

Information Retrieval: Introduction to Patents

Pablo Mollá, Pavlo Poliuha

2024-2025

Agenda

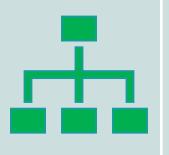
- Introduction to Patents Theory
- PatentMatch Dataset
- Transformers: BERT & SBERT
- Introduction to IR Challenge Datasets



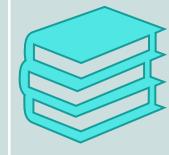
What is a Patent?



Why do we care about Patents?



How is structured a European Patents ?



What are citations on patents? What are their purpose?

Patent Theory

What is a patent?



Official certificates given by an institution that grant inventors or their assignees the exclusive right to make, use, sell, and import an invention for a certain period, usually 20 years.

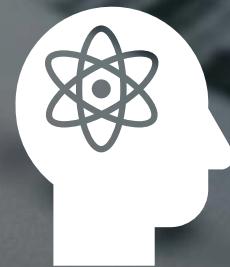


Protective shields for inventions. These inventions can be **new gadgets**, **chemical formulas**, **processes**, or any new and useful **improvement of an existing invention**.



Super important and valuable for many reasons:

- Protection for Inventors
- Encourages Innovation
- Economic Growth
- Revenue Generation
- Sharing Knowledge

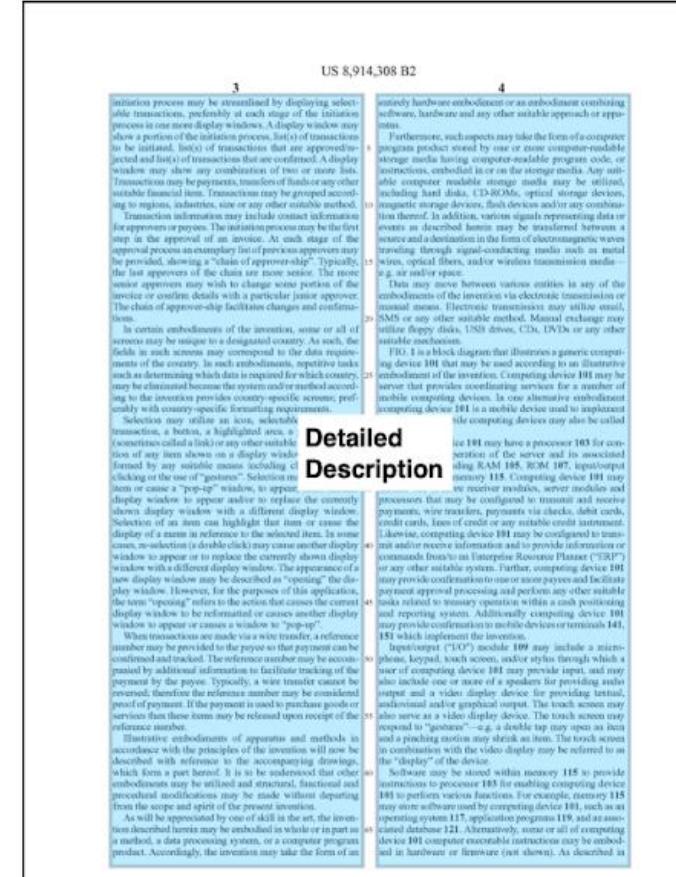
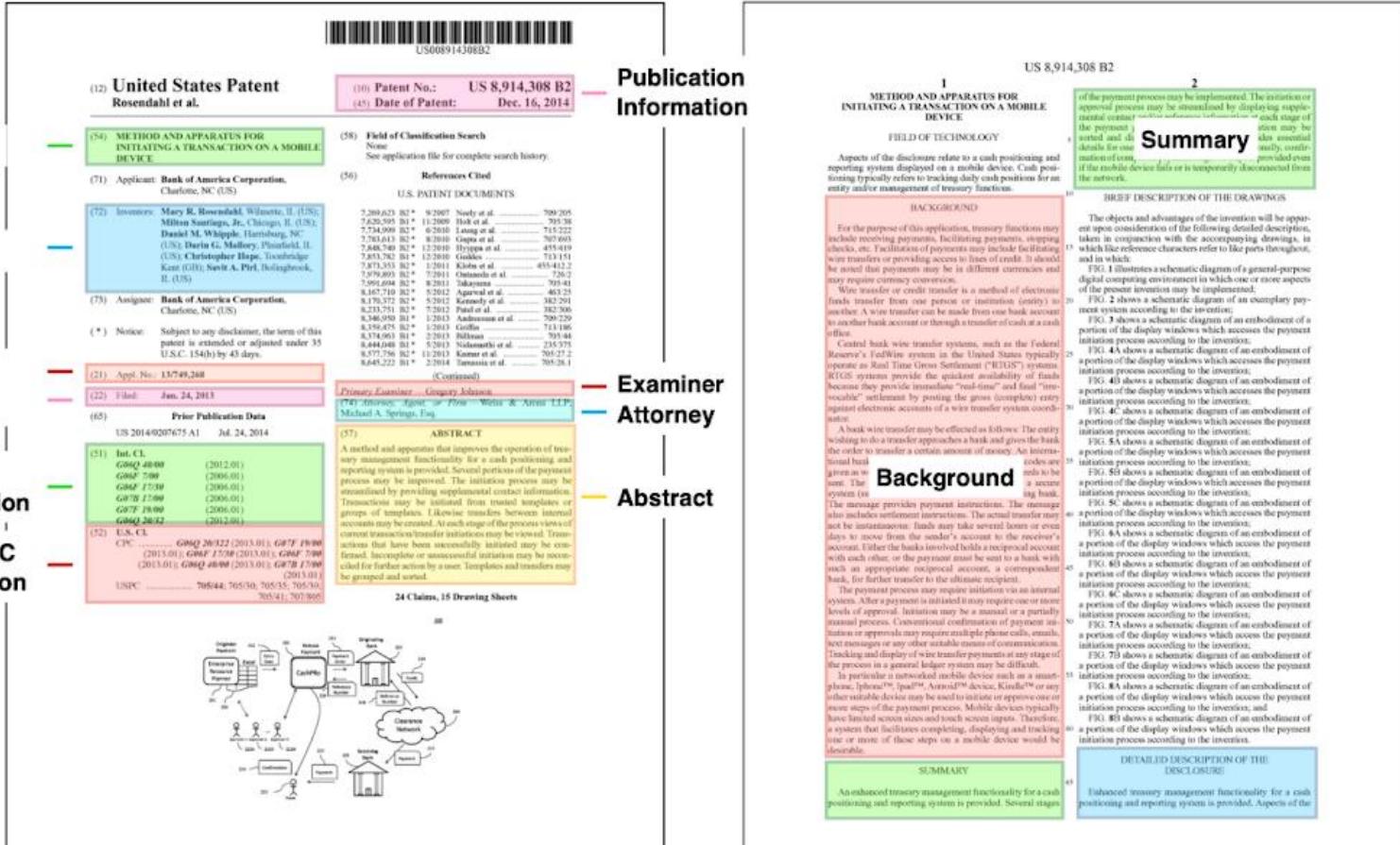


Time + Region



Europäisches
Patentamt
European
Patent Office
Office européen
des brevets





Structure of USA Patents - USPTO



(12)

EUROPEAN PATENT APPLICATION
published in accordance with Art. 153(4) EPC

(43) Date of publication
19.01.2022 Bulletin 2022/03

(21) Application number 20770428.9

(22) Date of filing: 05.03.2020

(86) International application number
PCT/BY2020/000003(51) International Patent Classification (IPC)
A63F 9/16 (2006.01) A63H 1/00 (2018.01)(52) Cooperative Patent Classification (CPC):
A63H 1/00(86) International application number
WO 2020/181352 (17.09.2020 Gazette 2020/38)(84) Designated Contracting States:
AL AT BE BG CH CY CZ DE DK EE ES FI FR GB
GR HR HU IE IS IT LT LU LV MC MK MT NL NO
PL PT RO RS SE SI SK SM TRDesignated Extension States:
BA MEDesignated Validation States:
KH MA MD TN

(30) Priority: 12.03.2019 EA 201900215

(54) SPINNER TOY AND METHOD OF ROTATING SAME

(57) The invention relates to the sphere of entertainment and is intended for developing motor skills of the fingers and hands through play. The technical result consists in operational autonomy from an outside energy source, increased duration of rotation, and improved entertainment qualities for a spinner. A rotating element (1) of a spinner toy is configured to be centrally balanced relative to a central axis of rotation (9) and is equipped with a means of rotation (2) in the form of a ball bearing and screw converter (10) having a housing (6) in the form of a hollow sleeve (11) which is capable of converting

The reciprocating motion of a pusher (19) of the means of rotation (2) into unidirectional rotational motion without slowing the rotating element (1). The present method includes imparting rotation to the rotating element (1) without interrupting the use of the spinner toy by a user by means of mechanically converting the reciprocating motion of the pusher (19) of the means of rotation (2) in the form of a ball bearing and screw converter (10) into unidirectional rotational motion without slowing the rotating element (1).

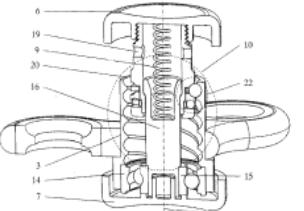


Fig. 1
Printed by Jouve, 75001 PARIS (FR)



(11) EP 3 939 678 A1

1 EP 3 939 678 A1

2

Description**FIELD OF INVENTION**

[0001] The invention relates to the field of entertainment and is intended for gaming purposes, and can also be used for the therapy of the psychoemotional state of a person and the development of motor skills of fingers and hands.

BACKGROUND ART

[0002] There are many different designs of spinner toys that rotate in the user's hands, characterized by the presence of a flat body, in which a ball bearing is centrally installed, located in the central hole of the flat body, several, at least two, loads are mounted, which are made in the form of a sandwich and are placed with the possibility of at least bipolar distribution of their weight. Each load contains at least one hole for adjusting its weight. The flat body comprises at least one load mounting hole at each end and designed to align with at least one load mounting hole in each load.

At each end of the planar body, designed to accommodate at least one balancing mass, a groove is made located between two loads in the form of a sandwich at each end. The first and second bearing caps contain a pair of supporting caps, the first bearing cap contains a first hole in the bearing cap and the second bearing cap contains a second hole in the bearing caps. A pair of supporting caps are secured to each other by a bearing cap, with the bearing cap post extending through a ball bearing and screws into each bearing cap, while a center support screw passes through a first hole in the first bearing cap and through a center hole. Also, the center support bolt passes through the second hole of the second bearing cap and is threaded into the center hole to engage with the center support screw. A flat (planar) body is made solid with a plurality of loads that are built into it; it also contains an element selected from the group consisting of two or three polar ends with two or three ends.

[0003] The patent [1] describes a finger spinner that includes a main body with a hole in the center into which a bearing in a protective casing is inserted. The bearing contains two end surfaces and means for connecting to an axial hole. The spinner has a central concave end surface rigidly mounted in the central hole.

[0004] There is also a finger spinner [2] made of composite material. The spinner contains a gyroscopic body, a central body with covers and ball bearings on the central axis of the lower surface of the body. The upper bearing is installed in the cover of the central tubular shaft in the hole in the lower cover on the lower surface of the tubular shaft. The spinner is characterized by smooth spinning, high strength and light weight.

[0005] The patents [3, 4] also describe a hand spinner with a flat body containing several, at least three, blades mounted on the outer edge of the rotating body. The rotating body contains a central through hole in which a bearing is installed and is closed by the bottom and top covers, and holes are provided in the cover bodies. The cover bodies are connected to each other by a threaded joint. The spinner has an elongated shape and is characterized by the ease of rotation of the blades with the user's fingertip.

[0006] The patent [5] describes a spinner with a rotating flat body and an assembly unit that includes a central roller bearing of the rotation mechanism. The assembly unit is equipped with release arms with blades. The arms of the blades contain light modules that are activated when the first arm is applied with the user's finger to drive the spinner's flat body in rotation.

[0007] A common disadvantage of the known analogs is the impossibility to maintain a long rotational motion of a flat body, since the rotation mechanism is driven exclusively by a single tangential action of the user's finger on the peripheral surface of the flat body. The disadvantage is also the impossibility to speed up the spinner's rotation by touching it again during its rotation, since such an impact leads to its slowdown.

[0008] There is also a device designed for rotation in the hands of the user and represents a spinner, which in

3 EP 3 939 678 A1

4

technical essence is the closest to the proposed invention and was chosen as a prototype [6]. The device contains a structural element in the form of a flat (planar) body with a centrally mounted ball bearing located in the central hole of the flat body and a button for holding the spinner between the user's fingers, while the body has a flat hub and spoke shape. The outer ring of the ball bearing is attached to the flat body, and the button contains a pair of bearing caps attached to each other through a ball bearing and clamped against the internal stroke of the ball bearing, while during the operation of the spinner, the button is held between the user's thumb and forefinger, and the flat body rotates freely together with the outer ring of the ball bearing. At opposite ends of the flat body, several, at least two, loads are mounted, which are made in the form of a sandwich and are placed with the possibility of at least bipolar distribution of their weight. Each load contains at least one hole for adjusting its weight. The flat body comprises at least one load mounting hole at each end and designed to align with at least one load mounting hole in each load.

At each end of the planar body, designed to accommodate at least one balancing mass, a groove is made located between two loads in the form of a sandwich at each end. The first and second bearing caps contain a pair of supporting caps, the first bearing cap contains a first hole in the bearing cap and the second bearing cap contains a second hole in the bearing caps. A pair of supporting caps are secured to each other by a bearing cap, with the bearing cap post extending through a ball bearing and screws into each bearing cap, while a center support screw passes through a first hole in the first bearing cap and through a center hole.

[0009] The disadvantage of the prototype is the inability to maintain the initial rotation of the spinner for a long enough time, since a flat (planar) body is brought into rotation by the mechanical tangential action of the user's finger on its peripheral surface, while a repeated similar action leads to interruption of the spinner rotation cycle and the process of rotation of the planar body needs to be repeated anew.

[0010] The patent [7] describes a magnetic spinner toy and a method of its rotation, selected as a prototype. A spinner toy contains many, but at least three, rotating bodies. On each rotating body, magnets are mounted on the peripheral surface. The spinner is equipped with an electric motor with a power source, and the electromagnetic mechanism of the motor is designed to interact with

the magnetic poles of a magnet of at least one of the rotating bodies. The spinner rotation method includes the interaction of magnetic poles with the electric mechanism of the engine and their alternating attraction and repulsion, which leads to rotational motion of the spinner's rotating bodies.

[0011] The disadvantage of the method - a prototype and a magnetic spinner toy based on it - is the use of a magnetoelectric drive as a means of rotation, since its implementation requires replaceable electric batteries or a battery that requires periodic replacement or recharging, which ties the user to a source of third-party electrical energy and complicates or makes it impossible to use the toy without an outside source of energy.

SUMMARY OF INVENTION

[0012] The aim of the invention is to eliminate these disadvantages and increase the attractiveness of the spinner toy for the user.

[0013] The technical result is the autonomy of the spinner, regardless of an external energy source and an increase in the duration of rotation of a flat (planar) body without interrupting the spinner rotation cycle, which is limited only by the user's desire. The technical result of the invention is also the improvement of the playing qualities of the spinner toy due to the high technological effectiveness of the design, which is free from outside energy sources.

[0014] The technical result is achieved due to the fact that a spinner toy contains a rotating element of a predetermined shape with a centrally mounted means of rotation, which is mounted in the neutral hole of the rotating element, and the outer surface of the body of the means of rotation is attached to the rotating element; the top and lower button covers are connected to each other through the means of rotation and made with the possibility of holding them between the user's fingers, while the rotating element is provided with symmetrically placed and massive elements and is made with the possibility of free rotation around the central axis, according to the invention, the rotating element is made centrally balanced with respect to the central axis of rotation, and the means of rotation is made in the form of a ball bearing and screw converter of reciprocating motion into unidirectional rotational motion of a rotating element, while the body of the ball bearing and screw converter is a hollow sleeve, the inner surface of which is provided with a helical groove of a given profile, and in the lower end of the hollow sleeve a rotation bearing is mounted, closed lower cover-button and a guide rod upper end, is installed in the inner ring of the rotation bearing, the rod contains a blind cavity and is kinematically connected to the pusher, which is located on the upper end of the hollow sleeve and is made to slide along the guide rod, wherein the pusher is made in the form of a hollow cylinder, in the lower end of which a thrust bearing is installed, top cover-button is mounted in the upper end of the pusher cylinder,

[0015] The rotating element has a shape similar to a flat disc and is rotatable about a central vertical axis that runs perpendicular to the flat surface of the disc.

[0016] The rotating element has the shape of a volumetric body, which is made with the possibility of rotation about a vertical axis passing through the center of gravity of the volumetric body.

[0017] On the inner surface of the body of the hollow sleeve, at least two helical grooves of a given profile are made, while their beginning and end are made turning into circular single-turn grooves.

[0018] The technical result is also achieved due to the method of rotation of the spinner toy described above, including imparting rotation to the rotating element with the centrally installed means of rotation, according to the invention, the rotation movement of the rotating element is imparted without interrupting the use of the spinner toy by the user by continuously maintaining its rotation by means of mechanical transformation of the reciprocating motion of the pusher of the means of rotation in the form of a ball bearing and screw converter into unidirectional rotational motion without slowdown of the rotating element.

[0019] The reciprocating motion of the pusher of the ball bearing and screw converter is performed by periodically pressing the spring-loaded top button cover of the ball bearing and screw converter, followed by the return of the pusher with the help of the spring to its original upper position, with simultaneously holding the spinner toy with a rotating element in the playing position between the user's fingers.

DESCRIPTION OF DRAWINGS

[0020] The essence of the invention is illustrated in drawings in Fig. 1-10.

3 EP 3 939 678 A1

4

it is removable and a spring is installed under it, one end of which is recessed in the blind cavity of the guide rod, and the other rests against the top cover-button, while the spring is made with the ability to return the pusher to its original upper position after the user has removed the load from the top cover-button when rotating the rotating element.

[0021] The disadvantage of the method - a prototype and a magnetic spinner toy based on it - is the use of a magnetoelectric drive as a means of rotation, since its implementation requires replaceable electric batteries or a battery that requires periodic replacement or recharging, which ties the user to a source of third-party electrical energy and complicates or makes it impossible to use the toy without an outside source of energy.

[0022] The rotating element has a shape similar to a flat disc and is rotatable about a central vertical axis that runs perpendicular to the flat surface of the disc.

[0023] The rotating element has the shape of a volumetric body, which is made with the possibility of rotation about a vertical axis passing through the center of gravity of the volumetric body.

[0024] On the inner surface of the body of the hollow sleeve, at least two helical grooves of a given profile are made, while their beginning and end are made turning into circular single-turn grooves.

[0025] The technical result is also achieved due to the method of rotation of the spinner toy described above, including imparting rotation to the rotating element with the centrally installed means of rotation, according to the invention, the rotation movement of the rotating element is imparted without interrupting the use of the spinner toy by the user by continuously maintaining its rotation by means of mechanical transformation of the reciprocating motion of the pusher of the means of rotation in the form of a ball bearing and screw converter into unidirectional rotational motion without slowdown of the rotating element.

[0026] The technical result of the invention is the autonomy of the spinner, regardless of an external energy source and an increase in the duration of rotation of a flat (planar) body without interrupting the spinner rotation cycle, which is limited only by the user's desire. The technical result of the invention is also the improvement of the playing qualities of the spinner toy due to the high technological effectiveness of the design, which is free from outside energy sources.

[0027] The technical result is achieved due to the fact that a spinner toy contains a rotating element of a predetermined shape with a centrally mounted means of rotation, which is mounted in the neutral hole of the rotating element, and the outer surface of the body of the means of rotation is attached to the rotating element; the top and lower button covers are connected to each other through the means of rotation and made with the possibility of holding them between the user's fingers, while the rotating element is provided with symmetrically placed and massive elements and is made with the possibility of free rotation around the central axis, according to the invention, the rotating element is made centrally balanced with respect to the central axis of rotation, and the means of rotation is made in the form of a ball bearing and screw converter of reciprocating motion into unidirectional rotational motion of a rotating element, while the body of the ball bearing and screw converter is a hollow sleeve, the inner surface of which is provided with a helical groove of a given profile, and in the lower end of the hollow sleeve a rotation bearing is mounted, closed lower cover-button and a guide rod upper end, is installed in the inner ring of the rotation bearing, the rod contains a blind cavity and is kinematically connected to the pusher, which is located on the upper end of the hollow sleeve and is made to slide along the guide rod, wherein the pusher is made in the form of a hollow cylinder, in the lower end of which a thrust bearing is installed, top cover-button is mounted in the upper end of the pusher cylinder,

[0028] The rotating element has a shape similar to a flat disc and is rotatable about a central vertical axis that runs perpendicular to the flat surface of the disc.

[0029] The rotating element has the shape of a volumetric body, which is made with the possibility of rotation about a vertical axis passing through the center of gravity of the volumetric body.

[0030] On the inner surface of the body of the hollow sleeve, at least two helical grooves of a given profile are made, while their beginning and end are made turning into circular single-turn grooves.

[0031] The technical result is also achieved due to the method of rotation of the spinner toy described above, including imparting rotation to the rotating element with the centrally installed means of rotation, according to the invention, the rotation movement of the rotating element is imparted without interrupting the use of the spinner toy by the user by continuously maintaining its rotation by means of mechanical transformation of the reciprocating motion of the pusher of the means of rotation in the form of a ball bearing and screw converter into unidirectional rotational motion without slowdown of the rotating element.

[0032] The technical result of the invention is the autonomy of the spinner, regardless of an external energy source and an increase in the duration of rotation of a flat (planar) body without interrupting the spinner rotation cycle, which is limited only by the user's desire. The technical result of the invention is also the improvement of the playing qualities of the spinner toy due to the high technological effectiveness of the design, which is free from outside energy sources.

[0033] The technical result is achieved due to the fact that a spinner toy contains a rotating element of a predetermined shape with a centrally mounted means of rotation, which is mounted in the neutral hole of the rotating element, and the outer surface of the body of the means of rotation is attached to the rotating element; the top and lower button covers are connected to each other through the means of rotation and made with the possibility of holding them between the user's fingers, while the rotating element is provided with symmetrically placed and massive elements and is made with the possibility of free rotation around the central axis, according to the invention, the rotating element is made centrally balanced with respect to the central axis of rotation, and the means of rotation is made in the form of a ball bearing and screw converter of reciprocating motion into unidirectional rotational motion of a rotating element, while the body of the ball bearing and screw converter is a hollow sleeve, the inner surface of which is provided with a helical groove of a given profile, and in the lower end of the hollow sleeve a rotation bearing is mounted, closed lower cover-button and a guide rod upper end, is installed in the inner ring of the rotation bearing, the rod contains a blind cavity and is kinematically connected to the pusher, which is located on the upper end of the hollow sleeve and is made to slide along the guide rod, wherein the pusher is made in the form of a hollow cylinder, in the lower end of which a thrust bearing is installed, top cover-button is mounted in the upper end of the pusher cylinder,

[0034] The rotating element has a shape similar to a flat disc and is rotatable about a central vertical axis that runs perpendicular to the flat surface of the disc.

[0035] The rotating element has the shape of a volumetric body, which is made with the possibility of rotation about a vertical axis passing through the center of gravity of the volumetric body.

[0036] On the inner surface of the body of the hollow sleeve, at least two helical grooves of a given profile are made, while their beginning and end are made turning into circular single-turn grooves.

[0037] The technical result is also achieved due to the method of rotation of the spinner toy described above, including imparting rotation to the rotating element with the centrally installed means of rotation, according to the invention, the rotation movement of the rotating element is imparted without interrupting the use of the spinner toy by the user by continuously maintaining its rotation by means of mechanical transformation of the reciprocating motion of the pusher of the means of rotation in the form of a ball bearing and screw converter into unidirectional rotational motion without slowdown of the rotating element.

[0038] The technical result of the invention is the autonomy of the spinner, regardless of an external energy source and an increase in the duration of rotation of a flat (planar) body without interrupting the spinner rotation cycle, which is limited only by the user's desire. The technical result of the invention is also the improvement of the playing qualities of the spinner toy due to the high technological effectiveness of the design, which is free from outside energy sources.

[0039] The technical result is achieved due to the fact that a spinner toy contains a rotating element of a predetermined shape with a centrally mounted means of rotation, which is mounted in the neutral hole of the rotating element, and the outer surface of the body of the means of rotation is attached to the rotating element; the top and lower button covers are connected to each other through the means of rotation and made with the possibility of holding them between the user's fingers, while the rotating element is provided with symmetrically placed and massive elements and is made with the possibility of free rotation around the central axis, according to the invention, the rotating element is made centrally balanced with respect to the central axis of rotation, and the means of rotation is made in the form of a ball bearing and screw converter of reciprocating motion into unidirectional rotational motion of a rotating element, while the body of the ball bearing and screw converter is a hollow sleeve, the inner surface of which is provided with a helical groove of a given profile, and in the lower end of the hollow sleeve a rotation bearing is mounted, closed lower cover-button and a guide rod upper end, is installed in the inner ring of the rotation bearing, the rod contains a blind cavity and is kinematically connected to the pusher, which is located on the upper end of the hollow sleeve and is made to slide along the guide rod, wherein the pusher is made in the form of a hollow cylinder, in the lower end of which a thrust bearing is installed, top cover-button is mounted in the upper end of the pusher cylinder,

[0040] The rotating element has a shape similar to a flat disc and is rotatable about a central vertical axis that runs perpendicular to the flat surface of the disc.

[0041] The rotating element has the shape of a volumetric body, which is made with the possibility of rotation about a vertical axis passing through the center of gravity of the volumetric body.

[0042] On the inner surface of the body of the hollow sleeve, at least two helical grooves of a given profile are made, while their beginning and end are made turning into circular single-turn grooves.

Structure of EU Patents - EPO

Fig. 6 is a spinner toy with a rotating element in the form of a flat body.

Fig. 7 and 8 are spinner toys with barrel-shaped and cylindrical rotating elements, respectively.

Fig. 9 is a longitudinal sectional view of a spinner toy with a ballbearing and screw converter of reciprocating motion into unidirectional rotational motion of a rotating element with helical grooves on the pusher.

Fig. 10 is a fragment of a longitudinal section of a spinner toy with a thrust sliding bearing.

DETAILED DESCRIPTION

[0021] The spinner toy includes a rotating element 1 with a central hole 3, a central axis of rotation 9 and massive elements 8, means of rotation 2 in the form of a ball bearing and screw converter 10 of reciprocating motion into unidirectional rotational motion of the rotating element 1; the ball bearing and screw converter 10 contains a housing 5 in the form of a hollow sleeve 11 with an outer surface 4, a removable top 6 button cover in the upper end of the pusher 19 cylinder and a lower 7 button cover, which are connected to each other through a means of rotation 2; the hollow sleeve 11 is provided with helical grooves 12 of a given profile on the inner surface, turning into circular single-turn grooves 30, and a rotation bearing 14 and a lower 7 button cover are installed on the lower end 21 of the pusher 19; the rotation bearing 14 is in the inner 15 ring contains a guide rod 16 with a blind cavity 18 in the upper end 17, which is connected with a pusher 19 located on the upper 20 end of the hollow sleeve 11; the pusher 19 in the lower end 21 contains a thrust ball bearing 22 with a thrust washer 23 attached to the lower end 21 of the pusher 19; the thrust ball bearing 22 includes a separator 24 with an oblique wedge-shaped cutout 31 and the thrust bearing 22 is placed in the sleeve 11 (see Fig. 9). Both in the first and in the second case, the ball bearing and screw converter 10 of reciprocating motion into unidirectional rotational motion of the rotating element 1 is possible, when the screw grooves 12 are made on the surface of the pusher 19, and the thrust bearing 22 is placed in the sleeve 11 (see Fig. 9).

[0022] When holding the top 6 button cover after pressing in the lower position, the ball 26 takes a stable position in the grooves 12 of the sleeve 11 and rolls freely along the semicircular groove 33 of the intermediate washer 28 and along the semicircular groove 35 of the pusher 19. Free rolling of the ball 26 due to the low rolling friction value, has a minimal slowdown effect on the sleeve 11, which contributes to the long-term rotation of element 1, which is also supported by the moment of inertia of massive elements 8 located symmetrically to the axis of rotation 9 at the periphery of the rotating element 1. When released after pressing the top 6 button cover, the spring 29 returns pusher 19 to its original position, which, through the thrust ball bearing 22, moves the ball 26 along the helical grooves 12 of the sleeve 11, while the rotating sleeve 11 rotates the ball 26 about the axis of rotation 9 of the rotating element 1. The rotation of the ball 26 in the thrust bearing 22 causes the intermediate washer 28 to rotate and the ball 27, which rolls over the thrust washer 23, exerting minimal impact on it and does not transfer rotation to it. Thus, the support ball bearing 22 prevents the rotation of the pusher 19 and the button cover 6. After the pusher 19 returns to its original upper position, the process is repeated, as in the case of holding the top button cover 6.

[0023] The invention is implemented as follows.

[0024] For a specialist it is obvious that the thrust ball bearing 22 can be replaced with a sleeve bearing (see Fig. 10), while instead of a ball and a separator, a slide washer 37 is used, and an intermediate washer 36 is made without semicircular grooves, while the rolling friction in the bearing is replaced by sliding friction.

[0025] Also, it is clear to the specialist that a variant of the design of the ball bearing and screw converter 10 of reciprocating motion into unidirectional rotational motion of the rotating element 1 is possible, when the screw grooves 12 are made on the surface of the pusher 19, and the thrust bearing 22 is placed in the sleeve 11 (see Fig. 9). Both in the first and in the second case, the ball bearing and screw converter 10 of reciprocating motion into unidirectional rotational motion of the rotating element 1 is possible, when the screw grooves 12 are made on the surface of the pusher 19, and the thrust bearing 22 is placed in the sleeve 11 (see Fig. 9).

[0026] Also, it is clear to the specialist that a variant of the design of the ball bearing and screw converter 10 of reciprocating motion into unidirectional rotational motion of the rotating element 1 is possible, when the screw grooves 12 are made on the surface of the pusher 19, and the thrust bearing 22 is placed in the sleeve 11 (see Fig. 9).

[0027] When holding the top 6 button cover after pressing in the lower position, the ball 26 takes a stable position in the grooves 12 of the sleeve 11 and rolls freely along the semicircular groove 33 of the intermediate washer 28 and along the semicircular groove 35 of the pusher 19. Free rolling of the ball 26 due to the low rolling friction value, has a minimal slowdown effect on the sleeve 11, which contributes to the long-term rotation of element 1, which is also supported by the moment of inertia of massive elements 8 located symmetrically to the axis of rotation 9 at the periphery of the rotating element 1. When released after pressing the top 6 button cover, the spring 29 returns pusher 19 to its original position, which, through the thrust ball bearing 22, moves the ball 26 along the helical grooves 12 of the sleeve 11, while the rotating sleeve 11 rotates the ball 26 about the axis of rotation 9 of the rotating element 1. The rotation of the ball 26 in the thrust bearing 22 causes the intermediate washer 28 to rotate and the ball 27, which rolls over the thrust washer 23, exerting minimal impact on it and does not transfer rotation to it. Thus, the support ball bearing 22 prevents the rotation of the pusher 19 and the button cover 6. After the pusher 19 returns to its original upper position, the process is repeated, as in the case of holding the top button cover 6.

[0028] The method of rotation of the spinner toy is implemented as follows. The top 6 button cover and the bottom 7 button cover of the ball bearing and screw converter 10 of the means of rotation 2 of the spinner toy are squeezed between user's fingers, and by pressing the top 6 button cover the pusher 19 is driven in reciprocating motion, which is located on the upper 20 end face of the hollow sleeve 11 and is designed to slide along the guide rod 16. After removing the load, the spring 29 each time

returns the pusher 19 to the upper initial position, while the user simultaneously holds the spinner toy with the rotating element 1 in the play position (not shown in the drawing) and provides a unidirectional rotational motion to the rotating element 1 due to the mechanical transformation of the reciprocating motion of the pusher 19 along the guide rod 16 of the ball bearing and screw converter 10, which is installed coaxially with the axis of rotation 9 of the rotating element 1 in the rotational movement of the latter. Continuity of rotation without slowing down the rotating element 1 is achieved by periodically, as necessary, pressing the pusher 19 through the spring-loaded top 6 button cover of the ball bearing and screw converter 10, by returning the pusher 19 to its original upper position by the spring 29. When the pusher 19 moves to the lower position, the ball 26 moves along the axis of the sleeve 11, while the ball 26 rolls along the helical grooves 12 and drives the sleeve 11 into rotation, connected through the outer surface 4 by a tight fit with the body 5 of the ball bearing and screw converter 10, thereby imparting a torque to the rotating element 1 with massive elements 8 located symmetrically to the axis of rotation 9 at the periphery of the rotating element 1.

[0029] When holding the top 6 button cover after pressing in the lower position, the ball 26 takes a stable position in the grooves 12 of the sleeve 11 and rolls freely along the semicircular groove 33 of the intermediate washer 28 and along the semicircular groove 35 of the pusher 19. Free rolling of the ball 26 due to the low rolling friction value, has a minimal slowdown effect on the sleeve 11, which contributes to the long-term rotation of element 1, which is also supported by the moment of inertia of massive elements 8 located symmetrically to the axis of rotation 9 at the periphery of the rotating element 1. When released after pressing the top 6 button cover, the spring 29 returns pusher 19 to its original position, which, through the thrust ball bearing 22, moves the ball 26 along the helical grooves 12 of the sleeve 11, while the rotating sleeve 11 rotates the ball 26 about the axis of rotation 9 of the rotating element 1. The rotation of the ball 26 in the thrust bearing 22 causes the intermediate washer 28 to rotate and the ball 27, which rolls over the thrust washer 23, exerting minimal impact on it and does not transfer rotation to it. Thus, the support ball bearing 22 prevents the rotation of the pusher 19 and the button cover 6. After the pusher 19 returns to its original upper position, the process is repeated, as in the case of holding the top button cover 6.

REFERENCES

[0028]

1. TW No. M551522, 11.11.2017.
2. CN No. 107754323, 06.03.2018.
3. JP No. 3212430, 07.09.2017.

3. The spinner toy according to claim 1, characterized in that the rotating element (1) has the shape of a volumetric body, which is configured to rotate about a vertical axis passing through the center of gravity of the volumetric body.

4. The spinner toy according to claim 1, characterized in that at least two screw grooves (12) of a given profile are made on the inner surface of the body (5) of the hollow sleeve (11), while their beginning and end are made turning into circular single turn grooves (30).

5. A method of rotating a spinner toy according to claim 1 of the formula, comprising imparting rotation to a rotating element (1) with a centrally installed means of rotation (2), characterized in that the rotation movement to the rotating element (1) is imparted without interrupting the use of the spinner toy by the user by continuously maintaining its rotation by means of mechanical transformation of the reciprocating motion of the pusher (19) of the means of rotation (2) in the form of a ball bearing and screw converter (10) into unidirectional rotational motion without slowing down the rotating element (1).

6. The method of rotation of the spinner toy according to claim 5, characterized in that the reciprocating motion of the pusher (19) of the ball bearing and screw converter (10) is performed by periodically pressing the spring-loaded top (6) button cover of the ball bearing and screw converter (10), followed by the return of the pusher (19) by the spring (29) to the initial upper position, while simultaneously holding the spinner toy with the rotating element (1) in the play position between the user's fingers.

Structure of EU Patents - EPO

EP 3 939 678 A1

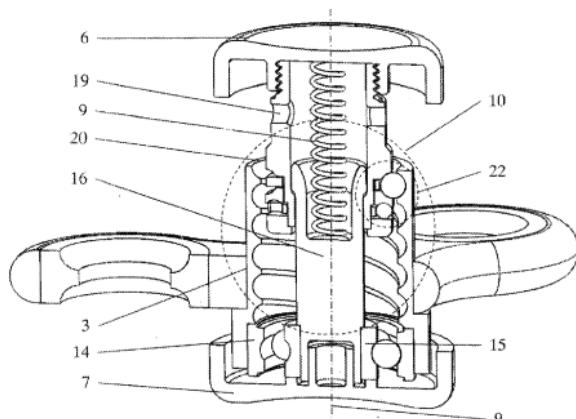


Fig. 1

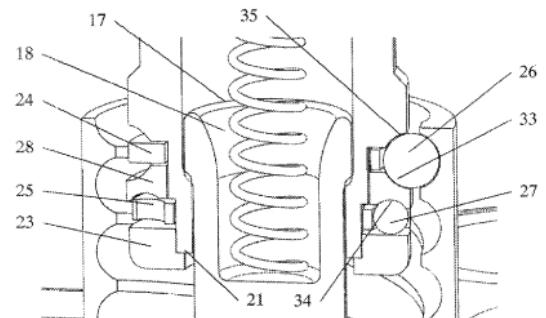


Fig. 2

EP 3 939 678 A1

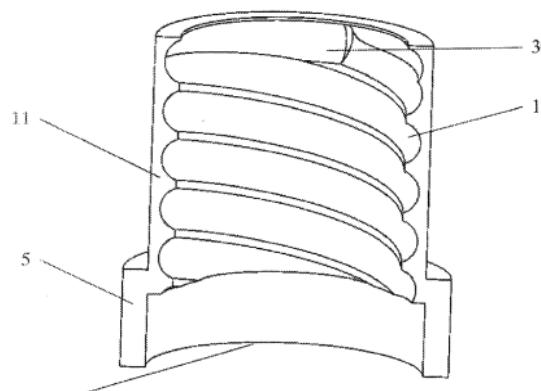


Fig. 3

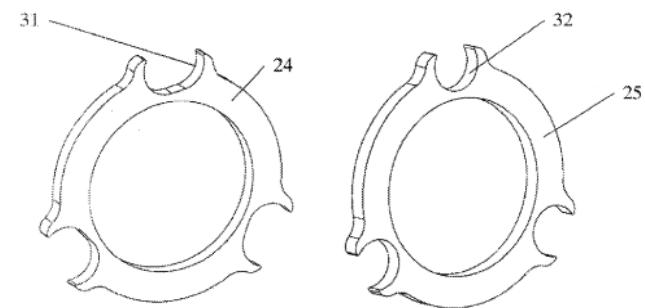


Fig. 4

Fig. 5

EP 3 939 678 A1

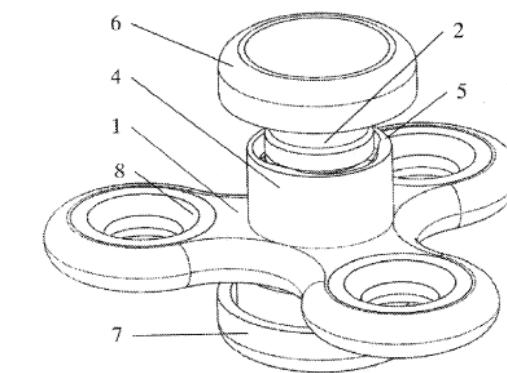


Fig. 6

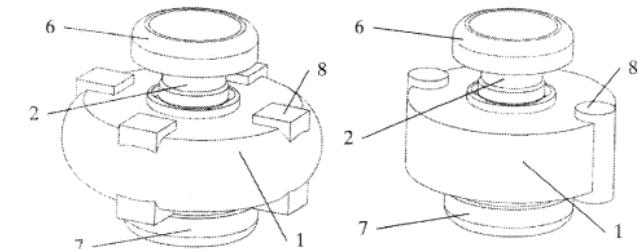


Fig. 7

Fig. 8

Structure of EU Patents - EPO

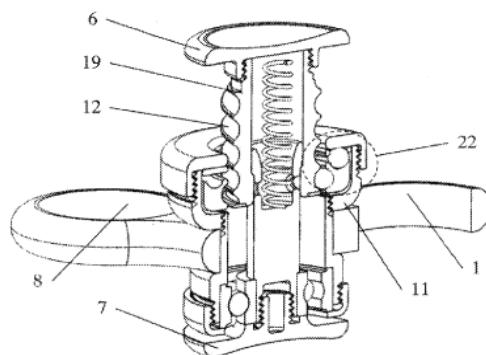


Fig. 9

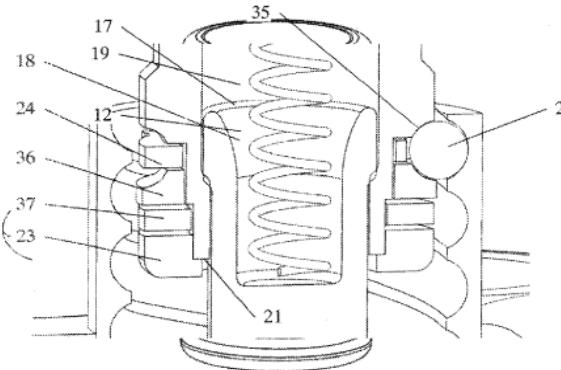


Fig. 10

INTERNATIONAL SEARCH REPORT

International application No.
PCT/BY 2020/000003

A.	CLASSIFICATION OF SUBJECT MATTER A63F 9/16 (2006.01) A63H1/00 (2019.01)	
B.	FIELDS SEARCHED Minimum documentation searched (classification system followed by classification symbols) A63F	
C.	Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched	
D.	Electronic data base consulted during the international search (name of data base and, where practicable, search terms used) Espacenet, PatSearch, PAJ, WIPO, USPTO, RUPTO	
E.	DOCUMENTS CONSIDERED TO BE RELEVANT	
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 5135425 A (ANDREWS MELVIN R; ANDREWS ROGER W) 04.08.1992	1-6
A	US 9914063 B1 (MCCOSKERY MICHAEL SCOTT et al.) 13.03.2018	1-6
A	US 2017326468 A1 (KINMONT JR RICHARD C et al.) 16.11.2017	1-6
A	CN 107638699 A (DONGGUAN DAVANTECH CO LTD) 30.01.2018	1-6

Further documents are listed in the continuation of Box C. See patent family annex.

* Special categories of cited documents:
 "A" document defining the general state of the art which is not considered to be of particular relevance;
 "E" earlier application or patent but published on or after the international filing date;
 "L" document which may disclose details on priority claim(s) or which is cited to establish the publication date of another citation or other special reasons as specified;
 "T" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step without the disclosure in this document;
 "C" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is relied upon to explain known physical effects of the claimed invention or to teach away from the claimed invention;
 "D" document referring to an oral disclosure, use, exhibition or other means;
 "P" document published prior to the international filing date but later than the priority date claimed. "A" document of the same patent family

Date of the actual completion of the international search: 14 May 2020 (14.05.2020) Date of mailing of the international search report: 21 May 2020 (21.05.2020)
 Name and mailing address of the ISA/ Authorized officer
 Facsimile No. Telephone No.

REFERENCES CITED IN THE DESCRIPTION

This list of references cited by the applicant is for the reader's convenience only. It does not form part of the European patent document. Even though great care has been taken in compiling the references, errors or omissions cannot be excluded and the EPO disclaims all liability in this regard.

Patent documents cited in the description

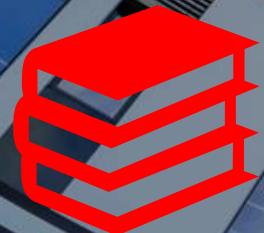
- TW M551522 [0028]
- TW 11112017 [0028]
- CN 107754323 [0028]
- CN 06032018 [0028]
- US 9895620 B [0028]
- US 99114063 B [0028]
- JP 3212430 B [0028]
- JP 07092017 B [0028]
- CN 107638699 [0028]

Structure of EU Patents - EPO

- What are the citations? How do they work?



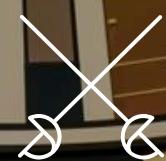
Strategic



Prior Art



Cite but not
too much



Legal
Representant vs
Patent Examiner

Structure of EU Patents - EPO

- X - Not new or is obvious in light of this prior art.

Document Title: Foldable Electronic Device with Flexible Screen

Relevance: This document describes a foldable electronic device, very similar to the claimed smartphone invention, which includes a flexible screen that can be folded without damage.

Impact on Patentability: The X citation directly challenges the novelty of the smartphone invention. Since it describes a very similar technology, it can be argued that the claimed invention is not new or is obvious in light of this prior art.

- A – Found documents that form technological **background** but are **not relevant to the novelty**.

Document Title: Overview of Quantum Computing Technology

Relevance: This document provides a comprehensive background on quantum computing technology, discussing various techniques and advancements in the field.

Impact on Patentability: The A citation does not directly challenge the patentability of the new encryption method. Instead, it serves as background information, establishing the state of the art in quantum computing.

Structure of EU Patents - Claims

- Y – Found documents that are relevant to the novelty or inventive step of a claim but do not directly challenge its patentability.

Document Title: An autonomous drone capable of weather prediction.

Relevance: This document discusses the integration of existing weather prediction models into drone technology, focusing on how these models can enhance the functionality of drones for various applications, including agriculture and search and rescue operations.

Impact on Patentability: The Y citation is pertinent to the claim.

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 5135425 A (ANDREWS MELVIN R; ANDREWS ROGER W) 04.08.1992	1-6
A	US 9914063 B1 (MCCOSKERY MICHAEL SCOTT et al.) 13.03.2018	1-6
A	US 2017326468 A1 (KINMONT JR RICHARD C et al.) 16.11.2017	1-6
A	CN 107638699 A (DONGGUAN DAVANTECH CO LTD) 30.01.2018	1-6

Further documents are listed in the continuation of Rev. C

See patent family annex

excluded and the EPO disclaims all liability in this regard.

Patent documents cited in the description

- TW M551522 [0028]
- TW 11112017 [0028]
- CN 107754323 [0028]
- CN 06032018 [0028]
- JP 3212430 B [0028]
- JP 07092017 B [0028]
- CN 107638699 [0028]
- US 9895620 B [0028]
- US 99114063 B [0028]
- US 5135425 A [0028]

Structure of EU Patents - EPO

Types of Claims

- **Independent Claims:** These stand on their own and do not refer to any other claims. They broadly define the invention.
- **Dependent Claims:** These refer back to an independent claim or another dependent claim. They further narrow the scope defined by the independent claim they depend on, often adding specific details or embodiments.



EUROPEAN SEARCH REPORT

Application Number

EP 18 21 4053

DOCUMENTS CONSIDERED TO BE RELEVANT		Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
Category	Citation of document with indication, where appropriate, of relevant passages		
X	EP 1 351 172 A1 (SHIMA SEIKI MFG [JP]) 8 October 2003 (2003-10-08) * paragraph [0027] - paragraph [0028] * * paragraph [0060] * * paragraph [0070] - paragraph [0074] * -----	1, 3-9 2	INV. G06K9/00 G06Q30/06
Y			TECHNICAL FIELDS SEARCHED (IPC)
			G06K

Figure 1: In this excerpt from a search report, a patent examiner cites paragraph numbers of the published patent document EP1351172A1 for assessing the novelty of claim 1 and 3-9 of application EP18214053.

The most common categories within the European Patent Office:

A1: Published application with search report

A2: Published application without search report

A3: Search report

B1: Granted patent (in the case of EPO, it signifies that the patent has been granted with a search report)

B2: Granted patent (in the case of EPO, it signifies that the patent has been granted without a new search report, often after a limitation procedure)

Kinds/Status of Publications

A	HUMAN NEEDSIES
B	PERFORMING OPERATIONS; TRANSPORTING
C	CHEMISTRY; METALLURGY
D	TEXTILES; PAPER
E	FIXED CONSTRUCTIONS
F	MECHANICAL ENGINEERING; LIGHTING; HEATING; WEAPONS; BLASTING
G	PHYSICS
H	ELECTRICITY

A	HUMAN NEEDSIES
A01	AGRICULTURE
A21	AGRICULTURE; FORESTRY; ANIMAL HUSBANDRY; HUNTING; TRAPPING; FISHING FOODSTUFFS; TOBACCO
A22	BAKING; EQUIPMENT FOR MAKING OR PROCESSING DOUGHS; DOUGHS FOR BAKING [2006.01]
A23	BUTCHERING; MEAT TREATMENT; PROCESSING POULTRY OR FISH
A24	FOODS OR FOODSTUFFS; TREATMENT THEREOF, NOT COVERED BY OTHER CLASSES
A24	TOBACCO; CIGARS; CIGARETTES; SIMULATED SMOKING DEVICES; SMOKERS' REQUISITES
A41	PERSONAL OR DOMESTIC ARTICLES
A42	WEARING APPAREL
A43	HEADWEAR
A44	FOOTWEAR
A45	HABERDASHERY; JEWELLERY
A46	HAND OR TRAVELLING ARTICLES
A47	BRUSHWARE
A47	FURNITURE; DOMESTIC ARTICLES OR APPLIANCES; COFFEE MILLS; SPICE MILLS; SUCTION CLEANERS IN GENERAL
A61	HEALTH; LIFE-SAVING; AMUSEMENT
A62	MEDICAL OR VETERINARY SCIENCE; HYGIENE
A63	LIFE-SAVING; FIRE-FIGHTING
A63	SPORTS; GAMES; AMUSEMENTS
A99	SUBJECT MATTER NOT OTHERWISE PROVIDED FOR IN THIS SECTION [2006.01]
B	PERFORMING OPERATIONS; TRANSPORTING
C	CHEMISTRY; METALLURGY
D	TEXTILES; PAPER
E	FIXED CONSTRUCTIONS
F	MECHANICAL ENGINEERING; LIGHTING; HEATING; WEAPONS; BLASTING
G	PHYSICS
H	ELECTRICITY

A	HUMAN NEEDSIES
A01	AGRICULTURE
A01	AGRICULTURE; FORESTRY; ANIMAL HUSBANDRY; HUNTING; TRAPPING; FISHING
A01	Definitions
A01B	SOIL WORKING IN AGRICULTURE OR FORESTRY; PARTS, DETAILS, OR ACCESSORIES OF AGRICULTURAL MACHINES OR IMPLEMENTS, IN GENERAL (making or covering furrows or soil working apparatus or capable of soil working A01D 42/04; mowers combined with soil working implements A01D 43/12; soil working for engineering purposes E01, E02, E21)
A01C	PLANTING; SOWING; FERTILISING (parts, details or accessories of agricultural machines or implements, in general A01B 51/00-A01B 75/00)
A01D	HARVESTING; MOWING
A01F	THRESHING (combines A01D 41/00); BALING OF STRAW, HAY OR THE LIKE; STATIONARY APPARATUS OR HAND TOOLS FOR FORMING OR BINDING STRAW, HAY OR THE LIKE INTO HORTICULTURAL PRODUCE (arrangements for making or setting stacks in connection with harvesting A01D 85/00)
A01G	HORTICULTURE; CULTIVATION OF VEGETABLES, FLOWERS, RICE, FRUIT, VINES, HOPS OR SEAWEED; FORESTRY; WATERING (picking of fruits, vegetables, hops or the like A01D 46/00; p
A01H	NEW PLANTS OR PROCESSES FOR OBTAINING THEM; PLANT REPRODUCTION BY TISSUE CULTURE TECHNIQUES [5]
A01J	MANUFACTURE OF DAIRY PRODUCTS (for chemical matters, see subclass A23C)
A01K	ANIMAL HUSBANDRY; AVICULTURE; APICULTURE; PISCICULTURE; FISHING; REARING OR BREEDING ANIMALS, NOT OTHERWISE PROVIDED FOR; NEW BREEDS OF ANIMALS
A01L	SHOEING OF ANIMALS
A01M	CATCHING, TRAPPING OR SCARING OF ANIMALS (appliances for catching swarms or drone-catching A01K 57/00; fishing A01K 69/00-A01K 97/00; biocides, pest repellants or attractants A01N; APPA
A01N	PRESERVATION OF BODIES OF HUMANS OR ANIMALS OR PLANTS OR PARTS THEREOF (preservation of food or foodstuff A23); BIOCIDES, e.g. AS DISINFECTANTS, AS PESTICIDES OR PEST-CONTROLLING AGENTS (including repellants or attractants A61K); PEST REPELLENTS OR ATTRACTANTS; PLANT GROWTH REGULATORS
A01P	BIOCIDAL, PEST-REPELANT, PEST ATTRACTANT OR PLANT GROWTH REGULATORY ACTIVITY OF CHEMICAL COMPOUNDS OR PREPARATIONS [2006.01]
FOODSTUFFS; TOBACCO	FOODSTUFFS; TOBACCO
A21	BAKING; EQUIPMENT FOR MAKING OR PROCESSING DOUGHS; DOUGHS FOR BAKING [2006.01]
A22	BUTCHERING; MEAT TREATMENT; PROCESSING POULTRY OR FISH
A23	FOODS OR FOODSTUFFS; TREATMENT THEREOF, NOT COVERED BY OTHER CLASSES
A24	TOBACCO; CIGARS; CIGARETTES; SIMULATED SMOKING DEVICES; SMOKERS' REQUISITES

A	HUMAN NEEDSIES
A01	AGRICULTURE
A01	AGRICULTURE; FORESTRY; ANIMAL HUSBANDRY; HUNTING; TRAPPING; FISHING
A01	Definitions
A01B	SOIL WORKING IN AGRICULTURE OR FORESTRY; PARTS, DETAILS, OR ACCESSORIES OF AGRICULTURAL MACHINES OR IMPLEMENTS, IN GENERAL (making or covering furrows or soil working apparatus or capable of soil working A01D 42/04; mowers combined with soil working implements A01D 43/12; soil working for engineering purposes E01, E02, E21)
A01B 1/00	Hand tools (edge trimmers for lawns A01G 3/06) [2006.01]
A01B 1/00	<u>Ploughs</u>
A01B 3/00	Ploughs with fixed plough-shares [2006.01]
A01B 5/00	Ploughs with rolling non-driven tools, e.g. discs (with rotary driven tools A01B 9/00) [2006.01]
A01B 7/00	Disc-like soil-working implements usable either as ploughs or as harrows, or the like [2006.01]
A01B 9/00	Ploughs with rotary driven tools (tiling implements with rotary driven tools A01B 33/00) [2006.01]
A01B 11/00	Ploughs with oscillating, digging or piercing tools [2006.01]
A01B 13/00	Ploughs or like machines for special purposes (for drainage E02B 11/02) [2006.01]
A01B 15/00	Elements, tools, or details of ploughs [2006.01]
A01B 17/00	Ploughs with special additional arrangements, e.g. means for putting manure under the soil, clod-crushers (A01B 49/00 takes precedence); Harrows

International Patent Classification (IPC)

-

A

HUMAN NECESSITIES

AGRICULTURE

D	-	A01	AGRICULTURE; FORESTRY; ANIMAL HUSBANDRY; HUNTING; TRAPPING; FISHING
	+		Definitions
D	A	-	A01B
			SOIL WORKING IN AGRICULTURE OR FORESTRY; PARTS, DETAILS, OR ACCESSORIES OF AGRICULTURAL MACHINES OR IMPLEMENTS; SOIL WORKING APPARATUS OR CAPABLE OF SOIL WORKING
			soil working apparatus or capable of soil working A01D 42/04; mowers combined with soil working implements A01D 43/12; soil working for engineering purposes A01G 11/00
	+	A01B 1/00	Hand tools (edge trimmers for lawns A01G 3/06) [2006.01]
			<u>Ploughs</u>
	+	A01B 3/00	Ploughs with fixed plough-shares [2006.01]
	+	A01B 5/00	Ploughs with rolling non-driven tools, e.g. discs (with rotary driven tools A01B 9/00) [2006.01]
		A01B 7/00	Disc-like soil-working implements usable either as ploughs or as harrows, or the like [2006.01]
		A01B 9/00	Ploughs with rotary driven tools (tilling implements with rotary driven tools A01B 33/00) [2006.01]
		A01B 11/00	Ploughs with oscillating, digging or piercing tools [2006.01]
	+	A01B 13/00	Ploughs or like machines for special purposes (for drainage E02B 11/02) [2006.01]
	+	A01B 15/00	Elements, tools, or details of ploughs [2006.01]
		A01B 17/00	Ploughs with special additional arrangements, e.g. means for putting manure under the soil, clod-crushers (A01B 49/00 takes precedence; for agricultural vehicles A01C 11/00)
			Harrows

Cooperative Patent Classification (CPC)

PatentMatch Dataset

- What is the PatentMatch Dataset?



Claims from patent applications



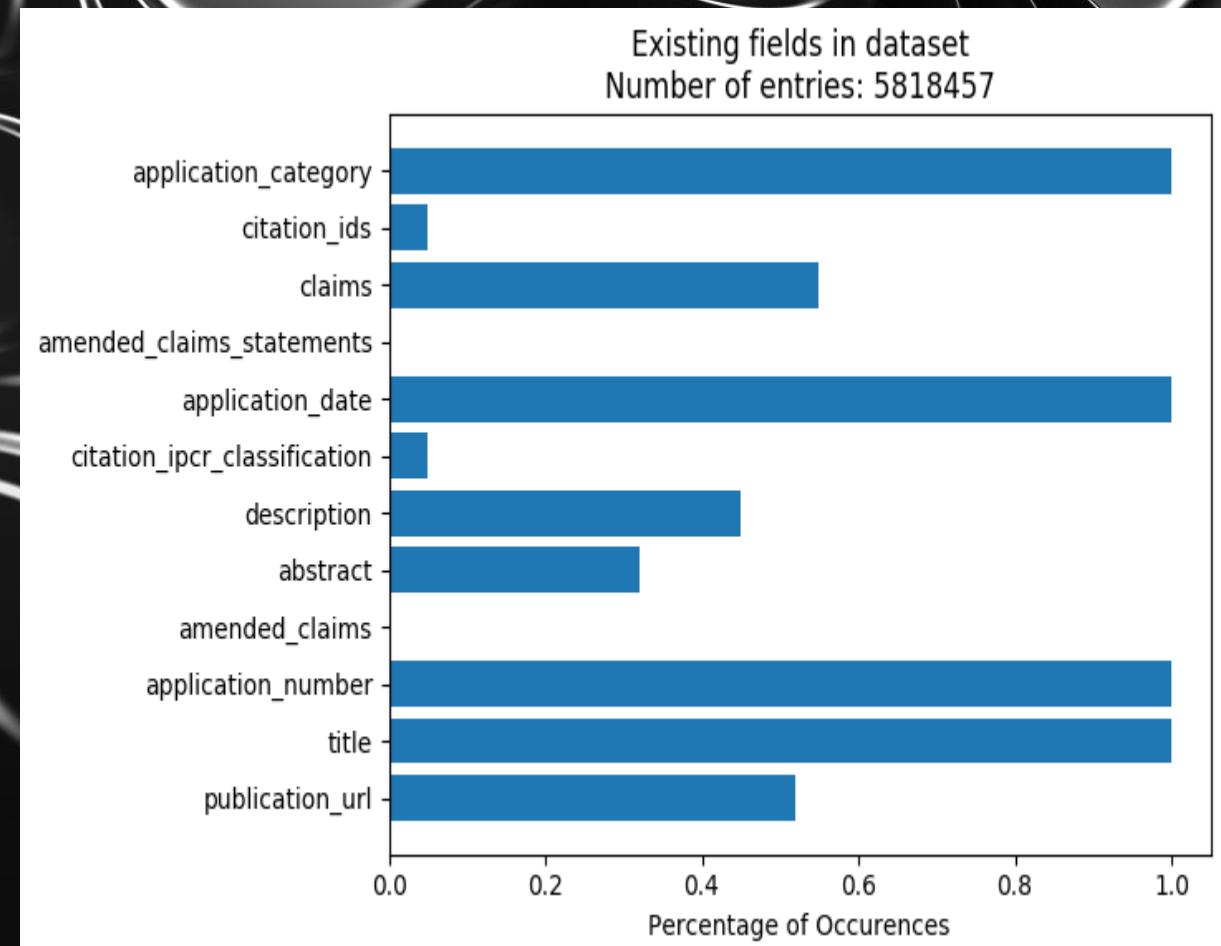
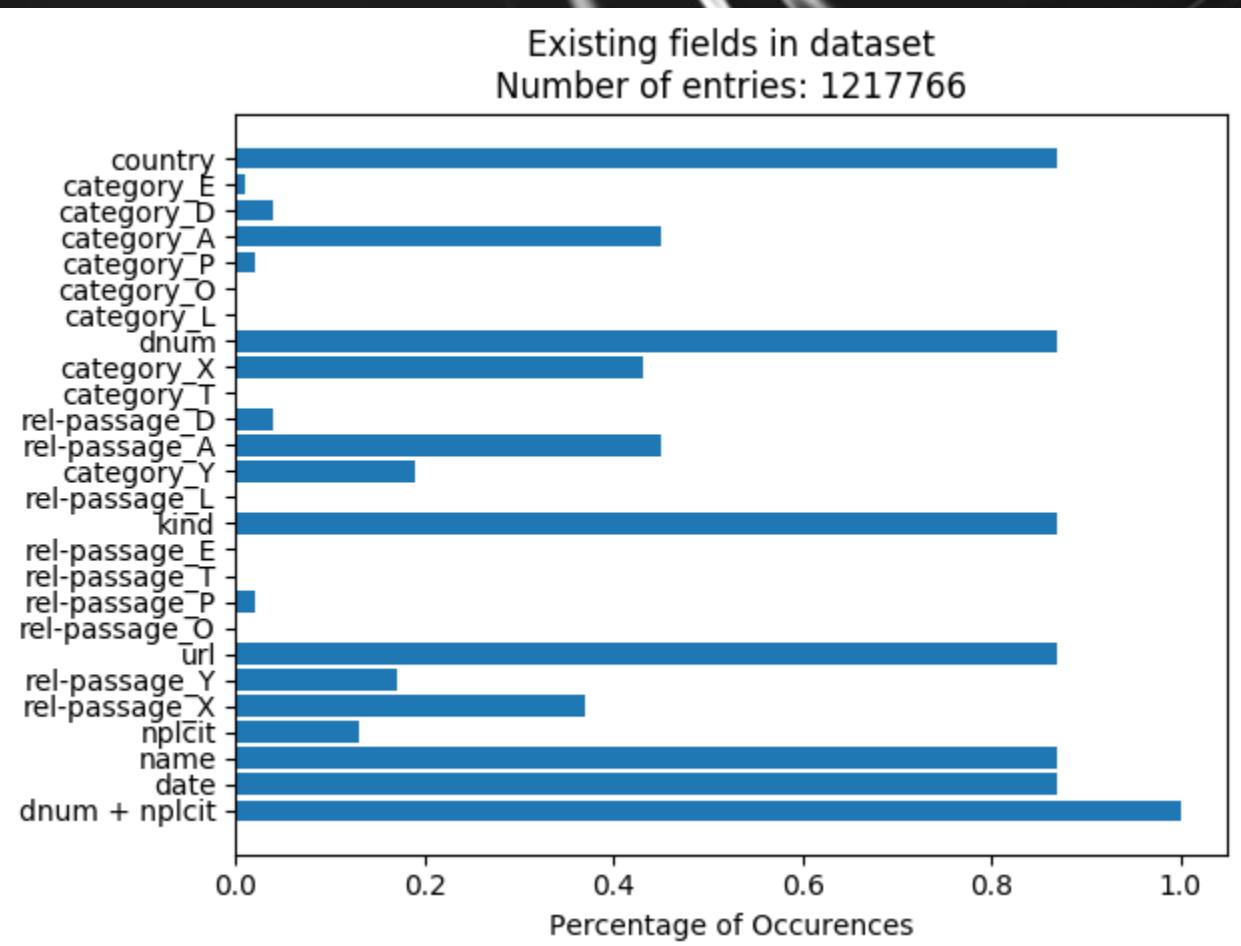
Paragraphs from prior art

Refers to anything related to your invention idea that has been made public before your patent application

Descriptions of inventions and what makes them unique

PatentMatch Statistics

- 40 txt files (each ~5Gb)

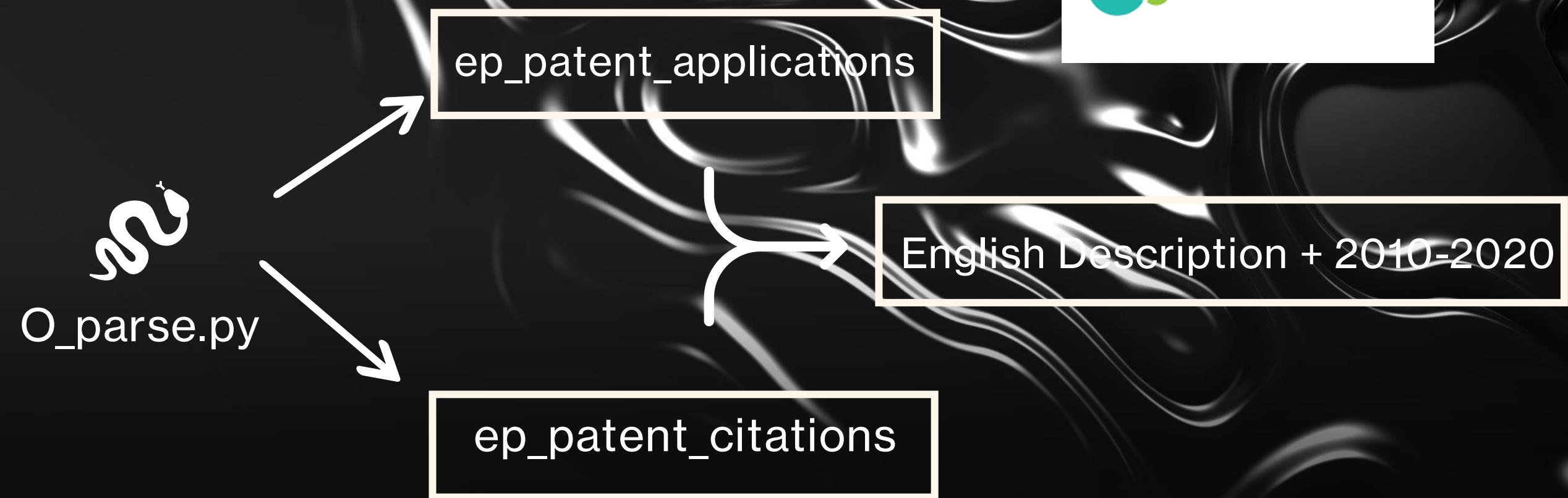


Data File - Example

ter > ep-fulltext-for-text-analytics > EP0000000.txt

1	EP	0051309	B2	2000-12-06	de	TITLE	1	Fenster	
2	EP	0051309	B2	2000-12-06	en	TITLE	1	Window	
3	EP	0051309	B2	2000-12-06	fr	TITLE	1	Fenêtre	
4	EP	0051309	B2	2000-12-06	de	DESCR	1	<p id="p0001" num="0001">Die Erfindung betrifft eine Mehrzahl von Grundbauarten von Fenstern oder dergleichen, umfassend einen Blendrahmen (2010),	
5	EP	0051309	B2	2000-12-06	de	CLAIM	1	<claim id="c-de-01-0001" num="0001"><claim-text>Fenster oder dergleichen, umfassend einen Blendrahmen (2010),	
6	EP	0051309	B2	2000-12-06	en	CLAIM	2	<claim id="c-en-01-0001" num="0001"><claim-text>A window or the like, comprising a window frame (2010),	
7	EP	0051309	B2	2000-12-06	fr	CLAIM	3	<claim id="c-fr-01-0001" num="0001"><claim-text>Fenêtre ou similaire comportant un châssis dormant (2010),	
8	EP	0051309	B2	2000-12-06	de	PDFEP	1	https://data.epo.org/publication-server/pdf-document?cc=EP&pn=0051309&ki=B2&pd=2000-12-06	
9	EP	0092898	B2	2000-02-09	de	TITLE	1	Verfahren zum Umschmelzen von Polyamiden	
10	EP	0092898	B2	2000-02-09	en	TITLE	1	Process for remelting polyamides	
11	EP	0092898	B2	2000-02-09	fr	TITLE	1	Procédé pour refondre des polyamides	
12	EP	0092898	B2	2000-02-09	en	DESCR	1	<p id="p0001" num="0001">This invention relates to a process for melting polyamide polymer.</p><p id="p0002" num="0002">The invention relates to a process for the production of a shaped article from a	
13	EP	0092898	B2	2000-02-09	en	CLAIM	1	<claim id="c-en-01-0001" num="0001"><claim-text>A process for the production of a shaped article from a	
14	EP	0092898	B2	2000-02-09	de	CLAIM	2	<claim id="c-de-01-0001" num="0001"><claim-text>Ein Verfahren zur Herstellung eines geformten Gegenstands aus einem	
15	EP	0092898	B2	2000-02-09	fr	CLAIM	3	<claim id="c-fr-01-0001" num="0001"><claim-text>Procédé pour la production d'un article façonné à partir d'un	
16	EP	0092898	B2	2000-02-09	en	PDFEP	1	https://data.epo.org/publication-server/pdf-document?cc=EP&pn=0092898&ki=B2&pd=2000-02-09	
17	EP	0098070	B2	2000-12-13	de	TITLE	1	Flüssigkristall-Vorrichtungen	
18	EP	0098070	B2	2000-12-13	en	TITLE	1	Liquid crystal devices	
19	EP	0098070	B2	2000-12-13	fr	TITLE	1	Dispositifs à cristal liquide	
20	EP	0098070	B2	2000-12-13	en	DESCR	1	<p id="p0001" num="0001">This invention relates to liquid crystal devices. Such devices typically comprise	
21	EP	0098070	B2	2000-12-13	en	CLAIM	1	<claim id="c-en-01-0001" num="0001"><claim-text>A liquid crystal device incorporating an amount of a pl	
22	EP	0098070	B2	2000-12-13	de	CLAIM	2	<claim id="c-de-01-0001" num="0001"><claim-text>Flüssigkristallvorrichtung, die eine Menge an einem ple	
23	EP	0098070	B2	2000-12-13	fr	CLAIM	3	<claim id="c-fr-01-0001" num="0001"><claim-text>Dispositif à cristaux liquides incorporant une certaine	
24	EP	0098070	B2	2000-12-13	en	PDFEP	1	https://data.epo.org/publication-server/pdf-document?cc=EP&pn=0098070&ki=B2&pd=2000-12-13	
25	EP	0098733	B2	2000-10-25	de	TITLE	1	Verfahren zur Behandlung von Eiern	
26	EP	0098733	B2	2000-10-25	en	TITLE	1	Egg processing system	
27	EP	0098733	B2	2000-10-25	fr	TITLE	1	Système de traitement des oeufs	
28	EP	0098733	B2	2000-10-25	en	DESCR	1	<p id="p0001" num="0001">This invention relates generally to an egg processing system in which eggs are	
29	EP	0098733	B2	2000-10-25	en	CLAIM	1	<claim id="c-en-01-0001" num="0001"><claim-text>An egg transfer apparatus comprising a first, continuous	

Data Extraction to ElasticSearch



ElasticVue for Index Analysis

Elasticvue default cluster ▾

HOME NODES SHARDS INDICES SEARCH REST SNAPSHOTS ⚙️

Indices

NEW INDEX Index templates Filter... ⚙️

<input type="checkbox"/>	Name	Health	Status	UUID	Aliases	Shards	Segments	Lucene docs	Storage	Actions
<input type="checkbox"/>	ep_patent_applications5	green	open	HBB7Af96T0-yGwMuoGLUfA	[]	1p 0r	39	1428046	72.9 GB	<input type="button"/> ⚙️
<input type="checkbox"/>	ep_patent_citations5	green	open	VtkvslW9fSAMUsb_GKRwVog	[]	1p 0r	17	1287385	310 MB	<input type="button"/> ⚙️

Records per page: 10 ▾ 1-2 of 2

BULK ACTION ▾

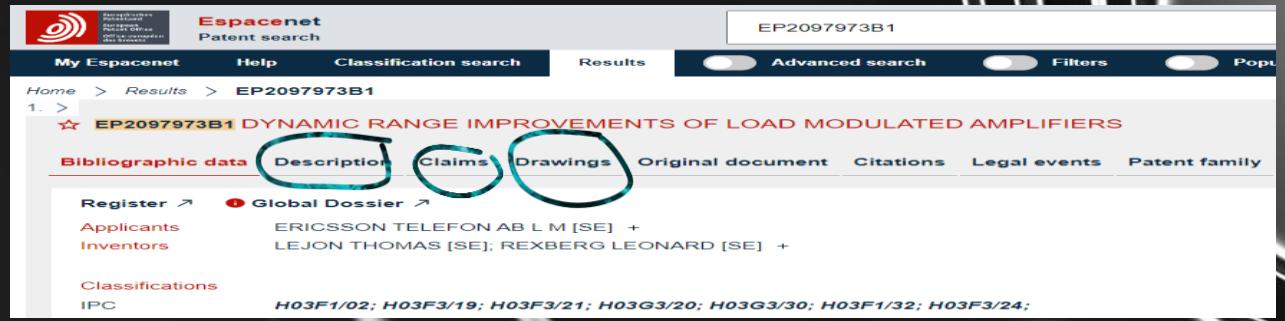


ElasticVue Insights – Patent Applications

ElasticVue default cluster ▾

HOME NODES SHARDS INDICES SEARCH REST SNAPSHTOS 

	_index	_type	_id	_score	application_number	application_category	application_date	title	description
□	ep_patent_applications5	_doc	2097973B12013-04-03	1	2097973	B1	2013-04-03	DYNAMIC RANGE IMPROVEMENTS OF LOAD MODULATED AMPLIFIERS	EPO <DP n="1"> --><heading id="h0001">TE
□	ep_patent_applications5	_doc	2027734B12013-04-10	1	2027734	B1	2013-04-10	METHOD IN A SCHEDULER FOR REDUCING INTER-CELL INTERFEREN...	EPO <DP n="1"> --><heading id="h0001">
□	ep_patent_applications5	_doc	2082550B12013-01-23	1	2082550	B1	2013-01-23	A method for limiting local bandwidth impairment using t...	EPO <DP n="1"> --><heading id="h0001">TE
□	ep_patent_applications5	_doc	2057081B12013-03-27	1	2057081	B1	2013-03-27	TWO-PIECE CONTAINER SEAL AND METHOD OF MANUFACTURE	EPO <DP n="1"> --><heading id="h0001">
□	ep_patent_applications5	_doc	2078325B12013-05-15	1	2078325	B1	2013-05-15	WAVEGUIDE-BASED WIRELESS DISTRIBUTION SYSTEM AND METHOD ...	EPO <DP n="1"> --><heading id="h0001">
□	ep_patent_applications5	_doc	2038699B12013-08-07	1	2038699	B1	2013-08-07	LIQUID CRYSTAL DISPLAY HAVING A FIELD EMISSION BACKLIGHT	EPO <DP n="1"> --><heading id="h0001">
□	ep_patent_applications5	_doc	2038909B12013-08-14	1	2038909	B1	2013-08-14	LIQUID CRYSTAL DISPLAY HAVING A FIELD EMISSION BACKLIGHT	EPO <DP n="1"> --><heading id="h0001">
□	ep_patent_applications5	_doc	2074309B12013-11-20	1	2074309	B1	2013-11-20	Nacelle assembly for a high-bypass gas turbine engine an...	EPO <DP n="1"> --><heading id="h0001">
□	ep_patent_applications5	_doc	2064433B12013-11-20	1	2064433	B1	2013-11-20	Gas turbine engine system and corresponding method for c...	EPO <DP n="1"> --><heading id="h0001">
□	ep_patent_applications5	_doc	2074320B12013-06-26	1	2074320	B1	2013-06-26	VARIABLE AREA FAN NOZZLE THRUST REVERSER	EPO <DP n="1"> --><heading id="h0001">
□	ep_patent_applications5	_doc	2084399B12013-12-11	1	2084399	B1	2013-12-11	COMPRESSOR SLIDE VALVE SUPPORT	EPO <DP n="1"> --><heading id="h0001">BA
□	ep_patent_applications5	_doc	2003821B12013-04-17	1	2003821	B1	2013-04-17	A STRATEGIC ROUTING DEVICE AND METHOD	EPO <DP n="1"> --><heading id="h0001">
□	ep_patent_applications5	_doc	2096801B12013-06-19	1	2096801	B1	2013-06-19	A UNITED ROUTE QUERY METHOD IN THE AUTOMATIC SWITCHED OP...	EPO <DP n="1"> --><heading id="h0001">
□	ep_patent_applications5	_doc	2085771B12013-09-11	1	2085771	B1	2013-09-11	METHOD AND DEVICE FOR SECURITY-INSPECTION OF LIQUID ARTI...	EPO <DP n="1"> --><heading id="h0001">
□	ep_patent_applications5	_doc	2073726B12013-06-05	1	2073726	B1	2013-06-05	DEVICE FOR INSTALLING FEMORAL PROSTHETIC KNEE JOINT	EPO <DP n="1"> --><p id="p0001" num="000
□	ep_patent_applications5	_doc	2089699B12013-05-22	1	2089699	B1	2013-05-22	ION SENSOR FOR FLUID AND METHOD FOR ITS MANUFACTURE	EPO <DP n="1"> --><heading id="h0001"><ur
□	ep_patent_applications5	_doc	2090088B12013-05-29	1	2090088	B1	2013-05-29	METHOD AND SYSTEM FOR FIBER-OPTIC MONITORING OF SPATIALL...	EPO <DP n="1"> --><heading id="h0001"><ur
□	ep_patent_applications5	_doc	2004822B12013-06-12	1	2004822	B1	2013-06-12	A METHOD FOR RADICAL SOLVATION OF RNA AND A KIT THEREOF	EPO <DP n="1"> --><heading id="h0001"><ur



```
ep_patent_applications5 / _doc / 2097973B12013-04-03 ⌂ ▾
id
2097973B120
_index ep_patent_applications5 _id 2097973B12013-04-03 _version 1 _primary_term 1 _seq_no 173793
2027734B120
1 v {
2   "application_number": "2097973",
3   "application_category": "B1",
4   "application_date": "2013-04-03",
5   "title": "DYNAMIC RANGE IMPROVEMENTS OF LOAD MODULATED AMPLIFIERS\n",
6   "description": "EPO <DP n=\"1\"> --><heading id='\h0001'>TECHNICAL FIELD OF THE INVENTION</heading><p id='\p0001'>The present invention relates generally to power amplifiers and amplifying methods and more specifically to high efficiency power amplifiers.</p><heading id='\h0002'>DESCRIPTION OF RELATED ART</heading><p id='\p0002'>In radio transmitters for broadcast, cellular and satellite systems the power amplifier in the transmitter has to be very linear in addition to being able to simultaneously amplify many radio channels (i.e. frequencies) spread across a wide bandwidth. High linearity is required since nonlinear amplifiers would cause leakage of interfering signal energy between channels and distortion within each channel.</p><p id='\p0003'>In the wireless communication industry a premium is placed on the ability to amplify wide bandwidth signals, e.g. spread spectrum signals, in highly efficient manner. To limit the size of the DC power supply and cooling equipment in a radio base station, it is essential to keep a high overall power efficiency. Various attempts have been made to address this problem, however it remains difficult to design a high efficiency power amplifier system that is at the same time also able to linearly amplify wide bandwidth signals.</p><p id='\p0004'>One such system is the Feed forward amplification system, in which the output signal from the amplifier stage is compared to the input signal to be able to determine the difference-signal. To outbalance the non-desired distortion components due to non-linear amplification, said difference-signal is amplified to a suitable amount and added in reversed phase to the output signal from the power amplifier.!-- EPO <DP n=\"2\"> --></p><p id='\p0005'>In a pre-distortion amplifier system however, the input signal first passes a non-linear pre-distorter, which is an inverse non-linear function to the transfer function of the power stage. Thus, the pre-distortion of the input signal will automatically compensate for the distortion generated by the power stage. In an adaptive pre-distortion system, correction values are stored in a look-up table arrangement of which the output is due to the incoming vector amplitude and the output signals amplitude and phase.</p><p id='\p0006'>Another known method and system for power amplifying is EER (Envelope Elimination and Restoration). The method is to determine the envelope of the input signal and regenerate it on the output by means of a modulating step. The amplifier operates with constant gain and output amplitude.</p><p id='\p0007'>Further, another known system and method is called Envelope Tracking. By this, the output signal is compared to the input drive signal for generating an amplifier control signal. Said signal controls the gain of the system and compensates for deviations. The system comprises
2082550B120
2050781B120
2078325B120
2038699B120
2038909B120
2074309B120
2064433B120
2074320B120
2084399B120
2003821B120
2096801B120
2085771B120
2073726B120
2089699B120
2090088B120
```

ElasticVue Insights – Patent Applications

- Application_Category
- Citation_IDs, Claims
- Amended_Claims_Statement
- Application_Date
- Citation_IPCR_Classification
- Description
- Abstract
- Amended_Claims
- Application_Number
- Title
- Publication_URL

ElasticVue Insights – Patent Citations

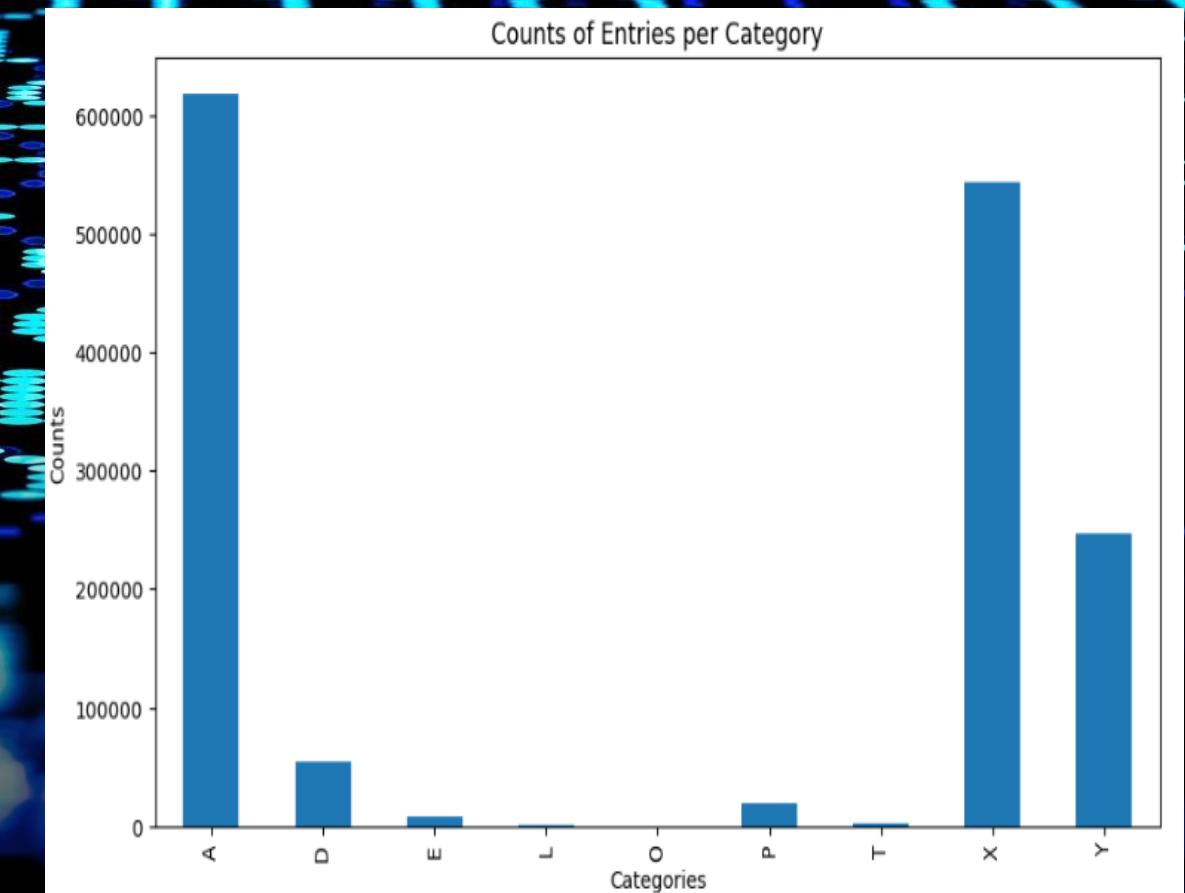
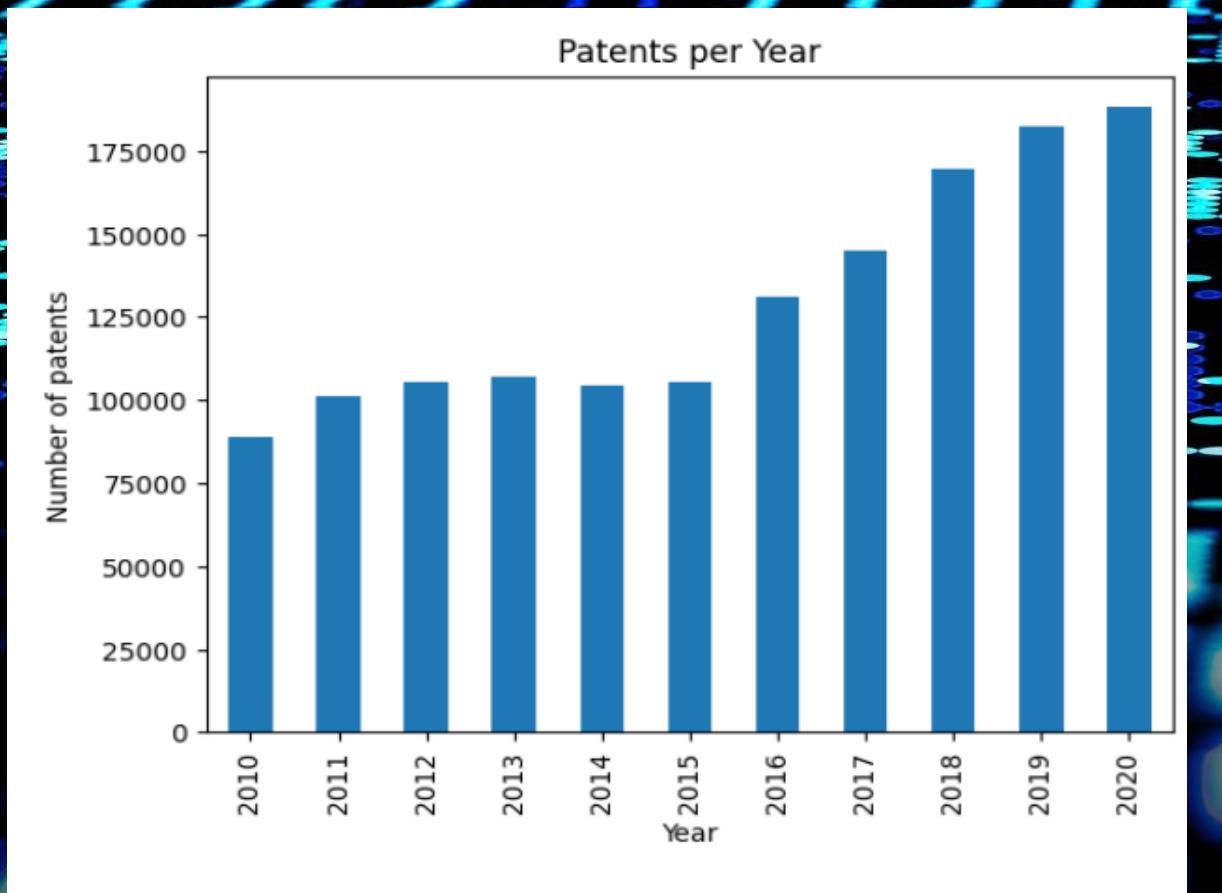
```
ep_patent_citations5 / _doc / 2536068A12012-12-19_0002 ⌂ ▾  
  
_index ep_patent_citations5 _id 2536068A12012-12-19_0002 _version 1 _primary_term 1 _seq_no 23763  
  
1 v {  
2   "original_patent_id": "2536068A1",  
3   "dnum": "W02010030437A1",  
4   "url": "http://v3.espacenet.com/textdoc?DB=EPDOC&IDX=W02010030437&CY=ep",  
5   "country": "WO",  
6   "doc-number": "2010030437",  
7   "kind": "A1",  
8   "name": "HYTRUST INC [US]; BUDKO RENATA [US]; CHIU ERIC MING [US]; BELOV BORIS",  
9   "date": "20100318",  
10  "category_Y": [  
11    1,  
12    2,  
13    3,  
14    4,  
15    5,  
16    6,  
17    7,  
18    8,  
19    9,  
20    10,  
21    11,  
22    12,  
23    13,  
24    14,  
25    15,  
26    16,  
27    17,  
28    18,  
29    19  
30  ],  
31  "rel-passage_Y": "* paragraphs [0020] - [0059] *"  
32 }  
  
INDIC
```

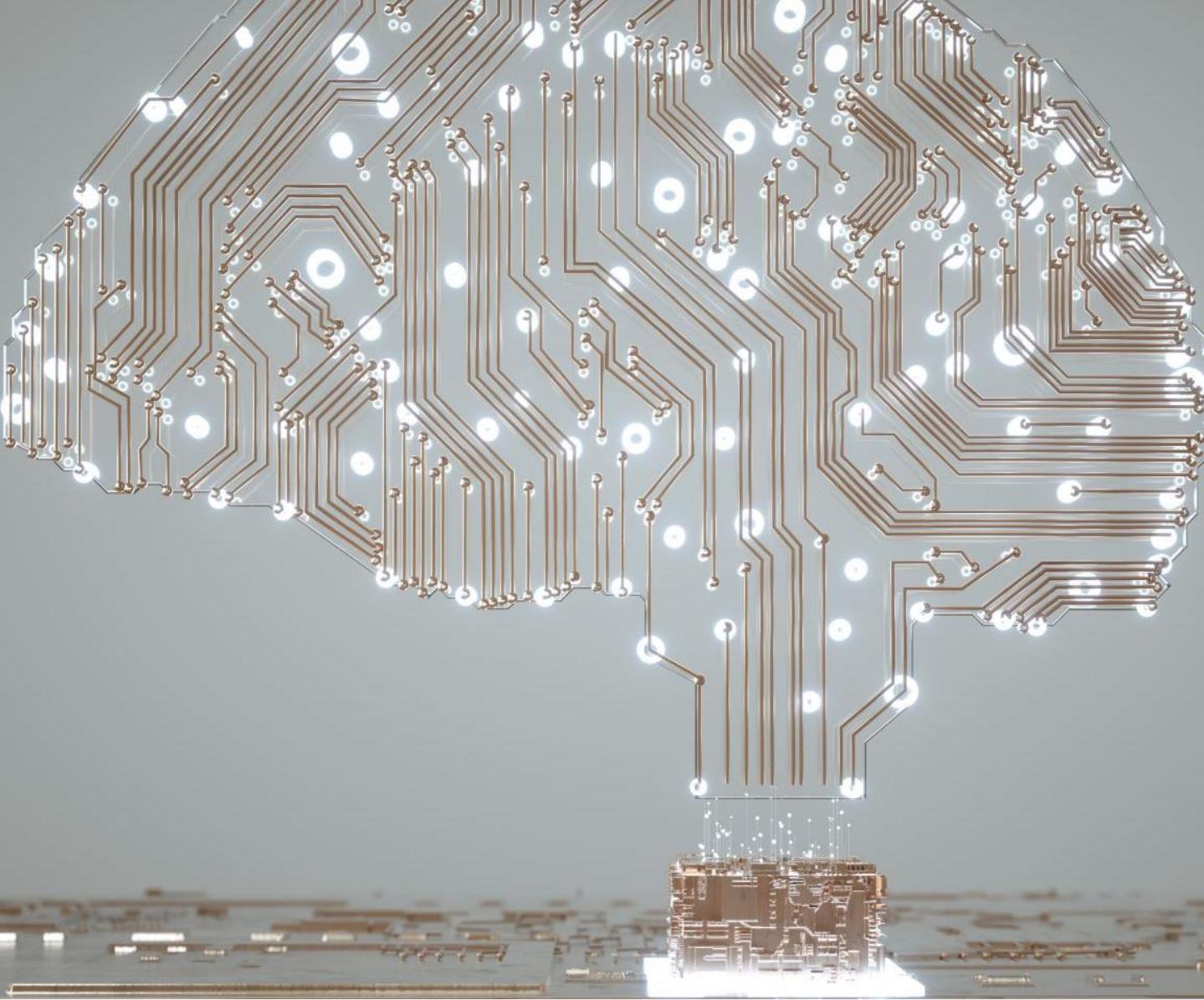
- Doc_Number
- Dnum
- Date
- Country
- Kind
- Publication_url
- Nplcit
- Category_A, Category_D, Category_E, Category_P, Category_O, Category_L, Category_X, Category_T, Category_Y,
- Rel-passage_D, Rel-passage_A, Rel-passage_L, Rel-passage_E, Rel-passage_T, Rel-passage_P, Rel-passage_O, Rel-passage_Y, Rel-passage_X

Indices Statistics

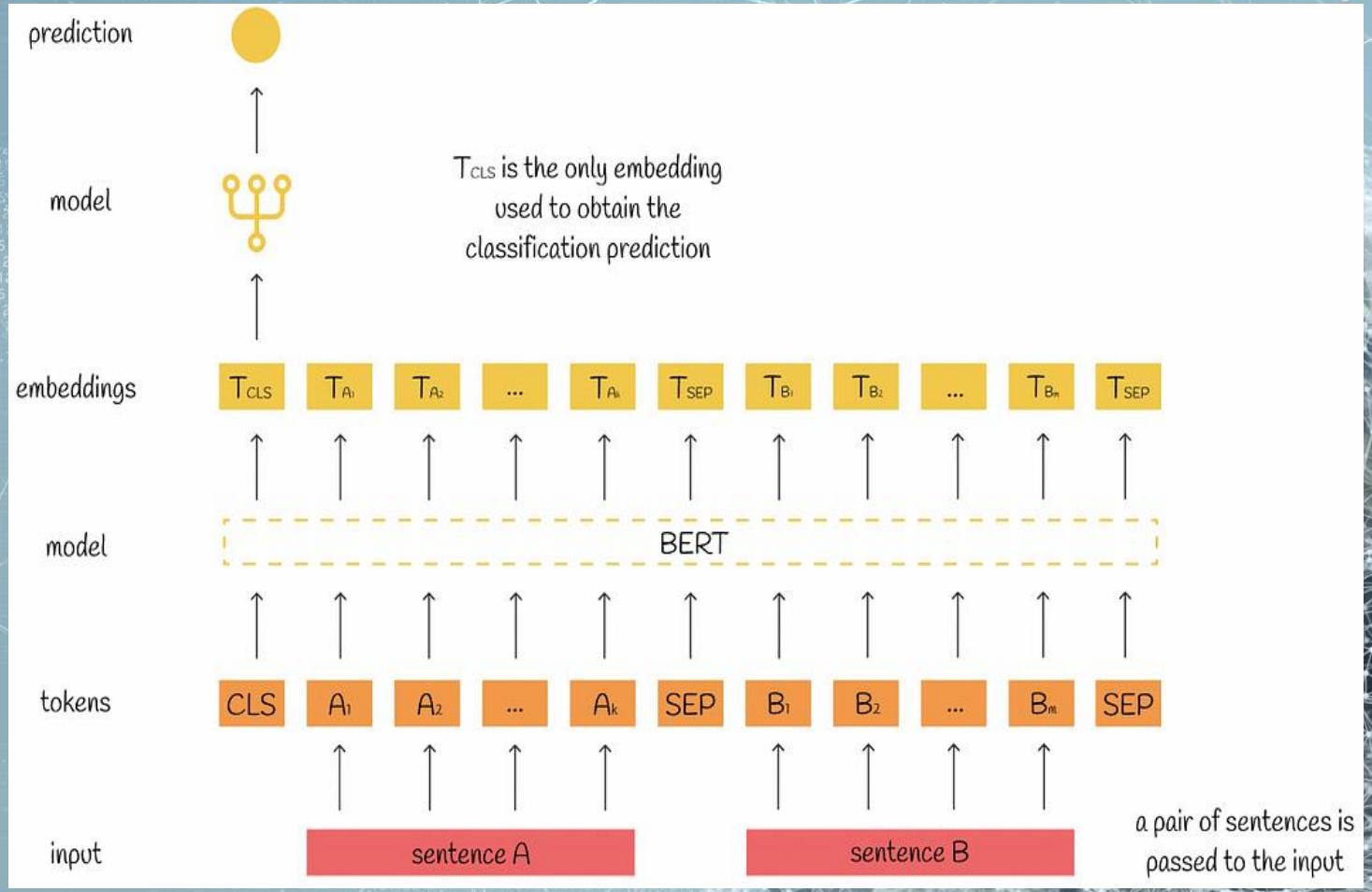
1428046 Patent Applications ~72.9GB

1287385 Citations ~310MB





Transformers: BERT & SBERT

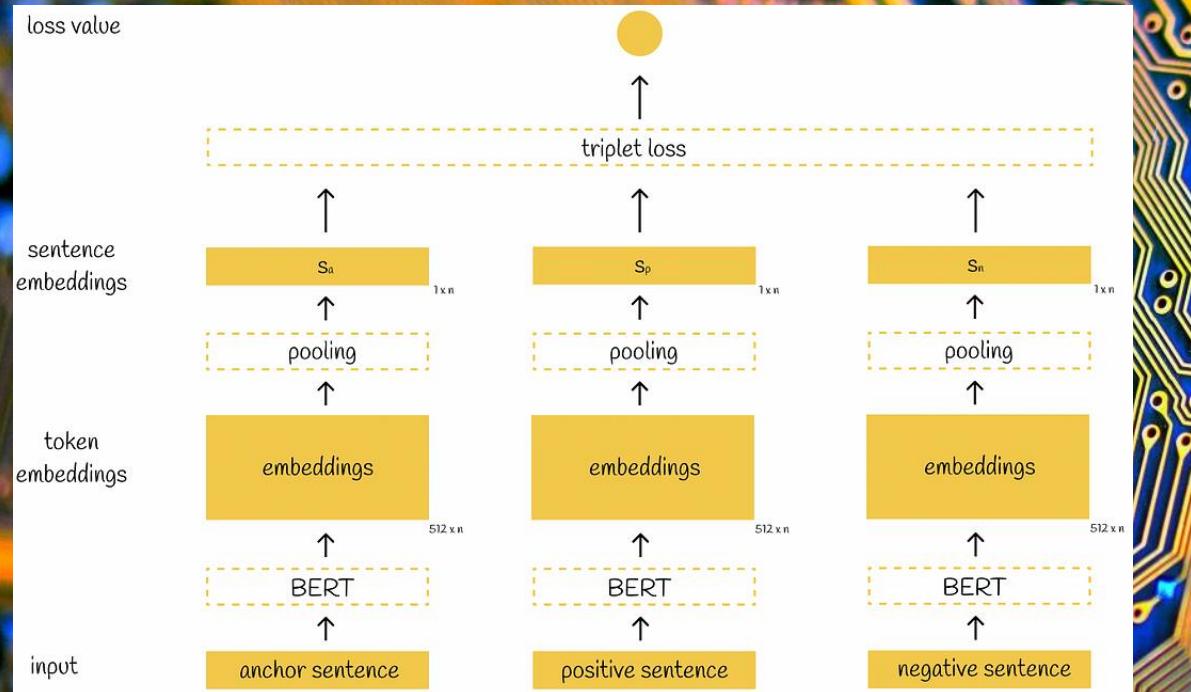


BERT Sentence Comparison

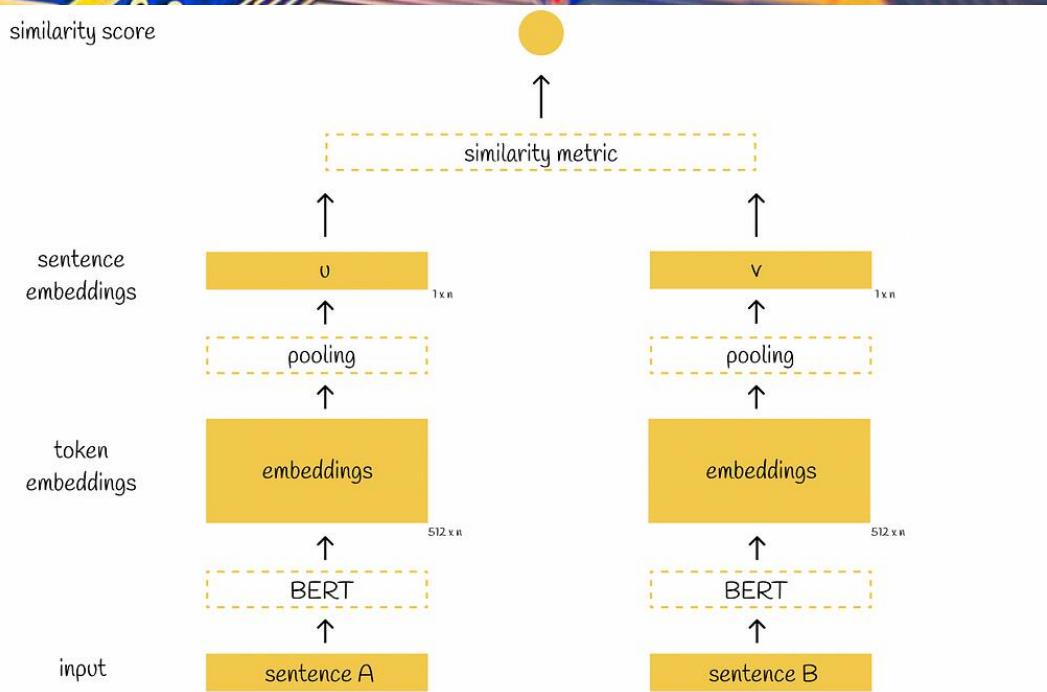
- Date: November 02, 2018
- Open Sourcing BERT: State-of-the-Art Pre-training for Natural Language Processing
- Authors: Jacob Devlin and Ming-Wei Chang – Google

- **Natural language inference:** determining whether the second sequence follows the first.
- **Similarity analysis:** finding a degree of similarity between sequences.

Triple Network



Bi-Encoder / Siamese



SBERT
Sentence BERT

Date: 27 Aug 2019

- Fine-tuned version of the pre-trained BERT transform model designed to improve efficiency + accuracy of sentence embeddings
- Authors: Nils Reimers and Iryna Gurevych – Technische Universität Darmstadt

- The first BERT model trained exclusively on patent text (unique text corpus)
- > 100m Patents (mostly US)

Applications

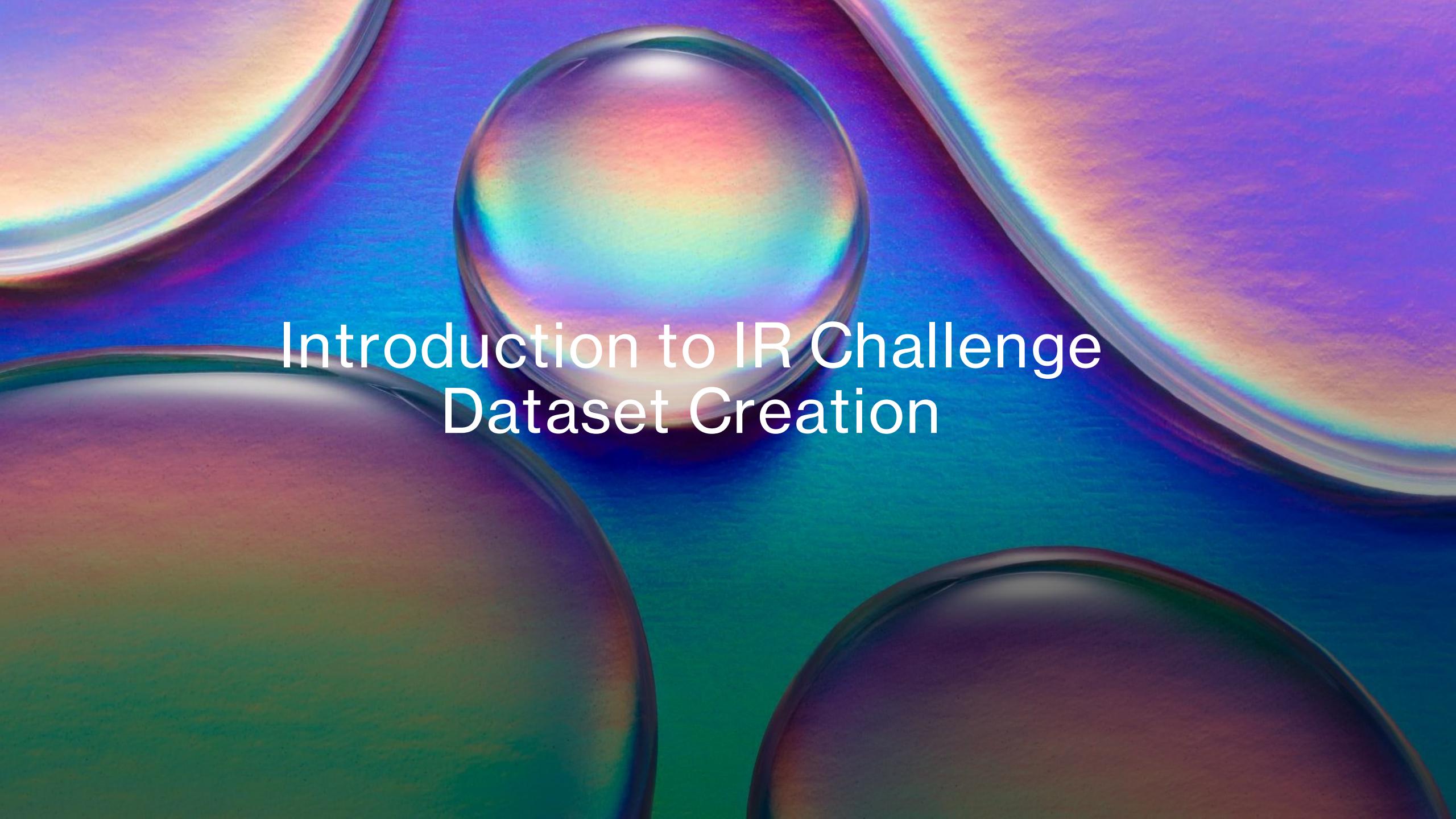
- Synonym Generation
- General Classification
- Autocomplete

BERT for Patents

US8000000B2 Abstract

[abstract] a visual prosthesis apparatus and a method for limiting power consumption in a visual prosthesis apparatus the visual prosthesis apparatus comprises a camera for capturing a video image , a video processing unit associated with the camera , the video processing unit configured to convert the video image to stimulation patterns , and a retinal stimulation system configured to stop stimulating neural tissue in a subjects [MASK] based on the stimulation patterns when an error is detected in a forward telemetry received from the video processing unit .

Masked Word	Prediction 1	Prediction 2	Prediction 3	Prediction 4	Prediction 5
eye	eye	retina	region	area	retinal



Introduction to IR Challenge Dataset Creation



Patent Applications +
Patent Citations (ElasticVue)

```
{  
    "application_number": "3597829",  
    "application_category": "A1",  
    "application_date": "2020-01-22",  
    "title": "MODULAR SENSOR ARRAY FOR BULK MATERIAL DETECTION\n",  
    "abstract": "1\t<p id='pa01' num='0001'>A combine having a  
    "description": "EPO <DP n='1'> --><heading id='h0001'>FIELD  
    "claims": "EPO <DP n='14'> --><claim id='c-en-0001' num='0  
    "citation_ipcr_classification": [  
        "A81D",  
        "G81F",  
        "G81N"  
    ],  
    "citation_ids": [  
        "3597829A12020-01-22_0001",  
        "3597829A12020-01-22_0002",  
        "3597829A12020-01-22_0003",  
        "3597829A12020-01-22_0004",  
        "3597829A12020-01-22_0005"  
    ],  
    "citation_application_number": [  
        "W02017187250A1",  
        "W02017187249A1",  
        "US5480354A",  
        "US2017208742A1",  
        "EP2359674A1"  
    ],  
    "publication_url": "1\\https://data.epo.org/publication-server/  
}
```



MAPPING_DATASET_citing_to_citations.json
10779 citing + 17801 Cited



```
"3597029A1": [{"cited_id": "2359674A1", "type": "A", "paragraphs": "* paragraph [0042] *", "claims": [9]}]
```



CONTENT_DATASET_cited_patents_by_2020.json
12195 docs



CONTENT_DATASET_citing_patents_2020.json
10779 docs



MAPPING DATASET
citing_to_citations.js



CONTENT DATASET
cited_patents_by_20
20.json



CONTENT DATASET
citing_patents_2020
.json

```
[  
 {  
 "ID_Citing": "3672233A1",  
 "Category_Cited": "X",  
 "Claims_Text": {  
 "c-en-0001": "Method for carrying out a health check of at least two cameras (12a-12d) comprising the steps of: -  
 "c-en-0002": "Method according to claim 1, wherein the selecting (S08) further comprises selecting the motion event  
 "c-en-0003": "Method according to claim 1 or 2 wherein the selecting (S08) further comprises selecting the motion event  
 "c-en-0004": "Method according to any of the preceding claims, wherein in response to that the checking step (S06)  
 "c-en-0005": "Method according to any of the preceding claims, further comprising the step of: composing (S12) a s  
 "c-en-0006": "Method according to claim 5 further comprising a step of transmitting (S14) the composed video sequen  
 "c-en-0007": "Method according to any of the preceding claims wherein the stored motion event is generated by one  
 "c-en-0008": "Method according to any of the preceding claims wherein each video clip has a predetermined length o  
 "c-en-0009": "Method according to any of the preceding claims wherein each video clip has a predetermined length o  
 "c-en-0010": "A camera system (10) having an integrated health check, the camera system (10) comprising: at least  
 "c-en-0011": "A camera system (10) according to claim 10 wherein the retriever (20) is further arranged to retriev  
 "c-en-0012": "The camera system (10) according to claim 10 or 11 further comprising: a composing unit (24) composi  
 "c-en-0013": "The camera system (10) according to claim 10 or 12 further comprising: a transmitter (26) configured  
 },  
 "ID_Cited": "2709350A1",  
 "References_Cited": "* abstract ** paragraphs [0065] - [0073] ** figure 6 *",  
 "Content_Cited": {  
 "pa01": "1\\tThere is provided a method for configuring a set of image capturing settings of a camera for a first s  
 "p0065": "In some cases there may be a large number of test images 408a-e to select from. In order to simplify the  
 "p0066": "Fig. 6 illustrates a plurality of test images 600. The plurality of test images may be divided into group  
 "p0067": "The selection receiving unit 312 may then receive input relating to one of the groups 602, 604, 606, 608  
 "p0068": "The selected group 606 in turn comprises a plurality of sub-groups 606a-n of test images. Each sub-group  
 "p0069": "Eventually, after repeating the above procedure until the selected sub-group comprises a single test ima  
 "p0070": "The above sequential procedure for selecting test images is efficient and reduces the time and effort of  
 "p0071": "In step S10 the set of image capturing settings 404c corresponding to the selected test image 408c is st  
 "p0072": "The above method has been described with respect to a first scene condition type 400. However, it is to  
 "p0073": "Moreover, the method may be applied as soon as a new scene condition type is detected, i.e., as soon as  
 "p0033": "The above, as well as additional objects, features and advantages of the present invention, will be bette  
 },  
 {  
 "ID_Citing": "3672283A1",  
 "Category_Cited": "X",  
 "Claims_Text": {  
 }
```

Input Document

```
"3672233A1": [{"cited_id": "2709350A1", "type": "X", "paragraphs": "* abstract ** paragraphs [0065] - [0073] ** figure 6 *", "claims": [1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13]}], "3672283A1": [{"cited_id": "3148217A1", "type": "X", "paragraphs": "", "claims": [1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 13]}],
```



Total Docs: 16274

Q7 Dataset



CLEANED_CONTENT_DATASET_citing_patents_2020.json
7831 documents



Q7.json



CLEANED_CONTENT_DATASET_cited_patents_by_2020_uncited_2010-2019.json

8000 Uncited + 8834 Cited

```
{  
    "Application_Number": "2005488",  
    "Application_Date": "2013-07-31",  
    "Application_Category": "B1",  
    "Content": {  
        "title": "OPTICAL DEVICE AND METHOD OF FABRICATING THE SAME",  
        "p0001": "The present invention relates to an optical device. More",  
        "p0002": "Recently, transparent conducting thin films are used in v",  
        "p0003": "Many domestic and foreign institutes related to group III",  
        "p0004": "Among transparent conducting oxides (TCO), indium oxide (",  
        "p0005": "First, since conventional TCO or transparent conducting n",  
        "p0006": "In addition, since conventional TCO or TCN does not flexi",  
        "p0007": "Second, conventional TCO or TCN represents low light tran",  
        "p0008": "Third, since conventional TCO or TCN has a great light re",  
        "p0009": "Recently, electronic devices, such as transistors and pho",  
        "p0010": "LEDs using a nitride-based semiconductor including indium",  
        "p0011": "According to the currently available TELED, light generat",  
        "p0012": "Since the p-type nitride-based cladding layer has a low h",  
        "p0013": "In other words, in order to realize the high-quality next",  
        "p0014": "The p-type ohmic contact layer of the TELED, which is ext",  
        "p0015": "In addition to the superior ohmic behavior mechanism of t",  
        "p0016": "However, since the TELED employing the semi-transparent p",  
        "p0017": "Recently, a document [T. Margalith et al., Appl. Phys. Le",  
        "p0018": "However, although the ohmic contact layer employing the a",  
        "p0019": "As mentioned above, if TCO such as ITO or ZnO is directly",  
    }  
}
```

Cleaned Datasets

```
[  
  [ "3689956A1",  
    [ "c-en-0001",  
      "c-en-0002",  
      "c-en-0003",  
      "c-en-0004",  
      "c-en-0005",  
      "c-en-0006",  
      "c-en-0007",  
      "c-en-0008",  
      "c-en-0009",  
      "c-en-0010"  
    ],  
    "3424487A1",  
    [ "p0021",  
      "p0055",  
      "p0075",  
      "p0076",  
      "p0078",  
      "p0079",  
      "p0080",  
      "p0082",  
      "p0083",  
      "p0084",  
      "p0086",  
      "p0087",  
      "p0088",  
      "p0089",  
      "p0094",  
      "p0095",  
      "p0098",  
      "p0105"  
    ],  
    "x"  
  ],  
  [
```

Citation_Train.json
7831 documents



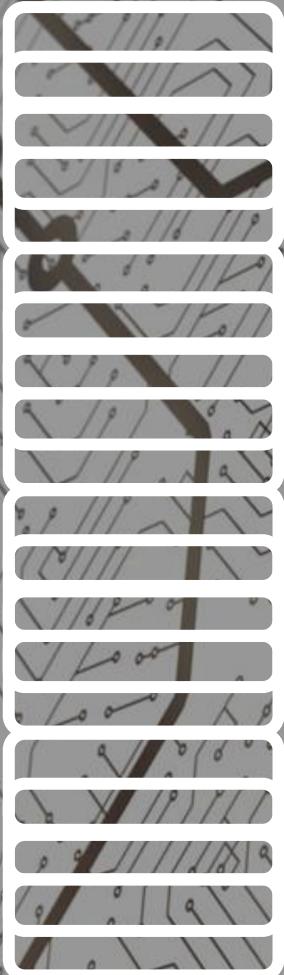
Citation_Test.json
1000 documents



```
[  
  [  
    citing_id,  
    [claim1, claim17],  
    cited_id,  
    [abstract, claim_1, p0022, p0056, ...],  
    type  
  ],  
  ...]
```

Train & Test Datasets

PatentMatch



ElasticSearch

ep_applications_patents
1428046 docs

ep_citations_patents
1287385 docs

Content_citing.json
10779 docs

Mapping_citing_cited.json
10779 docs

Content_cited.json
12195 docs

Content_uncited.json
10000 docs

Cleaned_content_citing.json
7831 docs

Q7.json
16274 docs

Citation_Train.json
8860 docs

Citation_Test.json
1000 docs

Cleaned_content_cited_uncited.json
8834 cited + 8000

Datasets Roadmap



Questions & Answers