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(54) **Improved safety handwheel**

(57) An improved safety hand-wheel (1) comprises a contoured annular perimeter (2), made as a single

piece, having a plurality of anatomically shaped angularly equispaced spokes (3).

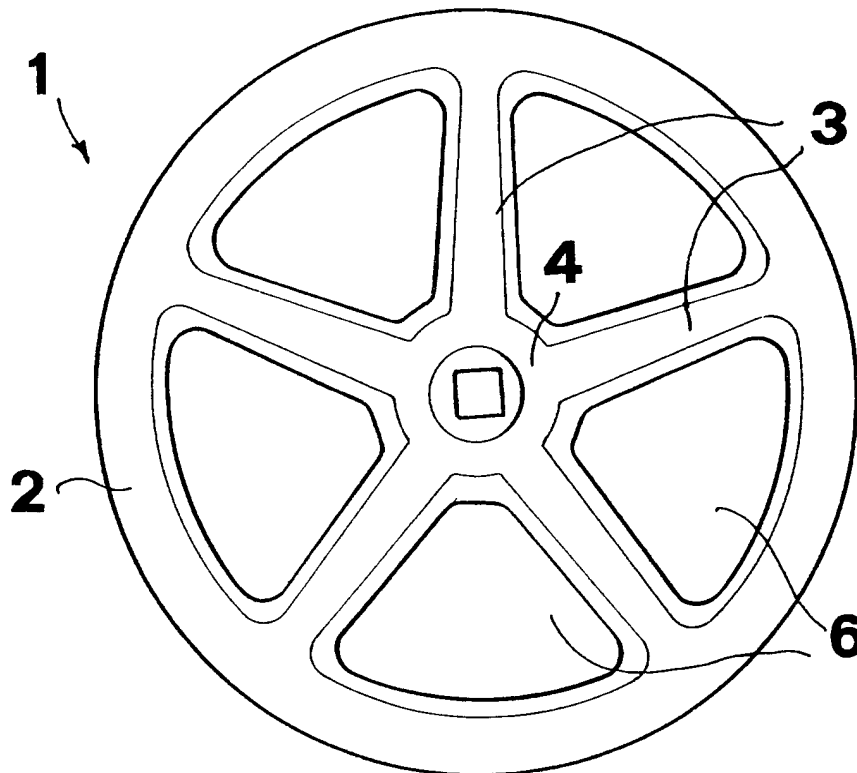


FIG. 1

Description

BACKGROUND OF THE INVENTION

[0001] The present invention relates to an improved safety hand-wheel.

[0002] In the industrial field are already known a plurality of mechanisms or devices for opening and closing passages through ducts or pipes, for driving different types of gates, for controlling safety valves and for changing the desired flow rates of any types of fluids.

[0003] The above mentioned mechanisms can be either manually or automatically operated.

[0004] In an automatically operated mechanism, in particular, are also provided manually operated emergency or safety means.

[0005] Actually, a manual driving device, both in a case in which it represents the sole driving means, and in the case in which it replaces an emergency driving means, is conventionally constituted by suitably contoured hand-wheels.

[0006] The above mentioned prior hand-wheels, however, are affected by the following disadvantages.

[0007] The gripping cannot be considered an anatomic gripping, i.e. the spokes included in prior hand-wheels and the annular perimeter of said prior hand-wheels cannot be easily used.

[0008] From the above mentioned problem several safety risks can occur, since a handling difficulty can, in an emergency case, delay a necessary handling operation so as to seriously damage systems and apparatus said prior hand-wheels are applied to.

[0009] A further drawback is that the mentioned prior hand-wheels require a lot of welding operations with a consequent presence of a lot of welded regions.

[0010] As it should be apparent, the mentioned welding operations would involve a comparatively high welding cost with further breakage consequences at the welded parts, mainly near the contact surface subjected to the welding operations.

SUMMARY OF THE INVENTION

[0011] Accordingly, the main object of the present invention is to overcome the above mentioned drawbacks affecting prior operating hand-wheels.

[0012] For achieving the above mentioned object, as well as yet other objects, which will become more apparent hereinafter, the invention provides an improved safety hand-wheel which can be made at low cost and can be easily and safely operated.

[0013] In particular, the subject hand-wheel is very reliable in operation and, accordingly, it can be used in a lot of demanding applications.

[0014] Thus, according to the present invention, an improved safety hand-wheel has been provided, comprising a contoured annular perimeter, and including a plurality of angularly equispaced spokes, which have an

anatomic shape, the overall hand-wheel being fully made as a single piece.

[0015] The improved safety hand-wheel according to the invention is characterized by the characterizing features disclosed in Claim 1.

[0016] The improved safety hand-wheel according to the invention provides the following advantages.

[0017] Its gripping, due to its specifically designed configuration, is easy and safe.

[0018] Thus, the operator can be properly handle the hand-wheel under any operating conditions.

[0019] Moreover, the subject hand-wheel can be made by making methods which are much simpler than prior similar hand-wheel making processes.

[0020] In fact, any welding operations, and the related problems, are fully eliminated.

[0021] The operating reliability and time duration of the subject hand-wheel, moreover, are much greater than those of prior hand-wheels, and this mainly owing to the single-piece construction of the inventive hand-wheel.

BRIEF DESCRIPTION OF THE DRAWINGS

[0022] Further characteristics, advantages and constructional details of the improved safety hand-wheel according to the present invention will become more apparent hereinafter from the following detailed disclosure thereof with reference to the accompanying drawings, illustrating, by way of a merely indicative example, some preferred embodiments of said hand-wheel.

[0023] In the drawings:

Figure 1 is a front view of the improved safety hand-wheel according to the invention;

Figure 2 is a rear view of the hand-wheel shown in Figure 1;

and

Figure 3 is a front view of a different embodiment of the hand-wheel according to the present invention.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

[0024] With reference to the number references of the above mentioned figures, the improved safety hand-wheel 1 according to the present invention is provided with an annular perimeter 2, from which advantageously extends toward a central region 4 five spokes 3 which are angularly equispaced from one another.

[0025] The central region 4 defines moreover, at the geometrical center of the hand-wheel 1, a square cross-section inlet 5 for mounting said hand-wheel on a suitable driving rod element, not specifically shown in the figures.

[0026] The spokes 3 connecting the annular perimeter 2 to the central region 4 defines five openings 6, allowing the hand-wheel 1 to be easily gripped, independ-

ently from the angular position of said hand-wheel.

[0027] More specifically, the spokes 3 and annular perimeter 2 are provided with a slightly crowned outer surface.

[0028] Thus, each opening 6 will have a perimetrical anatomic contour which can be easily gripped, owing to the provision of the mentioned crowned surfaces 7.

[0029] Advantageously, moreover, the overall hand-wheel 1 is made as a single piece, by any suitable molding operation.

[0030] In a different embodiment, the hand-wheel 10 according to the present invention is provided, on its annular perimeter 12, with a plurality of seats or recesses 11, which are preferably arranged by sets or groups, at each said opening 16.

[0031] More specifically, the mentioned seats or recesses 11 define five sets or groups of four equispaced elements, each seat 11 of each group being equispaced from the other seats.

[0032] Such an arrangement will facilitate the gripping by the operator, as the hand-wheel must be rotated.

[0033] It should be apparent that the configuration and size of the elements constituting the improved safety hand-wheel according to the invention can be changed, depending on requirements, without departing from the scope of the invention.

[0034] In operation, the hand-wheel 1, 10 is suitably connected to a driving shaft for operating any mechanisms to be applied to several different systems to be operated under safety conditions, the specific anatomic configuration of the hand-wheel and the strength deriving from its integral construction providing said hand-wheel with very good reliability and safety properties.

center of said hand-wheel (1).

- 5 5. An improved safety hand-wheel, according to one or more of the preceding claims, characterized in that said spokes (3) and annular perimeter (2, 12) provides several crowned and anatomic surfaces (7), each of which perimetricaly delimits each said opening (6, 16).
- 10 6. An improved safety hand-wheel, according to one or more of the preceding claims, characterized in that said annular perimeter (12) of said hand-wheel (10) defines a plurality of seats (11) arranged at each said opening (16).
- 15 7. An improved safety hand-wheel, according to one or more of the preceding claims, characterized in that said seats (11) define five sets of four equispaced elements, each said seat (11) of each said set being equispaced from the other seats.
- 20 8. An improved safety hand-wheel, characterized in that said hand-wheel comprises a plurality of specifically contoured, arranged and associated elements, and as broadly disclosed and illustrated and for the intended objects.

Claims

1. An improved safety hand-wheel, characterized in that said hand-wheel is made as a single piece and comprises an annular contoured perimeter (2, 12), and a plurality of angularly equispaced spokes (3), having an anatomic configuration.
2. An improved safety hand-wheel, according to Claim 1, characterized in that said single piece forming said hand-wheel (1, 10) is a molded single piece.
3. An improved safety hand-wheel, according to the preceding claims, characterized in that said hand-wheel (1, 10) comprises a plurality of anatomic spokes (3) radially extending from said annular perimeter (2, 12) toward a central region (4), thereby providing a plurality of openings (6, 16).
4. An improved safety hand-wheel, according to one or more of the preceding claims, characterized in that said central region (4) comprises an inlet (5), of square cross section, arranged at the geometric

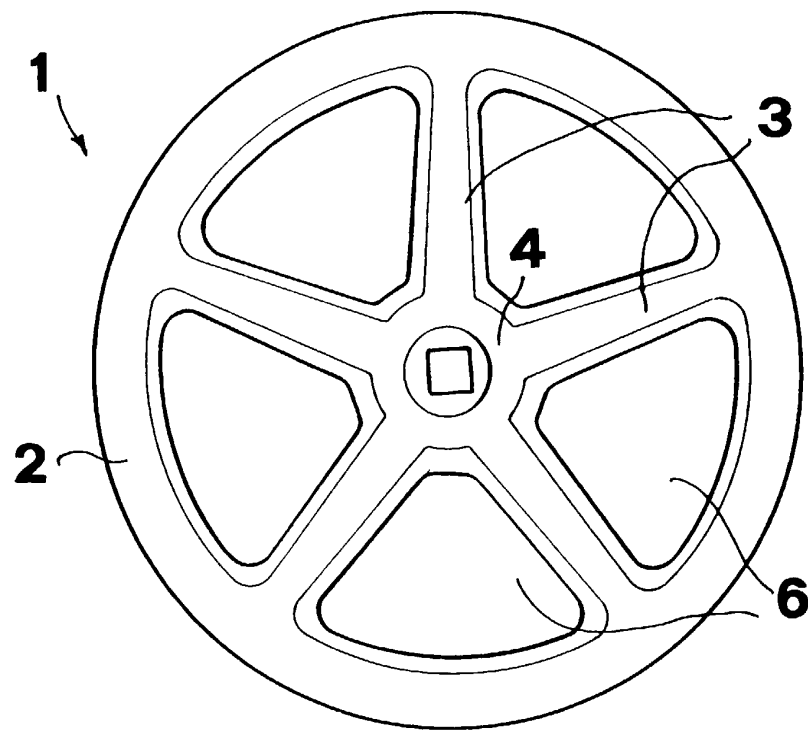


FIG. 1

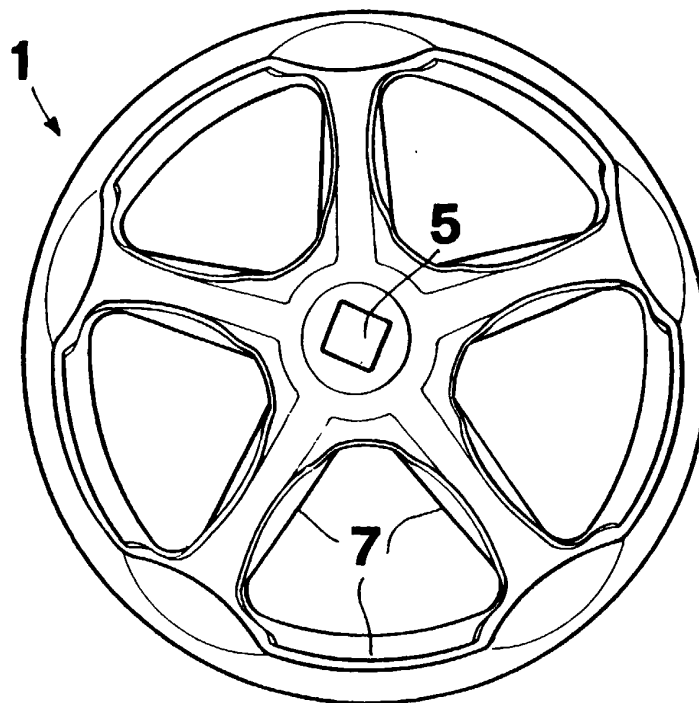


FIG. 2

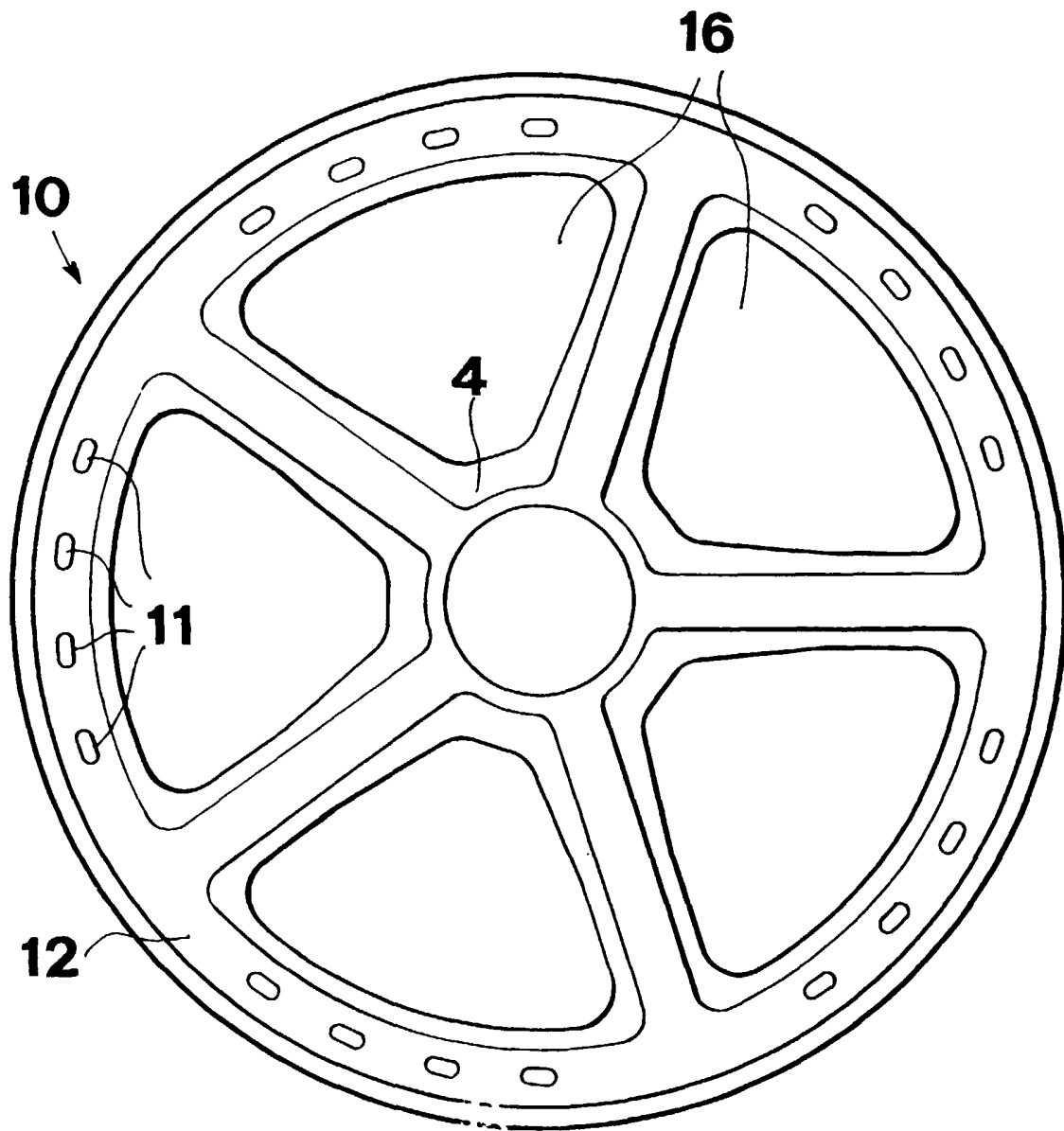


FIG. 3