

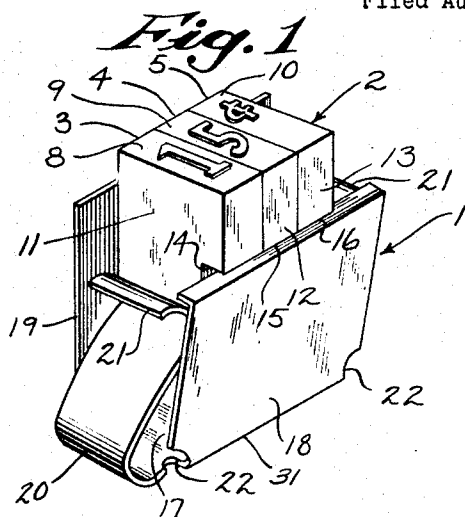
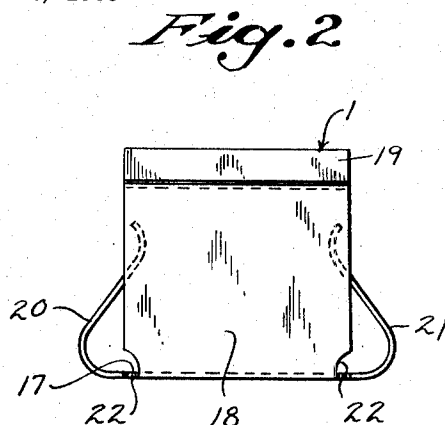
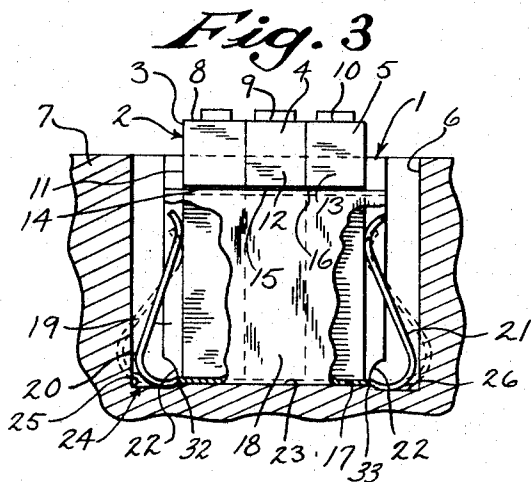
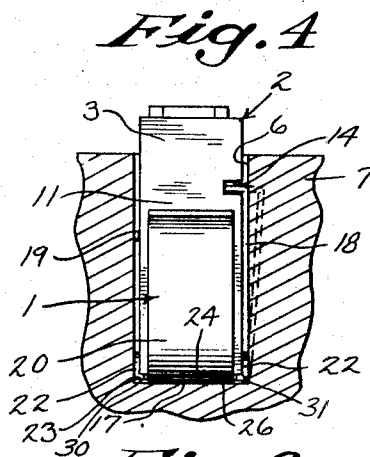
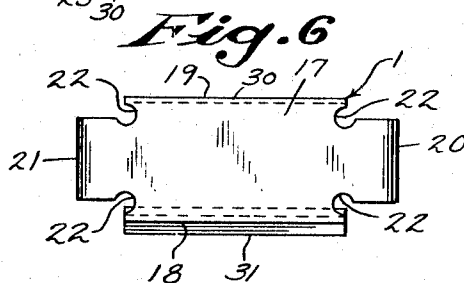
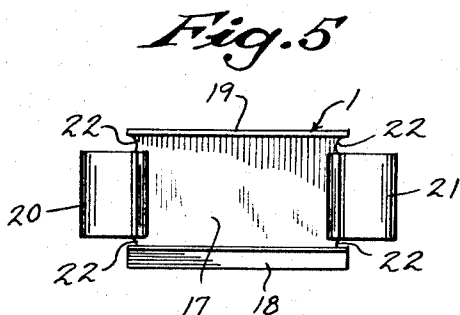
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3,392,668

TYPE SLUG HOLDING CLIP

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3,392,668

TYPE SLUG HOLDING CLIP

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ABSTRACT OF THE DISCLOSURE

A type slug for an imprinter is held in a type holding clip that has resilient end walls bearing inwardly on the ends of the slug and side walls, one of which is bent inwardly at the top to engage nicks in the type. The side wall that engages the nick is resiliently angled outwardly to frictionally engage a type holding hole in a heated block of the imprinter.

The present invention relates to a clip for holding a slug of type for a printing machine, and more specifically, the invention resides in a clip having a base, side walls and resilient end walls for holding the types of the slug in alignment and for cooperating with the printing machine to position the slug accurately.

The embodiment of the present invention described here was designed for use with the type of imprinters which are the subject matter of application Ser. No. 449,162, filed on Apr. 19, 1965, and entitled, "Imprinter Apparatus for Packaging Machines," issuing as U.S. Patent No. 3,280,728 on Oct. 25, 1966, and U.S. patent application Ser. No. 511,111, filed Dec. 2, 1965, and entitled "Intermittent Motion Imprinter Apparatus for Packaging" issuing as U.S. Patent No. 3,331,320 on July 18, 1967. For details of the environment of this clip, refer to those two documents. For present purposes, it may be said that this embodiment of the present invention was devised for use on an imprinter which is an accessory to a packaging machine, such as machines which vacuum pack sliced meats and the like. These imprinters affix the price and other similar transitory data on the preprinted packaging material being used. Widely used as packaging materials today are combinations of polyesters and polyethylene. To provide ink or pigment for imprinting, a sheet of roll leaf is positioned between a movable printing plate having letter press type and the packaging material, which is supported on an impression pad or drum. When the printing plate engages the roll leaf, the roll leaf and the packaging material are pressed between the printing plate and the impression pad, so that pigment from the roll leaf will be transferred to the packaging material in the configuration of letter press print on the printing plate. To avoid the need for drying a wet ink, dry pigments are employed, and, to cause the dry pigment to be released from the roll leaf and transferred to the packaging material the printing plate must be heated to between 300° and 400° Fahrenheit.

In order to enjoy the full advantages of such an imprinter, it is preferable that the slug of type on the printing plate be reusable on successive occasions, and that the type be readily changeable to accommodate the packaging of different articles requiring different pricing, or other information. Originally, the types were set up in the printing plates individually for each run, but this was time consuming and a nuisance. The heated block was provided with a hole into which the type would fit snugly, but once the block was heated with the type positioned and heated in the hole, the difference in the expansion characteristics of the two metals caused the type to bind tightly in the hole and it was necessary to

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cool the block before the type could be removed. If the types, which were held in place magnetically, were loosely fitted in the hole in the block, an imperfect transfer of heat to the type and improper positioning of the type could result, and this would interfere with the printing capability of the imprinter. Some means was therefore desired which would permit the type to be readily removed, retain the types in close registry, and provide a good heat transfer from the heated block to the type. The present invention satisfies all these specifications, and, in addition, avoids the repetitious setting and resetting of slugs of type.

Accordingly, the objects and advantages of the present invention may be summarized as follows:

Providing a convenient means for handling and storing repeatedly used preset types.

Providing means for supporting types in a slug in close registry with one another.

Providing means for supporting a slug of type in precise registry in a type holding hole in a printing block.

Providing convenient means for easily handling heated type.

Providing means for readily removing a hot slug of type from a type holding hole in a heated block and inserting a preset slug of type in a hole in a heated block.

Providing a simple, self-adjusting clip for achieving the foregoing advantages which is capable of holding slugs having varying lengths depending on the thicknesses of the types making up the slugs.

The means whereby the salient advantages already mentioned—as well as other advantages—are achieved by the present invention will become apparent from the description to follow. One embodiment of the invention will be described in very extensive detail to insure that the invention, and the manner and process of making and using it, will be set forth in such full, clear, concise and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the invention. Also, the embodiment selected for description herein constitutes the best mode presently contemplated by the inventors for carrying out their invention. However, this optimum mode of carrying out the invention is not to be confused with the invention itself, the subject matter of which is set forth in the claims at the conclusion of this specification.

In the drawings:

FIG. 1 is an isometric projection of a type slug assembly of the present invention showing a slug holding clip of the present invention containing a representative slug of type,

FIG. 2 is a side view of a slug holding clip of the present invention,

FIG. 3 is a side view of a type slug assembly of the present invention mounted in a type holding hole in a block of an imprinter,

FIG. 4 is an end view of a type slug assembly of the present invention mounted in the type holding hole of a blocking in an imprinter,

FIG. 5 is a top view of a slug holding clip of the present invention, and

FIG. 6 is a bottom view of a slug holding clip of the present invention.

Referring specifically to FIG. 1, a slug assembly is shown, which is made up of a metal slug holding clip 1 tightly and resiliently holding a slug 2 of types 3, 4 and 5 in close register with one another. As seen in FIG. 3, this type slug assembly is then inserted in a hole 6 serving as a type holder 6 in a block 7, which is a steel member of an imprinter of the type disclosed in the above mentioned copending applications, and which is adapted to be heated by means not shown here. The types 3, 4 and 5

are letter press types bearing in relief on their faces 8, 9 and 10 the characters to be printed. The types 3, 4 and 5 have shanks 11, 12 and 13 each containing a squared nick 14, 15 and 16, which will be in alignment when the types are in proper registry one with another. The types 3, 4 and 5 vary in thickness, depending on the characters on their faces 8, 9 and 10 so that the slugs will vary in length as the information to be printed changes.

The clip 1 is made from a single piece of 17-7 type stainless steel which is 0.010 inch thick. The clip 1 has a base 17 at the bottom with side walls 18 and 19 extending approximately perpendicularly upward from side edges 30 and 31 of the base 17, and S-curved end walls 20 and 21 extending from the end edges 32 and 33 of the base 17 in the same general direction as the side walls 18 and 19. The base 17, side walls 18 and 19 and end walls 20 and 21 cooperate to define an interior of the clip 1, which open in a direction away from the base 17, or, as it appears in the drawing, the clip 1 is open at the top. The end walls 20 and 21 are formed to be S-shaped as viewed from the side, so that one arc of each wall 20 and 21 projects outwardly near its fixed end, the base 17, and the other arc of each of the end walls 20 and 21 projects inwardly near the opposite, free extremity of the end walls 20 and 21. This permits the end walls 20 and 21 to bear resiliently inwardly against the ends of the slug 2 near the free end of the end walls 20 and 21.

A relief notch 22 is cut in each bottom corner of the end walls 20 and 21 adjacent to the base 17, and when the slug 2 is placed in the clip 1 it forces the end walls 20 and 21 outwardly at their free ends and downwardly at their fixed ends adjacent the base 17. The type holder 6 in the block 7 is shaped so that there is a raised land 23 in the center of the bottom surface 24 with grooves 25 and 26 on each end to receive the downwardly deflected end walls 20 and 21 of the clip 1. Thus, the types 3, 4 and 5 are held in registry with one another and the slug is positioned accurately in the type holder 6.

One of the side walls 18 of the clip 1, which may be arbitrarily designated the front side wall 18, has its free end, which is remote from the base 17, bent inward to fit in the aligned nicks 14, 15 and 16 in the shanks 11, 12 and 13 of the types 3, 4 and 5. In addition, the front side wall 18 of the clip 1 is angled approximately 5° away from the perpendicular with respect to the base 17, so that when the slug assembly is outside of the type holding hole 6 in the block 7, the bent end of the front side wall 18 is adjacent the mouths of the nicks 14, 15 and 16 in the shanks 11, 12 and 13 of the types 3, 4 and 5. When the assembly is mounted in the type holding hole 6 of the block 7, the front side wall 18 of the clip 1 is pressed inwardly to approximately a vertical position with respect to the base 17 so that the top portion of the free end, which is inwardly bent, is inserted in the aligned nicks 14, 15 and 16 in the types 3, 4 and 5.

While the clip 1 of the present invention does not require the critical tolerances of machined assembly, it is by no means haphazardly formed. In order to achieve the perfection of registry and reproduction that has become essential to modern day printing, fairly close tolerances must be maintained. For example, in the embodiment shown, the back side wall 19 is $\frac{1}{2}$ inch long and $\frac{1}{16}$ inch high, the front side wall 18 is 0.406 inch high, $\frac{1}{2}$ inch wide, and the inwardly bent portion of the front side wall 18 is 0.050 inch wide. The inside width of the base is 0.254 inch, and its inside length is $\frac{9}{16}$ inch at the bottom and $1\frac{3}{32}$ inch at the shortest distance between the inwardly curved, free ends of the end walls 20 and 21. The end walls 20 and 21 are identical, each being $\frac{3}{16}$ inch wide, and the curves of the S-shape are formed at $\frac{1}{16}$ inch radii separated by a $\frac{3}{16}$ inch straight section, which is tangential to the S-curves. The external arc length of the bottom curves of the end walls 20 and 21 is 128°, and the external arc length of the top curve is 90°. The angular tolerances of the curves and bends are within plus

or minus 1°, the fractional dimensions with plus or minus $\frac{1}{64}$ inch, and the decimal dimensions within plus or minus .005 of an inch. The bends are made at 45° to grain, and each clip is heat treated after forming so it will manifest and retain the desired permanent resiliency.

The embodiment of the invention described here is made in three sizes for standard face type of the letter press variety, and it is designed to hold three characters on three types, although larger clips 1 to hold larger and more types are planned. The packaging material on which this is designed to print may be of many different types but typically it would be mylar with a polyethylene coating. If the block 7 is heated to 300° to 400°, depending upon the roll leaf materials employed, this heat is transferred to the types 3, 4 and 5 through the clip 1. Typically, the roll leaf material employed has a cellophane substrate with a Carnauba wax primer, an inorganic pigment with a binder in the pigment including a wax, a plasticizer, a solvent, and other materials. When this roll leaf is heated to about 300°, roughly 90% of the pigment will lift from the cellophane substrate and form a preferential adherence onto the packaging material to be printed. As shown in the reference application, the type assembly of the present invention may be mounted in a reciprocating block 7, or the block 7 may be part of a rotating drum. In any case, the printing process is substantially the same, and the imprinter may be analogized to a typewriter, the type of the typewriter corresponding to the slug 2, the ribbon of the typewriter corresponding to the roll leaf in the imprinter and the paper typed on corresponding to the packaging material printed by the imprinter.

Thus it can be seen that the clip of the present invention through the cooperation of the side walls 18 and 19 and the resilient end walls 20 and 21 secure the types 3, 4 and 5 in registry in three dimensions, and the resilient urging of the side walls 18 and 19 stabilizes and positions the slug assembly precisely in two dimensions in the type holder 6 of the block 7, and the downwardly deflected end walls 20 and 21 in grooves 25 and 26 stabilizing the assembly in one dimension, also the four walls 18, 19, 20 and 21 engage the types 3, 4 and 5 to hold them in registry as the unified slug 2. The results mentioned are achieved in the simplest possible way in the sense that no special tools or adjustment are required by the machine operator, and the mechanism employed is a one piece clip 1 and a type holding hole 6 in the printing block 7. Moreover, the clip 1 is sufficiently versatile to accommodate a broad range of slug 2 lengths as is required by the different thicknesses of the various different types. The slug assembly is self-contained and self-adjusting, and can be inserted in and removed from the type holder 6 in the block 7 with an ordinary pair of pliers, whether the block 7 and slug assembly are hot or cold. Once the types 3, 4 and 5 are assembled in the clip 1 as a slug 2, the slug 2 may be retained in the form of a slug assembly until there is no longer need for the information as set up in the slug 2, however many times the slug assembly is interchanged with other slug assemblies in the imprinter. It will be apparent that the invention is not limited to the specific materials, dimension and configuration described above and shown in the drawings and that each of these specific parameters or characteristics may be modified in a large variety of ways without departing from the invention. Hence, the subject matter of the invention is not limited to the embodiment described in such detail above, but rather is set forth in the claims to follow.

We claim:

1. A type slug holding clip for supporting a slug of type in a heated block of an automatic imprinter utilizing pressure and heat to transfer pigment from roll leaf to a surface to be printed, the combination comprising:
 - a base having side edges and end edges;
 - a pair of resilient side walls extending from said side edges of said base, at least one of said pair of side

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walls diverging outwardly to frictionally engage a type holding hole in a block of said imprinter, and at least one of said side walls adapted to engage nicks in type to hold said type in said clip;

and a pair of resilient end walls extending from said end edges of said base to bear inwardly against opposite ends of said slug of type to hold said slug in register.

2. A type slug holding clip for a printer as set forth in claim 1 wherein

said one of said side walls adapted to engage said nicks in said type has a free end remote from the base and said free end is bent inwardly to engage a groove formed in a type slug to be held by said clip.

3. A type slug holding clip for a printer as set forth in claim 1 wherein

at least one of said end walls is a resilient member formed in an S-shape to bear inwardly in an endwise direction.

4. A type slug holding clip for a printer as set forth in claim 1 wherein

said base and said side walls and said end walls are formed from a single thin sheet of metal.

5. A type slug holding clip for a printer as set forth in claim 4 wherein

one of said side walls has a substantially rectangular shape with an extremity remote from said base bent inwardly, and said one side wall is angled outwardly approximately 5° from perpendicular with respect to said base;

and the other of said side walls also has a substantially rectangular shape and is approximately perpendicular to said base.

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6. A type slug holding clip for a printer as set forth in claim 5 wherein

both of said end walls have a substantially rectangular shape and are bent in an S-shape as viewed from the side so that said free ends of both of said end walls bear resiliently inwardly;

a relief notch is formed in each corner of each of said end walls adjacent to said base;

said end portions of and walls adjacent to said base being deflected downwardly when said free ends of said end walls are deflected outwardly.

7. A type slug assembly comprising the combination of a clip as set forth in claim 6;

and a slug of types having a type face at one end, and each type having a squared nick in an outer side of its shank, said nicks being aligned;

said slug being positioned in said clip so that said type faces face away from the base of said clip, said inwardly bent extremity of said side wall engages said aligned nicks in said slug, and said end walls remote from said base bear inwardly against the ends of said slug.

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