July 27, 1971 H. N. SKOLDKVIST 3,595,744

PULP-FORMING MACHINE

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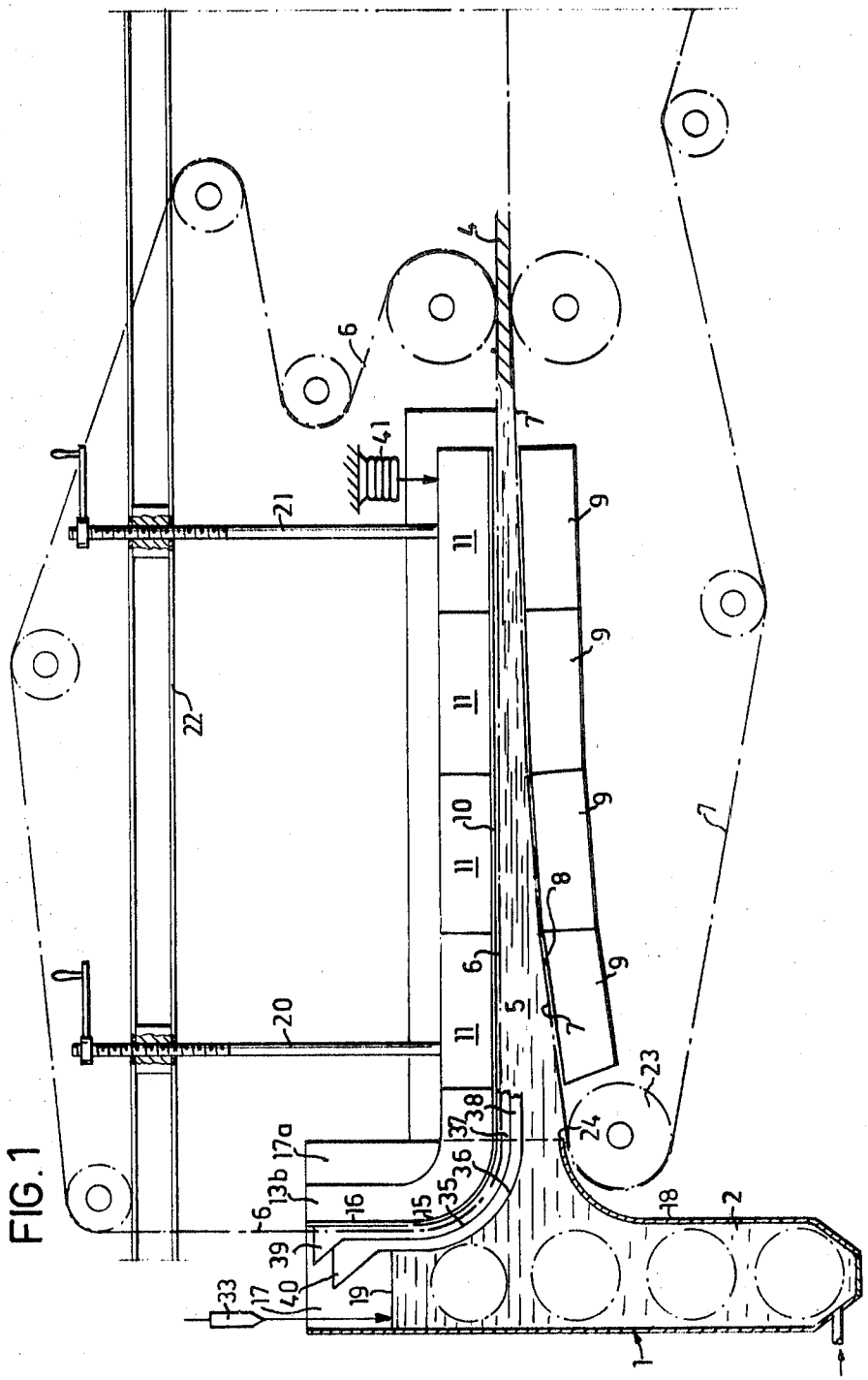


FIG. 1

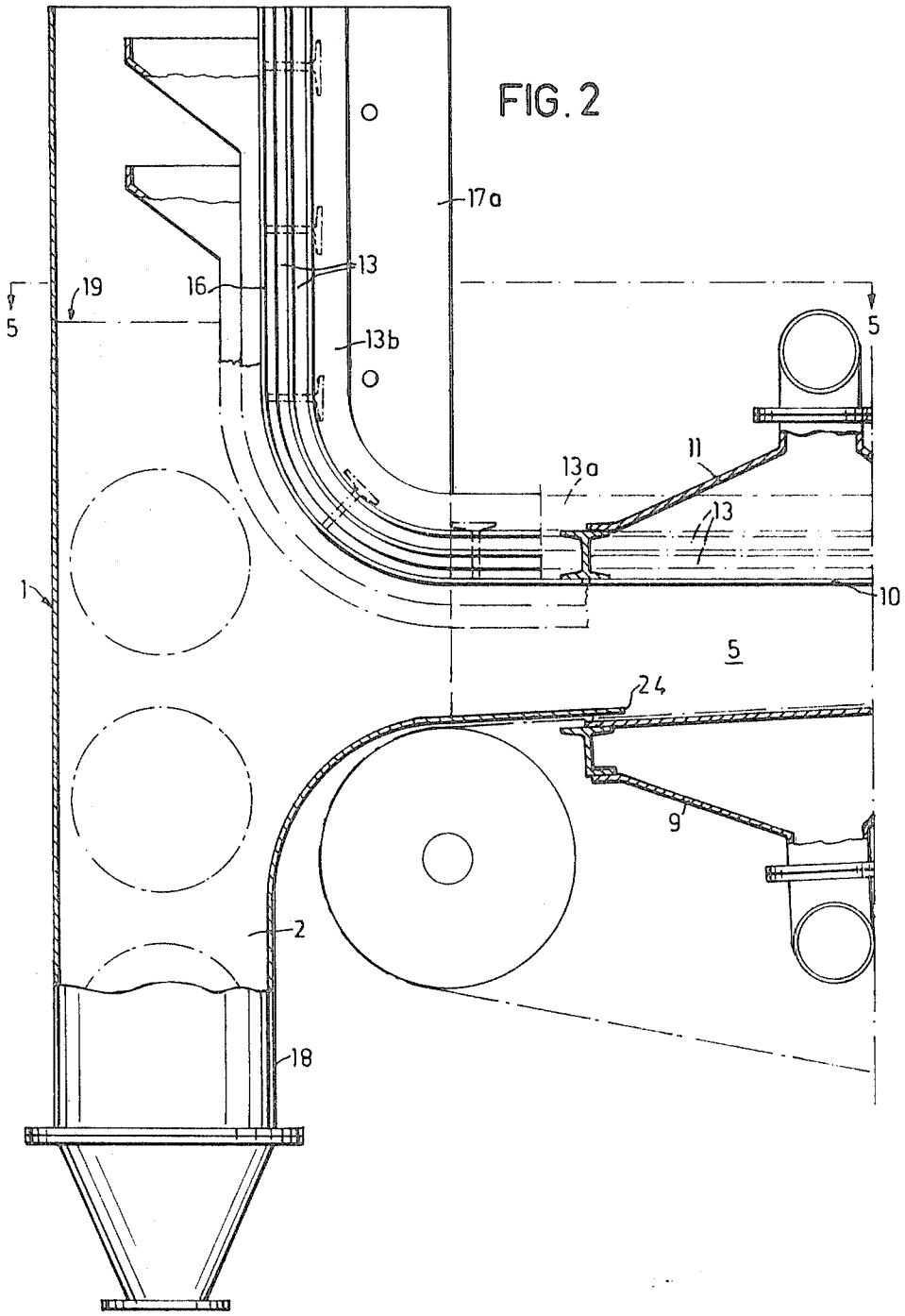
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PULP-FORMING MACHINE

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FIG. 2



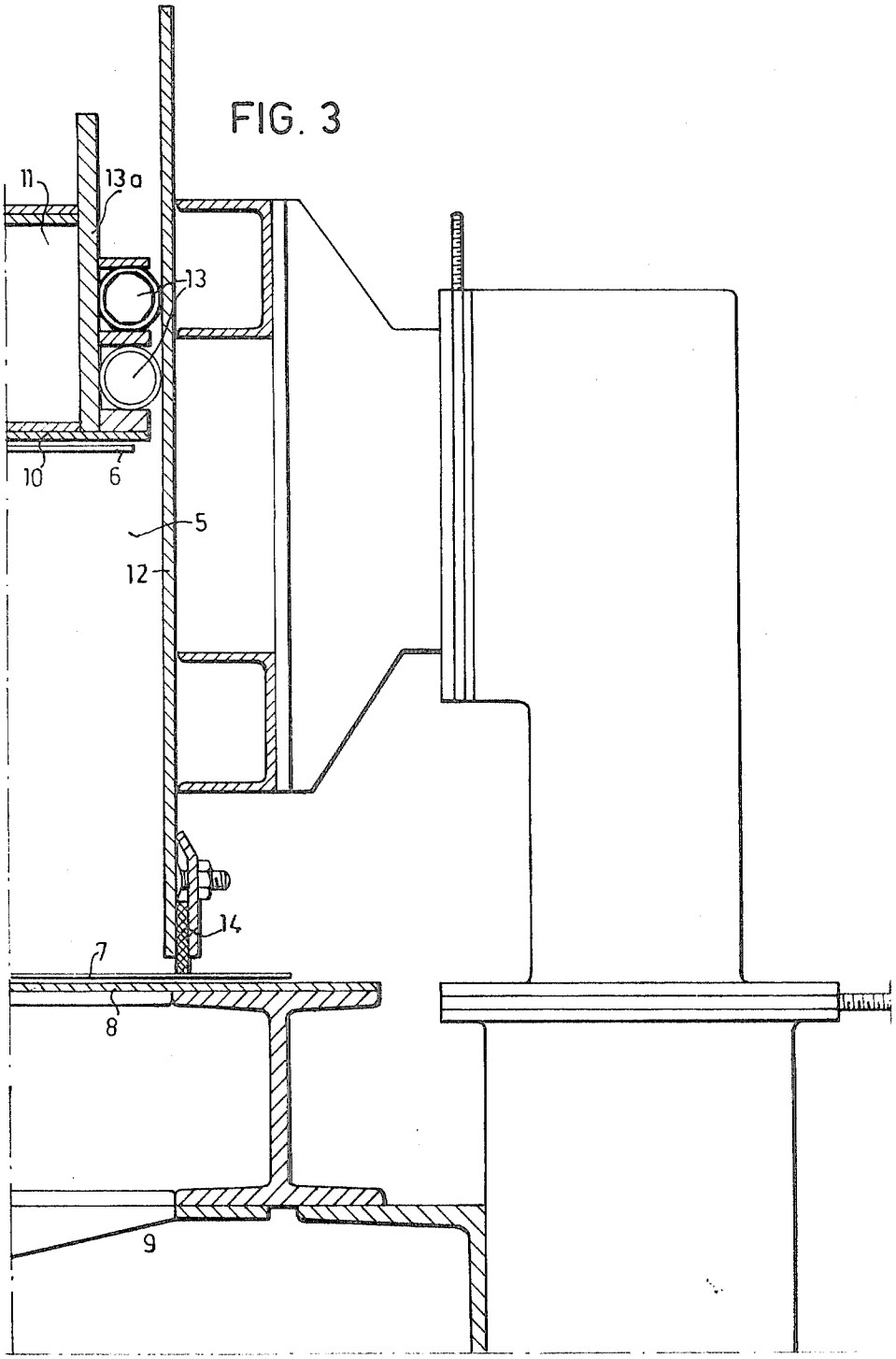
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FIG. 3



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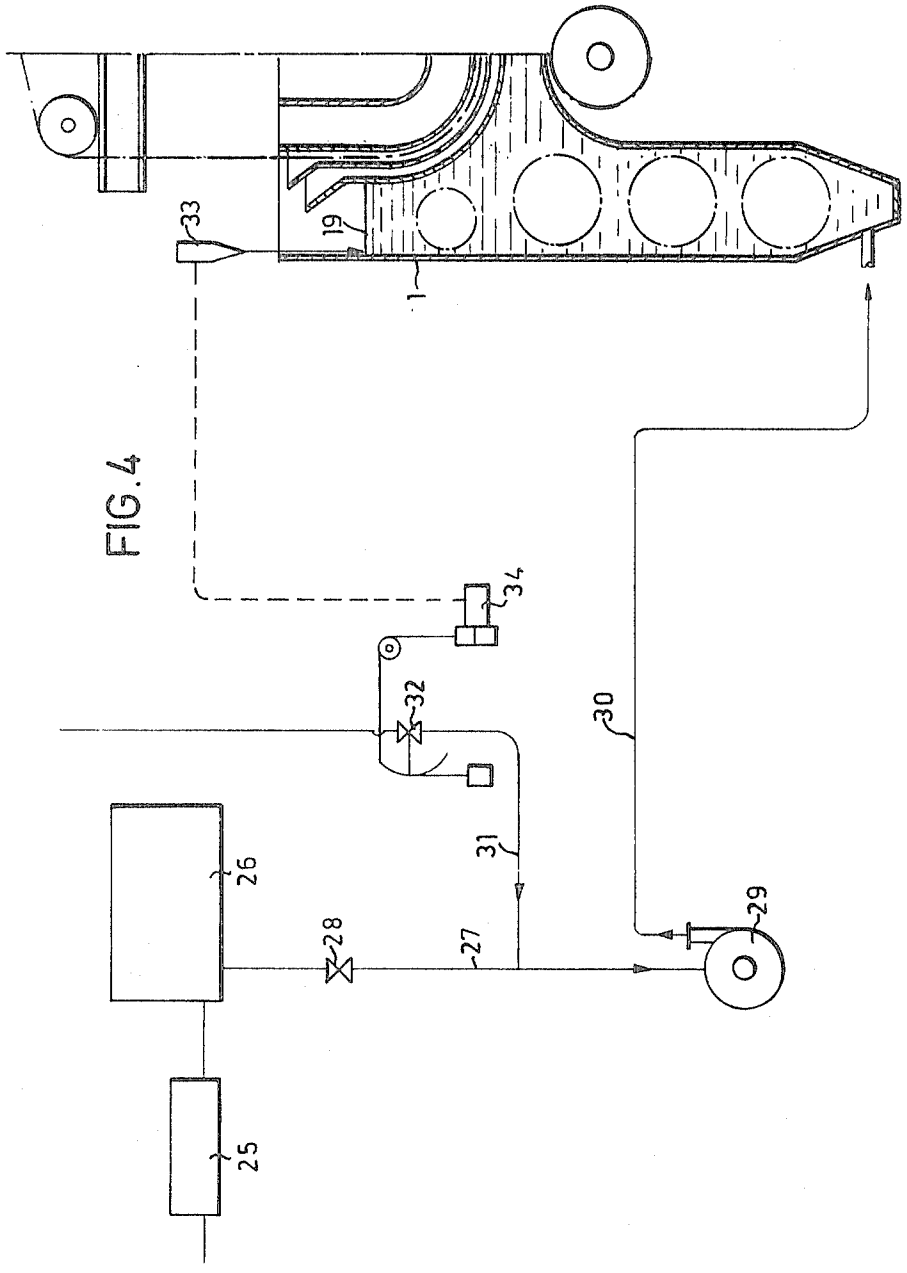


FIG. 4

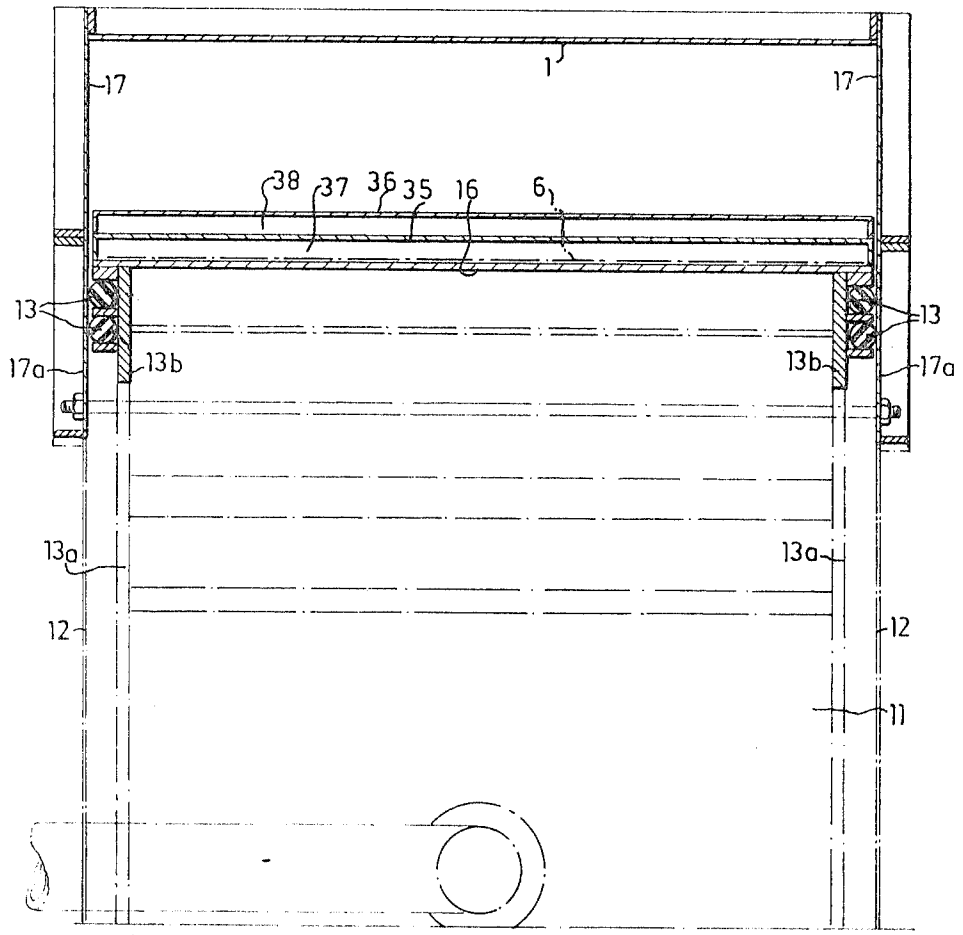
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FIG. 5



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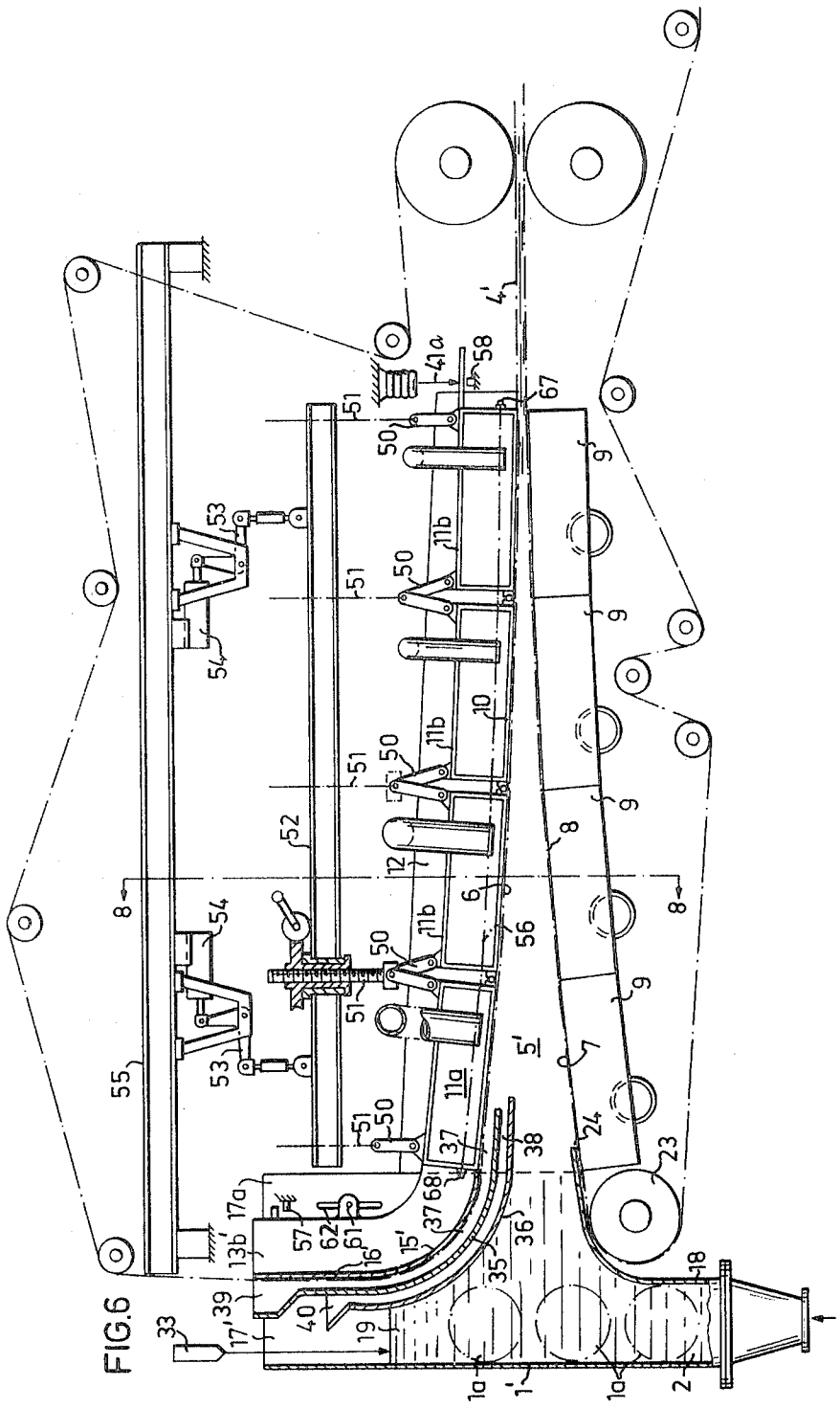


FIG.6

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FIG. 8

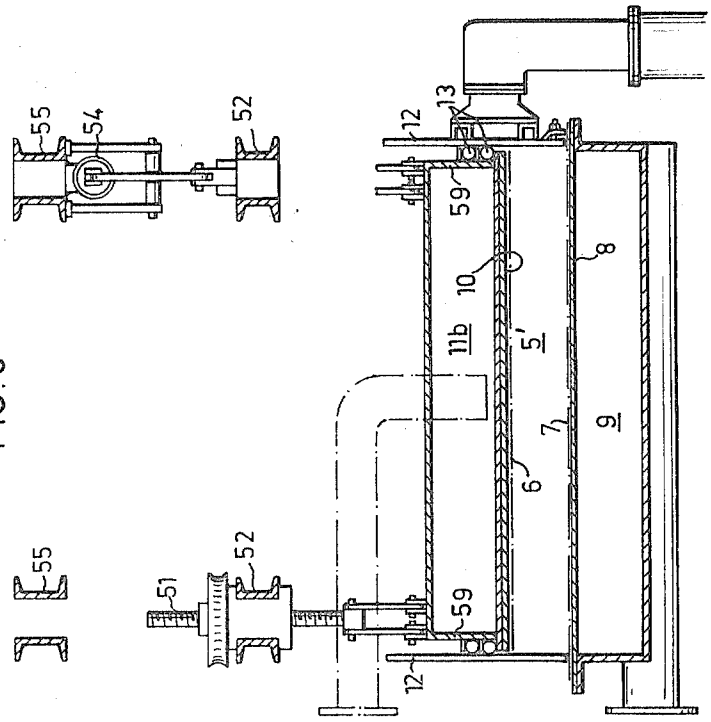
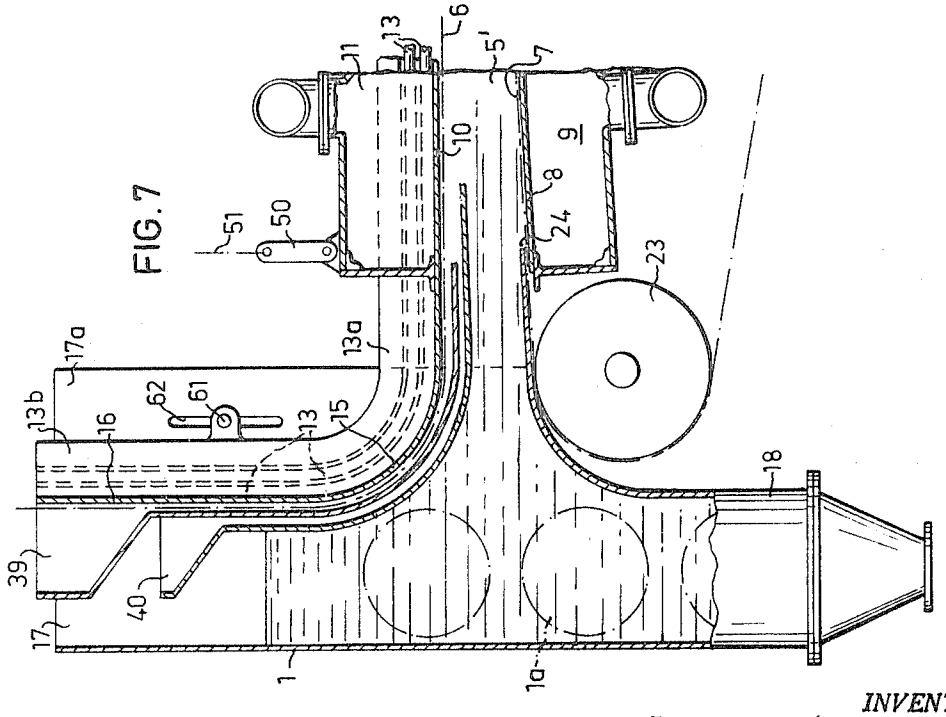


FIG. 7



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FIG.9

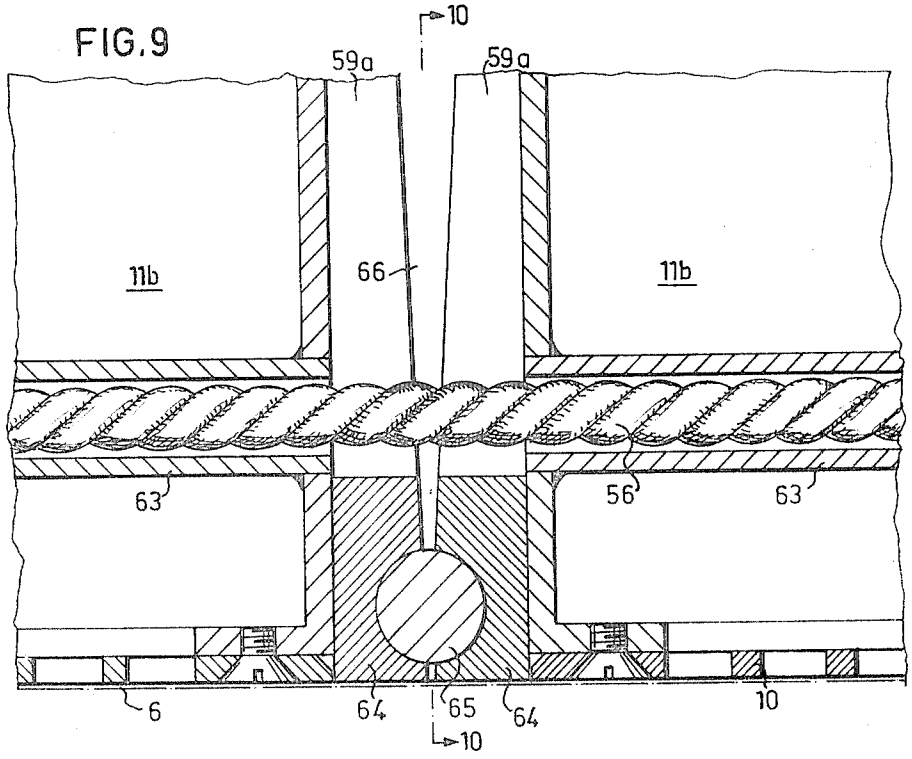
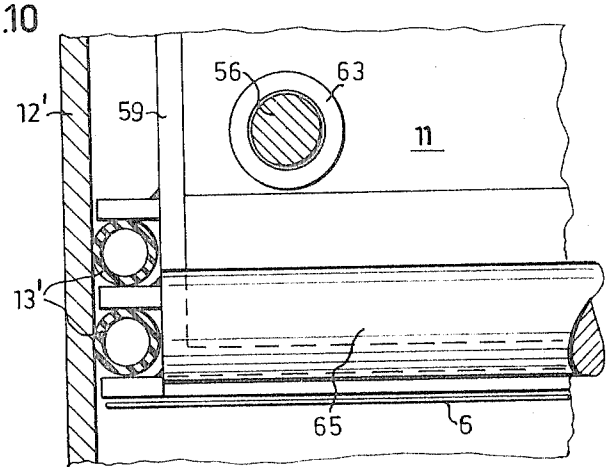


FIG.10



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United States Patent Office 3,595,744 Patented July 27, 1971

3,595,744

PULP-FORMING MACHINE

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Continuation-in-part of abandoned application Ser. No. 602,392, Dec. 16, 1966. This application Mar. 26, 1968, Ser. No. 724,665

Claims priority, application Sweden, Dec. 22, 1965, 16,678/65; Poland, Mar. 29, 1967, 119,739

Int. Cl. D21f 1/24

U.S. Cl. 162—301 8 Claims

ABSTRACT OF THE DISCLOSURE

A pulp-forming machine wherein an upper portion of a front wall of a pulp stock chamber or inlet box is sealingly movable between sidewalls of the chamber, and is through an arcuate portion rigidly connected with a top plate member of upper suction boxes to form a unit which is vertically movable relative to a lower plate of lower suction boxes to adjust the profile of the wedge-shaped pulp-forming or compression chamber to any desired shape. In one embodiment, the upper suction boxes are rigidly interconnected, while in the other embodiment, the upper suction boxes are hingedly interconnected to enable individual adjustment of the upper suction boxes when adjusting the profile of the compression chamber.

BRIEF DESCRIPTION OF THE INVENTION

This is a continuation-in-part application of my copending patent application Ser. No. 602,392, filed on Dec. 16, 1966, now abandoned. This invention relates to machines for forming a continuous fibrous sheet from a pulp suspension, comprising a top wire gauze and a bottom wire gauze associated respectively with a supporting top plate member and a supporting bottom plate member, which plate members are in sealing engagement with two side plates located one on either side of the wire gauzes and defining together with the wire gauzes a compression chamber which is wedge-shaped in longitudinal section and the inlet end of which communicates directly with an opening in the front wall of a pulp stock chamber.

The general object of the invention is to improve a machine of the kind referred to such that the machine can be adjusted in a simple way for relatively high production of continuous fibrous sheets of different thicknesses and formed from different pulp suspensions.

Forming of wet sheets of continuous fibrous sheets from a pulp suspension in the production of paper, pasteboard cardboard, fibre board and similar products has hitherto been carried out in certain known machines in such a way that a pulp suspension is caused to flow from a pulp stock chamber out over a longitudinal movable endless wire gauze.

The wire gauze and the pulp suspension are supported by rollers and suction boxes, and water is expressed from the pulp suspension due to contact of the wire gauze with said rollers and under the action of vacuum in the suction boxes.

Various types of pulp stock chambers have been used and all of them have the common feature that the suspension flows out onto the wire gauze. In principle, there is no difference between these pulp stock chambers whether they are open or closed or whether they are subjected to internal positive or negative pressure.

These methods of transferring the pulp suspension to the wire gauze have many and obvious disadvantages.

Because of the free outflow it is difficult to control the removal of water from the pulp suspension on the wire gauze. At low speeds and above all in case of high weights

by unit of area the expression of water is delayed because it is impossible to remove the water from the suspension, and the time for removing the water is so long that a highly increased flocculation will take place. At higher speeds the sheet will be broken by pressure shocks occurring i.e. on the table rollers thereby spoiling the formation of the sheets.

Among other inconveniences, a varying thickness of the final product will result due to flocculation at low speeds and an irregular sheet forming will result at high speeds. Especially in the production of fibre board the flocculation causes noticeable spots on the surface of the final product.

A further disadvantage is a more or less pronounced fibre orientation longitudinally or transversely of the sheet caused by a difference in speed between the top side of the sheet and the wire side.

The objects pursued in the construction of new machines, the changing or existent machines or in the coordination of novel and/or previously known elements and principles are the minimization or elimination of flocculation, the elimination of pronounced fibre direction, the elimination of the mixing of air with the pulp suspension, and the attainment of uniform thickness throughout the wet sheet or finished product.

Various constructions have been invented and tested in order to eliminate the above inconveniences but without entirely satisfactory results.

However, a certain improvement is obtained if, as has been practiced in the production of paper and cardboard, a top wire gauze is disposed immediately after the outlet nozzle of the pulp stock chamber and if the pulp suspension is caused to pass into the gap between the top wire gauze and the bottom wire gauze onto which the suspension flows. Removal of water from the pulp suspension in this gap takes place through the wire gauzes and by means of table rollers, suction boxes and the like means provided for this purpose.

However, this construction suffers from the inconvenience that the sheet has to be formed in two entirely separate steps.

In the first step, the pulp suspension flows freely from the outlet nozzle of the pulp stock chamber to the second step.

The second step is performed in the gap formed between the bottom wire gauze with its underlying water removing means and the top wire gauze with its overlying water removing means.

Another great disadvantage of the above method of forming wet sheets is that the method cannot be used for forming continuous fibrous sheets of high or extremely high weight.

In the production of fibre boards of relatively high and extremely high weights at moderate machine speeds the pulp suspension, which freely flows out of the pulp stock chamber, cannot be received in the gap formed by the bottom and top wire gauzes. The thickness of the suspension at the moment of outflow is too great and the machine speed is too low. Consequently, a great amount of the suspension will flow out over the edges of the wire gauze.

Similar situations will occur in the production of high weight sheets (as compared with paper) of pasteboard, cardboard and chemical pulp at what are called low machine speeds.

In forming wet sheets for the production of thick boards, such as fibre boards, it is also known to provide an elongated outflow nozzle between a pulp stock chamber located above the bottom wire gauze upstream from the breast roll and the gap formed by the top and bottom wire gauzes and their rolls. In this way and by means

of side plates in sealing engagement with the wire gauzes there is obtained a so-called connected vessel formed by the pulp stock chamber, the elongated nozzle and the gap between the wire gauzes. It is true that by means of this construction there is obtained a wet sheet of uniform thickness and without admixture of air or pronounced fibre direction, but the upward removal of water from the pulp suspension is only a fraction of the downward removal through the bottom wire gauze or only an amount that corresponds to the expression of water by the rollers which for this purpose are provided above the top wire gauze.

Therefore, a rapid removal of water through the top wire gauze of an order comparable with the removal of water through the bottom wire gauze cannot be obtained.

The result is an inhomogeneous formation of the fibrous netting in the fibrous sheet.

Because the top wire gauze passes into the nozzle at the top thereof at a distance from the pulp stock chamber in which there prevails a superatmospheric pressure, sealing problems arise which make this construction impractical.

The object of this invention is to provide a machine of the kind referred to in the preamble of this description which while maintaining the advantages of the connected vessels renders possible, irrespective of the machine speed, the weight of the sheet and the concentration of the pulp suspension, the forming of continuous fibrous sheets for the production of paper, cardboard, paste board, cellulose sheets and fibre boards.

Briefly, the machine comprises a pulp stock chamber or inlet box and wedge-shaped compression chamber. The upper portion of the front wall of the pulp stock chamber, through an arcuate portion, is rigidly connected with a top plate member of the upper suction boxes to form a unit which is vertically movable and which sealingly engages the sidewalls of the pulp stock chamber and the compression chamber. Adjustable suspension members are connected to the unit so that the unit may be raised or lowered relative to the lower plate of the lower suction boxes to adjust the profile of the wedge-shaped compression chamber. In one embodiment, the upper suction boxes are rigidly interconnected, while in the other embodiment, the upper suction boxes are hingedly interconnected to enable individual adjustment of the upper suction boxes by individual suspension members connected to adjacent suction boxes when the profile of the compression chamber is being adjusted.

Automatic regulation and control of the beating degree of the fibres is effected by means of a level measuring device in the pulp stock chamber which transmits impulses to a dilution regulator to control the amount of water introduced into the pulp stock prior to introduction of the pulp into the pulp stock chamber. An instrument is also provided for recording the vertical movement of the top plate member at the outlet of the compression chamber and, consequently, the thickness of the fibrous sheet coming out of the compression chamber. By this instrument, any variation in the amount of fibres supplied to the pulp stock chamber can be ascertained. In addition, one or more guide plates can be provided in the pulp stock chamber adjacent the front wall thereof into which different types of pulp can be introduced to form in a single step a wet sheet comprising a plurality of layers of different types of fibres and different beating degrees.

In accordance with the invention, the machine is characterized by the features indicated in the appending claims.

Due to the arrangement according to the invention, it is possible among other things to have the top wire gauze and the bottom wire gauze take part approximately in the same degree and extent in the removal of water from the pulp suspension. In addition, the gap between the wire gauzes can be changed to the desired size and shape within wide limits and according to the concentration of the input pulp suspension and the weight of the final product to be obtained.

These and other features and advantages of the invention will appear from the annexed drawings which by way of example illustrate two embodiments of a machine according to the invention.

FIG. 1 is a diagrammatic longitudinal sectional view of the machine according to the invention.

FIG. 2 is a partial view to an enlarged scale of the pulp stock chamber and the inlet end of the adjustable nozzle or forming part in FIG. 1 and illustrates several constructional details.

FIG. 3 illustrates part of a cross section to an enlarged scale of the inlet end of the gap between the wire gauzes.

FIG. 4 illustrates a diagram of the connections for the supply of pulp suspension and for regulating the properties thereof in response to the level in the pulp stock chamber.

FIG. 5 is a cross section along line **5—5** in FIG. 2, details not included in the cross section plane being indicated by dotted lines for the sake of clarity.

FIG. 6 is a diagrammatic longitudinal sectional view as FIG. 1 of a second embodiment of the machine according to the invention.

FIG. 7 is a detail view of the machine in FIG. 6 on an enlarged scale and partially broken.

FIG. 8 is a cross-section on line **8—8** in FIG. 6.

FIG. 9 is a partial longitudinal section of two adjacent upper suction boxes to illustrate their hinged connection, and

FIG. 10 is a partial cross-section on line **10—10** in FIG. 9.

DETAILED DESCRIPTION OF THE INVENTION

Throughout all figures, identical members of the first and second embodiments shown are denoted by the unprimed and primed reference numerals, respectively. Therefore, the following detailed description of the embodiment shown in FIGS. 1 to 5 also applies to the embodiment shown in FIG. 6 in all respect in which the two embodiments are equal.

Referring to FIG. 1, the machine comprises a pulp stock chamber **1** for the pulp suspension **2** which is directly passed to a forming part or compression chamber in which the suspension is formed to a continuous fibrous sheet **4** or so-called wet sheet.

As will be seen from FIG. 1, the pulp stock chamber **1** and the gap or compression chamber **5** between the top wire gauze **6** and the bottom wire gauze **7** are in the form of so-called connected vessels.

The forming part comprises a bottom plate member **8** with underlying suction boxes **9** and a top plate member **10** with overlying suction boxes **11.** These plate members form supports for the wire gauzes. The plate members are in lateral sealing engagement with two side plates **12** on either side of the wire gauzes. Sealing between the plate members and the side plates is effected by means of packings **13, 14** in a conventional manner, as shown in FIG. 3.

In order to connect the forming part to the pulp stock chamber **1,** the top plate member **10** is elongated at its inlet end and merges via an arcuate corner wall **15** into an upper portion **16** of the upper front wall of the pulp stock chamber. This wall portion **16** is movable and sealingly arranged between the two opposite side walls **17** of the chamber **1,** whereas the lower portion **18** of the front wall of the chamber **1** is firmly connected with the side walls **17** of the chamber. The side plates **12** are firmly connected with the extended side walls **17***a* of the pulp stock chamber **1.**

The level **19** of the suspension in the chamber **1** can freely rise and lower, but should be constant in normal operation for reasons to be explained hereinbelow.

The front wall portion **16**, the corner wall **15**, the top plate member **10** with appertaining suction boxes **11** and the top wire gauze **6** are mounted on a common structure which in the embodiment exemplified is suspended from front suspension members **20** and rear suspension members **21** which are mounted on frame beams **22** and are individually adjustable. Consequently, the inlet end of the compression chamber **5** between the wire gauzes **6**, **7** as well as the vertical distance between the wire gauzes at the outlet end can be adjusted to the desired value. This means that the longitudinal section of the compression chamber **5** can be adapted in a simple way to the pulp suspension supplied to the forming part and to the desired thickness of the continuous fibrous sheet.

From FIG. 1, it will be seen that the top wire gauze **6** passes downwards into the top end of the pulp stock chamber **1** and along the inside of the wall portion **16** and the corner wall **15** and therefrom into the forming part along the lower side of the top plate member **10**.

The lower portion **18** of the front wall of the pulp stock chamber has an arcuate extension at its upper end which is located above the front roller **23** of the bottom wire gauze **7** and terminates in an end edge **24** below which the bottom wire gauze **7** passes into the compression chamber.

The upper portions of the side walls **17** are forwardly extended as shown at **17***a* so that the wall portion **16** can be displaced forwardly and backwardly and upwardly into different positions corresponding to the position of the top plate member **10**.

In order to secure a continuous sealing effect by means of the packings **13** (FIG. 3), the beams **13***a* which carry the packings **13** have extended in portions **13***b* disposed along the side walls of the pulp stock chamber, as will be seen from FIGS. 1 and 3.

The position of the top plate member **10** and, consequently, the position of the top wire gauze **6** are adjusted to obtain the desired gap **5**. The dewatering is controlled by means of the suction boxes **9**, **11** the vacuum of which is adjustable. During operation, the raisable and lowerable top plate member **10** can be forced down against the suspension in the compression chamber **5** by a pressure at least equal to the total pressure chamber **5**.

Due to the fact that the top plate member **10** is individually raisable and lowerable at both ends, the pressure on the suspension in the compression chamber **5** can be adjusted such that it may be constant and has a maximum value at the outlet end of the compression chamber **5**.

If the suspension device **20**, **21** is adapted to exert an adjustable, but constant pressure on the suspension and if the quantity of pulp fed to the machine per unit of time varies, the plate member **10** will in certain cases be raised or lowered at the outlet end of the chamber **5**. Such changes in position are sensed by a measuring instrument **41**. If then the water content of the fibrous sheet at the outlet end of the compression chamber **5** is maintained constant, the deflection of the measuring instrument **41** will directly indicate variations of the thickness of the fibrous sheet and, consequently, the substance thereof. With the guidance thereof, correcting measures can be taken to restore the predetermined thickness which guarantees that the final product will have the stipulated weight.

Due to the fact that the vacuum in the upper and lower suction boxes **11** and **9**, respectively, is individually adjustable it is possible to regulate the desired removal of water at the top and bottom wire gauzes. In certain places, the adjustment may be such that the removal of water at the top wire gauze will be equal to the removal of water at the bottom wire gauze. In other cases, it may be suitable with regard to the properties of the final product to have different amounts of water expressed at the top and bottom wire gauze which is easily obtained by means of varying the pressures in the various boxes **9**, **11**, which may operate with sub-atmospheric, atmospheric and/or super-atmospheric pressures.

An especially important property of the machine according to the invention is due to the fact that the machine immediately reacts to changes in the beating degree of the fibres comprised in the pulp suspension **2**. Therefrom it follows that the machine can be separately used as an indicator of the beating degree in combination with a pulp-forming machine of any conventional type, in that part of the suspenson for the machine is diverted to the beating degree indicator according to the invention. Indication of the beating degree is obtained in the following manner.

The wire gauze speed, i.e., the machine speed, is adjusted to the value which for the product in consideration results in the calculated production per unit of time. Then the amount of fibre suspension corresponding to the wire gauze speed and the calculated production is supplied to the machine. The supply of pulp suspension is suitably effected in the manner illustrated in FIG. 4.

From a beater device **25** having adjustable beating members to obtain the desired beating degree fibres and water are passed to a level regulator **26** in which the fibre concentration is maintained at a desired value which is higher than the fibre concentration in the pulp stock chamber.

From the level regulator **26**, the suspension passes through a line **27** provided with a control valve **28** to a pump **29** which through an inlet line **30** pumps the suspension into the lower end of the pulp stock chamber **1**. The valve **28** controls the amount of fibres passing to the pump **29**. Connected between the valve **28** and the pump **29** is a dilution water line **31** which comprises an adjustable valve **32** for controlling the supply of dilution water which in turn determines the concentration of the suspension in the pulp stock chamber **1**.

The vacuum in the suction boxes **9**, **11** is adjusted to the desired value and maintained constant by means of regulators in response to the quantity of pulp suspension supplied to the machine and in response to the adjusted machine speed. The plate member **10** is brought into contact with the compression chamber as previously indicated and such that the level in the pulp stock chamber is higher than the highest point in the compression chamber or gap **5** and such that, with respect to the concentration of the pulp suspension and the pressure in the boxes **9**, **11**, the wet sheet or fibrous sheet **4** when leaving the forming part has the dryness suitable for the actual production.

With the above conditions and at unchanged beating degree and constant fibre supply, the system is in balance resulting in a guaranteed weight of sheet and production. Upon changes of the beating degree, the system comes out of balance unless counter-measures are taken.

For instance, if the beating degree is increased which means that the fibres become finer and the expression of water becomes more difficult, the level **19** in the pulp stock chamber will rise because the removal of water will be reduced due to the fact that the vacuum in the suction boxes is maintained constant and automatically controlled.

The conditions are reversed if the beating degree is reduced in which case the level in the pulp stock chamber tends to be lowered.

From the above, it will be apparent that the changes of the level in the pulp stock chamber within practical limits serve as an indicator of the beating degree of the fibres.

The simplest way of using the level difference in the pulp stock chamber for indicating the beating degree is to build in an indicating level gauge and with the guidance of the deflection thereof to take manual measures for restoring the beating degree.

Since this method would act too slow and result in oscillations of the level in the pulp stock chamber which oscillations in turn would affect the pressure in the form part, it is more advantageous to quick-regulate the level in the pulp stock chamber by controlling the supply of

dilution water such as to re-establish the beating degree to the desired value.

This can be effected by means of a level indicator **33** which senses the level **19** in the pulp stock chamber **1** and transmits impulses to a dilution water regulator **34** which is connected to the dilution water valve **32** and controls the supply of dilution water.

Upon increasing beating degree, the level in the pulp stock chamber rises resulting in that the supply of dilution water is reduced until the level **19** is restored.

The deflection of the dilution water regulator **34** can be used both as an indicator of the beating degree and as an impulse sender for automatic regulation of the beating degree. This can be effected such that the impulses from the dilution water regulator actuate the control members of the fibre beating member.

The result is an automatic regulation and control of the beating degree of the fibres and a guaranteed uniform beating degree prior to the entrance of the suspension into the pulp stock chamber.

Other ways of utilizing the level differences in the pulp stock chamber for regulating the beating degree are possible in connection with the invention.

If for some reason the amount of fibres supplied from the level regulator **26** to the pulp stock chamber **1** should vary, such variation is indicated by the pointed instrument **41***a* which is placed at the outlet end of the plate member **10** and indicates the vertical movement of the member **10** and, consequently, the actual thickness of the fibrous sheet **4**.

As will be seen from FIGS. 1 and 2, it is possible to provide, if desired, one or more guide plates **35**, **36** which are substantially of the same width as the front wall **16** and may be firmly connected thereto at some distance therefrom so as to form one or more passages **37**, **38**. These passages or nozzles extend upwardly in the pulp stock chamber and are connected to individual feed hoppers **39** and **40**, respectively, for types of pulp other than that to be supplied into the pulp stock chamber. The passage **37** between the plate **35** and the wire gauze **6** is in the form of a nozzle the outlet end of which is located within the compression chamber **5** and below the front suction box **11** by means of which water is expressed to a desired degree from the pulp supplied through the passage **37** before the pulp leaves the passage **37** and forms an external layer at the wire gauze **6**. Similarly water is expressed to a certain degree from the pipe entering through the passage **38** immediately before the pulp leaves this passage. To this end the plate **36** extends farther into the compression chamber **5** than the plate **35**, as will be seen from FIGS. 1 and 2. As a result there is obtained, in a single forming step, a wet sheet comprising a plurality of layers of different types of fibres and different beating degrees.

By means of the described and illustrated machine it is thus possible to produce continuous fibrous sheets in a single forming step comprising a single or a plurality of fibrous layers. The fibrous sheet can be produced in desired thickness at machine speeds which nowadays are used in pulp and cellulose mills. The result is a final product which has the following advantages: uniform weight and thickness of the sheet, uniform surface quality throughout the product, and a smooth and tight surface. Further, the product can be built up from layers of different fibre types. Suction of air into the suspension at the junction of the pulp stock chamber with the forming part is prevented. Further, flocculation is reduced and noticeable spots are prevented.

Referring now to FIGS. 6 to 10, the second embodiment of the machine according to the invention basically differs from that shown in FIG. 1 as to the upper suction boxes. From FIG. 6 it will be seen that the upper suction boxes **11***a*, **11***b* are hingedly interconnected and are suspended by links **50** which are connected to screws **51** or similar vertically adjustable members which are supported by parallel beams **52**. The beams are in turn carried by levers **53** operated by pneumatic servomotors **54** secured to stationary frame beams **55** and forming elastic stop members when the upper suction boxes **11***a*, **11***b* are biased upwardly by the pulp suspension flowing through the forming chamber **5'** upon operation of the machine. At rest the unit, formed by the upper boxes **11***a*, **11***b* which are tightly brought together by wires **56** passing through the boxes, is supported by forward supporting members **57** and rearward supporting members **58**. When starting the machine, the upper suction boxes **11***a*, **11***b* will be permitted to be raised by the pulp suspension to the level determined by the servomotors.

As will be understood from FIGS. 3, 9 and 10 the suction boxes have side walls **59** which as in FIG. 1 carry sealing hoses **13** or **13'** of elastic material for sealing against the stationary side plates **12** or **12'**. The side walls of the foremost suction box **11***a* are extended upwardly to form end portions **13***b'* on opposite sides of the extended wall portion **16**. These end portions have ears provided with transverse pins **61** which slide in substantially vertical slots **62** in the side walls **17***a* of the chamber **1**. By means of the pins **61** the unit, formed by the upper suction boxes **11***a*, **11***b* and held rigidly together by the wires **56**, is prevented from moving longitudinally when influenced by the flowing pulp suspension.

As in FIG. 1, the plate member in FIG. 6 of the foremost upper suction box **11***a* is also elongated at its inlet end and merges with an arcuate corner wall **15'** into the upper portion **16'** of the upper front wall of the pulp stock chamber **1'**. This upper wall portion **16'** is movable together with the unit formed by the suction boxes **11***a*, **11***b* and is sealingly arranged between the two opposite side walls **17'** of the chamber **1**, whereas the lower portion **18'** of the front wall is rigidly connected to the side walls **17'** of the chamber **1'** in the same manner as in FIG. 1.

In the chamber **1'** are rotatably mounted agitators **1***a* to obtain an even distribution of the fibres in the pulp suspension.

As to the connection between the upper suction boxes **11***a*, **11***b*, it will be seen from FIGS. 9 and 10 that the suction boxes are provided with longitudinal pipes **63** passing sealingly through the boxes to form guides for the wires **56**. At the lower end edges of the boxes are bearing pieces **64** for transverse bearing shafts **65** forming a hinge between the end portions of adjacent boxes **11***b* and **11***b* in FIG. 9. The end portions **59***a* of the side walls **59** of the boxes project beyond the ends of the boxes and form a V-shaped gap **66** when the boxes are horizontal as shown in FIG. 9. This gap will permit the boxes to be adjusted to various angular positions relative one another. The gap is sealed by the sealing hoses **13'** (FIG. 10) which extend along the whole length of the unit of boxes **11***a*, **11***b* and bridges the gaps **66**. The wires **56** are secured at their ends by means of any suitable securing means **67**, **68** such as screws forming parts of the ends of the wires and secured by means of nuts to the frame of the machine. This simple nut and screw connection at the ends of the wires will enable the wires to be tightened as desired when the desired profile of the unit formed by the boxes **11***a*, **11***b* has been adjusted by means of the screws **51**. Normally, the profile formed by the upper suction boxes **11***a*, **11***b* is adjusted to its desired shape which is then maintained during the complete production of a specific kind of fibrous sheet **4'**.

The longitudinal section of the forming chamber **5'** may thus be adapted in a simple manner to the pulp suspension supplied to the chamber **5'** and to the desired thickness of the continuous sheet **4'** to be produced.

While the preferred form of the invention has been shown and described, it is to be understood that all suitable modifications and equivalents may be resorted to which fall within the scope of the invention as claimed.

What is claimed is:

1. A machine for forming a continuous fibrous sheet from a pulp suspension, comprising a top wire gauze disposed below a supporting top pervious plate means and a bottom wire gauze disposed above a supporting bottom pervious plate means, said top and bottom plate means being in slidable sealing engagement with two side plates located on opposite sides of the wire gauzes and defining together with the wire gauzes a compression chamber which convergingly tapers in longitudinal section from an inlet end to an outlet end, a pulp stock chamber having spaced-apart side walls and a front wall facing the inlet end of said compression chamber, said front wall having an opening therein through which the inlet end communicates with the stock chamber, thus defining an upper and lower portion thereof, means securing together said top plate means and the upper portion of said front wall to form a unit, means for vertically adjusting said unit for varying the longitudinal sectional shape of said compression chamber, said upper portion of the front wall being movable between and in slidable sealing contact with said side walls of said pulp stock chamber, and said top wire gauze passing downwardly into the pulp stock chamber along the inside of said upper portion of front wall and into said compression chamber along the underside of said top plate means.

2. A machine as claimed in claim 1, wherein the upper portion of said front wall merges into said top plate means via an arcuate connecting corner wall and wherein an inner plate member extends substantially in parallel with said corner wall in spaced relation to the inside of said arcuate corner wall and inside of the top wire gauze and is approximately of the same width as the upper portion of said front wall, thus forming a passage, the passage formed between said corner wall and inner plate being separated from said pulp stock chamber and provided for receiving pulp of a type different from that to be fed into said pulp stock chamber, the lower or outlet end of said passage being located at the inlet end of said compression chamber.

3. A machine as claimed in claim 2, including a second inner plate member spaced inwardly from and parallel to the first-mentioned inner plate member so as to define therewith a second passage.

4. A machine as claimed in claim 1, wherein the top plate means is formed by a bottom of a plurality of upper suction boxes, means hingedly interconnecting said upper

suction boxes and means for suspending said upper suction boxes by vertically adjustable members which permit an individual adjustment of each suction box.

5. A machine as claimed in claim 4, wherein at least one wire extends through the hingedly connected upper suction boxes and is tightened at its ends to secure the boxes in their axial positions relative one another.

6. A machine as claimed in claim 4, wherein said suspending means includes links connected between the suction boxes and the vertically adjustable members, said vertically adjustable members being carried by supporting beams, said supporting beams being supported by said means for vertically adjusting said unit.

7. A machine as claimed in claim 4, including means for rigidly securing the bottom plate of the foremost upper suction box to the upper movable portion of said front wall of the pulp stock chamber.

8. In a machine for forming a continuous fibrous sheet from a pulp suspension, said machine being of the type which includes means for conveying a mass of the pulp between upper and lower runs of two endless looped wire gauze strips and means for removing water from the mass of pulp through at least said upper run, the improved water removing means comprising: a plurality of suction boxes disposed along said upper run, said suction boxes each including a bottom wall engaging said upper run; hinge means interconnecting said suction boxes for movement in a vertical plane; and independent vertically adjustable suspending means for suspending said suction boxes and for independently adjusting the vertical positions of said suction boxes relative to said lower run.

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