

March 23, 1943.

W. A. HUMPHRIES

2,314,828

PRINTING DEVICE

Filed Nov. 7, 1939

3 Sheets-Sheet 1

Fig. 1.

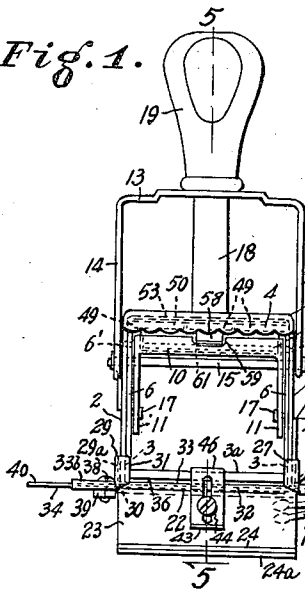


Fig. 2.

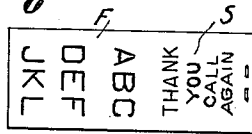


Fig. 3.

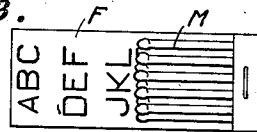


Fig. 4.

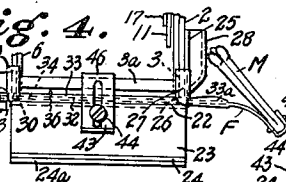


Fig. 6.

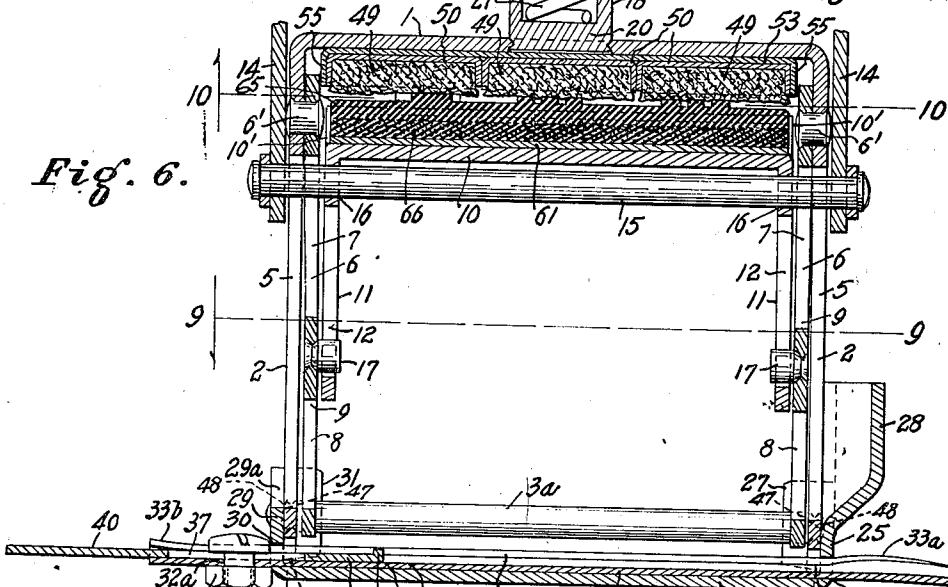


Fig. 7.

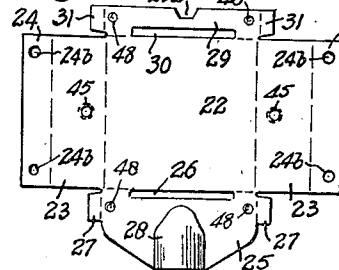


Fig. 8.



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3 Sheets-Sheet 2

Fig. 9.

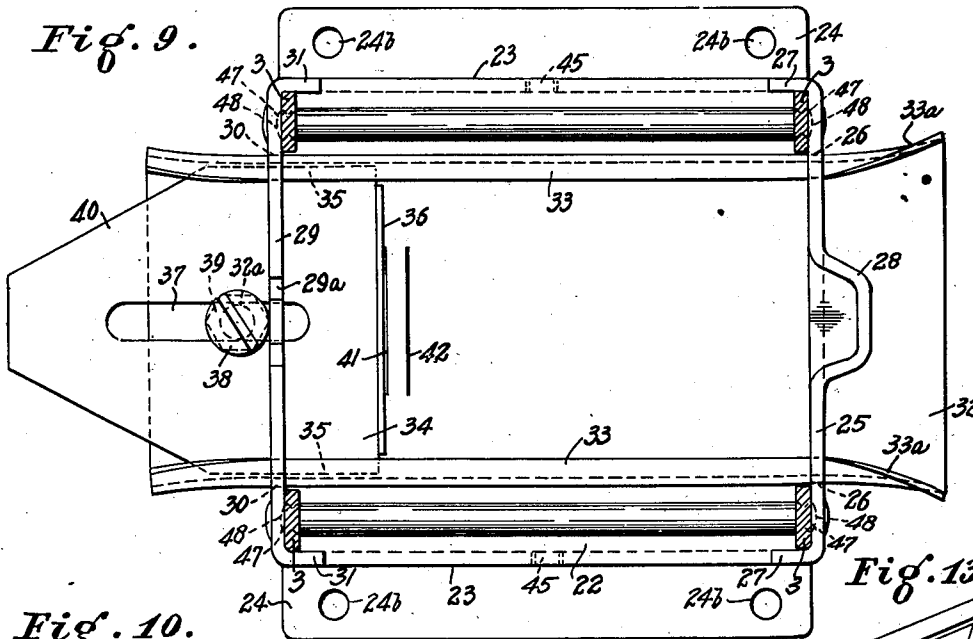


Fig. 10.

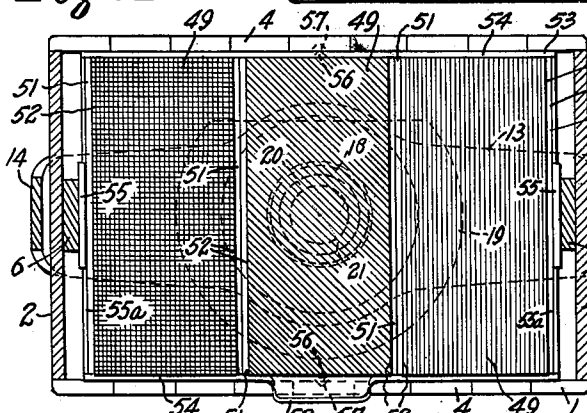


Fig. 11.

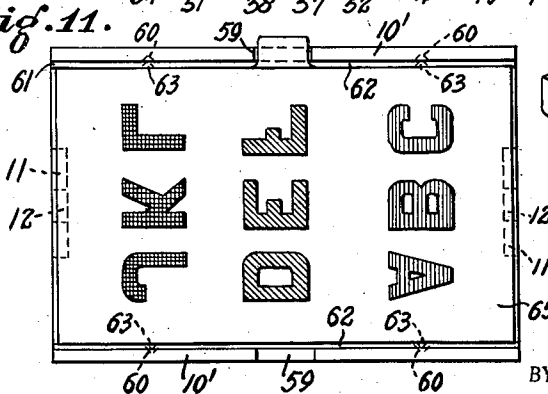


Fig. 13.

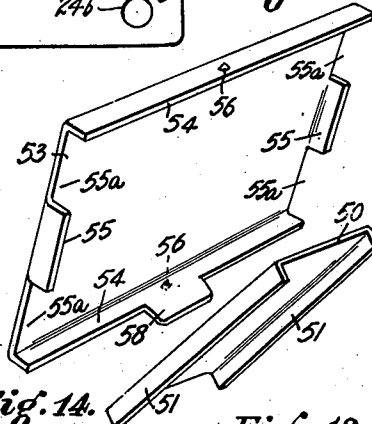
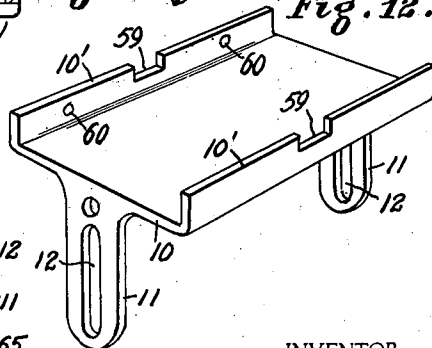


Fig. 14.

Fig. 12.



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3 Sheets-Sheet 3

Fig. 15.

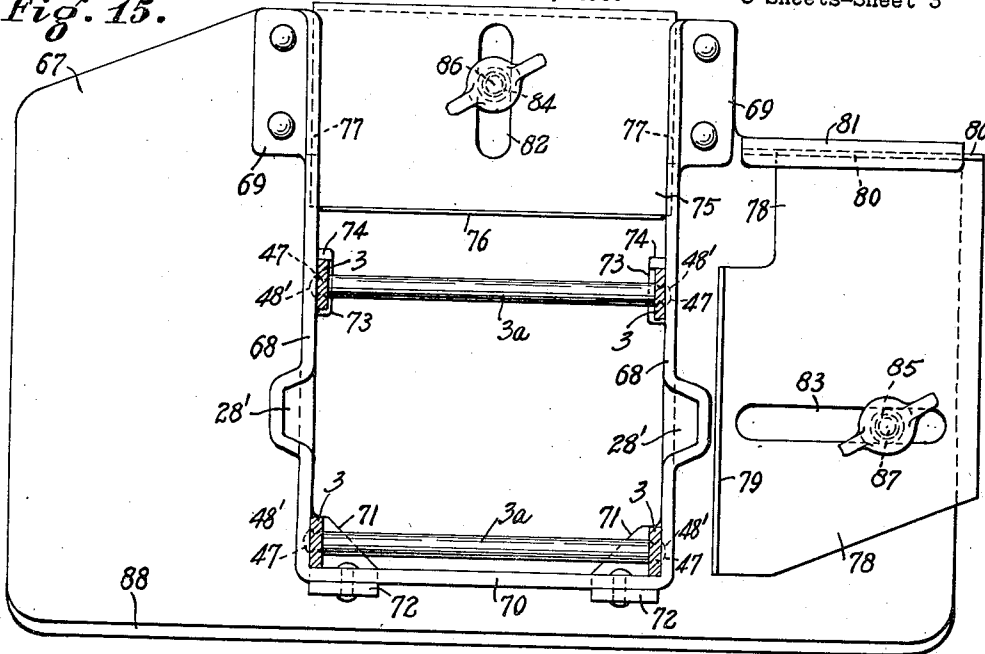


Fig. 16.

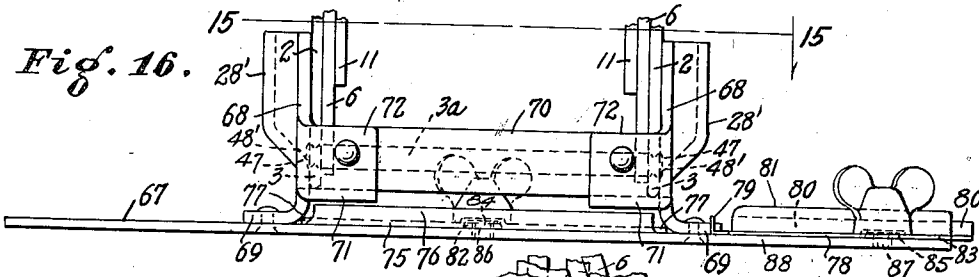


Fig. 17.

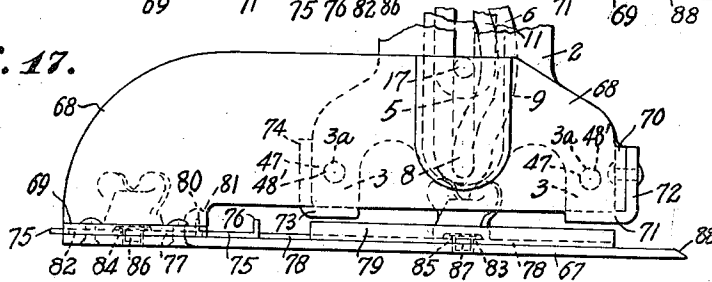
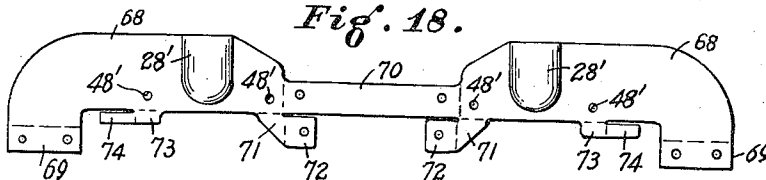


Fig. 18.



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UNITED STATES PATENT OFFICE

2,314,828

PRINTING DEVICE

William A. Humphries, Stanford, Ky.

Application November 7, 1939, Serial No. 303,270

4 Claims. (Cl. 101—334)

My invention relates to printing devices in which a stamp or die is inked by such means as a pad in which the ink is absorbed; and is an improvement upon my invention disclosed and claimed in my Patent No. 2,235,820, issued March 25, 1941.

Like that invention, my present invention has as an object the ready printing of small pieces of work, such as books of matches, for instance, both on the outside and the inside of the cover of the book; preferably using as the principal operating mechanism well known construction produced in large quantity for general printing or stamping.

A more particular object is to provide in such structure for accurately guiding and gauging the work, and for adjustment, both of the gauge and the operating mechanism to locate the impression differently as required on different surfaces. A preferred object is to have the well known mechanism above mentioned readily attachable to and detachable from a printing bed on which the work is supported, guided and gauged.

A further object is to make the impression multi-colored; and it is a particular object of the present invention to better insure that the different colors will remain distinct, with the desired full contrast of colors in each of many impressions. It is a further object to allow ready interchange of positions of the different colors in the impression. Another object is to have the color or colors presented for effective uniform inking, in the course of a run of many impressions, or in an interim of disuse of the device.

In general, the object is to provide impressions comparable favorably with printing press work, with the use of a stamp or die of rubber or the like and inking by means of a pad or the like, as to sharpness of impression, uniformity, and accuracy of location of the impression on the work. In this respect, my invention is adapted for printing many articles usually printed by printing press, as cards, envelopes, letterheads, checks and the like, or advertising impressions on such articles as napkins, wrappers, tape and the like; with suitable modification of the bed and gauge construction, as will hereinafter be more fully explained.

In pursuance of the above mentioned objects, it also is an object to make the device simple in its construction and operation, so as to be readily available at low cost to comparatively small users, and to be readily operated by the users

without especial mechanical or printing experience.

Other and more particular objects will appear in the course of the following description, illustrated by the accompanying drawings, in which—

Figure 1 is a front elevation of my device for printing match books, one of which is in position for printing the outer side of its cover;

Fig. 2 is an outside view of an open match book with an impression thereon as made by my device;

Fig. 3 is an inside view of the open match book with an impression thereon as made by my device;

Fig. 4 is a front elevation of the lower part of the device, understood as in Fig. 1, with a match book in position for printing the inside of the cover;

Fig. 5 is a sectional side elevation of the device, the section being of the upper part, on the plane of line 5—5 of Fig. 1;

Fig. 6 is a vertical side-to-side section on the plane of line 6—6 of Fig. 5, enlarged, and with lower and upper parts omitted for lack of space;

Fig. 7 is a plan, on the scale of Figs. 1 to 5, inclusive, of the blank from which the base or bed is formed;

Fig. 8 is a perspective view of one of the inking pads;

Fig. 9 is a horizontal section on the plane of line 9—9 of, and on the same enlarged scale as, Fig. 6;

Fig. 10 is a bottom plan view of the inking means and adjacent parts of the mechanism in section on line 10—10 of Fig. 6;

Fig. 11 is a face view of the stamp or die, and the carrier in which it is held;

Fig. 12 is a perspective view of the stamp or die carrier;

Fig. 13 is a perspective view of the pad-holder carrier;

Fig. 14 is a perspective view of one of the pad holders;

Fig. 15 is a plan view corresponding to that of Fig. 9, partly in section on the plane of line 15—15 of Fig. 16, showing a modification of my device adapted for general printing;

Fig. 16 is a front elevation of the same, the upper part of the operating mechanism, omitted for lack of space, being understood to be as shown in Figs. 1, 5 and 6;

Fig. 17 is a side elevation of the same; and

Fig. 18 is a plan of the blank from which is formed the supporting frame of the modified device shown in Figs. 15, 16 and 17.

The well known mechanism used in conjunction with my invention comprises an inverted U-shaped frame with the top 1 and depending legs or side parts 2 each having at each lower corner a foot 3. The top 1 is of inverted pan shape with front and rear walls 4; the ends of the pan being the upper portions of the legs or side parts 2. This inverted pan, in usual practice, holds a pad facing downwardly and made up of a stiff backing, a padding, and a fabric forming the lower face of the pad.

Rods 3a rigidly connect together the front pair and the rear pair of feet 3, respectively. Each leg or side part 2 has a median vertical slot 5; and cam levers 6 have pivots 6' at their upper ends, in each frame side part 2, just above the upper end of respective vertical slot 5. Each lever 6 has a slot, the upper and lower end parts 7 and 8 of which are adapted to register with respective side part vertical slot 5 in one position of lever 6, and a longer intermediate part 9 bowed forward from end parts 7 and 8.

The stamp or die carrier 10 is a rectangular channel with arms 11 extending down from its edges, each arm with a longitudinal slot 12. The U-shaped yoke 13 has its side arms 14 straddling the frame sides 2 and having in their lower ends respective end parts of a rod 15. This rod 15 extends across the frame and through the frame slots 5 and the slots of cam levers 6, and through openings 16 in the carrier arms 11 just above the upper ends of their slots 12. Also extending into these arm slots 12 are studs 17 fixed in the respective cam levers 6 about midway of their lengths.

The vertical tube 18 has its lower end fixed in the center of the top cross piece 1 of the frame and extends up therefrom through an opening in the middle of the top of yoke 13. The handle 19 has its lower end fixed in this yoke top and surrounds the tube 18, which contains a helical spring 21 compressed between the closed lower end 20 of the tube and the upper end of the hollow interior of the handle 19. This spring thus holds the stamp or die carrier 10 up with its stamp or die up against inking means in the inverted pan of frame top 1. Depression of handle 19 and yoke 13, with rod 15 sliding down in frame side slots 5, carries the carrier 10 down with its arm slots 12 coacting with studs 17 of cam levers 6, which levers are swung back as rod 15 coacts with the edges of their bowed slots. This action is such as to invert the carrier 10 in its descent, to impress the inked face of the stamp or die on whatever surface is at the bottom of the frame.

This well known stamping mechanism is explained merely to make clear the description of my improvements associated with such mechanism, which of course is not claimed per se herein. It will be understood I may use any mechanism having means to apply a stamp or die alternately to inking means and to a surface to be stamped or printed.

In the preferred construction, the supporting means for the work is a base or bed with flat top 22 to receive the work. Depending from the front and rear edges of this top 22 are respective vertical webs 23 which have bottom edge portions bent out to form foot flanges 24. Cushion strips 24a preferably are fastened to the bottom surfaces of foot flanges 24 by suitable adhesive; and the flanges have through them holes 24b for passage of screws if it is desired to secure the base to some firm support.

A curb 25 extends up from the right hand edge

of top 22 and has a front-to-rear slot 26 with its bottom coinciding with the top surface of top 22. At the front and rear ends of this curb 25, front and rear wall lugs 27 extend inward along and over the respective edges of top 22. The middle part of the curb, higher than these end wall lugs 27, has an outwardly extended half-cup part 28, open at its top. At the left hand edge of top 22 a strut 29 extends up, with a notch 29a in its top edge and with a front-to-rear slot 30 the bottom of which coincides with the top surface of top 22. At the front and rear ends of this strut 29, front and rear wall lugs 31 extend in along and over the respective edges of top 22.

As the means directly supporting and holding the work, a channel member 32 with a flat bottom and front and rear upstanding walls having inwardly extending top flanges 33 is slid through the curb and strut slots 26 and 30 across top 22. This channel member 32 is of width to fit snugly between the ends of slots 26 and 30. It extends considerably past both ends of top 22, and at the right the extension has its wall and top flange portions 33a bent upward and outward, forming a flaring entrance for easy insertion of the work. The widening incident to this flaring forms stops against the ends of curb slot 26; and the left hand extension also is slightly flared to form portions 33b engaging with the ends of strut slot 30, coacting with right hand entrance flared portions 33a to lock the channel member 32 against endwise sliding on the base.

The edges of the work slide in the spaces between the bottom of channel member 32 and its top wall flanges 33, for vertical guidance, and between the channel walls for horizontal guidance, so that the work is held flat on the base top 22.

To limit the extent to which the work is thus slid in along channel member 32, a gauge 34 comprises a flat bottom resting on the flat bottom of channel member 32, with front and rear edge portions 35 in the spaces under the channel wall top flanges 33. This flat gauge bottom has the abutment flange 36 upstanding from its right hand end, extending substantially from one top flange 33 to the other; and it has along its middle the left-to-right extending slot 37. The bottom of channel member 32 has an opening 32a registering with slot 37; and a screw 38 passes down through the slot and opening, with a nut 39 on it below the bottom of channel member 32 to screw up thereagainst and clamp the gauge 34 at various locations along channel member 32 within the limits of slot 37. The left hand tapered end part of the bottom of gauge 34 forms a handle 40 for the gauge. To indicate where to set the gauge 34, the bottom part of channel member 32 has marks or scores 41 and 42. It will be understood that there may be any number of such marks with any spacing desired for kinds of work frequently printed or stamped.

If the gauge 34 is removed, long narrow work, such as tape and the like, may be fed through channel member 32, for printing or stamping thereon at intervals.

In Figs. 1 and 5 I show vertically slotted clamps 43 held by screws 44 through their slots, tapped into holes 45 in the base webs 23, at front and rear; each clamp 43 having a jaw 46 extending in across base top 22. The mechanism previously described has its feet 3 slid down into the respective angles formed at the corners of the base by curb 25 and its front and rear walls 27 and

strut 29 and its front and rear walls 31. The clamps 43 engage their jaws 46 over the respective bars 3a of the mechanism. These clamps 43 may be used when a large quantity of work is printed, warranting time in setting them, to positively connect the mechanism to the base. They are not essential, however; the tight fitting of the legs 3 against the base parts being sufficient to retain the mechanism down on the base. To add to this holding effect, the slightly protruding convex headed ends 47 of the foot connecting rods 3a snap into slight depressions 48 in the inner surfaces of curb 25 and strut 29, as allowed by slight springing of these parts.

The base as shown is made of a single piece of sheet metal, the blank form of which is shown in Fig. 7, with the half-cup extension 28 having been formed in the curb portion 25. Folding at a, a and b, b forms webs 23 and foot flanges 24, and folding at c, c and d, d forms the curb 25 and strut 29, and the end walls 27 and 31, as will readily be understood. I am not limited to this one-piece construction of the base; but I prefer it for simplicity, economy and stability.

As the inking means, I prefer a construction making use of a pad supported generally as in the well known construction before described, but improved over the usual pads of such constructions. Instead of being a composite of backing, padding and fabric facing, the pad is simply a single piece of felt, as the pad 49 shown in Fig. 8. I have found that if the felt made of pure virgin wool is used for such a pad, it retains ink without running or spreading to a closely adjacent pad, and applies the ink to the stamp or die in much more uniform distribution than is had with the usual pads. Also, it retains the ink in condition for such application over long periods of time in interims of disuse of the device. The ink used is any good rubber stamp ink. Although the stamp or die directly contacts the felt, the pad satisfactorily withstands much usage; and its working qualities above described are not appreciably impaired in the course of extended operation. While I prefer the felt of superior qualities, above mentioned, it will be understood that I am not limited to felt of such especially good quality, as inferior materials will serve my purpose to a desired degree.

Such a pad 49, of oblong rectangular shape, is held in a holder 50 which is a simple channel with its side walls 51 engaging snugly the longitudinal edges 52 of pad 49 and being not quite as high as the thickness of the pad 49. A number, here being three, of these holders 50 are set into a carrier 53, which is a channel with side walls 54 and middle fractional end walls 55. Side walls 54 engage snugly the ends of the pad holders 50, holding them frictionally; and the end wall portions 55 engage the adjacent sides of the adjacent pad holders 50 snugly, while the spaces 55a at the ends of these end wall portions 55 admit of engagement to remove these adjacent pad holders 50, which, removed, give access to the middle pad holder 50 for its removal. Protrusions 56 on the outer sides of carrier side walls 54 snap into respective depressions 57 in the inner sides of frame top front and rear walls 4. On the rim of one carrier wall 54 is a tab 58 curved out to extend under adjacent frame top wall 4 for engagement to remove the carrier from the frame top.

As indicated in Fig. 10, for example, the three pads 49 carry, respectively, from right to left, red, green and black inks. In Fig. 6 it will be

noted that, the pads 49 projecting slightly past the rims of their holders, have their corner edges 49' mashed outward by the pressure of the stamp or die; and this outward distortion of the edges increases with added use. With the usual pads, this occurs, and when two such pads meet, ink from each flows or wicks over into the other; making impossible a maintenance of proper contrast between colors in the impressions, which tend to become mottled in color because of this. I find that my pads, above described, hold their inks in so that there is no appreciable mingling of colors under these conditions. Also, smudging, usually unavoidable in usual rubber stamping, is practically eliminated, as my pads do not permit running of the inks. Removal of pad holders from the carrier, and of pads from the holders, is easy, for cleaning, reinking, or substitution of new pads, or pads of different colors.

The stamp or die carrier 10 has the front and rear walls 10' of its channel shape before described provided, midway of their lengths, with respective notches 59; and, in their inner sides, with depressions 60. The stamp or die holder 61 is a simple channel, open at its ends, with its front and rear walls 62 fitting snugly and frictionally against the respective carrier walls 10', each wall 12 with protrusions 63 snapping into the carrier wall depressions 60. One holder wall 62 has a bent-out tab 64 that lies in one of the carrier wall notches 59 above mentioned and is adapted to be engaged for removing holder 61 from carrier 10. Holder 61 may be reversed in carrier 10, so that tab 64 lies in the notch 59 of opposite carrier wall 10'.

As here shown, the stamp or die 65 is the usual rubber stamp with a cushion backing 66, to which it is vulcanized, the backing being adhesively secured to the flat back of holder 61. Preferably the sheet of rubber, whatever the extent of the raised impression portions, is of substantially the full area of said flat back, for accurate mounting in the holder 61 and for good attachment thereto. It will be understood that material other than rubber may be used for the stamp or die, as metal or other materials harder than rubber. For instance, an electrotpe plate may be secured to holder 61, or other suitable means that may be secured in carrier 10.

In Fig. 11, and by comparison with Fig. 10, it is seen that lines of matter "ABC," "DEF" and "JKL" are located to contact with, respectively, the red, green and black inked pads 49; the colors being indicated on the characters. Thus, an effective display is had, with, for instance "ABC" being the name, in red; "DEF" being descriptive of the business, in green; and "JKL" being the address, in black. Reversing the stamp or die in carrier 10 would make "ABC" black, and "JKL" red; or rearranging the pads would effect any desired mutation of colors for the several lines; or substitution of pads with other colors permits further variation of display by very simple manipulation. Each substituted pad 49 may have its holder 50, or a pad may be easily substituted in the same holder 50.

For match book printing, the reversal of the mechanism on the base, and adjustment of the gauge 34, is sufficient for printing the outer and the inner sides of the cover flap of the books. For printing the outer side, as in Fig. 2, the flap F is inserted in channel guide 32 under its flanges 33 until the free end of the flap abuts gauge flange 36; the matches M secured on the other flap extend under the entrance end of guide 32

and adjacent end of bed top 22. The matter reads from the middle toward the left end of the cover, as seen in Fig. 2; the flap that carries the matches having come "stock" printed by printing press, as at S. As a user of the matches holds the open book with the cover flap end upward, the inside printing should read from the end toward the middle of the length of the book. Also, the inside space is more limited than the outside space; so that gauge 34 is set in to allow less extension of the cover flap along the channel member 32, for the inside printing. In this insertion, the matches M slant up along curb 25 by bending of their supporting flap. The mechanism having been reversed on the base, the required reverse printing will be had on the inside of the flap, as seen in Fig. 3.

As will be understood, "stock" books of matches are very inexpensive compared with those ordered with special printing to suit the user, who, with my device may print or stamp on such "stock" books the desired special matter, in uniform register and with distinctness comparable favorably with printing press work, and with color combinations, none of which have been attained with the ordinary hand guided rubber stamp inked from the ordinary pad. The user may order small quantities of the "stock" books without excessive cost, and may print or stamp any small quantity desired at any time convenient. It will of course be understood that any quantity first are all printed or stamped on one side, and then the device is set differently as above explained and all are printed or stamped on the other side.

The improved results attainable with my inking means extends the use of my device to many other articles and to small printed matter in general. For this reason, I have, in Figs. 15 to 18, inclusive, illustrated a modified structure of my device, as concerns the base or printing bed, the mechanism support or holder, and the gauge arrangement. It will be understood that the mechanism is that of the preceding example; and that the inking means therein is as previously described.

In this modified device, the bed is a flat plate 67 of ample extension to adequately support in flat condition such articles as sheets of paper, napkins, wrappers, envelopes, cards, including post cards, checks, or any such matter upon which display matter special for the user is to be stamped in relatively small quantities the cost of which would not be practicable, if ordered specially printed by printing press. In accordance with this purpose, a support for the mechanism is provided, elevated from the top of plate 67 and leaving a throat deep enough to allow stamping or printing at desired distances from the edges of the articles. As here shown, this support comprises a pair of vertical webs 68, each having an outwardly bent foot 69 riveted to bed plate 67 next to the rear edge thereof; these webs 68 being firmly joined by a cross-strut 70 at their front ends, at the junction corners of which tongues 71 are bent in, with end extensions 72 bent up in front of cross-strut 70 and riveted thereto. Tongues 71 thus act as stiffening gussets for the support; and they receive the front feet 3 of the mechanism; webs 68 having in their inner sides depressions 48' receiving the ends 47 of the mechanism front rod 3, which snap into the depressions. For the rear feet 3 of the mechanism, ribs 73 are bent in from the bottom edges of webs 68, with rear tabs 74 bent up; the webs here also having the depressions 48' for the ends 47 of the mechanism rear rod 3. The mechanism thus is

engaged snugly laterally and forwardly and rearwardly, keeping it definitely located, much as in the preceding example. The webs 68 also have the half-cup outward extensions 28' to accommodate the lower ends of the mechanism yoke, as do extension 28 and slot 28a of the preceding example.

The rear gauge 75 is a flat plate with a turned-up abutment flange 76 at its front edge; and it has its lateral edges 77 snugly slidable under adjacent curved junctions of webs 68 with their feet 69. The side gauge 78 is a flat plate with a turned-up left hand edge abutment 79, and a rear turned-up edge flange 80. The bed plate 67 has a portion of its rear edge bent upward and forwardly and downwardly to form an inverted channel 81 in which the gauge 78 slides its rear flange 80 for accurate holding of gauge 78 at any right or left hand adjustment. Rear gauge 75 has front-to-rear slot 82, and side gauge 78 has left-to-right slot 83; and the bed plate 67 has pressed up hollow necks 84 and 85 within the gauge slots 82 and 83, respectively. These necks 84 and 85 are tapped to receive clamp screws 86 and 87, respectively, with winged heads, to clamp the gauges in their adjusted positions.

In this modified device the mechanism is found to operate properly although it is raised a short distance from the printing bed so that the stamp or die has to travel down below the bottom of the frame of the mechanism. The bed plate 67, lying flat on a table or the like, has its front edge 88 beveled to facilitate sliding of work from the table or the like onto the top of the bed. The supporting frame, with its webs 68, front strut 70, feet 69, tongues 71 with extensions 72, and ribs 73 with tabs 74, preferably, though not essentially, is made of a single sheet of metal, folded on lines indicated in Fig. 18, where the blank is shown with the half cups 28' formed in it.

In either example the lines of matter on the stamp or die may succeed from rear to front instead of from side to side, with pads 49 arranged similarly, permitting further variations in form, to meet various conditions.

Modifications other than those herein disclosed may occur in practice, and I do not wish to be understood as being limited to the precise disclosures herein, but

What I claim as new and desire to secure by Letters Patent is:

1. In a printing device a work support formed of a single piece of sheet material with a flat bed portion to receive the work, said piece being bent to form spaced upstanding elements each with spaced pairs of surfaces angularly disposed along a transverse plane, each pair of surfaces being adapted for tightly receiving respective work-straddling corner portions of a printing mechanism support for detachably connecting the supports with the mechanism support resting on outlying corner parts of the flat bed portion, and said piece having slots along opposite ends of the flat bed portion whereby at least a portion of each of said connecting elements is spaced up from the flat bed portion to admit work under said portions of said elements.

2. In a printing device, in combination with mechanism comprising an impression member, inking means, and means alternately applying said impression member to said inking means and to work to be printed, and a support for said mechanism having members straddling the work, and having respective lower corner portions, a support for the work, connecting means readily

detachably connecting said members and said work support for relation of the impression member and the work, comprising upstanding elements on the work support engaging around respective ones of said lower corner portions, and means on said work support whereby the work is definitely located on said work support for the application of the impression member thereto when the supports are connected, the mechanism support members having protrusions near their respective lower corner portions, and the upstanding elements on the work support engaging around respective ones of said lower corner portions having resilient parts with respective depressions in which the respective protrusions retentively engage.

3. In a printing device, in combination with mechanism comprising an impression member, inking means, and means alternatively applying said impression member to said inking means and to work to be printed, and a support for said mechanism having members straddling the work, and having respective lower corner portions, a support for the work, connecting means readily detachably connecting said members and said work support for relation of the impression members and the work, comprising upstanding elements on the work support engaging around respective ones of said lower corner portions, and means on said work support whereby the work is definitely located on said work support for the application of the impression member thereto when the supports are connected, the work support comprising a flat bed plate on which the work-locating means is mounted, and a frame made up of a single piece of sheet material so bent as to form side webs, each with a foot by which the frame is fixed to the bed plate, a strut connecting the webs together near their ends remote from the feet, said frame having pairs of opposite transversely inwardly extending lower support portions, one pair near said strut and the second pair nearer to the frame feet, the support portions of this second pair having the before mentioned upstanding elements at their parts nearer said feet, and the lower corner portions of the mechanism support members rest-

ing on respective ones of the support portions, two tightly against the strut and respective webs, and the other two against the respective upstanding elements and the respective webs, thereby readily detachably connecting the supports.

4. In a printing device, in combination with mechanism comprising an impression member, inking means, and means alternately applying said impression member to said inking means and to work to be printed, and a support for said mechanism having members straddling the work, and having respective lower corner portions, a support for the work, connecting means readily detachably connecting said members and said work support for relation of the impression members and the work, comprising upstanding elements on the work support engaging around respective ones of said lower corner portions, and means on said work support whereby the work is definitely located on said work support for the application of the impression member thereto when the supports are connected, the mechanism support members having protrusions near their respective lower corner portions, and the upstanding elements on the work support engaging around respective ones of said lower corner portions having resilient parts with respective depressions in which the respective protrusions retentively engage, a bed plate forming the before mentioned work support, and a frame forming the before mentioned mechanism support, with one end part fixed to said bed plate near one edge thereof and extending across said bed plate and spaced upwardly from said plate to admit work under the frame, the work-locating means comprising a gauge member extending across the space near the fixed end of the frame, with edges slidably held under portions of the frame where the frame is fixed to the bed plate, and a second gauge member extending along a side of the frame and having an edge part bent to form an upstanding flange, said bed plate having an edge part bent up and then down to form an inverted channel, and the gauge member flange extending up into and being slidably held in said channel, to guide the gauge.

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