(No Model.) 3 Sheets—Sheet 1.

G. D. MACDOUGALD & J. STURROCK.

PROCESS OF MARKING SOAP TABLETS.

No. 533,306. Patented Jan. 29, 1895.

Fig. 1.

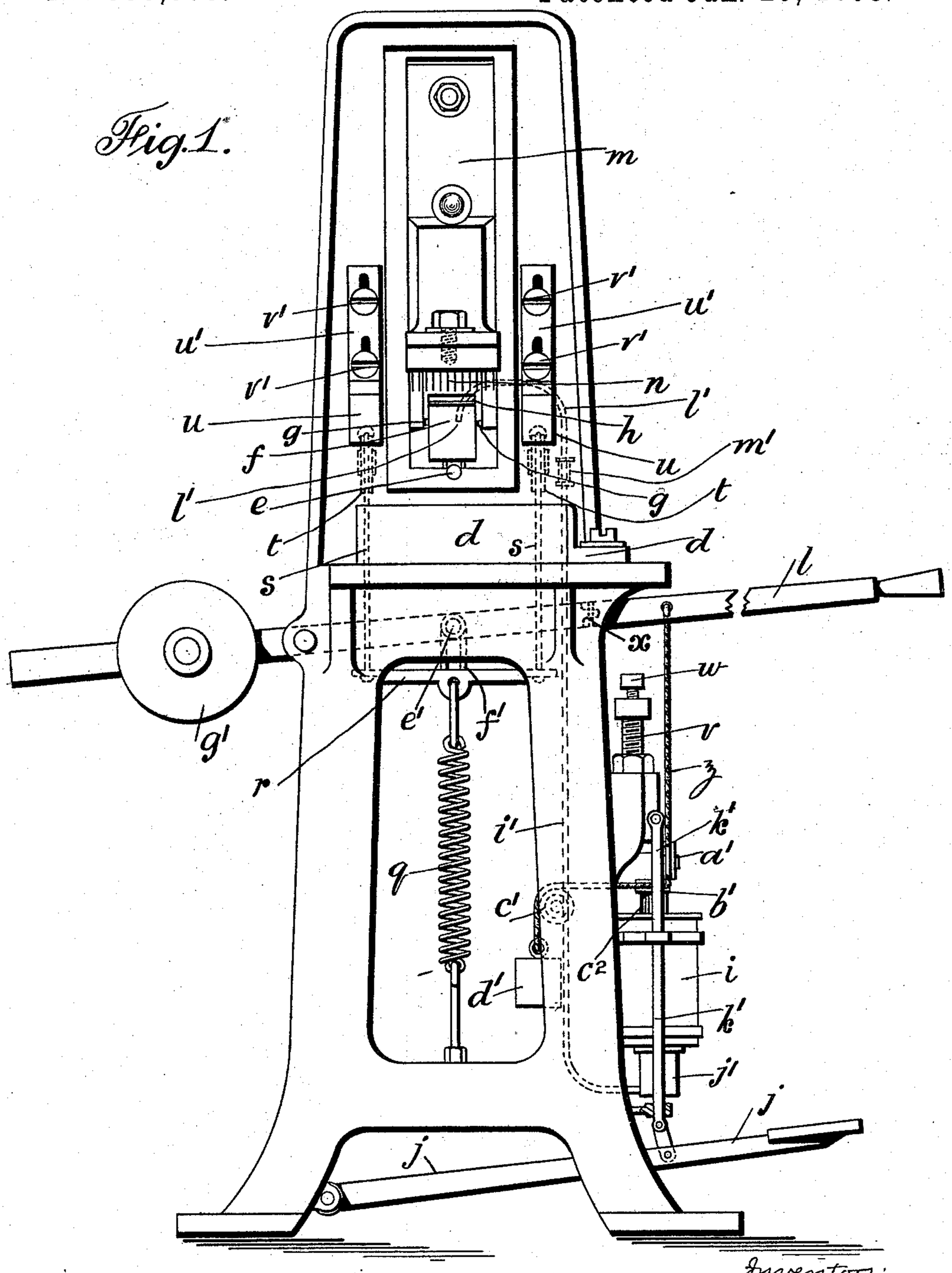

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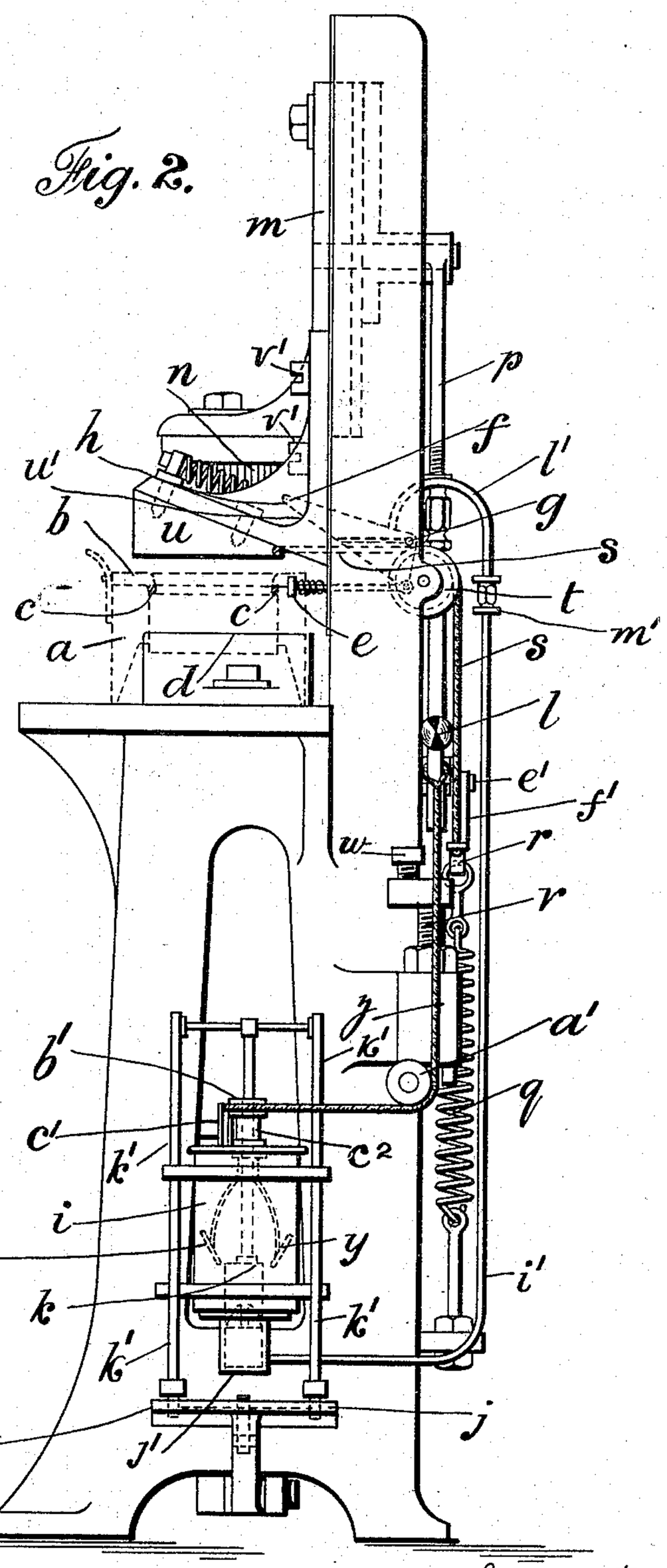
Fig. 2.



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(No Model.) 3 Sheets—Sheet 3.

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Fig. 3.

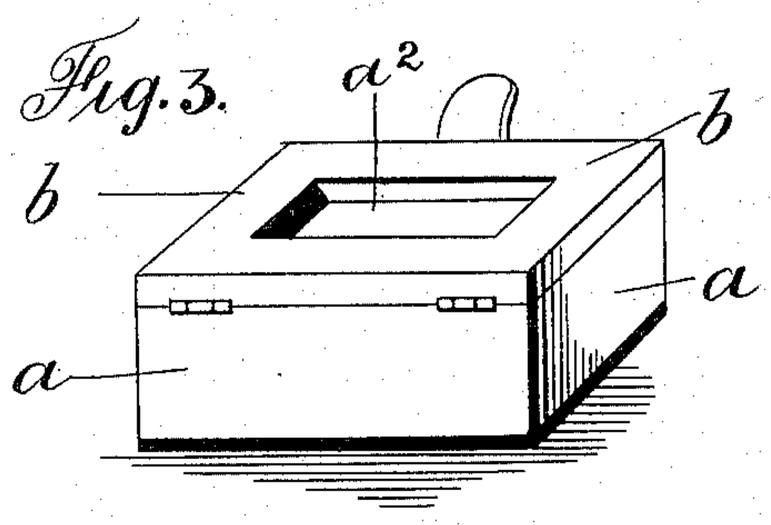

Fig. 4.

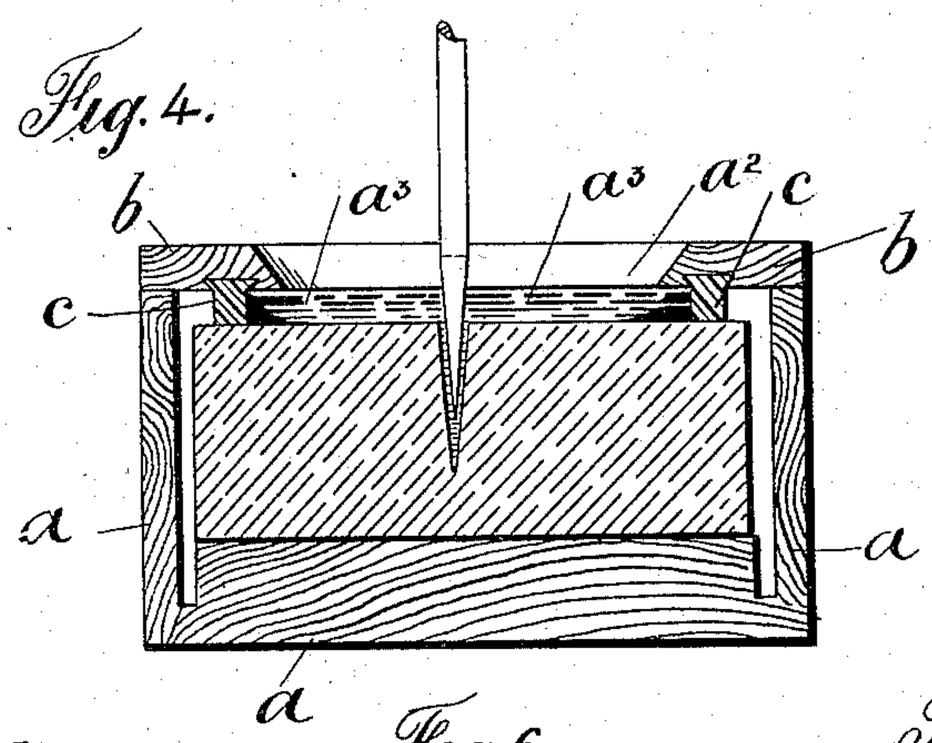

Fig. 5

Fig. 6.

Fig. 7.

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UNITED STATES PATENT OFFICE.

GEORGE DUNCAN MACDOUGALD AND JAMES STURROCK, OF NEWPORT, SCOTLAND.

PROCESS OF MARKING SOAP TABLETS.

SPECIFICATION forming part of Letters Patent No. 533,306, dated January 29, 1895.

Application filed June 15, 1893. Serial No. 477,737. (No specimens.) Patented in England July 14, 1892, No. 12,974; in France December 19, 1892, No. 226,496, and in Belgium December 19, 1892, No. 102,610.

To all whom it may concern:

Be it known that we, GEORGE DUNCAN MACDOUGALD and JAMES STURROCK, subjects of the Queen of Great Britain, both residing at Newport, in the county of Fife, Scotland, have invented a certain new and useful Improved Process or Means for Marking Soap Tablets, Cakes, or Bars with an Indelible Color, (patented in Great Britain, No. 12,974, dated July 14, 1892; in France, No. 226,496, dated December 19, 1892, and in Belgium, No. 102,610, dated December 19, 1892,) of which the following is a specification.

This invention has for its object to produce tablets, cakes or bars of opaque or transparent soap having an indelible mark composed of a compound or ingredient of a color contrasting with that of the soap. This object is accomplished in the manner and by the means hereinafter described and claimed, reference being made to the accompanying drawings which illustrate an apparatus for carrying our invention into effect, and in which—

Figure 1 is a side elevation, and Fig. 2 a front elevation. Fig. 3 is a back perspective view of the soap box, showing the hole in the lid. Fig. 4 is a sectional elevation of said soap box on a larger scale, showing the soap in the box and the well formed by the lid and rubber strips, the needle partially withdrawn from the soap for the entry of the liquid during withdrawal being of exaggerated dimensions. Figs. 5, 6, and 7 are needles, drawn to a large scale, horizontally, diagonally, and cross-diagonally grooved or pitted respectively.

In order to enable those skilled in the art to make and use our invention, we will now describe the same in detail with the aid of the accompanying drawings.

The cake of soap is first placed in a box represented by the dotted lines *a*, Fig. 2, or in full lines, Figs. 3 and 4, and its lid *b* closed upon it, and secured by any suitable spring-catch. The lid is formed with a hole or central opening, which, with an india-rubber packing-strip *c* forms a well a^2, into which a definite quantity of fluid color a^3 is discharged by the act of placing the box in position under the needles, it being at the same time automatically fixed in position by means of wedges before the descent of the needles for the piercing operation in the manner hereinafter fully described.

When the attendant places the box *a*, containing the soap tablet in position against a guide-plate *d*, it presses a spring plunger *e* and tilts the receiver *f* which is pivoted at *g* until the spout *h* rests upon the lid *b* of the box, when the liquid color which has been previously pumped into the receiver *f* from the color cylinder *i* by a depression of the treadle *j* to which the plunger *k* is connected by the rods *k'* is emptied into the well upon the top of the soap. The hand-lever *l*, connected to the slide *m*, upon which the piercing needles *n* are fixed by the rod *p*, is then pushed down to allow the spring *q* to pull the cross-bar *r* and the connecting cords or wires *s* which pass over the pulleys *t* to the wedge piece *u* and pull same inwardly until it is firmly down upon the box *a*. The downward movement of the lever *l* is continued to force the piercing needles through the color into the soap a given distance determined by the position of the set-screw *v* with which the lever *l* makes contact. The lever *l* is then lifted to withdraw the needles *n* from the soap. The withdrawal of the needles therefore from the soap leaves a void or vacuum within the holes made by the needles *a* into which the liquid color is sucked. The second piercing or reintroduction of the needles is regulated as to depth by the second set-screw *w*, the lever *l* being jointed at *x* to allow of its being moved sidewise over the second set-screw *w* at its second downward movement.

Upon referring to Fig. 4 it will be seen that owing to the taper of the needles, the color can run into the holes during the withdrawal of said needles, but as the soap is of a somewhat plastic nature it is found in practice that the holes formed by the needles gradually close near the bottom, and expel a certain amount of the color. Hence the necessity for the reintroduction of the needles which permanently open out the holes previously

formed, and furthermore, they serve to force the color already in the holes, and, as it were, compress it into the soap.

The various movements of the lever *l* are utilized to operate the agitator *y* by the cord *z* passing under the pulley *a'* around the pulley *b'*, over the pulley *c'* to the counterweight *d'*. The agitator *y* being fixed to a sleeve c^2 loosely mounted upon the plunger-spindle it is rotated by the pulley *b'* (also fixed to the sleeve c^2) upon the up and down movement of the lever *l*. When the piercing operation is finished the lever *l* is brought to its uppermost position for the pin *e'*, projecting from the lever *l* to engage the top of the link *f'* upstanding from the cross-bar *r*, counterweight *g'* on the lever *l* overcoming the tension of the spring *q* and lifting the cross-bar *r* to slack the cord and allow the spring *h'* to move the wedge *u* back and release the soap-box ready for the introduction of another tablet and to allow the receiver *f* to resume the position shown in the drawings and which must be filled with color by the attendant in the manner before described before another box is placed in position.

In order that any predetermined quantity of color may be emptied upon the soap the pipe *i'* from the pump *j'* is caused to dip a given distance into the receiver *f*, the depth to which it enters being used to regulate the quantity that shall remain to be tilted upon the soap in the box A'. For this purpose we arrange that the return action of the piston *k* shall draw the color out of the receiver *f* to the level of the end of the pipe that dips into it; so it follows that a more or less quantity can be accurately obtained by raising or lowering the pipe *l'* by means of the connector *m'*. The bracket *u'* upon which the wedges have motion are adjustable as to height by the screws *v'*.

It will be observed from the foregoing explanations that the marking compound or ingredient of a color contrasting with that of the soap is sucked into recesses, prickings, or perforations produced in the soap by needles or wedge-pointed wires, or a combination of the same, so that the mark will be of a prominent character, and always visible while the cake or bar is in use. The markings thus produced and capable of identification while the cake or bar lasts, are intended to represent given initial letters or names of firms, advertisements, representations of trade-marks, and other devices or indications either from the needle perforations alone, or by a combination of needle-like punctures and surface stamping simultaneously effected.

We do not limit ourselves to any particular ingredients or material from which to form our permanent color markings in tablets, cake, or bar soap, but if colored brick reduced to flour (powder) be mixed with water to the desired consistency, it will, when in the soap of say a white or other light kind, show a series of colored dots, or, if say finely powdered chalk be mixed with water it will, when in a transparent or dark colored soap show a series of white dots and represent the letter or other devices of the arrangement of needles or their equivalents. Thus by arranging the pressure of the needles to pass say half through from each side the reading would appear on both sides and remain visible while the soap is in use and until the last of the available cake can be seen.

The needles or piercing wires may be plain, pointed or wedge-shaped on one or more faces and the stem surface may have faint spiral grooves or be reduced at intervals, or be undulatingly curved either continuously or intermittently to form hollows or shallows, as in Figs. 5, 6, and 7, into which the slightly softer soap produced by the moisture of the liquid color through which they pass just prior to entering the soap may find a lodgment. By this means the needles or piercing wires are lubricated for easy insertion.

If the coloring matter employed be a part mixture of non-diffusible and part slightly diffusible, the color in the prickings or markings spreads a little, giving in some cases a softer and better effect.

Having thus described our invention, what we claim is—

1. The process or method herein described of indelibly marking soap tablets, cakes, or bars, which consists in indenting or recessing the body of the soap and forcing a marking substance into the indentations or recesses within the body of the soap by atmospheric pressure, substantially in the manner set forth.

2. The method or process herein described, of indelibly marking soap tablets, cakes, or bars, which consists in forcing needles through the soap and during the withdrawal thereof causing a marking substance to be drawn into the perforations within the body of the soap by atmospheric pressure, substantially as set forth.

In witness whereof we have hereto signed our names, in the presence of two subscribing witnesses, this 9th day of May, 1893.

GEORGE DUNCAN MACDOUGALD.
JAMES STURROCK.

Witnesses:
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