Jan. 29, 1946. A. W. METZNER ET AL 2,393,651

IMPRINTING APPARATUS

Filed July 15, 1942 4 Sheets-Sheet 1

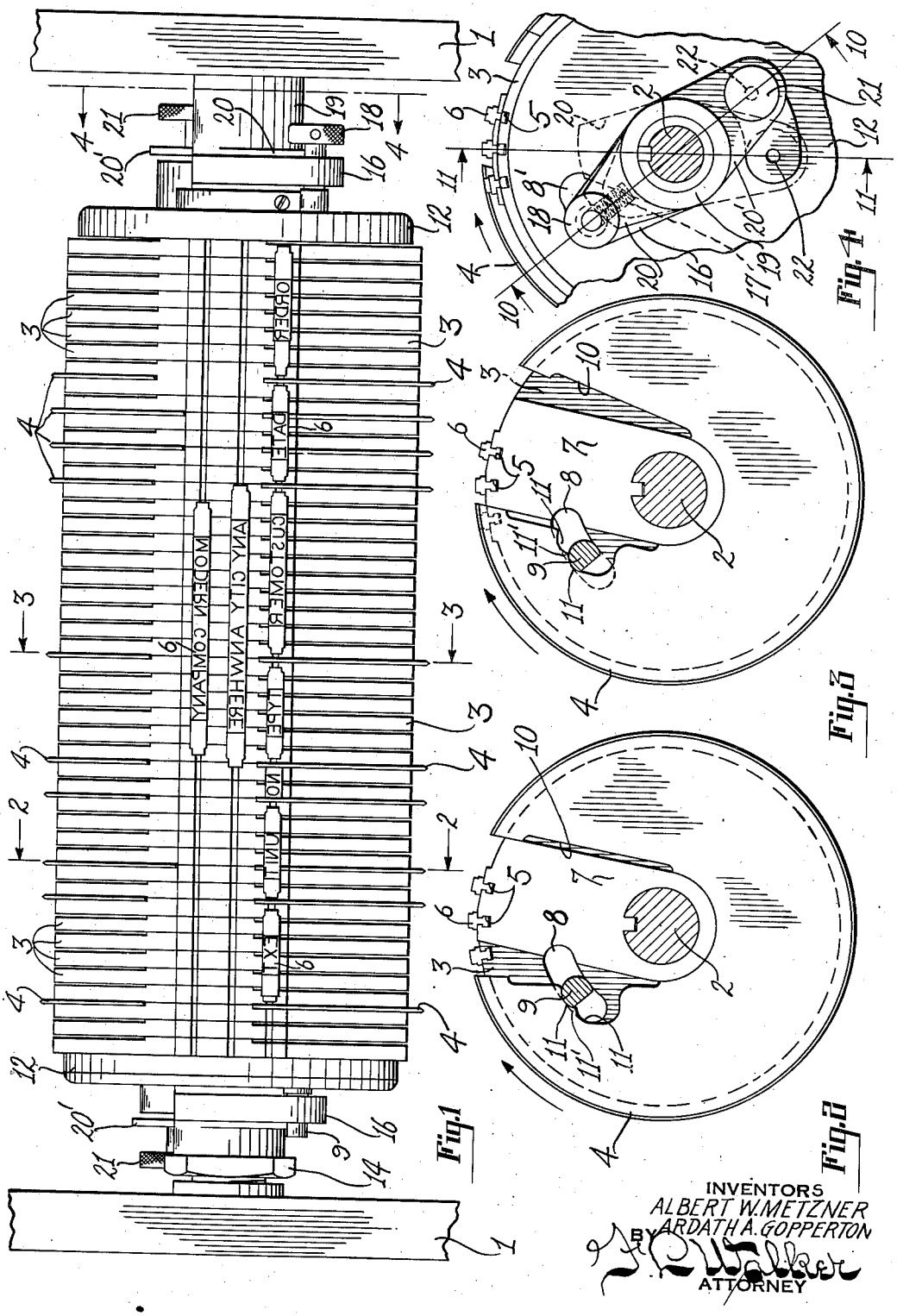


Fig. 1

Fig. 3

Fig. 2

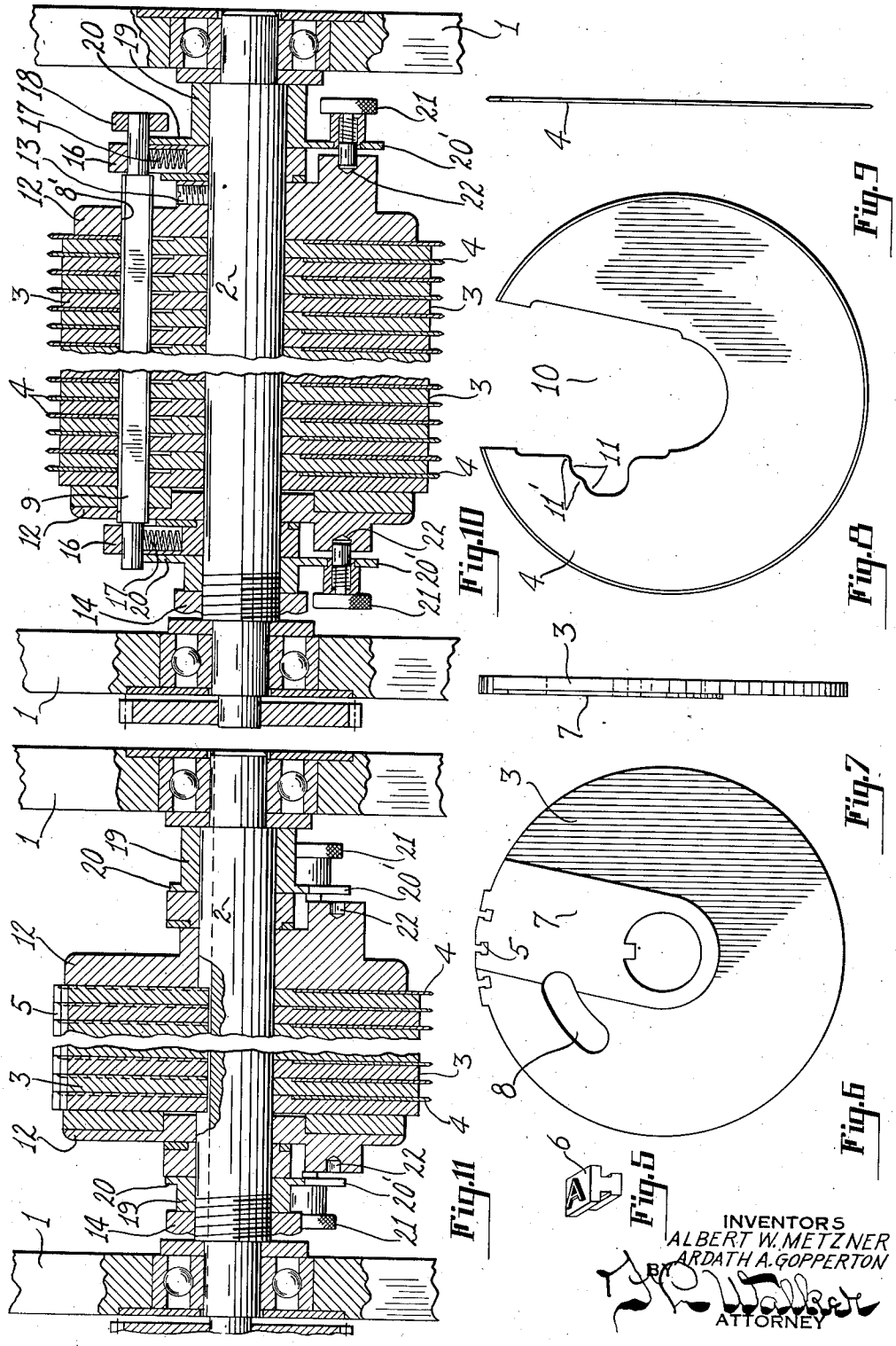
Fig. 4

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IMPRINTING APPARATUS

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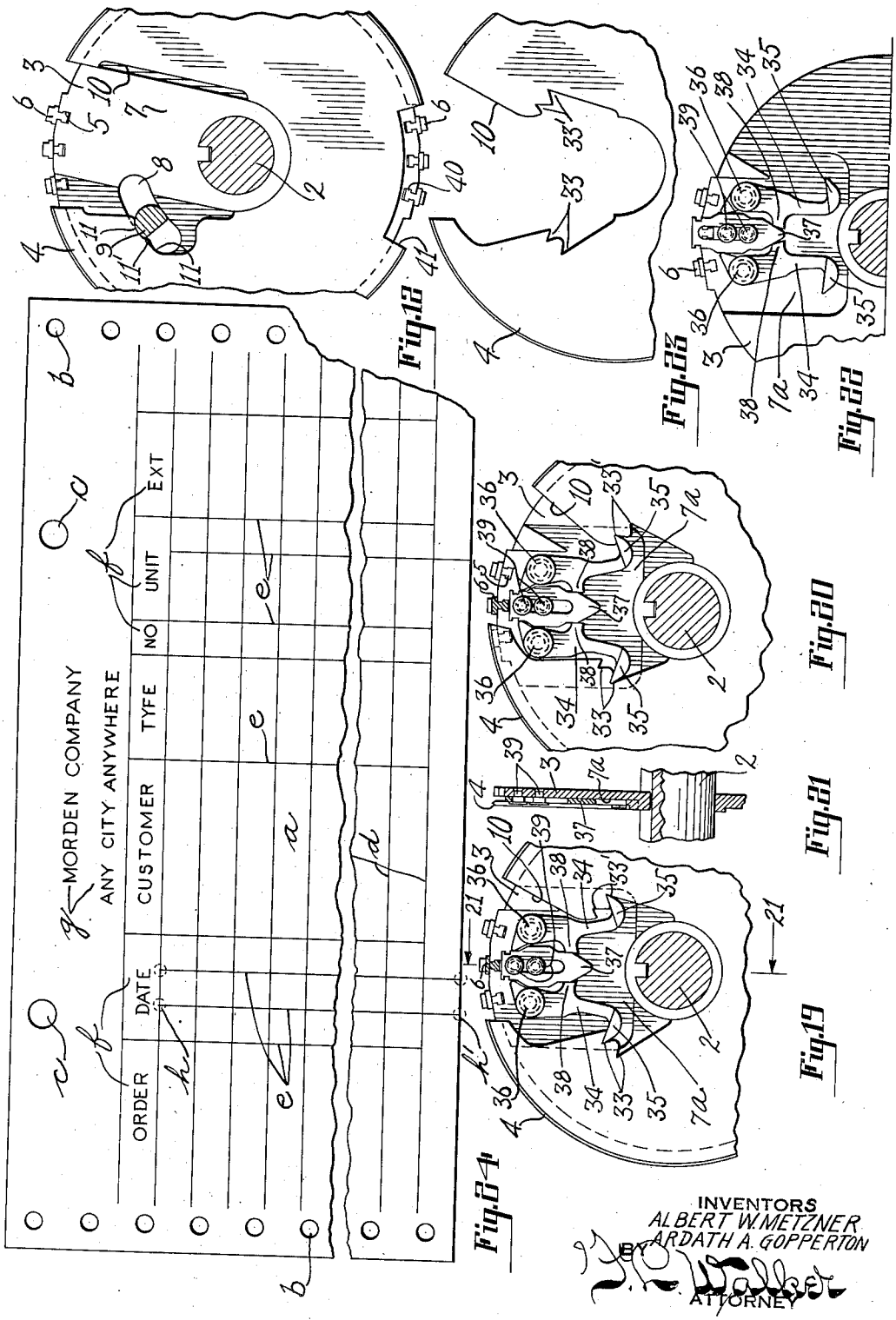


Fig.34

Fig.18

Fig.19

Fig.20

Fig.21

Fig.22

Fig.23

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Filed July 15, 1942 4 Sheets-Sheet 4

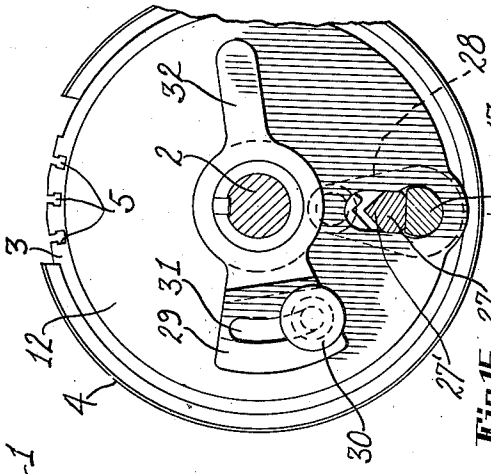


Fig. 16

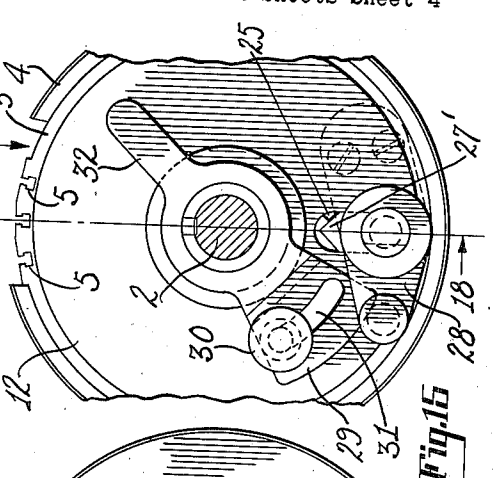


Fig. 15

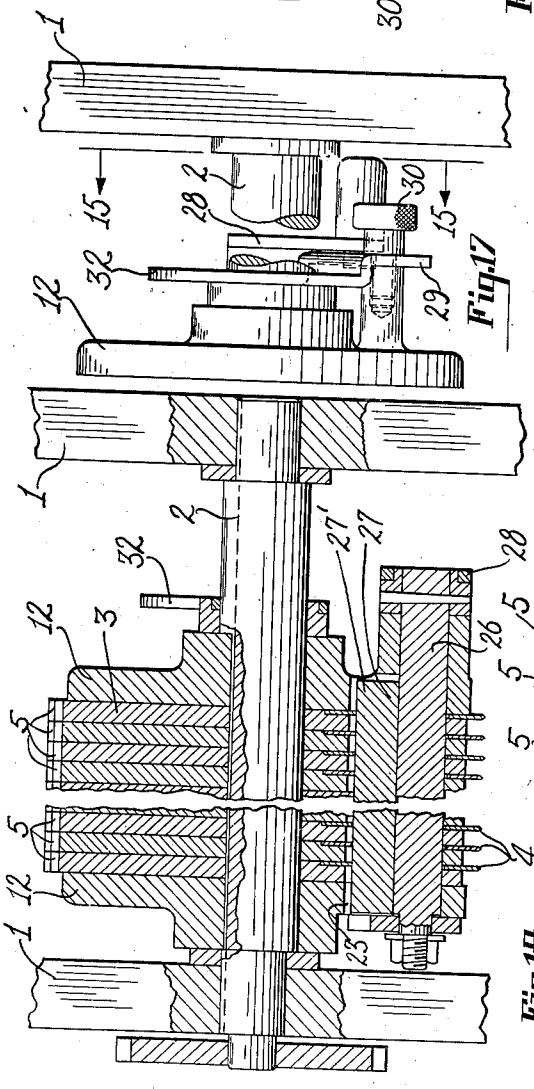


Fig. 17

Fig. 18

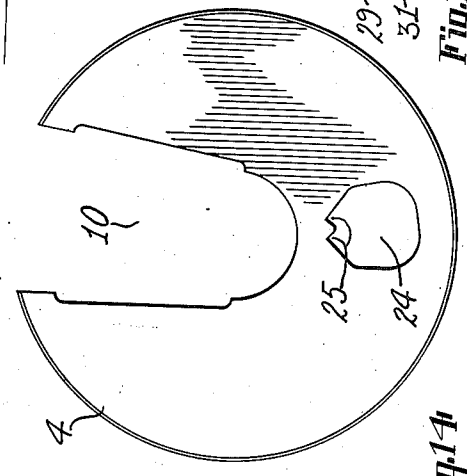


Fig. 14

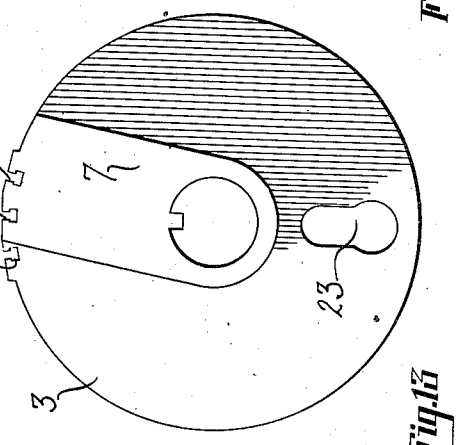


Fig. 13

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2,393,651

UNITED STATES PATENT OFFICE

2,393,651

IMPRINTING APPARATUS

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Application July 15, 1942, Serial No. 451,030

17 Claims. (Cl. 101—373)

This invention pertains to printing apparatus, and more particularly to a changeable roll for imprinting headings and optionally spaced down rules at successive spaced intervals upon strips of continuous series connected detachable form stationery.

It is customary commercial practice to employ preprinted record forms for bills, statements, invoices, stock sheets, and other records which involve tabulation of amounts or arrangement of indicia in columns. Ordinarily continuous form stationery is printed and folded upon cylinder presses which require considerable time for composition or "setting" of the forms and for "make ready," and hence such printing methods are not economical for small quantities of stationery supplies.

The spacing of transverse line ruling as employed upon such stationery is arbitrarily determined by the line spacing operations of the writing machine in which the stationery is to be inscribed and with which the horizontal line rulings must agree. The vertical rulings defining columnar spaces are optionally disposed, and differ in location and spaced relation for different purposes. Likewise, printed headings for the defined columns may vary widely, as do also identification headings of the record sheets.

In the present invention it is contemplated that stock stationery in large quantities may be preprinted with horizontal line rulings and simultaneously marginally punched, if to be used with pin type feeding devices, or provided with punched file holes, and may be zigzag folded all in continuous operation. Subsequently, smaller quantities of such preprinted stock material may be reprinted by the hereindescribed printing roll to individualize the stationery by imprinting relatively spaced down rules at predetermined intervals to define columns for specific purposes which may be optionally positioned and may vary greatly on different lots of reprinted stationery, and by inserting headings intermediate succeeding preprinted areas and also column headings in agreement with the optionally positioned vertical line rulings. It is, however, unnecessary that the stock material be preprinted. Plain, blank strip material, either punched or unpunched, may receive the imprinted headings and vertical line rules from the present printing roll.

In the present instance there are employed a series of segmental line rule members which are interchangeably positioned in relatively spaced relation upon a supporting arbor with intermediate spacing discs therebetween. The spacer discs are adapted to interchangeably receive printing type for imprinting headings. The column rule segments are rotatively adjustable relative to the spacer discs and other segments into alternate positions to longitudinally offset the ends of different ruled lines.

The object of the invention is to improve the construction, as well as the means and mode of assembly of printing rolls, whereby they may not only be economically manufactured, but will enable ready and quick reassembly into various combinations and spacings of line rules and headings.

A further and important object of the invention is to provide a method and device for imprinting line rule columns upon record material at optionally selective positions.

A further object of the invention is to provide improved locking means for securing the interchangeable elements of the present printing roll in their assembled relation.

A further object of the invention is to provide an improved method of producing a wide variety of printed forms of different design at minimum cost.

A further object of the invention is to enable the economical production of relatively small quantities of printed forms.

A further object of the invention is to provide a printing roll having the advantageous structural features and inherent meritorious characteristics, the method of assembly of such roll, and the mode of simplifying the production of printed forms herein set forth.

With the above primary and other incidental objects in view as will more fully appear in the specification, the invention intended to be protected by Letters Patent consists of the features of construction, the parts and combinations thereof, and the mode of operation, or their equivalents, as hereinafter described or illustrated in the accompanying drawings.

In the drawings, wherein are shown preferred embodiments of the invention,

Fig. 1 is a top plan view of an assembled printing roll embodying the present invention.

Fig. 2 is a side view of a line rule segment and an associated spacer and type carrying disc removed from the roll.

Fig. 3 is a similar view, in which the rule segment and spacer disc are relatively rotated to offset the terminals of the ruled line relative to

an associated line imprinted with the parts in the position shown in Fig. 2.

Fig. 4 is a fragmentary end view of the assembled roll viewed from the right of Fig. 1.

Fig. 5 is a perspective view of one of the type elements.

Fig. 6 is a side view of a spacer disc and type mount removed from the assembly.

Fig. 7 is an edge view thereof.

Fig. 8 is a side view of a line rule segment removed from the assembly.

Fig. 9 is an edge view thereof.

Fig. 10 is a sectional view on line 10—10 of Fig. 4.

Fig. 11 is a side elevation partially in section on the plane 11—11 of Fig. 4.

Fig. 12 is a side elevation of a line rule segment and associated spacer and type carrier disc for short length ("two-on") forms, by which two forms are imprinted at each rotation of the printing roll.

Fig. 13 is a side elevation of a spacer and type disc adapted to locking means of modified forms.

Fig. 14 is a side elevation of a rule segment for use with the spacer and type disc shown in Fig. 13 and adapted to the same locking device.

Fig. 15 is an end view of an assembly of rule segments and spacer and type discs as shown in Figs. 13 and 14 in locked condition.

Fig. 16 is a similar view with the parts unlocked.

Fig. 17 is a side view of the terminal portion of the roll assembly showing the locking devices of Figs. 16 and 17 in elevation.

Fig. 18 is a longitudinal sectional view of the roll assembly on the plane 18—18 of Fig. 15.

Fig. 19 and Fig. 20 are side elevations partially broken away, which illustrate a further modification of the segment locking means with the segment and associated disc in alternate positions of relative adjustment.

Fig. 21 is a detail sectional view of the assembly shown in Figs. 19 and 20.

Fig. 22 is a fragmentary side elevation of the spacer and type mounting disc with the rule segment locking means in release condition.

Fig. 23 is a fragmentary side elevation of the rule segment shown in Figs. 19 and 20.

Fig. 24 illustrates a typical printed record form upon which the vertical rule lines and headings have been imprinted by the present roll.

Like parts are indicated by similar characters of reference throughout the several views.

The printing roll assembly forming the subject matter hereof is primarily intended for production of continuous form stationery for use in International Business Machines tabulators or Powers tabulators, but may be used in production of printed forms for other uses, as in typewriters, billing and addressing machines, and even for hand written records.

The stock material for printed form stationery comprises continuous strips of material transversely scored at longitudinally spaced intervals to afford weakened division lines upon which the strip is divisible after inscription into individual sheets *a*, Fig. 24. The strips may be punched at prescribed intervals as at *b*—*b*, Fig. 24, for engagement of pin type feeding devices, or at *c*—*c*, Fig. 24, to provide file holes in successive separable sheets *a*. The stock strip may be entirely blank or may have thereon preprinted horizontal spaced lines *d*. The present printing roll is adapted to imprint upon each sheet section of the continuous stock strips relatively spaced vertical line rules *e*—*e* at optionally selected spaced positions, to define columns and to concurrently imprint column headings *f*—*f* and sheet identification headings *g*. By relative rotative adjustment of the rule segments, certain of the vertical rule lines *e*—*e* may be longitudinally offset a limited distance in relation to other vertical line rules, as indicated at *h* and *h'*, Fig. 24.

Referring to the drawings, 1—1 indicates portions of the printing press frame in which is journaled the printing roll shaft or arbor 2, upon which are aranged side by side a succession of spacer discs 3—3 and interposed line rule segments 4—4. Such assembly is well illustrated in Figs. 1 and 10. The spacer discs 3 are keyed upon the shaft or arbor 2 for unison rotation, but are free for limited axial shifting movement thereon, one relative to the other. A relative short segment of the periphery of each spacer disc 3 contains a plurality of undercut notches 5—5 to receive interchangeable type members 6. The type members are laterally notched, as shown in Figs. 2, 3, 4, 19 and 20, to slidingly engage in the laterally recessed notches 5. The notches 5 of each disc 3 register with those of the adjacent assembled discs to thereby form continuous undercut type channels or slots disposed longitudinally throughout the assembly. There may be as many peripherally spaced type channels as found necessary.

Each spacer and type disc 3 has on one side a raised, or relief, panel 7, which surrounds the concentric shaft opening and extends thence radially to the periphery of the disc. The projection of such relief panel 7 beyond the lateral face of the disc 3 is quite shallow, as indicated in Fig. 7, and is not greater than the thickness of the rule segments 4, but preferably slightly less than such dimension. Each spacer and type disc 3 has therein a concentric arcuate slot 8, the end of which intersects the relief panel 7, which receives a locking rod 9.

The line rule segments 4 are of somewhat greater diameter than the discs 3, beyond which their margins extend into peripheral agreement with the faces of the printing type 6 carried by the spacer discs 3. Each rule segment 4 has therein a substantially sector shaped slot or recess 10, the inner extremity of which is concentric with and proportioned to fit about the concentric inner end of the projecting relief panel 7 of an associated disc. The recess or slot 10 of the rule segments is somewhat wider than the panel 7 against the lateral shoulders of which the inner margins 10 of the segment slot alternately engage to limit relative rotative adjustment of the segment and disc. It is by such adjustment that certain vertical rules *e* of the printed form *a* are longitudinally offset at *h* and *h'*.

One side of the recess or slot 10 is provided with an arcuate indentation 11 which overlies the arcuate slot 8 of the associated disc 3. The discs 3 being loose on the shaft or arbor 2 for limited lateral adjustment, the laterally open recesses 10 in the line rule sectors 4 enable such sectors to be slidingly inserted in selected positions between any two adjacent spacer discs 3 into straddle relation with the raised panel 7. In final adjusted relation the line rule segments 4 are concentric with the discs 3. The open side of the segment 4 enables such members to be inserted and removed independently without disassembling the discs 3 from the shaft. The thickness of the spacer discs preferably agrees with

the standard lineal spacing of characters and figures inscribed by conventional writing or imprinting machines. The customary lineal character spacing is five thirty-seconds of an inch. Thus, the width of columns defined by spaced down rules *e*—*e* printed by the segments **4** on the record material are in each instance a multiple of the conventional writing machine character space. By inserting the line rule segments between selected spacer discs, the widths of the imprinted column lines may be varied to accommodate many or only a few indicia or characters in succeeding lines, and the spacing between columns may be likewise varied, also in multiples of indicia character spaces.

After being inserted between adjacent discs the rule segments may be individually rotatively adjusted, as shown in Figs. 2 and 3, to cause the imprinted down rules to start higher or lower on the printed forms in relation to the imprinted heading. The offset or line terminal variation is limited by the engagement of one side or the other of the segment apertures **10** with the marginal shoulder of the raised panel **7** of the adjacent spacer disc.

One margin of the indentation **11** in the line rule segment recess **10** is formed with adjacent arcuate configurations **11'** which slightly overlap the slot **8** of the spacer disc. The locking rod **9** which extends through the registering arcuate slots **8** of the disc **3** also extends through the lateral indentations **11** of the interposed line rule segments. The locking rod **9** is flattened on one side, and is engageable in one or the other of the arcuate configurations **11'** of the line rule segments **4** by initial rotative adjustment of the segments followed by partial rotation of the rod, to lock the segments against rotation from their adjusted position. The rule segments and the rod **9** are relatively adjustable only when the rod is partially rotated to present its flat side toward the arcuate configurations **11'** of the segment. After oscillatory adjustment of selected segments **4** from the position shown in Fig. 2 to that of Fig. 3 or vice versa, the locking rod is partially rotated to turn the convex face of the rod into the corresponding indentations **11'**. The spacer discs **3** and interposed line rule segments **4** are clamped in adjusted relation under axial compression between terminal thrust heads **12**. One of the heads **12** is secured to the shaft **2** by a set screw **13**. The other head **12** is axially adjustable under influence of a jamb nut **14** threaded on the shaft **2**. The ends of the locking rods **9** project through slots **8'** in the compression heads which correspond to the disc slots **8**, and are engaged in oscillatory arms **16** journaled upon the shaft **2** beyond the terminal clamp heads **12**. The swinging arms **16** carry helical springs **17** by which the rod **9** is held within the engaged indentations of the segments and chatter prevented. One extremity of the locking rod **9** is provided with a knob **18**, by which the rod may be rotated into and out of its segment locking position. To maintain locking position of the rock rod **9** a collar **19** rotative on the shaft **2** carries a polygonal flange **20**, one end **20'** of which is movable into and out of abutting relation with the flat side of the rock rod **9**, as shown by solid lines in Fig. 4 to temporarily prevent partial rotation thereof.

The opposite side of the flange **20** carries a detent plunger **21** engageable alternately in spaced holes **22** in the corresponding clamp head **12** to secure the flange extremity **20** either in or out of locking engagement with the rod **9**, as shown by solid and dotted lines in Fig. 4.

When it is desired to disengage the segments entirely from the assembly, the lock rod **9** is first rotated and then shifted to the end of the slot **8** which intersects the panel **7** by oscillation of the arms **16**. The line rule segments **4** may, at will, be transposed from one position to another and other segments may be inserted between adjacent discs or removed therefrom, and the assembled segments may be partially rotated from one position to another to vary the lateral and longitudnial relations of different down rule lines *e*—*e*.

In Figs. 13 to 18 there is illustrated a different mode of locking the line rule segments **4** in their rotative positions of adjustment. The spacer discs **3** are provided with key hole slots **23** which register with those of other discs. The line rule segments are of the same general shape with the same recess or cutout **10** as before. Instead of the indentation **11**, each segment is provided with an opening **24** in position to overlie the key hole slot **23** of the discs. The upper margin of the opening **24** is formed with two inverted V-shaped notches **25** side by side. Extending through the key hole slots **23** of the discs and the overlying openings **24** of the segments is a rock shaft **26** flattened on one side. Also disposed in parallel contacting relation with the rock shaft **26** through the key hole slots **23** and openings **24** of the discs and segments respectively is a polygonal wedge bar **27**, the upper side **27'** of which is beveled to form an angular edge engageable alternately in one or the other of the inverted V-shaped notches **25** according to the rotative position of the segment **4** relative to the discs **3**.

The wedge bar **27** is bodily movable radially of the discs and segments within the narrow portion of the key hole slots **23** by the camming action of the flattened shaft **26** upon partial rotation thereof. The rock shaft is provided with a crank arm **28** at one end for manual adjustment. When the rock shaft is turned with its flat side contiguous to the V-shaped bar **27**, as in Fig. 16, the latter is retractable out of engagement with either V notch **25** and the line rule segment is free for rotative adjustment from the relative position shown in Fig. 2 to that illustrated in Fig. 3, or vice versa. This adjustment, as before described, enables corresponding down rules *e*—*e* of the forms to be longitudinally offset as at *h* and *h'*, Fig. 24.

Upon partial rotation of the rock shaft, the wedge bar **27** is projected into the correspondingly positioned V notch **25**, as is shown in Fig. 15. To lock the rock shaft in adjusted position, an oscillatory segment **29** on the shaft **2** may be turned into the path of the crank arm **28** to prevent return oscillation of the crank and shaft. The locking segment may be clamped in adjusted position by a set screw **30** positioned within a slot **31** in the locking segment and engaging in a boss on one of the terminal clamp heads **12** of the roll assembly, as shown in Fig. 17. A radial finger **32** affords convenient means for adjusting the locking segment into and out of engagement with the crank arm **28**.

In Figs. 19 to 23 there is shown a further means for locking the interposed line rule segments **4** in either of alternative rotative positions of adjustment to effect longitudinally offset relation of different down rules *e*—*e* on the printed forms. In this embodiment the aperture **10** of the line

rule segment 4 is provided in its opposite margins, with two pairs of oppositely disposed V-shaped indentations 33 and 33'. Pivotally mounted within a lateral recess or pocket 7a in the associated spacer disc 3 is a pair of relatively spaced oscillatory arms 34 having outturned angular heads 35 engageable in one or the other of each pair of said V-shaped indentations. The arms 34 are independently pivoted at 36. Intermediate the pivoted arms 35 is a cam slide 37, the tapered head of which is engageable between bearing lugs 38 of the arms to thereby spread the pivoted arms 35 upon depression of the slide. The cam slide 38 is longitudinally slotted and is guided by a pair of studs 39 carried by the spacer disc and projecting through the cam slide slot.

The line rule segments, as before described, are rotatively adjustable from the position shown in Fig. 19 to that shown in Fig. 20, and vice versa. To rotate the segments, the cam slide is withdrawn, as in Fig. 22, which permits the heads 35 of the arms 34 to swing inwardly out of engagement in the V-shaped indentations 33 and 33'. Upon adjustment of the line rule segments, the cam slide is thrust inwardly, thereby forcing the heads 35 of the swinging arms into locking engagement in the indentations 33—33'. In one position of adjustment of the line rule segments, the locking arms 34 engage the outermost indentation 33 and innermost indentation 33', as in Fig. 19. In the alternative position of adjustment of the imprinting segments 4, the locking arms engage the innermost indentation 33 and outermost indentation 33', as shown in Fig. 20. When the cam slide 37 is thrust inwardly to lock the arms 34 in the indentations 33—33' is so held by positioning a type member 6 in the peripheral notch 5 of the spacer disc in overlying relation with the end of the cam slide, as shown in Figs. 19 and 20. The head of the cam slide 37 is marginally notched for engagement of a lifting tool which may be inserted within the restricted space for pulling the cam slide to release the locking arms.

The diameter and peripheral extent of the printing roll assembly are proportionate to the length of the forms to be imprinted thereby, so that ordinarily one form is imprinted at each complete rotation of the roller. However, for very short forms an additional group of type grooves or slots may be provided in the spacer discs as at 40 in Fig. 12, to receive a group of type for imprinting a second heading at each rotation of the printing roll. In such event, the line rule segment 4 is peripherally indented at 41 to interrupt the down rule lines coincident with such second heading. By this arrangement two complete form imprints are effected during each complete rotation of the roll assembly.

From the above description it will be apparent that there is thus provided a device of the character described possessing the particular features of advantage before enumerated as desirable, but which obviously is susceptible of modification in its form, proportions, detail construction and arrangement of parts without departing from the principle involved or sacrificing any of its advantages.

While in order to comply with the statute, the invention has been described in language more or less specific as to structural features, it is to be understood that the invention is not limited to the specific features shown, but that the means and construction herein disclosed comprise the preferred form of several modes of putting the invention into effect, and the invention is therefore claimed in any of its forms or modifications within the legitimate and valid scope of the appended claims.

Having thus described our invention, we claim:

1. An imprinting roll for imprinting a heading and laterally spaced down rules upon a record form, including a rotary supporting shaft, a plurality of discs assembled thereon side by side and keyed thereto for unison rotation, but capable of relative axial movement, registering peripheral notches in succeeding discs forming continuous type receiving slots in the disc assembly, interchangeable type elements removably engageable in the said slots, a plurality of line imprinting segments, each having therein a substantially sector shaped indentation straddling the shaft and interchangeably engageable intermediate succeeding discs of the plurality in alternate positions of rotative adjustment relative to each other and to the discs, and means for fixedly securing the discs and line imprinting segments in their assembled relation.

2. An imprinting roll for simultaneously printing headings and relatively spaced down rule lines upon record forms, including a rotary supporting shaft, a plurality of discs arranged side by side upon the shaft for unison rotation therewith but capable of limited axial movement thereon one relative to another, a plurality of interchangeable type carried thereby, a plurality of line rule segments interchangeably interposed between certain of the discs, a locking device for locking the line imprinting segments in alternate positions of rotative adjustment of the segments relative to each other and the discs, and clamp means for imposing axial compression on the assembly of discs and interposed line printing segments.

3. A printing roll for simultaneously imprinting a heading and relatively spaced down rules upon a record form, a supporting shaft, a plurality of discs mounted thereon for unison rotation but axially adjustable one relative to another, printing type carried by the discs, a plurality of peripherally recessed line imprinting segments interchangeably interposed between the discs in straddle relation with the shaft and independently rotatively adjustable relative to the discs while assembled therebetween, and locking means for interengaging the discs and interposed line imprinting segments in their rotatively adjusted relation.

4. An imprinting roll, including a supporting shaft and a plurality of axially adjustable spacer discs thereon forming a unitary assembly, a plurality of independently removable line imprinting segments interposed between adjacent discs for limited independent rotative adjustment relative to the spacer discs while interposed therebetween to initiate different line rule imprints in longitudinally offset relation, and means for fixedly securing the discs and segments in assembled relation.

5. A complementary couple for a printing roll, including a type carrying disc, a segmental line rule member associated with the disc, interengaging portions on the disc and segment for limiting relative rotative adjustment to change the point of initiation of the line rule imprint in relation with the type imprint, and means for locking the segment and disc in adjusted relation.

6. A printing roll for imprinting headings and down rules upon a record sheet, including a supporting shaft, imprinting type characters, sup-

porting members therefor carried by the shaft, a plurality of line imprinting segments disposed intermediate the type supporting members, at variable positions longitudinally of the shaft and independently rotatively adjustable relative to the imprinting type characters while interposed between the type supporting members, and interengaging portions on the type supporting members and the segments for limiting their relative rotative adjustment to enable the line imprints to be differentially initiated relative to the type character imprints upon the record sheet.

7. A printing roll including a supporting shaft and a plurality of axially adjustable type carrying spacer discs carried thereby forming a unitary assembly, a plurality of line imprinting segments interchangeably interposed between adjacent spacer discs at optionally spaced intervals, means mounting the line imprinting segments for limited rotative adjustment relative to the spacer discs and for individual removal from the assembly independently of the spacer discs, the line imprinting segments adapted to imprint upon a record sheet parallel spaced down rules of less length than the full peripheral extent of the platen roll.

8. A printing roll including a supporting shaft and a plurality of axially adjustable type carrying spacer discs carried thereby forming a unitary assembly, a plurality of marginally interrupted line imprinting elements interposed between adjacent spacer discs at optionally spaced intervals means mounting the line imprinting elements for limited rotative movement relative to the spacer discs and for individual removal from the assembly independently of the spacer discs, the line imprinting elements adapted to imprint intermittently interrupted line imprints upon a continuous strip of record material, and locking means for fixedly securing the discs and interposed line imprinting elements in assembled relation.

9. A printing roll including a supporting shaft and a plurality of axially adjustable spacer discs thereon forming a unitary assembly, a plurality of marginally interrupted line imprinting elements interposed between adjacent spacer discs of the assembly at spaced intervals, and capable of independent limited rotative adjustment relative to the discs while assembled therebetween to initiate different line rule imprints in longitudinally offset relation, and locking means for securing the discs and interposed line imprinting elements in relatively adjusted relation.

10. A printing roll including a supporting shaft, a plurality of type carrying spacer discs carried thereby, a plurality of line imprint elements of segmental form, each having therein a radial slot, the inner end of which is concentric with the shaft and extending thence into intersecting relation with the periphery of the line imprint element, whereby the line imprinting elements are independently engageable in straddle relation with the shaft intermediate adjacent spacer discs at axially spaced intervals, a substantially arcuate indentation in the wall defining the radial slot and locking means engageable therein for securing the assembly of discs and interposed line imprinting elements in adjusted relation.

11. A printing roll element comprising a segmental line rule imprinting member having a peripheral recess therein, including at least two adjacent indentations within the peripheral recess for alternate engagement of a locking device to maintain the rule imprinting member in one of alternate positions of rotative adjustment.

12. A line printing element for a printing roll, comprising an imprinting disc having a radial slot interrupting its imprinting margin and having relative spaced indentations in the margin of the radial slot for engagement of a locking device in an optionally selected indentation to maintain the line rule imprinting disc in alternate positions of rotative adjustment.

13. A printing roll, including a supporting shaft, a series of spacer discs arranged side by side thereon, a plurality of line rule imprinting discs having interrupted imprinting margins interposed at spaced intervals between adjacent discs of the series, the spacer discs and line imprinting discs having therein overlapping apertures, the margins of the apertures in the line rule imprinting discs being indented, and a locking member common to a plurality of line rule imprinting discs extending through the overlapping apertures in the spacer discs and in the line rule imprinting discs and engageable in one or the other of the indentations in the latter to temporarily lock the line rule imprinting discs in relative rotatively adjusted relation.

14. A printing roll, including a supporting shaft, a plurality of concentric line rule imprinting elements and interposed spacer members assembled upon the shaft in an optional sequence to afford a series of relatively spaced down rule impressions upon a continuous record strip, changeable to other spaced relations by rearrangement of the concentric line rule elements, the said line rule elements having marginal indentations therein to effect spaced interruptions in the continuity of the down rule impressions, said line rule elements being rotatively adjustable one relative to the other to longitudinally displace the interruptions of selected down rule impressions, and locking means for securing the line rule imprinting elements in relative positions of adjustment.

15. A printing roll, including a supporting shaft, a plurality of concentric line rule imprinting elements and interposed spacer members assembled upon the shaft in an optional sequence to afford a series of relatively spaced down rule impressions upon a continuous record strip, changeable to other spaced relations by rearrangement of the concentric line rule elements, the said line rule elements having marginal indentations therein to effect spaced interruptions in the continuity of the down rule impressions, and character imprinting type carried by the roll for imprinting indicia upon the record strip at spaced intervals substantially coincident with the interruptions of said down rule impressions.

16. A printing roll, including a supporting shaft, a plurality of concentric line rule imprinting elements and interposed spacer members assembled upon the shaft in an optional sequence to afford a series of relatively spaced down rule impressions upon a continuous record strip, changeable to other spaced relations by rearrangement of the concentric line rule elements, the said line rule elements having marginal indentations therein to effect spaced interruptions in the continuity of the down rule impressions, said indentations extending into concentric relation with the shaft, whereby the line rule imprinting elements straddle the shaft and are each independently retractable in the plane of the imprinting element from between adjacent spacer members for reinsertion between

other adjacent spacer members without necessity of disengaging the spacer members from the shaft.

17. A printing roll, including a supporting shaft, a plurality of concentric line rule imprinting elements and interposed spacer members assembled upon the shaft in an optional sequence to afford a series of relatively spaced down rule impressions upon a continuous record strip, changeable to other spaced relations by rearrangement of the concentric line rule elements, the said line rule elements having marginal indentations therein to effect spaced interruptions in the continuity of the down rule impressions, said spacer members having registering peripheral notches therein, and printing type members removably positioned in the registering notches to imprint indicia at spaced intervals upon the record strip in proximate relation with the interruptions of the imprinted down rules.

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