

[54] **APPARATUS FOR GUIDING A PRODUCT UNDERGOING TRANSFORMATION, AND THE USE THEREOF IN A WIRE MILL**

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[56] **References Cited**

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[57] **ABSTRACT**

Device which, by means of an appropriately calibrated rupture pin, enables damage to a machine to be prevented during any clogging which might occur in the product being transformed.

**8 Claims, 3 Drawing Figures**

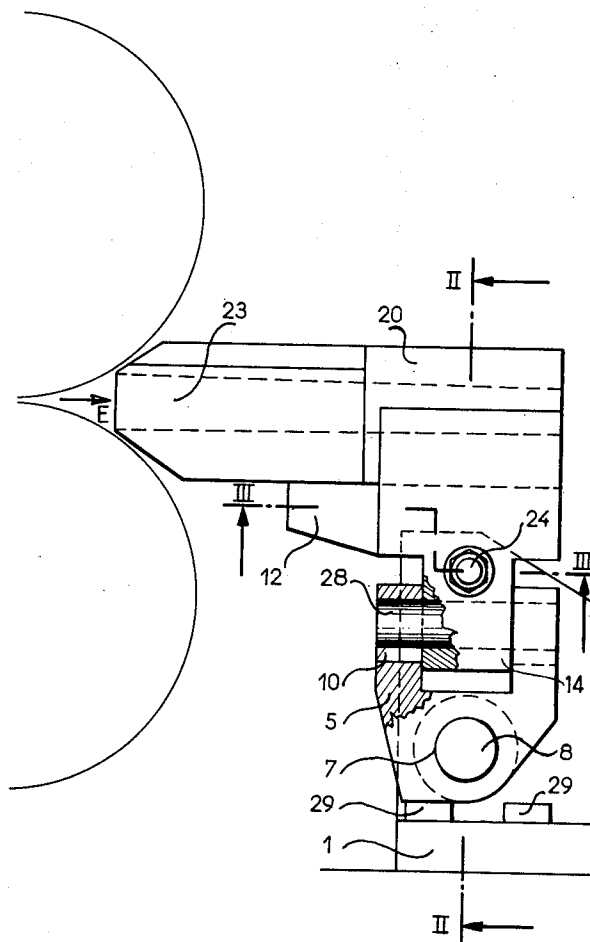
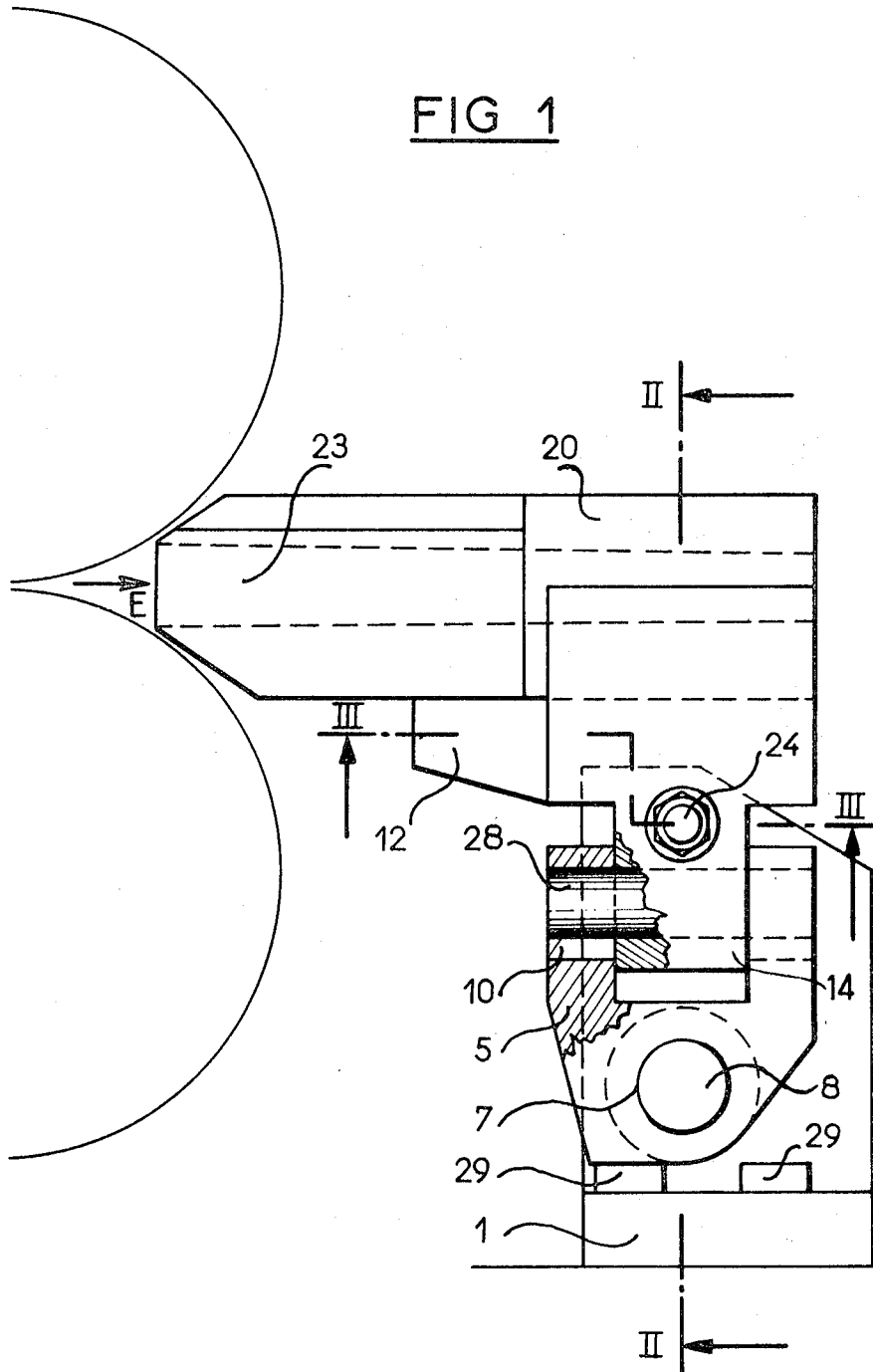


FIG 1



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FIG 2

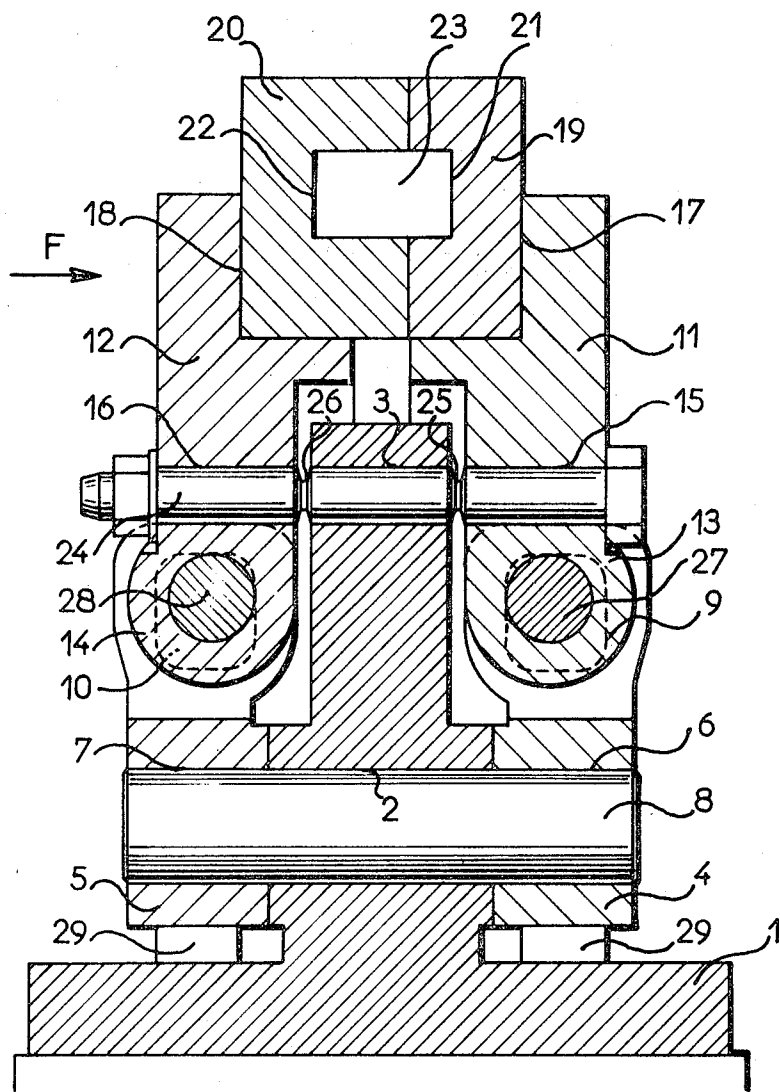
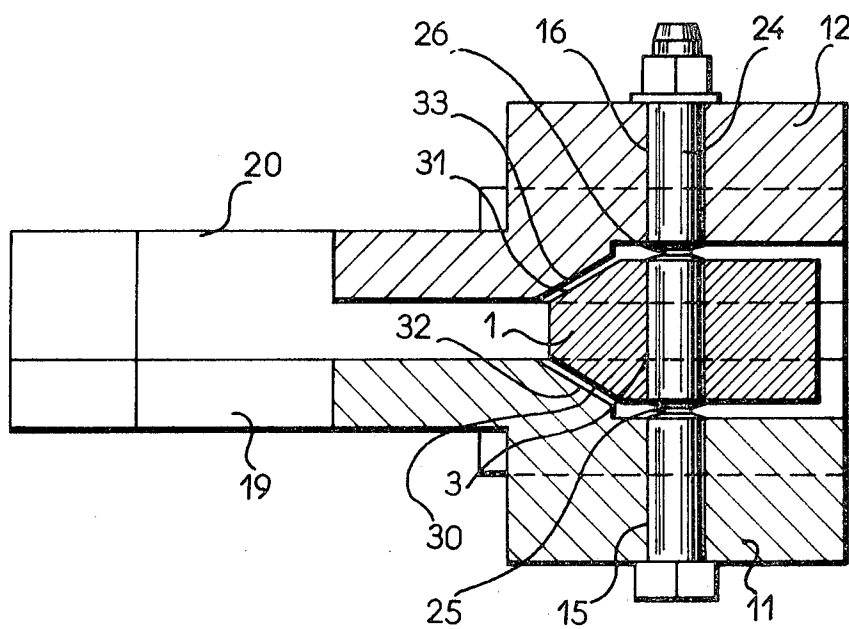


FIG 3



# APPARATUS FOR GUIDING A PRODUCT UNDERGOING TRANSFORMATION, AND THE USE THEREOF IN A WIRE MILL

It is known to use apparatus for guiding a product during transformation, such guiding being more particularly necessary when it is a question of a product traveling continuously over a machine or across a gap between two machines in which the product in question is to be treated successively. Of course, it is absolutely necessary that the travel in question should be carried out without the least incident and more particularly without the product breaking or becoming jammed as a result of "lumps."

Many solutions have already been proposed for meeting the difficulties encountered in this field.

The apparatus according to the invention proposes further improving the present art, proposing an improved guiding apparatus capable of reacting automatically as soon as any anomaly occurs in the travel of the product in the course of transformation.

According to the invention, the guiding apparatus proposed is capable of effecting a pivoting movement as soon as any resistance occurs to the advance of the product through the apparatus. Furthermore, the said pivoting movement has the result of partly opening the apparatus sufficiently to allow the passage, without danger, of an overthickness or "blocking lump" which has temporarily formed at the inlet or within the said apparatus.

To arrive at this result, the guiding apparatus according to the invention comprises, substantially at its base, a first pivoting shaft which is disposed transversely with respect to the direction of travel of the product and about which the upper portion of the apparatus pivots under the effect of a pressure which may be transmitted to it by the product at the instant when any anomaly occurs in the travel of the said product.

This pivoting movement has the result of causing the fracture, by shearing, of a pin provided for this purpose, this pin comprising more particularly two sections which are weakened for this purpose and are arranged at the places where the said fracture by shearing is to take place.

Furthermore, the upper pivoting part of the apparatus is adapted to open along a median longitudinal plane, the two halves of which this part is composed then moving away laterally from one another to leave the product a free passage in cases where the said product has already constituted a "blocking lump."

It will thus be seen that the apparatus according to the invention makes it possible to prevent the fracture of parts of the machine in the case of unexpected incidents occurring during production, which has the advantage of avoiding interrupting production. By means of the apparatus the product can on the other hand pass through the critical section without breaking in the case of lumps occurring in the product.

Other features and advantages of the invention will be brought out during the course of the description which follows and with reference to the accompanying drawings, description and drawings concerning one preferred form of embodiment of the invention which is given purely by way of illustration and is not intended to be limiting in any way.

In the figures, which are described hereinafter, like reference numerals are always used to designate like parts.

FIG. 1 is an elevational view showing an apparatus according to the invention;

FIG. 2 shows on a larger scale a vertical cross section through the apparatus of FIG. 1 taken on the line II—II of that figure; and

FIG. 3 shows a horizontal sectional view through the same apparatus taken on the line III—III of FIG. 1 but on the same scale as FIG. 2.

1 is the T-shaped frame or base of the apparatus.

At its lower portion, the said frame is arranged in such a manner as to comprise a shaft 8 which is transverse relatively to the direction of travel of the product, the said shaft being accommodated in a bore in the part 1. The base 1 comprises in

its upstanding leg a second bore 3 parallel to the first, in which is accommodated the frangible pin 24 which will be discussed hereinafter.

Two lateral straps 4 and 5 are situated each at one of the ends of the shaft 8, which thus passes right through them through the respective bores 6 and 7. Shaft 8 thus constitutes a securing means attaching the straps 4 and 5 to the base 1. Each of these straps comprises at its upper portion a pin, 27 and 28 respectively, situated in bores 13 and 14.

Apertures of rectangular cross section 9 and 10 respectively are also formed in the upper portion of the said straps 4 and 5.

Two lateral cheeks 11 and 12 each extend by means of an appropriate extension into the groove formed by the corresponding strap, the said extension comprising the respective bores 13 and 14 permitting the pins 27 and 28 to constitute the articulation of each of the said cheeks about the strap to which the said cheek is associated.

The cheeks 11 and 12 each comprise a bore, 15 and 16 respectively, which is arranged so as to be in prolongation of the bore of the part 1 mentioned hereinbefore.

The frangible pin 24 already mentioned is accommodated within the bores 3, 15 and 16, duly aligned, the said pin comprising two shearing sections 25 and 26 which are situated in the empty space reserved at each side of the apparatus between the central part 1 and each of the central cheeks 11 and 12.

At the upper portion of the apparatus there is situated the passage 23 through which the transformed product is made to travel. This passage is, in fact, bounded by two longitudinal shells 19 and 20 each comprising an internal recess in the form of a groove, 21 and 22 respectively, these recesses together forming the said passage 23.

The shells 19 and 20 are accommodated within recesses 17 and 18 formed for this purpose on the inner face of the cheeks 11 and 12.

Finally, as FIG. 3 shows, the frame of the apparatus terminates at its upper front portion in two cutaway faces forming ramps 30 and 31 with which correspond ramps 32 and 33 formed on the inner face of the two cheeks 11 and 12, opposite the first-mentioned ramps.

Above the base of the T-shaped frame 1, shoes 29 are placed, the function of which will become apparent hereinafter.

The apparatus operates as follows:

The product issuing from a machine shown diagrammatically in the left-hand portion of FIG. 1, is assumed to be traveling in the direction of the arrow E in that figure.

In case at the entry of the passage 23 there appears a force, particularly because of an irregularity in the travel of the material under transformation, the pressure which results would have the result of violently pivoting the whole of the upper part of the apparatus about the shaft 8 if the pin 24 did not oppose this movement. The two shearing sections of the said pin, however, are intended to yield under pressure, the pin thus being fractured at the two said regions.

The rear faces of the straps 4 and 5, cut at their lower portions with a certain angle relatively to the vertical, would then come to bear on the shoes 29, which are arranged for this purpose.

The two cheeks 11 and 12 are thus disconnected from one another. On the other hand, the pins 27 and 28 come to be situated to bear on the inner faces of the apertures 9 and 10.

Finally, the ramps 32 and 33, subjected to the pressure of the product, come into contact with the ramps 30 and 31 which correspond thereto, which has the result of moving the said two cheeks 11 and 12 away from one another in opposite directions, both transversal to the traveling direction of the product.

The half-shells 19 and 20 also move away from one another and the product can continue its travel without risk of damaging the guide owing to the pressure of the blocking lump which has just occurred.

In order not to encumber the illustration, the stopping device installed on either side of the shaft 8 has not been illustrated. To prevent the falling of parts due to the pressure of the product, of course, the shearing pin should be replaced immediately, and, in fact, this can be done very quickly. The defective portion of the product can also be eliminated at a suitable moment from the production line with a minimum amount of trouble in the said line. Nor has the sprinkling device provided been illustrated, which consists for example of a duct for supplying liquid, which may advantageously be water with the addition of soluble oil, the said liquid being sprayed within the passage 23 through orifices suitably distributed along the said passage.

It goes without saying that the invention is in no way limited to the form of embodiment which has just been described, which is given only by way of example.

That which is claimed is:

1. In an apparatus for guiding a longitudinally traveling product undergoing transformation, the improvement comprising,

- A. a stationary base,
- B. a pair of spaced straps,
- C. first securing means for pivotally attaching said straps to said base, the pivotal axis of said straps being normal to the direction of travel of said product,
- D. a pair of cheeks, one associated with each strap,
- E. second securing means to movably attach each said cheek to its associated strap for a movement transversal to said direction of travel,
- F. a pair of shells, one affixed to each cheek and movable

therewith as a unit, said shells adapted to assume a closed position and an open position, each shell including complementary groove means to define, in said closed position, a closed passage surrounding said traveling product and

G. a frangible pin in engagement with said base and each of said cheeks to immobilize the latter with respect to said base in said closed position.

2. An improvement as claimed in claim 1, wherein the base comprises an inverted T-shaped member including an upstanding leg means.

3. An improvement as claimed in claim 2, wherein said frangible pin extends through the upstanding leg means.

4. An improvement as claimed in claim 2, wherein the upstanding leg means includes ramp means complementary to and straddled by cooperative means carried by said cheeks.

5. An improvement as claimed in claim 3, wherein said upstanding leg means extends in the space between said straps.

6. An improvement as claimed in claim 1, wherein said second securing means are formed of pins constituting an articulation of each said cheek about the associated strap.

7. An improvement as claimed in claim 6, wherein said pins are carried by the cheeks and are adapted to loosely engage with aligned pairs of enlarged bores in said straps.

8. An improvement as claimed in claim 1, wherein each strap includes a two-part rear face arranged at an angle to one another, said base includes shoe means arranged to abut the one or the other part of said rear face respectively in said open and closed position of said apparatus.

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