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(54) Title: MAGNETIC SHIELDING TAPE FOR CABLE AND METHOD FOR MANUFACTURING THEREOF

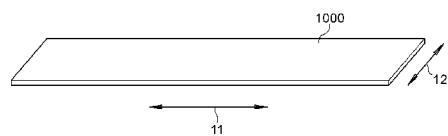


Fig. 1A

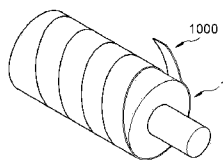


Fig. 1B

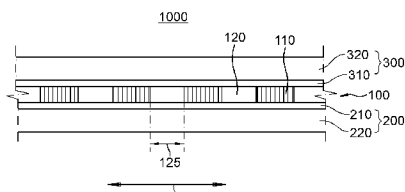


Fig. 2

(57) Abstract: The present disclosure relates to a magnetic shielding tape, which is capable of shielding a high-to-low frequency of a signal transmitted through a cable in shielding of a magnetic field which flows in such a cable or is emitted therefrom, and a method for manufacturing the same. The basic magnetic shielding tape comprises: - a thin film magnetic layer including at least one metal ribbon sheet which is divided into a plurality of fine pieces by flaking process, and a gap provided between adjacent fine pieces among the plurality of fine pieces; - a cover film layer adhered to one side surface of the thin film magnetic layer through a first adhesive layer; and - a conductive layer adhered to the other side surface of the thin film magnetic layer through a second adhesive layer, wherein a size of the gap is determined according to a frequency band of the signal.



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- *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))*

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INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2017/024935

Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:

2. Claims Nos.:
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:

3. Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box No. III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1. As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.

2. As all searchable claims could be searched without effort justifying an additional fees, this Authority did not invite payment of additional fees.

3. As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:

4. No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

- The additional search fees were accompanied by the applicant's protest and, where applicable, the payment of a protest fee.
- The additional search fees were accompanied by the applicant's protest but the applicable protest fee was not paid within the time limit specified in the invitation.
- No protest accompanied the payment of additional search fees.

INTERNATIONAL SEARCH REPORT

International application No
PCT/US2017/024935

A. CLASSIFICATION OF SUBJECT MATTER
INV. H01B11/10
ADD. H05K9/00 B32B27/00

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)
H01B H05K B32B

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

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
EPO-Internal

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X A A	US 2016/064814 A1 (JANG KIL JAE [KR] ET AL) 3 March 2016 (2016-03-03) the whole document ----- CN 205 039 010 U (HITACHI METALS LTD) 17 February 2016 (2016-02-17) figure 1 & US 2016/293295 A1 (HUANG DETIAN [JP] ET AL) 6 October 2016 (2016-10-06) -----	1-12, 19-22 13-18 1-22
X	US 2015/342099 A1 (JANG KIL JAE [KR] ET AL) 26 November 2015 (2015-11-26) paragraphs [0036], [0061], [0094], [0103]; figures 1,2, 11-15 -----	1-22
X	US 2015/334886 A1 (JANG KIL JAE [KR] ET AL) 19 November 2015 (2015-11-19) the whole document -----	1-22

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 throw doubts on priority claim(s) or which is cited to establish the publication date of another 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

2 October 2017

Date of mailing of the international search report

10/10/2017

Name and mailing address of the ISA/

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Overdijk, Jaco

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No PCT/US2017/024935

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			US 2015334886 A1 19-11-2015
			WO 2014092500 A1 19-06-2014

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1-12

Magnetic shielding tape for a cable in which the gap sizes between the magnetic flakes is determined according to the frequency band of the signal transmitted by the cable.

2. claims: 13-18

Magnetic shielding tape for a cable in which the gap between the magnetic flakes is filled with a filler material different from the adhesive layers used.

3. claim: 19

A multi-layered magnetic shielding tape, having a magnetic layer and a conductive layer, wherein, when wound around a wire, which transmits a first signal and the conductive layer emits a second signal, the magnetic layer absorbs at least 50% of the second signal in a frequency band of a predetermined range.

4. claims: 20-22

A multi-layered magnetic shielding tape, having a magnetic layer and a conductive layer, wherein a width of each of the plurality of magnetic pieces is equal to or greater than 10 μm and equal to or less than 5 mm, and a width of the gap is equal to or greater than 0.1 μm and equal to or less than 300 μm , and when a frequency, in which an imaginary part of relative permeability of the magnetic layer becomes a maximum value, refers to a maximum shielding frequency, the maximum shielding frequency is increased as the width of the gap is larger and the width of each of the plurality of magnetic pieces is smaller.
