

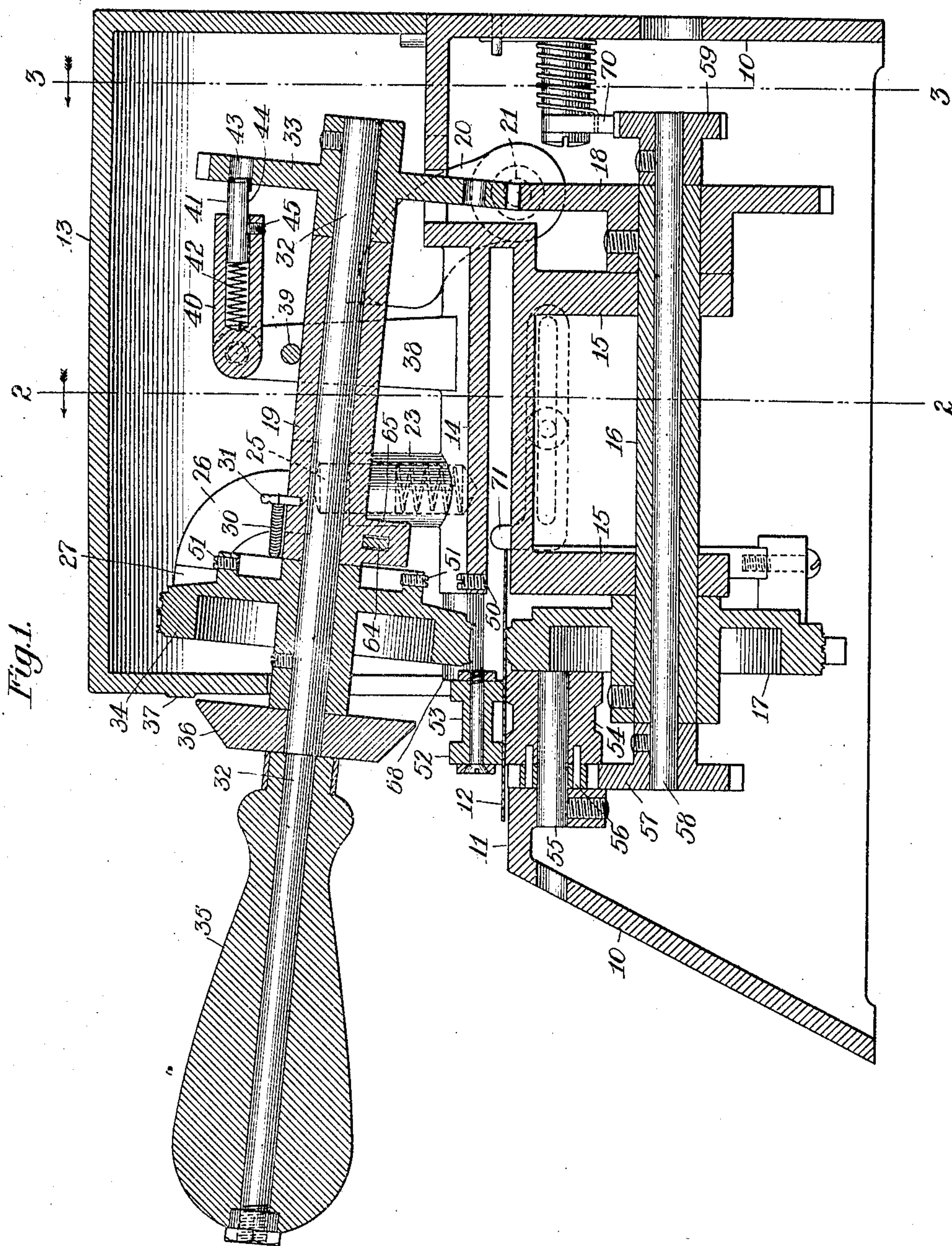
No. 849,715.

PATENTED APR. 9, 1907.

E. E. ANGELL.
METHOD OF PRINTING.

APPLICATION FILED AUG. 14, 1905.

3 SHEETS—SHEET 1.



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Fig. 3.

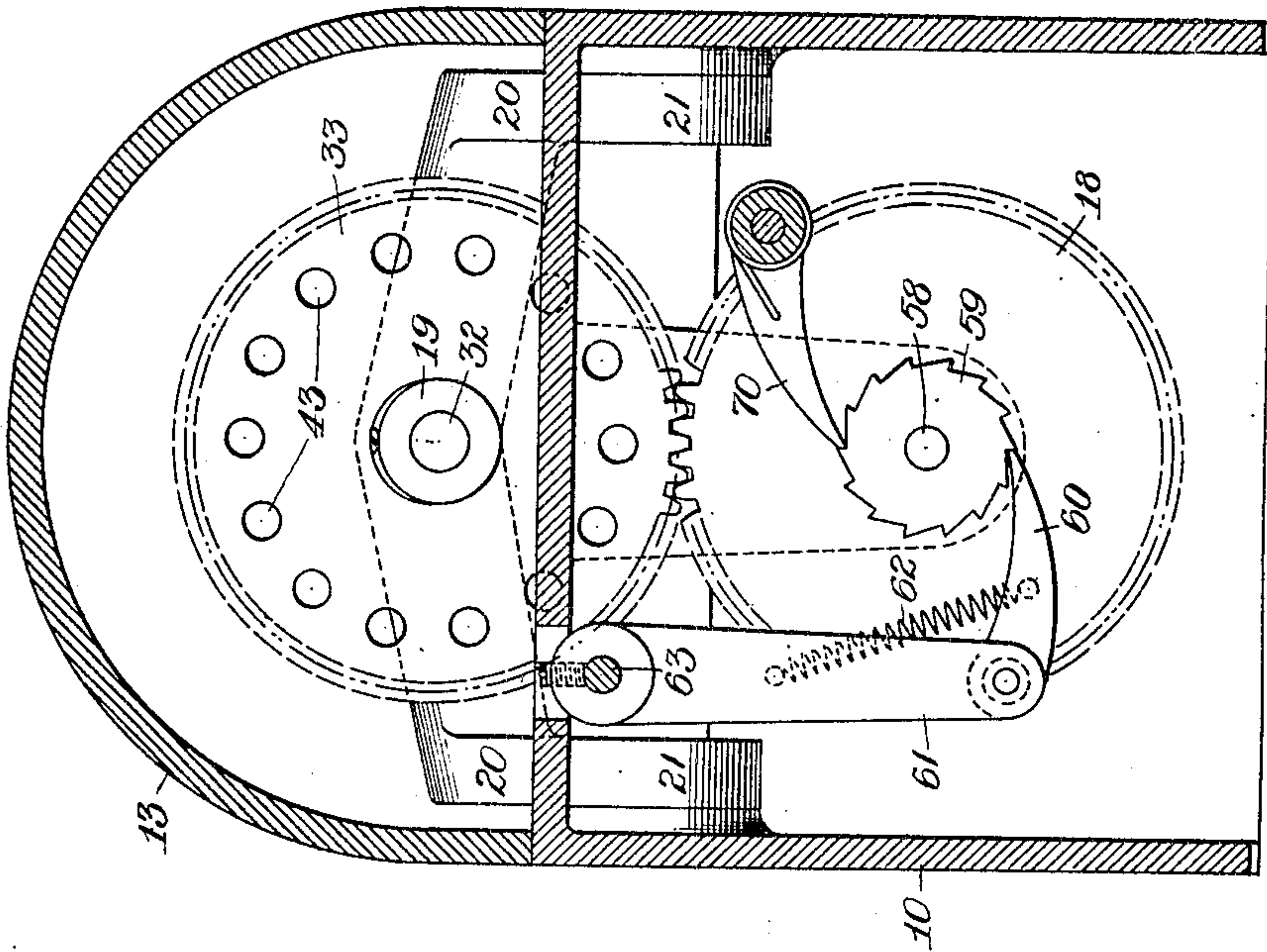
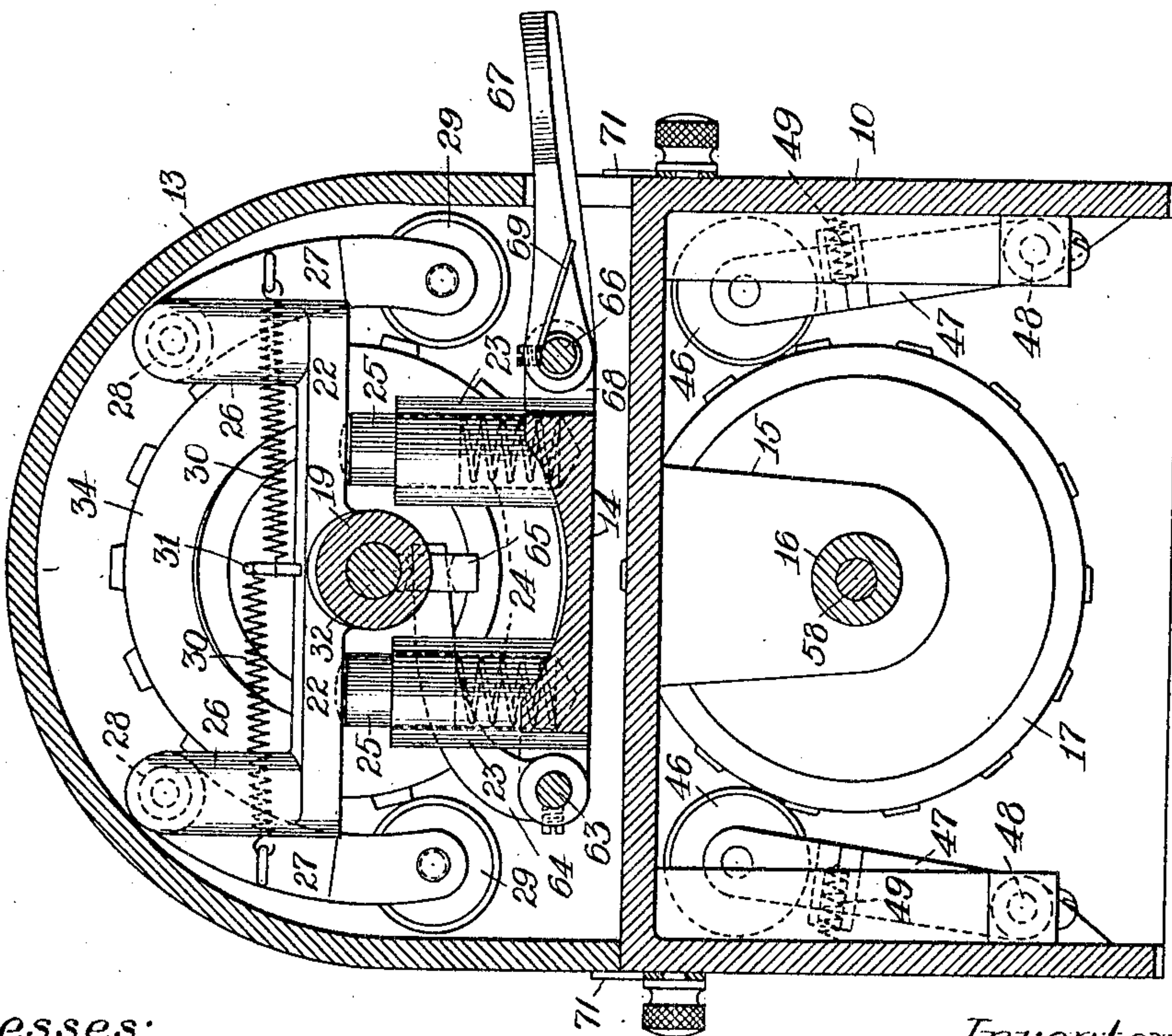


Fig. 2.



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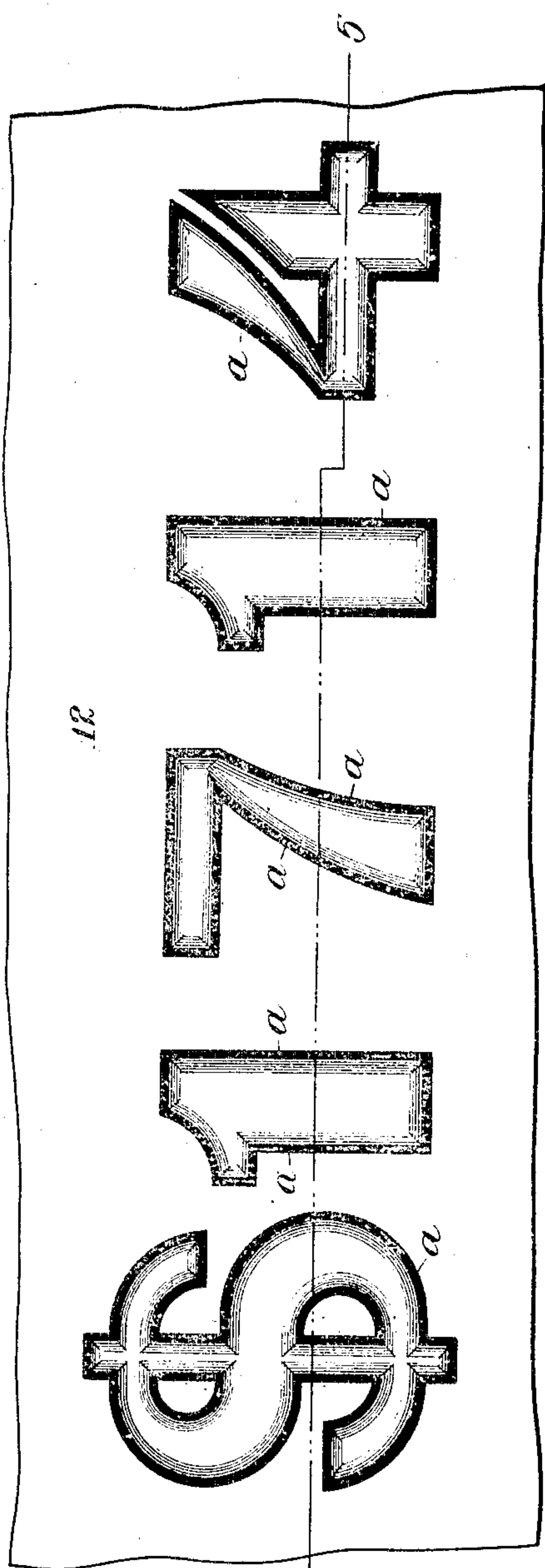


Fig. 4.

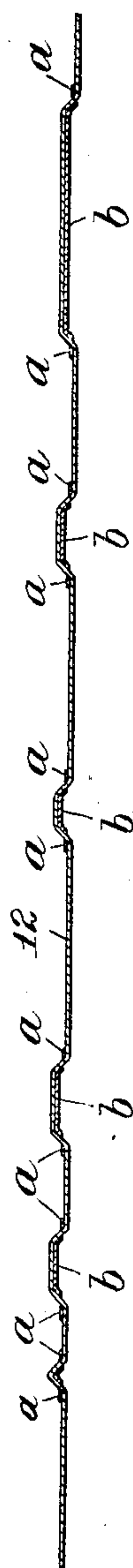


Fig. 5.

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UNITED STATES PATENT OFFICE.

EDWIN E. ANGELL, OF SOMERVILLE, MASSACHUSETTS, ASSIGNOR TO
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METHOD OF PRINTING.

No. 849,715.

Specification of Letters Patent.

Patented April 9, 1907.

Application filed August 14, 1905. Serial No. 274,047.

To all whom it may concern:

Be it known that I, EDWIN E. ANGELL, of Somerville, in the county of Middlesex and State of Massachusetts, have invented certain new and useful Improvements in Methods of Printing, of which the following is a specification.

This invention relates to the art of printing, and has particular reference to a method of indelibly or ineffaceably indicating the monetary value of checks, bonds, stock certificates, and similar commercial papers to prevent alteration thereof.

The object of the invention is to cause a coloring-matter to be so impressed in the paper as to show through it, preferably without perforating or puncturing the paper, whereby any attempt at alteration of the figures or characters will expose an increased amount of color, and thereby disclose such attempt. In attaining this object my improved method prevents the alteration or raising of a check or similar commercial paper by embossing characters on the check and applying a strong color to the back or recessed part, which color may be caused to show through the front of the paper.

A further object of the invention is to apply one color solidly on one side of the paper and another color in outline on the other side of the paper, whereby an attempt at alteration would result in more or less blending of the two colors.

To these ends the invention consists in the process or method substantially as hereinafter described and claimed.

In the accompanying drawings I have illustrated one embodiment of a device or apparatus for carrying out my invention as hereinafter stated.

Of said drawings, Figure 1 represents a central longitudinal vertical section through the device or apparatus. Fig. 2 represents a section on line 2 2 of Fig. 1. Fig. 3 represents a section on line 3 3 of Fig. 1. Figs. 4 and 5 are respectively a plan and sectional view of a portion of a commercial paper having characters embossed thereon, said views representing the paper and characters as very much enlarged in order to clearly indicate the location and application of the coloring-matter applied to the upper and lower surfaces of the sheet.

Similar reference characters indicate similar parts throughout the several views.

The base or frame of the device is represented at 10, said base having a table or surface 11 for the check or paper 12 that is to be embossed and printed. A suitable cover is indicated at 13. The frame is provided with a horizontal bracket 14 a slight distance above the level of the table-surface 11.

Within the base are bearings 15 for a tubular shaft or sleeve 16, to which is rigidly secured a type-wheel 17, having raised characters that are adapted to emboss the paper. Secured to the rear end of the tubular shaft or sleeve is a gear 18.

A tubular arm or lever 19 is provided with ears 20, which are pivoted at 21 to the base. Said lever is formed with lateral arms 22, Fig. 2, and the bracket or frame portion 14 is provided with sockets or hollow bosses 23, containing springs 24 and plugs or plungers 25, said springs pressing the plugs or plungers upward against the under side of the arms 22, so as to normally hold the lever in the position indicated in Fig. 1. The arms 22 are also provided with uprights 26 at their outer ends, arms 27 being pivoted at 28 to said uprights and provided with inking pads or rollers 29. Springs 30 are connected with the arms 27 and to a pin 31, projecting from the top of the lever, said springs serving to normally hold the inking-pads in contact with the characters of the upper type-wheel, which will be presently described.

A shaft 32 is rotatively mounted in the tubular lever 19, and a gear 33 is rigidly connected with its inner end, said gear meshing with the gear 18 at a point between and in alinement with the pivots 21 of the lever 19, so that movements of said lever will have no effect upon the meshing of the gears.

The upper type-wheel 34 is rigidly secured to the shaft 32 and is provided with intaglio characters, corresponding in outline with the characters upon the type-wheel 17, but so formed as to press the paper downward around the edges of the embossing-type upon said wheel 17. A handle 35 is secured to the front end of the shaft 32, and said shaft also has secured to it a disk or dial 36, provided with suitable characters corresponding with those upon the type-wheels and with marks to register with a pointer or indicator 37 upon

the cover 13. Inasmuch as such a dial-and-pointer construction is well known it is not necessary to represent the characters borne by the disk 36.

5 Rising from the bracket or frame 14 is an upright 38, having a stop-pin 39 to limit the upward movement of the lever. A horizontal portion 40 at the upper end of the upright 38 is formed with a socket in which is
10 mounted a plug or yielding stop or detent 41, having a convex or conical outer end. In the recess in rear of the plug or stop 41 is a spring 42. Said plug is formed with a recess or groove 44 to coact with a limiting pin or
15 screw 45 to restrict the outward movement of the plug 41 under the influence of the spring 42. The said plug or detent 41 co-operates with either one of a series of holes 43 formed in the gear 33, said holes being
20 preferably slightly smaller than the diameter of the detent 41, so that only the tapered or conical end portion of the plug can engage the mouth of a hole 43, thereby enabling the
25 shaft 32 to be turned, by means of the handle 35, by the employment of sufficient force to cause the detent 41 to slip out of engagement with said hole.

To supply ink to the lower type-wheel 17, I provide pads or rollers 46, carried by arms
30 47, pivoted at 48 to the base or frame of the machine and having springs 49 to press the inking-rollers against the type-wheel.

To limit the movement of the upper type-wheel toward the lower type-wheel, I provide
35 an adjustable stop 50 in the frame, said stop being adapted to coact with either one of a series of adjustable stops 51, mounted in a circular flange at the rear of the upper type-wheel 34.

40 A wheel presser-foot to bear upon the surface of the paper that is to be embossed and printed is represented at 52, said wheel being mounted upon a pin or stud 53, carried by a movable member hereinafter described.

45 The feed-wheel 54 is mounted on a pin 55, secured to the base or frame, a pinion 56 being fast with the feed-wheel 54. Said pinion 54 meshes with a pinion 57, fast on a shaft 58, mounted in the tubular shaft or sleeve 16.

50 Secured to the rear end of the shaft 58 is a ratchet 59, adapted to be actuated by a pawl 60, pivoted to the lower end of an arm 61 and connected to the latter by a spring 62, said arm 61 being carried by a rock-shaft 63, Fig.

55 3. The rock-shaft 63 is provided with an upper arm 64, Fig. 2, the end of which engages a perforated ear 65, projecting downward from the tubular arm or lever 19, so that each downward pressure of the lever

60 will cause the pawl 60 to retreat from the tooth of a ratchet, and upon the succeeding upward movement of the lever under the influence of the springs 24 the pawl 60 will engage a tooth of the ratchet 59 and cause the
65 shaft 58 to actuate the feed-wheel 54 to ad-

vance the check or sheet of paper a proper distance or step ready for the next impression due to another downward movement of the lever and upper type-wheel.

A detent-pawl 70 engages the ratchet 59 to
70 prevent retrograde movement. Mounted in bearings carried by the bracket 14 is a rock-shaft 66, having an arm or finger-piece 67, Fig. 2, and provided with another arm 68, carrying the pin or stud 53, on which the
75 pressure-wheel 52 is mounted. A spring 69 is coiled upon the shaft 66 and connected with the arm 67 and a suitable fixed part of the frame, so as to exert a downward pressure of the wheel 52 upon the paper. 80

Suitable adjustable gages for the edge of the paper are indicated at 71. The type or characters carried by the two type-wheels are such that those upon one wheel serve to emboss and print solidly-colored characters,
85 the color that will be deposited in the concavities, preferably the under side of the paper, depending upon the color applied to the inking-rollers 46. As has been stated, the type carried by the upper wheel are in-
90 taglio. While they outline the letters or numerals upon the upper surface of the paper with an ink preferably of a contrasting color, due to whatever ink is applied to the rollers 29, the said characters of the upper type-
95 wheel depress the surface of the paper around the outer edges of the raised portions embossed by the characters of the lower type-wheel.

In Figs. 4 and 5, which are enlarged or
100 magnified considerably beyond the size actually employed for check-printing, I have represented the ink or coloring-matter which is deposited by the type-wheel 34 at *a*. The ink or coloring-matter deposited by the lower
105 type-wheel 17 is indicated at *b*. It will therefore be seen that the paper is provided on one side with solidly-colored characters and on the other side with characters outlined in
110 color, the colors depending upon the selection for the inking-rollers. It will also be understood that the coöperation of the intaglio characters upon the one wheel with the embossing characters of the other wheel serves to stretch the portions of the paper
115 sheet on which the coloring-matter *b* is applied, so that the said coloring-matter will be readily perceptible on the face of the sheet inside of the lines bounded by the ink or coloring-matter *a*. Any attempt to alter the
120 characters will only serve to increase the amount of tint showing through the paper from the ink *b* and also tends to blend the colors *a* and *b*.

Of course it will be understood that when
125 using the apparatus described for carrying out my improved method the rotation of the handle 35 brings any particular pair of characters of the upper and lower type-wheels opposite each other, due to the intermeshing. 130

of the gears 18 and 33, and of course the characters borne by the two wheels are alike in so far that when, for instance, a "4" is uppermost on the lower wheel then the corresponding intaglio "4" of the upper type-wheel will be opposite the "4" of the lower wheel.

Having now described my invention, I claim—

10 1. The method of indelibly marking or printing on sheets consisting in offsetting a portion of the surface of the sheet, depositing solid masses of color in the concave side of the offset, and depositing an outline of color
15 around the edges of the offset portions.

2. The method of indelibly marking on paper, which consists in compressing a sheet of paper between cooperating types or dies in the form of a conventional character, one
20 of which is raised and solid, having a plane printing-surface, and the other of which has projecting ribs separated by recesses adapted to surround the solid type and forming the outlines only of the characters.

25 3. The method of indelibly marking on paper, consisting in raising a portion of the surface of the paper having the form of a legible character of extended area and sharply defining the edges of the character, inking
30 solidly the concave side of the raised surface, and inking in the angles between the raised edges of the character and the surface of the sheet.

35 4. The method of indelibly marking on paper, which consists in clamping a sheet of

paper between cooperating types, one of which is solid and the other having an edge adapted to surround the solid type, and applying ink to opposite sides of the sheet at the same time by means of said types. 40

5. Commercial paper having an offset or embossed portion colored in the concavity thereof, and the paper having on its opposite side a line following the edges of the embossed portion. 45

6. Commercial paper having a raised portion formed as a legible character colored on its concave side and surrounded on the opposite side of the paper close to its raised edges by a colored line. 50

7. Commercial paper having a raised portion formed as a legible character with an extended surface and sharply-defined edges, and inked in the angles between the surface of the sheet and the edges of the raised portion. 55

8. Commercial paper having a raised portion formed as a legible character with an extended surface and sharply-defined edges, inked over the entire concave surface of the raised portion, and inked in the angles formed between the outwardly-extending edges of the raised character and the surface of the sheet. 60

In testimony whereof I have affixed my signature in presence of two witnesses. 65

EDWIN E. ANGELL.

Witnesses:

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