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(54) **Machine for drawing a textile web out of a roll containing the same.**

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Description

This invention refers to a machine for drawing a textile web out of a roll containing the same and which enable various modular elements to be easily incorporated therein.

ANTECEDENTS TO THE INVENTION

Currently known machines for drawing a textile web out of a roll consist essentially of a trolley carrying the textile, which can move the length of of a table on which the textile is to be drawn the said trolley having two side upright members provided with wheels and rods which join the members together as well as at least one textile web feed roller and its corresponding guide tubes, a cutting unit and a zig-zag folding unit. The cutting unit consists essentially of a cutting head able to travel transversally while the folding unit is made up essentially of a pair of swivelling clamps fitted to one extremity of the trolley and associated with a pair of folder clamps at each end of the table, the said clamps being provided with a stop so as to limit their angular travel.

There exist various models of machine each of which offers devices suitable to the particular required operation, each such operation necessitatthe requisite machine. Moreover should it be required to adapt, in a particular machine, some additional device or module such an adaptation is difficult as the original machine was not designed for that eventuality.

SPECIFICATION

The difficulty of adaptability is resolved with the machine disclosed in this invention patent as the various devices designed for use with the machine are designed as modules which can be integrated into it by adding them to the basic machine with no difficulty. The machine in the invention patent described is also provided with other improvements as disclosed herein.

The improvements in machines for drawing a textile web out of a roll containing the same are characterised in that the manual advance cutting module may be converted to a motorized unit by attaching an integrated accessory which includes, mounted on a single profile bar a motor with its belt and pulley drive this being fixed at the drive head using the same support member which serves to carry the handle for the manually operated version.

Thus the conversion of the manually advanced module, once fitted, to become a motorized unit presents a very simple operation, consisting merely of attaching to the module the composite assembly comprising the motor and its belt drive mounted on the above mentioned bar.

It is advantageous if hte cutting and zig-zag folder and other accessory modules are attached at each end to endless chains which run on sprockets mounted on the respective side members of the trolley to enable them to be raised vertically.

It is also advantageous if the swivelling zig-zag folder clamps are mounted on the cross bar which is a joining member of the module structure and the stop limiting its angular travel is positioned on a flange attached to the said cross bar. The same flange acts as a limiting stop also for the linear travel.

Another characteristic of this invention is a pair of orifices, one in each of the upright side members so that a second feed roller can be fitted. the web feed guide tubes being connected using an attachment to the lateral supports of the guide tubes of the first feed roller.

Thus the attachment of the second feed roller is very simple in that no further machining modification of the already installed machine is required.

Preferably the cross-bars joining the side members are of a precise diameter and joined together by a central plate such that they can serve as guide rails for the lateral travel of a device for loading the roll, this central plate of the integrated unit being the base plate of the motor providing lateral movement of the said loading device.

Preferably the roll loading integral device comprises a frame which can travel the length of joining cross-bars mounted on wheels for this purpose and there being at both extremities of the frame motors for raising the arms supporting the roll of textile web, the frame being connected by chain or other drive mechanism to a motor for its lateral travel.

The loading device consists of a module containing the arm lifting motors it being easily fitted by simply locating the wheels on the cross-bars and securing the lateral travel motor on the central plate.

In addition the bar holding the textile roll has at least on one of its extremities a braking device which comprises essentially a disc provided with a plurality of plastic studs in recesses which also contain springs internally and a metal plate having its surface in contact with the studs and provided with a spigot for limiting movement of the bar support arm.

Thus on rotating the bar the spigot prevents the plate from turning, its surface rubbing on the plastic studs and exercising a braking action.

The improvements as disclosed herein permit the attachment of a variety of modules to the basic machine. Starting from a simple manual unit the various modules can be added so as to provide a

completely automatic machine. Described above is the attachment of modules for automatic cutting, a second feed roller and an automatic loading device. The machine is provided with the corresponding control module for the operation of these devices.

Another characteristic of the invention is the provision in one of the lateral upright members of orifices for attachment and coupling up of a drive motor and both uprights have housings to take the shaft bearings so that the trolley of the machine may be converted from manual to automatic operation by mounting the motor and the transmission mechanism without the need to mechanically modify the unit.

This conversion responds to the concept of enabling the various modules contributing to the possible variations to be built up on a step by step basis.

The invention also allows for the provision of a motor gear train for at least one feed roller, this gear train unit comprising a first pinion taking its motion from the wheel, a second pinion engaging with the first pinion, a third pinion coaxial with the second pinion and engaging with a fourth pinion which in its turn engages with the first pinion, the second and third pinions being mounted on a common shaft through unidirectional bearings both operating in the same sense of giration.

With this gear train, whichever be the direction of rotation of the motor the said common shaft which transmits movement to at least one feed roller always rotates in the same direction.

The gear train also includes an idler shaft in the interior of the common shaft, provided with means of driving allowing to be coupled thereto a component having a unidirectional bearing device obliging the said idler shaft to rotate in the same sense as the common shaft. The complete gear mechanism is mounted on a side plate forming a module which can be attached to the machine in an opening provided in one of the side members of the trolley.

This plate mounting is in the same modular concept as those already described.

Another improvement characteristic of the invention, relating to the two feed roller disposition, the first roller being positioned nearer to the roll of textile and the second further away, is that both rollers are kinematically connected through a chain and pinion transmission the first roller being the driver and the second the driven, with the pinion of the second roller being mounted on a unidirectional bearing.

Thus, this roller is unable to rotate in the contrary direction, but invariably at a velocity equal to or greater than the first and hence avoiding the formation of creasing in the drawing out of the textile.

The invention includes advantageously a device to prevent turbulence consisting of a length of cloth or similar rolled on a cylinder which is placed horizontally and transversely at the exit position of the textile web arid having its extremity fixed to a batten which is connected to a pair of chains arranged vertically and driven by pinions fitted to the two upright side members of the trolley, the upper pinions being composite with the cylinder and having their primitive diameter equal to the diameter of the cylinder.

This protective device covers the open space between the two upright members above the textile which is being drawn out. The device also includes a perforated plate in the space below the guide tubes. This avoids the effect of turbulence which could be caused by the passage of the textile between the uprights of the trolley and which could give rise to minor deformation in the continuous length of textile.

The means of attachment by hooking on the cutting, zig-zag and other modules of the trolley consists, in each of the two attachment plates of the cutting module, a pair of slots in the form of a horizontal slot followed by a vertical slot which can engage with a pair of screws in the respective upright members having their heads adapted to the width of the slots.

This device provides a rapid placing of the module without the necessity for any further attachment when the module is fitted. The screws have been already placed in the uprights permanently.

Another characteristic of these improvements is a textile tensioning device adapted to the cutting module, this device comprising a plurality of metal strips situated between a support bar and a cross member which is in contact with the textile.

The tensioning device adapts itself well to the textile due to the flexibility of the metal strips.

The improvements also include two horizontal movement pantographs in the form of an articulated parallelogram one side of which can travel in two slots one being horizontal and the other defining a hyperbola the object of which is the retention of the textile at the end thereof.

Preferably, the swivelling clamps on the zig-zag folding module are provided with a flange integral with the articulating bar and carrying a stop, the flange being capable of an angular movement and a linear movement the length of the said bar to provide a radial and lateral adjustment of the centralizing and the drop of the textile.

This invention includes a plurality of connection devices mounted on a guide rail and to which the various modules may be coupled-in electrically and progressively starting from the basic machine.

Finally the cutting module includes a flexible pneumatic tube and a pair of snap-on sockets,one at each end of the tube and in the cross member of the cutting unit and in the body of the cutting disc operating motor so as to provide for the power supply to the motor.

The above arrangement avoids the necessity for electrical conduit and its high cost and susceptibility to defects.

BRIEF DESCRIPTION OF THE DRAWINGS

For a better understanding of the above description drawings accompanying this specification show schematically one not limiting embodiment of the invention by way of example.

In the said drawings: Figure 1 is a side elevation of the basic machine, Figure 2 is a cross section of the manually operated cutting module; Figure 3 is a cross section of a motorized cutting module; Figure 4 is a cross section of the Zig-zag folding module: Figure 5 is a side elevation showing the attachment of the second feed roller. Figure 6 is a plan view of the loading device; Figure 7 is a lateral cross section of the loading device; Figure 8 shows a plan view in detail of the loading device; Figure 9 shows the detailed braking device for the shaft which carries the roll.

Figure 10 is a perspective view of one of the upright members of the manually operated trolley. Figure 11 shows the same member for the motorized version of the trolley; Figure 12 shows the trolley in perspective with the transmission to the four wheels; Figure 13 shows in perspective the gear train unit for driving at least one of the feed rollers from the wheel; Figure 14 is a plan view of the same gear train unit as is seen in Figure 13; Figure 15 is a perspective view of the detail of a pair of feed rollers; Figure 16 is a perspective view of the turbulence protection device; Figure 17 is a side elevation of the hook-on device for the cutting and Zig-zag modules and other modules and it shows also the textile retention device: Figure 18 is a perspective view of the same retention device; Figures 19 and 20 show in plan the pantograph device for retaining horizontal movement in two different positions, the object of which is the retention of the web at its end. Figure 21 shows in perspective the travel end-stop flange for the swivelling clamps; Figure 22 shows a perspective view of the electrical connection guide bar module interconnecting the different positions and thus facilitating the attachment of new electric or electronic modules without supplementary components. Figure 23 shows the electrical supply to the cutting disc operating motor.

DESCRIPTION OF A PREFERED EMBODIMENT

As is shown in figures 1 to 6, a machine for drawing a textile web out of a roll containing the same consists essentially of a trolley -1- carrying a roll -2- of textile, able to travel the length of a table -3- along which the textile is to be drawn, the said trolley having two lateral upright members -4- and -5- fitted with wheels -6- and -7- and cross-bars 6a and -7a- uniting the two upright members -4- and -5- and having also at least one feed roller -8- with its corresponding guide tubes -9- and a cutting module -10- comprising essentially a transversally movable cutting head, or a Zig-zag folding module -11- (Figure 4), comprising essentially a pair of swivelling clamps -12- and -13- attached to one extremity of the trolley associated with a pair of folder clamps (not shown) positioned at each end of the table -3-, the swivelling clamps having an end stop to limit their angular travel.

In figure 2 can be seen the manual advance cutting module which comprises a cutting disc -14- driven by the motor -15- mounted on the body -16- of the head which travels the length of the guide bar -19- on wheels -17- and -18-.

The advance motion is actuated manually by means of a lever -20- articulated on the support -21 which is integral with the body of the head -16-.

Figure 3 shows the motorized cutting module. As may be seen the manual advance cutting operation is converted to a motorized operation by attaching an integral assembly -22- which comprises, fitted to one single bar -23- a motor -24-, a drive belt -25-, pulleys -26-, the head being connected to the belt drive -25- through the support -21- which serves also to carry the manual advance lever -20- in the manual version.

As may be seen in Figure 4, the Zig-zag folder module -11- depends for its vertical movement on endless chains -27-, one at each extremity, and which gear with pinions -28- and -29- carried respectively on the upright side members -4- and -5-.

The swivelling clamps -12- and -13- of the Zig-zag folder -11- girate on their respective axes -30- and -31- which unite the module frames and the end stop for their angular travel is formed by the flanges -32- and -33- integral with the said axes. The flanges -32- and -33- also act as limiting stops for the linear travel.

As is shown in figures 1 and 5, the machine in the invention is provided with a pair of orifices, one, -34-, in each of the upright members -4- and -5- for fitting a second feed roller -35-, the textile guide tubes associated with it -36- and -37- being carried on lateral prolongations -38- of the guide tubes -9- of the first feed roller -8-, thus offering a simple assembly operation.

The structural joining bars -6a- and -7a- as can be seen in Figures 7 and 8 of the side uprights -4- and -5- are of a precise diameter and mutually joined by a central plate -39-. The bars -6a- and -7a- serve as guide rails for the lateral travel of the roll loading device -40- integral with the unit and of which the central plate -39- is the base plate of the motor -41- which actuates the lateral travel of the loading device -40-.

Figure 1 shows by dotted lines the outer profile of the loading device -40- as shown in Figure 6 in plan.

The integral loading device -40- for the roll -2- comprises a frame -42- mounted on wheels -43- and -44- travelling the length of the precision bars -6a- and -7a- with motors -45- and -46- mounted one at each end of the frame -42- for raising the arms -47- (figure 1) which carry the textile roll -2-, with the frame -42- having attached thereto a chain -48- (figure 8) driven by the lateral travel motor -41- .

Figure 9 shows that the rod -49- which holds the roll -2- of textile web has at least at one of its extremities a braking device -50- which comprise essentially a disc -51- provided with a plurality of plastic studs -52- in recesses with their respective springs in the interior of the recesses and a metal plate -54- the surface of which is in contact with the plastic studs and is provided with a spigot -55- to act as a limit stop to the arm -56- which carries the rod -49-.

On rotating the rod -49- the plate -54- is unable to rotate due to the stop -55- and the surface rubs against the plastic studs -52- causing a braking action.

As can be seen, starting from a simple manual machine various modules can be incorporated to the point of attaining a fully automatic machine.

As is shown in Figures 10, 11 and 12, the improvements are characterized also by the fact that one of the side uprights -4- of the trolley -1- is provided with an orifice -60- for coupling up the motor -61- and other orifices 62, 63, 64 and 65 for attaching the same and by the fact that both of the uprights -4- and -5- are provided with housings -66- and -67- to accept the transmission shaft bearings -68-.

As is shown in Figure 10 the manual trolley already has provision for coupling up the motor -61- and the drive shaft -68- by the presence of the respective orifices. It is necessary simply to fit these components and the transmission made up of the pinions 130, 131, 132, 133, 134 and 135 and the chains 136 and 137 to convert the machine trolley from manual (Figure 10) to motorized (Figure 11) without the need to carry out any structural modifications at the time of converting.

Figures 13 and 14 show a gear train which includes a first pinion -69- driven by the motor -61-, a second pinion -70- engaging with the first pinion -69-, a third pinion -71- coaxial with the second pinion -70- engaging with a fourth pinion -72- which in turn engages with the first pinion -69-, the second pinion -70- and the third pinion -71- being mounted on a common shaft -73-, each on unidirectional bearings, both designed for the same direction of rotation.

Whichever the direction of rotation of the motor -61-, the said shaft -73- common to the two pinions -70- and -71- transmitting the movement to at least one feed roller invariably rotates in the same direction.

The gear train also has an idler shaft -74- inside the common shaft -73- and which is provided a keyway -75- a component -76- to be coupled thereto, this component having a unidirectional bearing which obliges the shaft -74- to rotate in the sense of the common shaft -73-.

This gear train also comprises a base plate -77- on which are mounted all the pinions -69-, -70- -71- and -72- forming a module which can be coupled up to the machine through an opening -78- (Figures 10 and 11) in the side upright member -4-.

This transmission block constitutes hence another of the machine modules.

As is shown in Figure 15, when there are two feed rollers, -8- and -35-, the first roller -35- being situated nearer the roll of textile and the second roller -8- further from the roll of textile, both rollers -8- and -35- are kinematically united by a mechanism of chain -81- and pinions -79- and -80- the first roller -35- the driver and the second roller -8- the driven. The pinion -80- of the second roller is supported with a unidirectional bearing -82- such that the roller -8- is unable to rotate in the contrary sense but invariably at the same or greater velocity as the roller -35- so avoiding the formation of creases in the drawn out textile -83-.

The bar or counterweight -84- produces a tension in the textile compensating for the loss of velocity in the roller -35-.

Figures 16 and 12 show a device -85- for protection against turbulence and it comprises a length of cloth -86- or similar material, rolled on a cylinder -87- placed horizontally and transversally at the exit of the textile web -83- with its extremity fixed to a batten -88- which is attached to a pair of chains -89- and -90- disposed vertically and each engaging with a pair of pinions, -91-, -92-, -93- and -94- fitted to the two side upright members -4- and -5- of the trolley -1-.

The upper pinions -91- and -93 are integral with the cylinder -87- and of nominally the same primitive diameter as the cylinder so that the cloth -86- on rolling up is not under tension or creased.

The protective device -85- covers the free space between the two upright members -4- and -5- above the textile web -83- which is being drawn.

Figure 17 shows the hooking means -95- of the cutting module which comprises, in each of the two plates -96- of the cutting module a pair of slots -97- and -98- having an initial length -99- horizontal and a final length -100- vertical and in each of the upright members -4- and -5- a pair of screws -101- and -102- the heads of which are adapted to the width of the slots -97- and -98-.

Figures 17 and 18 show the textile tensioning device -103- adapted to the cutting module the device having three metallic strips -104-, -105- and -106- located between a support bar -107- and and a strip -108- which is in contact with the textile web -83-. The flexibility of the three strips -104-, -105- and -106- enables the device -103- to adapt itself correctly to the textile web -83-.

Figures 19 and 20 show a pantograph device with horizontal movement comprising an articulated parallelogram -109- one side -110- of which travels within two slots, one horizontal -111- and the other defining a hyperbola, -112-.

As may be seen in the Figures the arm -113- remains invariably horizontal.

Figure 21 illustrates that swivelling clamps of the Zig-zag folder module include a flange -32- joined to their articulation shaft -30-, fitted with a travel stop -114- the flange -32- being movable angularly and along the length of the said bar -30- so as to adjust both radially and laterally the drop and the centering of the textile. The flange -32- is secured in position by means of the screw -115-.

Figure 22 shows a plurality of connection devices -116-, -117-, -118-, -119-, -120-, -121- and -122- mounted on a guide bar -123- and to which the various modules, starting from the basic machine can be progressively coupled up.

This guide bar may be fitted betwee the two upright members or attached to one of them.

As is shown in Figure 23 the cutting module has a flexible pneumatic tube -124-and a pair of snap-on sockets or connectors -125- and -126 disposed at each end of the tube -124- and on the cross member -23- of the cutting module and in the cutting disc -14- motor body -15- for the purpose of the power supply to this motor -15-.

The above description corresponds to a specific embodiment of the invention but the invention is intended to include all the possible variations within its scope as available to a technician in the art.

Claims

1. Machine for drawing a textile web out of a roll containing the same, of the type which essentially consists of a trolley (1) carrying a roll (2) of textile and which can move the length of the table (3) on which the textile is to be drawn, the trolley including two side upright members (4,5) provided with wheels (6,7) and cross-bars (6a,7a) joining the two side uprights (4,5) and also including at least one feed roller (8) of textile accompanied by its corresponding guide tubes (9) and a cutting module (10) which consists essentially of a cutting head capable of transverse travel or a module for folding in Zig-zag (11) comprising essentially a pair of swivelling clamps (12,13) attached to one extremity of the trolley and associated with a pair of folder clamps located at each extremity of the table (3), the swivelling clamps (12,13) being provided with a stop to limit their angular travel, characterized in that the cutting module actuated manually by means of a lever (20) can be converted to a motorized unit by attaching a composite assembly (22) which includes, all fitted to one single profile bar (23), a motor (24), a drive belt transmission (25) with its pulleys (26), the head of the belt drive (25) being made integral with the same support member (21) to which a lever (20) is fixed in the manual version of the module.

2. Machine as in claim 1, characterized in that the Zig-zag folder module (11) is attached at each extremity to endless chains (27) to provide the vertical travel, these chains engaging with toothed pinions (28,29) mounted on the side upright members (4,5).

3. Machine as in Claim 1, characterized in that the swivelling clamps of the Zig-zag folder unit (11) swivel on the cross bar (30,31) of the module and the stop limiting their angular travel is provided on a flange (32,33) which is fixed to the said bar (30,31).

4. Machine as in Claim 1, characterized in that there is provided a pair of orifices, (34) one in each of the side upright members (4,5) for fitting a second feed roller (35) its corresponding textile guide tubes (36,37) being attached to a prolongation of the guide tube supports (38) pertaining to the guide tubes (9) of the first feed roller (8).

5. Machine as in Claim 1, characterized in that the bars (6a,7a) uniting the side uprights (4,5) are made to a controlled diameter and mutu-

ally joined by a central plate (39), the said bars (6a,7a) serving as guides for the cross travel of a loading device (40) for the roll (2) this integrated device having a motor (41), the base plate being the central plate (39) which said motor provides the cross travel of the loading device (40).

6. Machine as in Claim 5, characterized in that the loading device (4) for the roll (2) is an integral unit comprising a frame (42) mounted on wheels (43,44) which can travel the length of the bars (6a,7a) there being mounted on each extremity of the frame (42) motors (45,46) for raising the arms (47) which carry the roll (2) of textile. The frame (42) has attached thereto a chain or similar means (48) driven by the motor (41) causing its cross travel motion.

7. Machine as in Claim 6, characterized in that the rod (49) which carries the roll (2) of textile has on at least one of its extremities a braking device (50) which includes essentially a disc (51) carrying a plurality of studs (52) made of a plastic material, in recesses which house springs (53) associated with them in their interior also including a metal plate (54) the surface of which is is in contact with the said studs (52) and is fitted with a spigot (55) which together with the support arm (56) of the rod (49) forms a stop such that on rotating the rod (49) the spigot (55) acting as a stop prevents the plate (54) from turning so that its surface rubs against the studs (52) thus causing a braking action.

8. Machine as in Claim 1, characterized in that one of the side upright members (4) of the trolley is provided with orifices (60, 62, 63, 64 and 65) for the purpose of attaching and securing the driving motor (61) while both the upright members (4 and 5) have housings (66 and 67) for bearings carrying the drive shaft (68) for the conversion of the manual version of the trolley (1) to motorization by fitting the motor (61) and its drive system (66 and 131 to 137) without need for further machanical modification.

9. Machine as in Claim 8, characterized in that it includes a gear train unit driven by the motor to at least one feed roller this unit comprising a first pinion (69) driven by the motor, a second pinion (70) engaging with the first pinion (69), a third pinion (71) coaxial with the second pinion (70) engaging with a fourth pinion (72) which, in turn,engages with the first pinion (69), the second pinion (70) and the third pinion (71) being mounted on a common shaft (73) rotating in unidirectional bearings both operating in the same direction with the result that whichever be the direction of rotation of the motor the said shaft common to the two pinions (70 and 71) which transmits motion to at least one feed roller (35) invariably turns in the same direction of rotation.

10. Machine as in the Claims 8 and 9, characterized in that the gear train system includes an idler shaft (74) within the common shaft (73), this idler shaft being provided with a means of coupling (75) which enables a component (76) to be coupled thereto, this component being fitted with a unidirectional bearing which ensures that the said idler shaft (74) rotates in the same sense as the common shaft (73).

11. Machine as in Claims 8 and 9, characterized in that the gear train transmission comprises a plate (77) on which are mounted the pinions (69, 70,71 and 72) forming a module which can be coupled up to the machine through the corresponding aperture (78) in one of the upright side members of the trolley (1).

12. Machine as in Claim 8, characterized in that when there are two feed rollers (8 and 35), the first roller (35) being nearer to the textile roll and the second roller being further away from the roll, (8) they are kinematically in train through a chain (81) and pinion (79 and 80) drive,the first roller (35) being the driver and the second roller (8) the driven, and due to the pinion (80) of the second roller (8) being mounted in a unidirectional bearing, the roller (8) is not able to rotate in a contrary direction but invariably at a speed equal to or greater than that of the first roller (35) thus obviating the formation of creasing in the drawn textile web.

13. Machine as in Claim 8, characterized in that they include a device (85) for protection from turbulence which include a length of cloth (86) or similar material rolled on a cylinder (87) placed horizontally and transversally at the exit of the textile, there being at the extremity of the cloth a batten (88) fixed to the cloth, the ends of the batten being attached to a pair of chains (89 and 90) disposed vertically and running on pairs of pinions (91,92,93 and 94) mounted on the respective upright members (4 and 5) of the trolley (1), the upper pinions (91 and 93) being composite with the cylinder (87) and having their primitive diameter virtually

equal to the diameter of the cylinder (87), the turbulence protection device (85) covering the space between the two upright members (4 and 5) and above the drawn out textile web.

14. Machine as in Claim 8, characterized in that the means of hooking the cutting module (95) on to the trolley (1) consists of slots (97 and 98) in each of the two side attachment plates (96) of the cutting module, the slots having an initial horizontal length (99) followed by a final vertical length (100) there being in each of the two upright side members (4 and 5) a pair of screws (101 and 102), their heads being adapted to the width of the slots (97 and 98).

15. Machine as in Claim 8, characterized by the inclusion of a textile tensioning device (103) adapted to the cutting module, this device comprising a plurality of metal strips (104, 105 and 106) positioned between a support bar (107) and a cross member strip (108) which is in contact with the textile web and due to the flexibility of the strips (104, 105 and 106) adapts itself correctly to the textile.

16. Machine as in Claim 8, characterized in that they include a horizontal travel pantograph comprising an articulated parallelogram (109) one of whose sides (110) can travel along two slots, one being horizontal (111) and the other (112) defining a hyperbola.

17. Machine as in Claim 8, characterized in that the swivelling clamps of the Zig-zag folder module include a flange (32) fitted to the articulating shaft (30) provided with a travel stop (114), the flange (32) being capable of movement both angularly and along the said shaft (30 = for the purpose of adjusting radially and laterally, the drop and the centering of the textile web.

18. Machine as in Claim 8, being characterized by including a plrality of connector devices (116, 117, 118, 119, 120, 121 and 122) fitted to a trunking bar (123) to which the diverse modules can be plugged in or similarly connected progressively starting from the basic machine.

19. Machine as in the Claim 8, characterized by the cutting module including a flexible pneumatic tube (124) having a pair of rapid fitting unions (125 and 126) at either end of the tube (124) on the cross member (23) of the cutting module itself and on the body of the cutting disc drive motor, for the purpose of conducting the power supply to this motor.

Patentansprüche

1. Maschine zum Abziehen einer Textilbahn von einer Rolle, welche dieselbige enthält, von der Art, welche im wesentlichen aus einem Wagen (1) besteht, der eine Rolle (2) mit einem textilen Material trägt und der sich entlang der Länge eines Tisches (3) bewegen kann, auf welchem das textile Material abzuziehen ist, wobei der Wagen aufweist: zwei seitliche aufrecht stehende Elemente (4, 5), welche mit Rädern (6, 7) und Querstangen (6a, 7a) versehen sind, welche die beiden seitlichen aufrecht stehenden Elemente (4, 5) miteinander verbinden, ferner mindestens eine Zuführrolle (8) für textiles Material, welches von seinen entsprechenden Führungs-Rohren (9) begleitet ist, und ein Schneid-Modul (10), welches im wesentlichen aus einem zu einer Querbewegung befähigten Schneidkopf besteht, oder ein Modul zum Falten in Zick-Zack (11), das im wesentlichen ein Paar von schwenkbaren Spann-Blökken (12, 13) aufweist, welche an einem äußeren Ende des Wagens angebracht und mit einem Paar von Spannvorrichtungen zum Falten verbunden sind, welche an einem jeden äußeren Ende des Tisches (3) angeordnet sind, wobei die schwenkbaren Spann-Blöcke (12, 13) mit einem Anschlag zum Begrenzen ihrer Winkel-Bewegung versehen sind, **dadurch gekennzeichnet**, daß das mit Hilfe eines Hebels (20) manuell betätigte Schneid-Modul in eine motorbetriebene Einheit dadurch umgewandelt werden kann, daß eine zusammengesetzte Anordnung (22) angebracht wird, welche die folgenden, sämtlich an einer einzigen Profilstange (23) befestigten Elemente umfaßt: einen Motor (24) und eine Treibriemen-Übertragung (25) mit ihrer Riemenscheibe (26), wobei der Kopf des Riemenantriebes (25) mit dem gleichen Trägerelement (21) einstükkig ausgebildet ist, mit welchem ein Hebel (20) in der von Hand betätigbaren Ausführung des Moduls befestigt ist.

2. Maschine nach Anspruch 1, **dadurch gekennzeichnet**, daß das Zick-Zack-Falt-Modul (11) an jedem äußeren Ende mit Endlosketten (27) befestigt ist, um die vertikale Bewegungsbahn vorzusehen, wobei diese Ketten mit gezahnten Ritzeln oder Zahntrieben (28, 29) in Eingriff gelangen, welche an den seitlichen, aufrecht stehenden Elementen (4, 5) angebracht sind.

3. Maschine nach Anspruch 1, **dadurch gekennzeichnet**, daß die schwenkbaren Spann-Blökke der Zick-Zack-Falt-Einheit (11) auf der Querstange (30, 31) des Moduls geschwenkt

werden und daß der ihre Winkelbewegung begrenzende Anschlag auf einem Flansch (32, 33) vorgesehen ist, welcher mit der genannten Stange (30, 31) befestigt ist.

4. Maschine nach Anspruch 1, **dadurch gekennzeichnet**, daß ein Paar von Öffnungen vorgesehen ist, von denen jeweils eine (34) in einem jeden der seitlichen aufrecht stehenden Elemente (4, 5) vorgesehen ist, um eine zweite Zuführrolle (35) an ihren entsprechenden Führungs-Rohren (36, 37) für textiles Material anzubringen, welche mit einer Verlängerung der Führungs-Rohr-Träger (38) betreffend die Führungs-Rohre (9) der ersten Zuführ-Rolle (8) befestigt sind.

5. Maschine nach Anspruch 1, **dadurch gekennzeichnet**, daß die die seitlichen aufrecht stehenden Elemente (4, 5) zusammenfügenden Stangen (6a, 7a) mit einem voreingestellten Durchmesser ausgebildet und durch eine mittlere Platte (39) gegenseitig verbunden sind, wobei die genannten Stangen (6a, 7a) als Führungen für die Querbewegung einer Ladevorrichtung (40) für die Rolle (2) dienen, wobei diese integrierte Vorrichtung einen Motor (41) aufweist, während die Basis-Platte die mittlere Platte (39) bildet, für welche der genannte Motor die Querbewegung der Ladevorrichtung (40) liefert.

6. Maschine nach Anspruch 5, **dadurch gekennzeichnet**, daß die Ladevorrichtung (4) für die Rolle (2) eine ganzteilige Einheit ist, die einen Rahmen (42) aufweist, der auf Rädern (43, 44) angebracht ist, welche sich entlang der Länge der Stangen (6a, 7a) bewegen können, wobei ferner an einem jeden äußeren Ende des Rahmens (42) Motoren (45, 46) zum Anheben der Arme (47) angebracht sind, welche die Rolle (2) für das textile Material tragen, und wobei der Rahmen (42) eine mit ihm befestigte Kette oder eine ähnliche Einrichtung (48) aufweist, die durch deren Querbewegung verursachenden Motor (41) angetrieben wird.

7. Maschine nach Anspruch 6, **dadurch gekennzeichnet**, daß die die Rolle (2) für das textile Material tragende Stange (49) an wenigstens einem ihrer äußeren Enden eine Brems-Vorrichtung (50) trägt, welche im wesentlichen eine Scheibe (51) umfaßt, die eine Mehrzahl von vorspringenden Ansätzen aus Kunststoffmaterial innerhalb von Aufnahmen trägt, in welchen den vorspringenden Ansätzen in ihrem Inneren zugeordnete Federn (53) untergebracht sind, während diese Brems-Vorrichtung (50) ebenfalls eine Metallplatte (54) aufweist, deren Oberfläche sich in Berührung mit den genannten vorspringenden Ansätzen (52) befindet und welche mit einem Zapfen (55) versehen ist, der zusammen mit dem Träger-Arm (56) der Stange (49) einen derartigen Anschlag bildet, daß beim Drehen der Stange (49) der als ein Anschlag dienende Zapfen (55) die Platte (54) daran hindert, sich zu drehen, so daß ihre Oberfläche gegen die vorspringenden Ansätze (52) reibt, wodurch eine Bremswirkung verursacht wird.

8. Maschine nach Anspruch 1, **dadurch gekennzeichnet**, daß das eine der seitlichen aufrecht stehenden Elemente (4) des Wagens mit Öffnungen (60, 62, 63, 64 und 65) versehen ist, welche den Zweck haben, den Antriebsmotor (61) zu befestigen und zu sichern, während beide aufrecht stehenden Elemente (4 und 5) Gehäuse (66 und 67) für Lager zum Tragen der Antriebswelle (68) zum Umwandeln der manuellen Ausführungsform des Wagens (1) auf die motorbetriebene Ausführungsform dadurch aufweisen, daß der Motor (61) und sein Antriebssystem (66 und 131 bis 137) angebracht werden, ohne daß die Notwendigkeit für weitere mechanische Abänderungen besteht.

9. Maschine nach Anspruch 8, **dadurch gekennzeichnet**, daß sie bezüglich wenigstens einer Zuführrolle eine durch den Motor angetriebene Getriebe-Einheit aufweist, wobei diese Einheit ein durch den Motor angetriebenes erstes Ritzel (69), ein mit dem ersten Ritzel (69) in Eingriff gelangendes zweites Ritzel (70), ein mit dem zweiten Ritzel (70) koaxiales, mit einem vierten Ritzel (72) in Eingriff gelangendes drittes Ritzel (71) umfaßt, wobei das vierte Ritzel (72) seinerseits mit dem ersten Ritzel (69) in Eingriff gelangt, während das zweite Ritzel (70) und das dritte Ritzel (71) auf einer gemeinsamen Welle (73) angeordnet sind, welche in in einer Richtung laufenden Lagern rotiert, welche beide in der gleichen Richtung mit dem Ergebnis arbeiten, daß, wie auch immer die Richtung der Rotation des Motors ist, die genannte Welle zusammen mit den zwei Ritzeln (70 und 71), welche die Bewegung zu mindestens einer Zuführrolle (35) übertragen, sich in unveränderlicher Weise in der gleichen Richtung der Rotation dreht.

10. Maschine nach den Ansprüchen 8 und 9, **dadurch gekennzeichnet**, daß das Getriebe-System eine Leerlaufwelle (74) innerhalb der gemeinsamen Welle (73) umfaßt, wobei diese Leerlaufwelle mit Kupplungsmitteln (75) verse-

hen ist, welche es einer Komponenten (76) ermöglichen, mit ihr gekuppelt zu werden, wobei diese Komponente mit einem in einer Richtung laufenden Lager versehen ist, welches sicherstellt, daß die genannte Leerlaufwelle (74) in demselben Richtungssinne wie die gemeinsame Welle (73) rotiert.

11. Maschine nach Ansprüchen 8 und 9, **dadurch gekennzeichnet,** daß die Getriebe-Übertragung eine Platte (77) aufweist, auf welche die Ritzel (69, 70, 71 und 72) montiert sind, welche ein Modul bilden, das durch die entsprechende Öffnung (78) in einem der aufrechtstehenden, seitlichen Elemente des Wagens (1) an die Maschine angekoppelt werden kann.

12. Maschine nach Anspruch 8, **dadurch gekennzeichnet,** daß, wenn zwei Zuführ-Rollen (8 und 35) vorhanden sind, wobei die erste Rolle (35) näher an der Textilmaterial-Rolle und die zweite Rolle (8) von dieser Rolle weiter entfernt angeordnet sind, diese zwei Zuführrollen (8 und 35) durch einen durch eine Kette (81) und Ritzel (79 und 80) gebildeten Antrieb sich kinematisch in einem Getriebezug befinden, wobei die erste Rolle (35) die treibende Rolle und die zweite Rolle (8) die getriebene Rolle sind, und daß, aufgrund der Tatsache, daß das Ritzel (80) der zweiten Rolle (8) in einem nur in einer Richtung laufenden Lager angeordnet ist, die Rolle (8) nicht dazu in der Lage ist, in einer entgegengesetzten Richtung zu rotieren, jedoch in unveränderlicher Weise mit einer Geschwindigkeit zu rotieren, die gleich derjenigen oder größer als diejenige der ersten Rolle (35) ist, wodurch das Auftreten von Knittern oder Falten in der abgezogenen Textilbahn verhindert wird.

13. Maschine nach Anspruch 8, **dadurch gekennzeichnet,** daß sie eine Vorrichtung (85) zum Schutze gegenüber Turbulenz enthält, welche einen Längenabschnitt aus einem Stoff (86) oder aus einem ähnlichen Material aufweist, das auf einen Zylinder (87) gerollt ist, der an dem Ausgang des textilen Materials in einer horizontal sowie in einer quer verlaufenden Richtung angeordnet ist, wobei an dem äußeren Ende des Stoffes eine Leiste (88) vorgesehen ist, die mit dem Stoff befestigt ist, und wobei ferner die Enden der Leiste mit einem Paar von Ketten (89 und 90) befestigt sind, welche vertikal angeordnet sind und auf Paaren von Ritzeln (91, 92, 93 und 94) laufen, welche an den jeweiligen aufrecht stehenden Elementen (4 und 5) des Wagens (1) angebracht sind, wobei ferner die oberen Ritzel (91 und 93) mit dem Zylinder (87) zusammengesetzt sind und wobei ihre Grund-Durchmesser scheinbar gleich dem Durchmesser des Zylinders (87) sind, ferner **dadurch gekennzeichnet,** daß die Turbulenz-Schutz-Vorrichtung (85) den Raum zwischen den zwei aufrecht stehenden Elementen (4 und 5) und oberhalb des Verlaufes des Abzuges der Textilbahn abdeckt.

14. Maschine nach Anspruch 8, **dadurch gekennzeichnet,** daß die Mittel zum Einrasten des Schneid-Moduls (95) an dem Wagen (1) aus Schlitzen (97 und 98) bestehen, die in einer jeden der zwei seitlichen Befestigungs-Platten (96) des Schneid-Moduls vorgesehen sind, wobei diese Schlitze einen anfänglichen horizontalen Abschnitt (99) aufweisen, auf den ein abschließender vertikaler Abschnitt (100) folgt, wobei ferner in einem jeden der zwei aufrecht stehenden seitlichen Elemente (4 und 5) ein Paar von Schrauben (101 und 102) vorgesehen ist, deren Köpfe der Breite oder Weite der Schlitze (97 und 98) angepaßt sind.

15. Maschine nach Anspruch 8, **dadurch gekennzeichnet**, daß sie eine Spann-Einrichtung (103) zum Spannen des textilen Materials mit einschließt, welche an das Schneid-Modul angepaßt ist, wobei diese Einrichtung eine Mehrzahl von metallischen Streifen (104, 105, 106) aufweist, welche zwischen einer Trägerstange (107) und einem ein Querelement bildenden Streifen (108) angeordnet sind, der sich mit der Textilbahn in Berührung befindet und sich aufgrund der Flexibilität der Streifen (104, 105 und 106) selbst genau an das textile Material anpaßt.

16. Maschine nach Anspruch 8, **dadurch gekennzeichnet,** daß sie einen Horizontal-Weg-Pantographen mit einschließt, welcher ein Gelenk-Parallelogramm (109) aufweist, dessen eine seiner Seiten (110) sich entlang zweier Schlitze bewegen kann, von welchen der eine horizontal (111) verläuft und der andere (112) eine Hyperbel definiert.

17. Maschine nach Anspruch 8, **dadurch gekennzeichnet**, daß die schwenkbaren Spannblöcke des Zick-Zack-Falt-Moduls einen Flansch (32) aufweisen, der an der Gelenkwelle (30) angebracht und mit einer Bewegungssperre (114) versehen ist, wobei der Flansch (32) sowohl zu einer Winkelbewegung als auch zu einer Bewegung entlang der Welle (30) mit dem Zweck befähigt ist, den Fall und die Zentrierung der Textilbahn radial und seitlich einzustellen.

18. Maschine nach Anspruch 8, **dadurch gekennzeichnet**, daß sie eine Mehrzahl von Verbindungsvorrichtungen (116, 117, 118, 119, 120, 121 und 122) umfaßt, welche mit einer Verbindungsstange (123) befestigt sind, mit welcher die verschiedenen Module durch Einstecken oder in ähnlicher Weise voranschreitend verbunden werden können, wobei von der Basis-Maschine ausgegangen wird.

19. Maschine nach Anspruch 8, **dadurch gekennzeichnet**, daß das Schheid-Modul ein flexibles Pneumatik-Rohr (124) aufweist, welches mit einem Paar von Schnellverbindungselementen (125 und 126) an einem jeden Ende des Rohres (124) auf dem Quer-Element (23) des Schneid-Moduls selbst und an dem Körper des Antriebs-Moduls für die Schneid-Scheibe, zum Zwecke der Zuführung der Antriebsenergie zu diesem Motor, versehen ist.

Revendications

1. Machine pour tirer une bande textile à partir d'un rouleau contenant celle-ci, du type qui se compose essentiellement d'un chariot (1) portant un rouleau (2) de textile et qui peut se déplacer de la longueur de la table (3) sur laquelle doit être tiré le textile, le chariot comportant deux éléments latéraux verticaux (4, 5) munis de roues (6, 7) et d'entretoises (6a, 7a) réunissant les deux éléments latéraux verticaux (4, 5), et comportant également au moins un rouleau d'alimentation (8) de textile accompagné par ses tubes de guidage (9) correspondants et un module de coupe (10) qui se compose essentiellement d'une tête de coupe susceptible de se déplacer transversalement ou d'un module pour plier en zig-zag (11) composé essentiellement d'une paire de blocs de serrage oscillants (12, 13) fixés à une extrémité du chariot et associés à une paire de dispositifs de serrage pour le pliage disposés à chaque extrémité de la table (3), les blocs oscillants (12, 13) étant munis d'une butée pour limiter leur déplacement angulaire, caractérisée en ce que le module de coupe actionné manuellement au moyen d'un levier (20) peut être converti en une unité motorisée par fixation d'un ensemble composite (22) qui comporte, tous fixés sur une seule barre profilée (23), un moteur (24), une transmission par courroie d'entraînement (25) avec sa poulie (26), la tête de la courroie d'entraînement (25) étant d'une seule pièce avec l'élément de support (21) auquel est fixé un levier (20) dans la version manuelle du module.

2. Machine selon la revendication 1, caractérisée en ce que le module de pliage en zig-zag (11) est fixé à chaque extrémité à des chaînes sans fin (27) pour permettre leur déplacement vertical, ces chaînes étant engrenées avec des pignons dentés (28, 29) montés sur les éléments latéraux verticaux (4, 5).

3. Machine selon la revendication 1, caractérisée en ce que les blocs de serrage oscillants de l'unité de pliage en zig-zag (11) oscillent sur la barre transversale (30, 31) du module et en ce que la butée limitant leur déplacement angulaire est disposée sur un flasque (32, 33) qui est fixé à ladite barre (30, 31).

4. Machine selon la revendication 1, caractérisée en ce qu'elle comporte une paire d'orifices (34), à raison d'un dans chacun des éléments latéraux verticaux (4, 5) pour fixer un deuxième rouleau d'alimentation (35), ses tubes de guidage de textile correspondants (36, 37) étant fixés à un prolongement des supports de tubes de guidage (38) faisant partie des tubes de guidage (9) du premier rouleau d'alimentation (8).

5. Machine selon la revendication 1, caractérisée en ce que les barres (6a, 7a) unissant les éléments latéraux verticaux (4, 5) sont constituées avec un diamètre contrôlé et sont mutuellement réunies par une plaque centrale (39), lesdites barres (6a, 7a) servant de guides pour le déplacement transversal d'un dispositif de chargement (40) pour le rouleau (2), ce dispositif intégré possédant un moteur (41), la plaque de base étant la plaque centrale (39) par laquelle ledit moteur assure le déplacement transversal du dispositif de chargement (40).

6. Machine selon la revendication 5, caractérisée en ce que le dispositif de chargement (40) pour le rouleau (2) est une unité d'une seule pièce comportant un châssis (42) monté sur des roues (43, 44) qui peut se déplacer de la longueur des barres (6a, 7a), des moteurs (45, 46) étant montés à chaque extrémité du châssis (42) pour élever les bras (47) qui portent le rouleau (2) de textile. Le châssis (42) possède, fixés à celui-ci, une chaîne ou des moyens similaires (48) entraînés par le moteur (41) pour provoquer son déplacement dans le sens transversal.

7. Machine selon la revendication 6, caractérisée en ce que l'arbre (49) qui porte le rouleau (2) de textile possède sur au moins l'une de ses

extrémités un dispositif de freinage (50) qui comporte essentiellement un disque (51) portant une pluralité de plots (52) faits en matière plastique, dans des cavités qui renferment des ressorts (53) associés avec ceux-ci à l'intérieur de celles-ci, et comporte également une plaque métallique (54) dont la surface est en contact avec lesdits plots (52) et est fixée au moyen d'un tourillon (55) qui forme, avec le bras de support (56) de l'arbre (49), une butée, de telle sorte que, lors de la rotation de l'arbre (49), le tourillon (55), agissant comme une butée, empêche la plaque (54) de tourner, de telle sorte que sa surface frotte contre les plots (52), provoquant ainsi une action de freinage.

8. Machine selon la revendication 1, caractérisée en ce que l'un des éléments latéraux verticaux (4) du chariot est muni d'orifices (60, 62, 63, 64 et 65) dans le but de recevoir et de fixer le moteur d'entraînement (61), tandis que les deux éléments verticaux (4 et 5) comportent des logements (66 et 67) pour des paliers portant l'arbre d'entraînement (68) pour la conversion de la version manuelle du chariot (1) en une version motorisée par la disposition du moteur (61) et de son système d'entraînement (66 et 131 à 137) sans qu'il soit nécessaire de réaliser d'autres modifications mécaniques.

9. Machine selon la revendication 8, caractérisée en ce qu'elle comporte une unité de train d'engrenages entraînée par le moteur pour au moins un rouleau d'alimentation, cette unité comportant un premier pignon (69) entraîné par le moteur, un deuxième pignon (70) s'engrenant avec le premier pignon (69), un troisième pignon (71) coaxial au deuxième pignon (70), s'engrenant avec un quatrième pignon (72), qui s'engrène lui-même avec le premier pignon (69), le deuxième pignon (70) et le troisième pignon (71) étant montés sur un arbre commun (73) tournant dans des paliers unidirectionnels fonctionnant tous dans la même direction, avec pour résultat que, quel que soit le sens de rotation du moteur, ledit arbre commun aux deux pignons (70 et 71) qui transmettent le mouvement à au moins un rouleau d'alimentation (35) tourne invariablement dans le même sens de rotation.

10. Machine selon les revendications 8 et 9, caractérisée en ce que le système de train d'engrenages comporte un arbre libre (74) à l'intérieur de l'arbre commun (73), cet arbre libre étant muni de moyens de couplage (75) qui permettent à un composant (76) d'être couplé à celui-ci, ce composant étant muni d'un palier unidirectionnel qui garantit que ledit arbre libre (74) tourne dans le même sens que l'arbre commun (73).

11. Machine selon les revendications 8 et 9, caractérisée en ce que la transmission à train d'engrenages comporte une plaque (77) sur laquelle sont montés les pignons (69, 70, 71 et 72), formant un module qui peut être couplé à la machine par l'intermédiaire de l'ouverture correspondante (78) dans l'un des éléments latéraux verticaux du chariot (1).

12. Machine selon la revendication 8, caractérisée en ce que, lorsqu'il y a deux rouleaux d'alimentation (8 et 35), le premier rouleau (35), qui est le plus proche du rouleau de textile, et le deuxième rouleau (8), qui est le plus éloigné du rouleau, sont reliés cinématiquement par l'intermédiaire d'un entraînement à chaîne (81) et pignons (79 et 80), le premier rouleau (35) étant le rouleau d'entraînement et le deuxième rouleau (8) étant le rouleau entraîné, et, du fait que le pignon (80) du deuxième rouleau (8) est monté dans un palier unidirectionnel, le rouleau (8) ne peut pas tourner en sens contraire, mais tourne à une vitesse invariablement supérieure ou égale à celle du premier rouleau (35), empêchant ainsi la formation de froissements dans la bande de textile tirée.

13. Machine selon la revendication 8, caractérisée en ce qu'elle comporte un dispositif (85) pour la protection contre les turbulences qui comporte une longueur de tissu (86) ou de matériau similaire enroulé sur un cylindre (87) disposé horizontalement et transversalement à la sortie du textile, un battant (88) étant fixé au tissu à l'extrémité du tissu, les extrémités du battant étant réunies à une paire de chaînes (89 et 90) disposées verticalement et passant sur des paires de pignons (91, 92, 93 et 94) montées sur les éléments verticaux respectifs (4 et 5) du chariot (1), les pignons supérieurs (91 et 93) étant réunis au cylindre (87) et ayant leur diamètre primitif virtuellement égal au diamètre du cylindre (87), le dispositif de protection contre les turbulences (85) couvrant l'espace entre les deux éléments verticaux (4 et 5) et au-dessus de la bande de textile tirée.

14. Machine selon la revendication 8, caractérisée en ce que les moyens pour accrocher le module de coupe (95) sur le chariot (1) se composent d'encoches (97 et 98) dans chacune des deux plaques de fixation latérales (96) du module de coupe, les encoches ayant une

longueur horizontale initiale (99) suivie par une longueur verticale finale (100), une paire de vis (101 et 102) étant disposée dans chacun des deux éléments latéraux verticaux (4 et 5), les têtes de celles-ci étant adaptées à la largeur des encoches (97 et 98).

15. Machine selon la revendication 8, caractérisée par l'incorporation d'un dispositif de tension de textile (103) adapté au module de coupe, ce dispositif comportant une pluralité de bandes métalliques (104, 105 et 106) positionnées entre une barre de support (107) et une bande de traverse (108) qui est en contact avec la bande de textile, et qui, du fait de la flexibilité des bandes (104, 105 et 106), s'adapte correctement au textile.

16. Machine selon la revendication 8, caractérisée en ce qu'elle comporte un pantographe à déplacement horizontal comportant un parallélogramme articulé (109) dont un des côtés (110) peut se déplacer le long de deux encoches, l'une étant horizontale (111), et l'autre (112) définissant une hyperbole.

17. Machine selon la revendication 8, caractérisée en ce que les blocs de serrage oscillants du module de pliage en zig-zag comportent un flasque (32) fixé à l'arbre d'articulation (30), muni d'une butée de déplacement (114), le flasque (32) étant capable de se déplacer d'un mouvement tout à la fois angulaire et le long dudit arbre (30) afin d'ajuster, radialement et latéralement, la chute et le centrage de la bande de textile.

18. Machine selon la revendication 8, caractérisée par l'incorporation d'une pluralité de dispositifs formant connecteurs (116, 117, 118, 119, 120, 121 et 122) fixés à une barre commune (123) sur laquelle les différents modules peuvent être enfichés, ou connectés progressivement de façon similaire en partant de la machine de base.

19. Machine selon la revendication 8, caractérisée en ce que le module de coupe comporte un tube pneumatique flexible (124) possédant une paire de raccords rapides (125 et 126) à chaque extrémité du tube (124) sur la traverse (23) du module de coupe lui-même et sur le corps du moteur d'entraînement du disque de coupe, dans le but d'amener l'alimentation en énergie à ce moteur.

FIG.1

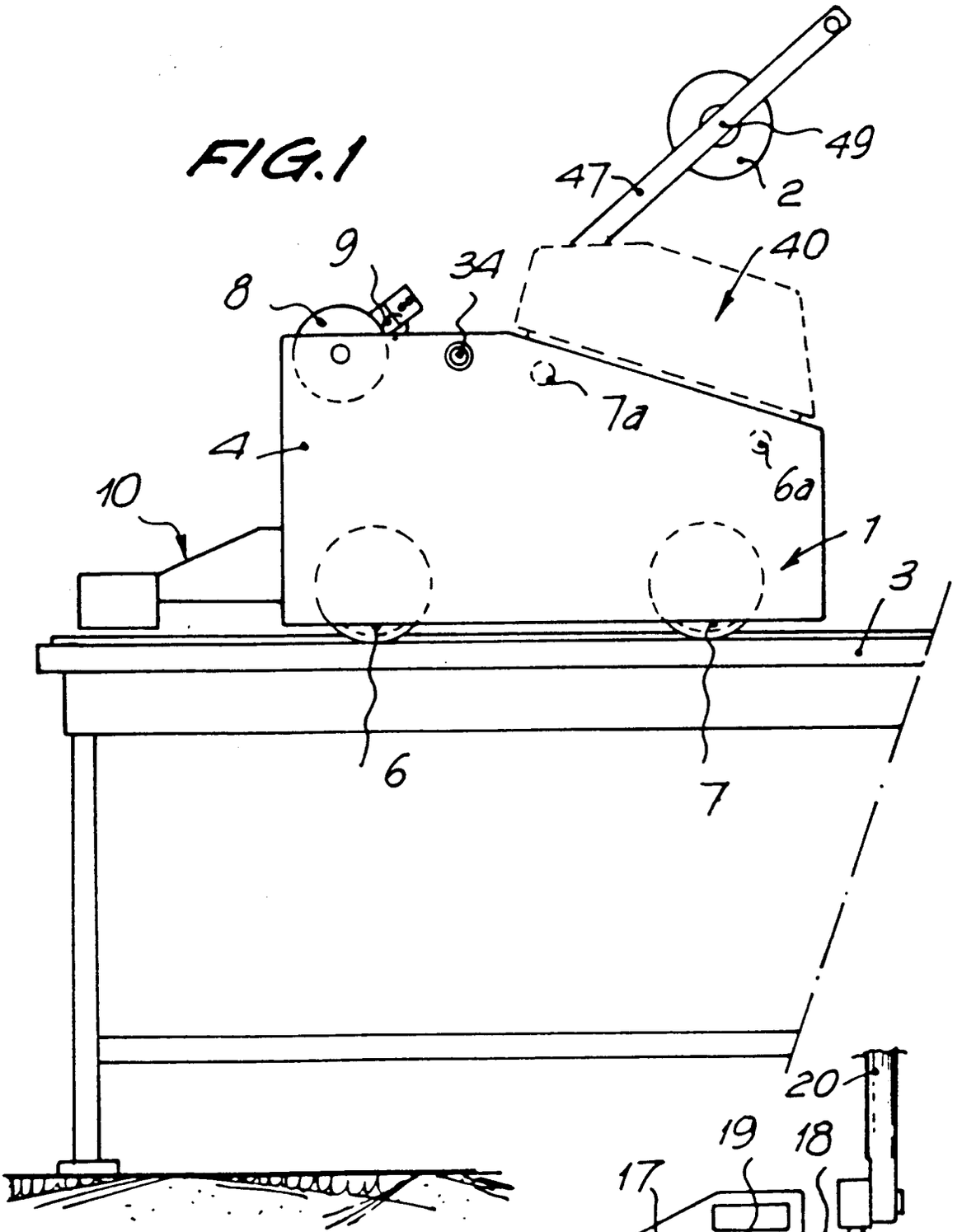


FIG.2

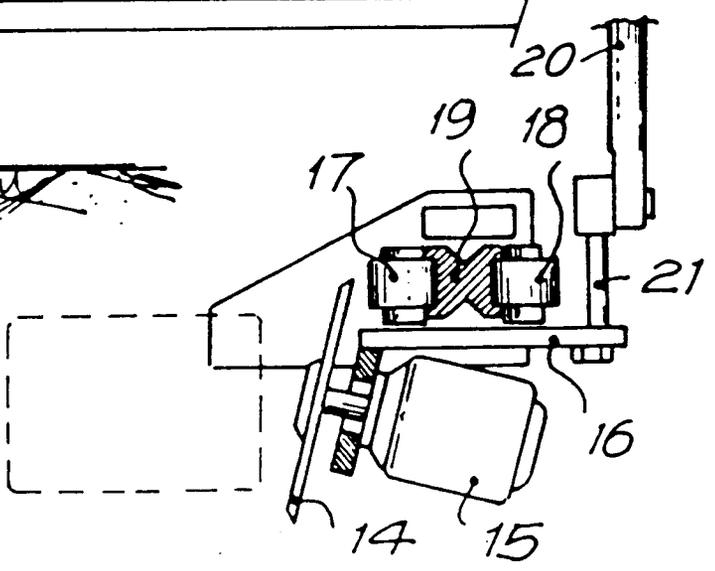


FIG.3

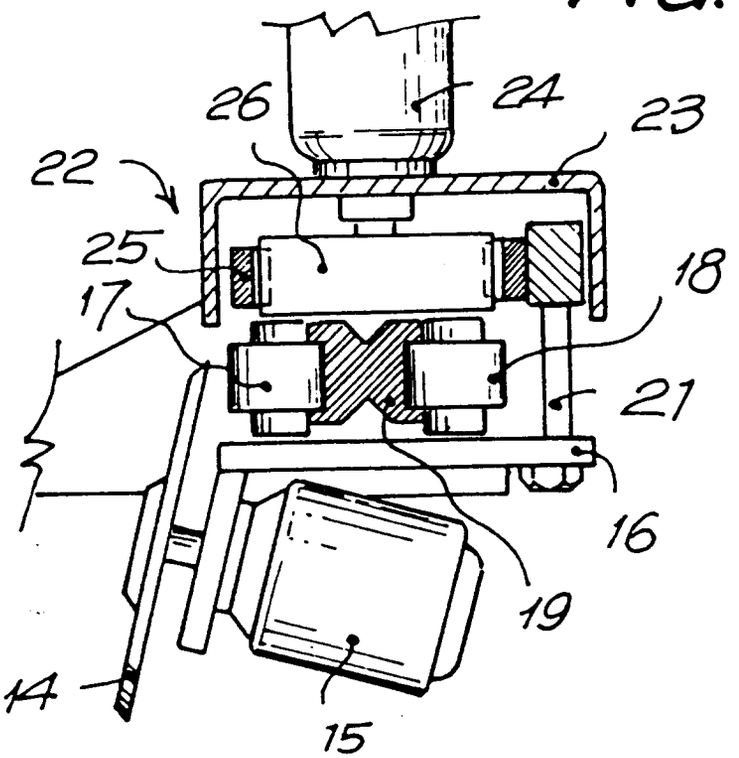
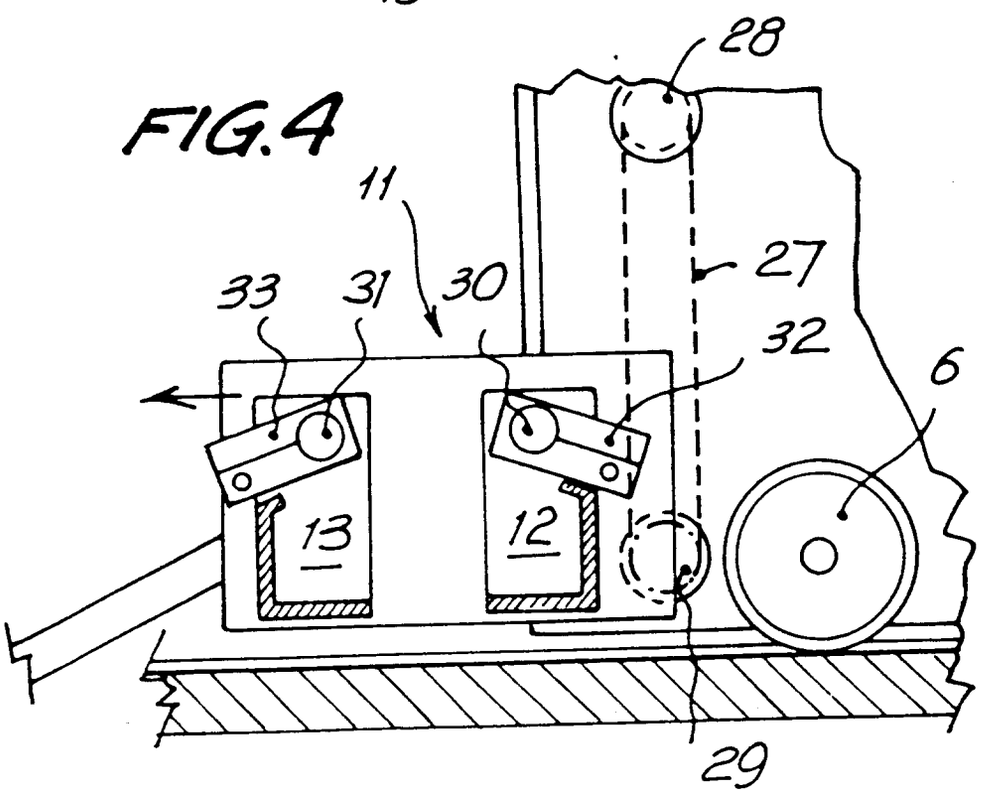


FIG.4



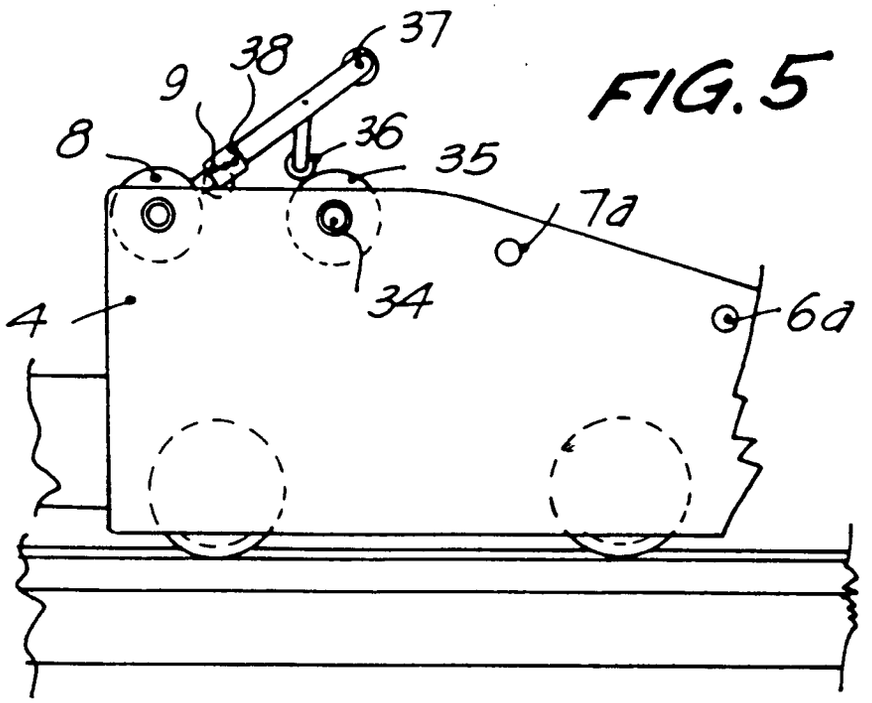


FIG. 5

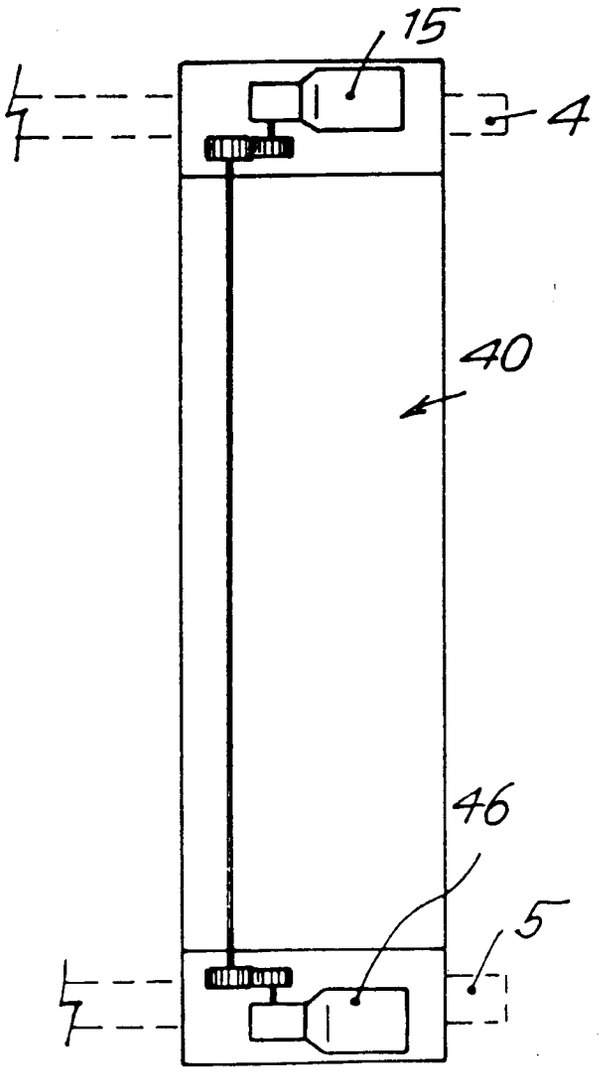


FIG. 6

FIG. 7

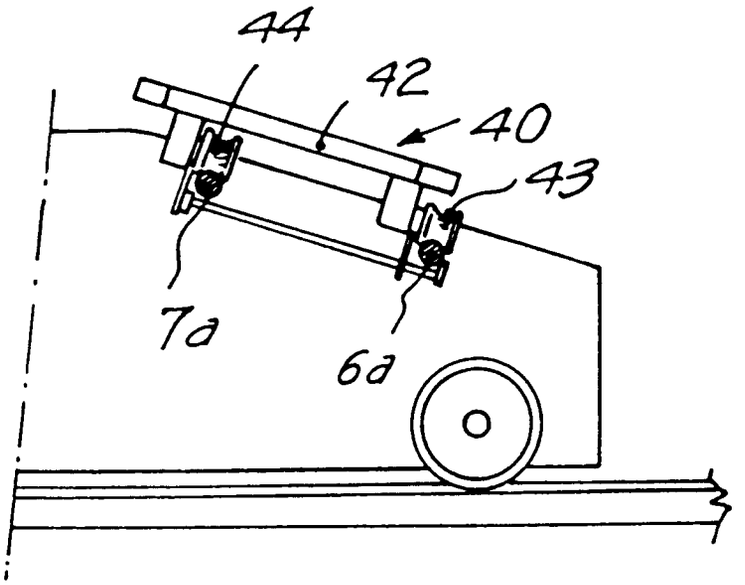


FIG. 8

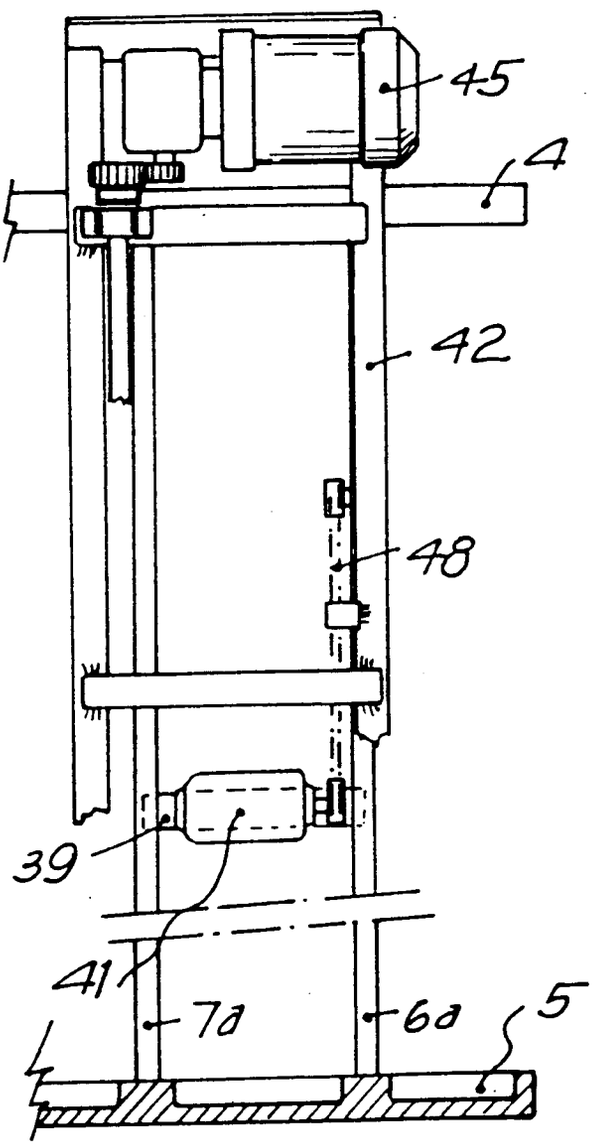
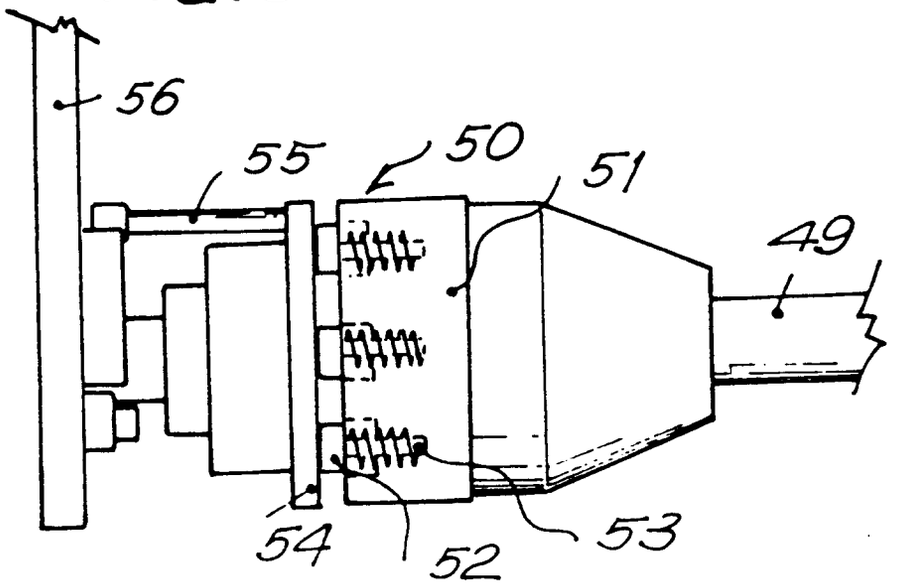


FIG. 9



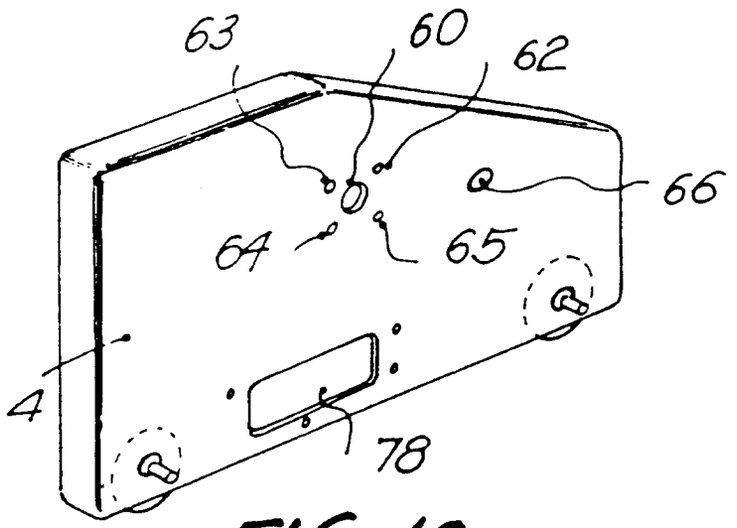
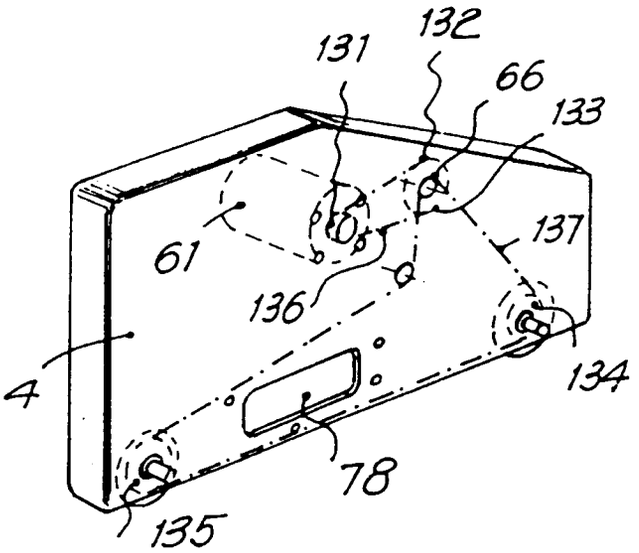


FIG. 10

FIG. 11



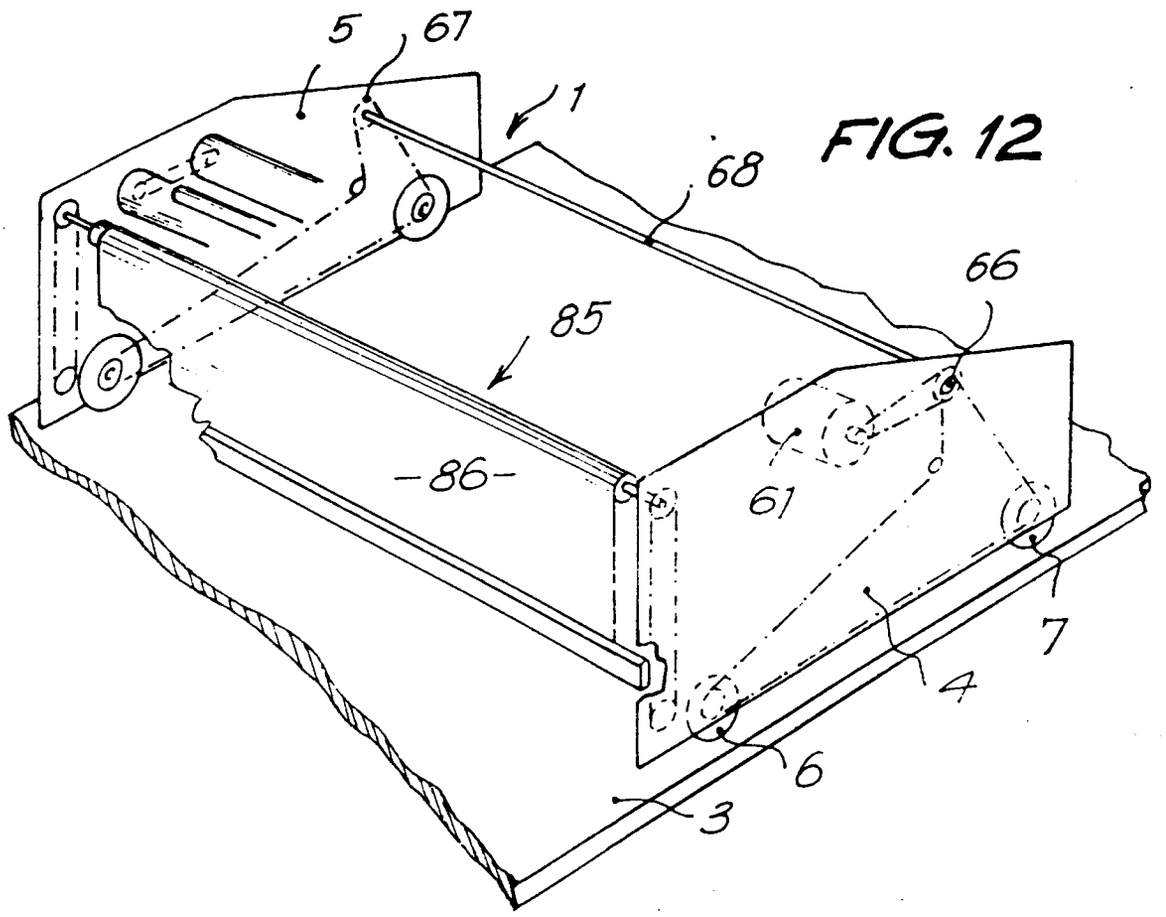


FIG. 12

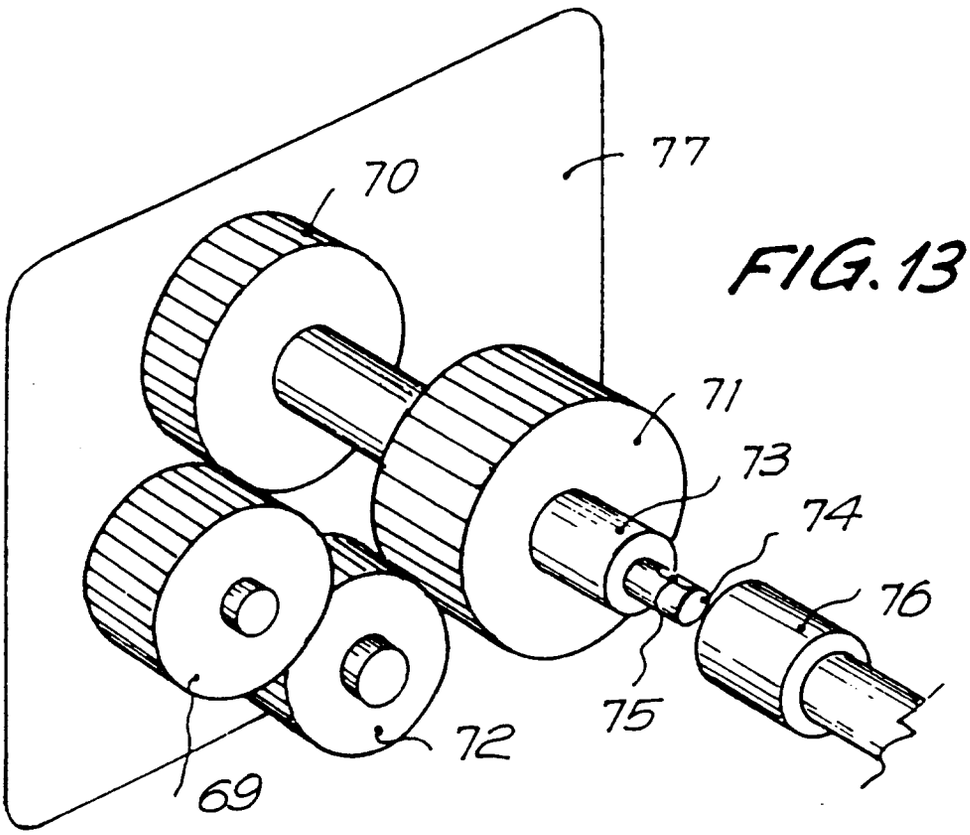


FIG. 13

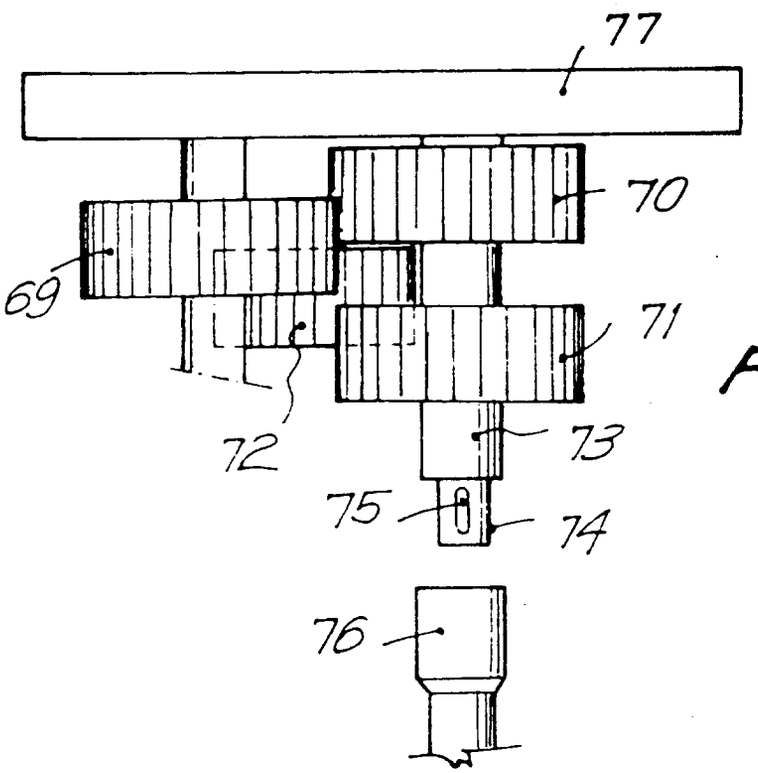
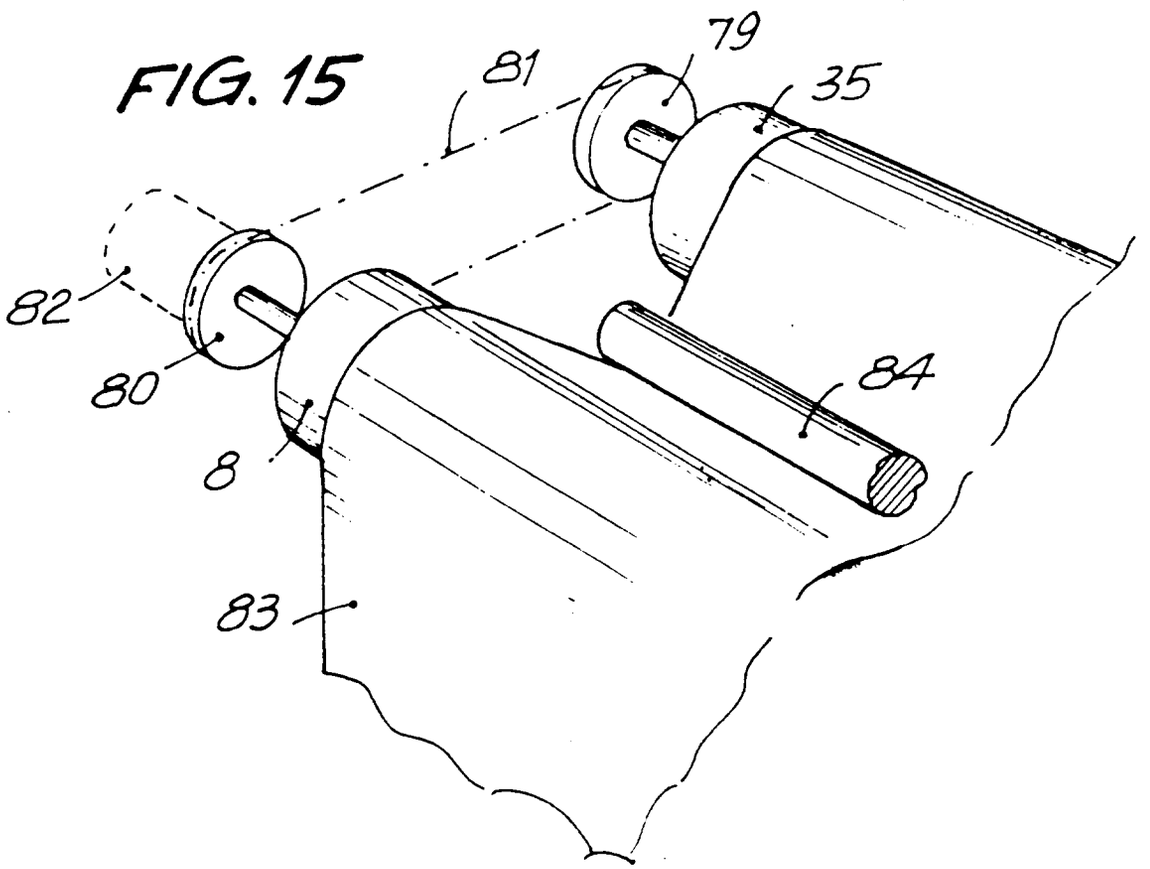


FIG. 14

FIG. 15



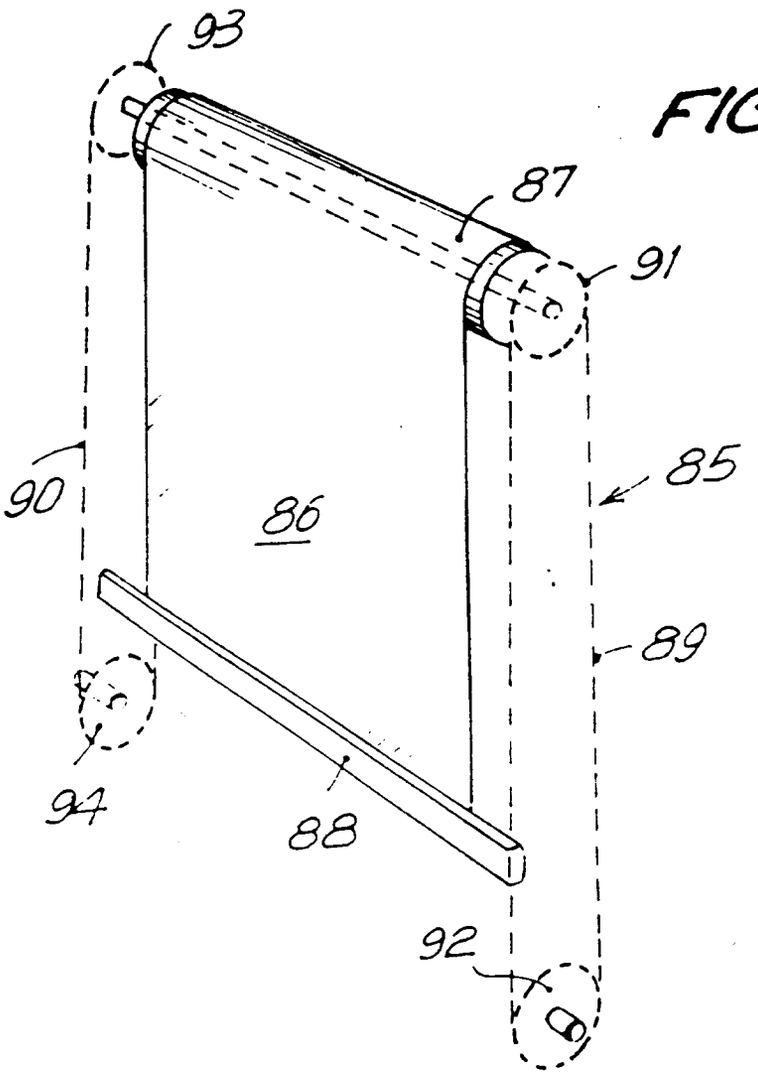
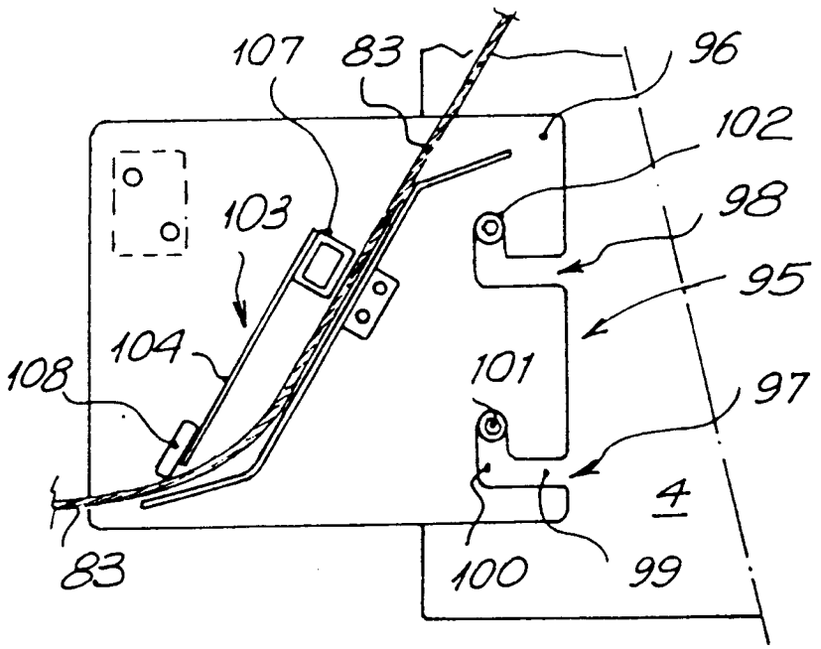


FIG. 16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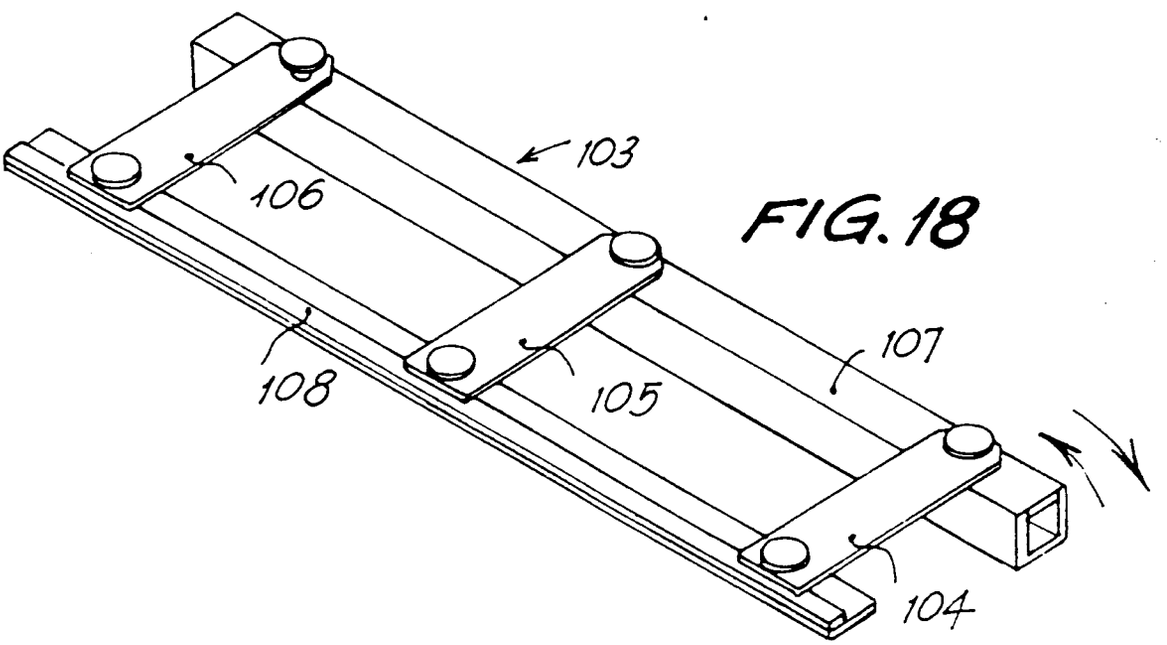
108
101
97
4
83
100
99

FIG.17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106
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105
107
104

FIG.18

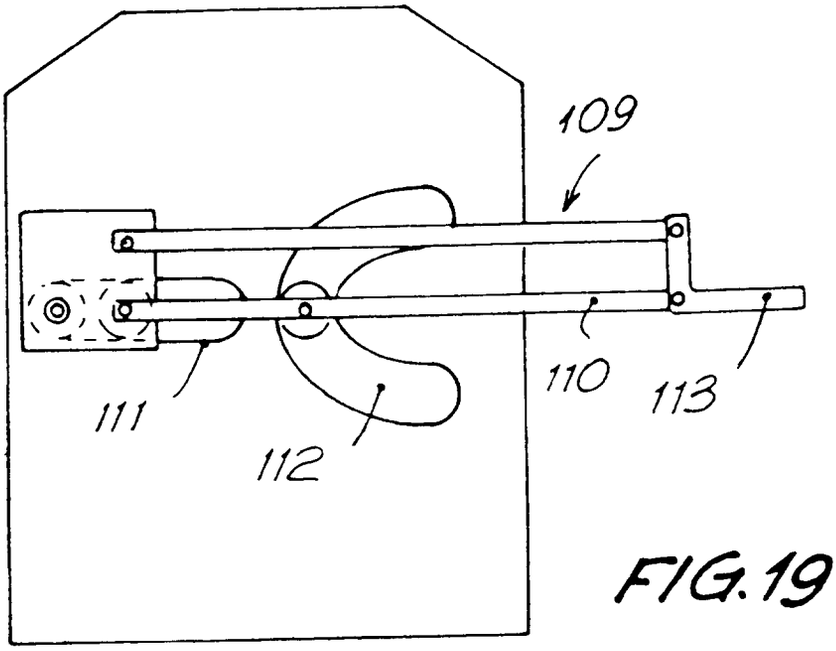


FIG. 19

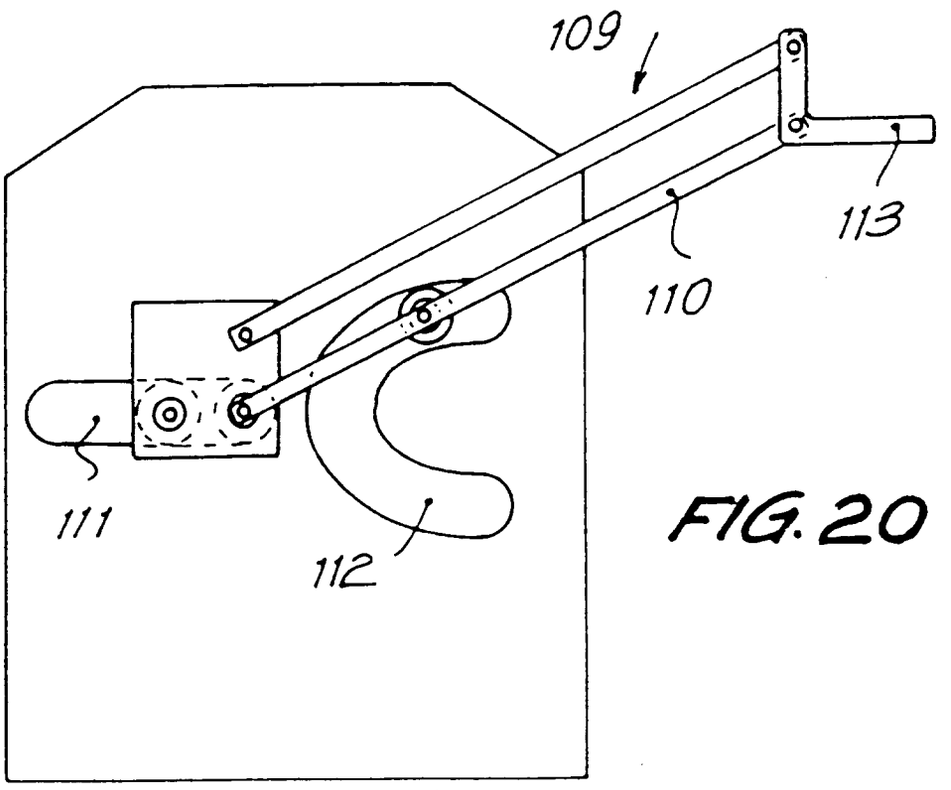
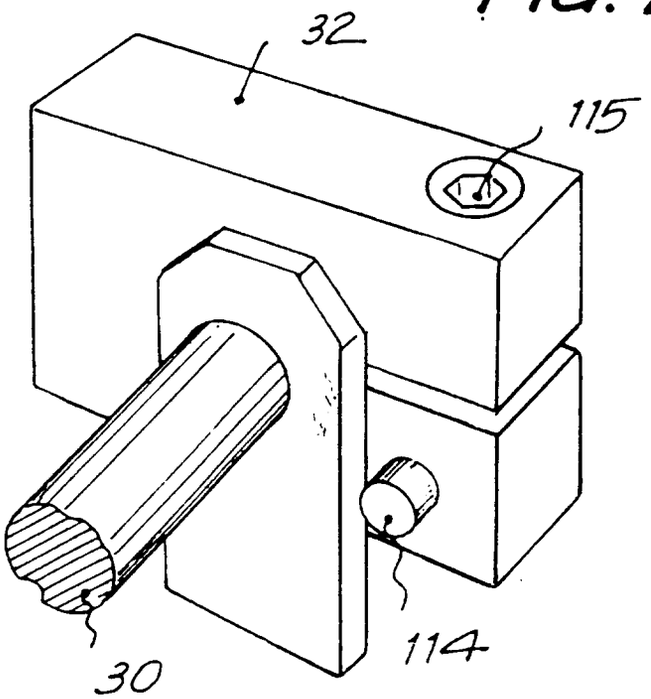


FIG. 20

FIG. 21



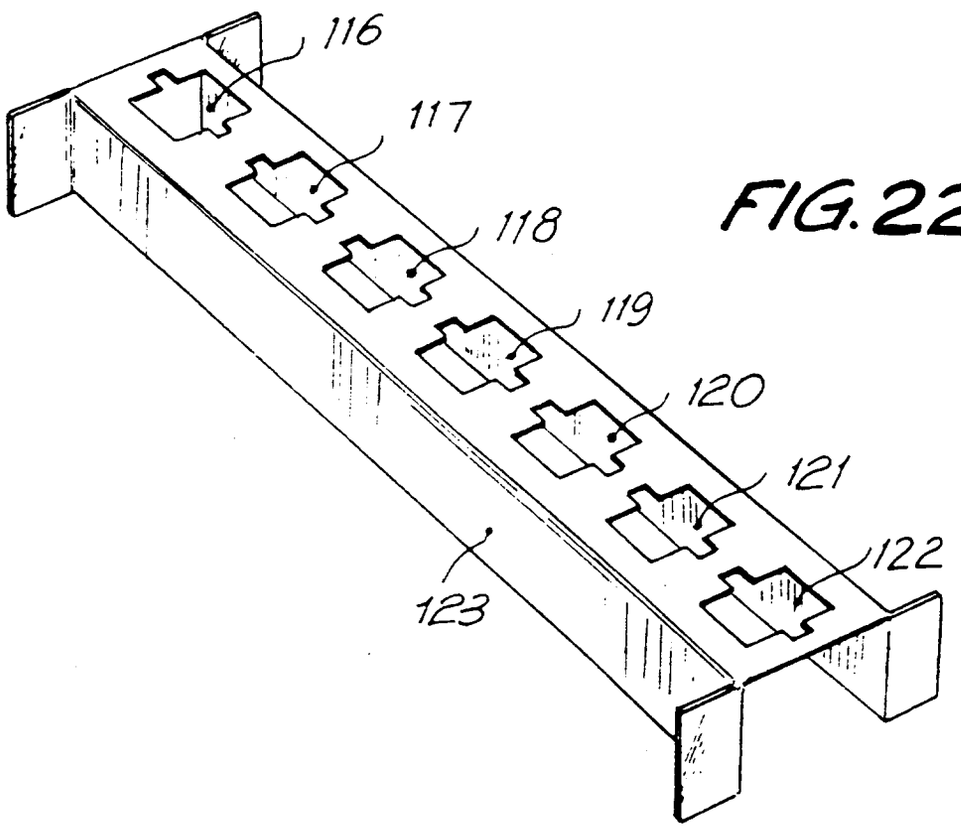


FIG. 22

FIG. 23