

EUROPEAN PATENT APPLICATION

Application number: **86201416.4**

Int. Cl.⁴: **B 41 J 15/16, G 06 K 15/16,**
G 01 D 15/24

Date of filing: **12.08.86**

Priority: **30.08.85 BE 2060779**

Applicant: **ATEP SYSTEMS, naamloze vennootschap,**
Nieuwstraat 14a, B-2990 Haacht-Wespelaar (BE)

Date of publication of application: **04.03.87**
Bulletin 87/10

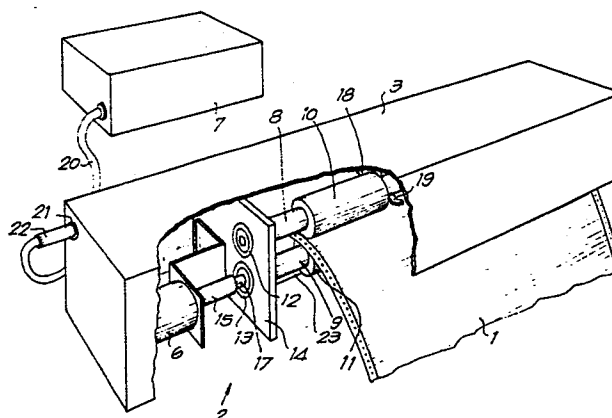
Inventor: **Verbiest, Charles Guido, Mereldreef 57,**
B-2850 Keerbergen (BE)

Designated Contracting States: **AT CH DE FR GB IT LI LU**
NL SE

Representative: **Donné, Eddy, M.F.J.Bockstael**
Arenbergstraat 13, B-2000 Anvers (BE)

Transport device for continuous forms for printing units and additional feeder applied therefor.

Device (2) for the transport of continuous forms (1) for printing units, of the type where continuous forms (1) are moved forward by means of a traditional feeder and leave the printing unit by the sound deadening cover (3), characterized thereby that an additional feeder (2) for the continuous forms is provided.



TRANSPORT DEVICE FOR CONTINUOUS FORMS FOR PRINTING UNITS
AND ADDITIONAL FEEDER APPLIED THEREFOR

5 The present invention relates to a device for the
transport of continuous forms for printer units, more common-
ly known by the name of printers.

10 In a special embodiment the invention relates to an
additional feeder which, besides the traditional feeder used
for printers to transport continuous forms, is installed on a
sound deadening cover known as such, which has been put over
the printing unit.

15 It is known that it often occurs when using printers
or printing units, printing their data on continuous forms,
that these forms are drawn to one side, possibly causing an
accumulation of paper. Such a problem is presenting itself
particularly on printing units having a sound deadening
cover, where the continuous forms have to be pushed into this
20 sound deadening cover.

Aforesaid problem of paper accumulation often arises
also due to the fact that printing units often are unsuitable
to function with continuous forms made of different kinds of
25 paper.

If the kind of paper used is too thin or too thick, the transport of the continuous forms may cause trouble due to a difficult passage of the unsuitable paper through the sound deadening cover.

5

The present invention is therefore relating to a device for the transport of continuous forms in printing units or printers, permitting to avoid systematically the aforesaid and other disadvantages.

10

The device according to the invention moreover presents the great advantage that a better sound reduction by the sound deadening cover is obtained and that special traction rollers are used leaving no traces of ink when transporting the printed continuous forms.

15

For this purpose the present invention consists therefore of a device for the transport of continuous forms for printing units of the type transporting the continuous forms by means of a traditional feeder and leave the printing unit by the sound deadening cover, whereby this device according to the invention contains an additional feeder for the continuous forms. In a preferred embodiment, this additional feeder has been built in in the sound deadening cover and both these elements form one construction unit. Therefore the invention also relates to such an autonomous unit which can be applied at several types of printers.

20

25

In order to show the characteristics of the invention more clearly, a preferred example is described hereafter without any limiting character, with reference to the attached drawings where:

30

Figure 1, represents an additional feeder for continuous form, built in in the sound deadening cover;

35

Figure 2, represents roller elements, used for the additional feeder;

5 Figure 3, represents a switch element for the device;

Figure 4, represents a possibility to drive the roller elements of figure 2 by means of an electric motor.

10 The device for the transport of continuous forms 1 according to the invention consists of a traditional feeder built in in the printing unit for the transport of these continuous forms 1, which are not shown in the figures, and in combination herewith an additional feeder 2, which, preferably, is built in in the sound deadening cover 3. This sound deadening cover 3 can or cannot be carried out to form one piece with of the covering of a printer or printing unit.

20 The additional feeder 2, consists mainly of at least two roller elements 4 and 5, between which the continuous forms 1 can be picked up and transported and a driving mechanism to drive at least one of the roller elements 4 or 5.

25 This driving mechanism consists preferably of an electric motor 6, an electric supply 7 and a switch element to connect or to separate the motor 6 to or from the electric supply 7.

30 The roller elements 4 and 5 mainly consists each of a shaft 8 and 9, respectively, and preferably rubber rollers 10 and 11 which can work together. These rollers 10 and 11 are preferably made of sanded synthetic rubber.

35 The shafts 8 and 9 of the roller elements 4 and 5 in

accordance with the preferable embodiment supported by means of ball bearings 12 and 13 in walls 14 provided for that purpose. In accordance with a variant, self-lubricating bronze bearings may be used.

5

The upper shaft 8 is attached in such a way that it can adapt its position automatically in accordance with the thickness of the paper used for the continuous forms 1.

10 The connection between the electric motor 6 and the driven shaft, in this case shaft 9, is made by means of a direct transmission formed here by the silicon tube 15, slipped over the motor shaft 16 and the shaft end 17 of shaft 9 respectively and attached thereto.

15

The motor 6 is preferably of the direct current type and is, in accordance with this embodiment operating at a tension of four and a half to twelve volt and the supplied current has an intensity of 2,5 Amp.

20

The switch element is formed by a microswitch 18 which can be switched on by means of a sliding arm 19 by the presence of the continuous forms. For this purpose the microswitch 18 is therefore preferably placed in the vicinity of
25 the contact plane between the two roller elements, 4 and 5 respectively.

The complete feeder 2 can or cannot be entirely or partly built in in the the sound deadening cover 3. In the re-
30 presented embodiment the motor 6 and the roller elements 4 and 5 are built in in such a sound deadening cover, while the electric supply 7 for the motor however is a separate element which by means of an electric connection 20 provides the current for the motor 6. Preferably a socket 21 is provided in
35 the sound deadening cover 3 with which an interruptable con-

nection can be made by means of a plug 22, between the electric supply 7 and the electric motor 6. The electric supply 7 however form one compact unit with the additional feeder.

5 The device is functioning as follows. If aforesaid traditional feeder supplies a form, and this form gets in contact with the sliding arm 19, of the microswitch 18 at the additional feeder 2, the electric motor 6 starts. As long as there will be any paper for the roller elements 4 and 5, this
10 motor will exert a tractive effort on the continuous forms 1, irrespective of the fact whether those forms are moved forward already by the traditional feeder at that moment or not. The electric motor and the electric supply 7 are, of course, of such a conception that they will not be damaged by over-
15 heating or burning when in the switched on position, the continuous forms are not moving.

 In a preferable embodiment, the whole represented in figure 1, is built as a separate unit and can be commerciali-
20 zed as such.

 In addition, the necessary sheet guides 23 may also be provided.

25 The casing of the complete device, or in other words, the sound deadening cover 3, is preferably made of injection moulded plastic, like for instance PVC.

 The present invention is in no way limited to the embodiment as described as an example and represented in the
30 attached drawings, but such a device for the transport of continuous forms can be realized in numerous forms and dimensions without going beyond the scope of the invention.

35

CLAIMS

1.- Device for the transport of continuous forms for printing units, of the type where continuous forms (1) are moved forward by means of a traditional feeder and leave the printing unit by the sound deadening cover (3), characterized thereby that an additional feeder (2) for the continuous forms is provided.

2.- Device according to claim 1, characterized thereby that the additional feeder (2) mainly consists of at least two roller elements (4-5) between which the continuous forms (1) are picked up to be transported and a driving mechanism to drive at least one of the roller elements (4-5).

3.- Device according to claim 2, characterized thereby that the driving mechanism of the roller elements (4-5) mainly consists of an electric motor (6), an electric supply (7) to feed the motor (6) and a switch element to switch the motor (6) on and off.

4.- Device according to one of the foregoing claims, characterized thereby that the additional feeder (2) for the continuous forms (1) is completely built in in the sound deadening cover (3).

5.- Device according to one of the claims 1 up to and including 3, characterized thereby that the additional feeder (2) and the built in feeder (7), whether electric or not, are built in in the sound deadening cover (3).

6.- Device according to one of the foregoing claims, characterized thereby that the electric motor (6) is of such a type as to be able to supply a constant tractive effort on the continuous forms (1) when switched on, whether these

forms are moving or not.

7.- Device according to one of the claims 3 up to
and including 6, characterized thereby that the switch ele-
5 ment is a microswitch (18).

8.- Device according to claim 7, characterized there-
by that the microswitch (18) is provided with a sliding arm
(19) which can be controlled by the presence of the continu-
10 ous forms (1).

9.- Device according to one of the foregoing claims
2 up to and including 8 characterized thereby that the roller
elements (4-5) mainly consists of shafts (8-9) provided with
15 rubber rollers (10-11) which can work together.

10.- Device according to claim 9, characterized there-
by that the rubber rollers (10-11) are made of sanded syn-
thetic rubber.

20

11.- Device according to one of the claims 3 up to
and including 10 characterized thereby that the connection
between the electric motor (6) and the driven roller element
(5) is a direct transmission.

25

12.- Device according to claim 11, characterized there-
by that the direct transmission is formed by a silicon tube
(15).

30

13.- Device according to one of the foregoing claims
2 up to and including 12, characterized thereby that the rol-
ler elements (4-5) are supported by means of ball bearings
(12-13).

35

14.- Device of one of the foregoing claims, charac-

terized thereby that the number of sheet guides (23) are mounted near the additional feeder (2).

5 15.- Device according to one of the claims, 3 up to and including 13, characterized thereby that the electric motor (6) is a direct current motor operating at a tension of 6 to 12 Volt and an intensity of 2,5 Ampere.

10 16.- Additional feeder (2) as applied in the device as described in the foregoing claims, characterized thereby that it is made as a unit which can be commercialized separately.

15 17.- Additional feeder (2) according to claim 16, characterized thereby that the feeder (2) is mainly built in in a sound deadening cover (3) which can be placed on existing printing units.

20 18.- Additional feeder (2) for continuous forms, according to claim 17, characterized thereby that the sound deadening cover (3) is made of plastic like for instance PVC.

25

BAD ORIGINAL

30

35

1/2

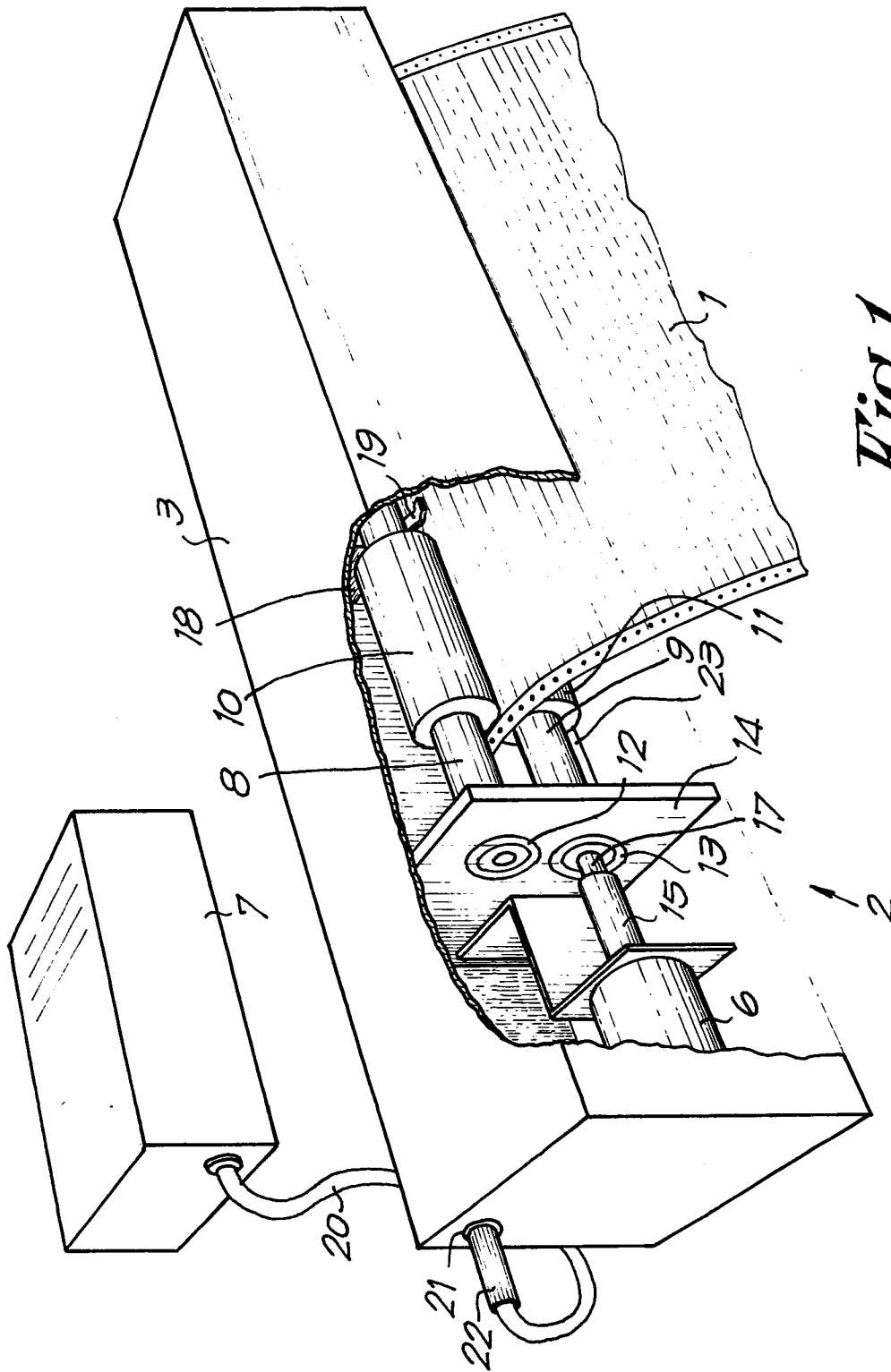
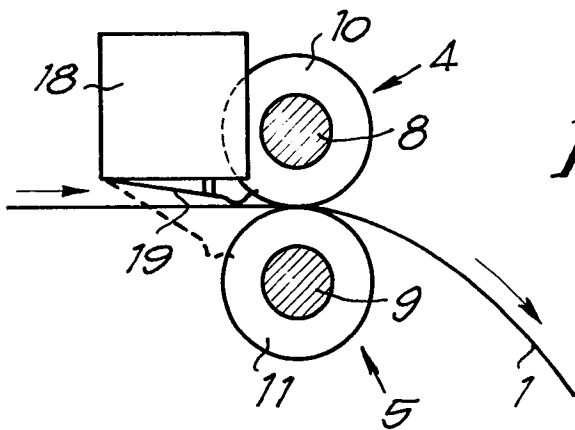
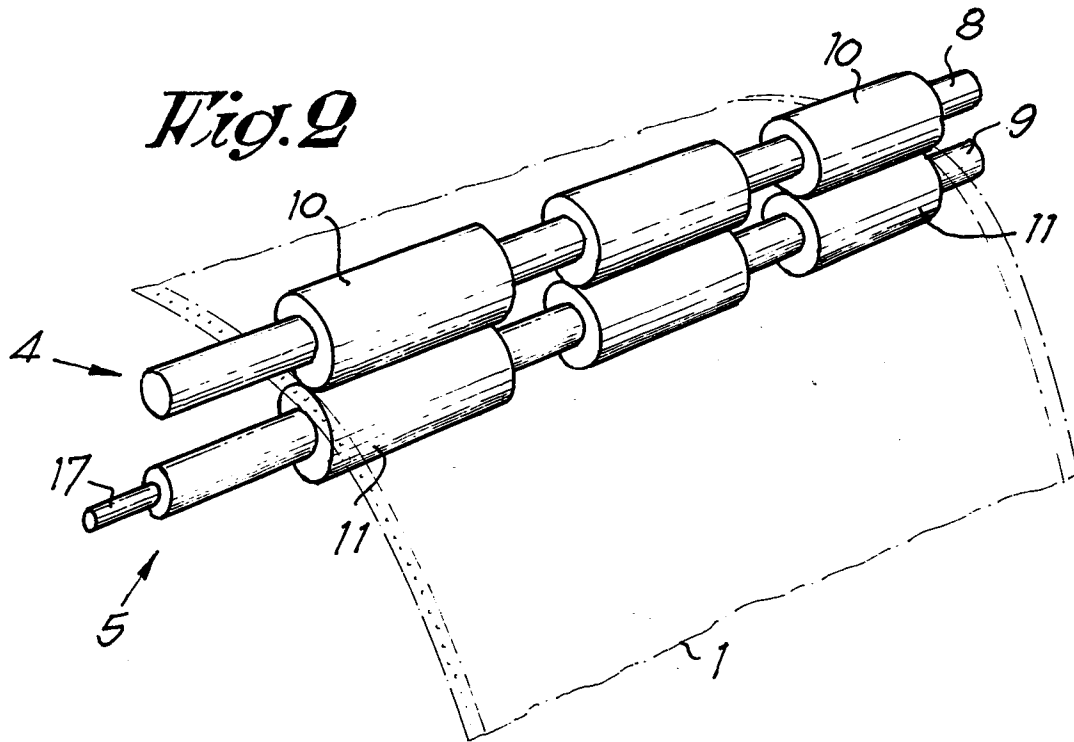
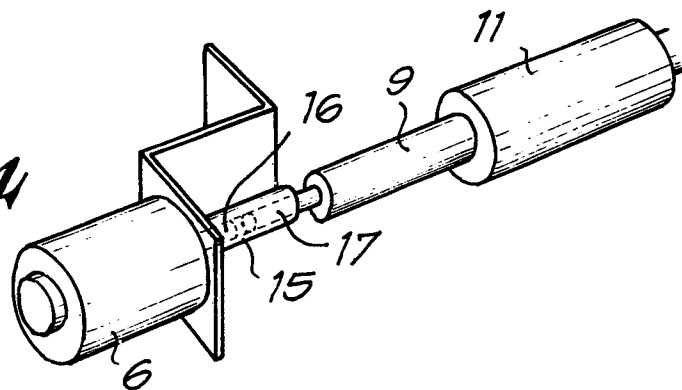


Fig. 2*Fig. 3**Fig. 4*



DOCUMENTS CONSIDERED TO BE RELEVANT			EP 86201416.4
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl. 4)
X	DE - A1 - 2 133 569 (HONEYWELL)	1,2,4-6,14,3,9,10,17	B 41 J 15/16 G 06 K 15/16 G 01 D 15/24
A	* Totality *		
	--		
A	US - A - 4 072 225 (MANNING)	3,9	
	* Fig. 1; Column 3, lines 19-26 *		
	--		
A	DE - A1 - 2 709 310 (PRINTRONIX)	3,7,8	
	* Fig. 2,3; page 6, paragraph 2 *		
	--		
A	US - A - 4 396 307 (SHAH)	3,16	
	* Column 2, line 56 - column 3, line 44 *		
	--		
A	US - A - 4 395 152 (HENDRISCHK)	13	B 41 J G 01 D G 06 K
	* Fig. 1 *		
	--		
A	DE - A1 - 2 036 374 (GENERAL ELECTRIC)	11,15	
	* Fig. 1; page 2, line 21 *		
	--		
A	DE - A1 - 2 136 806 (OLYMPIA)	1,4,5,17,18	
	* Page 2, lines 16-19 *		
	--		
	./.		
The present search report has been drawn up for all claims			
Place of search VIENNA		Date of completion of the search 07-10-1986	Examiner MEISTERLE
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			



DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.4)
A	IBM TECHNICAL DISCLOSURE BULLETIN, vol. 25, no. 7B, December 1982, page 3859; Armonk, New York, US H.E. MEISTER: "Acoustic tractor." * Whole document *	1,4,5, 17,18	

A	US-A-3 722 655 (F.W. SINGER) * Column 3, line 22 - column 4, line 43; figures 2,3 *	1-3,9, 10	

A	FR-A-2 039 896 (SIEMENS AG) * Whole document *	9,10	

A	EP-A-0 024 662 (HONEYWELL INFORMATION SYSTEM ITALIA) -----		TECHNICAL FIELDS SEARCHED (Int. Cl.4)
The present search report has been drawn up for all claims			
Place of search		Date of completion of the search	Examiner
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			