Sept. 23, 1969 J. H. LEMELSON 3,468,252

PRINTING DEVICE

Original Filed Aug. 25, 1964

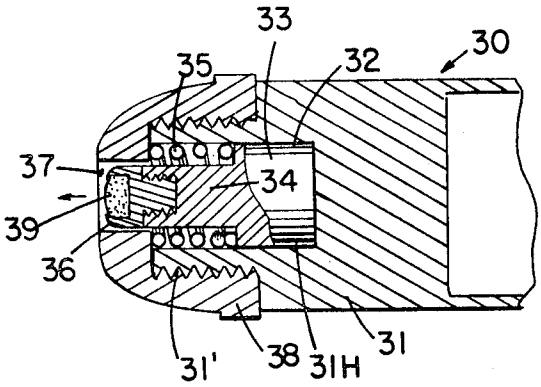


FIG.1

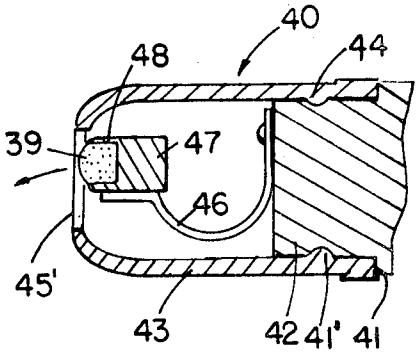


FIG.2

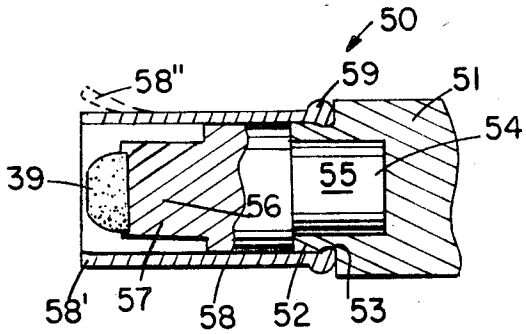


FIG.3

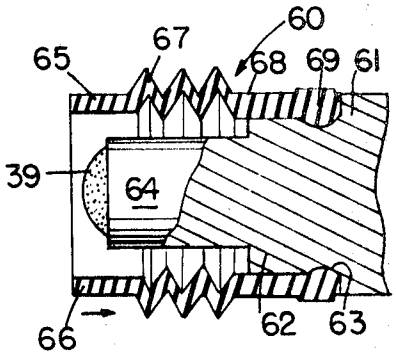


FIG.4

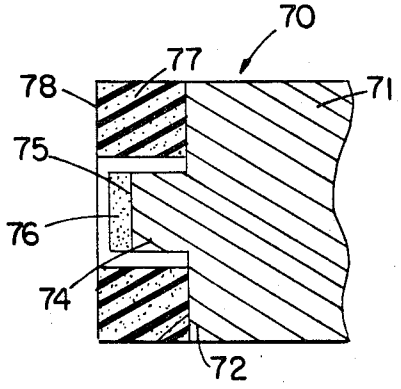


FIG.5

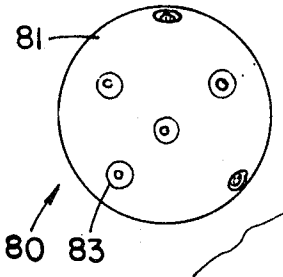


FIG.6

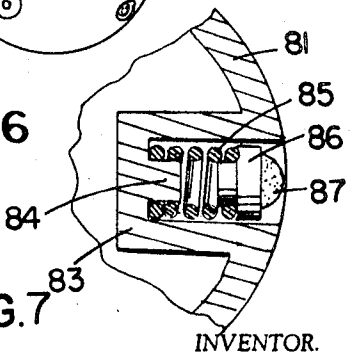


FIG.7

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PRINTING DEVICE

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Int. Cl. B41f 17/00

U.S. Cl. 101—379 8 Claims

ABSTRACT OF THE DISCLOSURE

A printing device is provided which includes a printing cut or stamp preferably of the self-inking type, and a protective housing which is open at one end and surrounds the printing cut so as to protect same and normally prevent its contact with surfaces surrounding the device. The housing or jacket, in one form of the invention, is made of a resilient plastic material and is longitudinally displaceable when the front end thereof is engaged against a surface so as to permit the printing device supported within said housing to engage said surface. As a result, the ink wetted surface of the printing device will not normally rub or make contact with surfaces surrounding the printing device when it is not in use so as to prevent soiling objects in the vicinity of the printing device.

In another form, the printing device is supported on a member which is movable within a cavity or opening in a housing so as to permit the printing cut to be projected therethrough against the surface disposed immediately adjacent the end of the printing device either by the momentum of the support for the printing device or other means.

RELATED APPLICATIONS

This is a division of application Ser. No. 391,882, filed Aug. 25, 1964, now abandoned, having as a parent application Ser. No. 797,001, filed Feb. 12, 1959, now U.S. Patent 3,147,011.

SUMMARY OF THE DISCLOSURE

This invention relates to a printing device which may have various uses which may include its use as a hand stamp for providing impressions or imprints on paper and other articles by the manual applications of the device to the desired surface and in various other fields including toys and games where the device may be thrown or ejected against a surface to receive an imprint thereof.

It has been known in the art to produce a hand impression device such as a so-called hand held rubber stamp unit which generally includes a handle and the support for a rubber pad or cut shaped to provide the desired print or impression of a word, phrase or other indicia on a surface when the rubber cut is properly coated with ink. These devices require that the rubber cut portion of the stamp be applied to an ink bearing member such as a so-called stamp pad to apply a sufficient film or coating of ink on the rubber cut portion to permit the outline thereof to be imprinted on a surface when brought to bear against it. Rubber stamps of this type generally do not require means for protecting the cut portion thereof since, after one or two impressions, the ink film is generally used up and, shortly thereafter, the remaining ink either evaporates of dries up.

This invention employs a printing cut made of a self-inking material which contains printing ink encapsulated within the cells or pores of the flexible plastic, which ink may be brought to the surface of the cut by pressure applied to said flexible member such as when it is brought to bear against a surface to receive the desired impression or print. One suitable material is known commercially as Porelon plastic which is manufactured by the S. C. Johnson and Son Corporation of Racine, Wis. This material may be cast or otherwise molded to any suitable shape such as the shape of one or more letters or numbers and may be applied as a flexible blanket or cut to a support so as to serve as a printing device similar to the well-known rubber stamp but which does not require the application of the cut to an ink pad as it self-contains its own printing ink which may be dispensed from the surface thereof by bearing said surface against the surface to receive the ink. However, such a material has an inherent short coming resulting from its ability to provide a substantial amount of printing ink on all of its surfaces whenever pressure is applied thereto. As a result, a device employing a blanket or cut of such ink containing material, must necessarily be carefully handled and hung or otherwise supported so that the ink bearing portion thereof will not engage other surfaces when not in use. The weight of gravity may be sufficient to cause a substantial amount of ink contained within the porous ink-bearing plastic to be dispensed therefrom and to flow against and across a surface against which it rests. This may not only cause a substantial amount of the ink to be used but will also smear and stain the surface against which the printing cut rests.

Accordingly, it is a primary object of this invention to provide a new and improved printing device employing a self-inking or ink-bearing porous flexible printing member and suitable protective means therefore which normally prevents dispensing of ink from the member by preventing contact of the member with adjacent surfaces until the device or assembly is properly aligned and handled to effect the desired printing operation.

Another object is to provide a printing device which does not required the application of a printing portion thereof to an ink supplying member or pad yet which may be handled easily without normally dispensing or smearing printing ink therefrom.

Another object is to provide an assembly of a self-inking or ink-containing printing cut and a protective means therefore which does not prevent use of the cut yet which permits the cut to be handled and carried in the pocket without smearing the ink of the cut on the clothing of the user.

Another object is to provide a new and improved printing device which is easily portable and does not require that it be disposed at a particular attitude or hung up when not in use to prevent ink contained thereon from smearing or transferring to other surfaces.

Another object is to provide an assembly of a self-inking printing member and a protective means and support therefore which may be applicable to games and other devices.

With the above and such other objects in view as may hereinafter more fully appear, the invention consists of the novel construction, combination and arrangement of parts as will hereafter be more fully described and illustrated in the accompanying drawings, wherein are shown embodiments of this invention, but it is to be understood that changes, variations and modifications may be resorted to which fall within the scope of the invention as claimed.

In the drawings:

FIG. 1 is a partial view with parts broken away for clarity of an assembly of components defining a printing device having a movable printing member which is normally retracted within said device;

FIG. 2 is a fragmentary view in cross section of a modified form of the device illustrated in FIG. 1;

FIG. 3 is a partial view of an assembly with parts broken away for clarity, showing a printing device having a protective, deflectable cover for an ink-containing printing member or cut;

FIG. 4 is a side view with parts broken away for clarity of a printing device having a printing member protected by a longitudinally deflectable flexible plastic cover;

FIG. 5 is a side view of the end portion of a printing device having a longitudinally deflectable sponge or foamed plastic cover for the printing cut;

FIG. 6 is an isometric view of a printing device falling in the purview of this invention and having the shape of a ball or sphere containing a plurality of cavities in its outer surface, each of which cavities contain a printing member movable therein and

FIG. 7 is a fragmentary view in cross section of a portion of the device illustrated in FIG. 6.

There are shown in FIGS. 1 to 7 various constructions in printing devices which may utilize the printing materials hereinabove described for applying an ink imprint on a surface. More specifically, the embodiments illustrated in FIGS. 1 to 7 may be applicable to various toys, games and manually operated printing devices, including printing stamps, impart printing toys, darts and the like.

In FIG. 1 is shown a structure in a printing device comprising an assembly **30** including a base **31** having a centrally disposed bore or cavity **31H** in one end thereof. Slidably retained within said bore and axially movable is an assembly **32** of a piston-like member **33** and a printing member **39** disposed in its own base or mount **36**. The forward end **34** of member **33** has a bore therein which is threaded to receive the threaded rear portion of mount **36** for printing member or cut **39**. The member **39** may comprise a putty-like material as described or any suitable printing cut adapted to receive printing ink on its exposed outer face or retain a quantity of printing ink therein. For example, the member **39** may comprise a porous material such as Porelon containing a printing ink which will leave an impression on a surface against which **39** is abutted.

The assembly **32** is normally retained retracted in the position illustrated in FIG. 1. A nose member **38** is threadably secured to a threaded extension of the forward end of member **31** and has a bore **37** therein through which the nose or mount **36** of assembly **32** is movable and retracted so as to present the surface of **39** inward of the outer surface of the end of **38** as illustrated. A coil spring **35** serves to normally urge movement of assembly **32** to retain said assembly completely within bore **37**, as illustrated. The inertia of the assembly **32** provided when assembly **30** is suddenly moved towards a surface is operative to compress spring **35** and move the assembly **32** and cause the forward face of **39** to strike said surface. Such an action will require the sudden direction of the end of the assembly **30** against a member containing the surface to receive the imprint whereafter assembly **32** will be retracted by the spring **35** to retract the forward end of **39** inside the outer surface of **38**, thus serving to prevent engagement of **39** against any surface disposed immediately adjacent the end of the assembly **30**.

In FIG. 2 is shown a modified form of the invention which includes an assembly **40** of a base member **41** having its forward end **42** shaped to frictionally retain a self-supporting sleeve **43** therein. A groove **41'** circumscribing the end of **41** is operative to receive a beaded formation **44** projecting inwardly from the inner surface of **43**. The forward end of **43** has an opening for aperture **45'** therein and disposed immediately inside of said aperture in a printing member **39** as described secured on its own mount **47** which is secured to a cantilevered spring **46** which is movable when inertially urged by the movement of **47**, a degree permitting the forward face of **39** to engage a surface against which the end of **43** is suddenly struck. Notation **48** referes to a bore in the forward end of base **47** for **39**.

The printing device **50** of FIG. 3 consists of a base member **51** having a retainer **54** for an ink containing printing cut **39** secured to the forward end **57** of **54** and projecting therefrom. At least partly surrounding the retainer **54** and projecting just forward of the printing cut **39** is a protective cover **58** which is made of an easily deformable material such as a flexible vinyl or polyethylene plastic which will deform both outwardly and rearwardly when the forward end **58'** thereof is brought to bear against a surface which is to receive the imprint so that the end or printing face of **39** is permitted to engage the surface. As illustrated, the forward face of printing material **39** is normally disposed in a plane inward of the plane of the end face **58'** of deflectable member **58**. FIG. 3 illustrates in dashed notation how the wall of member **58** deflects outwardly and rearwardly to permit the front face of member **39** to project beyond the end of **58** to engage the surface to receive the imprint.

In a form of the device illustrated in FIG. 3, the side wall of the cover member **58** may be shaped to permit easy deflection thereof as illustrated at **58''**. In another form, the wall of **58** may be divided longitudinally to define a plurality of wall sections which will outwardly and rearwardly deform to permit the printing member **14** to abut a surface to receive the imprint thereof, yet will retain the shape illustrated after removal of the front end **58** from the surface receiving the member. Notation **59** refers to the beaded rear end of member **58** which is shaped to be frictionally retained when forced over the forward end of the base member **51**, preferably being retained in a grooved **53** therein. Said base member **51** may include a handle or other means for effecting the prepositioning of the printing device relative to a surface to receive an imprint. If retainer member **54** is frictionally retained in a cavity or recess in the end of base member **51**, then the assembly illustrated in FIG. 3 may be disassembled for replacement of retainer **54** with another similarly shaped retainer having either a different printing member retained against the end thereof or a replacement printing member for the member **51** when it is used up or in the event that it should become damaged. In other words, the assembly illustrated in FIG. 3 may be utilized in a variety of different manual or automatically operated printing devices where it is desired to replace cuts or type.

There is shown in FIG. 4 a printing device **60** consisting of a support or base member **61** which is preferably made of rigid material such as plastic or wood and having a forward end **64** on which is secured a printing cut **39** having a forward end or face in the shape of the desired imprint. The cut **39** is preferably made of flexible, ink containing material and is adhesively bonded or otherwise secured at its rear face to the front face of the forward end of support member **61**. The cut may also be otherwise secured to the forward end of member **61**, preferably in a manner so as not to normally compress the material thereof which contains ink within the cells of the material as said material is of a character as described and comprises a micro-porous plastic opertive such that said ink may be forced to flow to the surfaces of the plastic when the plastic is compressed. U.S. Patent No. 2,777,824 describes a flexible plastic material which may be formulated to encapsulate a variety of liquids such as inks which may be dispensed upon compression of the material against a surface.

Disposed adjacent to the compressible printing cut **39** and secured to the forward end of base member **61** is a deflectable member **65** which is preferably made of a suitable flexible plastic material such as polyethylene, polyvinyl chloride, polypropylene, or the like. Member **65** is shown having a side wall **66** shaped with a plurality of deflectable accordion-like portions **67** and preferably, although not necessarily, circumscribes the printing mem-

ber 39. The forward end of deflectable member 65 normally protrudes beyond the end-face of the printing cut 39 and the side wall thereof normally protects the face or side walls of the cut 39 from making surface contact with objects which the device 61 may rest against while on its side or when positioned with the end thereof disposed downward.

The rear portion 62 of member 64 may be secured by any suitable means to the forward end of base member 61 such as by frictional retention thereon, adhesive bonding or by means of fasteners. It is shown with a beaded formation 69 frictionally engaged in a circular groove provided in the cylindrical surface of 61.

FIG. 15 illustrates another structure in a printing member which includes an ink containing portion or cut of the type described. The assembly 70 includes a base member 71 having a forwardly projecting portion 74 against the face 75 of which is adhesively bonded a printing member 76 of the ink containing type described. Laterally disposed around portion end 72 of 71 and member 76 is a member 77 made of highly flexible plastic such as sponge rubber, cellular flexible polyurethane, vinyl or the like. The member 77 extends just beyond the front face of ink containing plastic member 76 and has lateral portions disposed adjacent 76 which serve as means for preventing contact of 76 with adjacent surfaces until 77 is longitudinally compressed when 70 is urged in the direction of a surface abutting the front face 78 of 77. The material comprising 77 is such that it will return to its normal shape so that the front face 78 thereof will normally protrude beyond member 76 as illustrated. The member 77 may completely circumscribe member 76, protrude partly there-around or may be segmented or provided as a plurality of portions which normally prevent contact of the forward face of 76 with a surface adjacent 78.

FIGS. 6 and 7 illustrate details of a printing device 80 in the shape of a ball or sphere having a shell 81 shaped with a plurality of indented portions 83 each of which supports a mount 86 for a printing member as described. The bore defined by indented portions 83 permits the axial movement of the assembly including mount 86 and printing member 87 when the ball is directed against a surface at the proper attitude to cause 86 to inertially project printing member 87 beyond the surface defined by wall 81. Member 86 is movably secured to a projection 84 from the bottom of formation 83 by means of a coil spring 85 secured to both. The structure illustrated in FIGS. 6 and 7 may be applied to others of the illustrated structures without departing from the spirit and scope of the invention and the various other structures may also be partially or totally interchanged with each other to provide printing devices and structures operative to protect a printing member from objects which would ordinarily engage the surface of the member without said protection yet are also operative so as not to prevent the movement of the printing member in a manner to effect an imprint on a surface thereby when necessary.

I claim:

1. A printing device comprising in combination:
   (a) a printing member,
   (b) a base member for supporting said printing member,
   (c) said printing member being secured to said base member at one end thereof and having a printing surface positioned to be engageable with a surface adapted to receive an imprint thereof,
   (d) a resilient protective plastic tubular covering means circumscribing and disposed laterally adjacent to said printing member and having a first end portion normally maintained in a first position forward of said printing surface,
   (e) said plastic covering means normally protruding outwardly from said base member in a manner to prevent contact of said printing member with the surfaces of objects brought adjacent to the end of said plastic covering means,
   (f) said plastic covering means being deflectable towards said base member when the end portion thereof is longitudinally forced against a surface to permit the printing member to relatively move within said covering means and to project to the end of said covering means so that the printing surface thereof engages said surface and provides an imprint thereon,
   (g) said resilient plastic covering means being normally biased by the characteristics of the plastic to return its end portion forward of the printing surface of said printing member to protect same when the force urging said device against the printing surface is released.

2. A printing device in accordance with claim 1 wherein said printing member contains its own supply or printing ink which may easily be dispensed from the printing surface thereof.

3. A printing device in accordance with claim 1, said resilient protective plastic covering means being shaped so as to completely circumscribe said printing member, said covering means being spaced outwardly thereof.

4. A printing device in accordance with claim 3, said protective plastic covering means being cylindrical in shape and of tubular configuration.

5. A printing device in accordance with claim 1, said protective covering means comprising a resilient cellular plastic capable of being longitudinally compressed to permit engagement of the printing surface of said printing member with a surface adapted to receive an imprint thereof.

6. A printing device in accordance with claim 1, said protective plastic covering means having its end portion joined to said support by a longitudinally deformable portion capable of yielding to permit the movement of said end portion towards said support when sufficient force is brought to bear against the end of said end portion by urging said support towards a surface adapted to receive an imprint of the printing member.

7. A printing device in accordance with claim 6 whereby said longitudinally deformable portion is in the shape of a bellows.

8. A printing device comprising in combination:
   (a) a printing member,
   (b) a base support for said printing member,
   (c) said printing member being secured to said base support at one end thereof and having a printing surface positioned to be engageable with a surface of a material such as a sheet of paper adapted to receive an imprint thereof,
   (d) said printing member being made of a porous plastic material containing ink in the cells thereof and capable of feeding said ink to said printing surface when pressure is brought to bear against said printing member,
   (e) a protective cover means disposed about and completely circumscribing that portion of the end of said base support to which said printing member is secured and protruding forward thereof a degree such as to prevent objects from normally engaging the printing surface of said printing member,
   (f) said protective covering means being tubular in shape and being open at its front end and secured to said base support at its rear end,
   (g) said protective covering means being biased to normally project beyond said printing member yet capable of being moved longitudinally towards said base support a degree when the end of said cover means is brought against a print receiving surface to permit the printing surface of said printing member to engage said print receiving surface and to leave an imprint thereon,
   (h) the biasing of said protective cover means being such as to cause it to assume the position forward of said printing member when the force urging said printing member against said print receiving surface is removed to locate said protective cover means to

protect said printing member and prevent objects from normally laterally engaging the printing surface of said printing member.

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