May 20, 1941. K. FLADER 2,242,699

INDICATOR WHEEL

Filed July 9, 1938

Fig. 1.

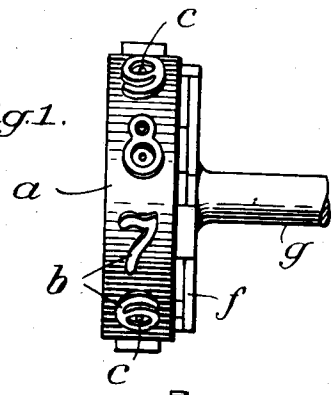


Fig. 1a.

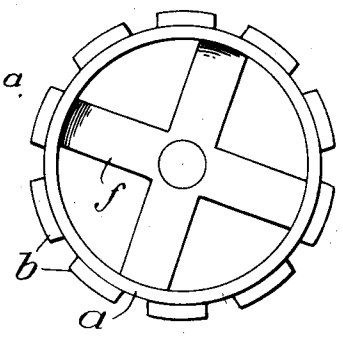


Fig. 2.

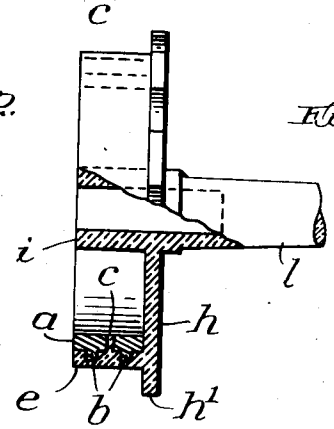


Fig. 2a.

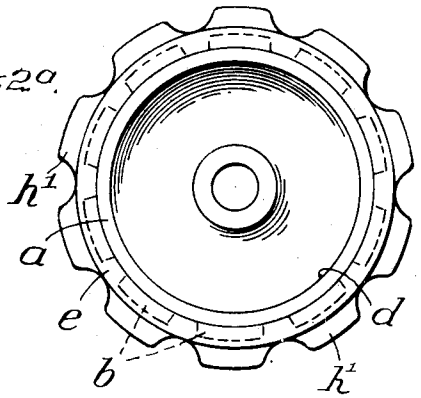


Fig. 3.

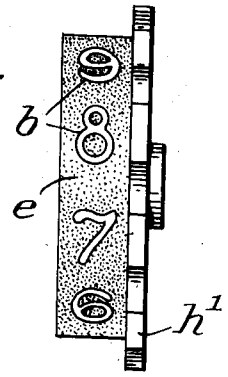
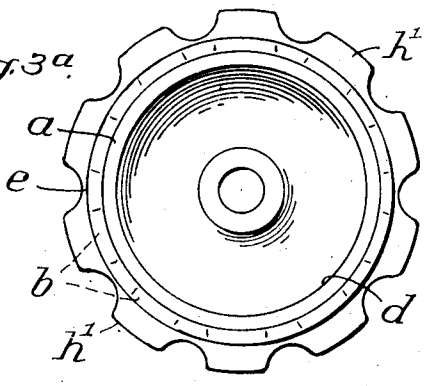


Fig. 3a.



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INDICATOR WHEEL

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Application July 9, 1938, Serial No. 218,471
In Germany July 13, 1937

1 Claim. (Cl. 235—1)

This invention relates in the first place to such bodies as are used in registering and calculating machines and the like and bear distinguishing marks which, as a rule, are digits or numerals, but may also be formed by characters or symbols. In the second place the invention relates to an improved method of manufacturing such bodies, especially as regards the wholesale manufacture thereof.

Concerning, for instance, the wholesale manufacture of circular or annular bodies for registering or calculating machines, bearing numerals, a ring that is to bear either projecting or recessed numerals has hitherto been extruded upon a wheel-like central member, the finished ring showing then the respective numerals. In order to render these latter, or their top faces respectively, more easily visible, these faces and the other surface portions of the ring have been differently colored, f. i. said surface portions have been made black and the thus produced body has then either been ground at the top faces of the marks or been provided with a colored coating or both these contrivances have been used.

Manufacturing the bodies with their distinguishing marks (numerals or characters etc.) in the above-stated manner renders the manufacture expensive also in wholesale manufacture, and the bodies are very liable to be damaged by shocks or blows, and it is also difficult to maintain them in clean state, as a smooth circumferential surface does not exist.

It has been endeavored to obviate these drawbacks by the use of metallic surfaces, or flat metal rings respectively, which bear stamped distinguishing marks, or numerals etc. respectively, and are filled up interiorly with a suitable material, say the same as used for the production of the annular body. There is, indeed, obtained a smooth and more resistible circumferential surface by said method, but the contours of the marks must always be interrupted where otherwise enclosed pieces likely to fall out of the ring would arise, in consequence whereof, for instance, such numerals as 0, 6, 8 and 9 are readable only with greater or lesser difficulty, depending upon the more or less particular shape chosen for said numerals.

The above mentioned drawbacks of the known manner of manufacturing the mark-bearing bodies in question are completely overcome in and by the present invention, the characteristic feature of which, as regards the finished body, is that the surface bearing the distinguishing marks, viz. marks projecting over said surface, is covered with a material having another color, this being effected by casting, pressing, extruding, or the like, and in such a manner that only the top faces of the marks remain visible or become visible when the surplus of the respective material above said faces has been removed by turning or grinding off. Where the marks have hollow portions, as exists, for instance in the above mentioned numerals 0, 6, 8 and 9 passages are provided in the annular body, and the colored, i. e. otherwise colored material applied onto this body enters into the respective passages whereby these portions of said material are securely retained in place. Matters will be particularly simplified if the body with its distinguishing marks and the material to be applied onto the body and the marks consist of differently colored artificial masses, the last mentioned material forming at the same time the outer shape of the body or roller.

In order to make my invention more clear, I refer to the accompanying drawing on which

Fig. 1 is a side-view of the inner body, or body proper, without the separate covering, with its projecting distinguishing marks which are numerals, or digits respectively.

Fig. 1*a* is a frontal view of said body with its marks.

Fig. 2 is a view similar to Fig. 1, but the body is covered with another material, the lower half being shown in axial section.

Fig. 2*a* is a front-view of the constructional form shown in Fig. 2.

Fig. 3 is a side-view of the finished body with its marks, and

Fig. 3*a* is a view similar to Fig. 2*b* showing a front-view of said finished body.

The inner body of the constructional form shown in the drawing consists in general of an inner ring *a* which bears the distinguishing marks *b*, which are numerals, or digits respectively, in the example shown. The ring *a* consists preferably of an artificial mass, say artificial resin, which may have a white color, but also any other color, preferably yellow, may be used. Of the numerals the digits 6, 8 and 9 (also 0 which is, however, not visible in the Figs. 1 and 3) enclose hollow spaces, from which extend narrow passages *c* through the ring to the interior thereof. At the inner circumference of the ring *a* is a low and small ledge *d* (Figs. 1*a* and 2*a*), the object of which is to secure the proper position of the marks, or numerals respectively, relatively to the exterior shape of the ring while this is being made. The body is made by casting the liquid

artificial resin or the like into a correspondingly shaped mold (not shown), and in order to provide for the proper flowing of the material during the casting the ring *a* is provided with radial stays *f*, from the centre of which extends outwardly a tubular ingot *g*.

When the ring *a*, together with said stays and said ingot, has been made, that is to say, when these parts have cooled down and become rigid, the parts *f* and *g* are separated from the ring *a* which can be carried out quickly in one procedure.

Now the ring with its projecting numerals is placed into another mold (likewise not shown), the ledge *d* being used to secure the proper position of the ring in this mold, in which the ring is embedded into another mass *e* preferably of another color. This mass may also be an artificial one, for instance polystyrol, which may be extruded around the ring *a* with its numerals. An ingot *l* serves for a good flowing of the hot liquid mass *e* into said mold, this ingot being a continuation of the hub *i*. The internal diameter of the said other mold may be such that an annular space remains between the inner circumferential surface of the same and the outer circumferential surface of the ring *a*, the radial width of said space being such that the mass covers also the numerals, that is to say, forms a thin layer over them, and flows into the passages *c*.

In the example shown the mass cast into the second mold forms not only an outer ring (*e*) around the inner one and covers the numerals, as just stated, but forms also a lateral disk *h* which may have knurls h^1, by means of which the finished body may be manually turned, if desired. I wish it, however, to be understood that the knurled rim is not indispensably requisite.

By the provision of the ingots *g* and *l* the flow of the hot liquid masses into the molds is facilitated and secured.

When the mass in the second mold has cooled down and hardened, the member *l* is removed and the above mentioned thin layer of the mass *e* is turned off until the top faces of the numerals *b* become visible. This step is to be carried out in a careful manner so that the top faces present a good appearance and can be conveniently read.

The liquid mass cast into the second mold and entering into the above-mentioned passages *c* forms therein so-to-say fastening pins for the small portions of the mass laying in the hollow spaces of the numerals (0, 6, 8, 9) which are thereby securely retained in said spaces.

I wish it to be understood that the invention is not limited to circular or annular members as shown merely by way of example, but also any other members, f. i. straight members may be made of two layers of differently colored masses in the manner described. The masses forming the rim of the body may also be applied onto a metallic body.

I claim:

Indicator wheel for calculating machines and the like, comprising an inner ring-shaped portion of artificial resin, projecting distinguishing marks consisting of the same artificial resin and being integrally provided on the outer rim surface of said portion, said inner ring being provided with radially arranged passages at the existing hollow parts of said marks, an outer portion of artificial resin having another appearance surrounding the said inner portion so that the top faces of said marks are on the same face level with the outer surface of the outer portion, a disc-like portion secured to the inner ring-shaped portion by which the finished wheel may be manually turned and being integral with said outer portion arranged on one side of said outer portion to strengthen said inner portion, and pins formed on said outer portion extending into and filling said passages.

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