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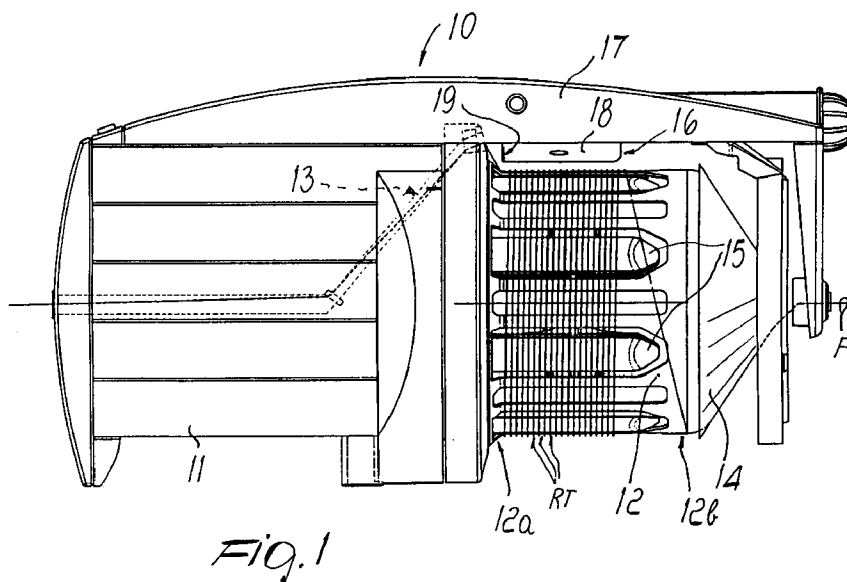
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(54) **Weft feeder for textile machines, with wearproof means for protecting the weft reserve monitoring device**

(57) A weft feeder (10) for textile machines, with wearproof means for protecting the monitoring device (16) of the weft reserve (RT), wherein the wearproof means are constituted by a shield (18) made of thermoplastic polymeric material and provided, at the side

(18a) directed towards the base (12a) of the drum (12) of the feeder (10), with a metallic protective sheet (19) whereon a hardened surface layer is deposited so as to produce a given thickness.



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Description

The present invention relates to a weft feeder for textile machines with wearproof means for protecting the weft reserve monitoring device.

It is known that weft feeders are devices provided with a fixed drum whereon a rotating arm, arranged at the base of said drum, winds a plurality of thread turns constituting a weft reserve. When demanded by the textile machine, which is typically constituted by a loom, the turns of the reserve unwind from the drum, passing through braking means that control the thread tension.

A monitoring device is provided in order to detect the presence of the weft reserve turns on the drum and to activate or stop the rotating arm when said reserve reaches a minimum or, respectively, maximum number of turns.

The monitoring device generally includes a mechanical feeler that detects the presence of the turns, but in modern weft feeders the mechanical feeler has been replaced with so-called "contactless" sensors, typically magnetic ones, which have several advantages, the main one being their insensitivity to dust and to the presence of foreign objects in general.

A sensing device of this type, which comprises fixed magnetic elements supported by the drum of the feeder and movable magnetic elements supported by the device itself, is disclosed in the prior Italian patent application no. TO94A00093 in the name of the same Applicant of the present Application and will be briefly termed "known magnetic sensor" hereinafter.

Correct installation of said known magnetic sensor on the weft feeder requires on the one hand that said sensor be located as close as possible to the feeder drum to avoid dispersion of the flux of the fixed magnetic elements and on the other hand that said sensor be effectively shielded by protective means in order to ensure perfect operation of the movable magnetic elements. This is done by enclosing the sensor in a protective and concealing screen, which however must be made of nonmagnetic material to avoid intercepting and attenuating the flux of the fixed magnetic elements.

Polymeric material in general has excellent magnetic permeability characteristics. However, in practice the use of a shield or housing made of such a material entails considerable functional drawbacks. In fact, due to the very close arrangement of said shield with respect to the drum of the weft feeder, accidental contacts between said shield and the thread occur when the weft reserve is depleted fully due to occasional reasons, and said thread assumes the arrangement shown in figure 3, which shows that the thread F makes contact with the shield 18 in the point designated by P. In view of the low hardness of the polymeric material, this contact, also in view of the temperature increase caused by friction, causes rapid wear of said shield; it has been observed that grooves form on said shield and can hinder the uniform advancement of the thread, causing frequent breakages thereof.

A principal aim of the present invention is to eliminate this drawback while allowing to use polymeric material to provide said protective shield, with the dual advantage of not hindering the correct operation of the magnetic sensor, on the one hand, and of providing an economically advantageous protective means, on the other hand, in view of the possibility of producing it with thermoforming methods that furthermore allow to optimize its shape.

According to the present invention, this important and specific aim is achieved by providing a weft feeder with wearproof means for protecting the weft reserve monitoring device, characterized in that said wearproof protection means are constituted by a shield made of thermoplastic polymeric material that is provided, at the side directed towards the base of the feeder drum, with a metallic protective sheet whereon a hardened surface layer is deposited so as to produce a given thickness. Typically, said metal sheet is connected to the shield of polymeric material through self-threading screws and has an exposed surface layer that is hardened by chromium plating.

The invention will now be described in detail with reference to the accompanying drawings, provided by way of example and wherein:

figure 1 is a schematic lateral elevation view of a weft feeder with the protective shield of the weft reserve monitoring device according to the invention;

figure 2 is a bottom perspective view of a detail of said protective shield;

figure 3 is a view, similar to figure 1, of the weft feeder in the accidental configuration in which the weft reserve is fully depleted.

In the drawings, the reference numeral 10 generally designates the weft feeder, that conventionally comprises a base 11 and a fixed drum 12, whereon a hollow rotating arm 13, arranged at the base 12a of the drum, feeds a plurality of turns of thread constituting a weft reserve RT which, when demanded by the loom or other textile machine, unwinds from the drum, passing through a braking means 14 that controls the mechanical tension of the thread. A conventional device with oscillating rods 15 causes the advancement of the turns of thread from the base 12a towards the free end 12b of the drum, and a monitoring device 16, arranged adjacent to the drum 12 and supported by a rigid arm 17, is provided in order to detect the presence of turns of weft reserve RT and to activate or stop the rotation of the arm 13 when said reserve reaches a minimum or maximum number of turns respectively.

As clearly shown in the figure, the monitoring device 16, typically of the known type with movable magnetic elements described in the cited prior Italian patent application, is concealed and protected by a shield or housing 18 that runs parallel and adjacent to the drum 12 and is provided with the fixed magnetic ele-

ments -- not illustrated -- that interact with the moving elements of the device 16.

According to the present invention, the shield 18 is made of thermoplastic polymeric material, typically chosen among the following materials: acetalic resin, ABS (acrylonitrile-butadiene-styrene), and polypropylene; shield 18 is provided, on its face 18a directed towards the base 12a of the drum 12, with a metallic protective sheet 19 capable of absorbing and neutralizing the stress that the thread F discharges onto the shield 18 when said thread, as a consequence of an accidental full depletion of the weft reserve RT, is arranged as shown in figure 3. The sheet 19, applied on the face 18a of the shield 18, is rigidly coupled to said face, advantageously by means of self-threading screws 20 (figure 2) and is preferably made of one of the following metals or metallic alloys: aluminum, steel, copper, bronze. The sheet 19 has, on its outer surface directed towards the base of the drum 11, a hardened layer that is applied so as to reach a given thickness, typically a layer of surface chromium plating.

The effects of the present invention of course also apply to inventions that achieve the same utility by using the same innovative concept.

Where technical features mentioned in any claim are followed by reference signs, those reference signs have been included for the sole purpose of increasing the intelligibility of the claims and accordingly, such reference signs do not have any limiting effect on the interpretation of each element identified by way of example by such reference signs.

Claims

1. A weft feeder (10) for textile machines, with wearproof means for protecting a monitoring device (16) of the weft reserve (RT), characterized in that said wearproof means are constituted by a shield (18) made of thermoplastic polymeric material that is provided, at the side (18a) directed towards the base (12a) of the drum (12) of the weft feeder (10), with a protective metal sheet (19) whereon a hardened surface layer is deposited so as to produce a given thickness.
2. A weft feeder according to claim 1, characterized in that said protective metal sheet (19) is rigidly coupled to the shield (18) through self-threading screws (20).
3. A weft feeder according to claim 1, characterized in that said thermoplastic polymeric material of the shield is chosen among the following materials: acetalic resin, ABS, polypropylene.
4. A weft feeder according to claim 1, characterized in that said protective metal sheet (19) is made of one of the following metals or metal alloys: aluminum, steel, copper, bronze.

5. A weft feeder according to claim 1, characterized in that said protective metal sheet (19) of the shield (18) has a surface chromium plating layer.

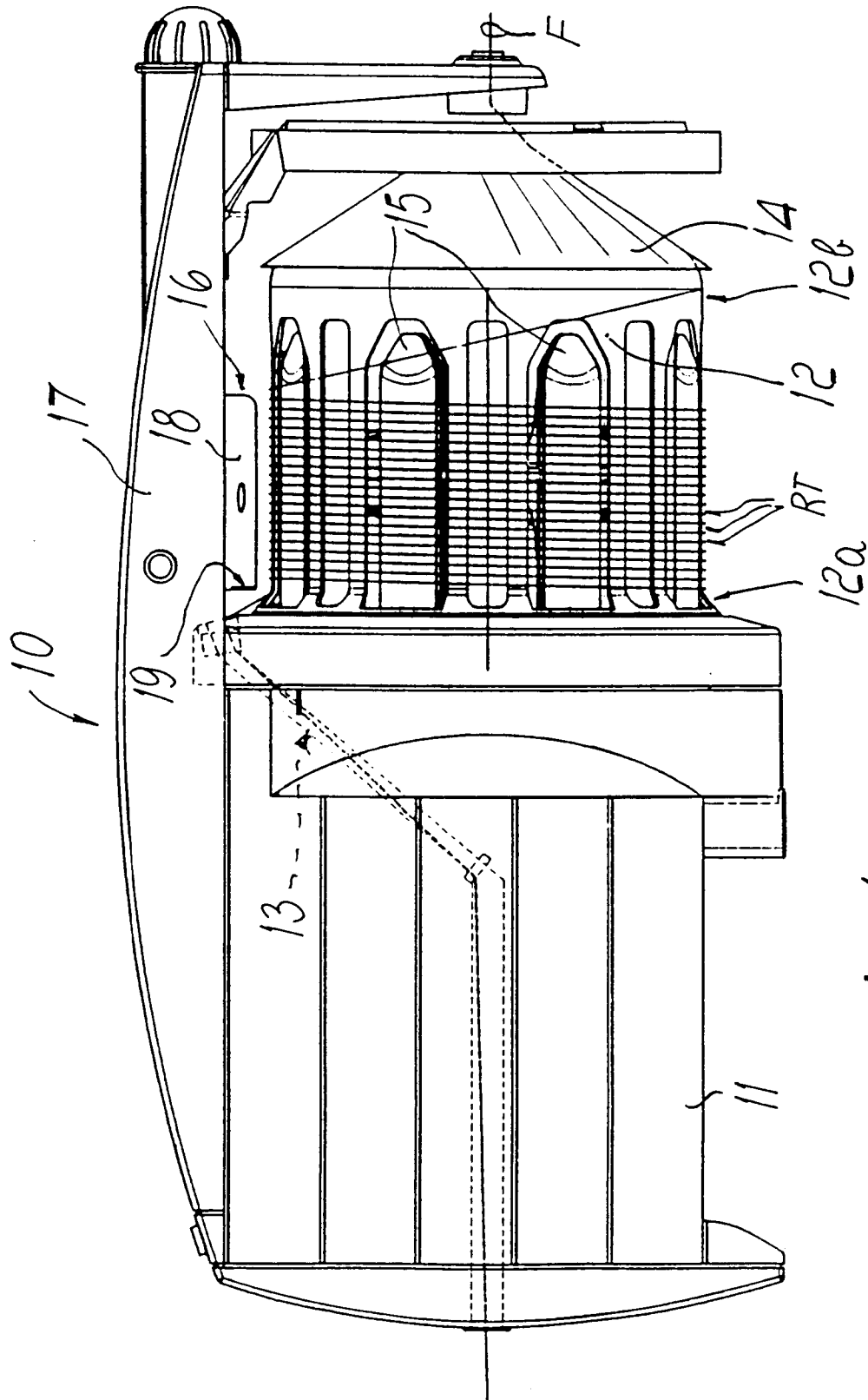


Fig. 1

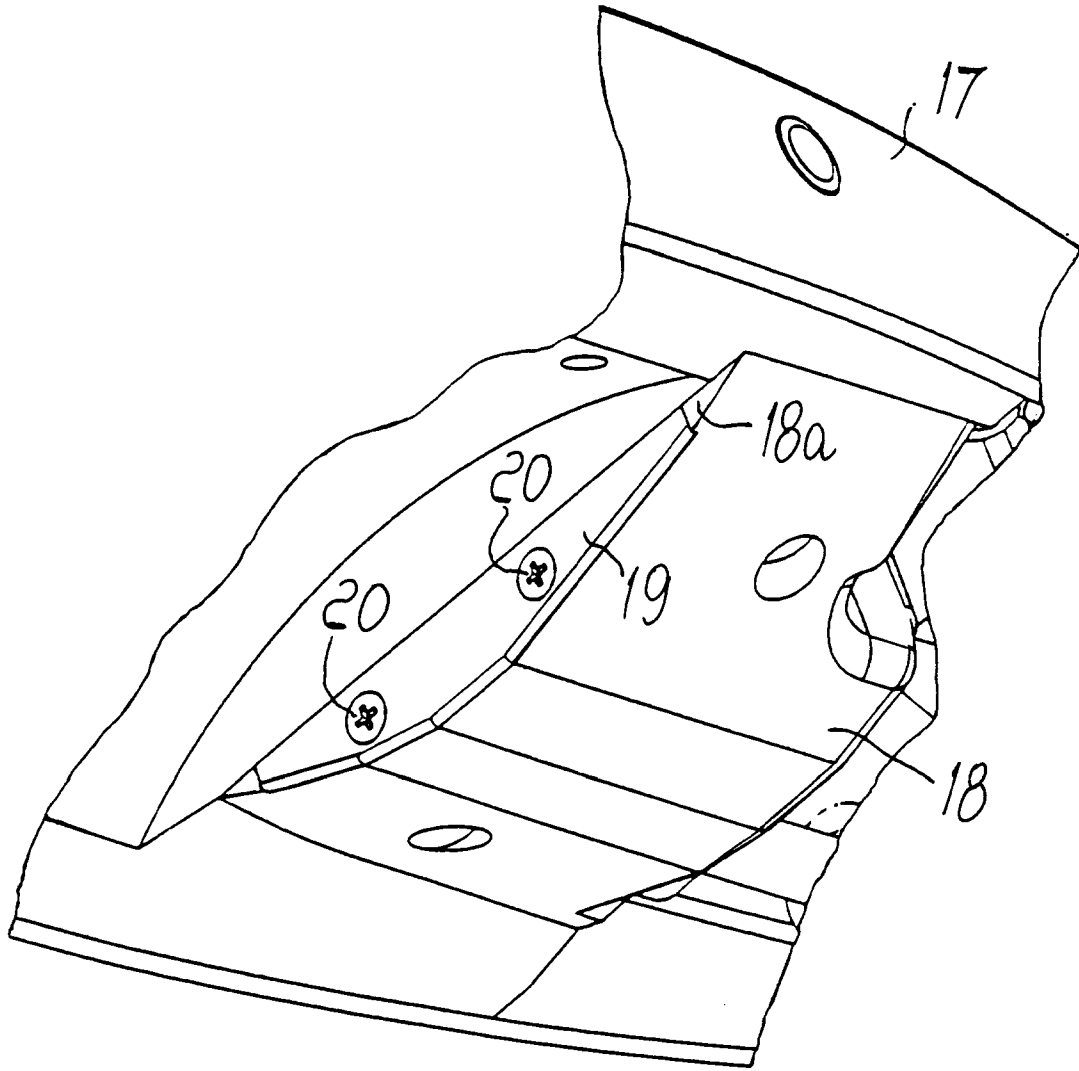


Fig. 2

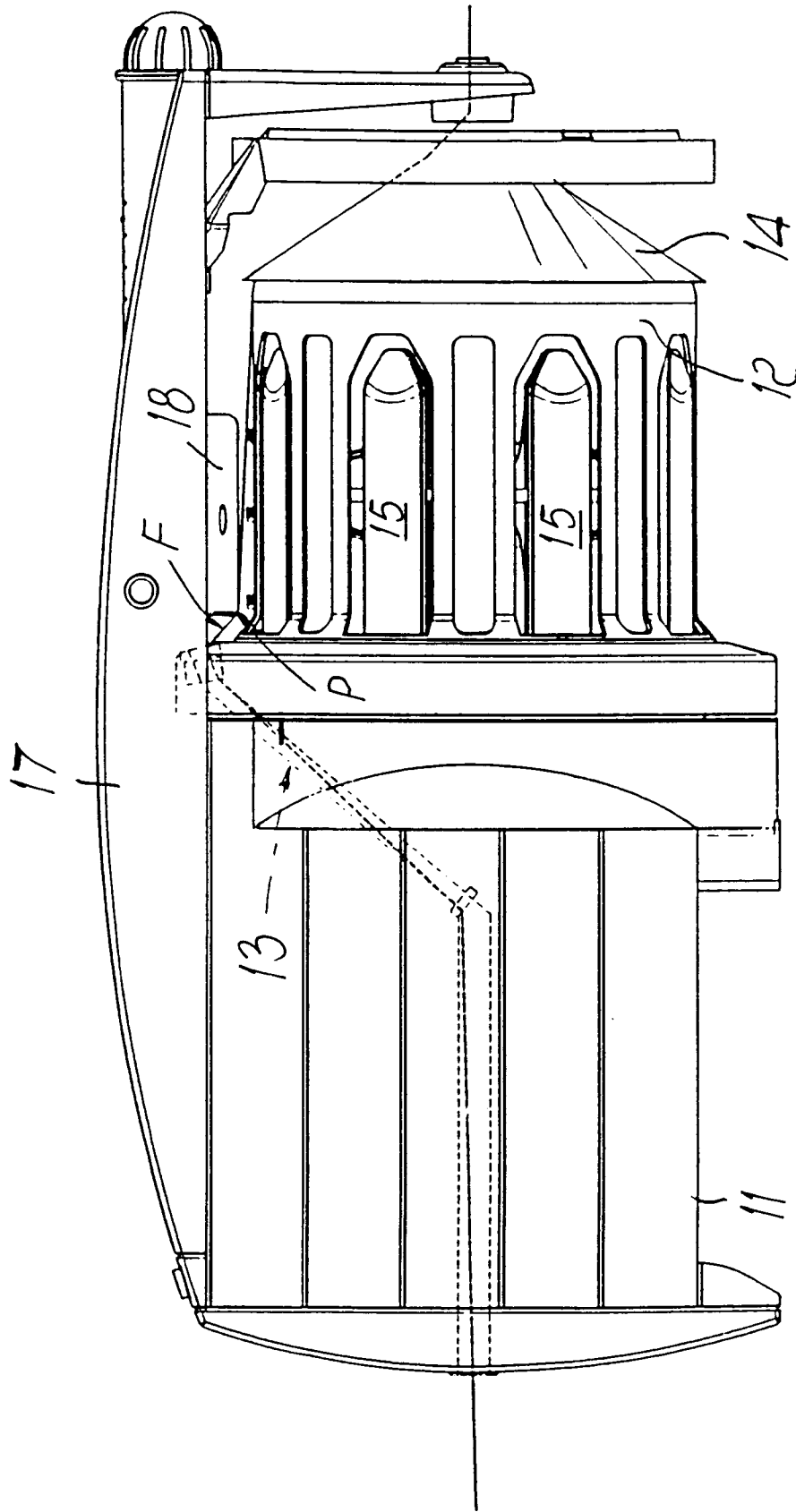


Fig. 3



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EUROPEAN SEARCH REPORT

Application Number
EP 96 11 4777

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.6)
A	EP-A-0 192 851 (SOBREVIN) ---		B65H51/22
A	DE-B-27 01 718 (IRO) -----		
			TECHNICAL FIELDS SEARCHED (Int.Cl.6)
			B65H
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 18 December 1996	Examiner Boutelegier, C
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