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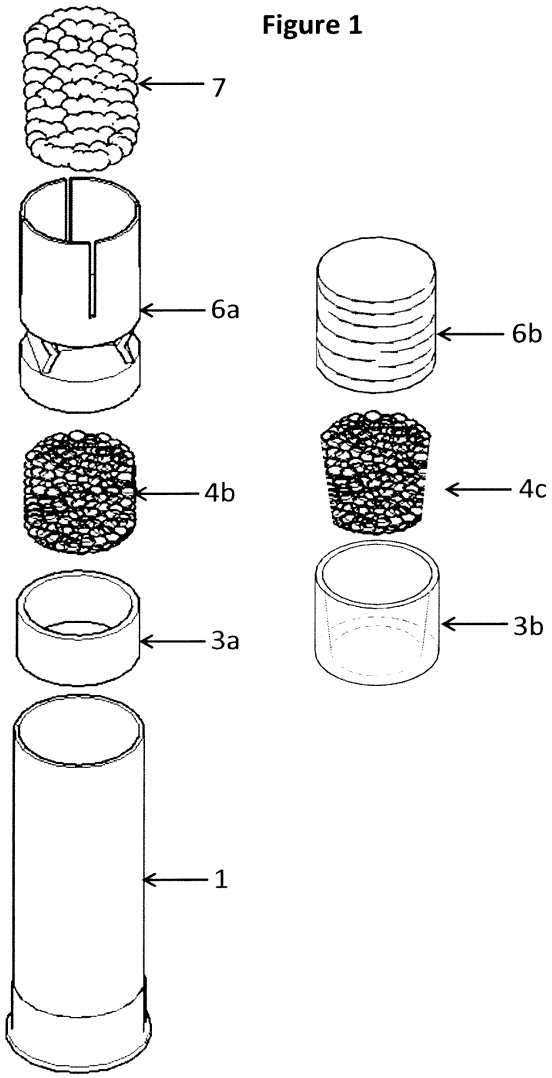
(54) HUNTING CARTRIDGE WITH PLASTIC RING RECEIVING POWDER CHARGE

(57) The invention involves a rigid polyethylene ring, cylindrical (3a) or conical (3b) in cross-section, with fixed outer diameter according to its respective caliber of application, on which the bottom end rests on the inner bottom (2a,2b), of the plastic or paper bullet casing (1) and enclosing within it the necessary amount of gunpowder (4b, 4c), with its upper end exceeding one half (0.5) millimeter in height over the gunpowder and the resting wad , i.e. plastic concentrator (6a) or wool wad (6b), creating between gunpowder (4b,4c) and wad, discoid space (5), about half (0.5) millimeter. Thus, the Ring (3a,3b), completely absorbs the strong pressures exerted by the weight of the shot shells (7) and by the asteroid closure (8) of the cartridge and allows no pressure to be applied to the gunpowder (4b,4c), thereby completely equating the same cartridges of the same batch , in terms of pressures generated by its burning, and ensuring the required corresponding stability between shots of the shotgun.

Figure 1



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Description

[0001] The present invention relates to a plastic, hard polyethylene Ring, cylindrical (3a) or conical (3b) cross-section, with a fixed outer diameter, consistent with the caliber of the cartridge applied, on which its bottom end rests on the inner bottom (2a,2b), of the plastic or paper hollow bullet casing (1), enclosing within it the necessary amount of gunpowder (4b,4c), and its opposite end exceeds half that height (0.5) millimeter and the wad, that is plastic concentrator (6a) or woolen wad (6b), creates between powder (4b,4c) and wad (6a,6b), a discoid gap (5), about half (0.5) mm .

Fig. 1 shows a perspective view of the entire cartridge as well as its loading components thereof.

Figures 2, 3, 4 and 5 show vertical cuts of finished cartridges, with their component parts in their final position.

[0002] In modern hunting cartridges (Figure 2, and Figure 4), consisting of plastic or paper bullet casing (1), and the internal load, which includes, gunpowder (4a), wad, i.e., plastic concentrator (6a), or woolen wad (6b), shot shells (7), and asteroid closure (8), of the bullet casing (1), wad, woolen wad(6b), or plastic concentrator (6a), mounts directly on the gunpowder (4a), so that it receives all the pressure from the weight of the shot shells (7), and the strong pressure from the asteroid closure (8), of the cartridge from the loading machine.

[0003] This strong pressure on the gunpowder (4a), is the problem of the great imbalance in terms of pressures produced when it is burned between the same cartridges of the same batch, and the large difference and instability thereafter, from shot to shot.

[0004] Published tables of modern hunting cartridge cannons, where all modern cartridge loading materials, all bullet casings and shot shells , all kinds of concentrators, wool wads and gunpowder, are used show that the differences of produced pressures during burning of gunpowder, of five same cartridges in the same batch, between first and fifth, are from 50 to 218 atmospheres of pressure.

[0005] Such a huge difference in pressures produced when burning the powder in the same cartridge of the same batch, is completely devastating to the ballistic effect and normal (Good), shotgun shot.

[0006] The object of the present invention is to provide a hunting cartridge, stable in performance, minimizing the difference in pressures produced during the burning of the gunpowder (4b,4c), in the same cartridges of the same batch and fully equalizing it, and thus the stability between shotgun shots.

[0007] This is accomplished by the application of the Ring (3a,3b), which does not allow any pressure to be applied to the gunpowder (4b,4c), thereby equating the same cartridges of the same batch from the pressures produced by burning it.

[0008] An additional important advantage is that with the application of the Ring (3a,3b), the burning chamber of the gunpowder (4b,4c) is reduced in spaces and higher and stronger pressures are generated upon its burning than in a Ringless cartridge, and for the cartridge with a Ring (3a,3b), for the same weight of pepper a smaller amount of gunpowder is required (4b,4c). This results in a great saving of gunpowder.

[0009] The individual components have the same symbols in all shapes for matters of explanation. Fig. 1 shows a perspective view of the entire cartridge and the individual components of the loading constituting it, with the bottom-up arrangement thereon.

[0010] First enters the empty plastic or paper bullet casing(1), the Ring (3a,3b) and rests on the inner bottom (2a, 2b), then, into the interior of the Ring (3a,3b), the gunpowder is inserted (4b, 4c) third, the plastic concentrator (6a) or the woolen wad (6b) enters and sits onto the Ring, and lastly the shot shells (7), of the loading at various weights.

[0011] Figure 2 shows a modern hunting cartridge in vertical cut. It consists of plastic or paper bullet casing (1), inner conical bottom (2a), gunpowder (4a), plastic concentrator (6a), the load of the shot shells (7), and the asteroid closure (8).

[0012] There the concentrator (6a), directly sits on the gun powder (4a), and exerts pressure, the pressure from the weight of the shot shells (7), as well as the strong pressure of the asteroid cartridge closure (8), by the loading machine.

[0013] Figure 3 shows the same cartridge as is precisely after the application of the cylindrical Ring cross section (3a), at its upper end being the point of deposition of the concentrator (6a), which forms between the wad and the gunpowder (4b), discoid space (5), about half (0.5) millimeter. So completely absorbed by the Ring (39), all the pressures exerted by the weight of the shot shells (7), as well as strong pressure from the asteroid closure (8) of the cartridge from the loading machine and no longer allows any pressure to be applied to the gunpowder (4b).

[0014] The selection of the plastic concentrator(6a) while applying it with the cylindrical cross-section Ring (3a) must be done carefully and the chosen concentrator should have a very small or better no dent at its lower end, so as not to create a large gap between it and the powder (4b).

[0015] In such concentrators there are several options, both domestic and imported.

[0016] Figure 4 shows a modern hunting cartridge, also in a cross section, with the difference from the cartridges of Figures 2 and 3, that the inner bottom (2b), of the plastic or paper bullet casing (1), is flat. For a wad, is used a woolen wad (6b), which attaches directly to the gunpowder (4a), and exerts pressure from the weight of the shell shots (7), as well as the strong pressure of the asteroid closure (8)', from the loading machine.

[0017] Figure 5 shows the same cartridge as it appears after the application of the conical cross section Ring (3b), at its uppermost end is a point of contact of the woolen wad (6b), which creates between wad and gunpowder (4c), a discoid gap (5), of a half (0.5) millimeter. The Ring (3b) thus completely absorbs the pressure exerted by the weight of the shot shells (7), as well as the strong pressure from the asteroid closure (8), of the cartridge from the loading machine, and no longer allows pressure to be exerted upon the gun powder (4c).

[0018] A prerequisite for the application of said conical cross section Ring (3b) is that the inner bottom (2b) of the plastic or paper bullet casing (1) must be flat. It is optionally applied, in particular to the caliber twelve (12), and mostly in light and regular loads of twenty-four (24), up to thirty-two (32) grams of pepper in weight, and not only.

[0019] This choice, if a conical(3b) or cylindrical (3a), cross-section Ring is used, on an empty plastic or paper bullet casing (1), with a flat inner bottom (2b), is left to the preference of each loader.

[0020] For a caliber of twelve (12), the length of the outer diameter of the Cylindrical Ring (3a) and the conical (3b), is eighteen millimeters and eight tenths (18.8) millimeters. Their height is variable, for the cylindrical (3a) cross-section Ring starting point is three (3) millimeters to a maximum of twenty-five (25) millimeters.

[0021] The conical cross-section Ring's height has a starting point of nine (9) millimeters to a maximum of twenty-five (25), millimeters, and all intermediate heights of both Rings cylindrical(3a) and conical (3b) cross-section fluctuate downwards or upwards with steps of half (0.5) millimeters always at a height of volume of the necessary amount of gunpowder (4b,4c), which are called to enclose within them, and exceed half a millimeter (0.5) and measure between the wad(6a,6b) and gunpowder (4b,4c), discoid gap (5), about half (0.5) millimeters.

[0022] The thickness of Ring wall cross-section (3a), is one (1) millimeter across its height, and the thickness of the wall of the conical ring (3b), at its top end is one (1) millimeter, and at its opposite end its thickness of the wall is one millimeter and five tenths (1.5) millimeters to a maximum of two millimeters and six tenths (2.6) .

[0023] The construction material is selected of hard polyethylene for the Ring, cylindrical (3a) and conical (3b) cross-section the same as that of the inner bottom (2a, 2b) of the bullet casing (1), suitably treated to have high thermal and physical endurance.

Claims

1. Plastic Ring cylindrical(3a) or conical (3b) cross-section, hunting cartridge loading component with fixed outer diameter in accordance with the respective caliber of application, **characterized in that** its bottom end mounts the inner bottom (2a,2b), of plastic or paper wad (1) and enclosing within it the necessary amount of gunpowder (4b,4c), with its upper end exceeding by one half (0.5) mm over the powder and it's wad, plastic concentrator (6a), or wool wad (6b) creating between the gun powder (4b,4c) and wad, discoid space (5) of a half (0.5) millimeter.

2. The plastic cylindrical cross-section ring (3a) according to claim 1, **characterized by** a constant outer diameter of eighteen millimeters and eight tens of diameter(18.8)of a millimeter for twelve (12) caliber, steady wall thickness of one (1) millimeter, for all its height, with wall height varying, with a minimum of three (3) millimeters, a maximum wall thickness of twenty-five (25) millimeters and all intermediate heights wall fluctuations, between three (3) and twenty-five (25) millimeters, fluctuating upwards or downwards, in steps per half (0.5) millimeter, always according to the height of the gunpowder volume (4b), which is enclosing within it and its corresponding end, exceeding that height Half (0.5) millimeter.

3. The plastic cylinder (3a) according to claim 1, **characterized by** a constant outer diameter of seventeen millimeters and four-tenths (17.4), for a sixteen (16) caliber fixed wall thickness of one (1) mm, with a height of wall varying, with a minimum of three (3) millimeters, corresponding to a wall height of twenty-three (23) millimeters and all intermediate wall heights, between three (3) and twenty three (23) millimeters, fluctuate, upwards or downwards, in steps per half (0.5) millimeter, always according to the height of the gunpowder volume (4b), which is enclosing within and its upper end exceeding a half (0.5) millimeter in height.

4. A plastic cylindrical cross-section ring (3a) according to claim 1, **characterized by** a constant outer diameter of fifteen millimeters and eight tenths (15.8) millimeters to a caliber of twenty (20), constant wall thickness for all its height of one (1) millimeter, with variable wall height, with a minimum of three (3) millimeters, corresponding to a wall height of twenty-three (23) millimeters and all intermediate wall heights, between three (3) and twenty three (23) millimeters, fluctuate, upwards or downwards, in steps per half (0.5) millimeter, always at the amount of the gunpowder volume (4b), which is enclosing within and its upper end exceeding that by a height of half (0.5) millimeters.

5. Plastic conical ring (3b) according to claim 1, **characterized by** a constant outer diameter of eighteen millimeters and eight tenths (18.8)millimeters, for a caliber of twelve (12), with variable wall height, with a minimum of nine (9) millimeters, maximum a wall height of twenty-five (25) millimeters and all intermediate wall heights, between nine (9) and twenty-five (25) millimeters, fluctuating upwards or downwards

in steps per half (0.5) millimeter, always according to the amount of the volume of powder (4c), which is to enclose inside, and the upper end exceeds it in height by half (0.5) millimeter.
The wall thickness of the conical section (3b) of the Ring at its upper end is one (1) millimeter, and at its lowest end the minimum wall thickness is one millimeter and five tenths (1.5) mm, to a maximum wall thickness of the bottom end of two millimeters and six tenths (2.6).

6. Cylindrical (3a) or conical (3b) cross-section Ring according to the claims 1, 2, 3, 4 and 5, **characterized in that** its material is selected of hard polyethylene, identical to that of the inner bottom (2a and 2b) of the bullet casing (1), suitably elaborated to have a high thermal and physical endurance.

Figure 1

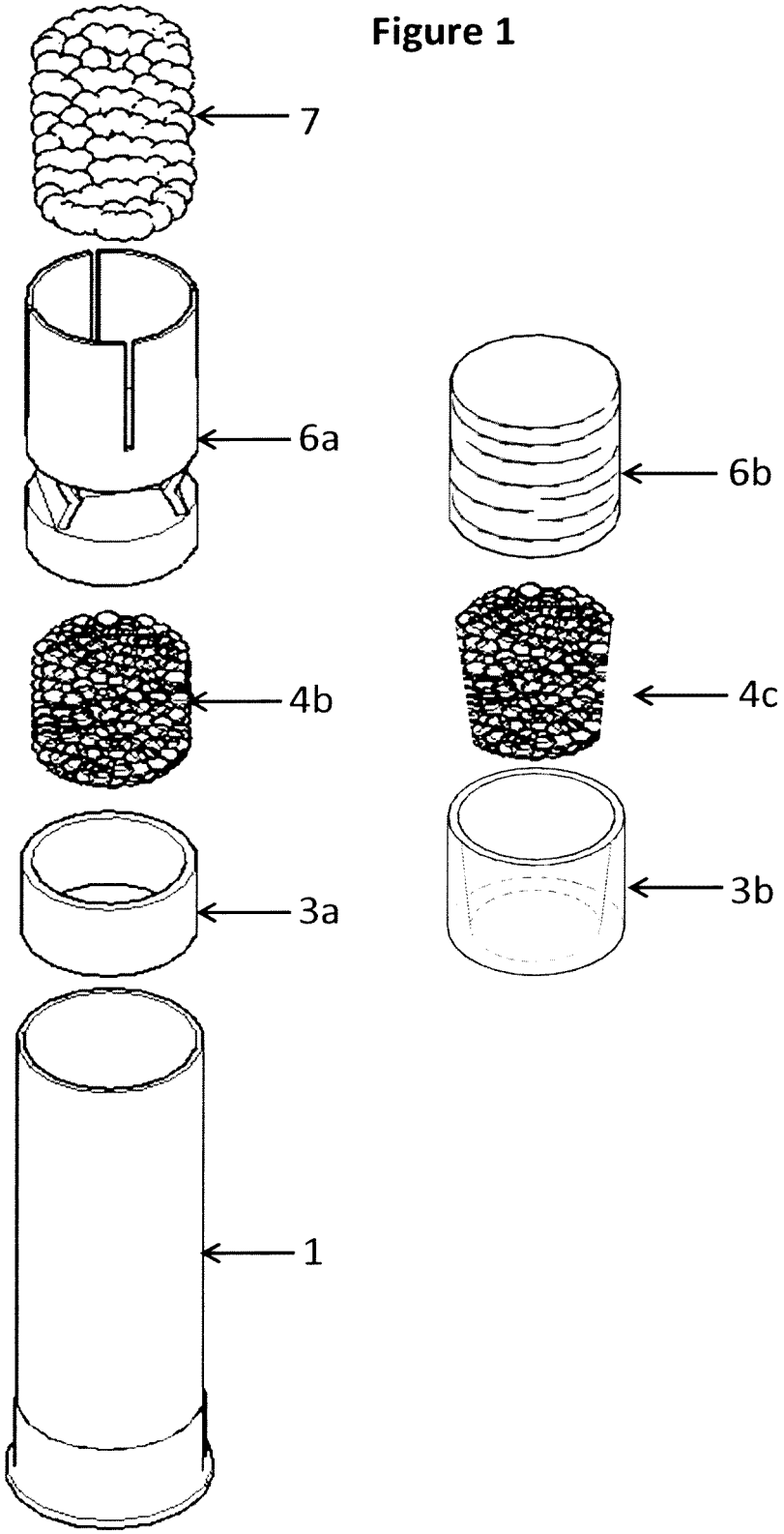


Figure 2

Figure 3

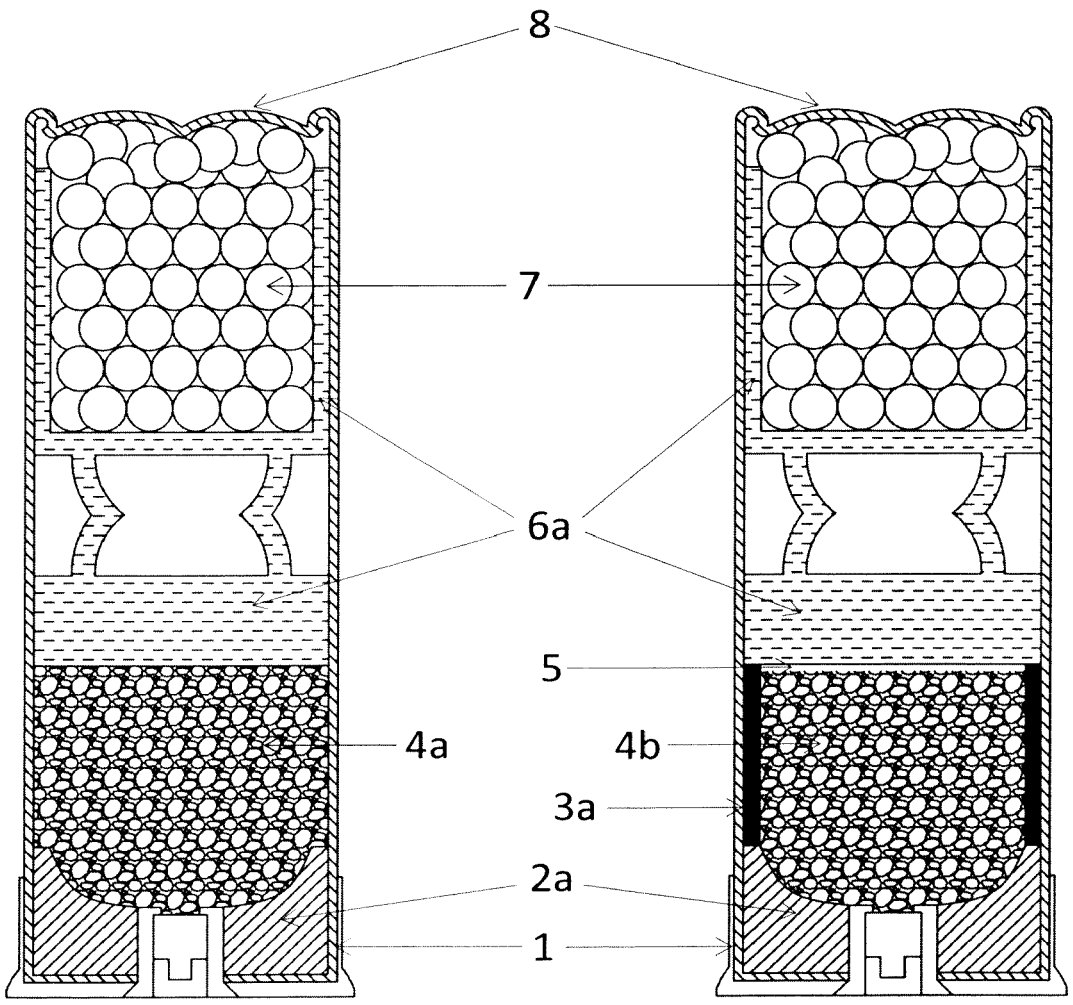
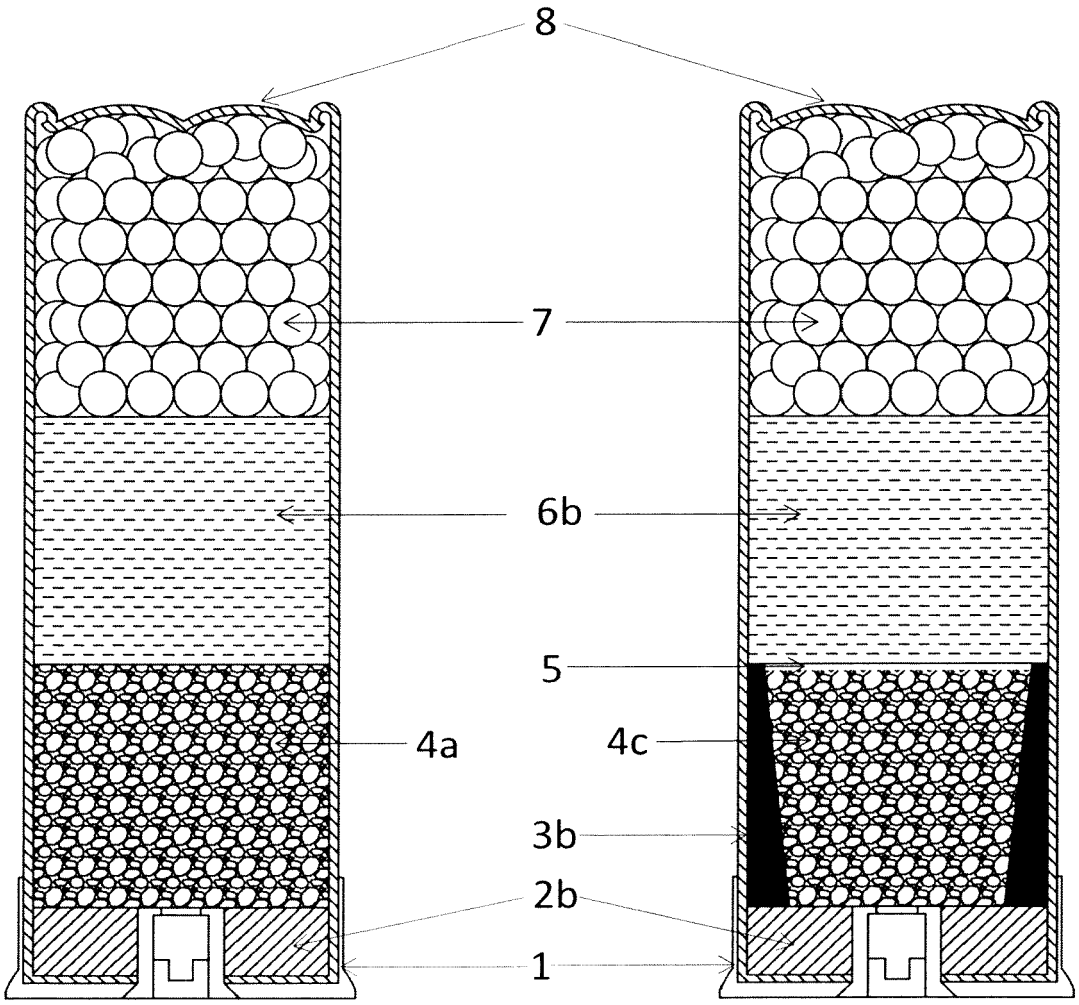


Figure 4

Figure 5



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EUROPEAN SEARCH REPORT

Application Number
EP 20 38 6003

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
Y	FR 1 390 151 A (BOROVSKY NICOLAS [FR]) 26 February 1965 (1965-02-26) * figures 1,9,13,19,57 * * page 1, left-hand column, paragraph 1 - right-hand column, paragraph 3 * * page 2, left-hand column, paragraph 7 - right-hand column, paragraph 2 * * page 2, right-hand column, paragraphs 4,5 * * page 6, left-hand column, paragraph 3 *	1-6	INV. F42B7/04 F42B7/08
Y	US 3 487 779 A (HENDRICKS GROVER E) 6 January 1970 (1970-01-06) * figures 1,3 * * column 2, lines 23-56 *	1-6	
A	FR 1 183 607 A (LAJUS RENE [FR]) 9 July 1959 (1959-07-09) * page 2, left-hand column, paragraph 2 - paragraph 4 * * claim; figures *	1,6	
			TECHNICAL FIELDS SEARCHED (IPC)
A	US 2 582 124 A (HOLMES RAYMOND S) 8 January 1952 (1952-01-08) * figure 3 * * column 4, lines 22-28; figure 1 *	1	F42B
A	US 2 462 312 A (FINLAY WALTER L ET AL) 22 February 1949 (1949-02-22) * figure 2 * * lines 57-71 *	1	

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	14 July 2020	Schwingel, Dirk

CATEGORY OF CITED DOCUMENTS

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14-07-2020

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
FR 1390151 A	26-02-1965	NONE	
US 3487779 A	06-01-1970	NONE	
FR 1183607 A	09-07-1959	NONE	
US 2582124 A	08-01-1952	NONE	
US 2462312 A	22-02-1949	NONE	

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For more details about this annex : see Official Journal of the European Patent Office, No. 12/82