April 26, 1938. W. T. GOLLWITZER 2,115,444

PRINTING DEVICE

Filed March 2, 1936

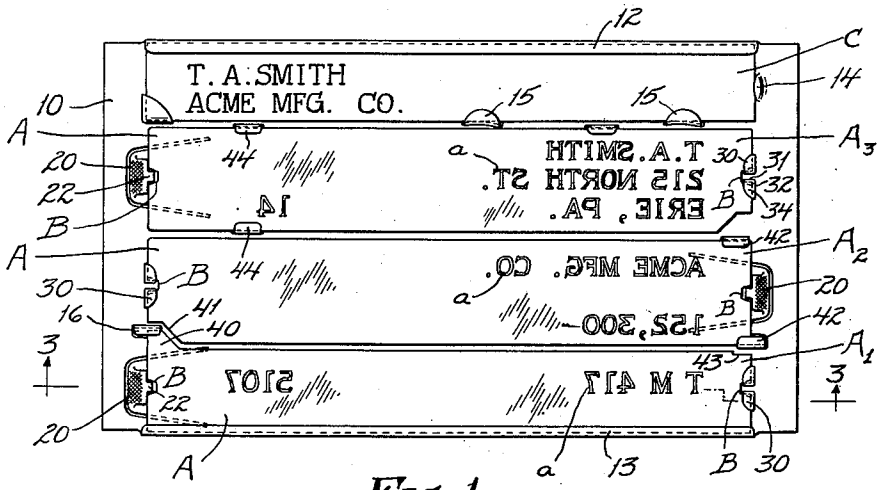


Fig. 1

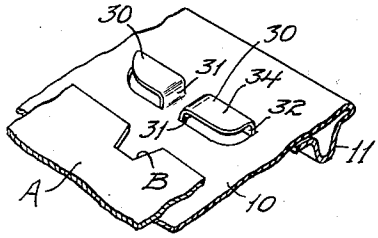


Fig. 5

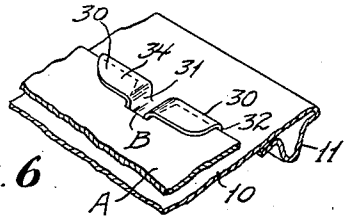


Fig. 6

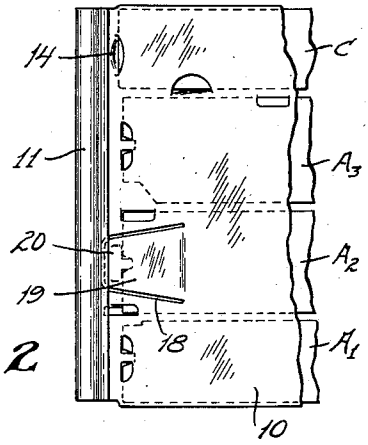


Fig. 2

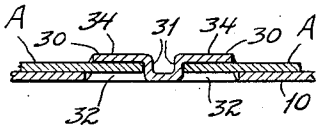


Fig. 4

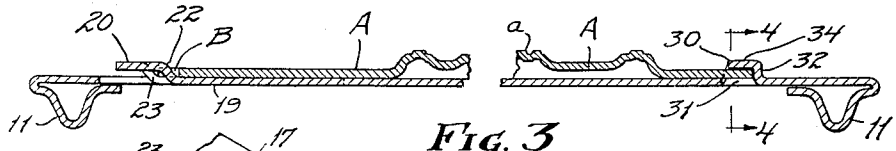


Fig. 3

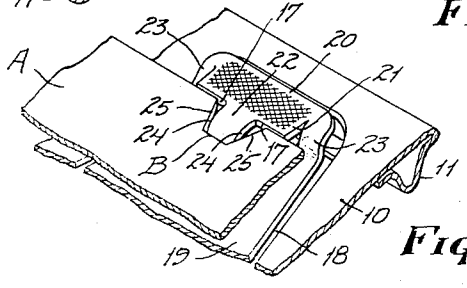


Fig. 7

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Patented Apr. 26, 1938 2,115,444

UNITED STATES PATENT OFFICE

2,115,444

PRINTING DEVICE

Walter T. Gollwitzer, Cleveland, Ohio, assignor, by mesne assignments, to Addressograph-Multigraph Corporation, Cleveland, Ohio, a corporation of Delaware

Application March 2, 1936, Serial No. 66,646

11 Claims. (Cl. 101—369)

This invention relates to improvements in printing devices and especially to an improved printing device of the type comprising a holder or frame having removably mounted thereon an embossed printing plate. This invention is especially concerned with improvement of the formation of the frame to coact with a particularly formed printing plate to retain the plate in position on the frame. This, therefore, is the general object of the present invention.

A more specific object is to provide a printing plate frame with an improved formation or formations which may be stamped up from the body of the frame, which formation or formations will cooperate with a notched printing plate or plates to effectively retain such plate or plates in proper position on the frame, and which formations will act to stiffen the frame itself.

A preferred embodiment of my invention is illustrated in the drawing hereof and is explained in detail in the following description. The novel and essential features of the invention are summarized in the claims.

In the drawing, Fig. 1 is a plan of a complete printing device incorporating my invention; Fig. 2 is a fragmentary plan, looking at the bottom of the device shown in Fig. 1; Fig. 3 is a transverse section on an enlarged scale of the printing device, the plane of the section being indicated by the lines 3—3 on Fig. 1; Fig. 4 is a fragmentary sectional view on the same scale as Fig. 3, the plane of the section being indicated by the lines 4—4 on Fig. 3; Fig. 5 is a perspective of a portion of a frame showing the printing member about to be moved into position thereon; Fig. 6 is a perspective similar to Fig. 5, but illustrating the printing device in position; Fig. 7 is a perspective similar to Fig. 6, but illustrating a different portion of the frame.

The complete printing device comprises a frame 10 and an embossed printing plate or plates A mounted thereon, and if desired, in addition to the printing plate the frame may carry an index card C. The plates A, as well as the cards C, are of general rectangular shape and the plates are each provided at their extreme ends with notches B. As shown in the drawing, these notches flare outwardly as they approach the edges of the plates, the width of the notches being greater at their throats than at their bases. However, if desired, they may be rectangular, as shown in my Patent No. 2,030,865, issued February 18, 1936, to my assignee, Addressograph Company.

The frame 10, as shown in the drawing, comprises a sheet metal member having its ends bent beneath it and bowed to form hollow supporting and strengthening ribs 11. The top and bottom edges are curled over to form lips 12 and 13, which overlie the frame. The lip 12, together with a series of lips 15, which are struck up from the plane of the frame and extend toward the lip 12, serve as retaining members for the index cards C.

The lower lip 13 provides a guideway along which the printing plate A may be slid to position it on the frame. The plate A, when in position on the frame 10, is restrained against movement toward the lips 12 and 13 of the frame by abutment members 20 and 30, which also act to prevent movement of the plate relative to the frame, to the left or right, respectively, (Fig. 1). The abutment member 30 also acts with a lip 16, struck up from the body of the frame, to retain the printing plate in contact with the surface of the frame.

The abutment 20 is formed by an upward distortion of a portion of a spring tongue 19, separated from the body of the frame by an approximately U-shaped slit 18. This abutment and its coacting relationship with the printing plate A is similar to that shown, described and claimed in my patent, heretofore mentioned.

Briefly, the abutment 20 comprises a pair of abrupt shoulders 17, which are formed by a sheared edge of the upwardly distorted outer end portion 21 of the tongue 19. The portion 21 of the tongue is joined to the body of the tongue by an inclined central portion 22, which is of substantially the same width as the base of the notch B of the printing plate. The sides of this inclined portion 22 are likewise sheared from the body of the tongue, thereby forming abrupt shoulders 24, which coact with the side walls 25 of the plate notch B, to prevent movement of the plate toward either the frame lip 12 or the frame lip 13. The portion 21 of the tongue is also joined to the body of the tongue by sloping portions 23, which lie back of the shoulders 17, so that contact with them by the end of the printing plate is avoided.

This invention is especially concerned with the abutment 30 and its relationship to the printing plate A. This abutment is formed directly from the body of the plate. As shown in the drawing, this abutment comprises a longitudinally extending wall or walls 31, stamped and extending upwardly from the plane of the frame, together with a transversely extending wall or walls 32, also stamped and extending upwardly from the body of the frame. The transverse and longitudinal vertically extending walls are joined by a top or

bridge wall 34, which lies parallel with but is spaced above the surface of the frame.

The longitudinal extending walls 31, (and I prefer to use two walls 31) are spaced apart a distance such that from the outer face of one such wall to the outer face of the other of such wall is preferably substantially the same as the width of the printing plate notch C, at its base. The length of the walls 31, or rather the distance from their outermost edge 36 to the innermost face of the vertical wall 32, is slightly less than the depth of a plate notch C. Hence, the longitudinal walls 31 coact with opposite side walls of the plate notch B to prevent transverse movement of the printing plate, while the transverse walls 32 coact with the end of the printing plate adjacent the notch to prevent movement of the plate toward the abutment. As the shoulders 17 of abutment 20 are spaced from the inner faces of the transverse walls 32 of the abutments 30, a distance substantially equal to the length of the printing plate, all movement of the printing plate in a plane parallel with the plane of the frame and adjacent thereto is prevented.

Movement of the plate A1 away from the frame is prevented at one end of the frame by the bridging portions 34 of the abutment 30, which are spaced from the plane of the frame a distance slightly greater than the thickness of the plate. These bridges overlie the corners of the plate formed by the notch B thereof. At the other end of the frame such movement is prevented by the lip 13, which overlies the lower edge of the plate and the lip 16, which is stamped up from the body of the frame and overlies the top edge of the printing adjacent that end.

To prevent weakening of the frame, the lip 16 is spaced a greater distance from the lip 13 than the width of the plate A. Hence, the plate A1, adjacent its left-hand end (Fig. 1) is provided with an ear 40, thereby increasing its width an amount sufficient to permit it to underlie the lip 16.

The plate A1, namely, the lower plate shown in Fig. 1, is inserted on or removed from the frame 10 by depressing the spring tongue 20 and sliding the plate across such tongue and the left-hand edge of the frame onto or from the frame. The next plate A2, namely, the middle plate of Fig. 1, is arranged to be slid onto or off from the frame across the right-hand edge of the frame. The advantages of this are several. The plate A2 may extend substantially in contact with the upper edge of the plate A1 and may have its lower left-hand corner cut away as at 41 to permit it to clear the extended portion 40 of the plate A1 and its retaining ear 16. Likewise, the spring tongue abutment 20 for the plate A2 is positioned at the opposite end of the frame relative to the abutment 20 for the plate A1, preventing undue weakening of the frame at the left-hand side. Furthermore, the vertical walls 31 and 32 of the abutment 30, which are joined by the bridge wall 34, materially stiffen the frame in the region of the abutment 30. Hence, by positioning the corresponding abutment 30 for one plate adjacent the spring tongue abutment 20 for the next plate, I reinforce the frame adjacent each spring tongue abutment 20, which materially strengthens and stiffens the frame.

The plate A2 is prevented from movement in a plane parallel with the frame by its abutments 20 and 30, as heretofore described, in connection with the abutments 20 and 30, and the plate A1. The abutment 30 also serves to maintain the adjacent end of the plate A2 in contact with the face of the frame. At its right-hand end the plate A2 is retained in contact with the face of the frame by a pair of lips 42 stamped upwardly out of the frame and overlying the longitudinal edge of such plate adjacent its end. These also serve as a guideway to facilitate the entrance of the plate on the frame.

As the plate A1 is inserted from the left of the frame, its right-hand end may be cut away slightly, as indicated at 43, to clear the lower lip 42.

The plate A3 is retained in position by an abutment 20 located at the left-hand end of the frame and an abutment 30 at the right-hand end, a pair of frame lips 44 stamped up from the body of the frame retain the plate in contact with the face of the frame in the region of the abutment 20.

Thus it is seen that I have strengthened one side of the plate, namely, the left-hand side, by positioning an abutment 30 intermediate two abutments 20, and I have strengthened the right-hand side, or most frequently grasped side of the frame, by providing a pair of abutments 30 at opposite sides of the abutment 20, thereby increasing the rigidity and durability of the frame.

I claim:

1. A frame for a printing plate having a notch in one end, said frame having means to retain the plate in position thereon comprising a vertically extending member rigid with the frame and projecting upwardly from the body of the frame adapted to enter the notch in the plate, a second vertically extending member projecting upwardly from the body of the frame and adapted to engage the edge of the plate adjacent the notch, said vertically extending members being connected by a member extending parallel with the face of the frame and adapted to overlie the plate adjacent the notch thereof.

2. A frame having an abutment comprising a portion upstanding from the body of the frame, a top portion extending parallel with the frame, and an intermediate portion depressed from the top portion, said abutment being adapted to coact with a printing plate having a notch in its end, said notch being adapted to embrace the depressed portion while the material of the plate on opposite sides of the notch lies beneath the top portion of the abutment.

3. The combination of a frame having an abutment and a printing plate retained by said abutment, said abutment comprising two adjacent portions each having an end wall rising from the body of the frame and a side surface rising from the frame and a top surface connecting the side surface and end wall, the two side surfaces being comparatively close together and the printing plate having a notch embracing both side surfaces.

4. A frame having an abutment and a printing plate adapted to coact with the abutment and be retained thereby on the frame, said abutment comprising two adjacent members stamped up from the body of the frame, each member having an end wall and a side wall rising from the frame with a top portion connected with both walls, the side walls being adjacent each other and the printing plate having in its end a notch embracing both side walls, while the corners of the plate on opposite sides of the notch extend beneath the top portions of the abutment.

5. A frame provided with an abutment for a printing plate adapted to be retained by the abut-

ment, said abutment comprising a pair of angularly shaped pockets formed upwardly from the body of the frame, each pocket having one leg parallel with a leg of the other pocket and another leg substantially in alignment with the other leg of the other pocket, the parallel legs being relatively close together and adapted to coact with a notch in the plate to restrain movement of the plate in one direction, and the other legs adapted to coact with the end of the plate adjacent the abutment to prevent movement of the plate in a direction at right angles to the first legs and each of said pockets being adapted to overlie corners of the plate adjacent the notch.

6. A frame adapted to carry a printing plate, said frame being formed with a spring tongue adjacent one end of the frame, said tongue having a raised abutment connected with the tongue by a central extension, a fixed abutment adjacent the opposite end of the frame, said fixed abutment comprising two oppositely facing pockets providing end walls, adjacent side walls and top portions, the adjacent side walls being substantially in line with the connecting portion of the spring tongue and having substantially the same overall width, whereby said frame may carry a printing plate having similarly located notches in its opposite ends, either of which may embrace the side walls of the fixed abutment while the other embraces the connecting portion of the spring tongue.

7. A frame provided with an abutment comprising a pair of angularly shaped pockets formed upwardly from the body of the frame and positioned side by side and close to each other, each of said pockets being adapted to receive one of the inner corners of a notched plate adjacent the notch while the notch embraces the side walls of the two pockets.

8. The combination of a printing plate having a notch in its end and a frame for carrying the plate having a fixed raised abutment which occupies the notch and at the same time overhangs the outer face of the plate, whereby the abutment restrains the plate against movement in either a longitudinal direction or lateral direction parallel with the frame, as well as against movement away from the frame.

9. A notched printing plate and a holder therefor with a fixed abutment which occupies the notch and overhangs the top face of the plate.

10. A printing plate having an intermediately located notch in its end and a holder therefor with a fixed abutment which occupies the notch and overhangs the top face of the plate.

11. The combination of a printing plate having an intermediately located notch in its end and a frame for carrying the plate having a fixed raised abutment which occupies the notch and at the same time overhangs the outer face of the plate, whereby the abutment restrains the plate against movement in a longitudinal direction toward the abutment and in either lateral direction parallel with the frame, as well as against movement away from the frame.

WALTER T. GOLLWITZER.