May 17, 1932. C. CHISHOLM 1,858,537

HOLDER FOR PRINTING MEMBERS

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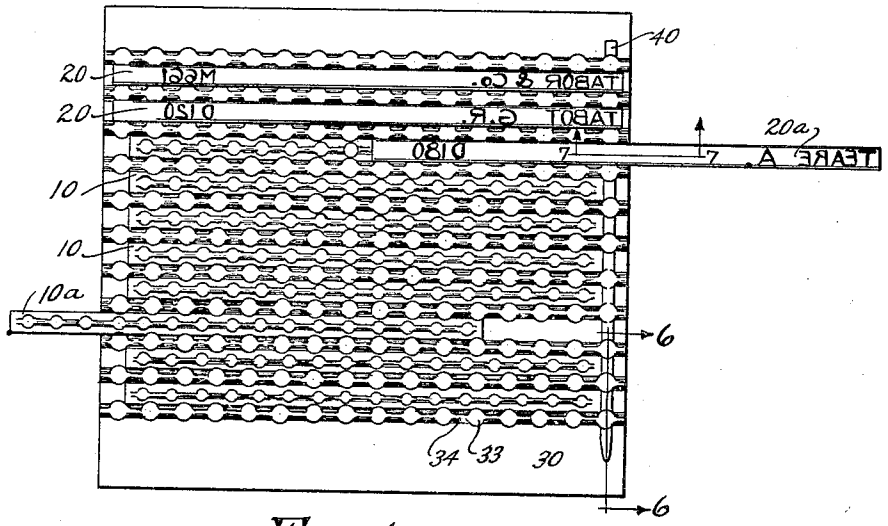


FIG. 1



FIG. 2

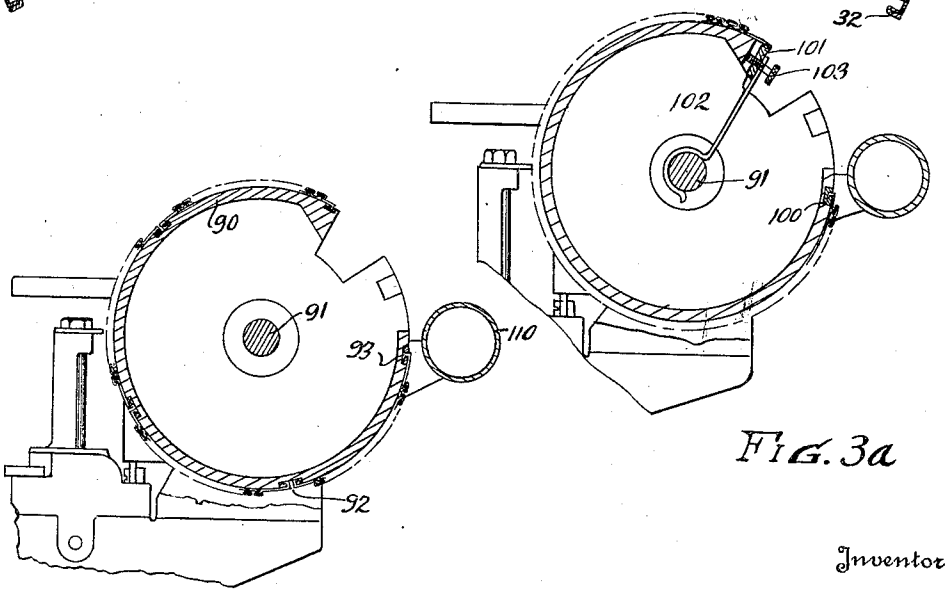


FIG. 3a

FIG. 3

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HOLDER FOR PRINTING MEMBERS

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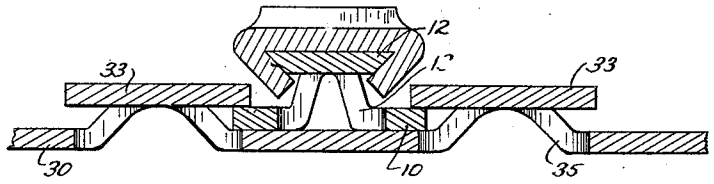


FIG. 4

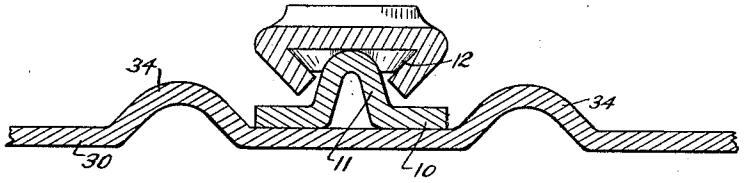


FIG. 5

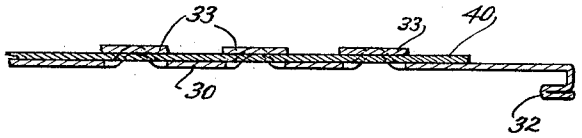


FIG. 6

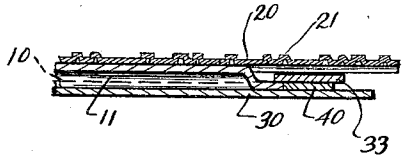


FIG. 7

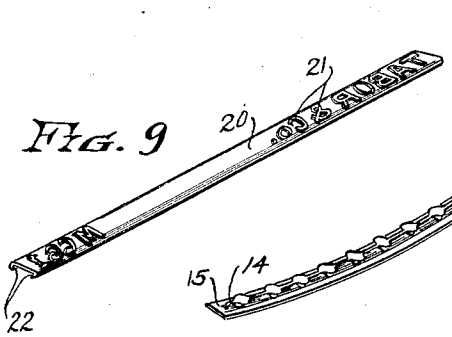


FIG. 9

FIG. 8

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HOLDER FOR PRINTING MEMBERS

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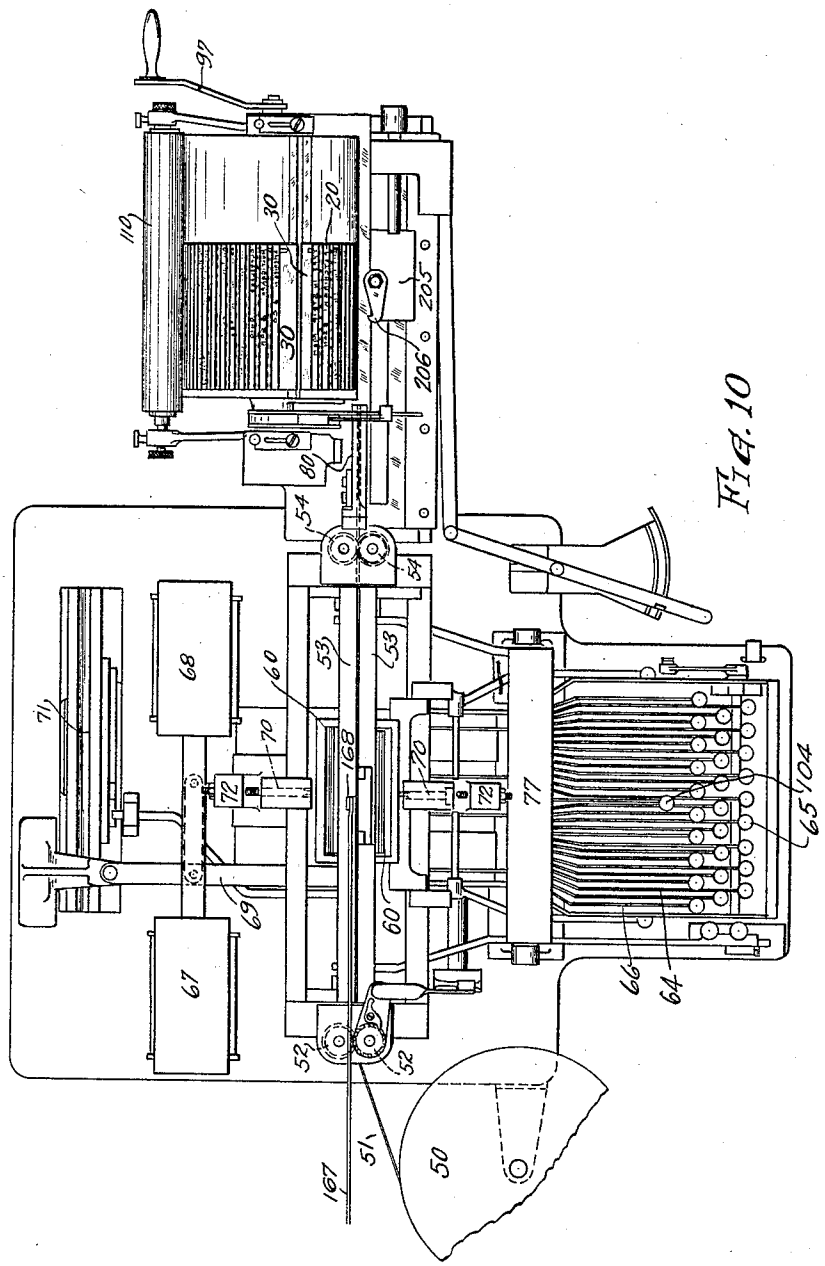


Fig. 10

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HOLDER FOR PRINTING MEMBERS

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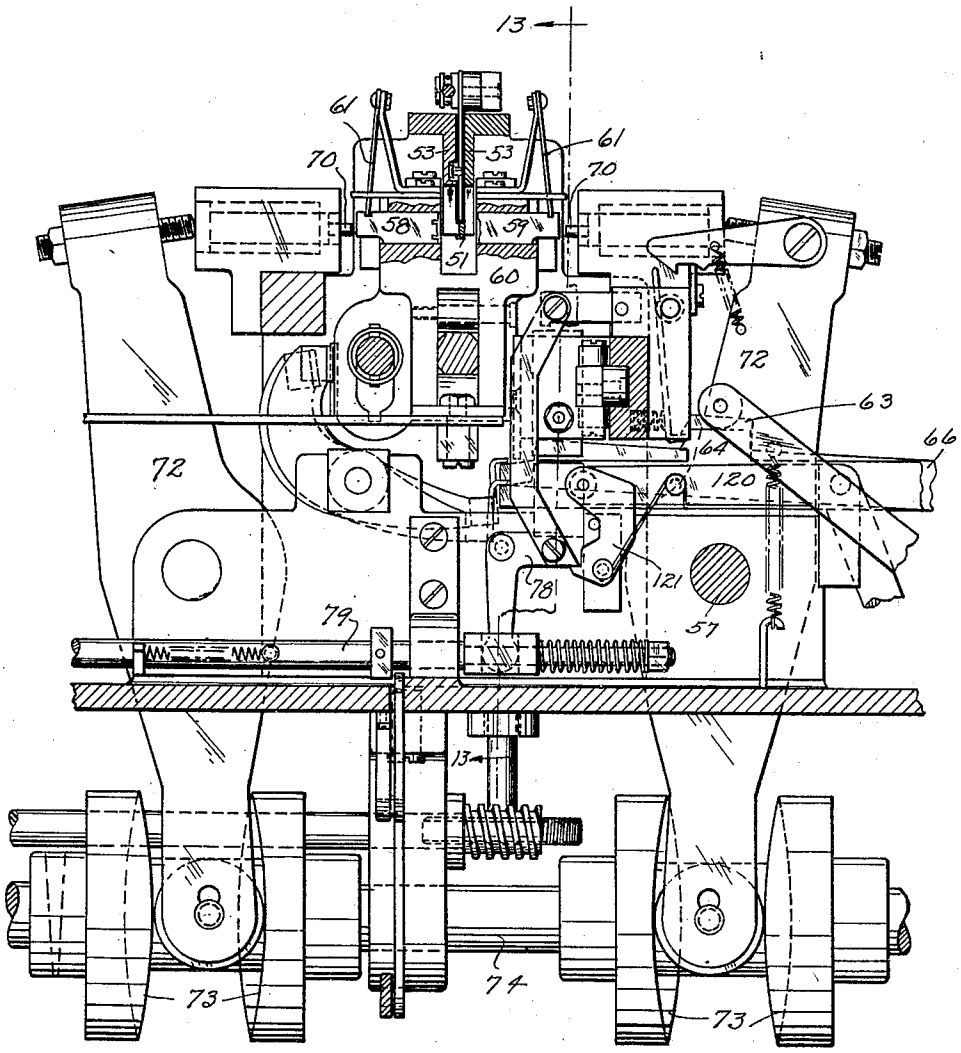


FIG. 11

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HOLDER FOR PRINTING MEMBERS

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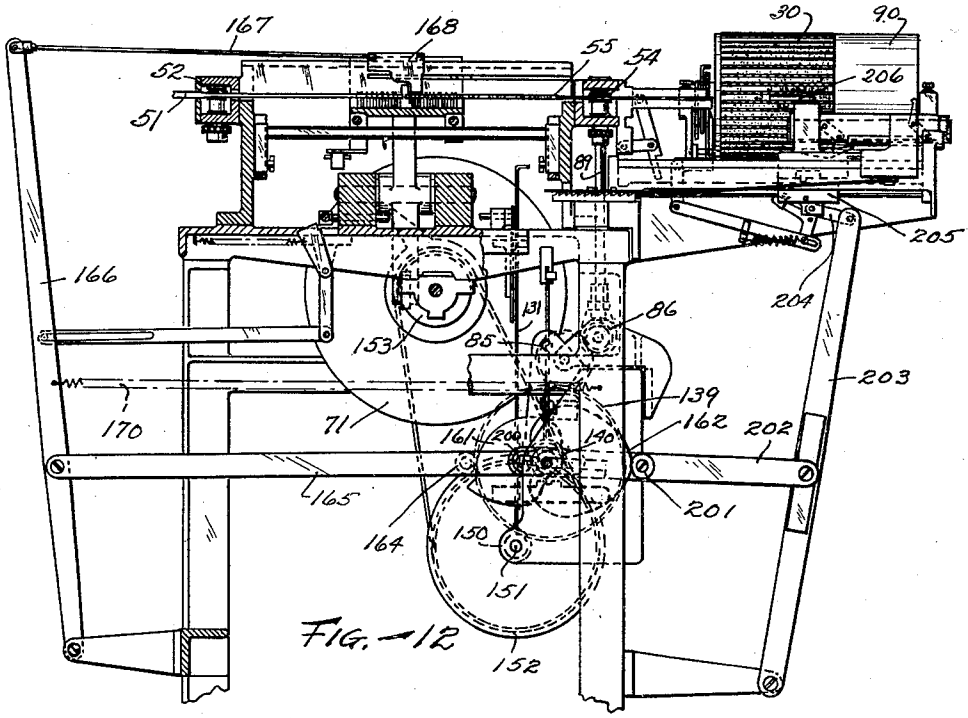


FIG. -12

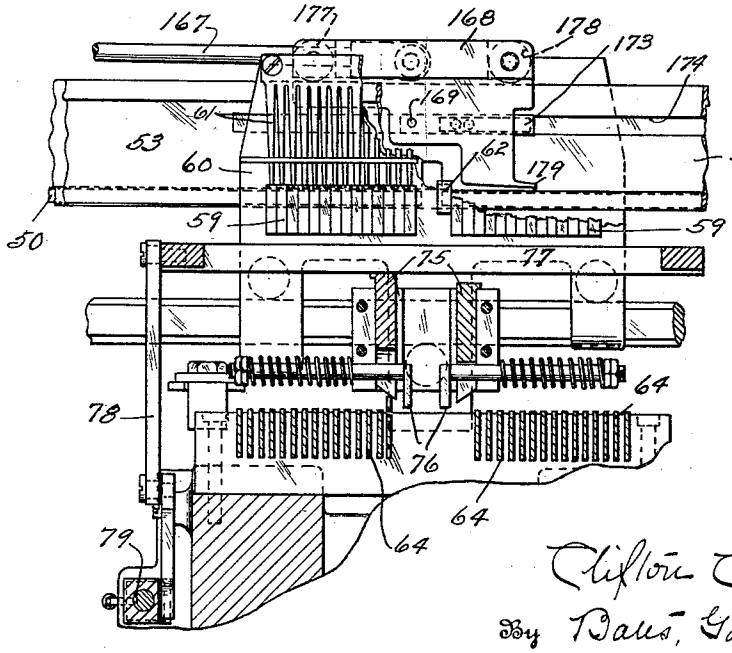


FIG. -13

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HOLDER FOR PRINTING MEMBERS

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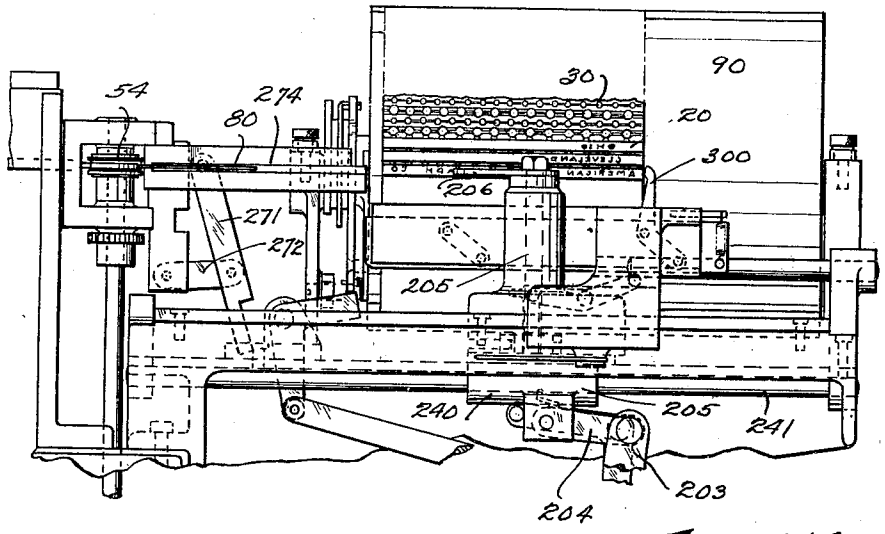


FIG. 14

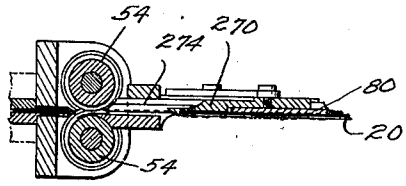


FIG. 15

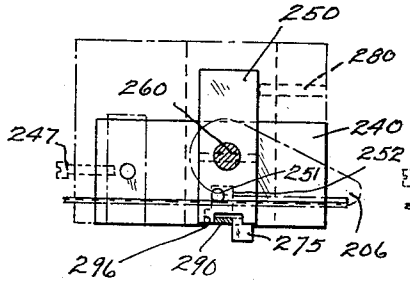


FIG. 17

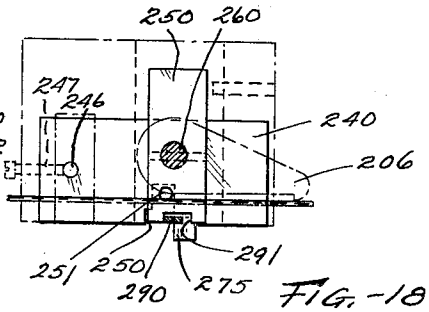
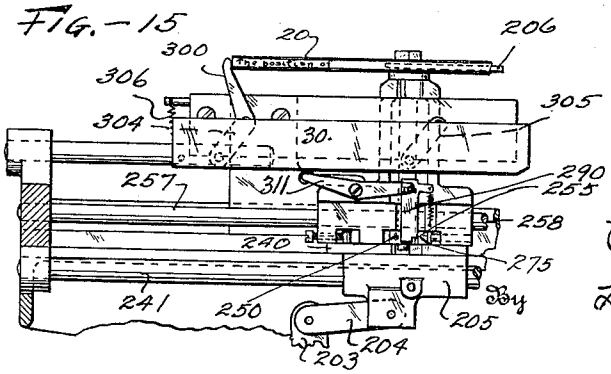


FIG. 18

FIG. 15



Inventor

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Patented May 17, 1932

1,858,537

UNITED STATES PATENT OFFICE

CLIFTON CHISHOLM, OF CLEVELAND, OHIO, ASSIGNOR, BY MESNE ASSIGNMENTS, TO AMERICAN MULTIGRAPH CO., OF WILMINGTON, DELAWARE, A CORPORATION OF DELAWARE

HOLDER FOR PRINTING MEMBERS

Application filed April 18, 1930. Serial No. 445,500.

Application Serial No. 445,499 of mine filed concurrently herewith shows and claims a printing member comprising a base strip having a row of upstanding projections and an embossed printing strip of substantially the same width as the base strip but somewhat shorter and having edge flanges underhanging the projections when the embossed strip is mounted thereon. The composite member thus produced is adapted for ready mounting in a suitable holder having overhanging members beneath which the projecting portions of the base strip extend. An illustration of such a holder, in a flexible form, may be found in an application of myself and Peter M. Colquhoun filed concurrently herewith, Serial No. 445,501.

The invention relates to a suitable temporary or intermediate, holder adapted to hold the base strips of my composite member and assist in the mounting of the printing strips on such base strips, and adapted to retain the composite strips ready for tranference as units to a flexible galley or other means for holding a form on a printing press. My holding device is adapted for mounting in a suitable embossing machine, so that it may receive automatically the embossed printing strips as discharged by the embossing machine; then, when the holding device is loaded with a number of composite strips, it may be removed from the embossing machine for use as a storage or transferring member.

My invention is illustrated in the drawings hereof, in which Fig. 1 is a face view of my holding device, showing also the elements of the composite members in various stages of being mounted thereon or removed therefrom; Fig. 2 is an enlarged cross section of the holder with the composite printing members thereon in a curve it occupies in the embossing or loading machine; Fig. 3 is a vertical section through a drum on the embossing machine adapted to carry a number of the flexible holders; Fig. 3*a* is a section similar to Fig. 3 but illustrating a drum adapted to carry a single holder; Figs. 4, 5 and 6 are cross sections on larger scales through the holding device in planes extending across the successive lines, the planes of the sections being indicated by correspondingly numbered lines on Fig. 1; Fig. 7 is a vertical cross section through the holding device at right angles to Figs. 4, 5 and 6; Figs. 8 and 9 are perspectives respectively of the base portion and the printing portion of the composite printing strip; Fig. 10 is a plan of a suitable embossing machine which may produce the printing members of the composite strips and may mount them on the base strips carried by the holding device of this invention; Fig. 11 is a vertical section through the embossing machine of Fig. 10 on a plane at right angles to the path of the embossed strip; Fig. 12 is a vertical section on a smaller scale through the embossing machine and assemblage mechanism on a plane along the embossed strip; Fig. 13 is a vertical section at right angles to Fig. 4, as indicated by the line 5—5 on Fig. 4; Figs. 14 to 18 are details of the assemblage mechanism.

I will first describe briefly the composite printing member itself, reference being made to my copending application for a fuller description thereof. As shown in Fig. 8, the base member comprises a long narrow strip of metal 10 having upwardly formed aligned corrugations 11 and periodic lateral projections 12 formed by cutting out portions of the sides of the corrugation and of the base strip proper (shown at 13, Fig. 4) and turning up such cut out ears into a plane parallel with the base and coincident with the top plane of the corrugations. The endmost corrugations 14 are of gradually reduced height to merge with the flat end portions 15 of the strip. The strip is preferably concave on the button or projection side thereof, as shown in this figure.

The embossed printing strip is a narrow piece of metal shown at 20 in Fig. 9, carrying a single row of printing characters 21 and having inwardly extending edge flanges 22. When the printing strip is placed on the base, it rests on top of the corrugations and buttons and the edge flanges extend beneath the ears of the buttons. The printing strip is made flat as shown in Fig. 9, and the cambered base strip is held flat in the embossing

or loading machine, and the printing strip may thus be slid lengthwise onto the base strip; after which, the composite strip will assume the camber, which is very useful in retaining the device in place when it is held at its ends in a suitable form.

The holder constituting the present invention is adapted to have the base strips 10 mounted on it, and to properly position them to receive the embossed printing strips. As shown in Figs. 1 to 7 inclusive, my holder comprises a sheet metal thin rectangular plate 30 normally having a shallow arcuate form, as shown in Fig. 2, and provided at its ends with underhanging hooked portions 32 by which it may be retained on a suitable drum. On the face of the member 30 are parallel rows of upstanding projections, each row comprising buttons 33, and intermediate corrugations 34, both pressed up from the plate and standing the same face height. The construction in this regard is similar to that of the base strip itself, but the buttons are preferably larger and farther apart than those of the base strip.

The raised-button and corrugation construction in both the printing strip base and of the holder are made in accordance with Patents Nos. 1,438,582 and 1,438,584 granted December 14th, 1922 to my assignee The American Multigraph Co., and reference may be had to these patents for fuller description of this construction.

The distance between the rows of buttons on the holder is such that the base strip may be readily slid into place lengthwise of the holder, with the edges of the base strip projecting beneath the buttons. The printing strips of the composite printing member are of substantially the same width as the base strips, and thus when a base strip extends beneath buttons of the holder, the surmounting printing strip will have its inward inclined edge flanges underlying and bearing against the edges of the buttons on the base strip. The composite strip obtains a sufficient frictional hold on the holder to prevent inadvertent displacement, so that the holder may therefore constitute an efficient carrier therefor for storage purposes, though the composite strips may be manually slid out of the holder whenever desired.

When my holder plate is about to receive the printing strips, the base strips are first manually mounted in the holder between the rows of buttons. Several of the base strips 10 are shown in Fig. 1 as mounted in position. One strip 10*a* is shown in the act of being slid into place. Now, when the holder with the base strips in it is mounted in the embossing or loading machine, the projections of the base strip furnish means for receiving the printing strips. Some of such printing strips are shown in mounted position at 20 in Fig. 1, and one of them, 20*a*, as it is being removed from the holder.

The dimensions of the printing strip and base strip buttons are mutually chosen so that the strip flanges engage the buttons very snugly, the friction being sufficient to prevent any inadvertent displacement of the printing strip when mounted on the base strip. On the other hand, the base strip and holders buttons are mutually dimensioned so that the base strips have an easy sliding engagement with the holder, to enable their manual placement therein and removal therefrom. It thus results that when the printing strips are shoved by the loading machine lengthwise of the strip onto the base strips, there is a pronounced tendency to shove the base strips out of the holder. I therefore provide suitable stopping means adjacent one end of such holder plate, preventing discharge of the base strips at that end.

As the buttons of the holder are made from cut-out portions 35 of the corrugations and plate, they necessarily leave beneath the transverse openings, and by locating the buttons of the holder in lateral registration, I can avail myself of the laterally aligned openings beneath the endmost buttons for the insertion of a strip forming a stop for all of the inserted base strips. This stop comprises a comparatively thin flexible strip passing crosswise beneath the endmost buttons of the holder, as shown at 40 in Figs. 1 and 7. The base strips mounted between the rows of buttons of the holder abut this stopping strip 40, so that they cannot be moved out of that end of the holder.

Now it will be noted that the printing strips stand high enough on the base strip so that they may be slid across the stop strip 40, as illustrated by the printing member 20*a* in Fig. 1. Accordingly, the printing members may be removed from the base strips by moving them across the stop strip 40, that is, toward the right in Fig. 1, or they may be removed from the holder with the base strip by moving them toward the left. The friction of the embossed strip on the base strip being materially greater than the friction between the base strip and the holder, the simple pressure of the operator's thumb and fingers on the printing strip enables him to shove the printing member as a whole out of the holder.

It will be seen that my holding device is very useful as a storage member and may be loaded entirely manually; that is to say, the base strips may be inserted manually in the holder and the printing strips shoved manually onto the base strips while in the holder. However, one of the advantages of my holder is that it may be loaded with the base strips in an embossing machine, and thus receive, automatically, the printing strips as made and delivered by the embossing machine.

Figs. 10 to 18 illustrate an embossing machine substantially as shown in my prior Patent No. 1,557,810 equipped with mechanism for automatically loading the embossed strips on a holder, substantially in accordance with prior Patent No. 1,557,811 of W. J. Demming. Both of these prior patents were issued October 20th, 1925 to my assignee The American Multigraph Company, and reference is made to those patents for a fuller description.

Briefly, the embossing machine illustrated comprises a reel 50 carrying a thin wound-up strip or ribbon 51 of metal (aluminum, for example) suitable to be embossed. This ribbon 51 passes between rolls 52, which flange its edges at right angles to give it a channel shape, and feed it a distance of one character following each impression between guides 53, one of which has a rib supporting the flanged ribbon. The ribbon thus comes between male and female dies 58 and 59 mounted in a reciprocatory die carrier 60, and normally held retracted by springs 61. The carrier 60 is adapted to be positioned according to the keys 65, which are actuated in a suitable keyboard at the front of the machine, each key 65 operating a corresponding lever 66, the rear end of which 64 is thereby raised into position to intercept the movement of the die carrier. The same actuation of a key lever moves one or the other of a pair of universal lever mechanism 63, which close switches to actuate the solenoid 67 for the left hand portion of the keys or the solenoid 68 for the right hand portion. Either solenoid, through suitable leverage 69, moves the die carrier in the appropriate direction, until stopped by engagement of the raised key lever. Thus, the depression of any key brings to the central region the pair of dies corresponding to that key.

When in the central region the selected dies stand directly between a pair of plungers 70, which may be operated by suitable rocking levers 72 actuated by cams 73 on a shaft 74 controlled by a clutch 71. As the die carrier comes to active position, one or the other of a pair of slidable vertical plungers 75 (Fig. 13) having bevelled lower ends engages the raised key lever end 64, and is cammed upward as the die head comes to rest by its abutment 76 (preferably yieldingly carried to provide a shock absorber) engaging the key lever end.

The upward movement of either plunger 75 raises a universal bar 77, which, through the linkage 78, pulls the clutch rod 79 to energize the clutch 71. Incidentally, the clutch may be actuated also whenever desired by the space bar of the keyboard, the lever 120 of which carries a dog 121 acting directly on the linkage 78. The clutch is of the single rotation type and withdraws itself at the end of the cycle of operation. The rock shaft 57 carrying one of the embossing levers 72 is connected by suitable linkage mechanism with the feed rollers 52 to actuate them to feed the ribbon a distance of one character, as the embossing lever moves back to idle position.

The operation of the embossing machine is therefore to draw the flat ribbon from the reel, flange and feed it between the embossing dies; to position the dies according to the key struck; to automatically operate the plungers to force the dies inwardly to emboss the strip; then to withdraw the dies and feed the strip a distance corresponding to the character embossed.

After a sufficient number of characters have been embossed in a strip to constitute a line, a shearing key 104 in the keyboard is operated which actuates a pair of specially formed dies 62 (Fig. 13) to shear off the embossed strip, and this same mechanism may automatically shove such strip toward the right to enable its automatic mounting on the assemblage drum. Mechanism for this purpose may substantially correspond to Patent No. 1,557,811 of W. J. Demming, and may be described as follows:

The shearing key 104 operates to position the shearing dies 62 in the same manner as the ordinary key operates to position the character dies, and this positioning, through the actuation of the plunger 75 and the universal bar 77, energizes the clutch to operate the plungers 70 to cause the shearing dies to cut off the embossed strip from the following portion of the ribbon. This shearing key 104 is also connected by suitable linkage system, indicated at 131 in Fig. 12, with a dental clutch which serves to couple a continuously rotating gear 139 with a shaft 140 on which it is loosely mounted. The gear 139 is shown as meshing with a pinion 150 on a shaft 151, which carries a pulley 152 belted to a pulley 153 rigid with the continuously rotating portion of the main clutch 71. The shearing key clutch is of the single rotation type, thus operates to give a single rotation to the shaft 140, which, as about to be described, actuates the mechanism for shoving the sheared off portion of the strip toward the assemblage drum.

The single rotation shaft 140 has, pinned to it, two cams 161 and 162. The cam 161 coacts with a roller 164 on a link 165 connected to a lever 166, which is connected by a link 167 with the sliding plate 168, as hereinafter described, and is adapted to engage the sheared off portion of the strip and then move toward the right under the control of the cam 161 to shove such embossed strip.

The first operation of the cam 161 is to carry the plate 168 to its extreme left hand position. Then, as a portion of the cam of decreasing radius coacts with the roller 164, a spring 170 swings the lever 166 toward the

right and thus shoves the plate 168 in that direction. The plate 168 is pivoted at 169 to a sliding bar 173 which occupies a horizontal slideway 174 in the stationary frame rail 53. A spring 175 on the sliding bar 173 bears against the stationary rail 53 and forces the plate against the mating stationary frame rail 53. This makes a frictional drag on the pivot of the plate so that when the plate moves toward the left in its initial positioning, the link 167 drawing it rocks it upwardly a slight distance until the roller 177 carried by the plate engages the top of one of the stationary rails 53. Now, when the spring 170 acts to shove the plate 168 toward the right the reverse rocking takes place until the roller 178 on the plate engages the rail 53. This swings the nose 179 of the plate downwardly so that it digs into the section of the strip which was cut off by the shearing dies. Then as the spring 170 continues to move the plate 168 toward the right, the engaged strip is shoved with it into the pass of the delivery rolls 54.

The delivery rolls 54, Figs. 10, 12 and 14, are continuously rotating quite rapidly, and operate as soon as they receive the embossed strip 51, Fig. 12, to force it through the roll pass and deliver it into the stationary T rail 80. These rolls, it will be understood, not only feed the strip, but bend inwardly the edge flanges thereof. As shown, the continuously rotating delivery rolls 54 are rotated by means of the continuously rotating gear 139, heretofore described. As shown, this gear meshes with an idler 85, which meshes with a pinion 86, on a shaft carrying a bevel gear, which meshes with a bevel gear on a shaft 89, on the upper end of which is one of the delivery rolls 54. The other delivery roll 54 is geared with this roll to rotate at the same speed and in the opposite direction.

While the cam 161 on the shaft 140 was acting, as above described, to shove the embossed strip toward the right and into the pass of the delivery rolls, the cam 162 was acting to shove toward these delivery rolls the slide mechanism to engage the delivered strip. As shown, this cam 162 acts between two rollers 200 and 201 on a link 202 connected to a lever 203, the upper end of which is connected by a link 204 to the sliding mechanism 100, which carries at its upper end a pivoted hook member 101, adapted to engage the delivered strip. The cam 162 is formed to substantially contact at all times with each roller 200 and 201. As it starts to rotate, its increasing radius acting on the roller 200 shifts the slide mechanism toward the left until the hook member 101 thereon, by mechanism hereinafter described, is in position to engage the delivered strip at its left hand end. Then as the portion of the cam of decreasing radius coacts with the roller 200, the correspondingly increased portion, bearing against the roll 201, shoves the slide mechanism toward the right, rocking the hook and carrying with it the delivered strip and shoving it into the receiving holder.

Assuming that such embossed strip as shown in Fig. 9 is delivered by the mechanism illustrated, or from other forming mechanism, at the right hand edge of the machine, it passes along suitable guides illustrated at 80 in Fig. 10 into position to be received on my holding device. The portion of the machine which carries the holding device comprises a drum 90 shown as mounted on a shaft 91. This drum has several longitudinal channels 92 in its surface, and the outer peripheral portion of the drum overhangs these channels to provide ribs 93 properly dimensioned to occupy the space between the hooks 32 of the holder and the body thereof.

Fig. 3 shows the drum 90 arranged to carry four of my storage holders, each of these holders being slid into place lengthwise of the drum. When in such position any base strip 10 carried by the holder may be brought by indexing the drum into alignment with the guide 80 to receive the printing strip.

In many instances it is desirable to have a holder of a greater length than those shown in Fig. 3. I show in Fig. 3*a* a holder of such length as to embrace the entire drum. In this instance one of the corrugations 32 engages a slot 100 in the drum and the other corrugation is retained in a slotted bar 101 pivoted to the shaft 91 by arms 102. A set screw 103 threaded in the bar abuts the edge 104 of the drum and serves to stretch the holder until it contacts with the surface of the drum and retain it in place.

To shove the printing strip from the guide 80 onto the holder, I provide a longitudinally slidable block 100 which carries a hook 101 adapted to engage the end of the printing strip. This block may be operated by a suitable mechanism initiated by a lever 104, so that as the block travels to the left in Fig. 10 the hook will engage the left hand end of the delivered printing strip, and then, on the right hand movement of the hook, the strip is forcibly drawn over the row of buttons of the registering base strip, as indicated by the printing strip 20 in Fig. 10.

The slide mechanism referred to as 205, and which shoves the printing strip from the guide 80 onto the holder, includes a slide 240 slidable on a horizontal rod 241, and which is pivotally connected to the link 204 leading from the cam operated lever 203. The slide 240 has a flat top plate 244 on which rests a transversely extending flat rocking bar 250 carrying a pin 251 depending into a notch 252 in the top plate of the slide.

The transverse bar referred to is housed within a recess 255 in the lower face of a

standard 256 which is slidable upon the frame rod 257 and the frame plate 258. This standard carries the vertical rock shaft 260, which at its lower end is pinned to the rocking bar 250 and at its upper end carries the hook 206.

As the slide 240 moves toward the left under the influence of the cam 162, the right hand wall of the notch 252 (left hand in Figs. 15, 17 and 18) engages the pin 251 depending from the rocking bar 250, and thus carries the rocking bar, standard and hook toward the left until the point of the hook is beyond the left hand end of the delivered strip.

To carry the strip from the delivery rolls into position so that the point of the hook in its left hand position will be beyond it, I provide a horizontally sliding hook 270, Figs. 14 and 16, which extends freely through the pass of the roll 54, and has its right hand portion 273 guided in a slideway in the horizontally stationary member 274, which carries the rail 80 for supporting the strip. This rail is slotted horizontally at 276 to receive the hook 270. This hook member is pivoted at its right hand end to the lever 271, which is intermediately pivoted to a link 272 and depends below its pivot into the path of a lug 275 on the forward edge of the top plate of the slide 240. Accordingly, as the slide mechanism is carrying its hook 206 toward the left it also moves the hook 270 toward the right, thus drawing the finished strip onto the rail 80, as shown in Fig. 16. Thus, as the slide mechanism reaches its left hand position, the point of the hook 206 is beyond the left hand end of the delivered strip.

As hereinafter explained, the hook 206 stands normally swung to the front away from the embossed strip. When the movement to the left begins, the notch 252 catches up to the pin 251 as heretofore explained. Thereafter, during the travel of the slide mechanism toward the left, the latching bolt 290, which slidably occupies the notch 291 in the rocking bar 250, is released as hereinafter explained, and moves downwardly under the influence of the spring 292 into the notch 252. It will be noticed that this notch is enlarged at this point 296, so that there is play of the lower end of the latching bolt in the notch. This is the normal condition as the slide mechanism moves toward the left. It comes to rest with the hook 206 beyond but in front of the left hand edge of the embossed strip. Now, on the return movement, the first thing that takes place is for the slide 240 to take up the slack between the left hand or trailing edge of the slot 252 and the latching bolt 290 and rock the rocking bar until it is stopped by abutting the pin 280, the parts thus coming into the position shown in Fig. 17. The parts remain in this condition during the right hand movement of the slide mechanism until the embossed strip is drawn onto the holder, it being understood that one of the base strips 10 is held in alignment with the rail 80, so that as the slide mechanism moves toward the right under the influence of the cam 162, the embossed strip is drawn along the slide and onto the holder.

When the embossed strip reaches its final position on the holder, its far end engages a bell crank 300, which is rocked thereby and thus moves downwardly the horizontal plate 302, this plate having a parallel-ruler connection with the stationary plate 303 by means of the portion 304 of the bell crank and a parallel and equal-length link 305. This plate remains in its lowered position until eventually released and returned by a spring 306. This downward movement of the plate 302 causes it to engage a lever 311, the other end of which is connected to the latching bolt 290. This results in raising the bolt and thereby temporarily unlocking the hook carriage from the slide. As soon as this takes place a slight further movement toward the right of the slide 240 brings the pin 246 against the stop 247, as shown in Fig. 18, and therefore the continued movement of the slide and carriage allows the hook to swing forwardly away from the embossed strip, and the rest of such movement of the slide mechanism is idle.

Suitable means (not shown) may be provided for automatically indexing the drum 90 to bring successive base strips into registration with delivered printing strips. If desired, the means for this purpose may be substantially that shown in my prior Patent No. 1,557,756 issued October 20th, 1925, to The American Multigraph Company.

The patent just referred to, shows a receiving drum and a platen with which it may coact so that a proof may be taken of matter assembled. A similar feature may be utilized with the temporary holders of this invention. Figs. 1 and 3 illustrate at 110 a suitable platen with which the printing members on the drum may coact. The drum shaft is provided with a crank 97 for rotating it. The drum has a recess 98 in which may be loaded a suitable inked ribbon. It is sufficient to mount one end of a short ribbon, of a length corresponding to the periphery of the drum, and to allow the other end to hang freely, as one rotation of the drum for the purpose of taking proof is ordinarily the only printing effected at this time.

If upon reading of the proof, or in any other manner, it is found that any printed strip is not satisfactory, it may be readily removed manually by the operator, by simply pressing on it with his fingers and pulling it toward the right, so that it passes off of the base strip and over the stopping strip 40

as shown by the strip 20*a* in Fig. 1. This enables a fresh embossed printing strip to be shoved by the machine onto the now vacant base strip.

After the strips produced by the embossing machine have been mounted on the base strip carried by the holder, and after proof has been taken if desired, the entire holder with its base strips and printing strips is slid off of the drum lengthwise thereof, and may be stored for future use. A large number of these holders may be mounted one on the other in a comparatively small space. When so mounted, the under-turned end flanges of each holder, resting on the holder below it, keeps the body of the surmounting holder out of contact with the printing face of the type strips beneath such holder, so that there is no danger of injury to the printing characters.

When it is desired to transfer a strip from the holding device shown to the printing form, the operator simply presses on the face of the selected embossed strip and on the back of the holder with his thumb and finger and shoves the strip toward the left. In this movement, both the printing strip and base strip pass as a unit partly out of the holder at the left hand end, and thus the partially ejected composite strip may be readily taken hold of and withdrawn from the holder, ready for loading in a chase, blanket, or other holding device of the printing machine. It may be noted that a system of printing, which may employ the holder of the present application, is set out and claimed in my co-pending application Serial No. 457,200.

I claim:—

1. The combination of a holder, base strips slidably mounted thereon, printing strips slidably mounted on base strips, and means on holder for stopping the base strip without stopping printing strip.

2. The combination of a holder with upstanding buttons having openings beneath them, a stopping strip extending through the openings, base strips slidable between buttons against stopping strip, and printing strips slidable on the base strips.

3. The combination with a holding plate having parallel rows of upstanding buttons made by cutout ears on the holder plate, whereby there are openings beneath the buttons, the openings of successive rows aligning, a stopping strip passing through aligned openings a series of base strips mounted on the holder between successive rows of buttons, each base strip itself having upstanding overhanging buttons, and a series of embossed printing strips slidably mounted on the base strips and having edge flanges overhanging the buttons of the base strips.

4. The combination of a holder with upstanding buttons spaced apart by corrugations, base strips with upstanding buttons spaced apart, the strip buttons being smaller and spaced closer together than the buttons of the holder, and flanged strips overlying the base strip buttons.

5. The combination of a holder with parallel rows of buttons, base strips slidable between buttons and themselves having upstanding buttons, embossed printing strips of substantial same width as base strips having inclined edge flanges, the edge flanges of the printing strips engaging on their inner sides the buttons of the base strips and on their outer sides buttons of the holder.

6. The combination of a sheet metal plate adapted to be curved, parallel rows of upstanding overhanging projections on the plate, printing members carried in the space between the rows and held by the overhang of the projections, and a stopping strip carried by the plate and extending across the space between the rows.

7. The combination of a rotary drum, one or more arc-shaped plates held thereon, each plate having parallel rows of overhanging projections, base strips mounted between the rows, and means for shoving printing strips onto the base strips.

8. The combination of a recessed drum, an arc-shaped sheet metal holder having inwardly hooked ends, whereby the body of said holder may rest on the drum surface with the ends extending inwardly, said holder having rows of projections adapted to hold base strips between them, means for sliding printing strips onto the base strips.

9. The combination with means for embossing printing strips, of a drum, an arc-shaped holder adapted to be mounted thereon and removably carrying base strips of line printing members, and means for sliding the embossed printing strips onto the base strips to produce composite printing members.

10. The combination with an embossing machine having means for forming embossed printing strips with inwardly flanged edges, said machine having a rotary drum, a holding plate removably mounted on the drum, a series of base strips removably mounted on the holding plate, and means in the machine for shoving the produced printing strips automatically onto a base strip on the holder.

11. The combination of means for delivering embossed strips having flanged edges, a drum having means for carrying an arc-shaped plate, a plate adapted for mounting in arc shape on such drum and having parallel rows of upstanding buttons with overhanging edges, single line base strips slidably mounted between the rows of buttons of said plate, each base strip having upstanding overhanging buttons, the drum being so located with reference to the strip delivery means, that the buttons of the base strips

may be caused to align with the delivery means.

12. The combination of a sheet metal holder plate having parallel retainers, base strips slidably mounted between retainers and having upstanding projections, printing strips slidable on the projections, and a transverse stopping strip stopping the base strips but not the printing strips.

13. The combination of a holder having parallel rows of upstanding buttons, a base strip slid into place between the rows and engaged at its edges by the buttons, and a printing strip mounted on the base strip.

14. The combination of a holder having parallel rows of upstanding buttons spaced apart, a base strip mounted between the rows of buttons with the buttons engaging opposite edges of the base strip, said base strip having upstanding buttons, and a printing strip mounted on the base strip and held by the buttons thereof.

15. The combination of a holder having rows of upstanding buttons spaced apart, a narrow base strip adapted to be mounted between adjacent rows of buttons on the holder, said base strip having a row of buttons smaller than those of the holder, and a flanged printing strip resting on the buttons of the base strip and having its flanges extending beneath such buttons.

16. The combination of a plate having upstanding projections arranged in rows, narrow base strips slidably mounted therein with their edges engaged by the projections of adjacent rows, each base strip having a single row of projections stamped up from it, and single line printing strips on the projections of the base strips respectively.

17. The combination of a holder having rows of upstanding projections, base strips each sliding between adjacent rows of projections and itself having upstanding projections, flanged printing strips overlying the projections of the base strips and having their edge flanges projecting beneath them.

18. The combination of means for embossing printing strips, means for supporting an arc-shaped holder having parallel straight rows of upstanding projections between which rows successive narrow base strips may be mounted, each base strip having a single row of upstanding projections thereon, and means for sliding the printing strips from the embossing machine onto rows of projections of the respective base strips.

19. The combination with a holder having means for carrying a plurality of base strips, of a transverse stopping strip carried by the holder and adapted to limit the movement of the base strips in that direction, and printing strips mounted on the base strips in such position that they may be slid off the base strip over the stopping strip.

20. In a printing apparatus, the combination of a suitable holder having means for carrying a plurality of base strips, means to prevent the ejection of the base strips in one direction, means for shoving printing strips onto the base strips from the opposite side, and means for shoving printing strips off the base strips by movement in the same direction as that which placed them on the base strips.

21. The combination with an embossing machine adapted to form printing strips, of an associated holder adapted to carry base strips, means for shoving the printing strips from the embossing machine onto the base strips in the holder, and means for taking a proof for the printing strips while thus held in the holder, each composite printing strip being removable as a unit from the holder.

22. The combination, with means for forming single-line printing strips, of an associated rotary drum adapted to carry a holder, means for sliding the produced strips from the producing machine onto the holder, and means for rotating the drum carrying the holder to take a proof of the strips.

In testimony whereof, I hereunto affix my signature.

CLIFTON CHISHOLM.