(51) International Patent Classification:  
E01H 5/04 (2006.01)  
E01H 5/07 (2006.01)

(21) International Application Number:  
PCT/US20 12/020083

(22) International Filing Date:  
3 January 2012 (03.01.2012)

(25) Filing Language:  
English

(26) Publication Language:  
English

(30) Priority Data:  
61/429,454 4 January 2011 (04.01.2011) US  
61/434,460 20 January 2011 (20.01.2011) US


(72) Inventors:  
GERRITTS, Samuel J. [US/US]; 12301 West Wirth Street, Wauwatosa, Wisconsin 53222 (US).  

(74) Agents: RATHE, Todd A. et al; 1061 I W. Hawthorne Farms Lane, Mequon, Wisconsin 53097 (US).


[Continued on next page]

(54) Title: TWO STAGE SNOW THROWER

(57) Abstract: A two stage snow thrower (20) comprises an auger (32), and a snow discharge housing (38). In one implementation, the auger comprises an auger flight assembly (62) comprising first and second blades (76, 78) supported by first and second supports (72, 74) offset from one another by 90 degrees. In one implementation, the snow discharge housing comprises a one piece deep drawn auger housing (100). In one implementation, the snow discharge housing further comprises a chute (312) extending from the housing, an inner ring (330) coupled to one of the chute and the housing, an outer ring (332) about the inner ring and coupled to the other of the chute and the housing, detents (334) associated with one of the inner ring and outer ring; and a projection (336) associated with the other of the inner ring and outer ring, wherein the projection (336) is resiliently biased into one of the detents (334) to releasably retain the chute in one of a plurality of positions.

Declarations under Rule 4.17:
— as to the identity of the inventor (Rule 4.17(i))
— as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(H))
— as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii))

Published:
— with international search report (Art. 21(3))
— before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments (Rule 48.2(h))

Date of publication of the international search report: 26 October 2012
A. CLASSIFICATION OF SUBJECT MATTER

E01H 5/04(2006.01), E01H 5/07(2006.01)

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

E01H 5/04; E01H 5/08; E01H 5/09

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Korean utility models and applications for utility models

Japanese utility models and applications for utility models

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
eKOMPASS(KIPO internal) & Keywords: snow thrower, auger, chute, detent, projection, auger support

C. DOCUMENTS CONSIDERED TO BE RELEVANT

<table>
<thead>
<tr>
<th>Category</th>
<th>Citation of document, with indication, where appropriate, of the relevant passages</th>
<th>Relevant to claim No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Y</td>
<td>US 6952893 Bl (DONALD RICHARD SANDERSON) 11 October 2005 See claims 1-21, and figures 1-4</td>
<td>1.2, 9, 10, 12, 16, 24, 31, 32, 3-8, 11, 13-15, 17-23, 25-30</td>
</tr>
<tr>
<td>A</td>
<td>US 2009-0183395 Al (SUGIURA KEISUKE) 23 July 2009 See claims 1-6, and figures 1-12</td>
<td>1-32</td>
</tr>
<tr>
<td>A</td>
<td>US 05177888A A (THORUD; RICHARD A. et al.) 12 January 1993 See claims 1-15, and figures 1-4</td>
<td>1-32</td>
</tr>
</tbody>
</table>

* 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 throw doubts on priority claim(s) or which is cited to establish the publication date of citation or other special reason (as specified)
- "O" 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
- "T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
- "&" document member of the same patent family

Date of the actual completion of the international search
14 AUGUST 2012 (14.08.2012)

Date of mailing of the international search report
27 AUGUST 2012 (27.08.2012)

Name and mailing address of the ISA/KR
Korean Intellectual Property Office
189 Cheongna-ro, Seo-gu, Daejeon Metropolitan City, 302-701, Republic of Korea
Facsimile No. 82-42-472-7140

Authorized officer
LEE Seung Hwan
Telephone No. 82-42-48 1-8419

Form PCT/ISA/210 (second sheet) (My 2009)
<table>
<thead>
<tr>
<th>Patent document cited in search report</th>
<th>Publication date</th>
<th>Patent family member(s)</th>
<th>Publication date</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>WP 2006-00 19 19 A1</td>
<td>5.01.2006</td>
</tr>
<tr>
<td></td>
<td></td>
<td>CN 101487241 A</td>
<td>22.07.2009</td>
</tr>
<tr>
<td></td>
<td></td>
<td>US 7730642 B2</td>
<td>08.06.2010</td>
</tr>
<tr>
<td>US 05177888A A</td>
<td>12.01.1993</td>
<td>US 05315771 A</td>
<td>31.05.1994</td>
</tr>
</tbody>
</table>