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⑤④ Apparatus for providing pigeons with rings for competition flights.

⑤⑦ For computing the flight results of competition pigeons, an apparatus (40) is proposed for providing a vane strip (12) around a pigeon's foot (21), which carries in non-visible manner the secret competition number of the pigeon.

The apparatus (40) has cooperating rollers (41,42), whereby the strip (12) is provided around the foot (21). The vane strip (12) may carry the number on its interior side, which is covered by a cover sheet (26). The number may also be provided in bar code (29), readable by a reading pen (61), connected to a microprocessor. The apparatus (40) may be built into a single housing together with a vane strip issuing (15) and a reading device (50).

The pigeon may also carry a footing having a built-in IC containing the data.

EP 0 118 141 A2

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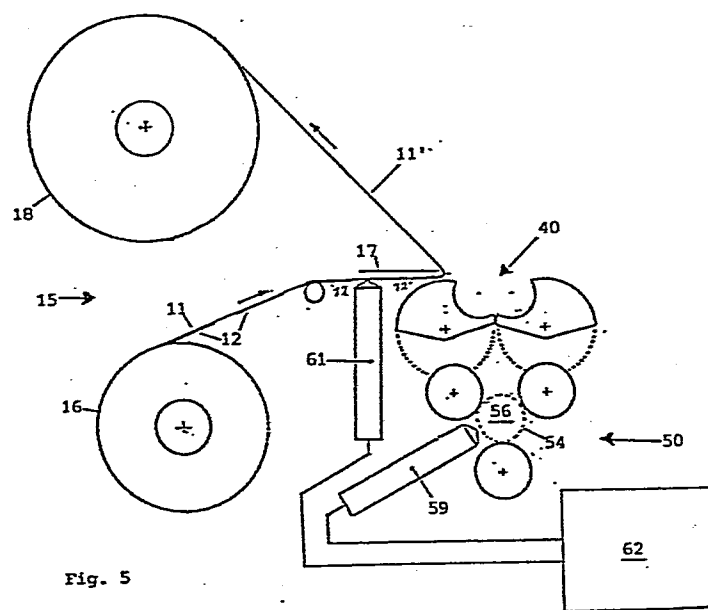


Fig. 5

Title: Apparatus for providing pigeons with rings for competition flights.

The invention relates to an apparatus for providing pigeons with rings, which apparatus is adapted to provide a vane strip around a pigeon's
5 foot. Said vane strips act as so called competition rings carrying the competition number of the pigeon and the flight number of the competition flight for competition flights with homing pigeons.

Said apparatus is characterized by two discs or rollers, which are
10 adapted to rotate in mutual circumferential engagement, the vane strip being permitted to be placed transversely to the roller axes and to be pushed by the pigeon's foot, to be provided with a ring, between the rollers.

15 According to a further feature of the invention the discs or rollers are completely covered with foam rubber or foam plastics. Said rollers may then be rotated continuously, since the material recedes when a pigeon's foot passes. However, the discs or rollers may also be covered along only part of their circumference with foam rubber or foam plastics,
20 in which case the discs or rollers have to carry out a reciprocating movement.

A different construction in order to permit moving the pigeon's foot through the narrow gap between the discs or rollers is that in which the
25 discs or rollers are each provided with a half circular recess for receiving the pigeon's foot.

The discs or rollers may be adapted for movement between two stable positions corresponding to the beginning and the end of the passing of
30 a pigeon's foot. Said positions are then preferably symmetrically situated relative to the common tangent point of the discs or rollers.

Also continuous rotation of the discs or rollers is permitted if the discs or rollers have a number of recesses in their circumferences, said
35 recesses having a mutual circumferential spacing which is equal to the

length of the strips to be provided.

The invention also includes a novel vane strip, which may be provided around the pigeon's feet by means of the above described apparatus.

Said vane strips are adhered by means of an adhesive layer to a transport carrier fabricated from opaque material.

According to the invention the vane strip carries in printing at its upper side a serial number, which is allotted to each vane strip and carries in printing at the lower side a visibly readable competition number, which, however, during the registration and basketing of the pigeon is inaccessible.

The vane strip made from wheatherproof material carries printed characters at two sides. At that side which forms the exterior side after provision of the ring around the pigeon's foot, the serial number of the vane strips on the transport carrier is provided.

Said number may be used for checking the correct registration of the pigeon.

It is very much important that the vane strip carries a competition number, which remains secret and which is verifiable only after the competition. Said number is imprinted at the other or inner side of the vane strip. During the registration and basketing this number is inaccessible and thereby not readable. If later on the pigeon returns from the flight, this number is the absolute proof that the pigeon has arrived. In order to prevent errors, this competition number should remain invisible during basketing and thereafter until the pigeon has arrived. Should the vane strip be released from the transport carrier when the vane strip is provided around the pigeon's foot, the competition number, provided at the lower side, could become visible. In order to prevent this, a cover sheet of opaque material is provided at the position of the vane strip in which at the lower side

the competition number is mentioned, in order to remove the competition number from direct observation by unauthorized persons.

5 Preferably the material of the cover sheet is formed by the material of the transport carrier, in which at the position of the central zone of the vane strip a break line has been provided.

The cover strip prevents, moreover, that the vane strip adheres to the pigeon's foot when the strip has been folded around the foot.

10 By apparatus to be described later on, for releasing vane strips, the transport carrier moves along the sharp edge of a bending plate, whereby the vane strip together with the cover sheet is released from the transport carrier.

15 Making the competition number visibly unreadable may be done in different manners. One manner is to provide the competition number in bar code on the exterior side of the vane strip. The number is then visibly unreadable but may be read by a reading pen, coupled to the club-computer. At the back side of the vane strip the competition number may have been
20 provided in readable characters in the above described manner, covered by the cover sheet. Adjacent the transition between the cover sheet and the adhering lower side of the transport carrier a perforation has been provided, whereby the vane strip may easily be removed from the pigeon's foot after the flight. The pigeon number may then be read and entered
25 into the pigeon recorder processing the data.

A different manner is using a duplicate strip. Thereby the secret competition number is provided on a separate duplicate strip, which is in the same embodiment as the main vane strip and adhered to the same
30 transport carrier.

In that case a releasing apparatus releases two vane strips, one of which is adapted to be provided as the competition vane and the other acts as guarantee strip and therefore is adhered to a basketing list
35 which is kept by the competition staff. Said duplicate strip carries at

the upper side the same serial number as the vane strip proper and comprises at its lower side the competition number, which is covered by a portion of the transport carrier, which may be removed along a break line and serves as the cover sheet.

5
Through this manner it is not necessary to provide the competition number in barcode, which has to be verified by a computer, but the duplicate strip may be adhered to the basketing list next to a pigeon's data. Should an unauthorized person wish to see which
10 competition number is carried by a predetermined pigeon, then he would have to remove the duplicate strip from the list and remove the cover sheet, which operations inevitably leave traces. In order to make fraud still more difficult, a strip of cellotape may be adhered to the list above a complete column of duplicate strips, whereby
15 the unseen removal becomes still more difficult. Said strip has the additional advantage that the competition staff is permitted to remove all duplicate strips simultaneously from the list.

In order to release the vane strips from the transport carrier the
20 invention includes an apparatus in which a supply roll is provided on which the transport carrier for the vane strips has been wound, wherein the carrier is guided towards a bending plate and from there towards a winding roll, the bending plate being provided adjacent to the entry side of the discs or rollers of the apparatus for providing
25 the rings to the pigeon's feet.

Furthermore the invention includes a reading device for reading a bar code provided on the fixed footing of the pigeon and which constitutes the pigeon's identification number, which bar code is read by a reading
30 pen.

Said reading device is characterized in that for reading the bar code, which is provided on a fixed footing of a pigeon's foot, the reading pen is mounted stationary and the ring is mounted such that it may be
35 rotated in front of the reading pen. Thereby correct reading is possible

nevertheless the ringsurface has a strong curvature .

In a preferred embodiment the reading device comprises three or more rolls positioned along the circumference of an imaginary circle, spaced with substantially equal circular angles, whereby the
5 diameter of the circle is equal to the diameter of the footring, by which one or two rolls are pivotable in order to permit the passage of the foot bearing the footring, the reading pen being arranged between two rolls at short distance from the imaginary circle. One or two of said rollers drive the footring, which then rotates around the pigeon's
10 foot so that the number moves completely along the reading pen.

Although the rollers are not restricted to having a predetermined position, it is advantageous when they are arranged adjacent to the apparatus for providing the rings, e.g. according to a further feature
15 of the invention such that the reading device is positioned below the circular pressure rollers or discs of the ringing apparatus. In this manner the ringing by means of the vane strip, provided with the competition number, and the reading of the fixed footring number may take place in a continuous movement in which the pigeon's foot first
20 passes the ringing device and thereafter is pressed further downwardly into the space between the three rollers. Thereafter the pigeon's foot returns in the reverse direction.

Preferably the described reading device is combined in the same housing
25 with an apparatus for issuing the vane strips.

Therein the stationary mounted reading pen for reading the fixed footring may be adapted to cooperate with a stationary arranged reading pen for reading the competition number on the vane strip, said reading pens being
30 preferably connectable one after the other to a decoding unit through an electronic switch.

It is possible to eliminate the competition ring and to incorporate its data, which are variable, likewise in the fixed footring. Then this
35 footring is constructed such, that it is electronically programmable in

that an IC for the storage of fixed and variable data, which are relevant for the competition flight, is built into the ring.

5 As fixed data the fixed footring number, the birth year and the
homeland of the pigeon are programmed. The variable data are a
newly programmed secret competition number and the flight number
for every flight. It is possible to have different pigeons partake
on a certain day in two or more competitions, each having a different
starting place and a different flight number. The secret competition
10 number is used for recording the pigeon and may only become known
to the pigeon fancier if he catches the pigeon after the completion
of the flight.

When the pigeons are put into a basket, the fixed footring numbers of
15 the pigeons basketed for the pigeon fancier are programmed into the re-
corder by the clock computer. Only rings having these numbers may be
read by this recorder. Said numbers cannot be entered by the pigeon
fancier himself, so that it is not possible to read the rings during
the transport by means of an arbitrary recorder. The own recorder will
20 store times prior to the starting time. Erasing said times would mean
simultaneous erasing of the fixed footring number, so that recording
is no longer possible. It is therewith technically very difficult to
practice fraud.

25 When the recorder reads the ring it stores all data of the ring together
with the recording time. Through the starting time and the distance
corresponding with the flight number, which data have before been pro-
grammed into the recorder, the recorder computes directly the flying
velocity. Therein neutralisation of the pigeon during the night may be
30 taken into account if the data, necessary therefore, have been pro-
grammed previously to data with the footring numbers.

In order to permit reading and programming the ring, galvanic contacts
may be provided at its exterior side, which may be touched by hand or
35 by a hand operated pair of sensor pincers and may be used for electronic

programming or reading respectively of the data.

Therewith input and output signals are transmitted through variations in the feed tension or the power consumption of the IC.

5 If a voltage of 12 V of the computer is connected with the main contacts, the outputs automatically become inputs and it is then possible to program the footings in the club building different and to store new competition numbers in the IC. For the connection with said contacts two isolated contacts, to be secured to the finger- and
10 thumbtips, could be used. It is then only necessary to engage the ring in the correct points in order to be able to input or output data. By means of a pair of pincers, having contacts, this is also possible. In each case the information stored in the IC may be transmitted through the pincer- or handcontacts and a cable to a recorder, which is carried
15 around the neck or in the coat pocket.

The said fixed footing needs to have only two galvanic contacts at its circumference, since this number is sufficient for inputting or outputting the variable data.

20

The invention further relates to a pigeon recorder in the embodiment of an electronic microprocessor having digital time signalling, a memory, a display screen, keys for inputting data and for calling up and displaying the data stored in the memory and having means for computing the flight
25 results from the previously stored and afterwards, after arrival of a pigeon, entered data.

Said recorder comprises a keyboard for entering the competition number, which is read by the pigeon fancier from the competition ring provided
30 around the pigeon's foot after the pigeon has returned from the flight. Earlier the following data had already been stored in the recorder's memory: the starting time of the pigeons, which e.g. has been announced by the radio, the distance in kilometers, the pigeon house coordinates etc.

35

By operating keys, marked as such, the arrival time of a predetermined

pigeon, its starting time and the velocity computed therefrom may be called up and made visible on the screen. It is possible to partake simultaneously in different flights, in which case the flight data are arranged in separate columns and in this manner become
5 visible on the display screen.

When recording arriving pigeons, the arrival time and other data of the pigeon are entered in horizontal lines, e.g. step by step. Should a pigeon having a different flight number arrive, then its
10 data are entered in the next horizontal line.

However, it is required for such a recorder that it permits returning from a predetermined position always to an earlier column or to an earlier line. If therefore three arriving pigeons have to be dealt
15 with subsequently, one has not the necessary time to consider the flight results of said pigeons separately. In that case it is always possible to return later on to the pigeon which was under consideration. In connection therewith the recorder according to the invention is characterized in that apart from the keys, by actuation of which the in-
20 formation is indicated on the screen according to subsequent horizontal lines, further keys are provided, whereby the information may be entered into the screen of data in positions on earlier lines, which means receding in horizontal and/or vertical direction with reference to the information position, which momentarily was shown.

25 This may mean a direction to the left and/or upwardly, because for most western countries the normal reading direction is to the right and downwardly. However, there are countries in which the reading direction is completely or partially contrary thereto.

30 A further feature of the recorder is characterized in that keys are provided by actuation of which it is possible to move the information, shown in an arbitrary position in a line or column, to a further line or column.

35 In spite of said possibilities to proceed or recede stepwise the recorder

according to the invention further comprises the possibility to register immediately the competition number and the arrival time of a new pigeon when it arrives at a moment in which one is considering the results of previously arrived pigeons. Thereto the recorder according to the invention is characterized in that means
5 are provided whereby a new competition number of a just arrived pigeon is entered by automatically storing it in the next empty line regardless which line was being displayed on the screen at that moment.

10

The invention will be further explained below with reference to embodiments shown in the accompanying drawings.

Fig. 1 shows a matrix of the data recorded in a recorder;
15 Fig. 2 a to f show a transport carrier with vane strips, only one vane strip being shown, which is considered in different stages of its use.

Fig. 3 shows a modification on the principle of figure 2, namely a transport carrier, having vane strips cooperating with
20 duplicate strips;

Fig. 4 a to e show schematically the operation of the apparatus for providing the vane strips around the pigeon's feet.

Fig. 5 shows schematically a combination of a vane strip releasing device and the ringing device with a reading device; and

25 Fig. 6 shows part of the reading device on an enlarged scale.

Fig. 1 shows a matrix of a recorder having lines and columns. One line contains the data of a single pigeon, such that the pigeon arriving as number X is entered into line X. Furthermore there
30 are three columns containing the competition numbers, the flying velocities and the arrival times respectively of the pigeons. Each box in the figure indicates what will appear in the display.

Let us assume that the flying velocity of the second pigeon (2 - 2) is
35 shown in the display. With the key marked "up" one remains in this

column, but recedes one line; the velocity of the first pigeon V1 appears. By depressing the key marked "down" one had obtained V3. By the keys marked "to the right" and "to the left" one remains in the same line but changes column, whereby the arrival time and the competition number respectively of the second pigeon would have appeared. In this manner all data may be made to appear in the display screen.

In figure 2 a portion of the transport carrierstrip 11 has been shown on which subsequently a large number of imprinted vane strips 12 are adhered by means of their adhesive layer 22 provided at the lower side, which strips are mutually spaced a certain distance. Said strip is received in the shape of a roll in a vane strip releasing device 15 as shown in figure 5. It appears therefrom that the transport carrier strip having the vane strips 12 is drawn from a supply roll 16 and is guided along a bending plate 17, which effects the separation between the transport carrier 11 and the vane strips 12 at the release opening (not shown) whereafter the transport carrier 11 without vane strips is further guided towards a winding spool 18.

The separation which takes place is shown in figure 2 in various stages. In figure 2a the vane strip 12 and the transport carrier 11 are still mutually connected. In figure 2b the vane strip passes during the transport the bending plate 17 (not shown), whereby the vane strip 12 is released from the carrier 11. In fig. 2c is shown that the vane strip 12 has been folded around the pigeon's foot wherein the overlapping ends 13, 14 mutually adhere but the central zone 23 of the strip forming the competition ring 25 proper around the foot is non adheringly provided around the foot 21 in that a protective strip 12 is adhered against said central zone. This cover strip originates from the material of the transport carrier 11 itself for which purpose previously when fabricating the roll 16 a break line 27 is punched in the carrier material. So after passing the bending plate 17, the transport carrier 11 continues its movement towards the winding spool 18; without vane strips but with apertures 28 at the positions where the coverstrip 26 has been released from the

carrier material.

5 In figure 2d once more clearly the vane strip 12 with the cover strip 26 are visible such as this assembly has been released from the transport carrier 11.

Here the lower side of the vane strip is viewed, which lower side constitutes the interior side of the ring 25 formed according to figure 2c.

10 It will be clear that all said operations mentioned above are carried out in the club building during ringing and basketing the pigeons. Here it is an imperative requirement that the competition number, which is allotted to the pigeon, remains unknown to everybody handling the pigeon between the moment of ringing the pigeons and
15 the moment in which the pigeons are released, while yet somewhere in the club building information is present about this competition number for verification if necessary.

Said apparently contrary requirements are fulfilled by the invention
20 in that the competition number, which is printed in bar code 29 on the vane strip 12 (see figure 2a) prior to the ringing, is read and stored in the club computer to which an unauthorized person has no access. Moreover, the competition number is printed in readable script on the lower side of the vane strip, but remains hid in that
25 the strip is folded around the foot 21 of a pigeon, together with a cover strip 26 and thereby is withdrawn from direct observation. Only if the pigeon has returned from the competition flight, the pigeon owner is allowed to remove the cover strip 26 so that he can read the competition number "1, 2, 3, 4, 8" and enter into its recorder.

30 In figure 2e the cover strip 26 has been partially removed and the competition number is partially visible. In figure 2f the vane strip 12 and the cover strip 26 are completely separated.

35 From the description as given above the two-fold function of the cover

strip appears:

- a) hiding the competition number from the ringing action up till the return of the pigeons from the flight.
- b) preventing that the vane strip adheres to the pigeon's foot.

5

In figure 2c, e and f the tear line 31 has been indicated along which the ring may be torn from the foot 21 of the pigeon.

10

In figure 3 a different way has been taken for the above mentioned contrary requirements, namely using a duplicate strip 32. The duplicate strip carries the same serial number as the main strip, carries at its lower side the same competition number and is also released from the transport carrier together with its cover strip 36. The difference is that the competition number is not provided on the upper side in bar code. The duplicate strip now serves, when the pigeon starts with the main strip 12, as the remaining information in the club building for verification purposes in that the duplicate strip 31 is adhered to the basketing list behind the registration data of the relative pigeon whereby still the cover strip 36 continues keeping the competition number secret.

20

25

In figure 4a to e the operation of one of the possible embodiments of a ringing device adapted for use with the present electronic pigeon recording system is shown in different phases. The purpose of the ringing device adapted to the new recording system is to provide a competition ring not by stringing it on the pigeon's foot but by folding it around that foot by starting from a strip instead of from a closed ring, said strip being folded around the pigeon's foot to a ring of which only the overlapping ends are mutually adhered.

30

In figure 4 for ringing the pigeon's foot 21 by means of a vane strip 12, a ringing device 40 is used of the type having ringing jaws, e.g. of the type of which the sector or segment shaped pressing means 41, 42 have half circular recesses 43, 44. Said recesses enable the pigeon's foot 21 to pass the narrow gap 46 in the contact zone between the pressing

35

means 41, 42. In that the pressing means are rotatable around their axis 47, 48 a mutual rolling of the circular circumferences of both pressing means along each other takes place, whereby the contact zone displaces and finally the pigeon's foot provided with a ring
5 leaves the device at the lower side.

The several phases of said ringing operation are shown in figures a to e and will be clear, so that a further description will be unnecessary. Therefore a single remark will suffice. In figure 4a
10 the vane strip 12 is seen in elongated shape, which just has left the vane strip releasing device 15. The strip issues such, that the upper side, as defined in figure 2a, b faces downwardly and the opaque cover strip 26 faces upwardly. The foot 21 is moved downwardly and gradually the strip 12 is folded around the foot to a ring
15 (figure 4b).

In figure 4c the ring 25 is closed and the self adhering ends 13 and 14 of the strip are superposed. Said ends are firmly pressed into mutual engagement (fig. 4e) in phase d when the foot 21 has passed the
20 contact zone through the recesses 43, 44, by further mutual rolling engagement of the circular circumferences.

In a different embodiment of the ringing device 40 the pressing means 41, 42 may be disc shaped, only having recesses 43 and 44. If only
25 one set of recesses is present, the pressing means shall move between one or two fixed positions which may be controlled by return springs and abutments.

It is also possible to have the discs rotate continuously, so without
30 abutments, if said discs are given such a circumferential length that it is dividable an integer number of times by the strip length which is necessary for providing the rings, and as many recesses as this integer number are provided in the circumference.

35 A modified embodiment of such continuous pressure rolls comprises a

set of discs of resilient compressible material, such as foam rubber, foam plastics and similar material.

In figures 5 and 6 a circumferential reading device 50 is shown
5 which may be applied in the electronic recording system according to
the invention, said reading device cooperating with the ringing
device 40 and with the vane strip releasing device 15 and possibly
has been combined therewith. In figure 5 the circumferential reading
device 50 has been shown in its spacial relation to the other
10 apparatus belonging to the recording system; in figure 6 the device
has been shown in itself on an enlarged scale.

The circumferential reading device is substantially formed by three
rolls 51 to 53 arranged around an imaginary circle 54, in which cir-
15 cular space 56 a pigeon's foot 21 may be received, having its fixed
footring 57, for which purpose at least one of the rolls, in the
example the roll 51, must be pivotable, as shown by the double arrow 58.

One or two rolls are power driven, e.g. the roll 52, so that the
20 fixed footring 57 starts rotating slowly around the pigeon's foot 21.
Between the rolls 52 and 53 a reading pen 59 is stationary arranged
so that it is adapted to read the fixed footring number, which is
present in barcode. Just before the competition number, which is pre-
sent in barcode on the vane strip 12, has been read by an other reading
25 pen 61. The reading pens 59, 61 in turn transmit their information
through an electronic switch (not shown) to a decoding unit 62.

30

C L A I M S

1. Apparatus for ringing pigeons adapted to provide a vane strip around a pigeon's foot, characterized by two discs or rollers (41, 42) which are rotatable in mutual circumferential engagement, the vane strip (12) being adapted to be placed
5 transversely to the roller axes (47, 48) and to be pushed by the pigeon's foot (21) to be ringed between the rollers.

2. Apparatus according to claim 1, characterized in that the discs or rollers (41, 42) completely comprise of foam rubber or foam plastics . . .

10 3. Apparatus according to claim 1, characterized in that these discs or rollers (41, 42) are covered over only part of their circumference with foam rubber or foam plastics.

4. Apparatus according to claim 1, characterized in that the discs or rollers (41, 42) each have a half circular recess (43, 44)
15 for receiving the pigeon's foot (21).

5. Apparatus according to claim 3 or 4, characterized in that the discs or rollers (41, 42) are adapted to take one or two stable positions, which in the latter case are situated symmetrically with reference to the common tangent point (46) of the discs or rollers.

20 6. Apparatus according to claim 1, characterized in that the discs or rollers (41, 42) have a plurality of circumferential recesses (43, 44) having a mutual circumferential spacing, which is equal to the length of the strips (12) to be provided.

7. Vane strip adapted to be used as competition ring around
25 the foot of a homing pigeon partaking in a competition flight, said vane strip being adhered together with other similar vane strips by an adhesive layer to an opaque substrate serving as transport carrier, characterized in that the vane strip (12) is imprinted at the upper side with a serial number which is allotted to each vane strip and is
30 imprinted at the lower side with a visibly readable competition number, which, however, is inaccessible during the registration and the basketing of the pigeon.

8. Vane strip according to claim 7, characterized in that at the position in which at the lower side the competition number is mentioned, a coversheet (26) of opaque material is provided in order to shield the competition number from direct observation by unauthorized persons.

9. Vane strip according to claim 8, characterized in that the material of the cover sheet (26) is constituted by the material of the transport carrier (11) in which at the position of the central zone of the vane strip a break line (27) has been provided.

10. Vane strip according to one of the claims 7 - 9, characterized in that the secret competition number is provided in bar code shape (29) at the upper side, e.g. the exteriorly accessible side, of the vane strip (12).

11. Vane strip according to one of the claims 7 - 9, characterized in that the secret competition number is provided on a separate duplicate strip (32), which is in the same embodiment as the main vane strip (12) and is adhered to the same transport carrier (11).

12. Apparatus for releasing a vane strip according to one of the claims 7 - 11, combined with an apparatus for ringing according to one of the claims 1 - 6, characterized in that a supply roll (16) is provided on which the transport carrier (11) for the vane strips (12) has been wound, from which the carrier is guided towards a bending plate (17) and from there to a rewinding roll (18), said bending plate being provided adjacent to the entrance side of the discs or rollers (41, 42) of the apparatus for ringing.

13. Reading device for reading a bar code by means of a corresponding reading pen, characterized in that for reading the bar code, which is provided on a fixed footing (57) of a pigeon's foot, the reading pen (59) is arranged stationary and in that the ring is rotatable in front of the reading pen.

14. Device according to claim 13, characterized by three or more rollers (51, 52, 53), arranged around the circumference of an imaginary circle (54), with substantially equal angular spacing, in which the diameter of the circle is equal to the diameter of the footing (57), while one (51) of two rollers is pivotable in order to permit the passing of the

foot (21) having the footring and in that the reading pen (59) is arranged between two rollers at short spacing from the imaginary circle (54).

15. Device according to claim 13 or 14, characterized in that the device is positioned below the circular pressure rollers or discs (41, 42) of an apparatus for ringing according to one of the claims 1 - 6.

16. Device according to one of the claims 13 - 15 , combined with an apparatus for issuing vane strips.

10 17. Apparatus according to claim 16, characterized in that the stationary arranged reading pen (59) for reading the fixed footring (57) cooperates with a stationary arranged reading pen (61) for reading the competition number on the vane strip (12), said reading pens being connectable one after the other to a decoding unit by means of an
15 electronic switch.

18. Electronically programmable fixed footring for a competition pigeon, characterized in that an IC for storing fixed and variable data which are relevant for the competition flight has been built into the ring.

20 19. Fixed footring according to claim 18, characterized in that galvanic contacts are provided at the exterior of the ring, said contacts being adapted to be touched by hand or by a hand operated pair of sensor pincers and which are used for electronically programming and reading respectively of the data.

25 20. Fixed footring according to claim 19, characterized in that only two galvanic contacts are provided at the ring circumference.

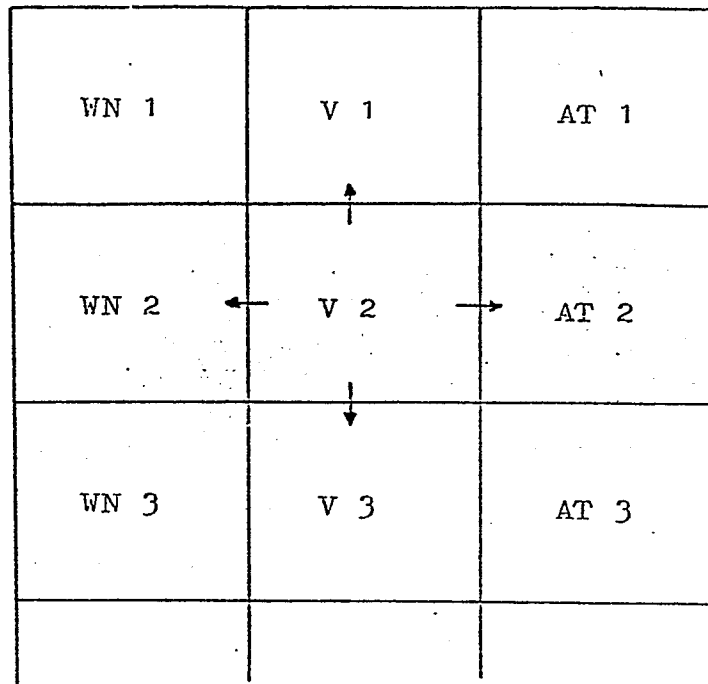
21. Pigeon recorder in the embodiment of an electronic microprocessor having digital time signalling, a memory, a display screen, keys for entering data and for summoning or displaying data which are
30 stored in the memory and having means for computing the flight results with previously stored and later on, after the arrival of a pigeon, entered data, characterized in that apart from the keys by actuation of which the information is displayed on the screen according to subsequent horizontal lines, further keys are provided, the actuation of which permits the
35 appearance of data on the screen at positions of previous lines which

means a recession in horizontal and or vertical direction, therefore in contrary direction, relative to the momentarily shown information position.

22. Pigeon recorder according to claim 21, characterized in that keys are provided which by actuation permits to shift the information shown from an arbitrary position in a line and in a column through one line or column.

23. Pigeon recorder according to claims 21 or 22, characterized in that means are provided whereby, when a new competition number of a just arrived pigeon is entered, this is automatically stored in the next empty line, regardless which line was presented at that moment on the screen.

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LEGENDA

AT = Arrival Time

V = flying Velocity

WN = competition Number

Fig. 1

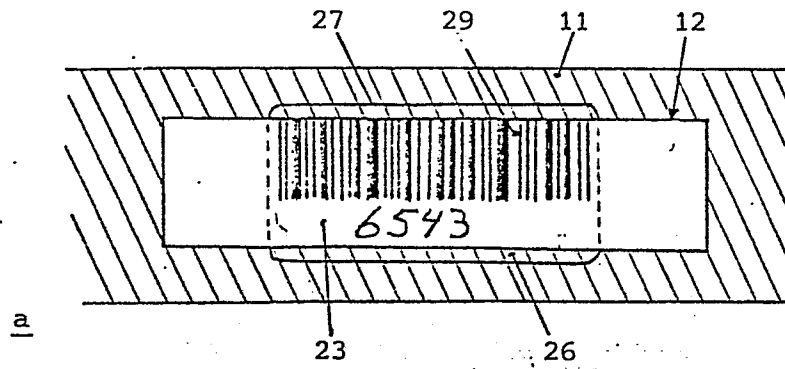
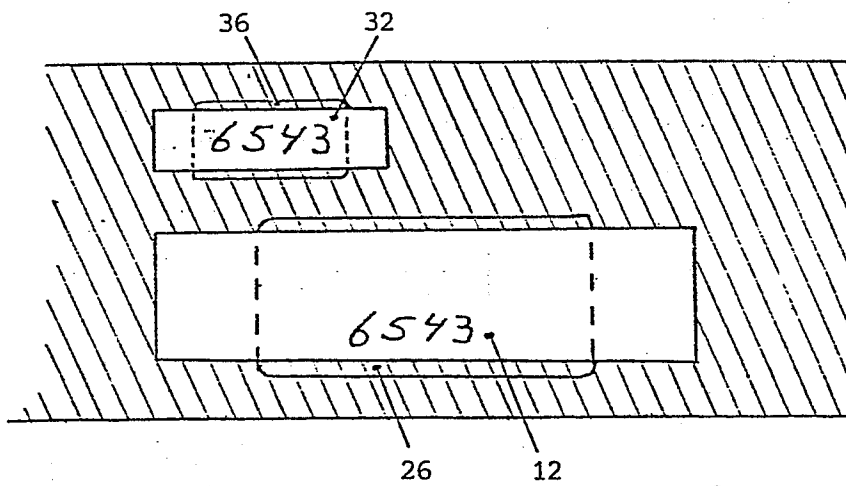
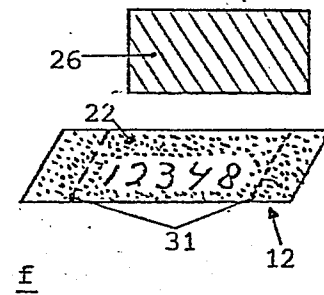
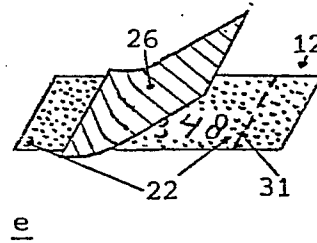
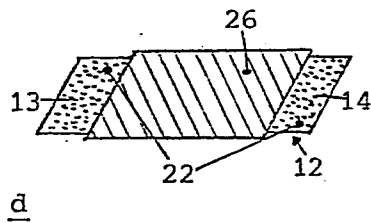
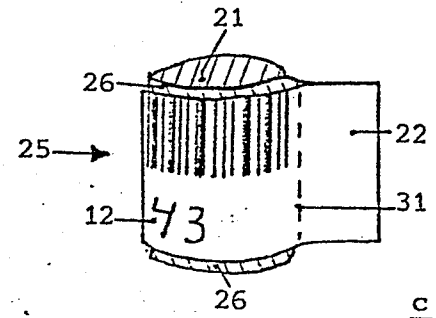
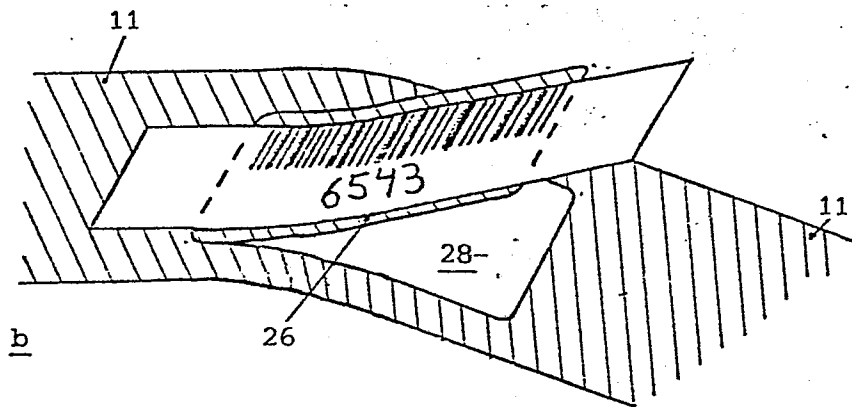


Fig. 2



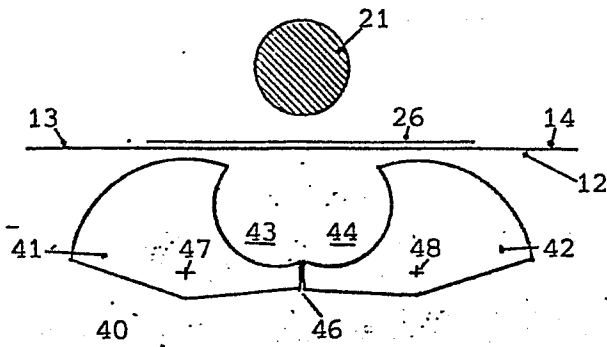


Fig. 4 a

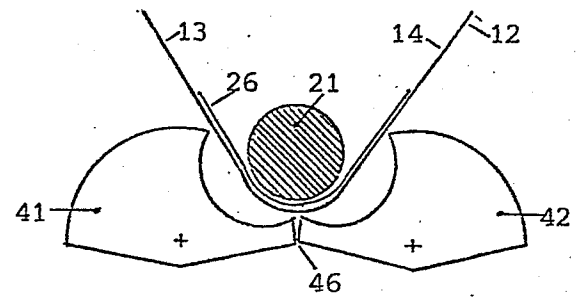


Fig. 4 b

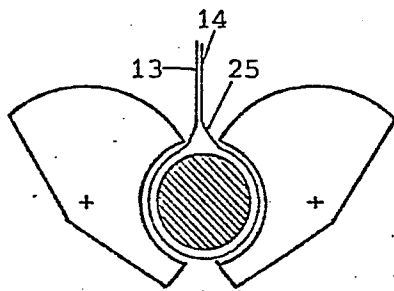


Fig. 4 c

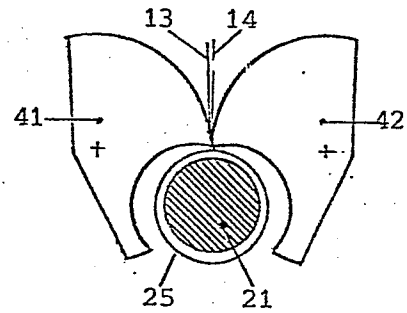


Fig. 4 d

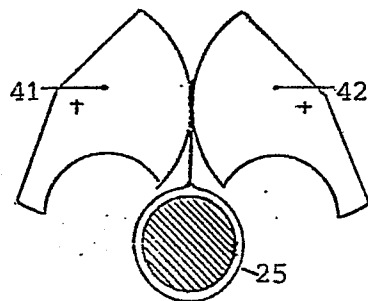


Fig. 4 e

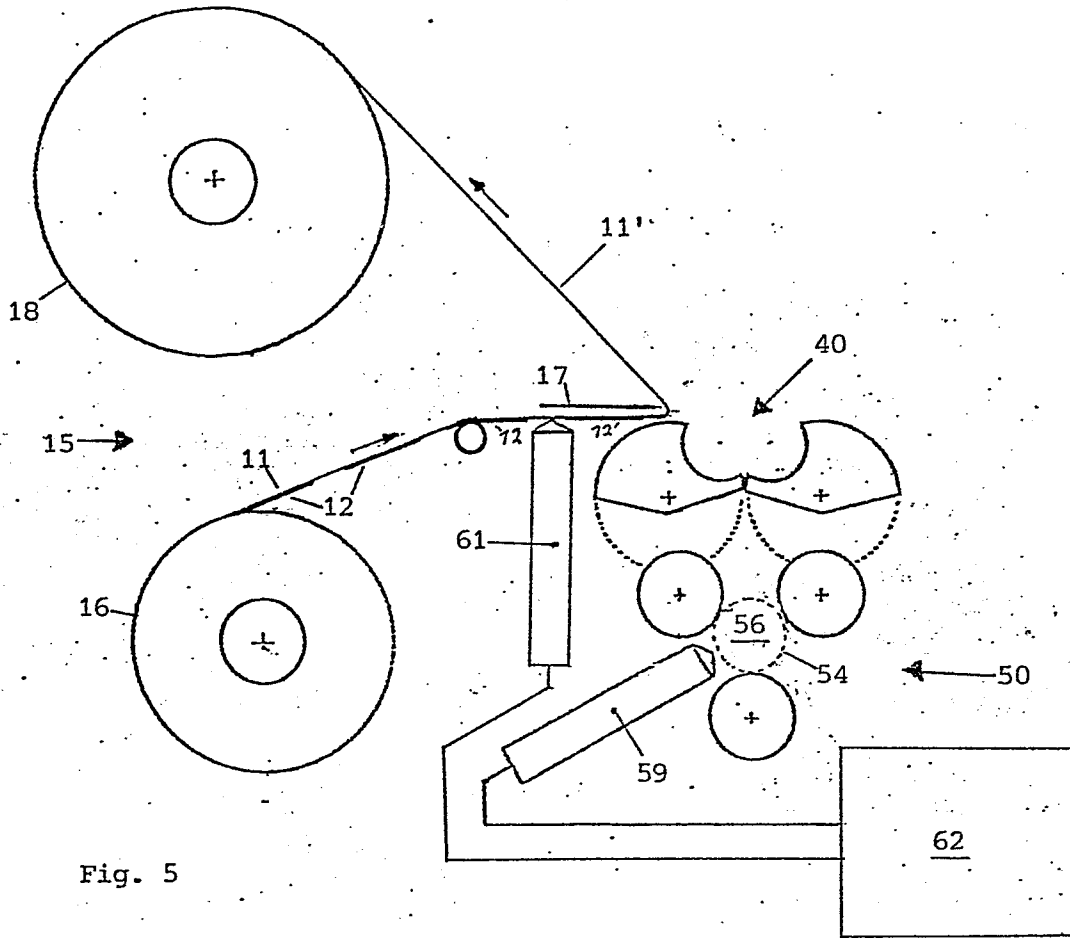


Fig. 5

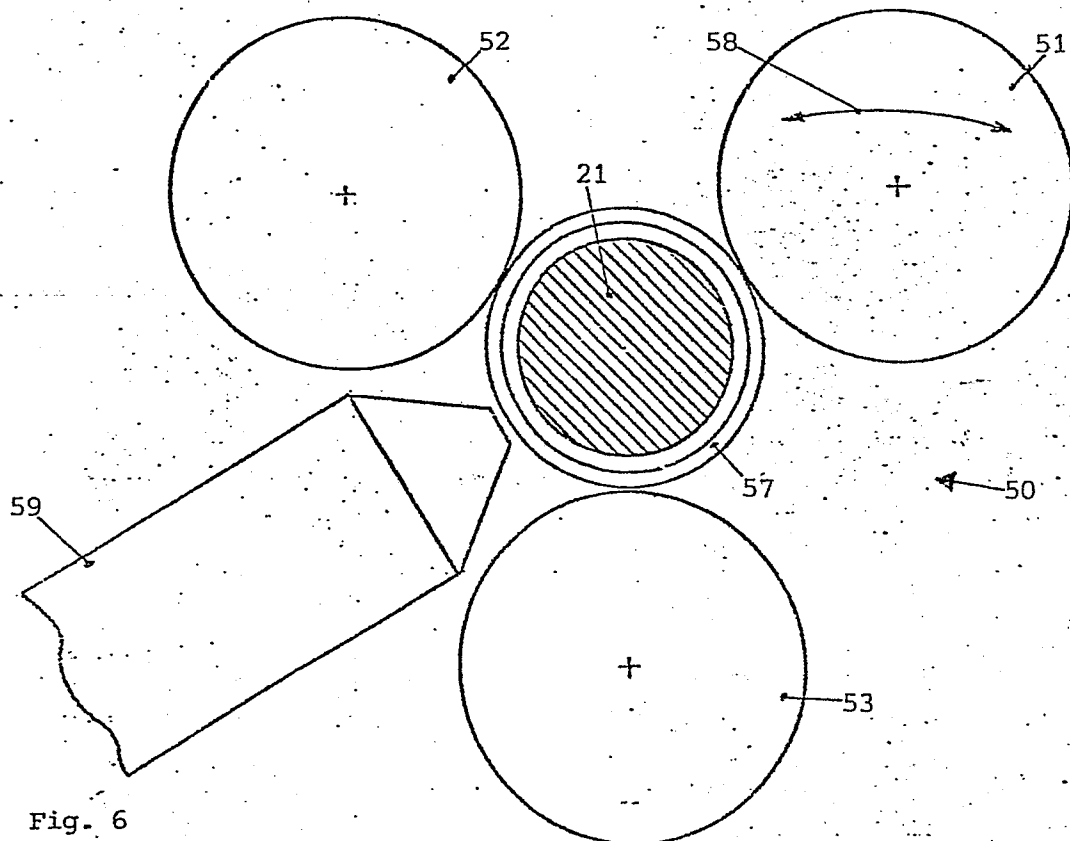


Fig. 6