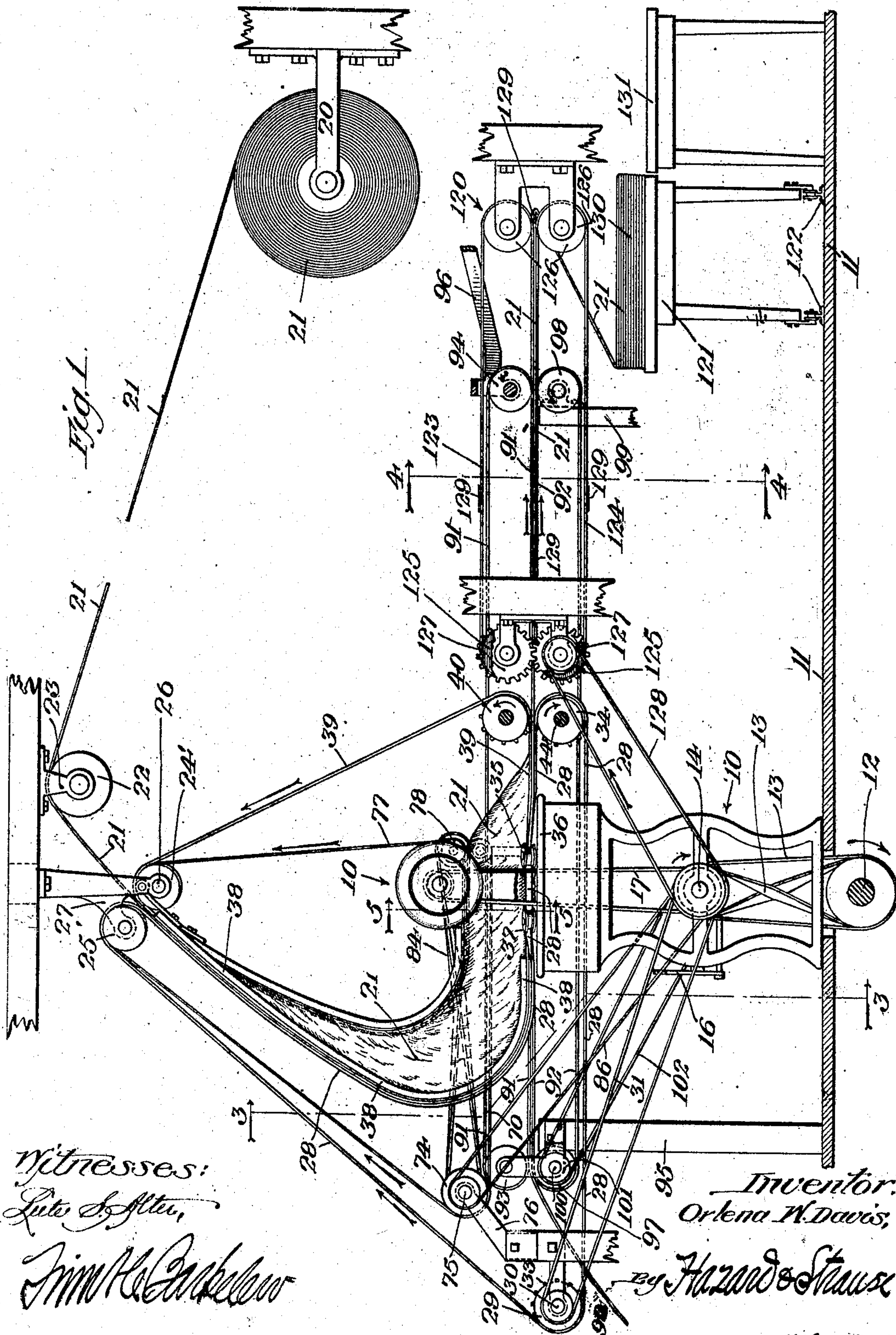


900,267.

O. W. DAVIS.
STRAIGHT-SEAMING APPARATUS.
APPLICATION FILED OCT. 29, 1907.

Patented Oct. 6, 1908.
5 SHEETS—SHEET 1.



Witnesses:
Lute S. Allen,
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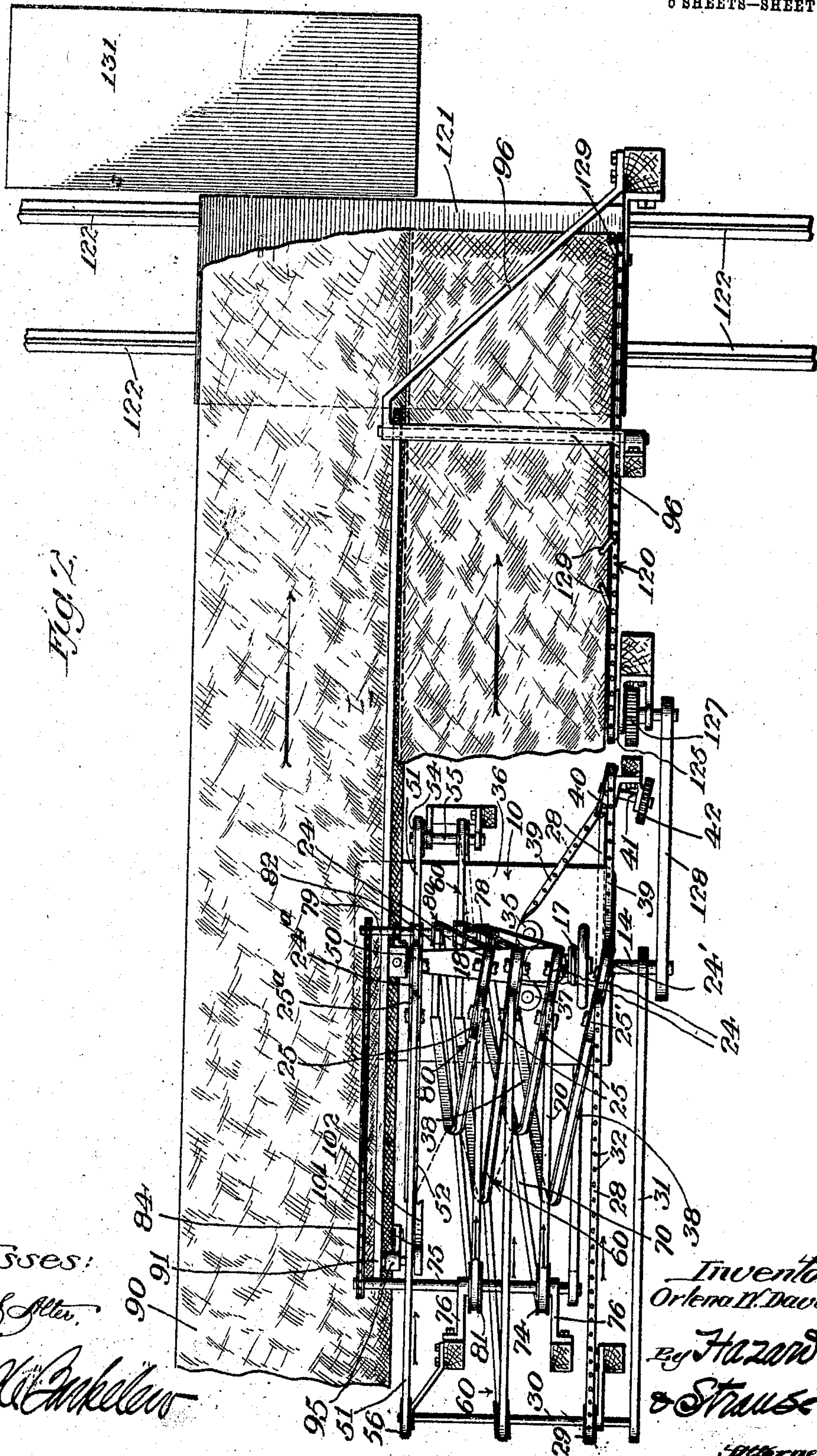
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6 SHEETS—SHEET 2.



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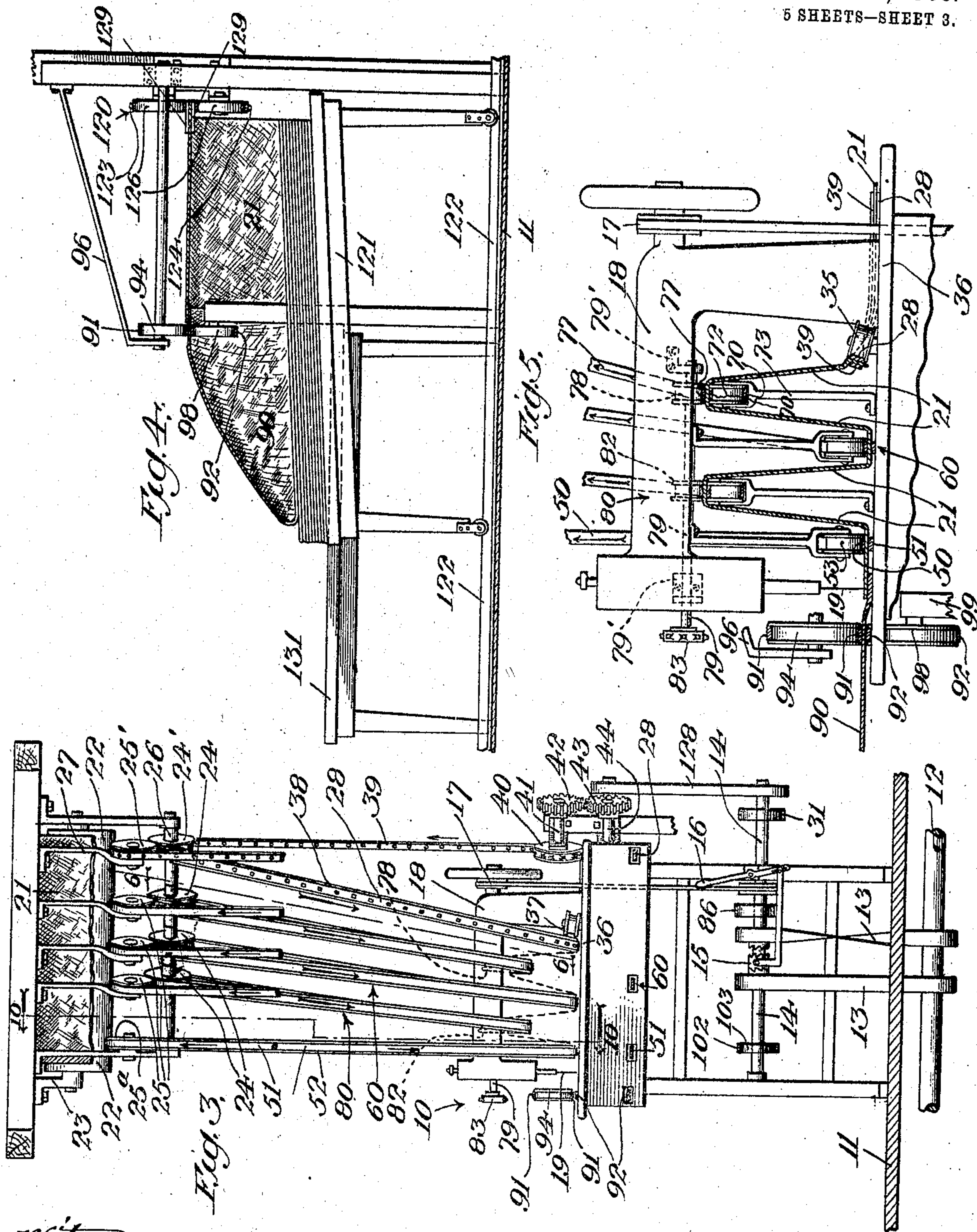
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Patented Oct. 6, 1908.
5 SHEETS—SHEET 3.

900,267.



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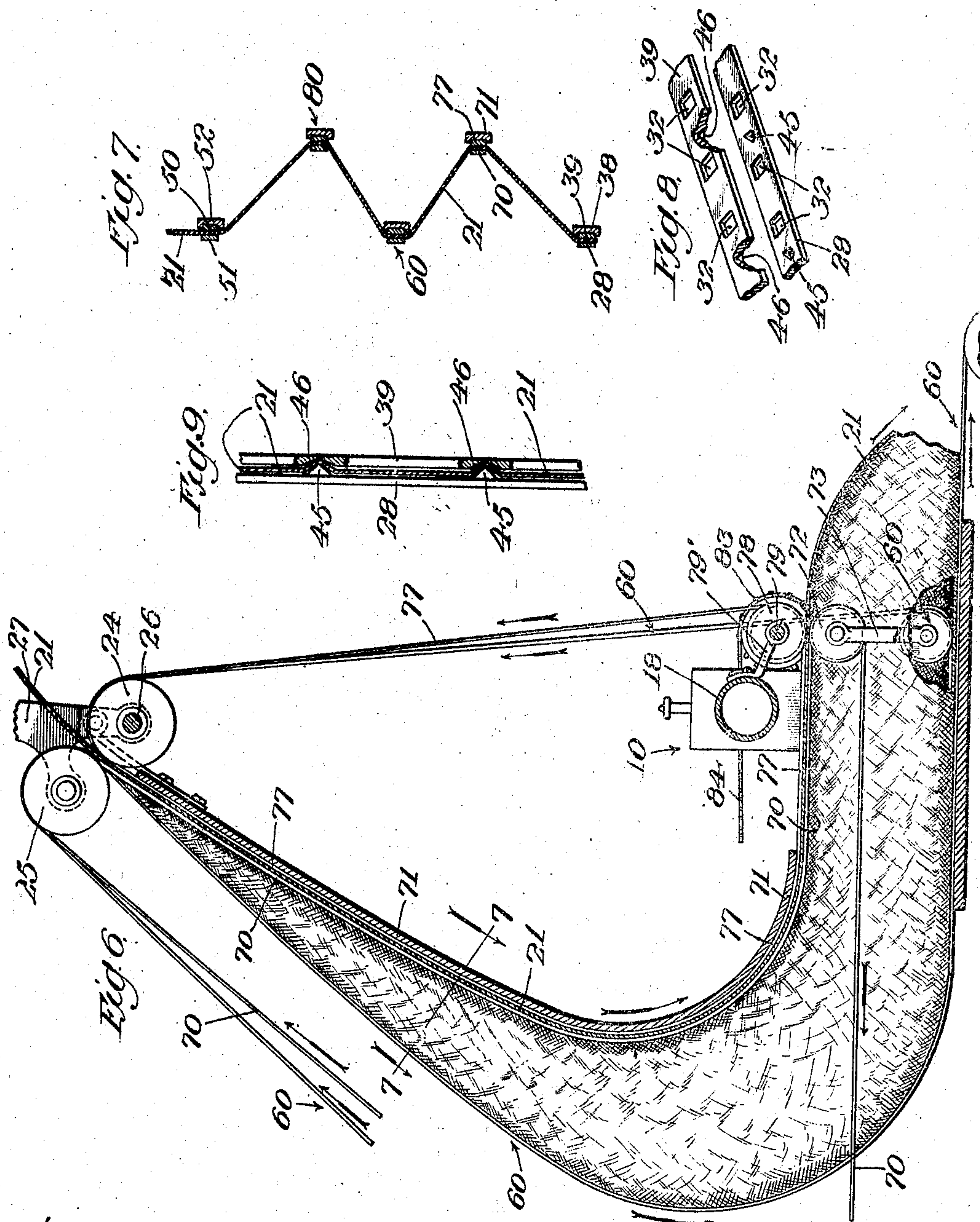
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Patented Oct. 6, 1908.
5 SHEETS—SHEET 4.



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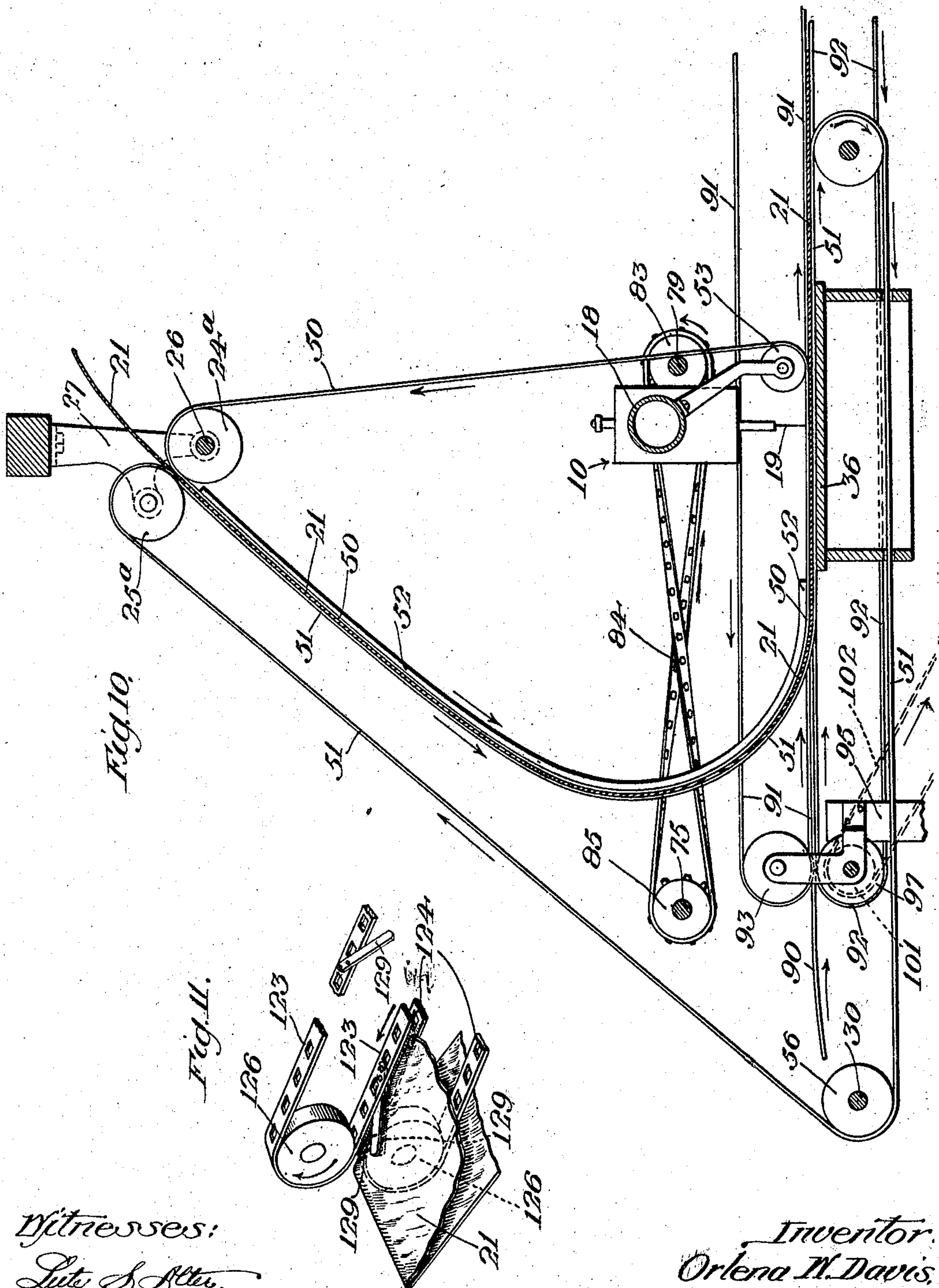
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Patented Oct. 6, 1908.

5 SHEETS—SHEET 5.



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BEST AVAILABLE COPY

UNITED STATES PATENT OFFICE.

ORLENA W. DAVIS, OF LOS ANGELES, CALIFORNIA.

STRAIGHT-SEAMING APPARATUS.

No. 900,267.

Specification of Letters Patent.

Patented Oct. 6, 1908.

Application filed October 29, 1907. Serial No. 399,762.

To all whom it may concern:

Be it known that I, ORLENA W. DAVIS, a citizen of the United States, residing at Los Angeles, county of Los Angeles, State of California, have invented new and useful Improvements in Straight-Seaming Apparatus, of which the following is a specification.

My invention relates to an apparatus adapted to be used in combination with a sewing machine for the continuous seaming of straight lengths of goods together and especially for the seaming of long strips of canvas as used in the manufacture of tents and the like.

The prime object of my invention is to provide an apparatus which will automatically carry the goods through the machine and pile it up after having passed through the same in a convenient position to be handled.

In pursuance of the above object it is an object to provide a mechanism which will automatically feed a wide strip of goods through a narrow space beneath the sewing machine arm.

A further object is to provide such mechanism in convenient form so that it may be placed around the machine without interfering with the mechanism thereof.

I accomplish these objects by means of the device described herein and illustrated in the accompanying drawings in which:—

Figure 1,— is a side elevation of my complete improved apparatus. Fig. 2,— is a plan view of the same, parts of the cloth being broken away for clarity of illustration. Fig. 3,— is a sectional end elevation taken on line 3—3 of Fig. 1 the cloth being removed from parts of the mechanism. Fig. 4,— is a sectional elevation of the receiving tables and the piling apparatus taken on line 4—4 of Fig. 1. Fig. 5,— is an enlarged sectional elevation of the machine and the parts attached thereto taken on line 5—5 of Fig. 1. Fig. 6,— is an enlarged vertical section taken on line 6—6 of Fig. 3 with the cloth in place. Fig. 7,— is a horizontal section taken on line 7—7 of Fig. 6. Fig. 8,— is a fragmentary perspective detail of one of the pairs of belts. Fig. 9,— is an enlarged sectional view of the cloth showing the belts of Fig. 8 in engagement therewith. Fig. 10,— is an enlarged vertical section taken on line 10—10 of Fig. 3. Fig. 11,— is a detail perspective of part of the piling apparatus.

Referring to the drawings 10 designates a sewing machine of the power type which stands upon floor 11 and is operated from main shaft 12 by means of belts 13 which connect the main shaft with counter-shaft 14 of the machine. One of these belts is crossed while the other is straight and a clutch 15 operated by lever 16 affords means whereby the machine may be run in either direction as is desirable under some circumstances as hereinafter described. A belt 17 connects counter-shaft 14 with the upper mechanism of the machine which is located in arm 18 thereof, needle 19 being situated at the outer end of the arm as in the usual construction.

Located to the rear of the machine and revolubly mounted on supporting standard 20 is a roll or bolt of cloth 21. Cloth 21 passes forwardly and upwardly from the roll onto a cylinder 22 supported in bearings 23 above the sewing machine. Passing off of cylinder 22 the cloth passes forwardly and downwardly as shown in Figs. 1 and 6 and passes between a series of pulleys 24 and 25 shown in plan in Fig. 2 and in end elevation in Fig. 3. The mechanism for the right hand outer set of pulleys in Fig. 3 will first be described, the other mechanisms and arrangements being somewhat similar to this one.

Pulleys 24' and 25' are mounted on shaft 26 and on hanger 27 so as to come directly over the right hand edge of cloth 21 as shown in Fig. 3. An endless belt 28 passes over pulley 25' upwardly from a sprocket pulley 29 rigidly mounted on a shaft 30 which is adapted to be driven through the medium of a belt 31 from counter-shaft 14. As shown in Figs. 2 and 8 belt 28 is provided with spaced holes 32 therein which are adapted to fit over teeth 33 of pulley 29 so that the belt may be driven by the pulley without any slippage thereon. Passing downwardly from pulley 25' belt 28 passes onto and over a curved guide 38, whose shape is shown in the various figures and which extends from pulley 25' to a point near the machine base plate. From the lower end of the guide the belt passes onto a small vertically pivoted pulley 37 located on base plate 36 of the machine and situated under one edge of the arm as shown in Fig. 1. In order to pass over this pulley the belt must twist into the position illustrated most clearly in Fig. 5 and while in this position

it passes under the arm of the machine to a second small pulley 35 which is located under the other edge of the arm in a position to correspond with that of pulley 37. On passing off pulley 35 belt 28 again twists to its normal position as shown in Fig. 1 and passes diagonally outwardly to a sprocket pulley 34 from which it passes horizontally to pulley 29. From Fig. 3 it will be seen that guide 38 must pass diagonally downward in order to reach from pulley 25' to pulley 37 as pulley 37 is located some distance in beyond the vertical plane of the upper pulley.

Passing over pulley 24' is a second endless belt 39 which is similar in construction to belt 28 as shown in Fig. 8. Passing forwardly and downwardly from pulley 24' belt 39 passes over guide 38, the guide being grooved on its outer surface as shown in Fig. 7 to accommodate the belt. Passing off the lower end of guide 38 along with belt 28 belt 39 passes over pulleys 37 and 35 as shown in Fig. 5 and thence outwardly and rearwardly to the under side of sprocket pulley 40 whence it passes upwardly to pulley 24'. Sprocket pulley 40 is mounted on a shaft 41 provided on its outer end with a gear 42 which meshes with a companion gear 43 on shaft 44 of sprocket pulley 34 (see Fig. 3). Sprocket pulleys 40 and 34 are thereby forced to rotate at the same speed so that belts 28 and 39 are driven together.

As before stated cloth 21 is adapted to pass downwardly with its outer edge between pulleys 24' and 25', the cloth passing directly between belts 28 and 39 as shown in Fig. 1. As illustrated in Fig. 8 belt 28 is provided with a series of projecting points 45 on its inner surface, or the surface towards belt 39. Belt 39 is provided with a series of corresponding depressions 46 which are adapted to register with points 45 while the belts are being propelled around guide 38. In order to insure of points 45 always registering with depressions 46 belt 28 is made longer than belt 39 by a length which is a multiple of the distance between successive points 45 or depressions 46. Thus it will be seen that, upon the passage of the belt over guide 38, the points and depressions will register with each other and will continue to do so until the two belts separate by passing over pulleys 34 and 40. By means of this arrangement cloth 21 will be grasped tightly between the two belts as shown in enlarged detail in Fig. 9 and will be held between the same until the two belts separate at the point above mentioned, and the outer edge of the cloth will be carried inwardly through the arm of the sewing machine and then outwardly again until its full width is reached as shown in plan in Fig. 2.

As illustrated in Figs. 2 and 3 there are a number of sets of pulleys 24 and 25 arranged

from one edge of cloth 21 to the other. These pulleys are mounted in a manner similar to that in which 24' and 25' are mounted and are each provided with belts which correspond to belts 28 and 39. The inner set of these pulleys which I will designate as 24^a and 25^a are provided with belts 50 and 51 which pass over a guide 52 similar in construction to guide 38 with the exception that it is situated in a vertical plane, pulley 25^a being directly above pulley 53 over which the belts pass on passing under the sewing machine arm. As illustrated in Fig. 5 pulley 53 is located as near the inner edge of cloth 21 as is practicable to allow needle sufficient room in which to operate. Belt 50 passes downwardly from pulley 24^a over guide 52 around pulley 53 and upwardly again to pulley 24^a. Belt 51 passes over pulley 25^a downwardly over guide 52 and then horizontally as illustrated in Fig. 10 over a pulley 54 mounted on a small shaft 55, and thence horizontally to pulley 56 rigidly mounted on shaft 30 whence it passes upwardly to pulley 25^a again.

Between the sets of belts belonging to pulleys 24' and 25' and pulleys 24^a and 25^a are three other similar sets of belts and guides one of which, the center one, is identical in construction with the set last described and which set I will designate throughout by the numeral 60. It will be seen that the three sets of belts so far described will carry those parts of the cloth which they grip down to the bed plate of the sewing machine. The remaining two sets of belts are similar in every respect to those described except that they carry the cloth to a point directly under the arm and as high above the base plate as the height of the arm will allow. One of these sets is shown in enlarged detail in Fig. 6 and will be described, the other set being similar in construction and placement. Pulley 25 of this set is provided with a belt 70 which passes downwardly from the pulley over guide 71, which is similar to the guides before described except that its lower end is as far above the bed plate of the machine as the height of the arm will allow. Passing horizontally from the lower end of guide 71, belt 70 passes onto the upper side of a small pulley 72 mounted on a standard 73 which supports it above the bed plate of the machine. Passing around pulley 72 belt 70 passes horizontally forward as shown in Figs. 1, 2 and 6 onto a pulley 74 rigidly mounted on shaft 75 journaled in frame 76. Passing from pulley 74 the belt passes upwardly and rearwardly again to pulley 25. Pulley 24 is provided with a belt 77 which passes downwardly and forwardly off the same onto guide 71 beneath belt 70, the two belts holding cloth 21 between them by simple friction. On passing horizontally off the lower end of guide 71 belt 77 passes onto

the lower side of pulley 78 rigidly mounted on a shaft 79 journaled in supports 79' which are secured to the rear side of machine arm 18 as shown in Fig. 6. Passing upwardly from pulley 78, belt 77 passes again over pulley 24. Set 80, which corresponds to the set last described is also provided with a pulley 81 on shaft 75 and a pulley 82 on shaft 79 so that this set may be run along with the set last described by the rotation of these two shafts. Shaft 79 is provided with a sprocket wheel 83 on its outer end over which a crossed sprocket belt 84 is adapted to pass and connect sprocket 83 with a similar sprocket 85 located on the end of shaft 75. By this means shafts 75 and 79 are driven at the same speed so that all the belts of the sets connected to these shafts move uniformly at the same speed of travel, shaft 75 being driven by a belt 86 from counter-shaft 14 at the same speed as shaft 30 so that all the belts of all the sets will also be driven at the same speed as these two sets.

From the foregoing description it will be seen that the cloth is gripped between the numerous sets of belts and is carried thereby forwardly and downwardly and then rearwardly through the arm of the machine. It will be seen from the relative shapes and positions of the forms over which the belts pass that the cloth will gradually be worked into a cross sectional configuration such as illustrated in Figs. 7 and 5 and that therefore it will be enabled to pass through the arm of the machine. On passing out from beneath the arm the cloth is again spread out flatly by diagonal outward movement of the outside belt and is ready to be piled up by the mechanism presently to be described.

In Fig. 2 I have illustrated a strip of cloth 90 which is adapted to run alongside of the machine as shown in Fig. 5 so that its inner edge, the edge towards the machine, will come under the inner edge of strip 21, both the edges passing under needle 54 in a position to be sewn together. Strip 90 may be taken from a pile on the floor or from a roll whichever is the more convenient, it making no difference in the operation of my apparatus. As strip 90 approaches the machine it is taken between two belts 91 and 92, above and below the strip respectively, which belts hold the strip tightly between them and carry it forwardly through the machine at the same speed at which strip 21 is moved by the mechanism hereinbefore described. Belt 91 passes over pulleys 93 and 94 which are mounted on supports 95 and 96, respectively, while belt 92 passes over pulleys 97 and 98 which are mounted on supports 95 and 99. Pulley 97 is mounted on shaft 100 which carries a pulley 101 connected by a belt 102 to a pulley 103 on counter-shaft 14 and by means of which belt 92 is moved in a direction to move strip 90 through the machine

along with strip 21. Belt 91 is moved in the same direction through frictional contact with the cloth at the points where the cloth passes between the pulleys over which the belt runs. By this means it will be seen that the two strips of cloth are moved in unison through the machine at a speed which may be regulated by the relative sizes of the driving pulleys to suit the speed at which the machine is capable of sewing the two strips of cloth together. In case the threads should break, it is only necessary to throw clutch 15 so as to reverse the machine, at the same time lifting the needle by the usual mechanism, when the cloth may be run back to the point where the break occurred. It now only remains to pile the cloth in some suitable and convenient manner, so that it may be handled subsequently, to render the device complete.

Located immediately behind pulleys 34 and 40 which carry the rear ends of belts 28 and 39 is a set of belts 120 which receive the outer edge of cloth 21 immediately behind the point where the cloth leaves belts 28 and 39 and carries it rearwardly and piles it on a table 121 which is movably mounted on rails 122 so as to be moved transversely of the strips of cloth. This set is comprised of two belts 123 and 124 which run over pulleys 125 located directly behind pulleys 34 and 40 and pulleys 126 located over the rear edge of table 121. Pulleys 125 are rotated through the medium or meshing gears 127, one of which is rotated by means of a belt connection 128 with counter-shaft 14. Each of the belts is provided with over-hanging metallic fingers 129 as shown in detail in Fig. 11 between which cloth 21 is adapted to be grasped and held tightly until the fingers pass around pulleys 126 when they pass apart from each other and thus release the cloth. These fingers are provided at regular intervals on the belt, the space between adjacent fingers being approximately equal to twice the width of pile 130 of cloth 21 as seen in Fig. 1. Each of the belts is a sprocket belt, pulleys 125 being sprocket pulleys so that the fingers are always enabled to come into engagement with each other upon passing into the position in which they grasp the cloth. With the belt traveling in the direction indicated by the arrows, it will be seen that the fingers will come together at a point between pulleys 125 and will grasp the cloth to carry the same rearwardly between them. Upon reaching a point between pulleys 126, the fingers separate and allow the cloth to fall from such a position as shown in Fig. 1. The next pair of fingers has meanwhile grasped the cloth and is carrying it forwardly from a point at a distance behind the pair just referred to equal to twice the width of the pile. As this point is carried forwardly the cloth will be

gradually doubled up into the position shown in Fig. 1 when it will be dropped onto the pile.

From the immediately foregoing description it will be seen that the outer edge of the cloth will be piled in a zigzag fashion, the remaining parts of the cloth being allowed to adjust themselves more or less perfectly to this condition. The inner stitched edges of strips 21 and 90 are carried positively up to the edge of the pile by means of belts 91 and 92 so that that part of the sewed strip is free to adjust itself without any hindrance by the weight or sagging of the rest of the strip. In the application of my device shown in the drawings I have illustrated strip 90 as being composed of only one width of cloth, and in this case that strip will pile up in a fashion almost as perfect as that of the outer edge of strip 21. But it is obvious that strip 90 may be composed of any number of widths of cloth and in this case the far edge of the strip will only follow approximately the convolutions of strip 21, it being necessary with very wide pieces to either handle the outer edge by hand or to let it lie as it will on the floor. The prime reason for piling the cloth after having been sewed together is to facilitate its handling so that successive strips may be sewed to its edge. In this case the pile of cloth is removed from table 121 and is placed in front of the machine with its edge corresponding to the position in which the inner edge of strip 90 is illustrated, the whole composite strip, in fact, becoming a new strip 90. To facilitate the removal of the cloth piled up on table 121 I have mounted that table on rails 122 so that it may be moved to a position directly in front of a table 131 onto which the pile of cloth may be thrown, when table 121 may be moved back to its normal position to receive another pile of cloth.

From the foregoing description it will be observed that I have provided an apparatus by means of which the cloth may be fed through a sewing machine in a regular and efficient manner and afterwards piled up in a convenient position to be subsequently worked upon without any needless work on the part of the operator. It will further be noted that I am enabled to handle goods of any width it only being necessary to design my apparatus for a given width of goods and space under the machine arm. The number of belts passing the goods through the arm and their arrangement will depend on the width of the goods and the available space under the arm, and the number may be either more or less than is shown in the drawings to suit the needs of any particular

case. Thus for wider goods than that shown the number of belts is increased accordingly so that enough convolutions are made in it to pass it through the arm.

Having described my invention what I claim as new and desire to secure by Letters Patent is:—

1. In combination with a machine having a cloth support, a post and an overhanging arm; a plurality of belt guides converging from points above the machine to points adjacent the space between the arm and the cloth support, cloth carrying belts passing over said guides and through the space between the arm and the cloth support, and means to operate said belts.

2. In combination with a machine having a cloth support, a post and an overhanging arm; a plurality of curved belt guides converging from a line above the machine to points adjacent the space between the arm and the cloth support, endless cloth carrying belts passing over said guides and through the space between the arm and the cloth support, and means to operate said belts.

3. In combination with a machine having a cloth support, a post and an overhanging arm; a plurality of cloth carrying belts arranged to pass between the arm and the cloth support, alternate belts being arranged in proximity to the cloth support and the arm respectively, and means to support and operate said belts.

4. In combination with a machine having a cloth support, a post and an overhanging arm; a plurality of belt guides converging from points above the machine to points adjacent the space between the arm and the cloth support, alternate guides converging to points near the arm and the cloth support respectively, cloth carrying belts passing over said guides and through the space between the arm and the cloth support, and means to operate said belts.

5. In combination with a machine having a cloth support, a post and an overhanging arm; a plurality of sets of belts passing through the space between the arm and the cloth support, alternate sets of belts passing close to the arm and the cloth support respectively, each set comprising a pair of belts adapted to grip the cloth between them, and means to support and operate said belts.

In witness that I claim the foregoing I have hereunto subscribed my name this 21st day of October, 1907.

ORLENA W. DAVIS.

Witnesses:

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OLLIE PALMER.