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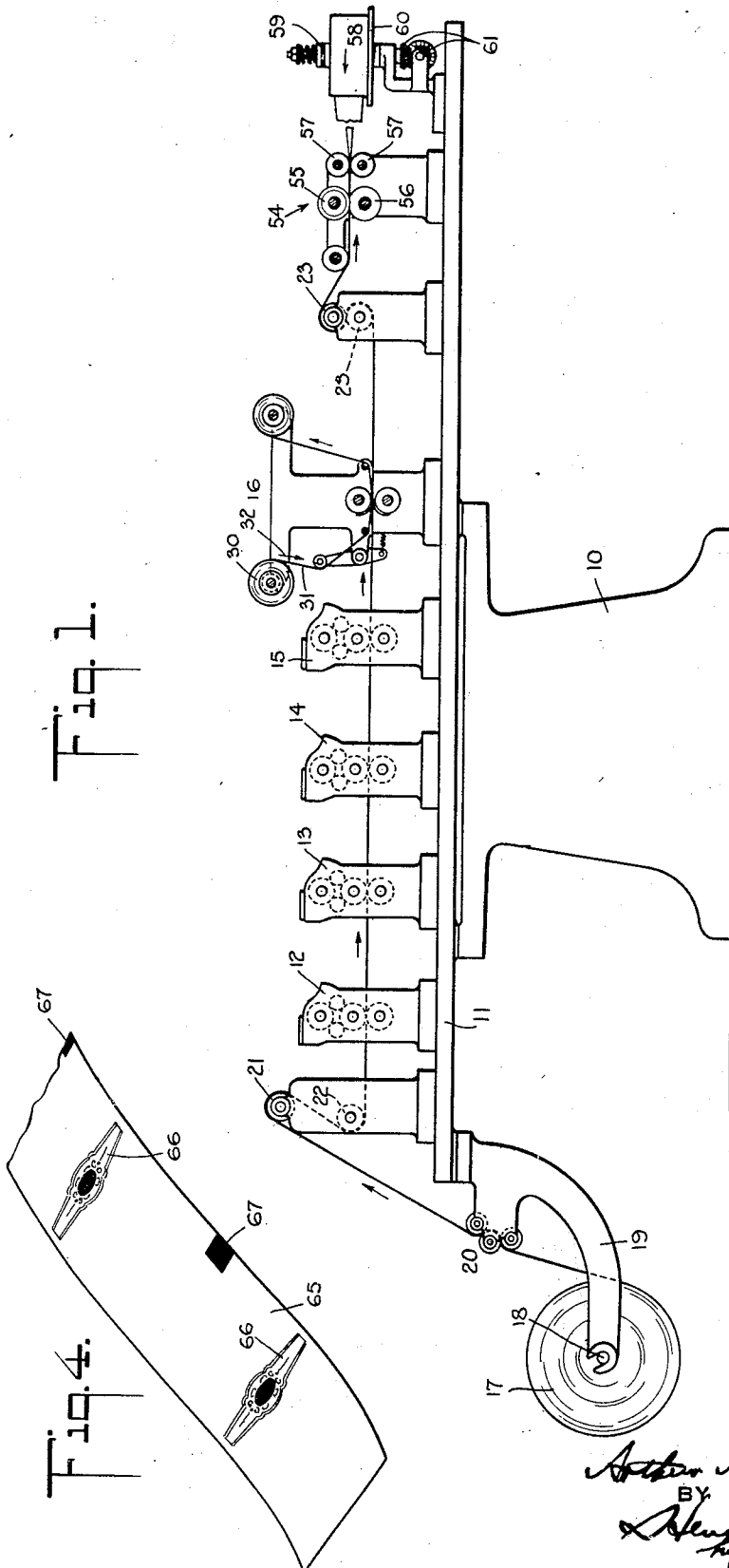
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1,949,362

PROCESS AND MACHINE FOR IMPRESSING AND EMBOSSING COVERING MATERIAL

Filed July 31, 1930

3 Sheets-Sheet 1



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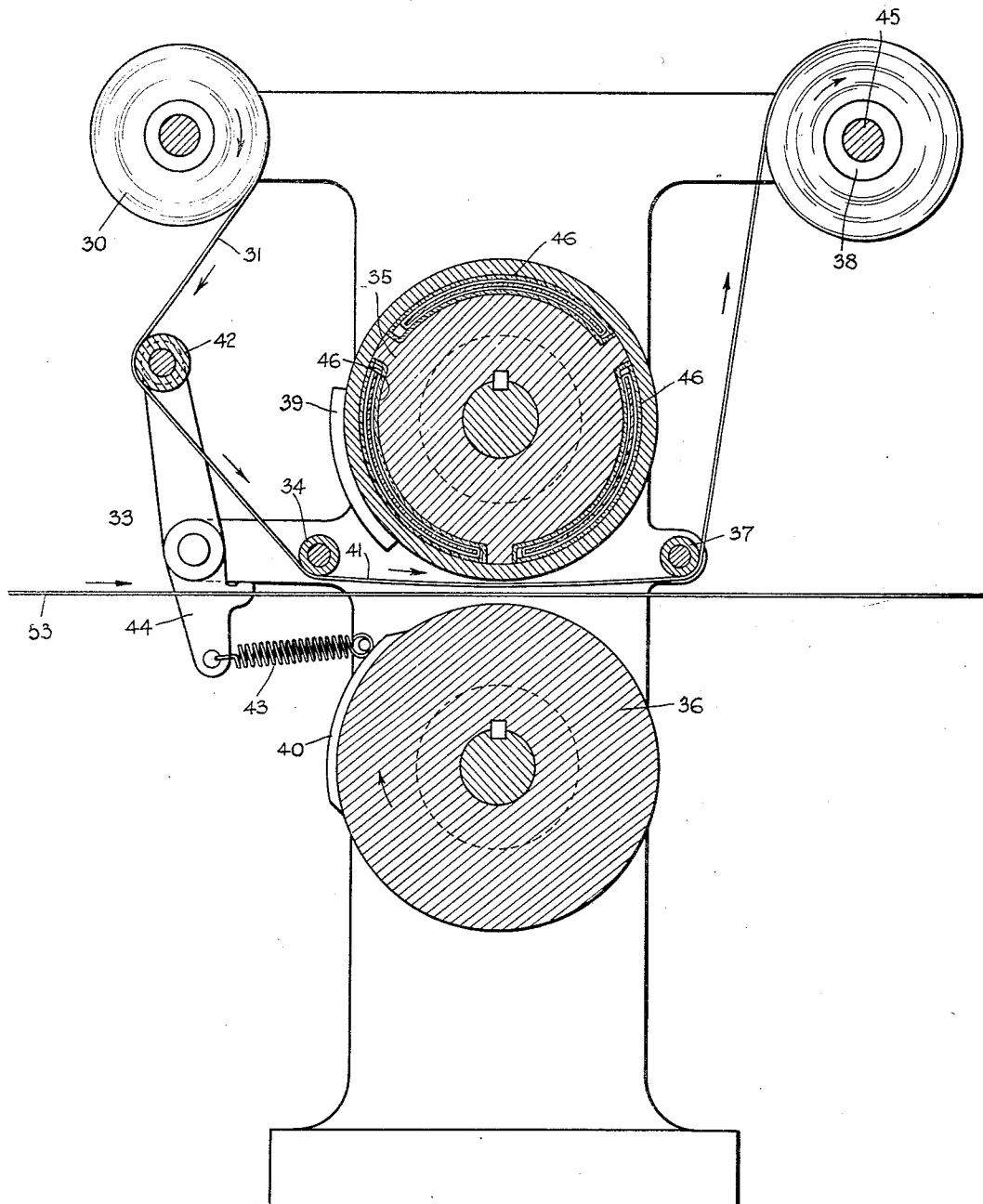
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Fig. 2.



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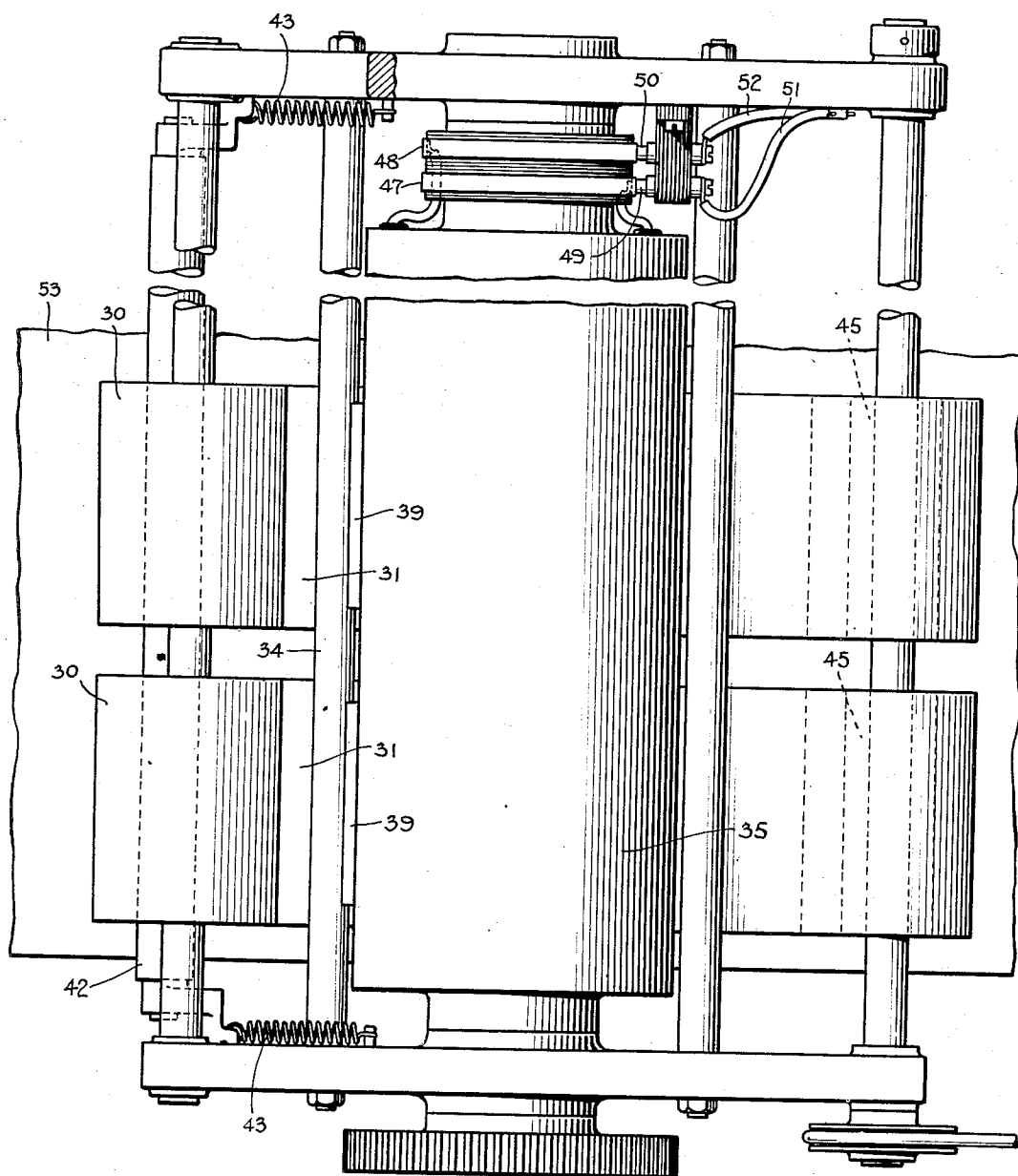
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Fig. 3.



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PROCESS AND MACHINE FOR IMPRESSING
AND EMBOSSING COVERING MATERIALArthur M. Wickwire, Jr., Nutley, N. J., assignor
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6 Claims. (Cl. 41-7)

This invention relates to the process and mechanism applicable thereto for embossing indefinite lengths of cellophane or other transparent or translucent enwrapping material, particularly in strip form for enclosing cigars and other articles; certain preferred forms of such embossed material are described and claimed in my co-pending application, Ser. No. 471,392, filed July 28, 1930, entitled Embossed strip of transparent material.

A particular use of cellophane or other transparent material bearing embossed impressions is for cigars, enwrapped pursuant to present-day practice in individual lengths of such strip, effected by severing individual lengths of the strip, the embossed impression or indicia being of trade mark or other trade character, such as trade marks per se, name of brand, type, size, etc. such indicia being repeated on the strip at regular or uniform spacings, each indicium being disposed at appropriate relation to the location of severing of the strip. Also, preferably, the cellophane strip bears areas of opaque impressions, or applied material for cooperation with the regulation "electric eye" of present-day cellophane enwrapping machines, for controlling the instants of operation of the severing mechanism and thereby the locations of severing of the strip.

In carrying out the aforesaid, I particularly contemplate the impressing of the indicia by metallic medium or media as by heat-releasible, so-called roll leaf, the metallic medium being as desired either genuine metal, or so-called imitation metal, with or without dye treatment of such metallic media, which metallic impressions may be supplemented with deposits of colored inking, printing or like media.

My machine, pursuant to the present invention, is arranged to receive the cellophane in the form of a web, the respective units of my machine, including a metallic medium embossing unit, successively applying the desired printed matter and the one or more embossed metallic media, whereby the web is impressed at uniform spacings of the trade mark or other indicia and other deposits relative to one another lengthwise of the web.

Such web may be of a single width of the desired resulting strip for use in a regulation or other approved cellophane wrapping machine; my machine is particularly adapted to receive the web of multiple width and suitable mechanism provided for slitting the web into individual

strips and rolling the individual strips in roll form.

Further features and objects of the invention will be more fully understood from the following detail description of the accompanying drawings, in which

Fig. 1 is a side elevation, largely of diagrammatic form of illustration, of a machine equipped for carrying out my invention;

Fig. 2 is a central vertical sectional elevation, on an enlarged scale of a metallic embossing unit indicated in Fig. 1;

Fig. 3 is a top plan view of Fig. 2; and

Fig. 4 shows in perspective a portion of a cellophane strip bearing impressions and embossed matter, illustrative of a product of my machine and process.

Referring to Fig. 1, the machine comprises any suitable base such as the pedestal 10 on which rests the bed 11 for the support of the respective units; the units in this instance are illustrated in Fig. 1 as four in number, for printing colors, designated 12, 13, 14, 15, and a unit 16 for embossing a metallic medium. By "colors" I include all forms of media, inclusive of white, known as ink, paint, or the like, and by metallic medium, I include genuine metal such as gold, silver, etc., imitation metals such as bronzes, aluminum alloys, etc., with or without dye.

Obviously, as desired, any number of colors and/or metallic media may be employed.

The supply roll of the web of cellophane or like enwrapping transparent material is indicated at 17, suitably mounted, as on a round bar 18 or other suitable rotary support, in the journal openings of the bracket 19 which may be secured to the bed 11. The web may be passed first through the set of feed-in rolls 20 to positively advance the web, and thence over the idler rolls 21, 22, as indicated, or otherwise, and preferably to feed the web in horizontal alignment between the respective sets of printing (or embossing) and their respective impression (or make-ready) rolls of the printing units 12, 13, etc., and through the metal embossing unit 16, and finally through a suitable set of take-up rolls 23. Preferably, the tension of the take-up rolls 23 is minutely greater than that exercised by the feed-in rolls 20 to thereby insure absence of slack of the web in its transit from one unit to and through the succeeding unit or units.

It will be understood that suitable ink supplying rolls for the printing cylinders are provided as will be apparent to those skilled in the art.

As indicated above, my invention is particu-

larly applicable for embossing metallic media upon a cellophane strip. As one manner of attaining such embossing impression, I have illustrated in Figs. 2 and 3, in conjunction with the unit 16 illustrated generally in Fig. 1, suitable mechanism for automatically feeding to regulated extents so-called roll leaf which is in strip form and usually comprises a carrier strip of paper or like inert material, on one face of which is applied a layer of unctuous material serving as the heat-releasing material, upon which in turn is deposited leaf of genuine metal or a layer of powdered bronze or other imitation metal, with or without dye, and a final layer of shellac or other sizing.

The supply roll of such roll leaf is indicated in Fig. 1 at 30, the free length 31 of which is fed in the direction of the arrow 32 through a suitable slack producing and regulating device 33, thence about the "breaker" bar 34, thence in transit between the embossing die mounted on the cylinder 35 and the "make-ready" cylinder 36, thence about the "breaker" bar 37 and thence on the re-wind roll 38, as is shown on larger scale and in greater detail in Figs. 2 and 3. A single die or set of dies is indicated at 39 on the die carrying cylinder 35, and its complementary make-ready indicated at 40 on the impression cylinder 36. It will be apparent to those skilled in the art that the number of dies or set of dies and complementary intaglio make-ready may be selected in number and at proper spacings circumferentially of their cylinders, depending upon the nature of the embossing, the number of embossings per linear unit of the web, etc. It will be observed that when each die or set of dies begins and continues registry with its make-ready, the portion 41 of the strip of the metallic medium interposed between the cylinders 35, 36 is engaged thereby and tension exercised upon the anterior portion 31 of the strip and upon the roll 30, causing the roll and said anterior portion to be pulled in the direction of the applied arrows, tension being also exercised by the passing of the strip 31 about the idler 42 of the tensioning device 33, biased by its retractile spring 43, one end of which is connected to the lever 44 carrying the idler 42. Upon completion of movement of registry of each die or set of dies 39, with the make-ready 40, engagement thereby with the strip portion 41 is discontinued by the action of the "breaker" rods 34, 37. The re-wind roll 38 is driven by any suitable rotary drive of its shaft 45, the spool of the re-wind 38 being mounted on and in actuation therewith by the shaft 45 through suitable adjustable friction means, the adjustment of frictional engagement being set to be less than that exerted on the anterior portion 31 of the strip by the idler 42 under tension of the spring 43, whereby during the periods of non-registry of the die or set of dies 39 and make-ready 40, i. e., non-engagement of the same with the portion 41 of the metallic strip, the re-winding operation of the spool 38 ceases. Upon re-registry of the die or set of dies 39 and make-ready 40, the feed of the metallic strip again takes place, whereby the extent of feed of the metallic strip for the particular die or dies is automatically regulated.

It will be observed that the operation of the re-wind 38 ensues by reason of the paper carrier strip thereof remaining integral, the portion of the metallic medium from the strip transferred to the embossed impression on the web corresponding to the configuration of the outlines of

the dies and effected by the heat supplied to the die or set of dies 39 by any suitable means in action upon the heat-releasable medium.

One suitable means of supplying heat is illustrated by the use of electrical resistance coils, suitably enclosed within the indicated electrically insulated housings 46, of suitable number, three being shown in Fig. 2, the leads of the electrical resistance wires being connected to suitable commutator bars 47, 48, see Fig. 3, engaged by the brushes 49, 50, connected through the conductors 51, 52 to any suitable supply of electrical energy.

In Figs. 2 and 3, the web of cellophane or like or other material is marked 53.

As indicated above, the web 53 may be of multiple width, and accordingly the number of dies or set of dies 39 axially of the cylinder 35 corresponds to the number of individual lengths into which the web is slitted. Preferably, the slitting of the web takes place posteriorly of the embossing operations, as is indicated at 54 in Fig. 1, the slitting being preferably effected by the use of complementary rotary severing knives 55, 56, whereupon the individual lengths are passed between sets of feed-out rolls 57, etc., to suitable re-winding means.

For re-winding cellophane, it is preferable to rotate the roll, see 58 Fig. 1, with its axis substantially vertical, the spool of the roll being connected by any suitable adjustable frictional connection, see 59, the spool and rewound roll 58 being supported on a rotary table 60, or equivalent, rotated in the desired direction by suitable gearing indicated at 61 from the main shaft or counter-shaft of the machine.

In Fig. 4 I have indicated a fragment of a length of cellophane 65 on which indicia 66 appear, each indicia being preferably of trade mark character, and may be in similitude of a cigar band for use with cigars, or name of the article, manufacturer, and other indicia appropriate for the particular articles enclosed in individual, severed lengths of the cellophane strips.

Desirably, such band or other trade mark indicia may embody one or more colors as well as the embossed metallic medium, such additional color or colors being impressed by the printing units, shown anteriorly of the embossing unit 16.

The product, as illustrated in Fig. 4, preferably embodies also elements 67 in the form of deposits of ink or like material, impressed by a printing unit preferably anteriorly of the embossing unit, or otherwise applied, for cooperation with an "electrical eye", i. e., a photo-electric lamp attachment, of a cellophane wrapping machine, for cooperation with its severing mechanism. The elements 67 are indicated exaggerated in dimension in Fig. 4, and preferably its dimensions are relatively minute and each element is disposed substantially centrally of the locations of severing of the strip 65 transversely of its length, whereby upon enwrapping the severed individual lengths of the strip, the remnants of each element 67 are substantially concealed within the folded or lapped ends of the cellophane material at the ends of the cigar, and similarly for other articles.

By my machine and process, as appears hereinabove, the desired printed impressions are applied to the web of the covering material in advance of the step of embossing with metallic medium by continuous operation upon the web of the successively arranged printing and embossing units, whereby high quality and uniform production at high rate of operation are readily at-

tained. These advantageous results are obtained by reason of the steps of printing or the like preceding the step of embossing, and also by reason of the printing and embossing units being disposed substantially in a single plane and the web passed under desired tension continuously successively from one unit to the succeeding unit or units.

Whereas, I have described my invention by reference to specific forms thereof, it will be understood that many changes and modifications may be made without departing from the spirit of the invention.

I claim:

1. The combination of a plurality of continuously operatively effective impression units disposed in successive relation, said impression units including a unit for embossing with metallic medium by the use of heat-releasing strip material embodying a metallic medium, said embossing unit further including a continuously operatively effective rotary cylinder for carrying suitable die or dies and a continuously operatively effective impression cylinder adapted to carry suitable make-ready material in intaglio of the relief of said die or dies, heating means for said rotary cylinder, continuously operatively effective re-winding means for said strip material, frictional drive means for said re-winding means, slack-effecting means for said strip material, said slack-effecting means exerting a force on the strip material in excess of the force of said friction driving means, and means for supplying web material to and through said plurality of said impression units.

2. The combination of a plurality of continuously operatively effective impression units disposed in successive, substantially horizontal relation, said impression units including a unit for embossing with metallic medium by the use of heat-releasing strip material embodying a metallic medium, said embossing unit further including a continuously operatively effective rotary cylinder for carrying suitable die or dies and a continuously operatively effective impression cylinder adapted to carry suitable make-ready material in intaglio of the relief of said die or dies, heating means for said rotary cylinder, continuously operatively effective re-winding means for said strip material, frictional drive means for said re-winding means, slack-effecting means for said strip material, said slack-effecting means exerting a force on the strip material in excess of the force of said friction driving means, and means for supplying web material to and through said plurality of said impression units.

3. The combination of a plurality of continuously operatively effective impression units disposed in successive relation, said impression units including a unit for embossing with metallic medium by the use of heat-releasing strip material embodying a metallic medium, means for supplying a web of material to and through said impression units, means for longitudinally slitting said web into individual lengths, means for continuously operatively effective re-winding said individual lengths, said embossing unit including embossing dies and complemental intaglio mountings in multiple sets and printing surfaces in multiple whereby said web is embossed and imprinted in duplicate transversely of the web as

well in repetition longitudinally of the web, and means for feeding strips of heat-releasable metallic embodying material respectively to said multiple dies to regulated extents.

4. The combination of a plurality of continuously operatively effective impression units disposed in successive relation, said impression units including a unit for embossing with metallic medium by the use of heat-releasing strip material embodying a metallic medium, means for supplying a web of material to and through said impression units, means for longitudinally slitting said web into individual lengths, means for continuously operatively effective re-winding said individual lengths, said embossing unit including embossing dies and complemental intaglio mountings in multiple sets and printing surfaces in multiple whereby said web is embossed and imprinted in duplicate transversely of the web as well in repetition longitudinally of the web, and means for feeding strips of heat-releasable metallic embodying material respectively to said multiple dies, said strip feeding means including common means for regulating the extents of feed of said metallic embodying strips individually.

5. The combination of a plurality of continuously operatively effective impression units disposed in successive relation, said impression units including a unit for embossing with metallic medium by the use of heat-releasing strip material embodying a metallic medium, means for supplying a web of material to and through said impression units, means for longitudinally slitting said web into individual lengths, means for continuously operatively effective re-winding said individual lengths, said embossing unit including embossing dies and complemental intaglio mountings in multiple sets and printing surfaces in multiple whereby said web is embossed and imprinted in duplicate transversely of the web as well in repetition longitudinally of the web, and means for feeding strips of heat-releasable metallic embodying material respectively to said multiple dies, said strip feeding means including common means for regulating the extents of feed of said metallic embodying strips individually, said slitting means being disposed posteriorly of said die embossing unit.

6. The combination of a plurality of continuously operatively effective impression units disposed in successive relation, said impression units including a unit for embossing with metallic medium by the use of heat-releasing strip material embodying a metallic medium, means for supplying a web of material to and through said impression units, means for longitudinally slitting said web into individual lengths, means for continuously operatively effective re-winding said individual lengths, said embossing unit including embossing dies and complemental intaglio mountings in multiple sets and printing surfaces in multiple whereby said web is embossed and imprinted in duplicate transversely of the web as well in repetition longitudinally of the web, and means for feeding strips of heat-releasable metallic embodying material respectively to said multiple dies to regulated extents, said re-winding means for the said web lengths serving to wind the same individually about vertically extending axes.

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