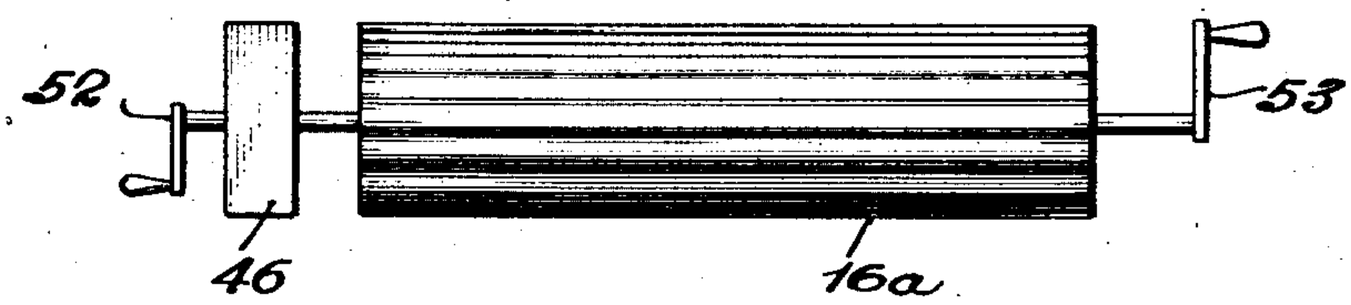


Fig. 6.

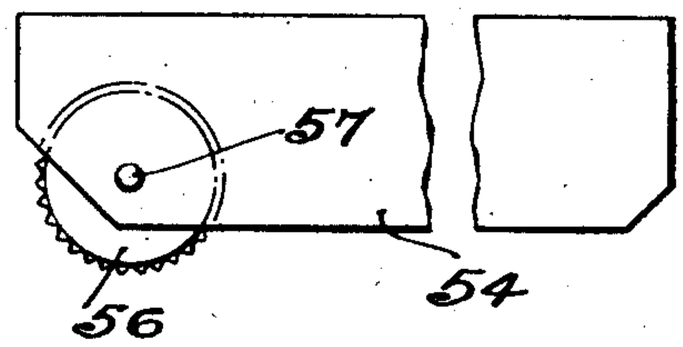
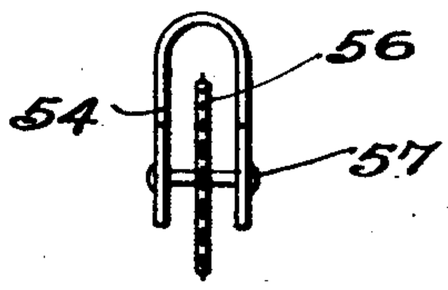


Fig. 7.



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Patented Sept. 16, 1947

2,427,611

UNITED STATES PATENT OFFICE

2,427,611

SHEET SEVERING MEANS

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Application December 21, 1942, Serial No. 469,608

2 Claims. (Cl. 242—56)

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The present invention relates to sheet severing and arranging means, and more particularly to a novel, inexpensive and simple arrangement for sub-dividing a web, bearing printed or recorded subject matter generally in page form, into sheets arranged in a predetermined manner.

The problem of handling a web issuing from a printing or recording machine of any type, so that subject matter recorded in page form will be available for inspection and perusal, has been imperfectly solved in the prior art by complicated and hence costly devices which have not been entirely satisfactory. In accordance with the present invention a web or strip as it issues from a recording machine is conveniently disposed in roll form in such a manner that by performing a simple severing operation a booklet of sheets arranged in a predetermined order is formed and the pages of the resulting booklet may be secured together in any known or suitable manner.

Accordingly, the primary object of the present invention is to provide novel and simple means for predetermining the arrangement of sheets severed from a web of recorded matter in such a manner that the sheets need not be handled for the purpose of arrangement.

Another object of the present invention is to provide a novel form of take-up roll for a printed or recorded web or strip.

A further object of the invention is to provide mechanism in the form of an attachment which may be readily applied to existing printing and recording devices in a fixed or adjustable position with respect to the recording means.

Still another object of the invention is to provide a normal drive arrangement for a take-up roll associated with a printing or recording mechanism.

A still further object of the present invention is to provide a novel sheet severing device for severing sheets from a continuous strip so that each severing operation occurs at least approximately in register with subject matter spaced at definite intervals on the strip.

The foregoing and other objects of my invention will be brought out more in detail in the following description of several illustrative embodiments of the invention, reference being had to the accompanying drawings in which:

Fig. 1 is a view in perspective of a printer or recorder provided with the take-up roll and sheet severing device of this invention.

Figs. 2 and 3 are fragmentary detailed showings of the device of Fig. 1.

Fig. 4 is a diagrammatic view in side elevation of a slight modification of the arrangement of Fig. 1.

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Fig. 5 is a view in front elevation of the device of Fig. 4.

Figs. 6 and 7 are elevational and sectional views of a web severing tool.

Referring to the drawings, and more especially of Fig. 1 thereof, 10 represents a casing in which is housed a printing or recording device (not shown) such as a facsimile telegraph receiver of the type which records received subject matter on a web or strip of paper 11, which is fed out through a slot 12 as the printing or recording operation proceeds. The printing or recording mechanism in the casing 10, it will be understood, may be a page printing telegraph machine, a rotary printing press or a facsimile recorder of any type as above stated. The portion of strip 11 which is visible on Fig. 1 is shown as having page material 15 recorded successively, that is, the line or unrecorded strip designated 14 is the end of one page and the beginning of the next succeeding recorded page. If desired, the recording apparatus may be arranged in such a manner as to print or record the line or strip 14, or the run-out mechanism of the printer or recorder may space the page recordings along the web or strip.

The strip of recording may be provided at intervals with printed matter forming the headings of page material which is to be recorded by the machine in the casing 10. If this is the case, the arrangement of the present invention provides accurate register of these headings when the recorded pages are severed.

The strip 11 is wound on a take-up roll 16, which is carried by a shaft 17 supported by suitable bearing brackets 18. In the preferred arrangement the take-up roll and its support are removably secured as a detachable unit to the casing 10 so that the brackets 18 may be formed integrally with a metal plate or the like 19, which has a downwardly turned portion 21 arranged to be clamped against the front of the casing 10 by suitable fastening means such as screws 22. The portion 21 is or may be slotted as indicated at 23 to provide lateral adjustment for the support plate 19 so that the take-up roll 16 may be in position axially to receive the paper web 11 from the slot 12 without wrinkling or other distortion. A severing device later to be described is conveniently supported on an upturned portion 24 of the plate 19.

The shaft 17 extends beyond the bearing bracket 18 to the right as shown and terminates in a crank 25 which may be manipulated to po-

sition the roll angularly when a severing operation is to be performed. The shaft 17, and with it the roll 16, may be rotated in direction of the arrow by means of a worm 27 and worm wheel 28 driven from a shaft 29 which projects into the casing 10 and is in turn driven by some rotating part of the printing or recording mechanism. The worm wheel 28 preferably drives the shaft 17 through a slip clutch mechanism 31 of any suitable type so that the shaft 17 may be stopped when desired by engaging a pawl 26 with a tooth of a ratchet wheel 26' secured to the end of the shaft which projects beyond the lefthand bracket 18. As an alternative arrangement, it will be understood that the shaft 29 may be driven through a clutch capable of operation by any suitable handle arrangement projecting from the casing 10 to a conveniently accessible position.

Referring to Figs. 2 and 3, which show the severing arrangement more in detail, a member 32 is slidably mounted in a slot 33 between the inwardly directed edge of the plate portion 24 and the inwardly turned edge of an elongated angle shaped member 36, which is secured to the portion 24 in any suitable manner. The slidable member 32 has pivoted on it a lever 37 ending in a handle or thumb piece 38. A spring 39 biases the lever and a severing wheel 42 rotatably carried thereon away from the periphery of the roll 16. The severing wheel 42 is preferably provided with sharpened teeth 43 so as to perforate and sever superposed layers of the sheet 11 when the thumb piece is pressed inwardly and the entire assembly is moved axially of the take-up roll 16. It will be understood that the wheel 42 may be provided with a sharpened edge rather than the teeth shown and described.

In accordance with the invention the circumference of the take-up roll 16 is approximately equal to the length of a recorded page 15, that is to say, the approximate distance between lines 14 on the web 11. This roll 16 is corrugated as shown so as to facilitate the severing operation, which is performed as pointed out above by pressing the thumb piece inwardly and moving the severing wheel 42 axially of the roll 16.

In operation of the arrangement just described, one turn or more of the strip 11 will be wrapped on roll 16, using the handle 25 for this purpose, the pawl 26 being released from engagement with the ratchet 26'. If the printing or recording mechanism in the casing 10 is of the type which is provided with a run-out release, this step may be performed after a length of unrecorded strip projects through the slot 12. After the strip 11 is started on the roll 16 the winding operation will be continued by reason of rotation of the shaft 29. It will be noted that when roll 16 is driven in the manner described above, no tension will be placed on strip 11 which may be of advantage when certain types of printing or recording mechanisms are employed. Inasmuch as the circumference of the roll 16 is substantially equal to the length of a recorded page, when the severing wheel 42 is drawn across the roll 16 after the recording of a number of sheets, for example, after all of the pages of a given series have been recorded, the severed sheets will be stacked and in their correct sequence when they are removed from the roll after the cutting operation. They may then be stapled or otherwise secured together in convenient booklet form.

During the cutting operation the pawl 26 will be engaged with the ratchet wheel 26', after the crank 25 has been used to bring the visible strip 14 under the wheel 42.

Figs. 4 and 5 of the drawings disclose a modified arrangement which may be entirely hand operated or driven by a motor such as a spring motor 46 of any suitable type. Parts corresponding with those in Fig. 1 will be designated by the same reference character with the suffix *a* added. Fig. 4 shows by way of example a recording arrangement comprising a paper feed storage roll 47, a paper moistening roll 48 and a facsimile recording scanner 49, which may be of any desired type.

A number of guide rollers 51 serve to guide the record strip 11*a* in its passage over the different elements of the recording mechanism. While the device 49 has been referred to as facsimile recording scanner, it will be understood that this may be the platen of a printing telegraph machine, a typewriter or the impression roll of a printing press. The web 11*a* is shown as being fed outwardly through a slot 12*a* in the casing, as fragment of which is indicated at 10*a*. The take-up roll 16*a* may be similar in all respects to the roll 16 of Fig. 1, and if desired may be supported in the same manner. The spring motor 46 may be wound in the usual manner by a crank or winding key 52. A crank 53 serves the purpose of the crank 25 of Fig. 1. It will be understood that if desired the spring motor 46 may be omitted entirely, and in that event the roll may be used to obtain a number of superposed discrete pages in a desired order by winding a portion of the recorded strip 11*a* on the reel 16*a* and using a separate cutting tool such as is shown in Figs. 6 and 7 of the drawings to sever these superposed layers.

Referring to Figs. 5 and 6 showing a tool designed to be used in cooperation with roll 16 for cutting a sheet or web rolled thereon, reference character 54 designates a channel shaped member of sufficient length to serve conveniently as a handle. A toothed perforated or edge sharpened wheel 56 is rotatably carried on a pintle 57 mounted in the sides of the channel. The manner of using this tool will, it is believed, be obvious from the foregoing.

Having now described the invention, what I claim is:

1. In combination with a recorder which records subject matter on a continuous strip, a take-up roll for said strip, drive means, means for rotating said roll from said drive means including a slip clutch, a cutting element movable axially of said roll for cutting the material of said strip while on said roll, said roll being corrugated for the purpose of accommodating said cutting element as it projects through the material of said strip during a cutting operation.

2. In a facsimile machine, means for marking a record strip along its length, a take up roll for receiving and forming said record strip into a roll as the said strip is discharged from said marking means, drive means for rotating said take up roll, a severing element associated with and movable axially of said take up roll for penetrating through the superposed layers of said strip in said formed roll thereby to facilitate separation of portions of said strip into a plurality of sheets arranged in the order of marking, and said take-up roll being provided with corrugations spaced around the periphery thereof for the purpose of accommodating said severing element as it pro-

jects through the material of said formed roll during a severing operation.

ALBERT E. LANE.

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