

Search history

Search [SP]: A replaceable unit for an electrophotographic image forming device according to one example embodiment includes a housing having
1: a reservoir for storing toner. A rotatable shaft is positioned within the reservoir and has an axis of rotation. A first magnet and a second magnet are connected to the shaft and rotatable around the axis of rotation in response to rotation of the shaft. The first magnet and the second magnet pass near at least a portion of an inner wall of the housing forming the reservoir during rotation of the first and second magnets. An amount of angular offset between the first magnet and the second magnet varies depending on an amount of toner in the reservoir. (Results 276)

Search paddle (Results 40783)
2:

Search 1 and 2 (Results 17)
3:

1) Family number: 3088641 (US4515467A)

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Title: Magnet brush cleaning apparatus for electrophotographic copying machine

Abstract: Source: US4515467A A magnet brush cleaning apparatus for removing a toner which has been left non-transferred on the surface of a photoconductive element. The residual toner is attracted by and supported on a rotary sleeve on which a magnetic carrier forms a magnet brush. The magnetic carrier separated from the magnet brush and the residual toner are separated from each other by an electrode which is disposed in a circulatory carrier supply path in order to develop an intense electric field. The thus separated carrier is returned to the sleeve. The electrode may take the form of a roller, a plate or a wire. The residual toner on the photoconductive element has its amount of charge reduced in advance by a discharging unit. A substantial amount of the residual toner is scraped off the photoconductive element by a fur brush. A desired amount of the carrier is discharged and replenished automatically in response to lowering of the cleaning ability of the apparatus.

Classifications:

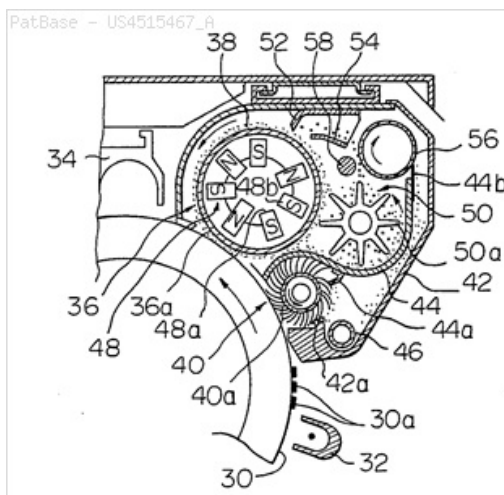
International (IPC 8-9): G03G21/00 G03G21/10 (Advanced/Invention)

International (IPC 1-7): G03G21/00

CPC: G03G21/0047 G03G2221/0005

European: G03G21/00B4 S03G221/00B

US: 15/256.52 399/354 399/356



Family:

Publication number	Publication date	Application number	Application date
DE3301796 A1	19830728	DE19833301796	19830120
DE3301796 C2	19851219	DE19833301796	19830120
JP1629963 C3	19911220	JP19820006991	19820120
JP2059470 B4	19901212	JP19820006991	19820120
JP58125079 A2	19830725	JP19820006991	19820120
US4515467 A	19850507	US19830457548	19830112

Priority:

JP19820006991 19820120

Probable Assignee: RICOH KK

Assignee(s): (std): RICOH KK

Assignee(s): RICOH CO ; RICOH CO LTD ; RICOH CO LTD TOKYO TOKYO JP ; RICOH CO LTD TOKYO JP ; RICOH COMPANY LTD

Inventor(s): (std): SUZUKI HIROHARU ; SUZUKI KOHJI

Inventor(s): SUZUKI KOHJI YOKOHAMA KANAGAWA JP

2) Family number: 28154617 (US2001036368A)

© PatBase

Title: ENCODED DEVICE FOR A TONER CARTRIDGE

Abstract: Source: US2001036368A One aspect of the invention is the invention is directed to a toner cartridge including a sump for carrying a supply of toner. An agitator is rotatably mounted in the sump, and the agitator has a first end and a second end. An encoded wheel is coupled to the first end of the agitator. The encoder wheel is structured and adapted to include a first preselected cartridge characteristic indicia having a first extent, a stop indicia having a second extent larger than the first extent and a start indicia having a third extent larger than the second extent. Each indicia may be in the form of a slot. Preferably, the start indicia is positioned between about a 5:00 o'clock position and a 6:00 O'clock position. The stop indicia is positioned at about a 9:00 o'clock position. At least one preselected cartridge characteristic indicia is positioned between the start indicia and the stop indicia. At least one measurement indicia is located between about 200 degrees and about 230 degrees in a clockwise direction from the 6:00 o'clock position.

Classifications:

International (IPC 8-9): B41J2/175 G03G15/00 G03G15/08

G03G21/00 G03G21/18 (Advanced/Invention);

G03G15/08 G03G21/00 G03G21/18 (Advanced/Non-invention);

G03G15/00 (Core/Non-invention)

International (IPC 1-7): B32B31/00 B41B17/42 B41J2/175 G00K7/00

G03G15/00 G03G15/06 G03G15/08 G03G15/08 G03G15/22

G03G21/00 G03G21/18 G03G5/00

CPC: G03G15/0856 G03G15/0858 G03G15/0889 G03G21/1896

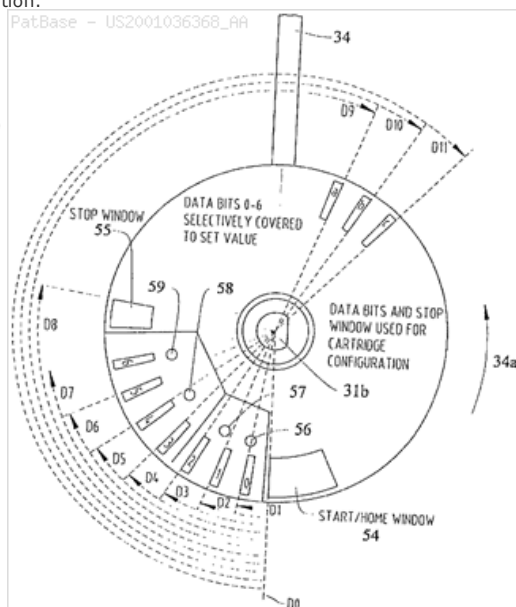
G03G15/0822 G03G15/0896 G03G2215/085 G03G221/1838

European: G03G15/08H G03G15/08H2 G03G15/08S G03G21/18L2

S03G215/08A5 S03G221/18P1

US: 156/108 156/DIG.5 235/461 399/119 399/12 399/12P 399/13

399/13S 399/27 399/27S



Family:

Publication number	Publication date	Application number	Application date
AR005618 AA	19990623	AR1997P100382	19970130
AR010782 AA	20000712	AR1997P105908	19971216
AT248389 E	20030915	AT19970301007T	19970217
AU199712570 A1	19970821	AU19970012570	19970206
AU199748298 A1	19980618	AU19970048298	19971211
AU693732 B2	19980702	AU19970012570	19970206
AU728152 B2	20010104	AU19970048298	19971211
BRPI9700989 A	20000418	BR1997PI00989	19970214
BRPI9700989 C1	20000425	BR1997PI00989	19970214
CA2197620 AA	19970626	CA19972197620	19970214
CA2197620 C	19980512	CA19972197620	19970214
CA2225021 AA	19980617	CA19972225021	19971216
DE0790536 T1	19980409	DE19970301007T	19970217
DE69724305 D1	20031002	DE19976024305	19970217
DE69724305 T2	20040617	DE19976024305T	19970217
DE69733700 D1	20050811	DE19976033700	19970217
DE69733700 T2	20060504	DE19976033700T	19970217
EP0790536 A2	19970820	EP19970301007	19970217
EP0790536 A3	19980930	EP19970301007	19970217
EP0790536 B1	20030827	EP19970301007	19970217
EP0859290 A1	19980819	EP19970310218	19971217
EP1291732 A1	20030312	EP20020027141	19970217
EP1291732 B1	20050706	EP20020027141	19970217
EP1522904 A2	20050413	EP20050000154	19970217
EP1522904 A3	20080416	EP20050000154	19970217
ES2109910 T1	19980201	ES19970301007T	19970217
GR980300007 T1	19980331	GR19980300007T	19980331
IN00085DE1997 A	20080725	IN1997DE00085	19970110
IN03264DE2005 A	20080905	IN2005DE03264	20051205
IN229860 B	20090313	IN1997DE00085	19970110
JP10026872 A2	19980127	JP19970048494	19970217
JP10198150 A2	19980731	JP19970364655	19971217
JP3581894 B2	20041027	JP19970048494	19970217
KR100298971 B1	20011026	KR19970004890	19970215
KR19970062828 A	19970912	KR19970004890	19970215
KR19980064215 A	19981007	KR19970069470	19971217
MX9710288 A1	19981031	MX19970010288	19971217
SG45532 A1	19980116	SG19970000347	19970217
SG68644 A1	19991116	SG19970004443	19971215
TW315429 B	19970911	TW19970100392	19970115
TW390979 B	20000521	TW19970118911	19971215
US2001036368 AA	20011101	US20010871226	20010531
US5634169 A	19970527	US19960602648	19960216
US5942067 A	19990824	US19970861842	19970522
US5995772 A	19991130	US19960768257	19961217
US6009285 A	19991228	US19970975389	19971120
US6169860 BA	20010102	US19990415620	19991012

US6295422 BA	20010925	US20000557096	20000421
US6397015 BB	20020528	US20010871226	20010531

Priority:

CA19972197620 19970214	CA19972197620 19970214	CA19972225021 19971216
EP19970301007 19970217	EP20020027141 19970217	US19970861842 19970522
US20010871226 20010531	US20000557096 20000421	US19990415620 19991012
US19960602648 19960216	US19970975389 19971120	US19960768257 19961217

Probable Assignee: LEXMARK INT INC

Assignee(s): (std): LEXMARK INT INC

Assignee(s): LEXMARK INTERNATIONAL INC ; LEXMARK INTERNATIONAL INC LEXINGTON KY US ; LEXMARK INTERNATIONAL INCUS ; LEXMARK INTERNATL INC ; NEWMAN BENJAMIN KEITH ; REAM GREGORY LAWRENCE ; WRIGHT PHILLIP BYRON ; WARD EARL DAWSON II ; BARRY RAYMOND JAY ; CURRY STEVEN ALAN ; LEXMARK INT

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Agent(s): PHILLIPS ORMONDE FITZPATRICK; SMART AND BIGGAR; HUGHES ANDREA MICHELLE

Designated states: AT BE CH DE DK ES FI FR GB GR IE IT LI LU MC NL PT SE

3) Family number: 12439515 (US6100601A)

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Title: MEASUREMENT OF TONER LEVEL EMPLOYING SENSOR ON PADDLE

Abstract: Source: US6100601A The level of powdered toner in a toner reservoir of a printer or copier is determined by ascertaining the time that it takes a stirring paddle to rotate from a second of two fixed ridges adjacent the top of the reservoir until the toner is engaged. A sensor, which is preferably a piezoelectric element or a strain gauge, is preferably mounted on the end of the stirring paddle to engage each of the two fixed ridges. When the sensor flexes after engaging each of the ridges, two closely spaced electrical pulse are produced. When the sensor engages the toner, another electrical pulse is produced, and the time between the second and third pulses is used to determine the level of the toner in the toner reservoir. If the stirring paddle is flexible, it may engage the ridges and the toner so that the sensor could be mounted on the stirring paddle to not engage the ridges or the toner but only to sense flexing of the stirring paddle for producing the electrical pulses. Instead of using the ridges, an emitter wheel may be employed to produce a pulse when the stirring paddle is in its substantially vertical position.

Classifications:

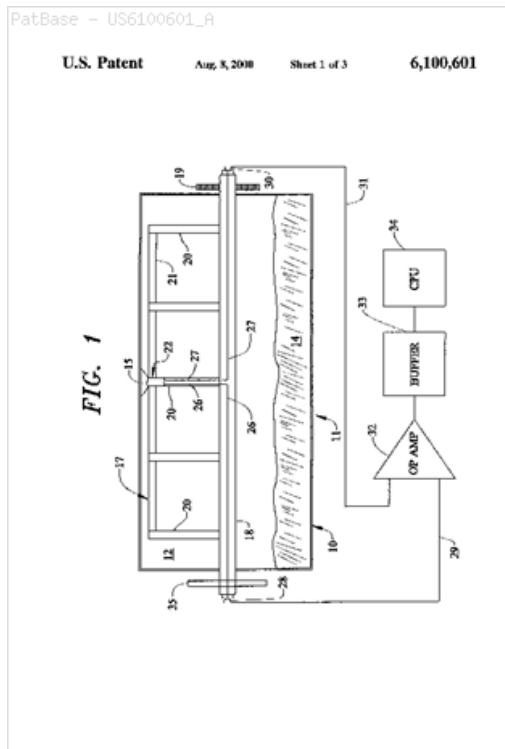
International (ipc 8-9): G03G15/08 (Advanced/Invention); G03G15/08 (Core/Invention)

International (ipc 1-7): G01F23/22 G03G15/08

CPC: G03G15/0856 G03G15/086 G03G15/0867

European: G03G15/08H2

US: 290/290V 399/27 73/290.00V 73/290V



Family:

Publication number	Publication date	Application number	Application date
GB200019494 A0	20000927	GB20000019494	20000808
GB2355534 A1	20010425	GB20000019494	20000808
GB2355534 B2	20030709	GB20000019494	20000808
US6100601 A	20000808	US19990372013	19990811

Priority:

US19990372013 19990811

Probable Assignee: LEXMARK INT INC

Assignee(s): (std): LEXMARK INT INC

Assignee(s): LEXMARK INTERNATIONAL INC ; LEXMARK INT

Inventor(s): (std): BAKER RAYMOND MILTON ; BUSSIÈRE RONALD PAUL ; HUTCHINSON JOHN WILLIAM

Inventor(s): JOHN WILLIAM HUTCHINSON ; RAYMOND MILTON BAKER ; RONALD PAUL BUSSIÈRE

4) Family number: 23981149 (US6459876B)

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Title: TONER CARTRIDGE

Abstract: Source: US6459876B A toner cartridge for use in a laser printer has a toner reservoir or hopper in which a first paddle rotates about a fixed first axis to sweep most of the toner volume of the cartridge to agitate and push the toner out of the toner reservoir or hopper through an exit port. A second paddle is pivotally mounted on the first paddle to sweep a volume of the toner reservoir or hopper in which a portion of the longitudinal wall of the toner reservoir or hopper of the toner cartridge is non-circular so as to produce a reduced cross section in the toner reservoir or hopper. The second paddle also initially engages the curved portion of the inner surface of the longitudinal wall of the toner reservoir or hopper and preferably has a tear drop cross section.

Classifications:

International (IPC 8-9): G03G15/08 (Advanced/Invention);

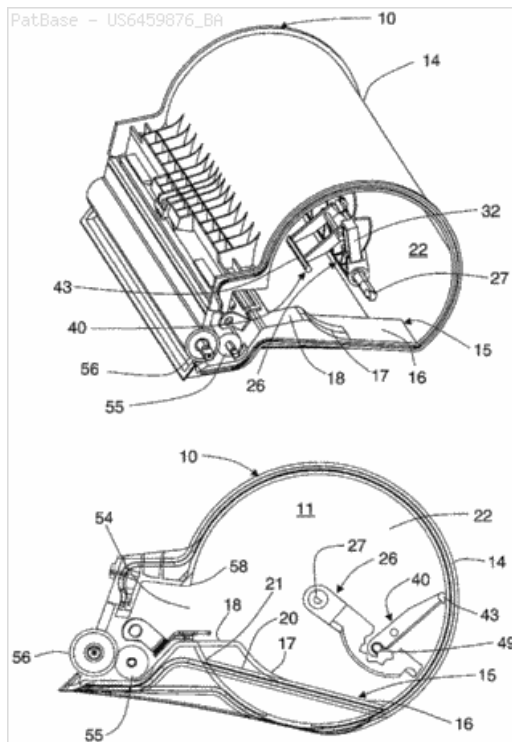
G03G15/08 (Core/Invention)

International (IPC 1-7): G03G15/08

CPC: G03G15/0872 G03G15/0877 G03G15/0822 G03G2221/183

European: G03G15/08H G03G15/08H3D S03G221/18P

US: 366/309 366/311 399/254 399/263



Family:

Publication number	Publication date	Application number	Application date
US6459876 BA	20021001	US20010908245	20010718
WO03009067 A1	20030130	WO2002US20786	20020701

Priority:

US20010908245 20010718

Probable Assignee: LEXMARK INT INC

Assignee(s): (std): LEXMARK INT INC

Assignee(s): LEXMARK INTERNATIONAL INC ; LEXMARK INTIONAL ; LEXMARK INT

Inventor(s): (std): BUCHANAN JOHN ANDREW ; BURDETTE CHRIS ANTHONY ; CARTER PHILIP SCOT ; KIETZMAN JOHN WILLIAM ; NEWMAN BENJAMIN KEITH ; ROGERS MATTHEW LEE

Designated states: AE AG AL AM AT AU AZ BA BB BE BF BG BJ BR BY BZ CA CF CG CH CI CM CN CO CR CU CY CZ DE DK DM DZ EC EE ES FI FR GA GB GD GE GH GM GN GQ GR GW HR HU ID IE IL IN IS IT JP KE KG KP KR KZ LC LK LR LS LT LU LV MA MC MD MG MK ML MN MR MW MX MZ NE NL NO NZ OM PH PL PT RO RU SD SE SG SI SK SL SN SZ TD TG TJ TM TN TR TT TZ UA UG UZ VN YU ZA ZM ZW

5) Family number: 28298597 (US2002154916A)

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Title: TONER SUPPLY WITH LEVEL SENSOR AND METER AND METHOD OF USING THE SAME

Abstract: Source: US2002154916A A device for storing toner within an image forming apparatus having an upper reservoir and a lower reservoir. A sensor paddle is positioned within the lower reservoir for determining a toner level within the lower reservoir. The sensor paddle rotates within an angular displacement from a fall point to a toner rest point. The device further includes a drive gear for rotating said sensor paddle, and a cam mechanism positioned adjacent to the drive gear. The cam mechanism is connected to the sensor paddle and has a cam angular displacement relative to the drive gear about equal to the sensor paddle angular displacement. A pawl having at least one opening is mounted on at least one post extending axially outward from the drive gear and includes a boss positioned within the cam track. Upon a predetermined angular displacement of the sensor paddle, the boss moves along the cam track resulting in the pawl radially extending outward from the drive gear and contacting a toner supply mechanism for transferring toner from the upper reservoir to the lower

reservoir.

Classifications:

International (IPC 8-9): G03G15/08 G03G5/00 (Advanced/Invention);
G03G15/08 G03G5/00 (Core/Invention)

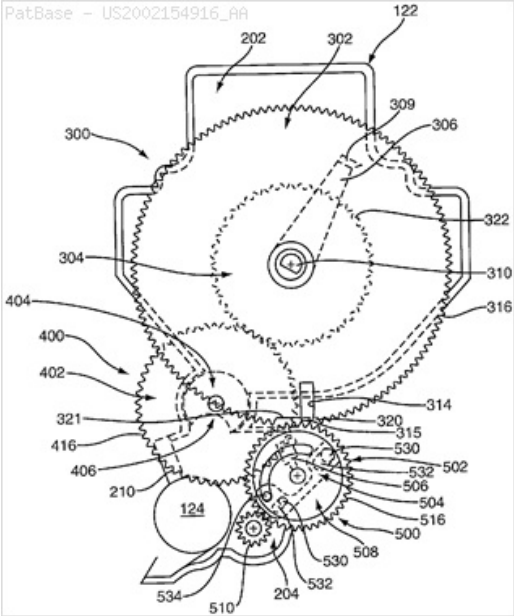
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CPC: G03G15/0856 G03G15/0877 G03G15/0822

European: G03G15/08H G03G15/08H2 G03G15/08H3D

US: 118/694 399/254 399/260 399/263 399/27

PatBase - US2002154916_AA



Family:

Publication number	Publication date	Application number	Application date
AU2002256118 AA	20021105	AU20020256118	20020410
DE60237465 D1	20101007	DE20026037465	20020410
EP1451643 A2	20040901	EP20020725562	20020410
EP1451643 A4	20070516	EP20020725562	20020410
EP1451643 B1	20100825	EP20020725562	20020410
US2002154916 AA	20021024	US20010838353	20010419
US6510291 BB	20030121	US20010838353	20010419
WO02086628 A2	20021031	WO2002US10986	20020410
WO02086628 A3	20040122	WO2002US10986	20020410

Priority:

US20010838353 20010419 WO2002US10986 20020410

Probable Assignee: LEXMARK INT INC

Assignee(s): (std): ALAN STIRLING CAMPBELL ; JERRETT CLARK GAYNE ; LEXMARK INT INC ; WILLIAM DALE SMITH

Assignee(s): LEXMARK INTERNATIONAL INC ; LEXMARK INTIONAL ; LEXMARK INT

Inventor(s): (std): ALAN STIRLING CAMPBELL ; CAMPBELL ALAN STIRLING ; GAYNE JARRETT CLARK ; JERRETT CLARK GAYNE ; SMITH WILLIAM DALE ; WILLIAM DALE SMITH

Inventor(s): JARRETT CLARK GAYNE

Agent(s): HUGHES ANDREA MICHELLE

Designated states: AE AG AL AM AT AU AZ BA BB BE BF BG BJ BR BY BZ CA CF CG CH CI CM CN CO CR CU CY CZ DE DK DM DZ EC EE ES FI FR GA GB GD GE GH GM GN GQ GR GW HR HU ID IE IL IN IS IT JP KE KG KP KR KZ LC LK LR LS LT LU LV MA MC MD MG MK ML MN MR MW MX MZ NE NL NO NZ OM PH PL PT RO RU SD SE SG SI SK SL SN SZ TD TG TJ TM TN TR TT TZ UA UG UZ VN YU ZA ZM ZW

6) Family number: 26937278 (US6496662B)

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Title: OPTICAL TONER LOW SENSOR

Abstract: Source: US6496662B Toner exhaustion is sensed in cartridge (1) having a toner chamber (3), a rotation paddle (7) extending across the long dimension. Chamber (3) has a transparent window (21) at its bottom and a reflective surface (23) in chamber (3), also at the bottom. An optical emitter and receiver (31) periodically senses for returned light, which indicates toner low. Paddle (7) carries a wiper to clean window and reflective surface. This provides improved accuracy by a cost-effective system.

Classifications:

International (IPC 8-9): G03G15/08 (Advanced/Invention);
G03G15/08 (Core/Invention)

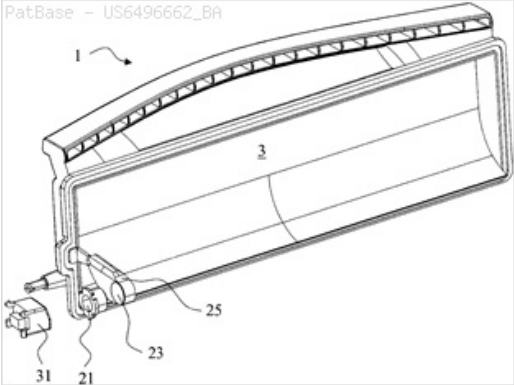
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CPC: G03G15/0856 G03G15/0862 G03G2215/0894 G03G2215/0897

European: G03G15/08H2 S03G215/08D1A S03G215/08D1A1

US: 399/27

PatBase - US6496662_BA



Family:

Publication number	Publication date	Application number	Application date
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AU2003238275 AA	20040106	AU20030238275	20030617
EP1535117 A1	20050601	EP20030737170	20030617
EP1535117 A4	20080305	EP20030737170	20030617
US6496662 BA	20021217	US20020174769	20020619
WO04001511 A1	20031231	WO2003US19208	20030617

Priority:

US20020174769 20020619 WO2003US19208 20030617

Probable Assignee: LEXMARK INT INC

Assignee(s): (std): LEXMARK INT INC

Assignee(s): LEXMARK INTERNATIONAL INC ; LEXMARK INTIONAL ; LEXMARK INT

Inventor(s): (std): BUCHANAN JOHN ANDREW ; NEWMAN BENJAMIN KEITH

Inventor(s): BENJAMIN KEITH NEWMAN ; JOHN ANDREW BUCHANAN

Designated states: AE AG AL AM AT AU AZ BA BB BE BF BG BJ BR BY BZ CA CF CG CH CI CM CN CO CR CU CY CZ DE DK DM DZ EC EE ES FI FR GA GB GD GE GH GM GN GQ GR GW HR HU ID IE IL IN IS IT JP KE KG KP KR KZ LC LK LR LS LT LU LV MA MC MD MG MK ML MN MR MW MX MZ NE NI NL NO NZ OM PH PL PT RO RU SC SD SE SG SI SK SL SN SZ TD TG TJ TM TN TR TT TZ UA UG UZ VC VN YU ZA ZM ZW

7) Family number: 30433512 (US6718147B)

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Title: TONER MEASUREMENT AND DARKNESS CONTROL USING PRINTER SYSTEMS

Abstract: Source: US6718147B Toner usage is measured with good accuracy. Printing tends to darken with the depletion of toner from a source. A toner cartridge employed in a printer (70) has the capability at the cartridge of determining the amount toner used. In an embodiment this is by a torsion spring (60) drive to a toner paddle (3). At turn-on and cover open, the amount of toner is measured at the cartridge (80). That is stored in NVRAM (78) when it is very different from the current amount stored in NVRAM. At certain amount levels observed at the cartridge the amount in NVRAM is revised to the new amount. Between those levels the amount of toner used is tracked by counting pels (94). Use amounts are converted to operating factors in a table (100), and the operating factors are applied to the printer to keep the darkness of printing more constant. Writing to NVRAM is minimized.

Classifications:

International (IPC 8-9): G03G15/08 (Advanced/Invention); G03G15/08 (Core/Invention)

International (IPC 1-7): G03G15/08 G03G15/10

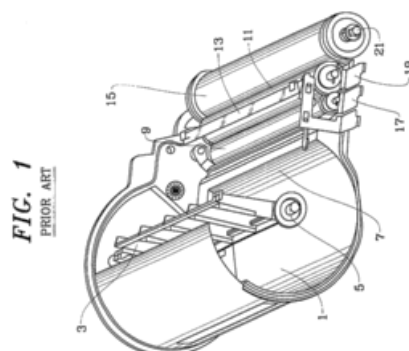
CPC: G03G15/0856 G03G15/0872 G03G15/556

European: G03G15/08H2

US: 399/27 399/58

PatBase - US6718147_BA

U.S. Patent Apr. 6, 2004 Sheet 1 of 6 US 6,718,147 B1



Family:

Publication number	Publication date	Application number	Application date
US6718147 BA	20040406	US20020287312	20021104

Priority:

US20020287312 20021104

Probable Assignee: LEXMARK INT INC

Assignee(s): (std): LEXMARK INT INC

Assignee(s): LEXMARK INTERNATIONAL INC ; LEXMARK INTIONAL ; LEXMARK INT

Inventor(s): (std): CARTER PHILIP SCOT ; NEWMAN BENJAMIN KEITH ; RICHARDSON WILLIAM KEITH ; TRUE JASON CARL

8) Family number: 33690022 (US2006257171A)

© PatBase

Title: PADDLE POSITIONING SYSTEM

Abstract: Source: US2006257171A The present invention is directed to an article, system and method for determining

and/or selecting the location of a toner engaging member in a developing agent device such as a toner cartridge. The article, system and method may be applied to a printing device such as a laser printer.

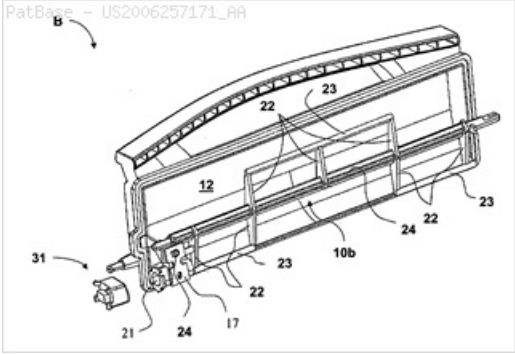
Classifications:

International (IPC 8-9): G03G15/06 G03G15/08 (Advanced/Invention); G03G15/06 G03G15/08 (Core/Invention)

CPC: G03G15/0872 G03G15/0856 G03G15/0862

European: G03G15/08H2 G03G15/08H3C1

US: 399/222 399/254 399/27



Family:

Publication number	Publication date	Application number	Application date
US2006257171 AA	20061116	US20050126835	20050511
US7248806 BB	20070724	US20050126835	20050511

Priority:

US20050126835 20050511

Probable Assignee: LEXMARK INT INC

Assignee(s): (std): LEXMARK INT INC

Assignee(s): LEXMARK INTERNATIONAL INC ; LEXMARK INT

Inventor(s): (std): TURNEY STEVEN MICHAEL ; TURNEY STEVEN M ; KAPPES LENCI ROBERT ; KAPPES LENCI R ; ASKREN BENJAMIN ALAN ; ASKREN BENJAMIN A

Inventor(s): ASKREN BENJAMIN ; KAPPES LENCI ; TURNEY STEVEN

Agent(s): LEXMARK INT INC INTELLECTUAL PROPERTY LAW DEPARTMENT; GROSSMAN TUCKER PERREAULT AND PFIEGER PLLC

9) Family number: 42166166 (US2008226351A)

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Title: TONER PADDLE FOR DISTRIBUTING TONER WITHIN AN IMAGE FORMING DEVICE

Abstract: Source: US2008226351A The present application is directed to devices for moving toner within an image forming device. In one embodiment, the device includes a reservoir with an inlet that leads into the reservoir through a first sidewall. New toner may be introduced through the inlet and into the reservoir. A paddle may be positioned within the reservoir to move the toner from the inlet and through the reservoir. The paddle may prevent the toner from accumulating at the inlet which may act as a block to prevent further toner from being moved into the reservoir. The paddle may include a shaft with a weighted first arm extending from the shaft in a first direction and a second arm extending from the shaft in a second direction. The arms are weighted such that the first arm is heavier than the second arm. The paddle is positioned within the reservoir such that rotation of the paddle moves the toner from the inlet throughout the reservoir.

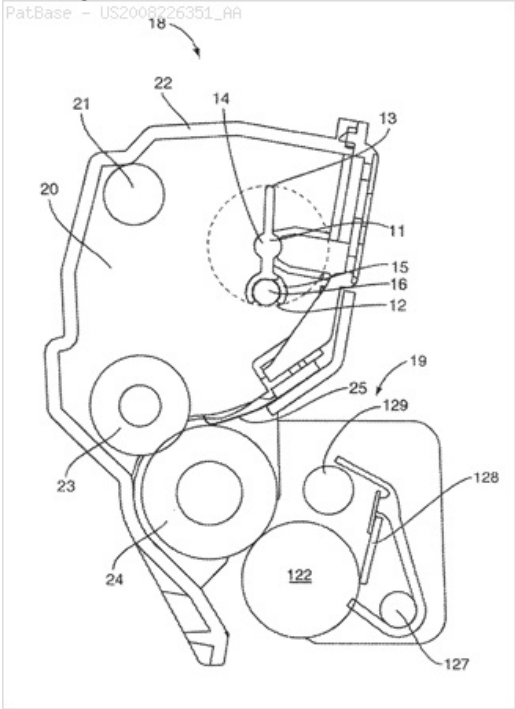
Classifications:

International (IPC 8-9): G03G15/08 (Advanced/Invention); G03G15/08 (Core/Invention)

CPC: G03G15/0891 G03G15/0875 G03G15/0877 G03G2215/0802 G03G2215/085

European: G03G15/08H3D S03G215/08A S03G215/08A5

US: 399/254



Family:

Publication number	Publication date	Application number	Application date
US2008226351 AA	20080918	US20070686658	20070315

Priority:

US20070686658 20070315

Probable Assignee: LEXMARK INT INC

Assignee(s): (std): DAWSON JEDEDIAH TAYLOR ; GAYNE JARRETT C ; VEGO ASMUND

Assignee(s): LEXMARK INT ; LEXMARK INT INC

Inventor(s): (std): DAWSON JEDEDIAH TAYLOR ; GAYNE JARRETT C ; VEGO ASMUND

Agent(s): JOHN J MCARDLE JR LEXMARK INT INC

10) Family number: 50663725 (US2012045224A)

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Title: METHOD FOR DELAYING THE START OF A GAGE FOR TRACKING THE LIFE OF A CONSUMABLE ITEM FOR AN IMAGING DEVICE

Abstract: Source: US2012045224A A method for delaying the start of a gage for tracking the life of a consumable item for an imaging device according to one exemplary embodiment includes counting the number of revolutions of a rotating imaging component having a correlation with the life of the consumable item and determining whether a predetermined delay threshold is satisfied based on the number of revolutions of the imaging component counted. Until the predetermined delay threshold is satisfied, starting the gage and tracking the remaining life of the consumable item are delayed.

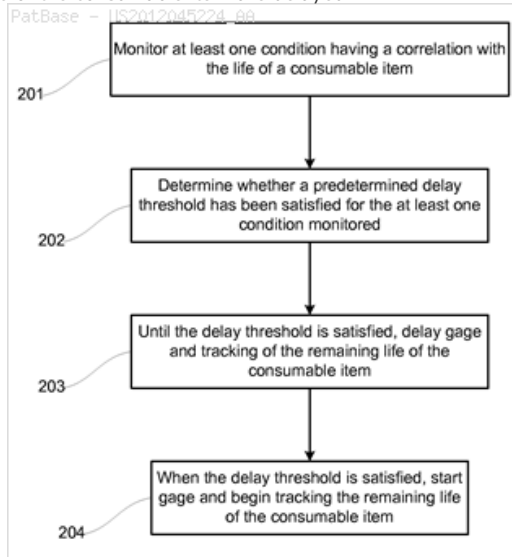
Classifications:

International (IPC 8-9): G03G15/00 G03G15/08 (Advanced/Invention)

CPC: G03G15/55 G03G15/553 G03G15/0875 G03G15/0834 G03G15/0868

European: G03G15/55B

US: 399/24 399/24P 399/26 399/260 399/262 399/26S 399/27 399/27S



Family:

Publication number	Publication date	Application number	Application date
US2012045224 AA	20120223	US20100858550	20100818
US2013108286 AA	20130502	US20120717959	20121218
US8489002 BB	20130716	US20100858550	20100818

Priority:

US20100858550 20100818 US20120717959 20121218

Probable Assignee: LEXMARK INT INC

Assignee(s): (std): AMANN MARK WILLIAM ; CAMPBELL ALAN STIRLING ; LEXMARK INT INC ; MERRIFIELD DAVID LEE

Assignee(s): LEXMARK INTERNATIONAL INC

Inventor(s): (std): AMANN MARK WILLIAM ; CAMPBELL ALAN STIRLING ; MERRIFIELD DAVID LEE

Agent(s): JUSTIN M

11) Family number: 50793936 (US2012070162A)

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Title: METHOD FOR DETECTING LOW TONER IN AN ELECTRO-PHOTOGRAPHIC TONER CARTRIDGE

Abstract: Source: US2012070162A A method for detecting low toner in an electro-photographic toner cartridge having an optical sensor using a light beam to detect the presence or absence of toner in the cartridge includes transmitting to a processor a signal related to the strength of the light beam sensed as a paddle disposed within the cartridge rotates. The processor calculates an average value for the signal for each of a plurality of sets of paddle revolutions. The processor then calculates a variation value for the signal for each of the plurality of sets of paddle revolutions. The processor filters each variation value to determine a plurality of short term variation values. The processor monitors whether at least one short term variation value exceeds a first threshold. When the at least one short term variation value exceeds the first threshold, the processor signals that the toner level is low.

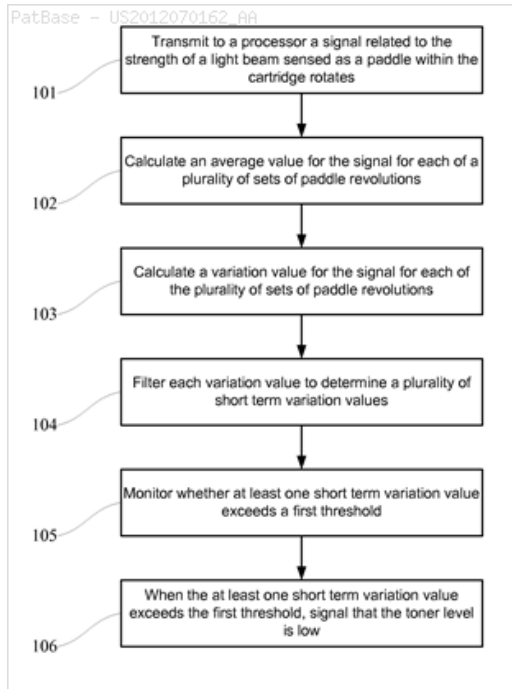
Classifications:

International (IPC 8-9): G03G15/00 G03G15/08 (Advanced/Invention)

CPC: G03G15/556 G03G2215/0827 G03G2215/0891 G03G15/0855 G03G15/0856 G03G15/0862 G03G15/0875

European: G03G15/08H1L G03G15/08H2 S03G215/08A3C S03G215/08D1

US: 399/27 399/27P



Family:

Publication number	Publication date	Application number	Application date
US2012070162 AA	20120322	US20100885129	20100917
US2013177327 AA	20130711	US20130780214	20130228
US8412058 BB	20130402	US20100885129	20100917
US8660443 BB	20140225	US20130780214	20130228

Priority:

US20100885129 20100917 US20130780214 20130228

Probable Assignee:

LEXMARK INT INC

Assignee(s): (std):

BARRY RAYMOND JAY ; LEXMARK INT INC

Assignee(s):

LEXMARK INTERNATIONAL INC

Inventor(s): (std):

BARRY RAYMOND JAY

Agent(s):

JUSTIN M; JOHN VICTOR

12) Family number: 56020838 (US2014079438A)

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Title: VOLUMETRIC TONER CARTRIDGE HAVING DRIVEN TONER PLATFORM

Abstract: Source: US2014079438A A toner cartridge for an imaging apparatus having a housing including two opposed end walls and an elongated body therebetween and an exit port. An inner surface of the body defines a toner reservoir that is in communication with the exit port. A drive shaft is rotatably mounted within the housing. A toner platform is provided in slidable contact with the inner surface of the body and is nonrotatable relative to the housing. A drive shaft coupling couples the toner platform to the drive shaft. An exit paddle is positioned adjacent the exit port and is rotatable by the drive shaft. Rotation of the drive shaft translates the toner platform toward the exit port and rotates the exit paddle. As the toner platform moves, toner within the reservoir moves toward the exit paddle and exit port and rotation of the exit paddle moves toner through the exit port.

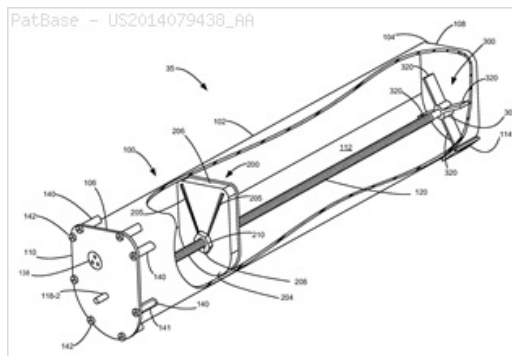
Classifications:

International (IPC 8-9): G03G15/08 (Advanced/Invention)

CPC: G03G15/0839 G03G15/0836 G03G15/087 G03G15/0875

G03G15/0877 G03G2215/0802

US: 1/1 399/262



Family:

Publication number	Publication date	Application number	Application date
US2014079438 AA	20140320	US20120617521	20120914
US9063460 BB	20150623	US20120617521	20120914

Priority:

US20120617521 20120914

Probable Assignee: LEXMARK INT INC

Assignee(s): (std): ABLER JEFFREY ALAN ; HILL JONATHAN MURRAY ; KANT BENJAMIN ERICH ; LEXMARK INT INC ;

MARTINKOVIC MATTHEW THOMAS ; MCALPINE ROBERT WATSON

Inventor(s): (std): MCALPINE ROBERT WATSON ; MARTINKOVIC MATTHEW THOMAS ; KANT BENJAMIN ERICH ; HILL JONATHAN MURRAY ; ABLER JEFFREY ALAN

Agent(s): JOHN VICTOR; JUSTIN M

13) Family number: 56727850 (US2014169806A)

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Title: REPLACEABLE UNIT FOR AN IMAGE FORMING DEVICE HAVING A FALLING PADDLE FOR TONER LEVEL SENSING

Abstract: Source: US2014169806A A replaceable unit for an electrophotographic image forming device according to one example embodiment includes a housing having an inner volume forming a reservoir for storing toner. A rotatable shaft is positioned within the reservoir. A paddle is mounted on the shaft and rotatable independent of the shaft. A driving member is rotatable with the shaft and positioned to push the paddle when the shaft rotates. The paddle is free to fall ahead of the driving member. The paddle includes a magnetic element rotatable with the paddle and detectable by a magnetic sensor when the replaceable unit is installed in the image forming device for detecting the motion of the paddle.

Classifications:

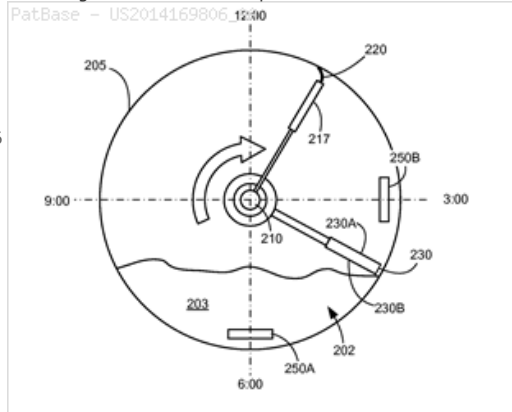
International (IPC 8-9): G01F23/00 G01F23/20 G03G G03G15/00 G03G15/06 G03G15/08 G03G15/09 G03G15/16

G03G15/22 (Advanced/Invention);

G01F23/00 (Core/Invention)

CPC: G03G15/0831 G03G15/0865 G03G2215/0802 G03G2215/0132 G03G2215/0819 G03G15/556 G03G15/0856 G03G15/50 G03G15/086 G03G15/0863

US: 1/1 399/13 399/258 399/263 399/27 399/27 399/53 399/61 399/83



Family:

Publication number	Publication date	Application number	Application date
AR094062 AA	20150708	AR2013P104796	20131217
AU2013363024 AA	20140626	AU20130363024	20131217
AU2013363024 BB	20161124	AU20130363024	20131217
AU2013363028 AA	20140626	AU20130363028	20131217
AU2013363028 BB	20160811	AU20130363028	20131217
AU2015236436 AA	20151001	AU20150236436	20150323
CA2892248 AA	20150521	CA20132892248	20131217
CA2892248 C	20170905	CA20132892248	20131217
CA2892263 AA	20150521	CA20132892263	20131217
CA2941750 AA	20160906	CA20152941750	20150323
CL2015001479 A1	20151211	CL20150001479	20150602
CL2015001480 A1	20151211	CL20150001480	20150602
CN106415401 A	20170215	CN201580016447	20150323
EP3123249 A1	20170201	EP20150767847	20150323
EP3123249 A4	20171115	EP20150767847	20150323
IN201617034967 A	20170224	IN201617034967	20161013
MX2015006421 A1	20151026	MX20150006421	20131217
MX2015006422 A1	20151026	MX20150006422	20131217
MX2016011318 A1	20161220	MX20160011318	20150323
MX345523 B	20170202	MX20150006421	20131217
MX346462 B	20170322	MX20150006422	20131217
SG11201607362W A1	20161028	SG20161107362	20150323
TW201433888 A	20140901	TW20130144321	20131204
TWI570528 B	20170211	TW20130144321	20131204
US2014169806 AA	20140619	US20120717908	20121218
US2014169808 AA	20140619	US20130013457	20130829
US2014169810 AA	20140619	US20130107487	20131216
US2014205305 AA	20140724	US20140227131	20140327
US2014212155 AA	20140731	US20140227117	20140327
US2014226994 AA	20140814	US20140257074	20140421
US2015301476 AA	20151022	US20150755147	20150630
US2017017179 AA	20170119	US20160278584	20160928
US8989611 BB	20150324	US20120717908	20121218
US9046817 BB	20150602	US20130107487	20131216
US9069286 BB	20150630	US20140257074	20140421
US9104134 BB	20150811	US20140227117	20140327
US9128443 BB	20150908	US20140227131	20140327
US9152080 BB	20151006	US20130013457	20130829
US9477175 BB	20161025	US20150755147	20150630
WO14099856 A1	20140626	WO2013US75569	20131217
WO14099859 A1	20140626	WO2013US75573	20131217
WO14099860 A1	20140626	WO2013US75575	20131217
WO15148352 A1	20151001	WO2015US21947	20150323
ZA201503703 A	20160928	ZA20150003703	20131217
ZA201503712 A	20160727	ZA20150003712	20131217

Priority:

US20120717908	20121218	US20130013457	20130829	US20130107487	20131216
US20140227131	20140327	US20140227117	20140327	US20140257074	20140421
WO2013US75575	20131217	WO2013US75569	20131217	US20150755147	20150630
WO2015US21947	20150323	US20160278584	20160928		

Probable Assignee: LEXMARK INT INC**Assignee(s):** (std): LEXMARK INT INC**Assignee(s):** STEINBERG DANIEL THOMAS ; SCHNEIDER DAVID ANTHONY ; ABLER JEFFREY ALAN ; BAST CHARLES ALAN ; DUTTON TODD ALAN ; LEEMHUIS MICHAEL CRAIG**Inventor(s):** (std): ABLER JEFFREY ALAN ; ABLER JEFFREY ALLEN ; BAST CHARLES ALAN ; CHARLES ALAN BAST ; DANIEL THOMAS STEINBERG ; DAVID ANTHONY SCHNEIDER ; DUTTON TODD ALAN ; JEFFREY ALAN ABLER ; LEEMHUIS MICHAEL CRAIG ; MICHAEL CRAIG LEEMHUIS ; SCHNEIDER DAVID ANTHONY ; STEINBERG DANIEL ; STEINBERG DANIEL THOMAS ; TODD ALAN DUTTON**Agent(s):** WRAYS PTY LTD; GOWLING LAFLEUR HENDERSON LLP; GOWLING WLG CANADA LLP; ROBIC; PUGA VALDES JUAN ENRIQUE; BOERNER ROBERT; JUSTIN M; TROMP JUSTIN MICHAEL**Designated states:** AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BN BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IR IS IT JP KE KG KM KN KP KR KZ LA LC LI LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PA PE PG PH PL PT QA RO RS RU RW SA SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW**14) Family number: 56727849** (US2014169807A)

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Title: SYSTEMS AND METHODS FOR MEASURING A PARTICULATE MATERIAL

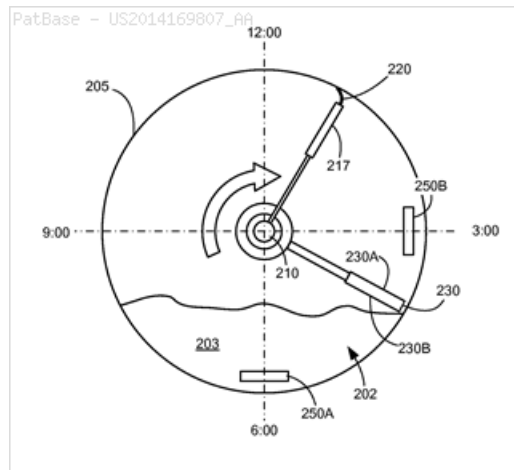
Abstract: Source: US2014169807A A system for measuring a particulate material according to one example embodiment includes a container having a reservoir for storing the particulate material. A rotatable shaft is positioned within the reservoir. A paddle is mounted on the shaft and rotatable independent of the shaft. A driving member is rotatable with the shaft and positioned to push the paddle when the shaft rotates. The paddle is free to fall ahead of the driving member. At least one sensor is positioned to sense a rotational motion of the paddle as the shaft rotates. A processor in electronic communication with the at least one sensor is configured to determine an amount of the particulate material remaining in the reservoir based on the sensed rotational motion of the paddle.

Classifications:**International (IPC 8-9):** G01F23/00 G03G13/08

G03G15/08 (Advanced/Invention)

CPC: G03G13/08 G01F23/003 G03G15/0858 G03G15/0879

G03G2215/0132 G03G2215/085

US: 399/27**Family:**

Publication number	Publication date	Application number	Application date
US2014169807 AA	20140619	US20120717923	20121218
US9031424 BB	20150512	US20120717923	20121218

Priority:

US20120717923 20121218

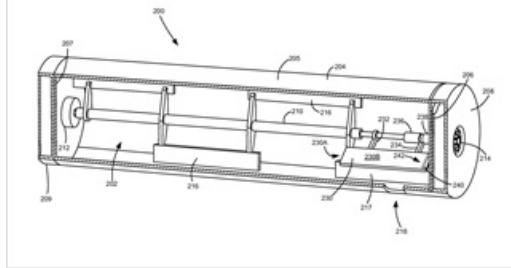
Probable Assignee: LEXMARK INT INC**Assignee(s):** (std): LEXMARK INT INC**Inventor(s):** (std): ABLER JEFFREY ALAN ; LEEMHUIS MICHAEL CRAIG ; STEINBERG DANIEL**Agent(s):** JUSTIN M**15) Family number: 60276421** (US9128444B)

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Title: TONER LEVEL SENSING FOR A REPLACEABLE UNIT OF AN IMAGE FORMING DEVICE USING PULSE WIDTH PATTERNS FROM A MAGNETIC SENSOR

Abstract: Source: US9128444B A method for estimating an amount of toner remaining in a reservoir of a replaceable unit for an image forming device according to one example embodiment includes measuring an amount of revolution of a shaft in the reservoir of the replaceable unit, decreasing an estimate of the amount of toner remaining in the reservoir based on the measured amount of revolution of the shaft, monitoring whether a pattern of widths of digital pulses generated from a magnetic sensor when the magnetic sensor senses a magnetic field of a magnet connected to a paddle mounted on the shaft in the reservoir when the paddle is near a lowest center of gravity of the paddle changes, and adjusting the estimate of the amount of toner remaining in the reservoir when the pattern of widths of digital pulses generated from the magnetic sensor changes.

Classifications:**International (IPC 8-9):** G03G15/00 G03G15/08 (Advanced/Invention)**CPC:** G03G15/556 G03G15/086**US:** 1/1

**Family:**

Publication number	Publication date	Application number	Application date
US9128444 BA	20150908	US20140254178	20140416

Priority:

US20140254178 20140416

Probable Assignee: LEXMARK INT INC**Assignee(s):** (std): LEXMARK INT INC**Inventor(s):** (std): BAST CHARLES ALAN ; LEEMHUIS MICHAEL CRAIG**Agent(s):** JUSTIN M**16) Family number: 60987702 (US2015346632A)**

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Title: TONER LEVEL SENSING USING ROTATABLE MAGNETS HAVING VARYING ANGULAR OFFSET

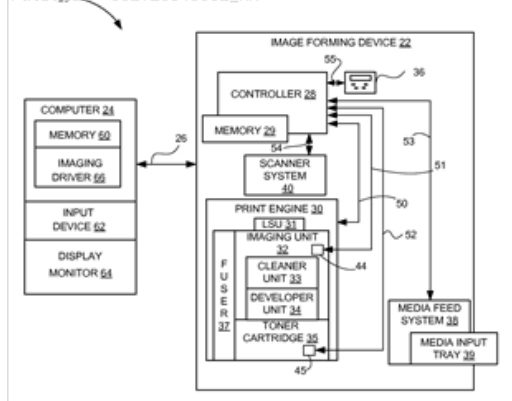
Abstract: Source: US2015346632A An electrophotographic image forming device according to one example embodiment includes a replaceable unit having a reservoir for storing toner and a rotatable shaft positioned within the reservoir. The replaceable unit has a first magnet and a second magnet connected to the shaft and rotatable around an axis of rotation of the shaft in response to rotation of the shaft. An amount of angular offset between the first magnet and the second magnet varies depending on an amount of toner in the reservoir. A sensor is positioned to sense the first magnet and the second magnet at a point in their rotational paths. A processor is in electronic communication with the sensor and configured to determine an angular offset between the first magnet and the second magnet and to adjust an estimate of the amount of toner remaining in the reservoir based on the determined angular.

Classifications:

International (IPC 8-9): G03G G03G13/08 G03G13/16 G03G15/08 G03G15/09 G03G15/16 G03G21/16 G03G21/18 (Advanced/Invention); G03G (Subclass/Invention)

CPC: G03G15/086 G03G15/087 G03G21/1647 G03G21/1676 G03G21/1803 G03G15/0889 G03G15/0921 G03G13/08 G03G13/16 G03G21/1817 G03G2215/0888 G03G15/0856

US: 1/1 399/111 399/119 399/262 399/61 399/63

**Family:**

Publication number	Publication date	Application number	Application date
AR102409 AA	20170301	AR2015P101749	20150602
AU2015271017 AA	20151210	AU20150271017	20150528
AU2015271017 BB	20171026	AU20150271017	20150528
CA2949458 AA	20161116	CA20152949458	20150528
CL2016002898 A1	20170324	CL20160002898	20161114
CN106462098 A	20170222	CN201580029476	20150528
CO20160004906 A2	20170217	CO20160004906	20161201
EP2952968 A1	20151209	EP20150168520	20150520
HK1218332 A1	20170210	HK20160106221	20160601
IL248986 A0	20170131	IL20150248986	20150528
IN201617043067 A	20170331	IN201617043067	20161216
KR20170010413 A	20170131	KR20167036476	20150528
MX2016014734 A1	20170228	MX20160014734	20150528
PH2016502397 A	20170220	PH20160502397	20161201
SG11201609488S A1	20161229	SG20161109488	20150528
TW201610618 A	20160316	TW20150116019	20150520
US2015346632 AA	20151203	US20140556470	20141201
US2015346681 AA	20151203	US20140556464	20141201
US2016077466 AA	20160317	US20150953714	20151130
US2016299466 AA	20161013	US20160182936	20160615
US2017052478 AA	20170223	US20160341216	20161102
US9335656 BB	20160510	US20140556470	20141201
US9389582 BB	20160712	US20140556464	20141201
US9519243 BB	20161213	US20150953714	20151130

WO15187438 A1	20151210	WO2015US32783	20150528
WO17095392 A1	20170608	WO2015US63137	20151201

Priority:

US20140006291P 20140602 US20140556464 20141201 US20140556470 20141201
US20150953714 20151130 US20160182936 20160615 US20160341216 20161102
WO2015US32783 20150528

Probable Assignee: LEXMARK INT INC

Assignee(s): (std): CARPENTER BRIAN SCOTT ; LEXMARK INT INC ; MCALPINE ROBERT WATSON ; TROMP JUSTIN MICHAEL

Inventor(s): (std): LEEMHUIS MICHAEL CRAIG ; ROBERT WATSON MCALPINE ; ROBERT WATSON MALPINE ; BRIAN SCOTT CARPENTER ; WATSON MCALPINE ROBERT ; TRUE JASON CARL ; TROMP JUSTIN MICHAEL ; SCOTT CARPENTER BRIAN ; MCALPINE ROBERT WATSON ; CARPENTER BRIAN SCOTT

Agent(s): WRAYS PTY LTD; ROBIC; JUAN ENRIQUE PUGA VALDES; JAIME EDUARDO DELGADO VILLEGAS; BOERNER ROBERT; JUSTIN M; TROMP JUSTIN MICHAEL

Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BN BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT HW HN HR HU ID IE IL IN IR IS IT JP KE KG KM KN KP KR KZ LA LC LI LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PA PE PG PH PL PT QA RO RS RU RW SA SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

17) Family number: 61123333 (US2015362860A)

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Title: SYSTEM AND METHOD FOR MAGNETIC COMMUNICATION BETWEEN REPLACEABLE UNIT AND IMAGING DEVICE

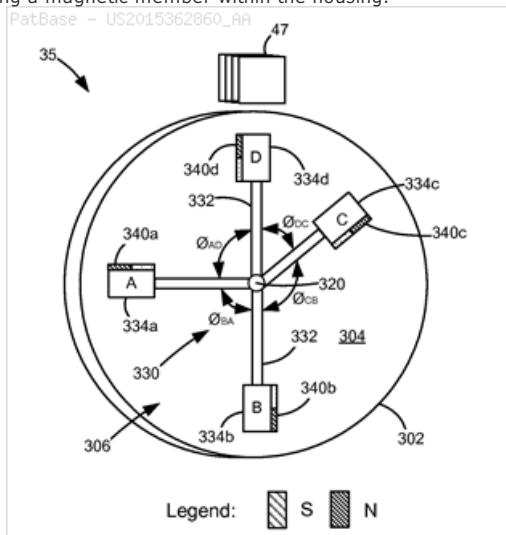
Abstract: Source: US2015362860A An apparatus includes a housing having a reservoir for storing consumable material and an outlet for exiting the consumable material from the reservoir; a rotatable shaft disposed inside the reservoir and positioned along a length of the housing; and one or more magnetic members disposed within the housing and coupled to the shaft so as to rotate therewith. The one or more magnetic members generate a magnetic field and when rotating indicate information about the replaceable unit. The information is based upon the presence or absence of the one or more magnetic members relative to one or more predetermined locations for receiving a magnetic member within the housing.

Classifications:

International (IPC 8-9): G03G15/08 (Advanced/Invention)

CPC: G03G15/0865 G03G15/0863 G03G15/0867

US: 1/1 399/272



Family:

Publication number	Publication date	Application number	Application date
US2015362860 AA	20151217	US20140537069	20141110
US9429870 BB	20160830	US20140537069	20141110

Priority:

US20140011946P 20140613 US20140537069 20141110

Probable Assignee: LEXMARK INT INC

Assignee(s): (std): LEXMARK INT INC

Assignee(s): LEXMARK INTERANTIONAL INC

Inventor(s): (std): ANDERSON JOHN DOUGLAS ; NELSON CHRISTOPHER MICHAEL ; OWENS BRIAN KEITH ; WIEDEMANN ADAM RANDAL