Sept. 24, 1968 TAKAJI FUNAHASHI 3,402,663

CONTINUOUS NONCELLULAR RUBBER FOAM STAMP

Filed Nov. 18, 1966

3 Sheets-Sheet 1

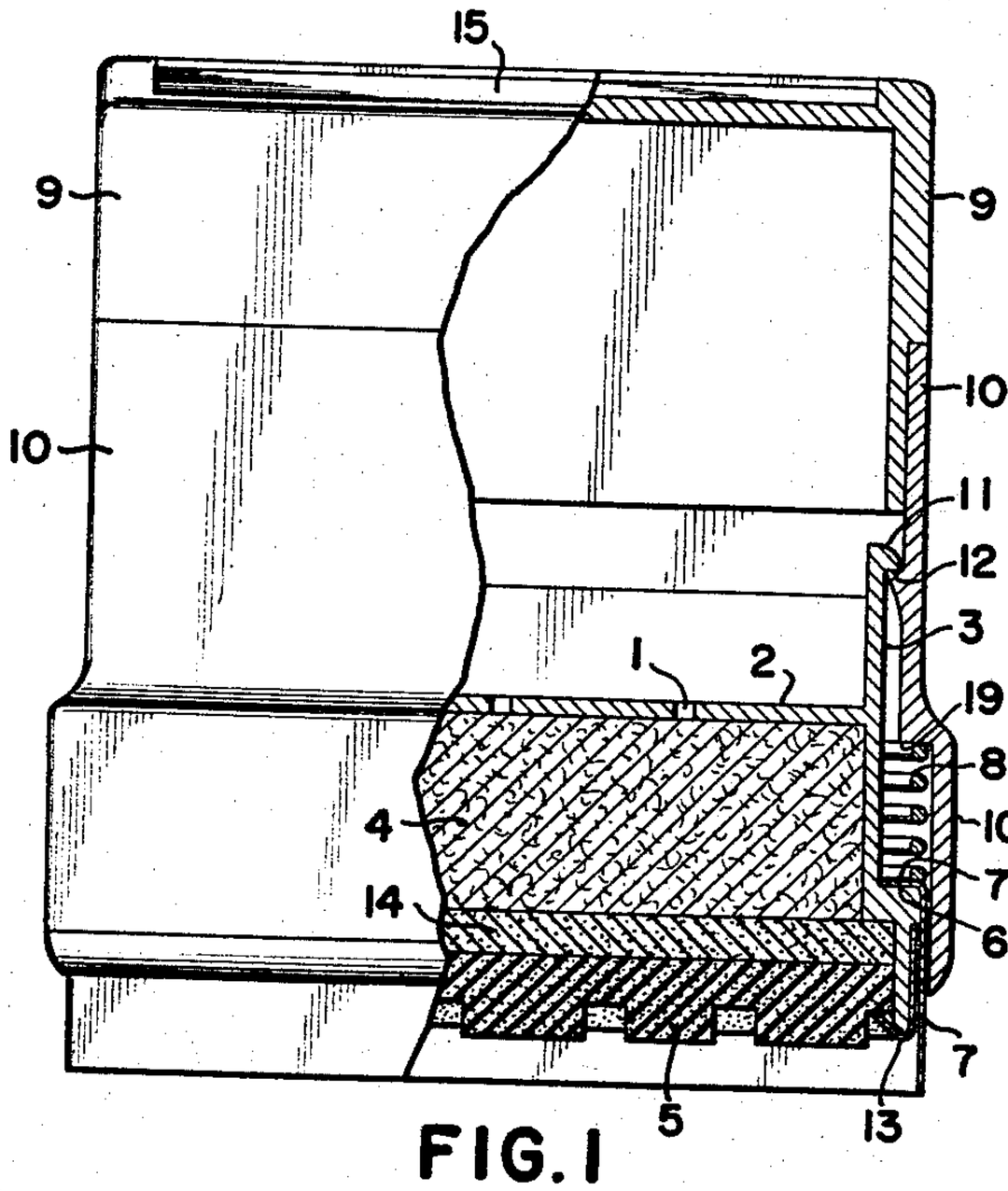


FIG. 1

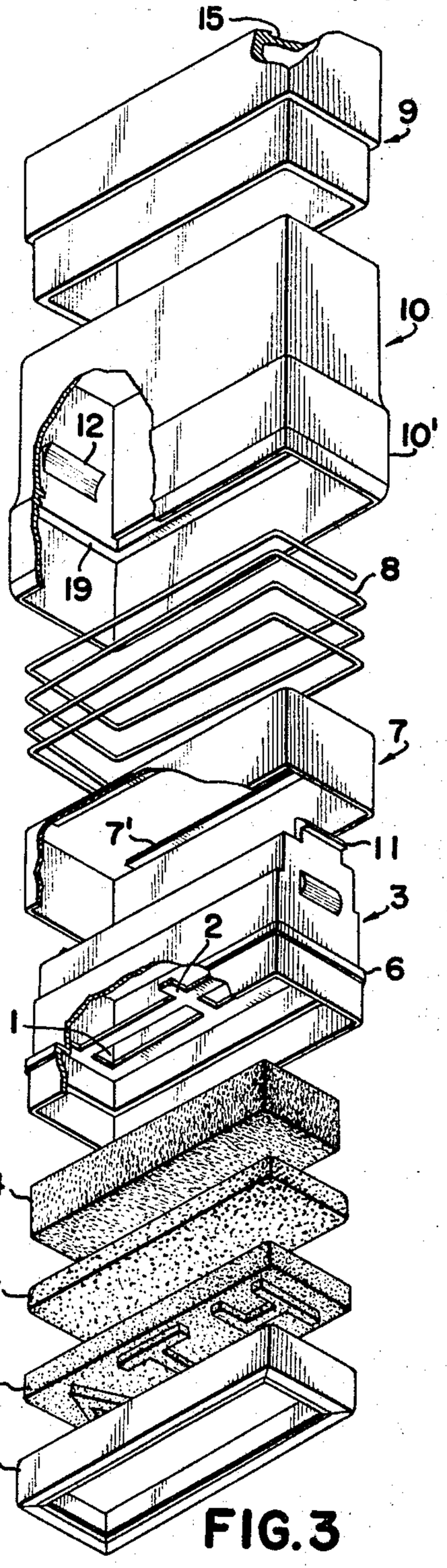


FIG. 3

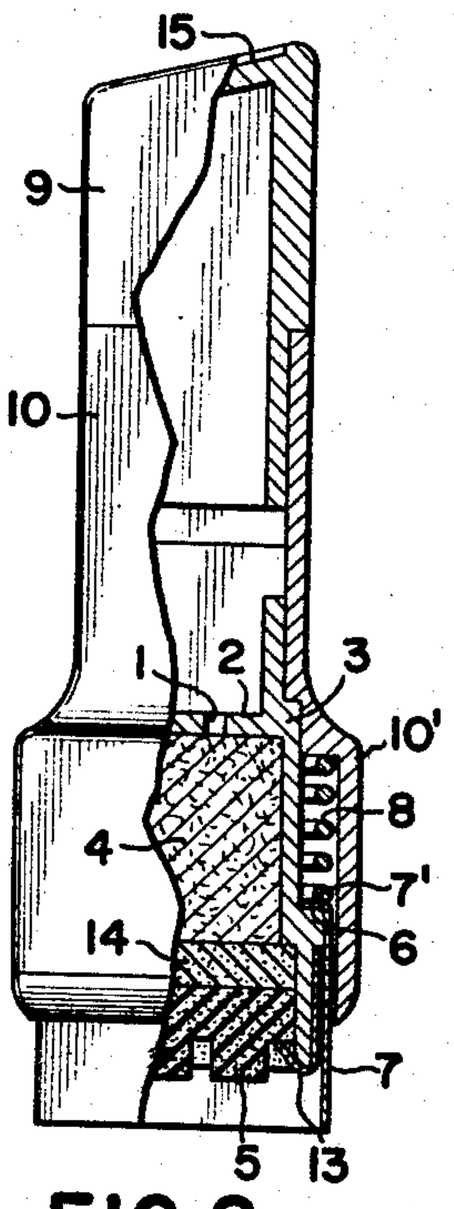


FIG. 2

Sept. 24, 1968 TAKAJI FUNAHASHI 3,402,663

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3 Sheets-Sheet 2

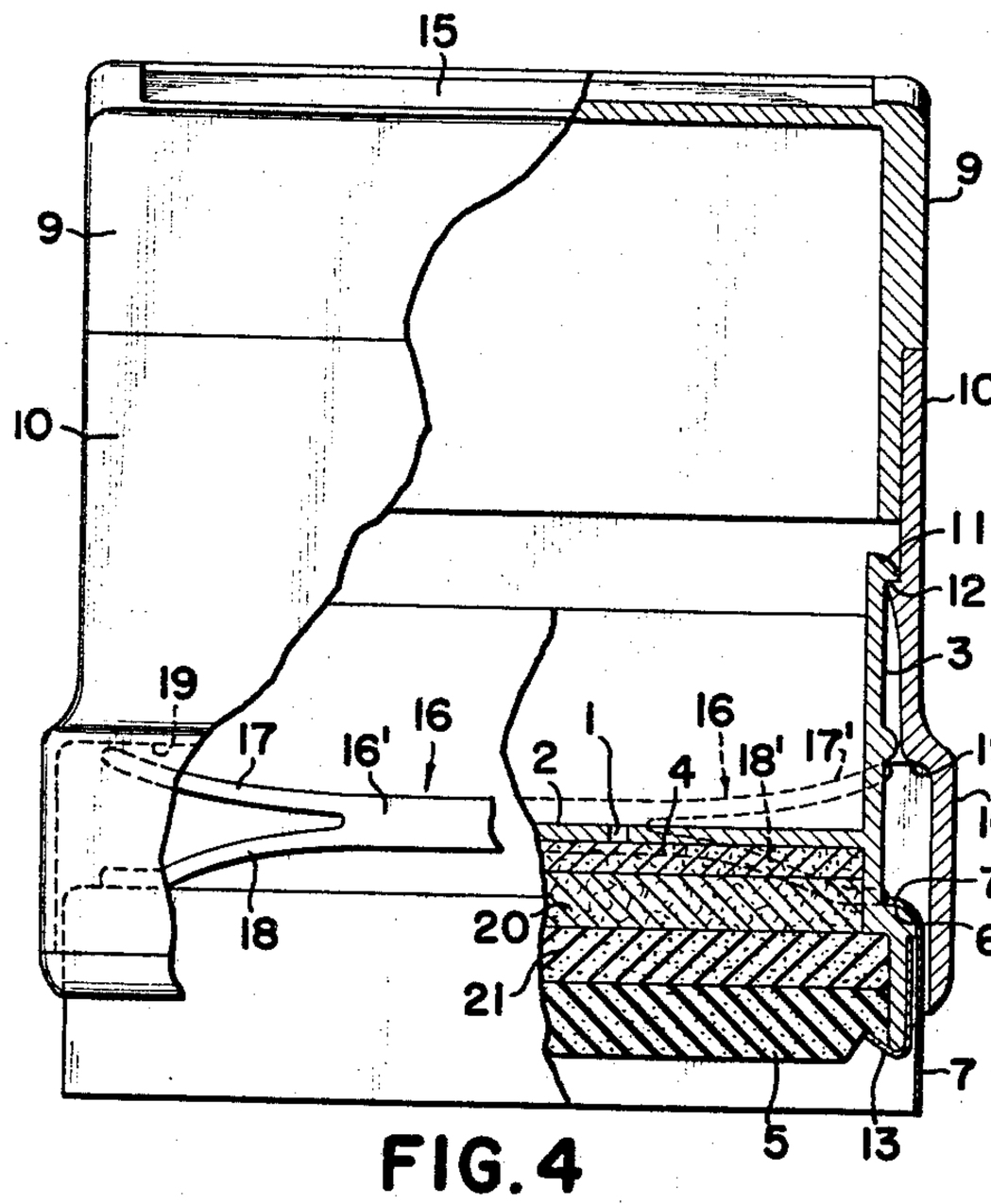


FIG. 4

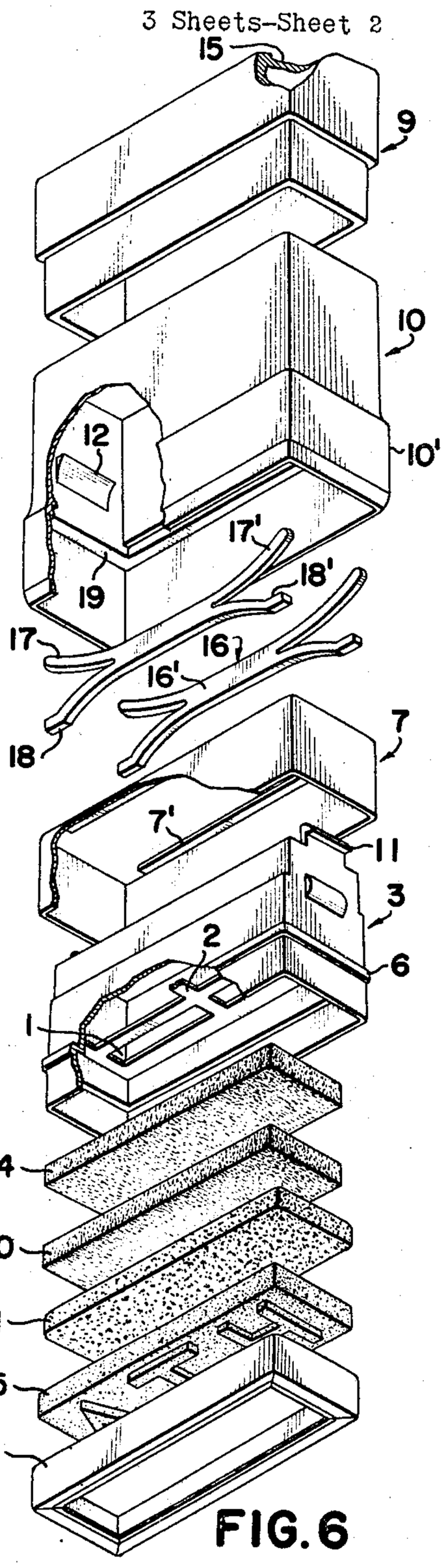


FIG. 6

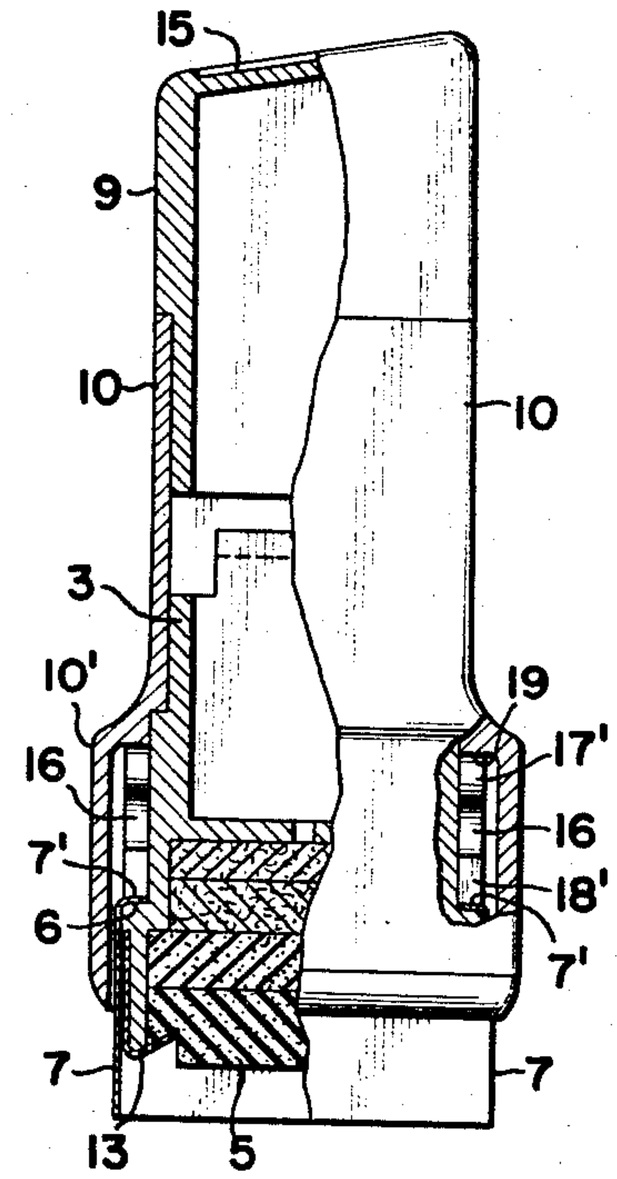


FIG. 5

CONTINUOUS NONCELLULAR RUBBER FOAM STAMP

Filed Nov. 18, 1966 3 Sheets-Sheet 3

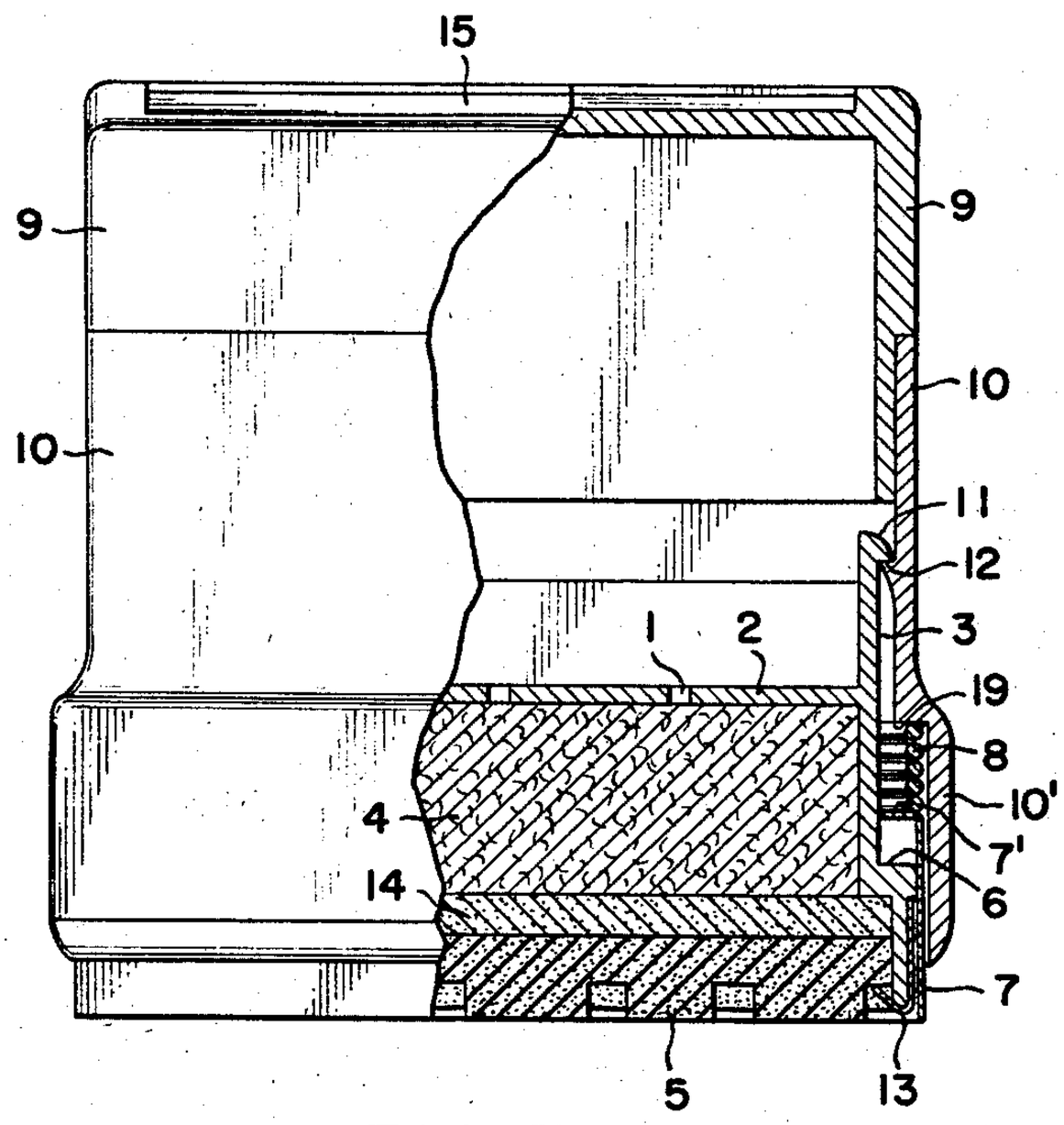


FIG. 7

United States Patent Office

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CONTINUOUS NONCELLULAR RUBBER FOAM STAMP

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8 Claims. (Cl. 101—327)

ABSTRACT OF THE DISCLOSURE

A stamp pad having an ink pad and stamp plate secured in a lower compartment beneath a transverse wall in an inner frame, an outer frame being telescoped over the inner frame and engaging a spring acting on a sleeve which is interposed between the inner and outer frames and which has a lower edge extending below the plate when the spring is relaxed.

This invention relates to a stamp made of a continuous noncellular rubber foam such as a sponge rubber, and more specifically to a rubber foam stamp of such construction which comprises an inner frame accommodating an ink pad and a continuous noncellular rubber plate and having a bottom provided with ink filling ports, an outer frame having inwardly protruding steps which engage with outer protrusions on the top edges of both left and right side walls of the inner frame, an elastic member or members interposed between the outer and inner frames in such manner as to permit the outer frame to be moved slidingly in the vertical direction by the application of a pressure on the elastic member, and an inverted L-shaped sleeve, the upper folded edges of which are supported between the lower end of the elastic member and stepped portions of the inner frame, said sleeve being normally kept extended below the sponge rubber plate.

In the prior art, an ordinary rubber stamp has been made by engraving letters, numerals and other symbols on the surface of a stamp or by applying a rubber plate on the base, such rubber plate being obtained by compressing unvulcanized rubber on the engraved original model and vulcanizing said rubber. Therefore, in order to use such rubber stamp, it is required that ink be applied to surface of the stamp by using a stamp box for each stamping operation. The present invention contemplates providing a continuous noncellular rubber foam stamp made of a material adaptable for retaining ink at all times such as a sponge rubber.

It is an object of the present invention to provide a continuous noncellular rubber foam stamp which permits stamping of letters, numerals and other symbols on paper and other surfaces, simply and surely by self inking of the stamp face or rubber plate surface without any trouble of inking on the stamp face or rubber plate surface before each stamping operation.

Another object of the invention is to provide a continuous noncellular rubber foam stamp which is equipped with a sleeve around the periphery of the plate surface in order to protect the surface against staining in the course of the return to its normal position after each impression.

Another object of the invention is to provide a continuous noncellular rubber foam stamp which is always ready for effective use as it can be replenished with stamping ink in the pad simply by opening the top cover and supplying the ink to the pad.

Another object of the invention is to provide a continuous potrous noncellular rubber foam stamp in which the protrusions of the inner frame which support the ink pad and rubber plate surface therein are freely engageable with the inwardly protruding steps of the outer frame

which fit with the cover so that the inner and outer frames can be engaged with each other with simplicity and surety.

Still another object of the invention is to provide a continuous noncellular rubber foam stamp which is equipped with elastic members of a tough synthetic resin material having excellent solvent resistance, shock resistance, elasticity and fatigue limit, disposed along the outer front side and back side of the inner frame and also inside of the outer frame, whereby the elastic function of the stamp can be maintained with negligible loss after repeated stamping operations.

The advantageous features and objects of the present invention will be more fully understood from the following detailed description taken in connection with the accompanying drawings, in which:

FIGURE 1 is a front elevational view, partly broken away, of a stamp according to the present invention;

FIGURE 2 is a side elevational view, partly broken away, of the stamp shown in FIGURE 1;

FIGURE 3 is an exploded view of a stamp shown in FIGURES 1 and 2 in accordance with the present invention;

FIGURE 4 is a front elevational view, partly broken away, of another form of stamp according to the invention;

FIGURE 5 is a side elevational view, partly broken away, of the stamp shown in FIGURE 3;

FIGURE 6 is an exploded view of a stamp shown in FIGURES 4 and 5 in accordance with another form of the present invention; and

FIGURE 7 is a view showing the relative position of the elements when the stamp is in its printing position.

In the drawings, numeral **1** indicates an ink filling port or aperture in a transverse wall **2** of an inner frame **3** constructed in the shape of a hollow box-like member. The wall **2** divides the frame **3** into upper and lower chambers or compartments and there is secured in the compartment below wall **2**, an ink pad **4** of felt or like material and a rubber plate **5** having a great number of continuous noncellular rubber foams, combined in the order mentioned. The left and right side walls of the inner frame **3** are provided on the top edges with outward protrusions **11**, which freely engage with the heads of inwardly protruding steps **12** on the left and right side walls of an outer frame **10**, also of hollow box-like construction. In the space between shoulders or stepped portions **6** of inner frame **3** and a shoulder or step **19** formed by extensions **10'** of outer frame **10**, is interposed a coil spring **8**. Furthermore, there is secured between the bottom end of the spring **8** and the stepped portions **6**, folded top edges **7'** of a sleeve **7** which is of inverted L-shape in cross section. The lower portion of the sleeve **7** for covering the rubber plate **5** normally protrudes below the rubber plate **5**. The periphery of the rubber plate **5** is secured to the lower periphery of the inner frame **3** by an annular retainer **13**.

Generally designated by numeral **9** is a cover which fits on the upper portion of the upper frame **10** and which is provided with a recess **15** on the top for indicating the letters, numerals or other symbols to be stamped. A seating plate **14** of porous rigid synthetic resin or the like is interposed between the ink pad **4** and the rubber plate **5** according to necessity.

With the construction as described hereinabove, the stamp is used by gripping it by the cover **9** and applying a stamping pressure. Under the pressure, the spring **8** borne by the stepped portions **6** of inner frame **3** through the folded top edges **7'** of sleeve **7** is compressed, and at the time of each impression the sleeve **7** which normally covers the rubber plate exposes the rubber plate **5** below the lower opening. Therefore the ink contained be-

forehand in the ink pad 4 which is accommodated in the compartment beneath the wall 2 permeates constantly through the numerous continuous pores of the rubber plate 5 down to the under face. Hence, there is no need of inking the plate surface before each impression and clear stamping of letters and other symbols is always ensured. After each stamping operation, the sleeve 7 is brought back by the recovery force of spring 8 to the original state in which the sleeve 7 covers the rubber plate 5 in such manner that it can positively protect the latter against dirt and contact with other materials. For replenishment of the ink pad 4 with ink, it is merely necessary to remove the cover 9 from the top opening of the outer frame 10 and pour in stamping ink. The pad 4 is easily impregnated with ink which is led through the filing ports 1 in the wall 2 of the inner frame 3. There is no possibility of the inner frame 3 being disconnected from the outer frame 10 because the outwardly protruding edges 11 on the top edges of left and right side walls of inner frame 3 are engaged with protruding steps 12 inwardly formed of the left and right side walls of outer frame 10.

In FIGURES 3 and 4 there is shown another form of rubber stamp according to the present invention, wherein like parts are designated as in FIGURES 1 and 2 except for the following. In the embodiment illustrated in FIGURES 3 and 4, the coil spring used in the first embodiment as interposed between the outside of inner frame 3 and outer frame 10 is replaced by substantially X shaped elastic members 16 of a tough synthetic resin material, e.g., polyacetal resin, having forked banches 17, 17′ and legs 18, 18′ on the left and right as viewed in FIGURE 6 and which are disposed on the front and back sides of inner frame 3. These elastic members 16, are fitted in position by placing the branches 17, 17′ of the elastic members 16 against lugs 19 formed by extensions 10′ of outer frame 10 while permitting the legs 18, 18′ of the elastic members 16 to be supported by the folded top edges 7′ of sleeve 7 above the steps 6 of inner frame 3. Numerals 20 and 21 indicate an auxiliary ink pad of felt or like material and an ink adjusting plate of porous rigid synthetic resin or the like, respectively, which are interposed if necessary between the ink pad 4 and the rubber plate 5.

Since the embodiment of the invention illustrated in FIGURES 3 and 4 is constructed as above described, it functions in the following way. When the stamp is gripped on the cover 9 and is pressed against paper or other material to be stamped, the elastic members 16 are uniformly compressed between the supporting steps 19 and the folded top edges 7′. Thus, while the lower portion of sleeve 7 which normally covers the rubber plate 5 is in contact with paper surface, the inner frame 3 descends together with the outer frame 10 until the rubber plate 5 at the lower end of inner frame 3 is somewhat exposed at a distance from the lower extensions 10′ of outer frame 10 and is pressed against the paper surface. Accordingly, the ink which is contained beforehand in the ink pad of felt or like material accommodated in the compartment beneath the wall 2 permeates constantly through the numerous continuous pores of rubber plate 5 down to the under face thereof and permits letters, numerals and other symbols on the rubber plate to be distinctly reproduced on the paper surface. When the stamp is freed from the stamping pressure and is held upwardly from the paper surface after impression, the compressed branches 17, 17′ and legs 18, 18′ of elastic members 16 are relaxed and assume the original open state, whereby the sleeve 7 returns to

the position where it covers the rubber plate 5 which is thus positively kept from being stained through contact with any other material. The ink pad 4 may be replenished with ink by the same procedure as in the embodiment shown in FIGURES 1 and 2.

Various modifications of the present invention are possible without being restricted to the embodiments disclosed herein and without departing from the scope and spirit of the invention as defined in the appended claims.

I claim:

1. A stamp comprising an inner frame constituted as a hollow box-like member with opposite open ends, said frame including an intermediate transverse wall dividing the frame into upper and lower chambers, said wall having apertures therein, an ink pad and a rubber stamp plate secured in the lower chamber of said frame in the above order from the transverse wall, an outer frame also constituted as a hollow box-like member surrounding the inner frame, means detachably connecting the frames together in telescoped relation, said frame having shoulders facing one another, a hollow sleeve interposed between the inner and outer frames and including an upper folded edge between the shoulders of the frames, and elastic means between the folded edge of the sleeve and the shoulders of the outer frame to permit the outer frame to be slidably moved relative to the sleeve, the sleeve having a lower edge extending below the level of the rubber plate with the elastic means relaxed.

2. A stamp according to claim 1 wherein said means which detachably connects the frames comprises inwardly protruding steps on the outer frame and outer protrusions on the inner frame engaging said steps.

3. A stamp according to claim 1 wherein said elastic means is a coil spring.

4. A stamp according to claim 1 comprising an annular retainer securing the rubber stamp plate to the inner frame in said lower chamber.

5. A stamp according to claim 1 comprising a removable cover mounted atop the outer frame, said cover being provided with a recess for indicating the letters, numerals and other symbols which form the rubber plate surface for stamping.

6. A stamp according to claim 1 wherein the rubber stamp plate is constituted of sponge rubber.

7. A stamp according to claim 1 wherein said elastic means comprises a pair of X-shaped members between the inner and outer frames.

8. A stamp according to claim 7 wherein the X-shaped members are constituted of a synthetic resin material selected from the group consisting of polyacetal resin or polyamide resin.

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