

No. 672,363.

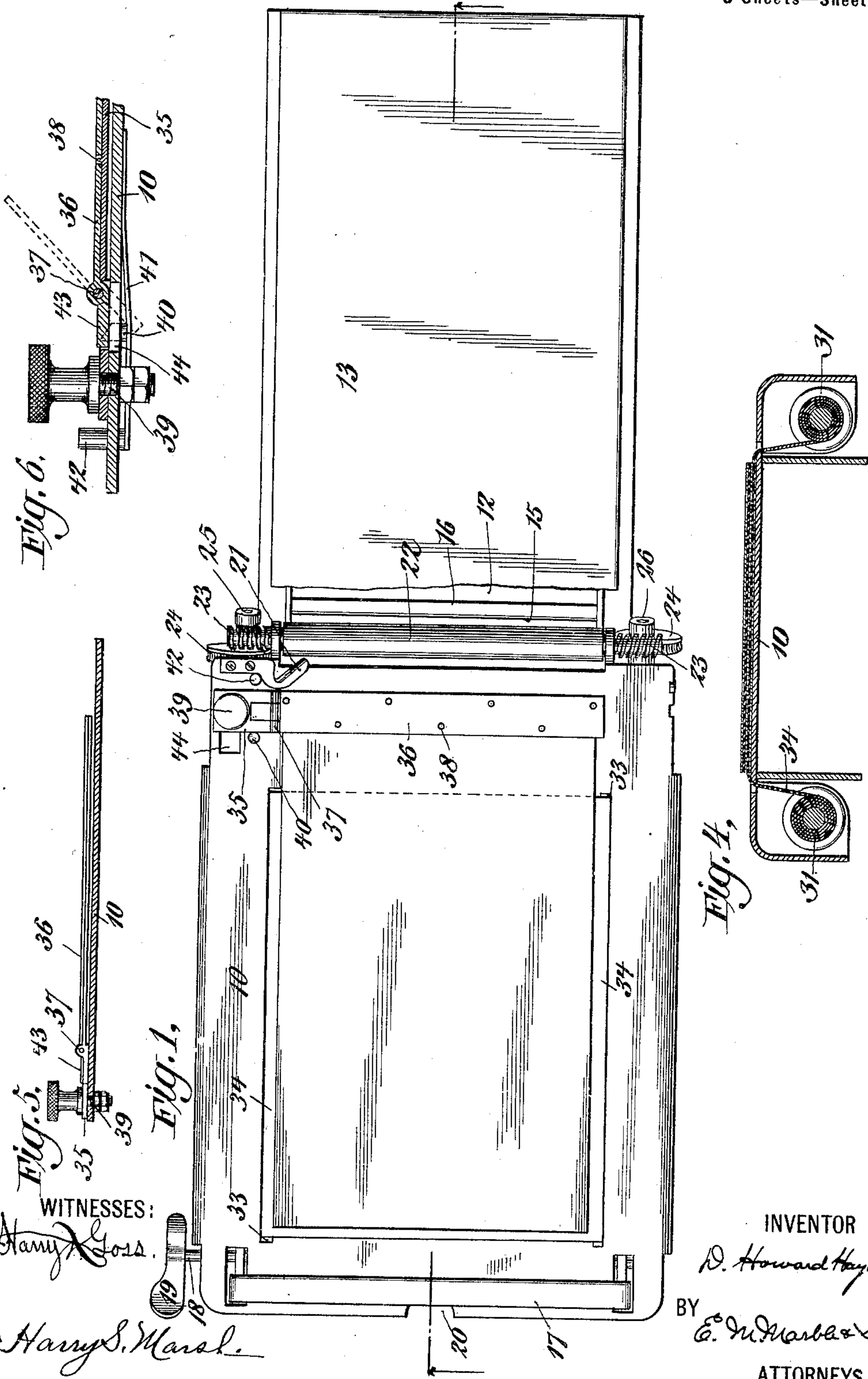
Patented Apr. 16, 1901.

D. H. HAYWOOD.
TRIPLICATING MACHINE.

(Application filed Apr. 17, 1900.)

(No Model.)

3 Sheets—Sheet 1.



WITNESSES:

Harry S. Goss.

Harry S. Marsh.

INVENTOR

D. Howard Haywood

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E. M. Marshall & Son

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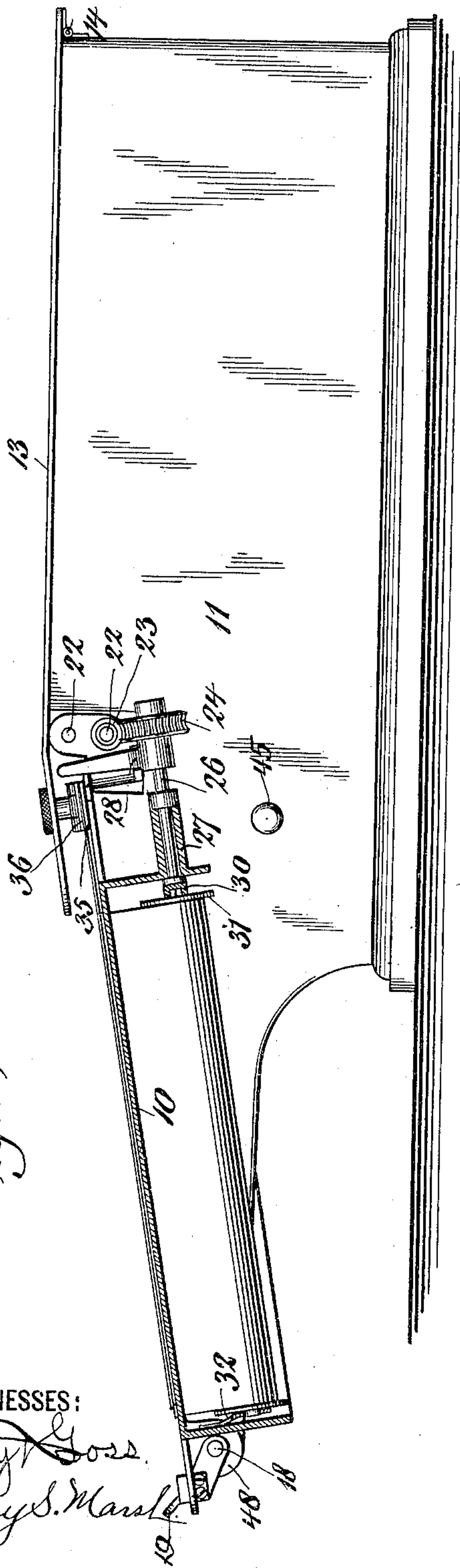
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3 Sheets—Sheet 2.

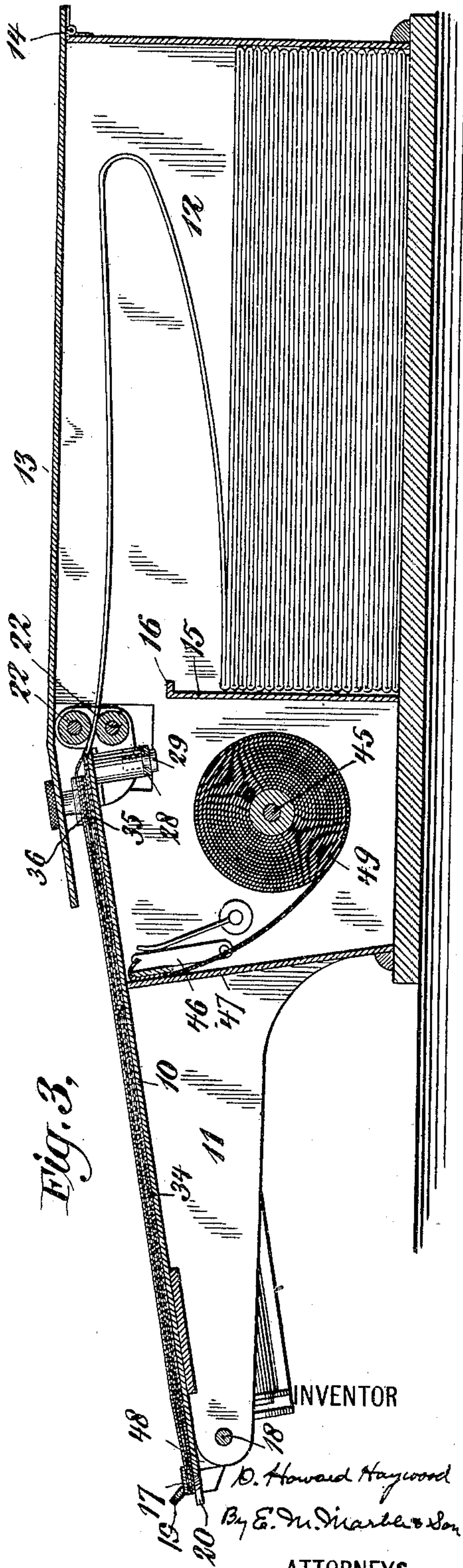
Fig. 2,



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Fig. 3,



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3 Sheets—Sheet 3.

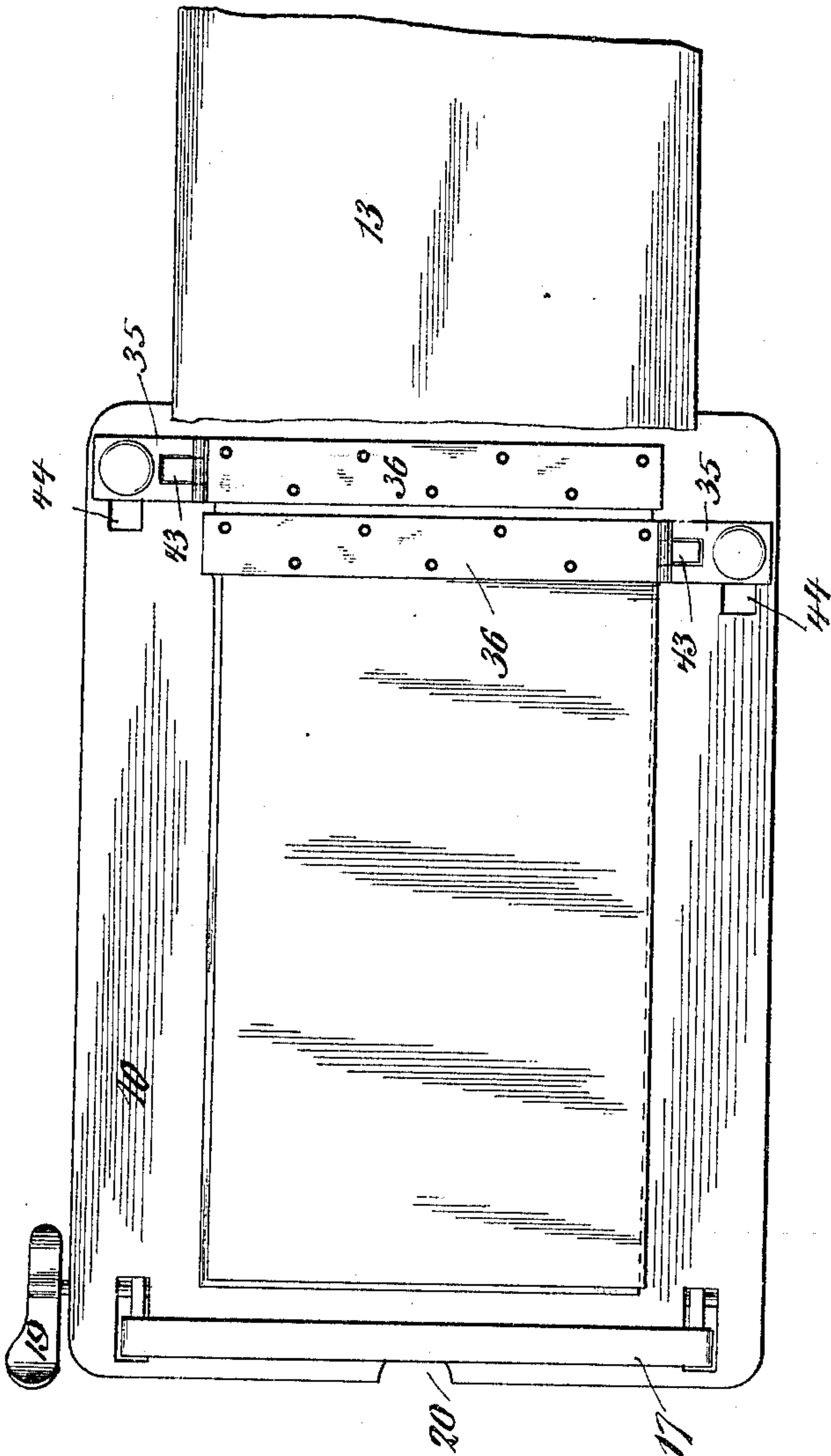


Fig. 2.

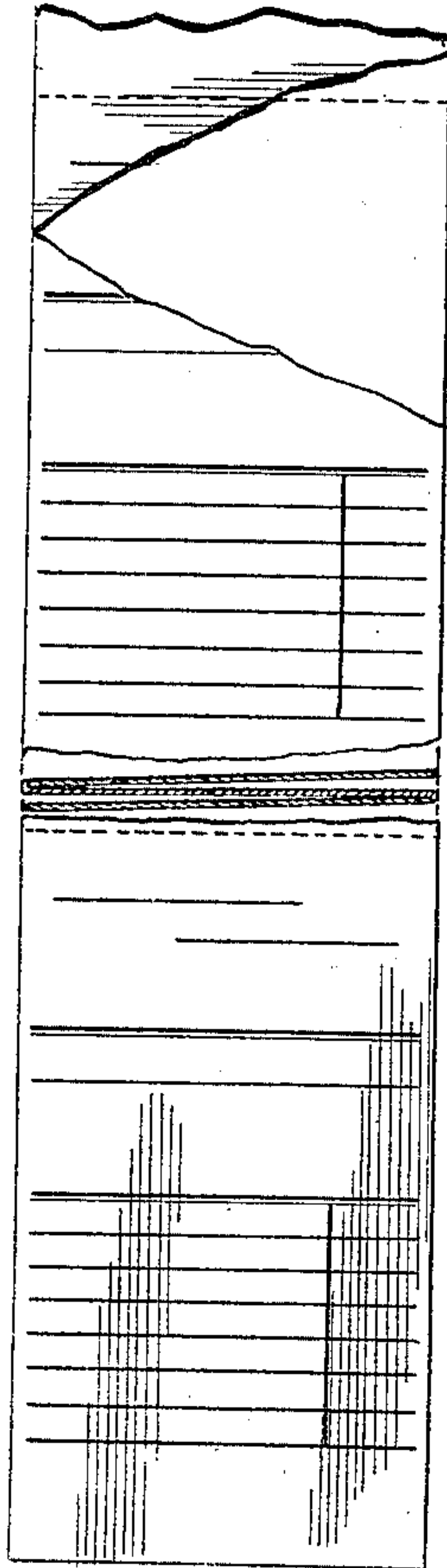
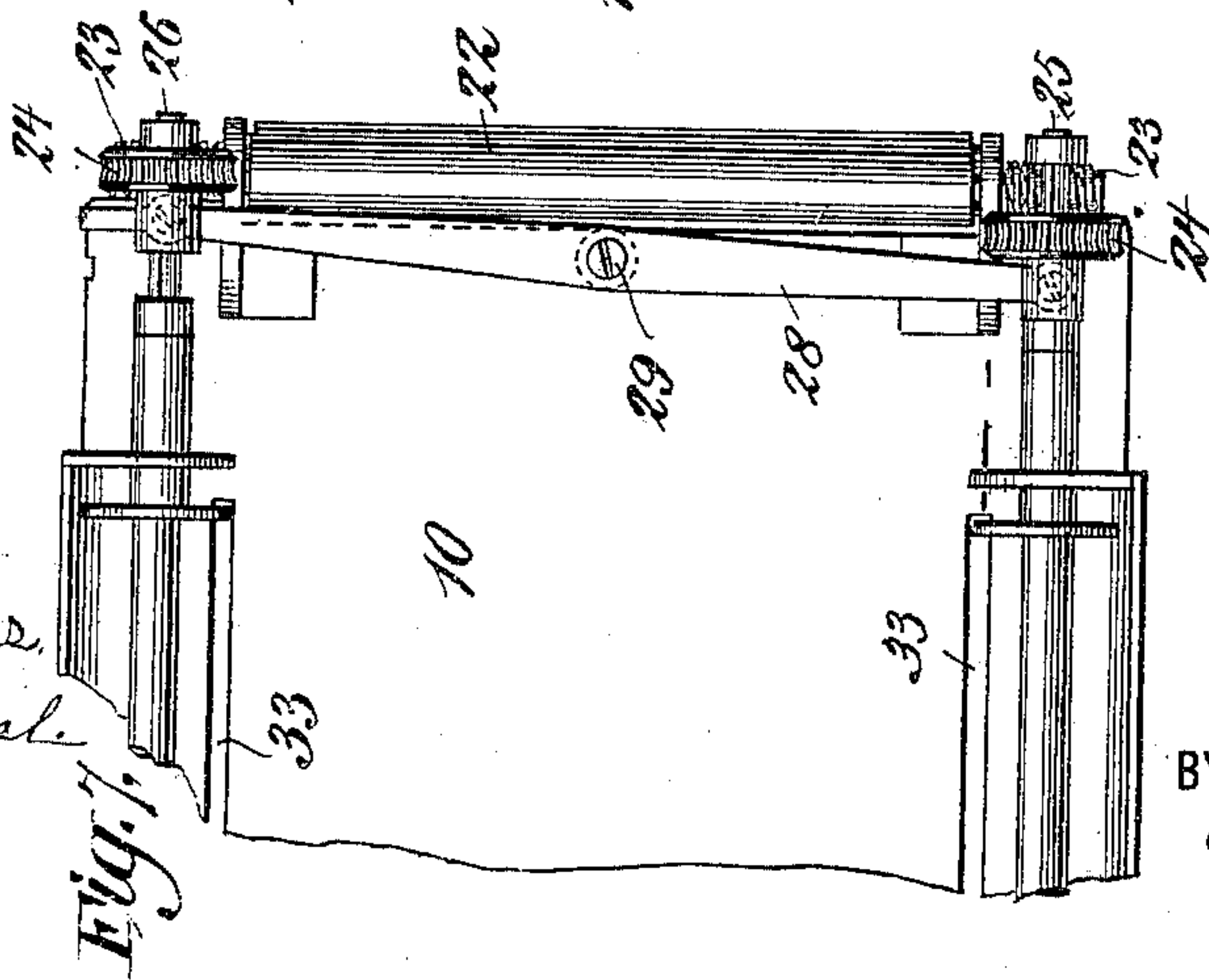


Fig. 9.



WITNESSES:

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Fig. 1.

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UNITED STATES PATENT OFFICE.

DANIEL HOWARD HAYWOOD, OF NEW YORK, N. Y., ASSIGNOR TO
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TRIPLICATING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 672,363, dated April 16, 1901.

Application filed April 17, 1900. Serial No. 13,211. (No model.)

To all whom it may concern:

Be it known that I, DANIEL HOWARD HAYWOOD, a citizen of the United States, residing at New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Triplicating-Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to triplicating-machines or kindred devices in which written memoranda—such as orders, shipping-manifests, and cash or sales checks—may be made in triplicate by superimposing three of the blanks therefor, one above the other, and by arranging carbon transfer-sheets between them and using a pencil or stylus for writing on the first sheet.

My invention relates particularly to means whereby a plurality of printed forms constituting the blanks for such orders, shipping-manifests, and cash or sales checks may be presented for use in triplicate over a suitable writing-table in perfect register one with the other.

To this end my invention contemplates the employment of a suitably-printed strip having two longitudinal folds and having transverse folds dividing the strip into lengths suitable for use and in accordance with the length required for each blank form or sheet.

My invention consists in a simple and improved means whereby the folded strip may be drawn across a writing-table without buckling the paper of which the sheets are formed, in an improved carbon-transfer-sheet holder for holding a single sheet of carbon transfer, in a means whereby a longitudinal cut may be made to sever one of the sheets from the other or others along the line of one of the longitudinal folds, in the provision of a carbon transfer-ribbon having a movement transverse of the path of movement of the folded strip, and in automatic means for feeding said ribbon in such transverse path.

My invention further consists in certain novel details of construction and combination of parts, as will hereinafter be more fully set forth.

I will now proceed to describe my invention with reference to the accompanying drawings, and will then point out the novel feature in the claims.

Figure 1 represents a top view of a triplicating-machine embodying my invention, a portion of the front end of the overhanging cover of the check-box being broken away to more clearly illustrate the parts beneath it. Fig. 2 illustrates a side view of the same, a portion of the writing-table being shown in section in order to better illustrate the parts. Fig. 3 is a central longitudinal section through the machine. Fig. 4 is a transverse section centrally through the writing-table, illustrating the path of the transversely-traveling ribbon. Fig. 5 is a detail view of the carbon-transfer-sheet holder, the same being in its locked position. Fig. 6 is a detail view of the same on an enlarged scale and in its unlocked position. Fig. 7 is an under side view of the upper portion of the writing-table, showing the means for actuating the transversely-traveling copying-ribbon. Fig. 8 is a detail view of the folded strip which I preferably employ, printed to form the blank forms or sales-checks and showing the lines of the transverse folds. Fig. 9 is a view of the writing-table end of a triplicating-machine in which there is no slitting-knife or transversely-traveling ribbon, but which is provided with two single carbon-transfer-sheet holders.

Similar reference characters designate corresponding parts in all the figures.

Reference character 10 designates a writing-table suitably supported upon the frame of the triplicating-machine, which frame is designated by reference character 11. This writing-table is preferably set at a slight angle for greater convenience for writing upon same. A strip of paper having two longitudinal folds and suitably printed with the desired forms to constitute the orders, shipping-manifests, cash or sales checks, and the like is arranged to be drawn across this writing-table. A strip of this character is shown in detail in Fig. 8 and is shown in use in the machine in Fig. 3. A number of transversely-arranged folds, the direction of each alternate fold being opposite to the one preceding it, are arranged in the said strip to permit

the same being contained in a small space. This fold is what is known as an "accordion-plaited" fold. The strip, printed and folded in this manner, may be placed in a part of the machine prepared to receive it, and for simplicity of description I have termed this portion of the machine a "check-box." It is designated in the drawings by the reference character 12.

13 is a cover with which the check-box is provided and which is hinged to the back thereof at 14. The front wall 15 of the box 12 is cut down below the level of the cover 13 in order to allow the strip to pass between it and the cover. The top of the front wall 15 is preferably turned over, as shown at 16, in order to prevent accidental displacement of any of the lower folds of the folded strip.

In using the machine a package of sales-checks or the like is placed in the check-box 12, and the end of the strip constituting the sales-checks is drawn through the space left between the top of the wall 15 and through the under side of the check-box cover 13 and over the writing-table 10. The end of the strip is then passed beneath the cutting-knife 17, with which the front end of the table is provided. The cutting-knife 17 is rigidly secured upon a rod 18, and a handpiece 19 is secured to the end of the said rod 18. By the manipulation of this handpiece the knife 17 may be raised and lowered. The rod 18 is mounted in the frame 11 of the machine. In first starting to use the strip the end thereof is drawn so far over the table as to be flush with the front end of the knife or to protrude a little past the same. When the desired memoranda have been made on that portion of the strip which is supported by the writing-table 10, the knife 17 may be lifted by depressing the front end of the handpiece 19, and the end of the strip may be grasped at about the center thereof. The end of the writing-table has a cut-away portion 20, which is arranged to permit the finger and thumb to seize the end of the strip at this point. The strip may now be drawn over the table until the first transverse fold is about flush with the front end of the knife 17. The knife 17 may now be lowered and caused to press upon the strip at the fold by the proper manipulation of the handpiece 19, and that portion of the strip constituting three superimposed sales-checks or the like may be torn off in a manner which will be well understood.

It will be noted that in arranging the check-box at the rear end of the writing-table I have been enabled to draw the strip directly over the table without it being necessary to lead the check forward and then backward over a turning-roller, as would be necessary if the check-box were arranged immediately beneath the writing-table. This in practice is a matter of considerable importance, for I have found by experience that in turning a strip of this character over a roller that portion of the strip which is against the roller is

apt to be cramped or crowded, owing to the fact that the outside portion of the strip or that portion farthest away from the roller has to travel through a larger arc than the inside portion. In this case the strip being in one piece, connected along the sides, it is impossible for one layer thereof to creep bodily upon another layer, as would be the case if three independent strips were used. The outer edge of the inner layer would, however, attempt to creep, and the part against the roller would be worked sidewise until the longitudinal folded edges were so crowded as to be either torn or thrown out of place. The check-box being arranged in the rear obviates the necessity of the strip having to turn over a roller, and hence such tendency to cramping or buckling is done away with.

As far as has thus been described the three superimposed sheets will be delivered connected together at their side edges, the top and bottom check being each connected by one of their edges to the central check. For certain classes of work it is desirable to deliver the checks in such a way that two will be connected together—as, for instance, the top and the central check, the lowest check being delivered separately or detached. I have provided a slitting-knife 21 for detaching one of the checks—as, for instance, the lowest check. This slitting-knife is so arranged that as the strip is drawn over the table the said strip will be slit along the line of one of its longitudinal folds. Thus when the strip is drawn forward the required amount and torn off against the knife 17 one of the checks, as the lowest one, will be delivered detached from the other two checks.

At the upper end of the table 10 and preferably mounted in brackets supported thereby are arranged rollers 22. The strip before being brought over the writing-table may be passed between these rollers, and the rollers are arranged to bear upon the strip with a gentle pressure, such pressure being sufficient to cause the rotation of the said rollers upon the movement of the strip forwardly. Upon the opposite sides of the lower roller are secured two worms 23, one right and the other left handed, which worms are adapted to engage with corresponding worm-wheels 24, which are mounted to rotate with stub-shafts 25 26. The stub-shafts 25 26 are each mounted in brackets 27, dependent from the writing-table 10. A shift-bar 28 is centrally pivoted at 29 to the under side of the writing-table, and the ends of the said shift-bar engage the hubs of the worm-wheels 24. The shift-bar is arranged to hold the worm-wheels in such position that when one of them is in engagement with its respective worm 23 the other one is out of engagement with its worm. This may best be seen by reference to Fig. 7. The worm-wheels 24 are splined to their shafts 25 26, so that they will be permitted to have longitudinal movement thereon, but will at all times compel the shaft to partake of their ro-

tary movement. In Fig. 7 it will be seen that the worm-wheel 24 upon the shaft 26 is in engagement with its worm 23, while the worm 24 upon the shaft 25 is out of engagement with its worm.

The shafts 25 26 are provided with square sockets 30, which are adapted to receive the square end of a ribbon-spool 31. The opposite ends of the ribbon-spools 31 are mounted in bearings in leaf-springs 32. They are free to rotate in these bearings. A suitable transfer carbon-ribbon travels between these two spools and over the writing-table 10 by passing through suitable slots 33 therein. The path of this ribbon is best illustrated in Fig. 4, in which figure it will be seen that the transfer-ribbon which is designated by the reference character 34 passes over the lowermost check which has been severed from the strip by the slitting-knife 21, and hence lies between this check and the one superimposed above it. As the strip is drawn forward and the rollers 22 rotated thereby, as hereinbefore described, the carbon transfer-ribbon 34 will receive a transverse feed across the table 10, the ribbon being wound up upon the spool on that side of the machine on which is the shaft 26 and unwound from the spool on the opposite side. The ends of the ribbons may be secured to their respective spools, so that when the ribbon is entirely unwound from one of the spools the shift-rod may be reversed so as to move the worm-wheel 24, which is upon the shaft 26, out of engagement with its corresponding worm and to move the worm-wheel 24, which is upon the shaft 25, into engagement with its worm. By reason of the opposite direction of the pitch of the worms 23 the motion of the ribbon 34 will be reversed and the said ribbon will be rewound on the spool on the opposite side of the machine. By this it will be seen that I have provided an automatic feed for a transversely-movable carbon transfer-ribbon.

The ribbon-spools may be removed when desired by withdrawing the square ends thereof from the sockets in the shafts 25 and 26, the leaf-springs 32 permitting such movement.

Between the upper and the central sales-check I have provided means for supporting a single carbon-sheet, which carbon sheet may conveniently consist of a carbon transfer-paper. The preferred form of such support is here illustrated as a thin metal bar 35, which is arranged below the carbon-sheet, and a second thin metal bar 36, which is hinged to the lower bar at 37 and which is arranged above and bears down upon the carbon-sheet. The carbon-sheet is thus clamped between the bars 35 and 36. For holding the transfer-carbon more securely in position and to prevent the accidental displacement of the same I have provided the lower bar 35 with a plurality of projections or pins and the upper bar 36 with a plurality of orifices corresponding thereto. In clamping the carbon-sheet between two bars 35 36 the pins or projections 38

will pierce the sheet and hold it securely in position.

The carbon-sheet supporter as a whole is pivoted to the writing-table at a point 39, and a suitable handle is secured thereto at such point in order that the said supporter may be turned to swing clear of the path of the traveling strip when desired. A locking-pin 40, passing through the said writing-table and mounted upon a spring-tongue 41, which is secured to the under side of the table, locks the said supporter in its normal position. A button 42 is secured to the spring 41 and passes through an orifice in the writing-table. It may be depressed to release the locking-pin 40 from engagement with the side of the said supporter, and a movement of the supporter will then be permitted. The upper bar 36 is provided at the opposite side of its hinge with detent 43. In its locked position, as shown in Fig. 1, the said detent bears against the top of the writing-table 10, and thus holds the bar 36 firmly against the bar 35. When the supporter is swung around to a position at right angles to that shown in Figs. 1 and 5, the detent 43 will be opposite an opening 44 in the writing-table 10. The parts are shown in such position in detail in section in Fig. 6, in which position the top bar 36 may be swung on its hinge 39 and opened in order to release the carbon-sheet. The said top bar 36 is shown as open in dotted lines in the said Fig. 6. With the parts in this position an old carbon-sheet may be removed and a new one put in position. The top bar 36 may be closed down, and the supporter may be again swung around into its position in which it is shown in Fig. 1. The handle upon the supporter opposite the pin 39 is provided for the purpose of so swinging it, and the top of the locking-pin 40 is beveled in order that the pin may be depressed automatically in moving the supporter in this direction, the said pin assuming its locked position when the supporter has been given its entire movement. In so swinging the supporter to its operative position it will be seen that the bar 36 is also automatically locked down in its position to securely clamp the carbon-sheet by the engagement of the detent 43 with the top of the writing-table.

The provision of means for swinging the carbon-sheet supporter out of the line of movement of the traveling strip will be useful not only for the purpose of providing a new carbon-sheet, but also will be found to facilitate the starting of a new record or check strip. By this means the strip may be drawn over the table and adjusted in position thereon, and the supporter, with its carbon transfer-sheet supported thereby, may afterward be swung in position from the side. It will also be noted that in my improved form of supporter I am enabled when desired to readjust the position of the transfer-sheet longitudinally of the table. This is a desirable

feature, for the reason that the transfer-sheet becomes worn in spots corresponding to those portions of the printed form of the strip which are most used, while other closely-adjacent portions of the transfer-sheet remain practically unused, and a slight adjustment longitudinally will often bring a practically unused portion of the carbon-sheet in position for use, which may be accomplished by removing the carbon-sheet from the supporter, as described above, and reinserting it in a slightly different position.

In Fig. 9 I have shown a portion of a triplicating-machine of such a form as is adapted for delivering the three checks connected together. If the checks are to be thus delivered, it is not possible to use a transversely-movable transfer-ribbon, and in such case I provide two transfer carbon-supporters, each supporting a single sheet and mounted on opposite sides of the table. Where two such supporters are provided, the transversely-arranged ribbon-feed mechanism may be of course entirely dispensed with, as may also the rollers 22 22. The strip will then be fed directly from the check-box 12 over the table 10. For convenience of handling I have provided in the machine means for carrying a roll of carbon transfer-paper. Such roll is designated by numeral 49. It is supported upon an arbor 45, mounted in the sides of the machine. A cutting-knife 46 is provided, between which and a transversely-arranged wall 47 the end of the carbon-roll is adapted to pass. The writing-table 10 as a whole is pivoted upon the front rod 18, suitable lugs 48, secured to the table 10 and dependent from the under side thereof, being provided for this purpose. When a new transfer carbon-sheet is required, the check-box 13 may first be opened and the writing-table 10 then swung forwardly upon the rod 18 as a pivot. The end of the carbon-roll 49 may be grasped by the fingers and a sufficient quantity of the said paper be drawn past the knife 46 and cut off as required. The writing-table may then be lowered into position again and the carbon transfer-sheet thus severed placed in position in the manner hereinbefore stated. Having thus completely described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In a triplicating-machine, the combination, with a writing-table adapted to support a strip composed of two or more layers superimposed one upon the other, and over which table said strip may be moved, of a ribbon-feeding mechanism driven by said strip when so moved, and arranged to feed a ribbon across said table, and between layers of said strip, in a direction transversely of the movement of the strip.

2. In a triplicating-machine, the combination, with a writing-table adapted to support a strip composed of two or more layers superimposed one upon the other, over which table said strip may be moved, of rollers between

which said strip is adapted to pass, said strip upon its movement being adapted to impart rotary movement to said rollers, ribbon-feeding mechanism and means operated by the movement of said rollers to impart movement to said ribbon-feeding mechanism, said ribbon-feeding mechanism being adapted and arranged to feed the ribbon across said table in a direction transversely of the movement of the strip.

3. The combination, with a record-strip which is folded longitudinally and is likewise folded transversely in alternate directions to form superposed sections, of a writing-table, across which said strip may be fed, adapted to support the same, and a check-box for holding said folded strip, said check-box being located in proximity to one edge of the table, and with its space for containing such record-strip entirely beyond and not under that portion of the table over which the strip passes, and having an opening through which the strip may pass directly to the table; whereby creeping of the layers of the strip with respect to one another is avoided.

4. In a triplicating-machine, the combination, with a writing-table adapted to support a longitudinally-folded strip, and over which table said strip may be moved longitudinally, of a slitting-knife located in proximity to said table and near one side of the path of the strip thereover and adapted to sever the said strip at or near the longitudinal fold, and a transfer-sheet supporter pivotally arranged at the side of said table, and beyond the slitting-knife, and adapted to be swung about its pivotal point out of the path of movement of said longitudinally-movable strip.

5. In a triplicating-machine, the combination, with a writing-table adapted to support a longitudinally-folded strip, and over which table said strip may be moved longitudinally, of a slitting-knife adapted to sever the strip at or near the said longitudinal fold, and a ribbon-feeding mechanism whereby a transfer-ribbon may be fed across the said table and between the severed layers of said strip in a direction transversely of the movement of the said strip.

6. In a triplicating-machine, the combination, with a writing-table adapted to support a longitudinally-folded strip, and over which table said strip may be moved longitudinally, of a slitting-knife adapted to sever the said strip at or near the longitudinal fold, and a ribbon-feeding mechanism operated by the movement of the said strip and adapted to feed a ribbon across said table and between the severed layers of the strip in a direction transversely of the movement of the strip.

7. The combination, with a record-strip which is folded longitudinally and is likewise folded transversely in alternate directions, to form superposed sections, of a writing-table, across which the said strip may be fed, adapted to support the same, and a check-box for holding said folded strip, located in prox-

imity to one edge of the table, and with its space for containing such record-strip entirely beyond and not under that portion of the table over which the strip passes, and having
 5 an opening through which the strip may pass directly to the table, whereby creeping of the layers of the strip with respect to one another is avoided; said box having also a projecting portion below said opening to prevent accidental displacement of any of the transversely-folded sections of the strip.

8. In a triplicating-machine, the combination, with a writing-table adapted to support a longitudinally-folded strip, and over which
 15 table said strip may be moved longitudinally, of a transfer-sheet supporter pivotally arranged at the side of said table, and adapted to be swung upon said pivot out of the path of movement of said longitudinally-movable strip.

9. In a triplicating-machine, the combination, with a writing-table adapted to support a longitudinally-folded strip, and over which
 25 table said strip may be moved longitudinally, of a transfer-sheet supporter pivotally arranged at the side of the said table, and adapted to be swung upon said pivot out of the path of movement of said longitudinally-movable strip, and a lock adapted to automatically engage the said supporter when in its operative position across the path of movement of said longitudinally-movable strip.

10. In a triplicating-machine, the combination, with a writing-table adapted to support
 35 a longitudinally-folded strip, and over which table said strip may be moved longitudinally, of a transfer-sheet supporter pivotally arranged at the side of said table, and adapted to be swung upon said pivot out of the path of movement of said longitudinally-movable strip, said transfer-sheet supporter having clamping means for holding a transfer-sheet in position, and provided with means for locking said clamping means and holding the same
 45 in its locked position when the said transfer-sheet supporter is in its operative position across the path of movement of said longitudinally-movable strip, and so arranged that when the said supporter is moved out of said
 50 path of movement, the said locking means will be released and the clamping means left free to permit the disengagement of the said transfer-sheet.

11. In a triplicating-machine, the combination, with a writing-table adapted to support
 55 a strip composed of two or more layers superimposed one upon the other, and over which table said strip may be moved longitudinally, of a transfer-sheet supporter pivotally arranged at the side of said table, and adapted to be swung upon said pivot out of the line of movement of said longitudinally-movable strip, said transfer-sheet supporter comprising two clamping members, one movable relatively to the other, a detent operating to keep the clamp closed while the said transfer-sheet supporter is in the path of movement of said

longitudinally-movable strip, and to permit the clamp to open when the said transfer-sheet supporter is out of the path of movement of said longitudinally-movable strip. 70

12. In a triplicating-machine, the combination, with a writing-table adapted to support a strip composed of two or more layers superimposed one upon the other, and over which
 75 table said strip may be moved longitudinally, of a transfer-sheet supporter mounted at the side of said table, and arranged normally to hold a transfer-sheet in the path of said longitudinally-movable strip, and adapted to be
 80 swung clear of the path of movement of said longitudinally-movable strip, when desired, said transfer-sheet supporter comprising two clamping members and means for automatically locking the said clamping members together, when the said holder is in its position in the path of movement of the longitudinally-movable strip, and for automatically releasing the said clamping members when the said supporter is out of the path of movement of the said longitudinally-movable strip. 85 90

13. In a triplicating-machine, the combination, with a writing-table arranged to support a strip having two longitudinal folds and over which table said strip may be moved longitudinally, of a transfer-sheet supporter mounted at one side of the table, and adapted to support a transfer-sheet between two of the layers of the longitudinally-movable strip, a slitting-knife adapted to sever the strip at or
 95 near one of its longitudinal folds, and means for feeding a ribbon across the said table and between two of the layers of the said strip in a direction transversely of the movement of the strip. 100 105

14. In a triplicating-machine, the combination, with a writing-table arranged to support a strip having two longitudinal folds and over which table said strip may be moved longitudinally, of a transfer-sheet supporter mounted at one side of the table, and adapted to support a transfer-sheet between two of the layers of the longitudinally-movable strip, a slitting-knife adapted to sever the said strip at or near one of its longitudinal folds, and a ribbon-feeding mechanism driven by said strip
 110 when so moved, and arranged to feed a ribbon across the said table and between two of the layers of said strip, in a direction transversely of the movement of the strip. 115 120

15. In a triplicating-machine, the combination, with a writing-table adapted to support a strip composed of two or more layers superimposed one upon the other, and over which
 125 table said strip may be moved longitudinally, of a transfer-sheet supporter pivotally mounted at the side of said table, the said transfer-sheet supporter comprising a relatively stationary flat bar forming one member of the clamping means, a relatively movable
 130 bar hinged to the said relatively stationary bar and forming the other member of the clamping means, said movable bar being adapted to have a movement relatively to said

stationary member at about right angles to the path of movement of the entire supporter, and a detent secured to the relatively movable member, and adapted normally to engage
 5 with the top of the writing-table, or that part of the triplicating-machine upon which the supporter is mounted, such part having an orifice through which the said detent is adapted to pass when the said transfer-sheet
 10 supporter, as a whole, is moved to a predetermined position.

16. In a triplicating-machine, the combination, with a suitable frame, of a writing-table pivotally mounted at its forward end upon a
 15 bar of said frame, a cutting-knife also pivotally mounted on said bar, and means whereby blank forms may be drawn longitudinally over the said table and under the said cutting-knife.

17. In a triplicating-machine, the combination, with a suitable frame, of a writing-table pivotally mounted, the said writing-table adapted to support a strip composed of two or more layers superimposed one upon the other, and over which table said strip may be
 25 moved, and a ribbon-feeding mechanism operated by the movement of the longitudinally-movable strip, to feed a ribbon across the table and between the layers of said strip, such ribbon-feeding mechanism being supported by, and movable with, said writing-
 30 table.

In testimony whereof I affix my signature in the presence of two witnesses.

DANIEL HOWARD HAYWOOD.

Witnesses:

HARRY A. GOSS,
 HARRY S. MARSE.