May 6, 1958 J. H. PATON ET AL 2,833,351

APPARATUS FOR CUTTING A PLEATED SHEET INTO PLEATED UNITS

Filed Dec. 16, 1955 4 Sheets-Sheet 1

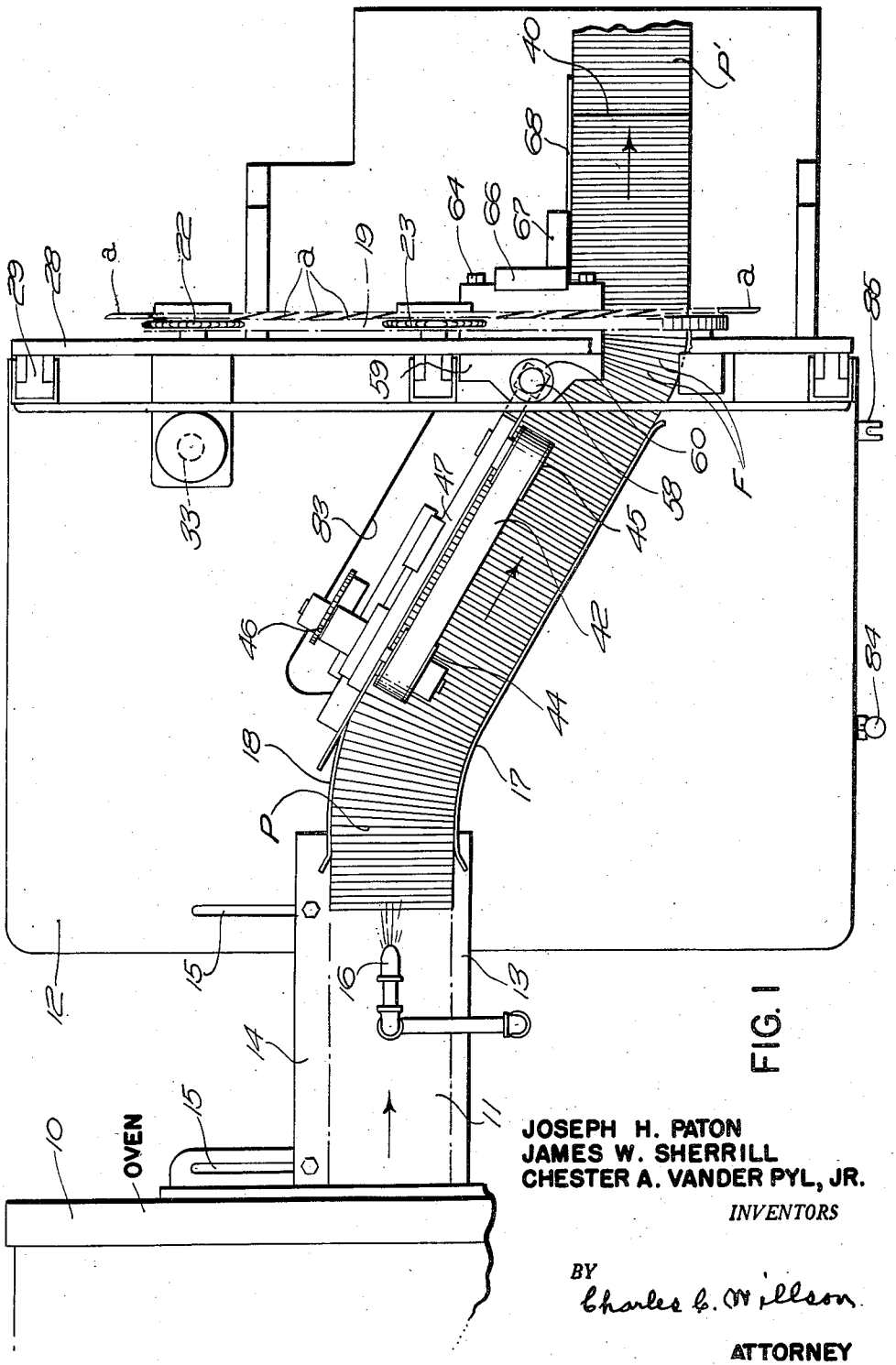


FIG. 1

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APPARATUS FOR CUTTING A PLEATED SHEET INTO PLEATED UNITS

Filed Dec. 16, 1955 4 Sheets-Sheet 2

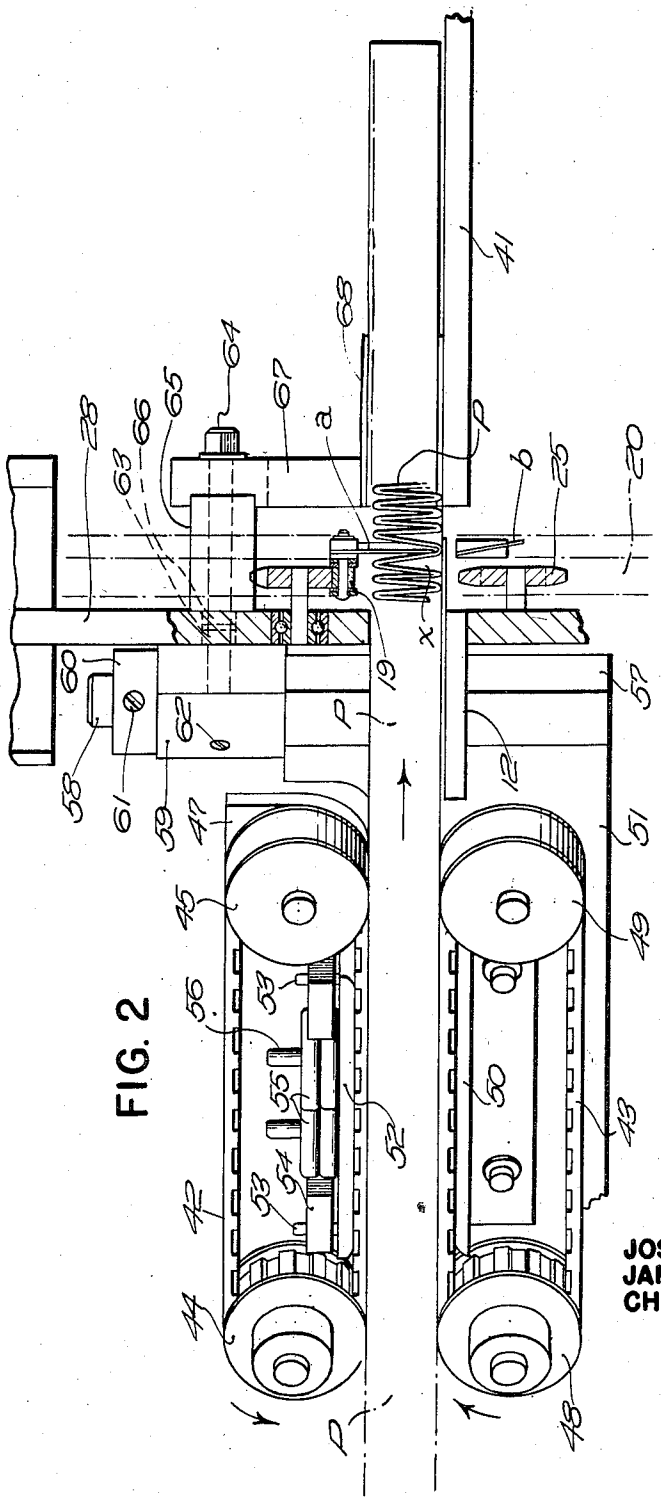


FIG. 2

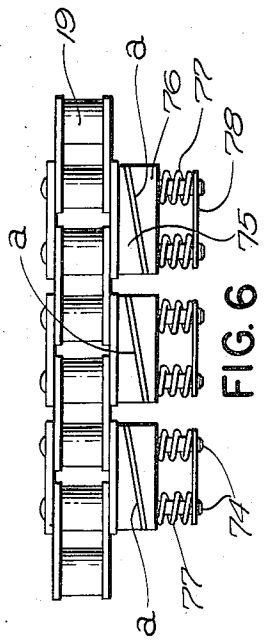


FIG. 6

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APPARATUS FOR CUTTING A PLEATED SHEET INTO PLEATED UNITS

Filed Dec. 16, 1955 4 Sheets-Sheet 3

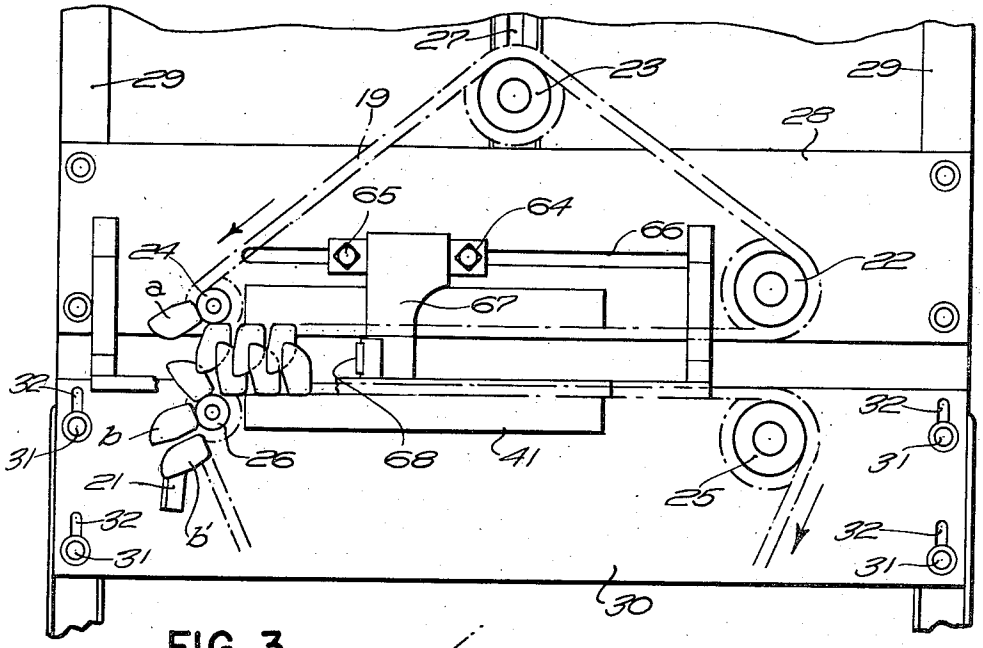


FIG. 3

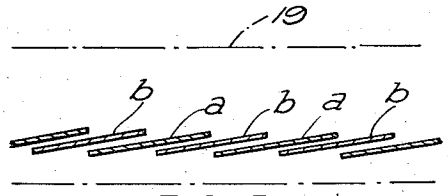


FIG. 5

FIG. 4

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APPARATUS FOR CUTTING A PLEATED SHEET INTO PLEATED UNITS

Filed Dec. 16, 1955 4 Sheets-Sheet 4

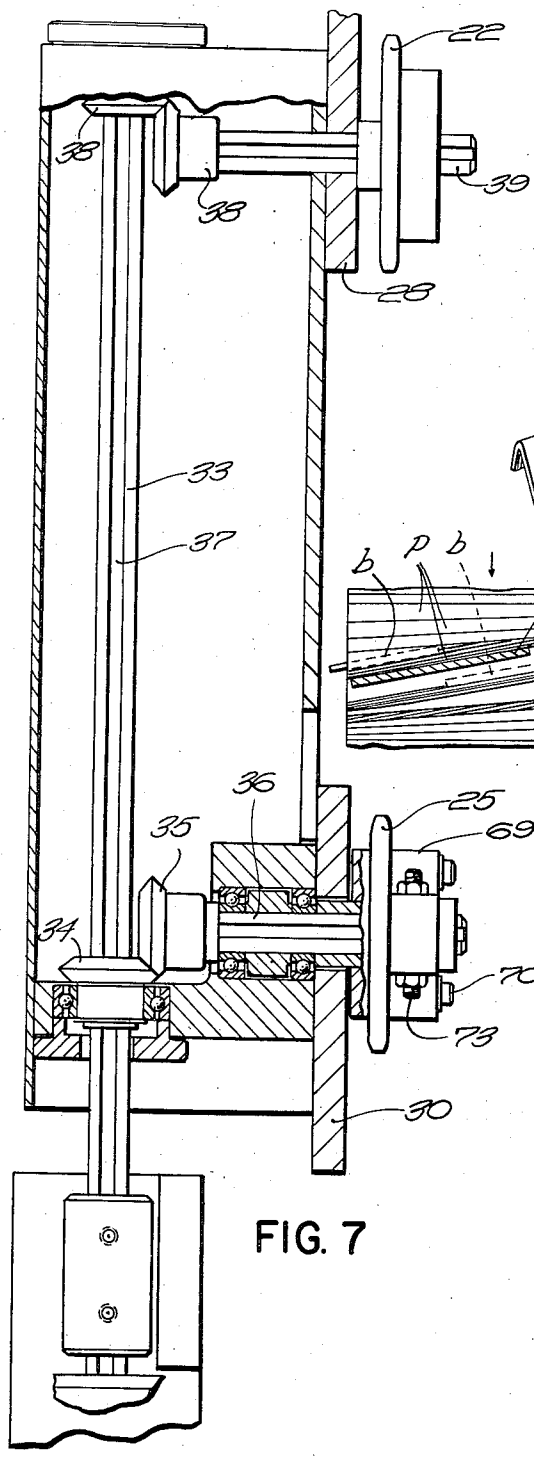


FIG. 7

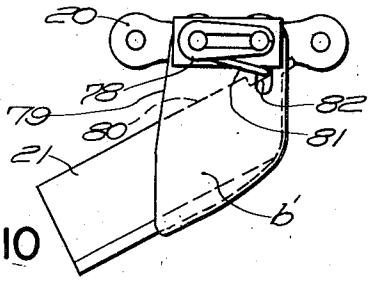


FIG. 10

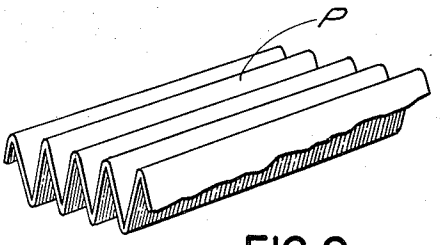


FIG. 9

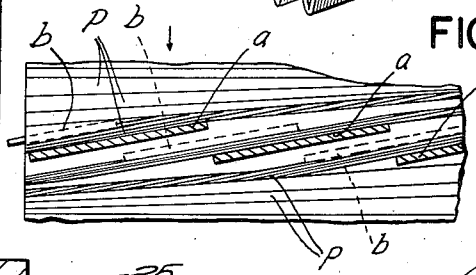


FIG. 11

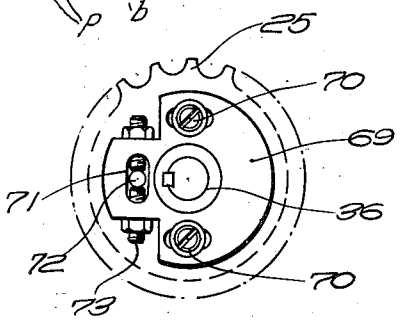


FIG. 8

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2,833,351

APPARATUS FOR CUTTING A PLEATED SHEET INTO PLEATED UNITS

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Application December 16, 1955, Serial No. 553,573

17 Claims. (Cl. 164—73)

This invention relates to apparatus for counting the pleats of an advancing strip or sheet of pleated material, and for cutting the same into successive lengths of pleated units.

The counting and cutting apparatus of the present invention can be used to count and cut various types of pleated sheet material, but was developed primarily to cut a pleated filter material, such as filter paper, into successive lengths of a predetermined number of pleats.

There are now extensively used on motor vehicles and in other fields fluid filters such as oil filters and air filters, employed to clean the oil and air for the engine of motor vehicles. Many of these filters employ a filter element or cartridge formed of pleated filter paper. These pleated cartridges, whether used to filter a gas such as air or a liquid such as oil, are commonly formed in the shape of a cylinder by taking a length of pleated paper having the desired number of pleats and folding it so that the pleats surround a central axis and extend parallel thereto. A closure cap is secured to each end of this pleated filter element.

In order to reduce the cost of manufacturing the pleated filter cartridge just described, a high speed rotary pleater has been developed which forms the subject matter of the Hockett et al. U. S. application Serial No. 487,642, filed February 11, 1955, now Patent No. 2,771,119. The rotary pleater of such application is capable of producing over six thousand pleats per minute.

The invention of the present application was developed to cooperate with the high speed rotary pleater just mentioned, and is designed to count the pleats of the rapidly advancing sheet supplied from such rotary pleater and to cut this pleater paper into filter units of the desired number of pleats.

An important feature of the present invention resides in a pleat counter having a series of fingers that are operated to enter the pleat folds and count a desired number of pleats, and then sever the pleated sheet.

Another feature of the invention resides in an endless chain for operating such fingers so that they will enter one pleat after another to count a selected number of pleats and then sever the sheet.

Another feature of the invention resides in cooperating feed rolls for delivering the pleats under the desired advancing pressure to the counting fingers.

Still another feature of the invention resides in means for supporting the counting fingers at an angle to their path of travel, so that each finger will force open the next adjacent pleat to receive the next counting finger.

The above and other features of the present invention will be further understood from the following description when read in connection with the accompanying drawings, wherein:

Fig. 1 is a top plan view of the machine of the present invention.

Fig. 2 on a larger scale is a vertical sectional view through part of the machine of Fig. 1 and shows the feeding belts for advancing the pleated sheet.

Fig. 3 is a face view looking towards the work discharge end of the machine of Fig. 1.

Fig. 4 on a larger scale shows a portion of the finger-carrying chains of Fig. 3.

Fig. 5 is a sectional view taken on the line 5—5 of Fig. 4.

Fig. 6 is a plan view of part of one of the chains and the fingers carried thereby.

Fig. 7 is a vertical sectional view showing gear mechanism for driving the finger-carrying chains.

Fig. 8 is a face view of adjustable means for one driving sprocket.

Fig. 9 is a perspective view of a short length of pleated paper.

Fig. 10 is a side view of the cutter-carrying finger; and

Fig. 11 is a top plan view of the pleated paper showing the upper fingers in section.

The mechanism of the present invention for counting the pleats of an advancing sheet and for cutting such sheet into successive units each containing a predetermined number of pleats can be employed for various purposes. It was developed, however, as above stated, to cut a pleated sheet of filter paper into successive filter elements at high speed. This filter paper is preferably treated with a resin such as a phenol formaldehyde to stiffen the paper and to prevent it from becoming limp in the presence of water. After the paper is pleated, preferably by the high speed rotary pleater above mentioned, it is passed through an oven which cures the resin contained in the paper.

The pleated paper, which when cured is to be cut into filter lengths by the machine of the present invention, is shown in Fig. 1 of the drawing as issuing from a curing oven **10**. This pleated paper indicated by P travels from the oven **10** along a guide way **11** onto the top of a table **12** of the machine of the present invention. The guide way **11** is provided with the side walls **13** and **14**, and since the length of the pleats of the paper P may range from several inches to a foot or more in length, the side wall **14** is preferably supported for adjustment towards and from the wall **13** by means of the slots **15** formed in the members shown. The travel of the pleated paper along the guide way **11** may be assisted by providing an air jet supplied by the pipe **16** in a downwardly inclined direction against the paper to move the pleats forward in the direction indicated by the arrows.

As the pleated paper P moves along the guide way **11** as indicated by the arrows towards a series of counting fingers, to be described, it travels along a bent path defined by the curved side walls **17** and **18**. The purpose in curving this path of travel is to cause the pleats to spread out like a fan F as they approach the pleat counting fingers.

The counting fingers, best shown in Fig. 4, comprise an upper series of fingers indicated by *a* and a lower series indicated by *b*. The upper fingers *a* are attached to and advanced by an upper sprocket chain **19** and the lower fingers *b* are attached to and advanced by a lower sprocket chain **20**. These fingers *a* and *b* are advanced by their respective chains at approximately right angles to the path travelled by the pleated paper P so that these fingers are carried by their chains in the direction in which the pleats extend. This enables the fingers to be advanced by their chains in the folds of the pleats to separate the pleats and count them.

In the construction shown two finger-carrying chains are provided, one above the pleated sheet P and the other below such sheet; and one of these chains, the lower one in the construction shown, is provided with as many fingers *b* as the number of pleats desired in a pleated unit when such unit is cut from the advancing sheet P. The cutting of the sheet, after a predetermined number of

pleats has been counted by the fingers, is secured by providing one of the fingers of the lower chain with a cutter blade **21**, as shown in Figs. 3 and 10. The upper chain **19** may be provided with the same number of fingers as the lower chain, but this is not necessary as the upper chain is here employed to cooperate with the lower chain and not to count the total number of pleats. The upper chain, therefore, is shown as shorter than the lower chain and as passing around the sprocket wheels **22, 23** and **24** which accommodate a much shorter chain than the sprocket wheels for the lower chain, two of which are designated by **25, 26**. The lowermost of the three sprockets for the chain **20** is not shown. The sprocket **23** for the upper chain is mounted for vertical adjustment along the slotted guide way **27** to vary the tension of the chains **19**, and the lowermost sprocket for the chain **20** should be similarly mounted for vertical adjustment to vary the tension and length of the chain **20**.

The sprocket **22** for the upper chain and the sprocket **25** for the lower chain are power driven to operate their respective chains. The sprockets **22** and **24** for the upper chain, and which determine the position of the horizontal run of this chain, are shown as supported by a horizontally extending metal plate **28** of the machine frame, which plate is rigidly secured to uprights **29** of the machine frame. The sprockets **25** and **26** for the lower chain and which position the horizontal run of such chain are similarly supported by a transversely extending metal plate **30**, but this plate **30** is adjustably secured to the uprights **29** by means of the bolts **31** and slotted openings **32**. The purpose of this is to enable the sprockets **25** and **26** to be moved up or down to accommodate pleats of different heights; that is, one pleated paper P may be provided with pleats an inch high, whereas at some other time it may be desirable to supply to the present machine paper pleats that have greater or lesser height. The plate **30** may be vertically adjusted to accommodate such difference in the height of the paper pleats. This will change the distance between the horizontal runs of the two chains. The chains **19** and **20** are driven in the direction indicated by the arrows, so that the horizontal run of these chains will advance in a right-hand direction, viewing Fig. 3.

The driving means for the sprockets **22** and **25**, and the means whereby the lower sprocket **25** may be adjusted vertically, are shown in Fig. 7 where the vertical shaft **33** is driven by power applied to its lower end. This will rotate the lower beveled gear **34** which is keyed to and slidably mounted on this shaft **33**. This gear **34** drives the cooperating bevelled gear **35** which drives the horizontally extending shaft **36** and sprocket **25** mounted on such shaft. The arrangement is such that when the horizontally extending metal plate **30** is raised or lowered as above mentioned, the driving gear **34** will slide along its driving shaft **33** and will be driven by a key extending into the slot **37**. The sprocket **22** that drives the upper chain **19** is driven from the shaft **33** through the cooperating beveled gears **38** and horizontal shaft **39** upon which the sprocket **22** is rigidly secured.

It should be noted that the sprockets **24** and **26** are shown as considerably smaller than the other sprockets so that the chains, in passing around these small sprockets **24** and **26**, will make a relatively sharp bend adjacent the point where the fingers *a* and *b* enter the pleats of the paper P. The manner in which the counter fingers *a* and *b* enter the pleat folds and travel in a right-hand direction in such folds is best shown in Fig. 4, where it will be noted that the left-hand edge of the pleated paper P lies approximately in alignment with the radius formed by the chains **19** and **20** as they pass around the small sprockets **24** and **26**. As will be observed from Figs. 3 and 4 the counting fingers *a* mounted on the chain **19** are disposed close to each other, and the counting fingers *b* are similarly mounted on the chain **20**. The parallel runs of the chains **19** and **20** lie close enough together to cause the fingers *a* and *b* to overlap a substantial amount as shown in Figs. 3 and 4. This is to cause the upper fingers *a* to project downwardly into the pleat folds nearly to the bottom of such folds, and to cause the fingers *b* to extend upwardly in the pleat folds nearly to the top of such folds. The fingers *a* and *b* are secured to their respective chains at an inclination to the direction in which the chains travel as shown in Figs. 5 and 6; and the fact that the fingers *b* of the lower chain extend upwardly between the fingers *a* of the upper chain is clearly shown in Fig. 5. The fingers are so operated by their respective chains that a finger *a* of the upper chain will enter each upwardly extending slot of the pleated paper P, and likewise the fingers *b* of the lower chain will enter each downwardly extending slot of the pleated paper; that is, one finger only will enter each pleated opening of the paper to count accurately the pleats of the rapidly advancing sheet of paper.

To facilitate the entrance of a finger into each pleat fold as just described, the fingers swing in the arcs indicated by the arrows in Fig. 4, and these fingers are curved at their forward edge as shown so that the forward portion of a swinging finger will enter a pleat and then the rear longer portion of such finger will penetrate deep into the pleat nearly to the fold of the same as will be apparent from Fig. 4. This introduction of the fingers into the pleats is further facilitated by causing the pleats to fan out, as indicated by F in Fig. 1 of the drawing, as they approach the counting fingers.

This introduction of one finger into each pleat fold is further facilitated by mounting the fingers *a* and *b* at an inclination to the direction in which they travel, as above mentioned. This serves to cant each finger somewhat with respect to the pleated fold in which it is introduced, so that the canted finger will serve to open the end of the next pleat fold at the point indicated by *x* in Fig. 2 of the drawing. It is this opening of the pleat by the canted finger that just entered the adjacent pleat which makes it possible for the next approaching finger to enter the proper pleat at high speed, so that the fingers *b* of the lower chain will accurately count the number of pleats. When the chain **20** has travelled through one complete revolution, it will have counted the desired number of pleats, such as seventy for example, whereupon the seventy-first finger *b'*, which is specially constructed and carries a cutter **21**, will sever the pleated sheet as indicated by the line **40** in Fig. 1 to form a pleated unit P' containing the desired number of pleats. These pleated units will slide along the runway **41** where they may fall into a container or be removed and assembled into filter cartridges.

The rate at which the advancing pleated sheet P can travel past the counting fingers *a* and *b* is determined by the speed at which the chains **19** and **20** operate. It is important that the pleated sheet be continuously fed against these fingers with a predetermined pressure. This is accomplished in the construction shown by providing the pleat feeding belts shown in Figs. 1 and 2 and comprising the upper feed belt **42** and lower feed belt **43**. These feed belts are preferably of the well known Gilmer type and will not slip with respect to their driving pulley. The upper belt **42** is supported by the spaced pulleys **44** and **45**, and the pulley **44** is positively driven by the chain **46** shown in Fig. 1. The pulleys **44** and **45** are supported by the metal plate **47** and are preferably mounted on this plate so that they can be adjusted up and down in a vertical direction to raise and lower the lower run of this belt **42** with respect to the pleated paper P engaged by such run. This is desirable in order that these feed rolls may cooperate with pleats of different heights. The lower feed belt **43** is supported by the spaced pulleys **48** and **49** and the pulley **48** is driven by the chain **46**. The upper run of the belt **43**, upon which the pleated paper rests, slides along and is supported by a plate **50**. This plate and the pulleys **48** and **49** are mounted upon a metal plate **51**.

In order that the feed belts just described will yieldingly push the pleated paper forward against the counting fingers, it is important that the lower run of the upper belt 42 shall rest upon these pleats with just the proper amount of pressure. To accomplish this a vertically movable plate 52 rests upon the lower run of the belt 42 and is prevented from moving in the direction in which this belt travels by the pins 53 that extend upwardly through holes in projecting members 54 secured to the plate 47. The pressure which the floating plate 52 exerts upon the lower run of the belt 42 can be varied by changing the number of weights 55 which rest upon this floating plate and are retained in place thereupon by the upwardly extending pins 56. These weights are provided with a central hole to receive the pins 56. The feed belts 42 and 43 should at all times be driven at a higher surface speed than that at which the pleated paper P is to be advanced so that some slippage will always occur between these feed belts and the pleats that they shove forward against the counting fingers. This assures a constant feeding of the paper against the fingers with the desired pressure.

As above stated, the present pleat counting and cutting machine is so designed that it may accommodate paper of various widths from, say, several inches to a foot or more wide. If pleated paper wider than that shown in Fig. 1 of the drawing is to be used, then the guide walls 14 and 18 should be moved to the left in Fig. 1. It is also desirable to provide means whereby the feeding belts 42 and 43 can be similarly adjusted to the left in Fig. 1 to accommodate wider paper. No matter what the width of the paper is, it should not be adjusted in a right-hand direction, since the right-hand edge of such pleated paper should always lie in approximate alignment with the sharply bent portion of the finger-advancing chains 19 and 20, as shown in Fig. 4.

It is desirable that the feed belts just mentioned, in addition to being mounted so that they may be adjusted in a left-hand direction viewing Fig. 1, can also be shifted angularly with respect to the travel of the finger-advancing chains, to thereby control the fanning out operation of the pleats where indicated by F in Fig. 1 of the drawing. Therefore, the supporting plates 47 and 51 which carry the feed belts are rigidly secured to an upright post 57 which is provided at its upper end with a round portion 58, and this portion is journaled in a supporting block 59 which is slidably secured to the upright plate 28 of the machine frame. The round post 58 is provided with a collar 60 that is secured thereto near its upper end by a set screw 61. The arrangement is such that the round post 58 and parts carried thereby may be angularly adjusted within the block 59 and then locked in the desired position of adjustment by tightening up the set screw 62 to thereby hold the feed belts 42 and 43 at the angle at which they are disposed in Fig. 1 of the drawing or at some other desired angle.

The supporting block 59 is provided with a key 63 which slides in a horizontal slot formed in the upright plate 28. This permits the block 59 and feed belts supported thereby to be moved in a right or left-hand direction, viewing Fig. 1, and then clamped in the desired position of adjustment by tightening up the clamping nuts 64. These nuts are mounted on long clamping bolts which extend through a sliding block 65 mounted on the opposite side of the upright 28 and having a key 66 that enters the slot in the plate 28. The purpose of this block 65 is to support the downwardly extending member 67 which has secured to its lower end a guide plate 68, which serves as an adjustable upright guide against which the ends of the pleats P abut as they leave the counting fingers.

It is important that as the fingers *a* and *b* are advanced in the direction indicated by the arrow in Fig. 4 they be accuartely spaced one from the other; that is, that each finger *b* be evenly spaced between a pair of fingers *a*.

To accomplish this the driving sprocket 25 for the lower chain 20 is not keyed directly to the driving shaft 36, but a shaft-embracing block 69 is keyed to this shaft and the sprocket 25 is adjustably secured to the block 69 for slight angular adjustment relative thereto. To this end, the sprocket 25 is clamped to the block 69 by the screws 70 and the block 69 has the elongated hole 71 therein which receives a pin 72 that extends laterally from the sprocket 25. The angular adjustment of this sprocket relatively to the block 69 is secured by loosening the screws 70 and adjusting one or the other of the two adjusting screws 73 that abut against the pin 72 and serve to rotate the sprocket 25 slightly relative to the block 69, whereupon the screws 70 are tightened to clamp the sprocket rigidly to the driving block 69.

As above stated the fingers *a* and *b* are supported by their respective chains at an angle to the direction to which the chains travel. Furthermore, it is found desirable to yieldingly attach these fingers to their respective chains so as to lessen the danger of the fingers being broken if the paper jams. These objects are secured by employing the construction best shown in Fig. 6 wherein the sprocket chain is shown as having the relatively long pivot pins 74 which serve to mount at one side of the chain a pair of blocks 75 and 76. Each of these blocks has an inclined surface, as shown, and between which a blade *a* or *b* is clamped so that the blade is held by these inclined surfaces at an angle to the length of the chain. In order to yieldingly secure the fingers to the chains, the coil springs 77 are provided between a face of the block 76 and the outer pin engaging link 78.

The manner in which the counting fingers *a* and *b* operate to count the pleats is best shown in Fig. 11 wherein the upper fingers *a* are shown in transverse section and the lower fingers *b* are shown in dotted lines. As the pleated paper is advanced in the direction indicated by the arrow in Fig. 11, the fingers *a* enter the upper pleats at the left, viewing Fig. 11, and travel towards the right and the lower fingers *b* similarly enter the lower pleats. Since these fingers are canted with respect to their carrying chains, they hold the pleats slightly open as they travel therein. This is indicated by the shading of the inclined face of the pleats adjacent the fingers *a*. The pleats are advanced by the feed belt 42 to the fingers, but the pleats are not packed so tight that they cannot yield to permit the fingers to slide from left to right in the pleats, to separate and count them.

One of the fingers of the lower chain 20 carries a cutter 21. The means for securing such cutter to a finger of the chain is best shown in Fig. 10, wherein this particular finger is indicated by *b'*, and it is formed by providing a shoulder portion 79 which may be supported from a chain like the fingers *a* or *b* above mentioned. This shoulder portion is provided with an inclined surface 80 against which a portion of the razor blade 21 may rest. The lower portion of the finger *b'* is formed of thin metal that is bent in the shape of a loop to form a pocket in which the blade 21 may be inserted. The blade is removably secured in this pocket by a spring 81 which has a lateral projection that engages a notch 82 formed in one edge portion of the blade.

The table 12 of the machine, as shown in Fig. 1, is provided with a hole 83 that receives the lower feed belt 43 so that the upper run of this belt will lie flush with the surface of the work-supporting table 12. This hole is large enough to receive the belt 43 and its supporting means, and also to permit the belt to be adjusted transversely of the machine to accommodate paper of different widths, and adjusted angularly through the supporting post 58.

The machine of the present invention preferably is driven in timed relation with the means which feeds the pleated paper through the curing oven 10. The

present machine is provided with an operating clutch, not shown, but controlled by the clutch lever **84**, so that the power may be disconnected and the finger chains driven by hand while a pleated sheet is being properly positioned with respect to the counting fingers. This can be done by engaging a crank handle with the end of the shaft **85** shown in Fig. 1. After the chains have been advanced by hand and an inclined finger *a* or *b* has entered a pleat opening, this finger will force open the next pleat, as indicated by *x* in Fig. 2, to receive the next finger. The clutch lever **84** may then be shifted to drive the machine by power. It is this construction whereby each finger opens up an adjacent pleat to receive the next finger that enables the machine to count the pleats accurately at the rate of several thousand per minute, and to cut the advancing pleated sheet into pleated units all of the same number of pleats.

Having thus described our invention, what we claim and desire to protect by Letters Patent is:

1. Apparatus for cutting an advancing sheet of pleated material into successive lengths of a multiple number of pleats, comprising a guide way along which a length of pleated sheet material is advanced, a series of counting fingers and mechanism for introducing them successively in the preformed pleat folds and for moving the fingers lengthwise in these folds to count the pleats, and means actuated by said mechanism for severing the sheet when a fixed number of pleats is counted.

2. Apparatus as in claim 1 wherein such counting fingers are provided at opposite sides of the pleated sheet.

3. Apparatus as in claim 1, wherein a travelling chain is provided to advance the fingers along the pleats.

4. Apparatus as in claim 1, wherein the counting fingers are yieldingly attached to the finger moving mechanism.

5. Apparatus as in claim 2, wherein the counting fingers are inclined to their path of travel to force the adjacent pleat open.

6. Apparatus for cutting an advancing sheet of pleated fibrous material into successive pleated units, comprising a guide way along which a length of pleated sheet material is advanced, a series of counting fingers and operating mechanism for introducing them successively between the preformed pleats at each side of the sheet and for advancing them longitudinally in the pleats to count the pleats, and means associated with one of the fingers for severing the sheet.

7. Apparatus as in claim 6, wherein chains serve to carry the fingers.

8. Apparatus as in claim 7, wherein the chains make a sharp bend where they introduce the fingers into the pleats.

9. Apparatus for cutting an advancing sheet of pleated material into successive lengths of pleated units, comprising a guide way along which a length of pleated sheet material is advanced and having a curved section that causes the pleats to open like a fan at one end, a series of counting fingers, mechanism for introducing these fingers between the fanned-out ends of the pleats and for advancing the fingers in these pleats to count the pleats, and means actuated by said mechanism to sever the sheet when a fixed number of pleats is counted.

10. Apparatus for cutting an advancing sheet of pleated material into successive lengths of pleated units, comprising a pair of cooperating feed belts for yieldingly advancing the pleated sheet along a fixed path, a series of counting fingers provided with mechanism for introducing the fingers successively between the pleats advanced by said belts to count the pleats, and means actuated by said mechanism for severing the sheet when a fixed number of pleats is counted.

11. Apparatus for cutting an advancing sheet of pleated material into successive lengths of pleated units, comprising a guide way along which a length of pleated sheet material is advanced in a horizontal direction, a series of counting fingers and mechanism for introducing these fingers between the pleats above and below the pleated sheet to count the pleats, and means actuated by such mechanism to sever the sheet when a fixed number of pleats is counted.

12. Apparatus as in claim 11, wherein the counting fingers are forced deep into each pleat.

13. Apparatus for cutting an advancing sheet of pleated material into successive lengths of pleated units, comprising a guide way along which a length of pleated sheet material is advanced, a chain at each side of said sheet and each provided with a row of counting fingers disposed close to each other on each chain and held at an inclined angle to such chains, mechanism for driving these chains to introduce a finger in each pleat fold so as to force the next fold open to receive a finger, and means actuated by said mechanism for severing the sheet when a fixed number of pleats is counted.

14. Apparatus for cutting an advancing sheet of pleated material into successive lengths of pleated units, comprising a guide way along which a length of pleated sheet material is advanced, a chain at each side of said sheet and each provided with a row of counting fingers, means for driving said chains to cause them to introduce the fingers successively in the pleat folds so that the finger on one chain opens a pleat to receive a finger on the other chain, and means actuated by one of said chains to sever the sheet when a fixed number of pleats is counted.

15. Apparatus for cutting a sheet of pleated material into similar lengths of pleated units, comprising a guide way for the sheet of pleated materials, a pair of chains extending transversely to said guide way and each chain having a series of counter fingers, means for feeding the pleated material towards the fingers, mechanism for driving the chains so as to introduce the finger in the successive pleats to count them, and a sheet cutter carried by one of said fingers.

16. Apparatus for cutting a sheet of pleated material into successive pleated units, comprising a series of counter fingers, means for advancing the sheet of pleated material towards said fingers, mechanism for operating the fingers to introduce them successively in the pleats and so that each finger opens the next pleat whereby the next approaching finger can enter the opened pleat, and means for severing the sheet when the fingers have entered a selected number of pleats.

17. Apparatus for cutting a sheet of pleated material into successive lengths each having the same number of pleats, comprising a guide way for the sheet of pleated material, a pair of chains one at each side of the pleated material and extending transversely to the guide way, each chain having a series of counting fingers and one chain having as many fingers as pleats to be counted, means for feeding the pleated material towards the fingers, mechanism for driving the chains to introduce the fingers in the successive pleats, and a sheet cutter actuated by one chain.

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