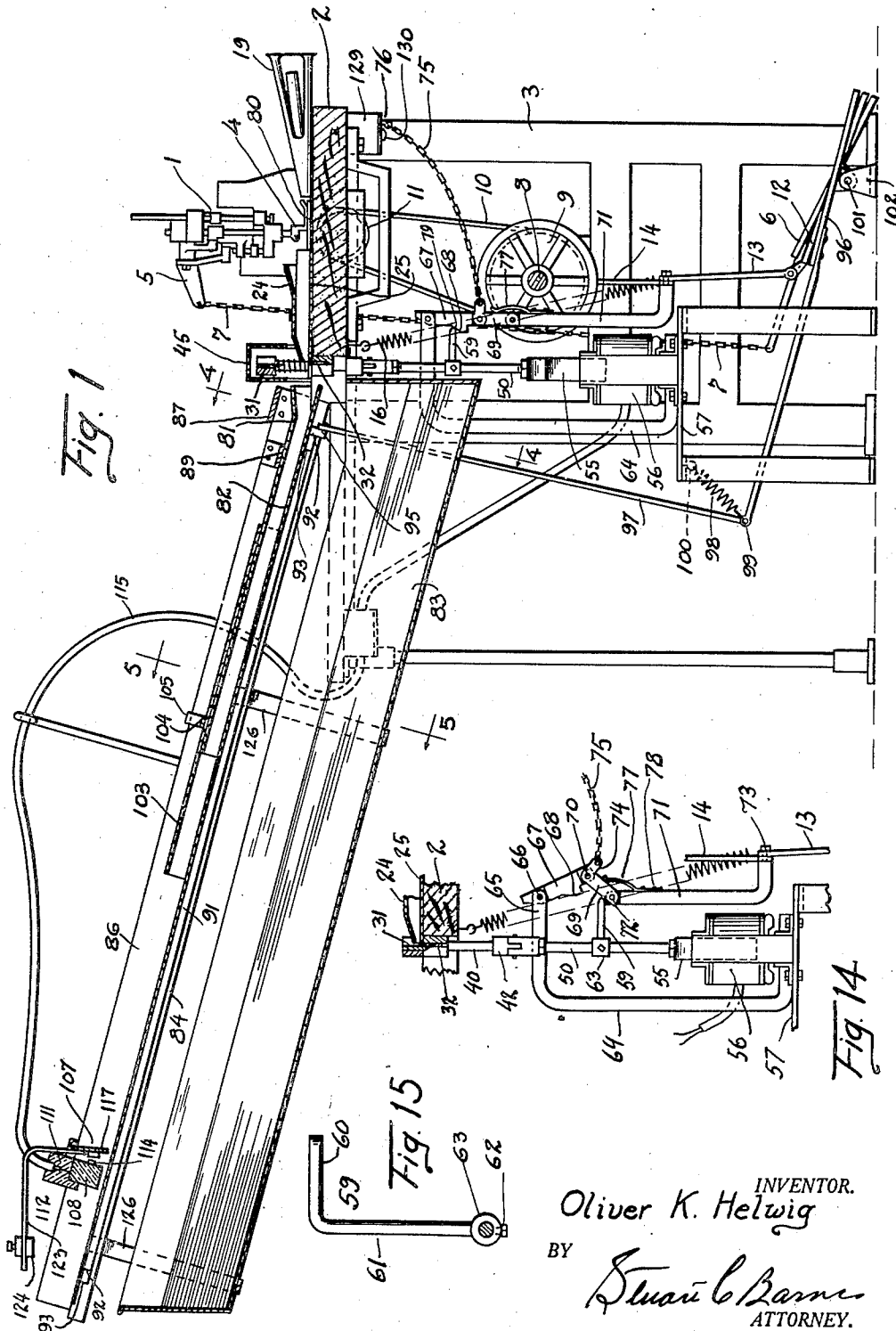


April 14, 1931.

O. K. HELWIG
 APPARATUS FOR SEWING, MEASURING, AND CUTTING
 OF WIND HOSE BINDINGS AND THE LIKE
 Filed May 31, 1929

1,800,629

5 Sheets-Sheet 1



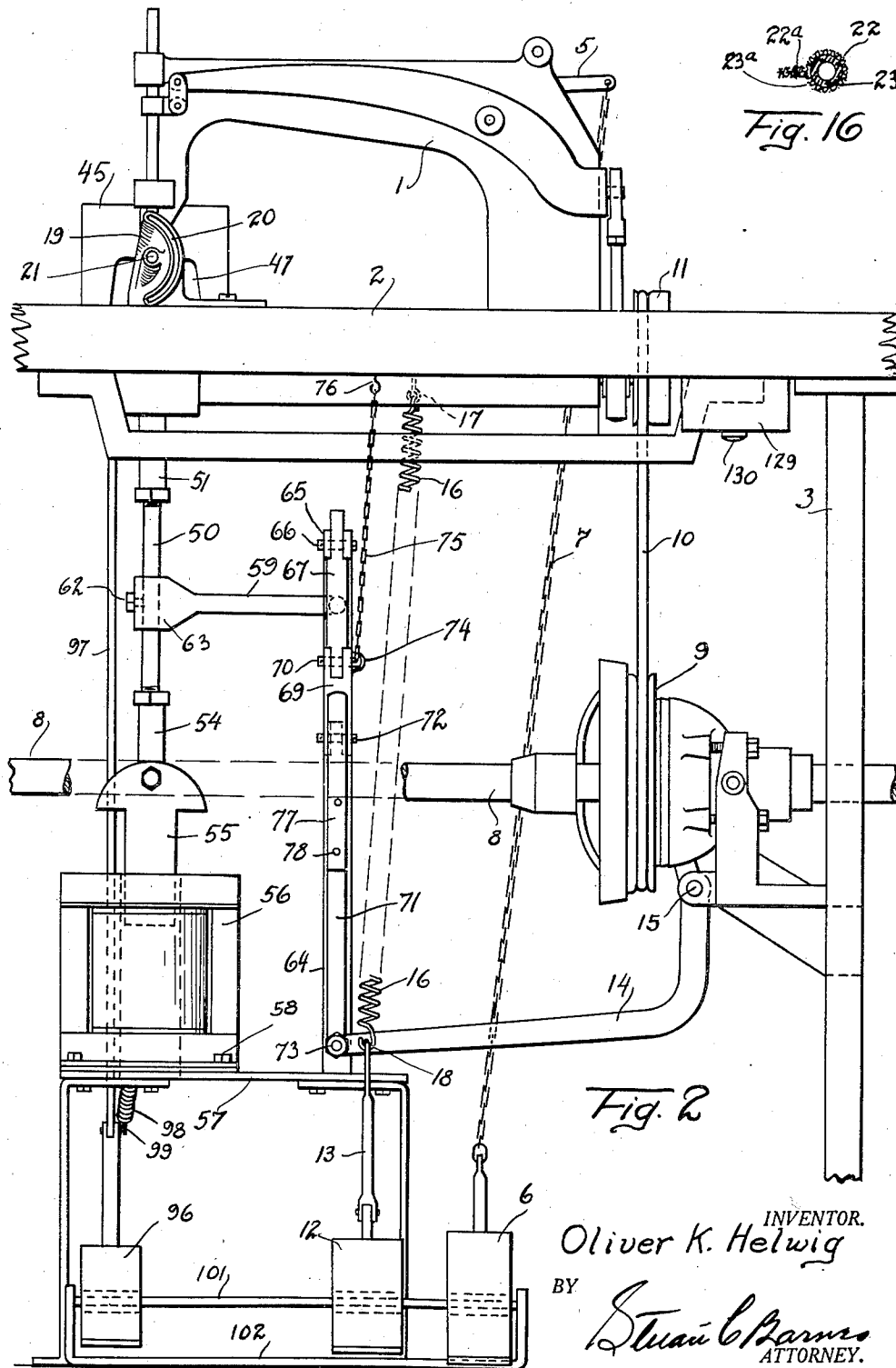
INVENTOR.
 Oliver K. Helwig
 BY
 Stuart C. Barnes
 ATTORNEY.

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 Oliver K. Helwig
 BY
 Stuart C. Barnes
 ATTORNEY.

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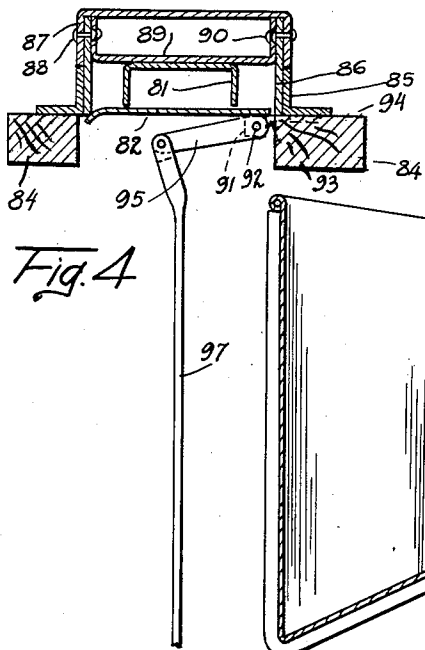


Fig. 4

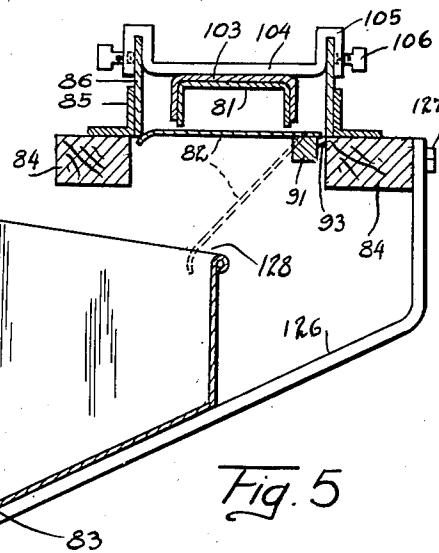


Fig. 5

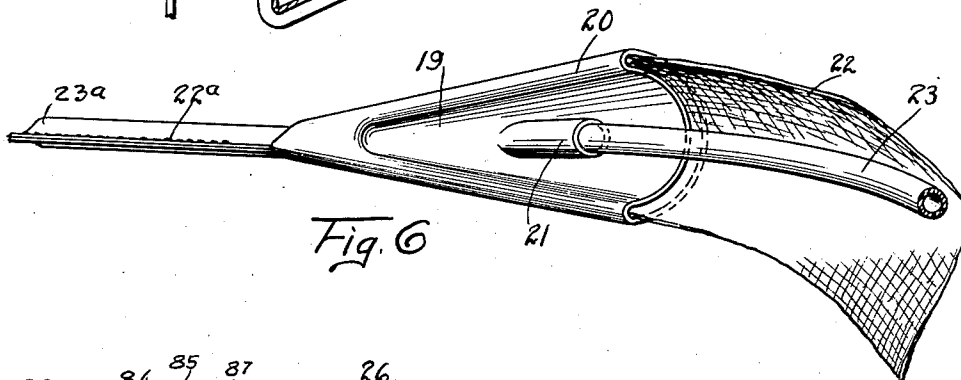


Fig. 6

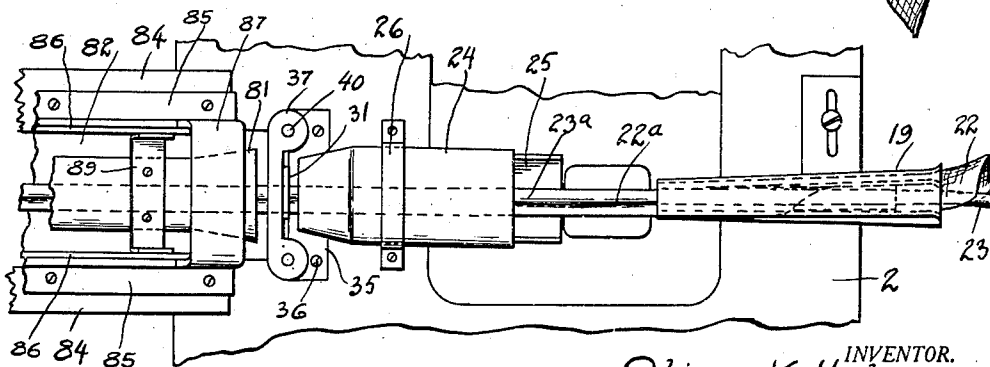


Fig. 3

INVENTOR.
 Oliver K. Helwig
 BY
 Stuart C. Barnes
 ATTORNEY.

April 14, 1931.

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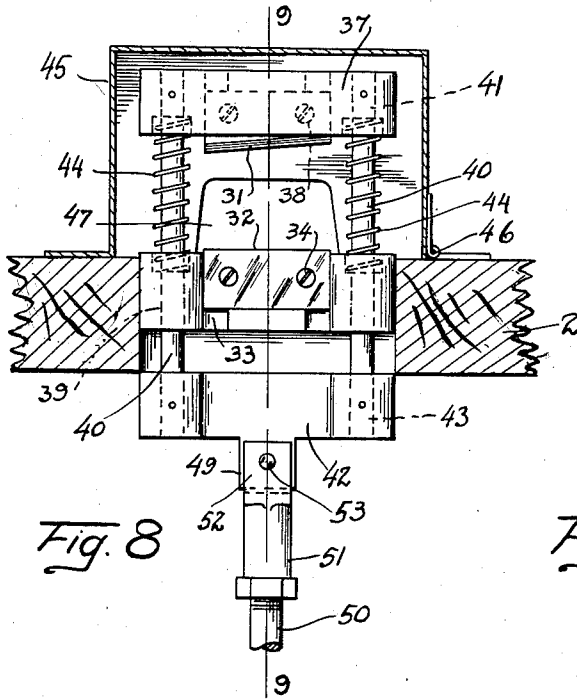


Fig. 8

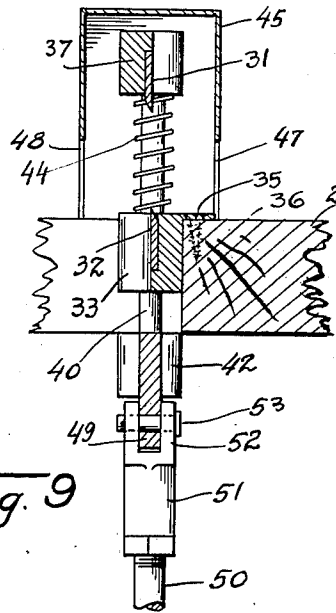


Fig. 9

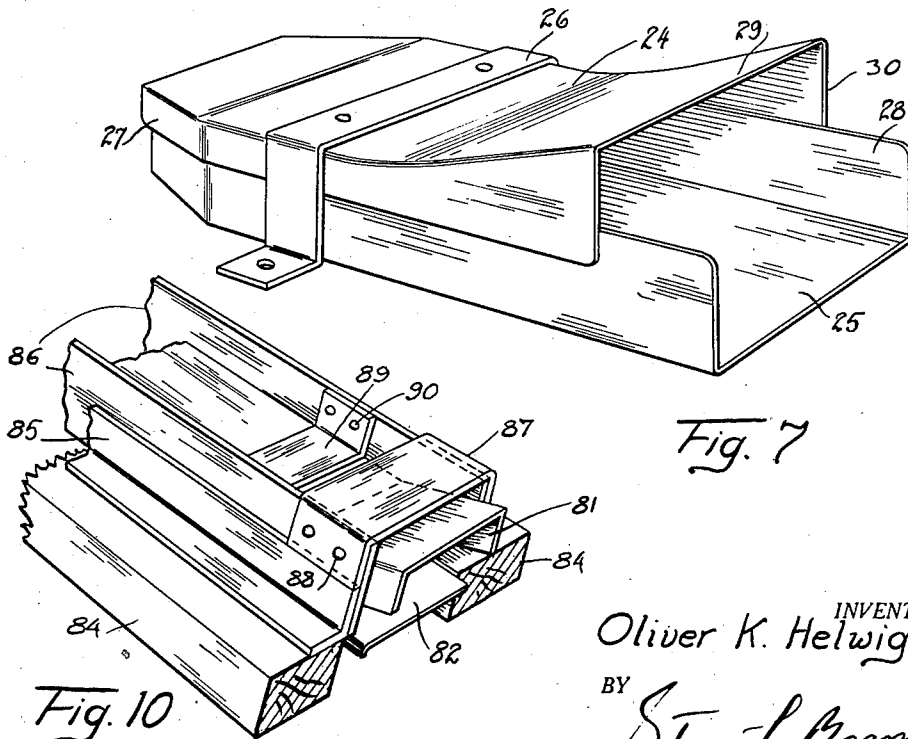


Fig. 7

Fig. 10

INVENTOR.
Oliver K. Helwig
BY
Stuart C. Barnes
ATTORNEY.

April 14, 1931.

O. K. HELWIG

1,800,629

U. R. HELWIG
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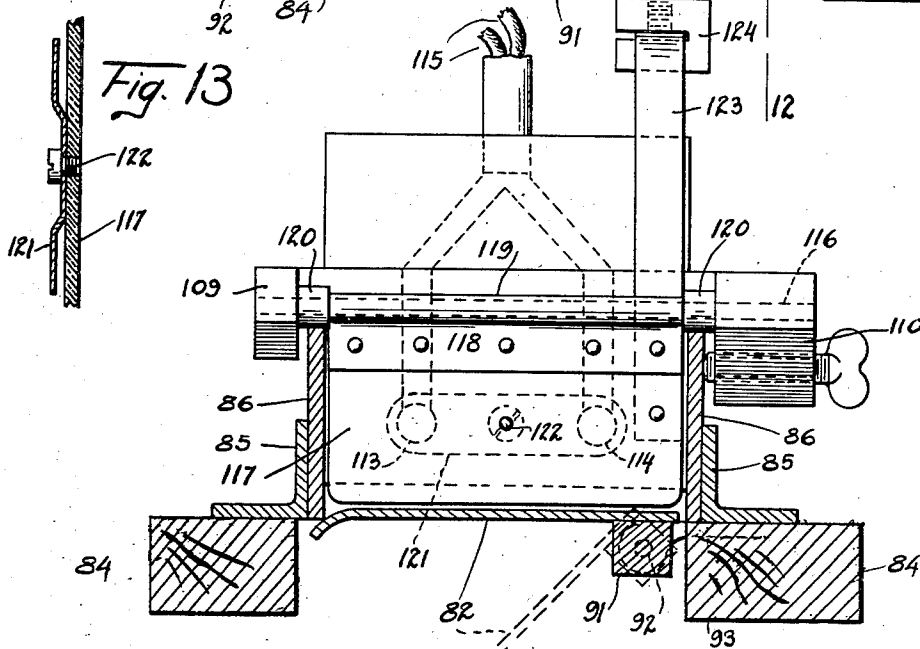
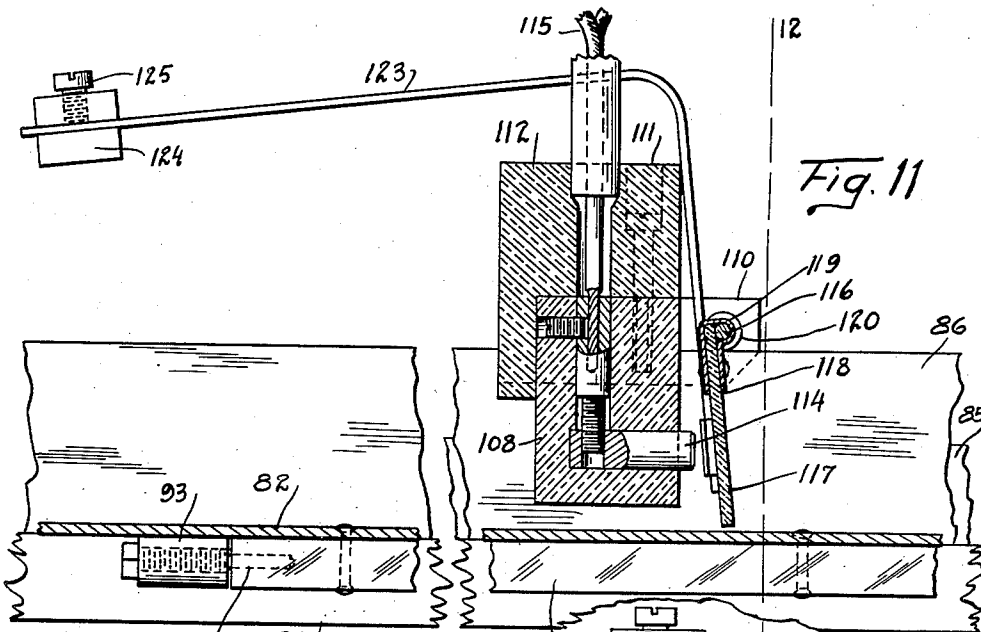


Fig. 12

Oliver K. Helwig^{INVENTOR.}

BY

Y
Stuart C Barnes
ATTORNEY.

UNITED STATES PATENT OFFICE

OLIVER K. HELWIG, OF DETROIT, MICHIGAN, ASSIGNOR TO GENERAL MOTORS CORPORATION, OF DETROIT, MICHIGAN, A CORPORATION OF DELAWARE

APPARATUS FOR SEWING, MEASURING, AND CUTTING OF WIND-HOSE BINDINGS AND THE LIKE

Application filed May 31, 1929. Serial No. 367,355.

This invention relates to an apparatus for sewing, measuring, and cutting of wind-hose, bindings, and the like.

Heretofore in the manufacture of wind-hose, it has been a common practice to wrap the web material about the hose, sew the web material together by a suitable sewing machine and then to roll the finished wind-hose upon reels and take it to the stock room to be measured and cut on a suitable machine such as the Artos cutting and measuring machine. This practice is inefficient inasmuch as it requires extra handling, extra floor space, and slows up the operation.

It is the object of this invention to present a machine of such a nature that it will sew the web material about the hose to form the wind-hose and measure and cut the finished wind-hose into the required length in one continuous operation.

In the drawings:

Fig. 1 is an end elevation of the assembled machine.

Fig. 2 is a fragmentary front elevation of the machine.

Fig. 3 is a fragmentary top plan view of a machine showing the folder, the guide, and the knife.

Fig. 4 is a section along the line 4—4 of Fig. 1.

Fig. 5 is a section along the line 5—5 of Fig. 1.

Fig. 6 is a perspective of a folder.

Fig. 7 is a perspective of the wind-hose support guide.

Fig. 8 is an elevation of the knives and knife brackets.

Fig. 9 is a section along the line 9—9 of Fig. 8.

Fig. 10 is a fragmentary perspective of the wind-hose guide and dumper.

Fig. 11 is a section of the contact plate and support.

Fig. 12 is a section along the line 12—12 of Fig. 11.

Fig. 13 is a fragmentary section of the hinged contact plate and associated contact spring.

Fig. 14 is a fragmentary elevation showing the eccentric and throw-out levers in the

position they assume when the clutch is disconnected.

Fig. 15 is a detail of the throw-out lever.

Fig. 16 is a section of the wind-hose.

Referring more particularly to the drawings, it will be seen that a well-known sewing machine 1 is mounted upon a regulation sewing machine table 2 which is supported by a suitable frame 3. The sewing machine has the usual presser foot 4 which is arranged to be lifted by a presser foot lifting lever 5 which is operatively connected to the presser foot treadle 6 by the chain 7.

Motive power for the sewing machine may be supplied by any well-known means such as an electric motor (not shown) through the driving shaft 8, the clutch 9, and drive belt 10 which drives the sewing machine pulley 11. The clutch 9 is arranged to be engaged by operating a suitable clutch treadle 12 and associated parts including link 13 and the lever 14 which is pivoted at 15. A suitable coil spring 16 is secured to the sewing machine table as at 17 and to the lever 14 as at 18 and is arranged to assist the lever 14 when actuated to disengage the clutch 9.

A folder 19 is mounted on the table 2. The folder 19 consists of the hollow arcuate portion 20 and the tubular portion 21. As the web material 22 is fed through the folder 20, it completely envelops the hose 23, which is fed through the tubular portion 21, (Figs. 6 and 16) and is then sewed along the hem 22a.

Upper guide 24 and lower guide 25 for the wind-hose are mounted on the sewing machine table 2 and secured thereto by the bracket 26, adjacent the presser foot 5 but on the opposite side from that on which the folder 19 is mounted. As shown in Fig. 7, both the upper and lower guides 24 and 25 have converging end portions 27. The lower guide 25 has the up-standing flanges 28 which carry the upper guide 24. The guide 24 has the upwardly bent end 29 from which depend the flanges 30.

After the wind-hose 23a passes through the guides 24 and 25, it is cut, and for this purpose are provided the upper knife 31 and the lower knife 32. The lower knife 32 is se-

cured to the lower knife bracket 33 by the screws 34. The lower knife bracket 33 has the projecting flange 35 which has suitable apertures for the screws 36 which secure the lower knife bracket to the sewing machine table 2. The upper knife 31 is secured to the upper knife bracket 37 by the screws 38. The lower knife bracket has suitable openings 39 for the bracket rods 40 which slidably engage the lower knife bracket in these openings and which are threaded at their upper ends into the upper bracket 37 as at 41 and which are threaded into the knife-pulling bracket 42 as at 43. The coil springs 44 are mounted about the knife bracket connecting rods 40 between the upper knife bracket 37 and the lower knife bracket 33 and are arranged to be contracted as the upper knife bracket 37 approaches the lower knife bracket 33.

The knives are suitably guarded by the guard 45 which is hinged to the sewing machine table as at 46. The guard 45 has suitable openings 47 and 48 to permit passage of the wind-hose therethrough.

The knife-pulling bracket 42 has the depending lug 49. The knife-pulling magnet rod 50 is threaded into the bushing 51, the bushing 51 having a bifurcated end with the up-standing lugs 52 which are pivotally connected to the knife-pulling bracket lug 49 by the pin 53. The rod 50 at its lower end is screwed into the bushing 54 which in turn is connected to the core 55 of the solenoid which may be generally designated 56. The solenoid 56 is secured to a suitable support 57 by the bolts 58.

Slidably mounted on the rod 50 is the throw-out lever 59 (Fig. 15) having a bent end 60 disposed substantially at right angles to the main shank portion 61. The throw-out lever 59 is adjustable upwardly and downwardly upon the rod 50 and may be fixed in any desired position by screwing in the bolt 62 which is carried by the sleeve end 63 of the throw-out lever 59.

Also mounted on the support 57 is a support bracket 64 which has a bifurcated end 65 in which is pivotally mounted, as at 66, the link 67 which has a projecting cam surface 68. The cam link 67 is pivotally connected with the link 69 as at 70. The L-bracket 71 is pivotally connected to the link 69 as at 72. The lower end of the bracket 71 is pivotally connected with the clutch lever 14 as at 73. The link 69 has the projecting apertured lug 74 to which is secured the chain 75, the upper end of the chain being secured to the table 2 as at 76. The links 67 and 69 are urged to the left (Fig. 14) by the flat spring 77 which is mounted on the bracket 71 as at 78 and hence tend to remain in alignment with the bracket 71. By referring to Fig. 1, it will be seen that the throw-out lever 59 engages the cam surface 68 as at 79.

After the sewing of the wind-hose, the feeder dog 80 of the sewing machine feeds it into the wind-hose guide 81 preparatory to the measuring and cutting of the wind-hose. During its travel through the guide 81, the wind-hose is supported on the dumper 82 from which it is dumped into the trough 83. Suitable supports 84 are secured to the main frame 3 of the machine. These supports project rearwardly from the sewing table in a slightly vertically inclined position as shown in Fig. 1. The supports 84 are mounted in spaced relation and each have mounted thereon the angle irons 85 adjacent their inner edges. These angle irons have spot-welded, or otherwise suitably secured thereto, the guides 86 which are co-extensive with the trough 83 and the supports 84. The forward ends of the guides 86 are connected by the bracket 87 which is riveted to the guides as at 88. The wind-hose guide 81 has riveted thereto the bracket 89, the bent ends of which are riveted to the guides 86 as at 90.

The dumper 82 is fixed at one end to the lengthwise shaft 91 which has a trunnion 92 at each end. The trunnions 92 are rotatably mounted in the dumper brackets 93 which are suitably mounted at the supports 84 as at 94. The trunnion 92 has fixed thereto the dumper link 95. The dumper link 95 is pivotally connected with the dumper treadle 96 by the connecting rod 97. A suitable spring 98 is secured to the pivot pin 99 at the lower end of the connecting rod and the other end of the spring is suitably secured to the support 57 as at 100. The spring is arranged to urge the dumper 82 upwardly into closed position. The presser foot treadle 6, clutch pedal 12, and the dumper treadle 96 are arranged to rock on the shaft 101 which is mounted in the shaft support 102.

Since it is desirable to vary the lengths of the strips into which the wind-hose is to be cut, the wind-hose guide of necessity must be adjustable. For this purpose the wind-hose guide 81, which does not extend through the entire length of the dumper 82, has an extension 103 (Figs. 1 and 5). By referring to Fig. 5, it will be seen that the extension 103 is a channel member similar to the guide 81 and is spot-welded or otherwise suitably secured to the adjustable bracket 104. The bracket 104 has the U-shaped ends 105 which are arranged to slidably engage the guides 86. The bracket 104 and the extension guide 103 can be removably secured in whatever position desired by the wing-screws 106.

After the wind-hose has traveled through the guides 81 and 103 the forward end is arranged to engage a contact device 107 which energizes the solenoid 56 and causes the upper knife to be pulled downward and thereby cut the wind-hose into the predetermined length.

The contact device is shown in detail (Figs. 11 and 12) and consists of the lower attach-

ment block 108 which has the projecting ears 109 and 110 and of the complementary upper blocks 111 and 112. The lower block 108 carries the two contact pins 113 and 114 which are suitably connected with the solenoid 56 by the wires 115. The ears 109 and 110 carry the shaft 116.

The contact device is arranged to slide as a unit along the guides 86. The shaft 116 has pivotally mounted thereon, between the ears 109 and 110, the fiber contact hinge 117. A suitable channel piece 118 is secured to the upper end of the fiber hinge 117 and has a tubular projection 119 for receiving the shaft 116. The shaft 116 also carries the spacer rings 120 which space the hinge plate 117 from the ears 109 and 110.

The fiber hinge plate 117 carries the contact spring 121 which is secured thereto by the screw 122 (Fig. 13). The contact spring 121 is arranged to close the circuit by engaging the contact pins 113 and 114.

The hinge plate 117 also has secured there-to the counter-weight shaft 123 which has adjustably mounted thereon the counter-weight 124 which is maintained in any desired position by turning down the screw 125.

The trough 83 is supported by the brackets 126 which are secured to the supports 84 by the bolts 127. The trough is so arranged that when the dumper 82 is placed in dumping position, the lower end of the dumper will rest immediately within the trough as at 128.

A suitable switch 129 actuated by the button 130 is provided for cutting off the electric current to the motor, and thereby completely stopping the machine at any time the operator deems expedient.

The operation of the device is as follows: By actuating the presser foot treadle 6, the operator raises the presser foot 4. This permits the web material 22 and the hose 23 to be fed through the folder 20 and placed in folded position between the feeder dog 80 and the presser foot 4. At this time the presser foot treadle is released which lowers the presser foot and causes the web material 22 to be suitably held between the presser foot and the feeder dog 80. This places the machine in position for operation. Hence, the clutch treadle 12 is pushed down to engage the clutch 9. This places the cam link 67, the link 69, and bracket 71 in alignment as shown in Fig. 1. The feeder dog pulls the web material 22 and the hose 23 through the folder 20 and feeds it through the sewing machine. After the web material 22 has been sewed about the hose 23, the product is known as wind-hose. The feeder dog then urges the wind-hose 23a through the upper and lower guides 24 and 25 between the upper and lower knives 31 and 32 and then through the guides 81 and 103. At this time the counter-weight 124 holds the contact spring 121

in the position shown in Fig. 11. When the end of the wind-hose engages the contact hinge 117, which is nicely balanced, it causes the hinge 117 to pivot about the shaft 116 and consequently the contact spring 123 engages the contact pins 113 and 114 and closes the circuit. When the circuit is closed, the solenoid 56 is energized and pulls the core 55 downward which in turn causes the rod 50 and the upper knife-bracket 37 and knife 31 to be drawn downward into cutting relation with the lower knife 32 at which time the wind-hose is cut to the desired length.

As the rod 50 travels downward, the throw-out lever engages the cam surface 68 of the link 67 as at 79 (Fig. 1). This causes the links 67 and 69 to pivot toward the right (Fig. 14) thereby raising the bracket 71 which in turn causes the lever 14 to pivot about the pin 15 and disengage the clutch 9 at which time the sewing machine ceases to operate.

At this time the operator presses down the dumper treadle 96 against the spring 98 which acting through the connecting rod 97 and link 95 causes the dumper 82 to pivot to the position shown in the dotted lines of Fig. 5 which causes the cut strip of wind-hose to be discharged into the trough 83.

After the strip of wind-hose has been dumped into the trough, the links 67 and 69 being in the position shown in Fig. 14, and the clutch being disengaged, the operator now presses down on the clutch treadle 12 against the action of the spring 16 which causes the links 67 and 69 to pivot into alignment with bracket 71 (Fig. 1) and at the same time causes the lever 14 to pivot at 15 and thereby throw the clutch 9 into engagement. The sewing machine is again placed in operation and the wind-hose fed through the knife and the operation repeated.

If the operator desires to stop the machine without stopping the drive shaft 8, he need only pull outwardly on the chain 75 which causes the links 67 and 69 to pivot into the position shown in Fig. 14 which in turn raises the bracket 71 and causes the clutch lever 14 to pivot about 15 and disengage the clutch 9.

If an emergency arises so that the operator desires the driving shaft 8 to stop, which in turn causes the entire machine to stop, he need only push in the button 130 which cuts off the electricity to the electric motor which actuates the driving shaft 8.

From the foregoing description it will be readily seen that there is here produced a machine which automatically sews, measures, and cuts wind-hose into whatever lengths desired in one continuous operation. It is of course to be understood that this machine can be used for sewing, measuring, and cutting bindings and the like, and it need not be limited to performing upon wind-hose.

Claims:

1. The combination with a sewing machine for sewing wind-hose, of driving means for the said sewing machine, means for guiding the wind-hose away from the sewing machine, severing means, and means for actuating the said severing means when the wind-hose has reached a predetermined length to cut the wind-hose and for disengaging said driving means to stop the machine.
2. The combination with a sewing machine for sewing wind-hose or the like, of guide means for the said wind-hose, severing means, driving means for the sewing machine including a clutch, power means associated with the severing means and clutch, and switch means arranged to contact with a predetermined length of wind-hose whereby the power means actuate the severing means and disengage the clutch.
3. In an apparatus for sewing, measuring, and cutting wind-hose or the like, the combination with a sewing machine, of driving means including a clutch for the said sewing machine, means for guiding the said wind-hose away from the said sewing machine, severing means, power means operatively connected with said severing means and said clutch, and means including a pivoted contact switch arranged to be pivoted by a predetermined length of wind-hose whereby the aforesaid power means actuates said severing means and disengages the said clutch.
4. In an apparatus for sewing, measuring, and cutting wind-hose or the like, the combination with a sewing machine, of driving means including a clutch for said sewing machine, means for guiding the said wind-hose away from the said sewing machine, severing means, a solenoid connected with said severing means and said clutch, and a pivoted contact switch arranged to be pivoted by a predetermined length of wind-hose to close the circuit whereby the said solenoid actuates the said severing means and disengages said clutch.
5. The combination with a sewing machine for wind-hose or the like, of guide means for the wind-hose, severing means, driving means for the sewing machine including a clutch, means including a cam lever for actuating the said severing means and disengaging the said clutch, and switch means arranged to contact with a predetermined length of wind-hose whereby the aforesaid means including a cam lever actuates the severing means and disengages the clutch.
6. The combination with a sewing machine for wind-hose or the like, of guide means for the said wind-hose, severing means, driving means for the sewing machine including a clutch, means for actuating the said severing means and disengaging the said clutch including a cam lever and throw-out lever arranged to engage the said cam lever, and switch means arranged to contact with a predetermined length of wind-hose whereby the said actuating means actuates the severing means and disengages the clutch.
7. The combination of a sewing machine for sewing wind-hose or the like, of an extensible guide for the said wind-hose, knife means, means for actuating the said knife means, and an adjustable control means for the means which actuate the said knife means, said control means being situated adjacent the end of the extensible guide and arranged to be operated by engagement with the end of the wind-hose as it passes through the wind-hose guide whereby the said control means and extensible guide may be adjusted to cut any pre-determined length of wind-hose desired.
8. The combination of a sewing machine for sewing wind-hose or the like, a guide for the said wind-hose comprising a supporting surface and a plurality of inverted relatively slidable channel members arranged to cooperate with the said surface support to form a tunnel, knife means, means for actuating the said knife means, and an adjustable control means for the means which actuate the said knife means, said control means being situated adjacent the end of the extensible guide and arranged to be operated by engagement with the end of the wind-hose as it passes through the wind-hose guide whereby the said control means and extensible guide may be adjusted to cut any pre-determined length of wind-hose desired.
9. The combination with a sewing machine for sewing wind-hose and the like, of guide means for said wind-hose, severing means, driving means including a clutch for the said sewing machine, a solenoid, a rod operatively connecting said solenoid and said severing means, clutch disengaging means including a cam lever, a throw-out lever carried by said rod and arranged to engage the said cam lever, and switch means arranged to be operated by contact with a pre-determined length of wind-hose whereby the solenoid actuates the said rod and severing means to sever a predetermined length of wind-hose and to cause said throw-out lever to engage the said cam lever to operate said clutch disengaging means to stop the said machine.

In testimony whereof I affix my signature.

OLIVER K. HELWIG.