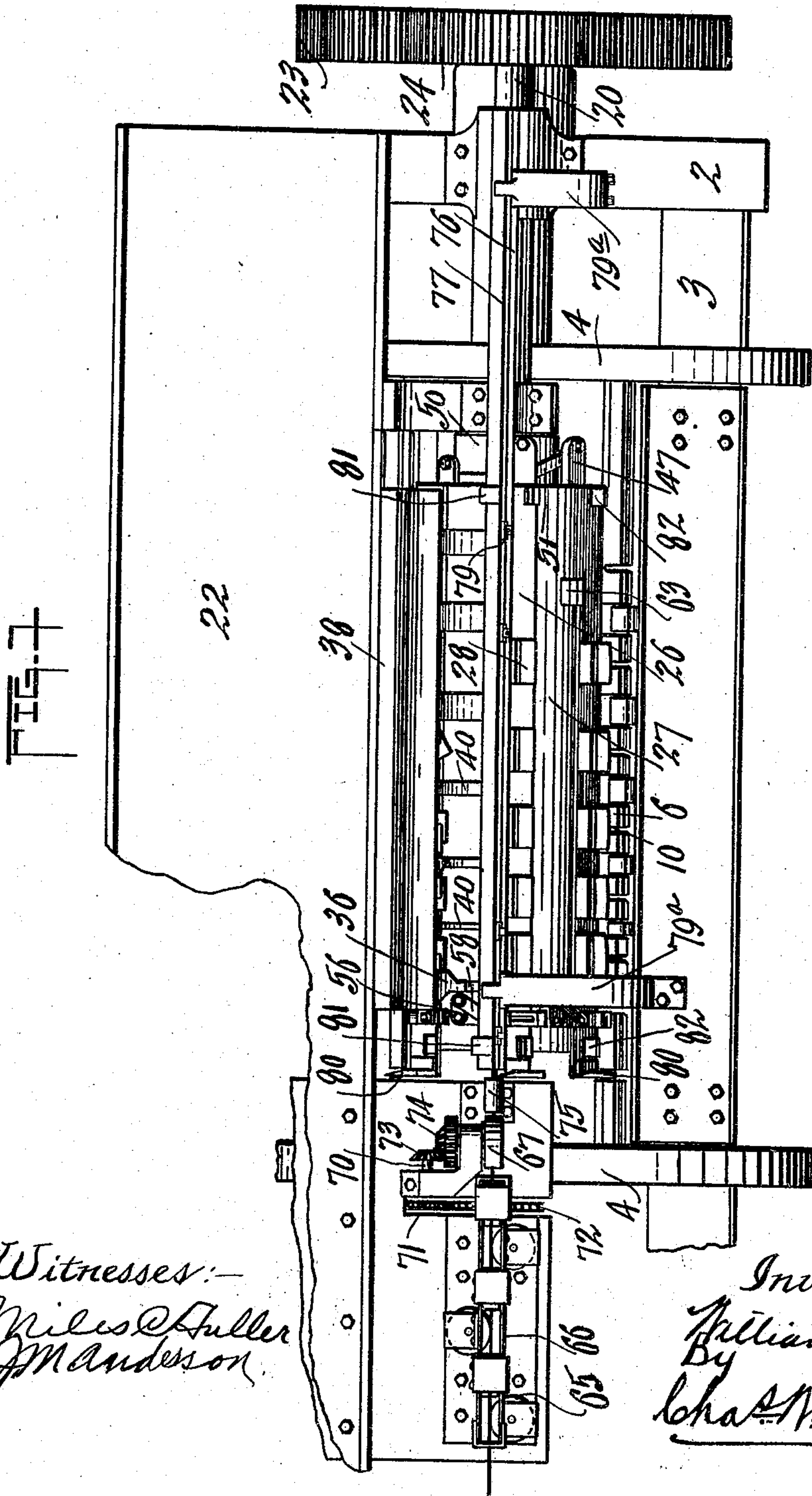


W. F. DREXLER, JR.
WIRE FABRIC MACHINE.
APPLICATION FILED AUG. 10, 1906.

930,944.

Patented Aug. 10, 1909.
9 SHEETS—SHEET 1.



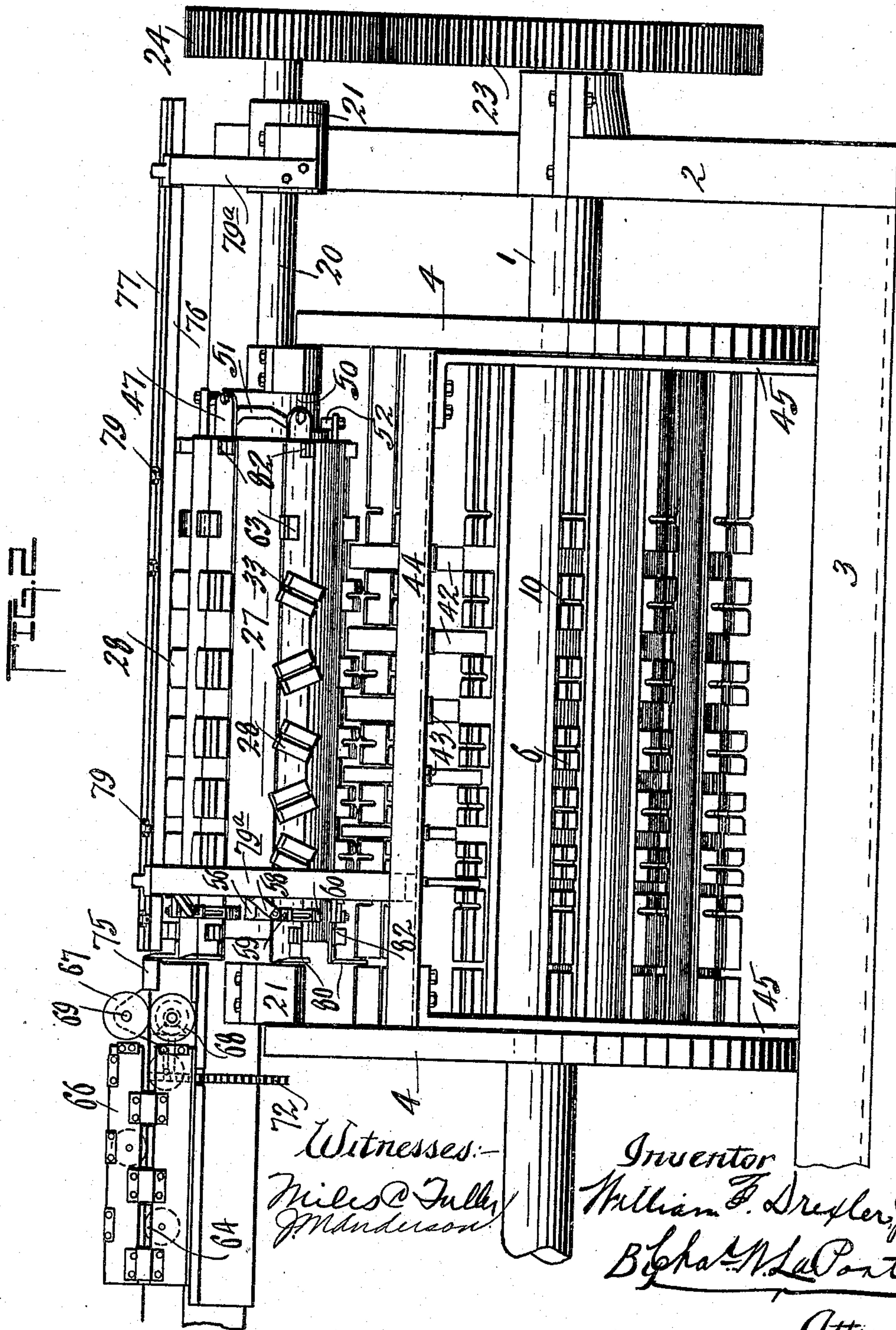
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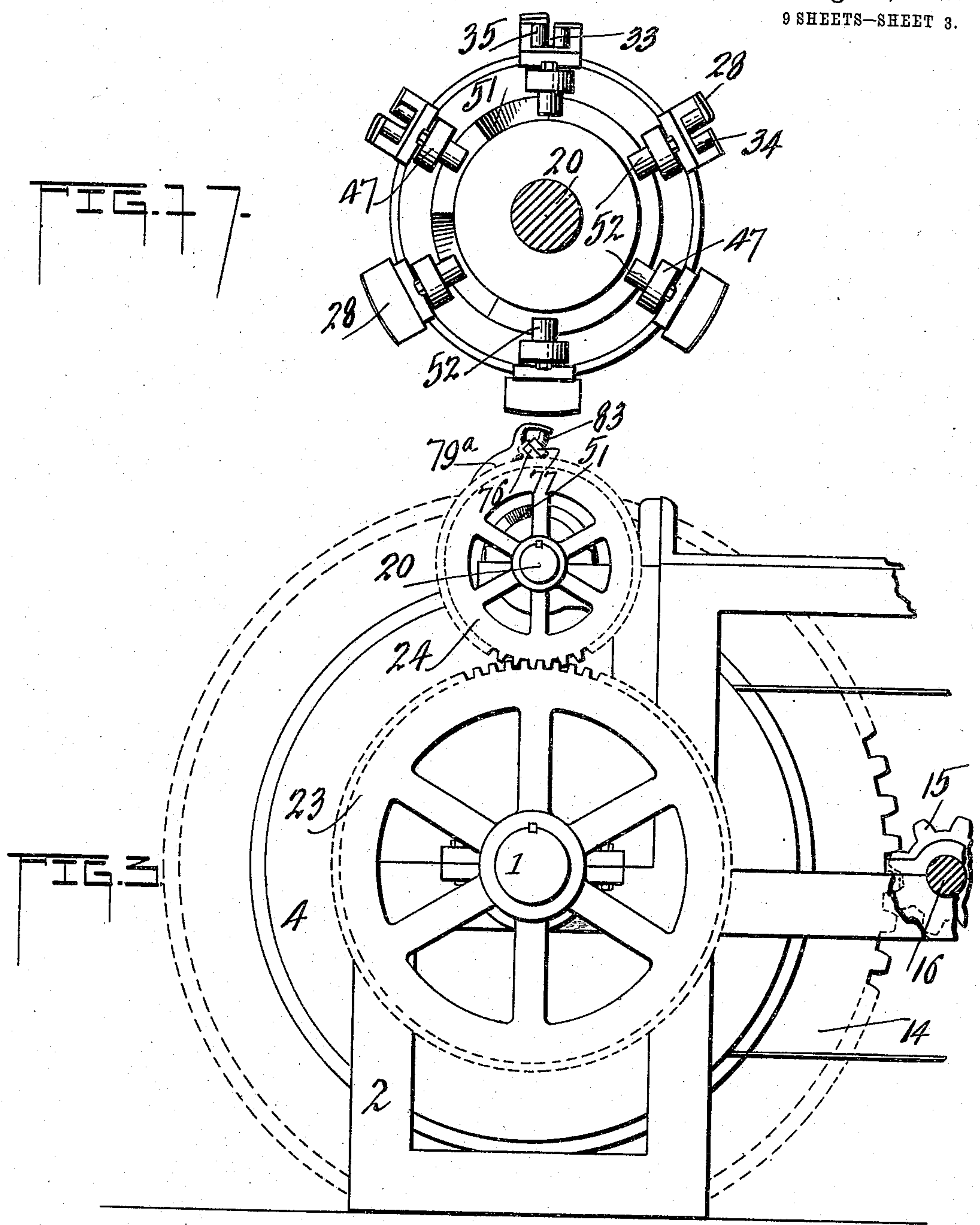
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 9 SHEETS—SHEET 3.



Witnesses:—
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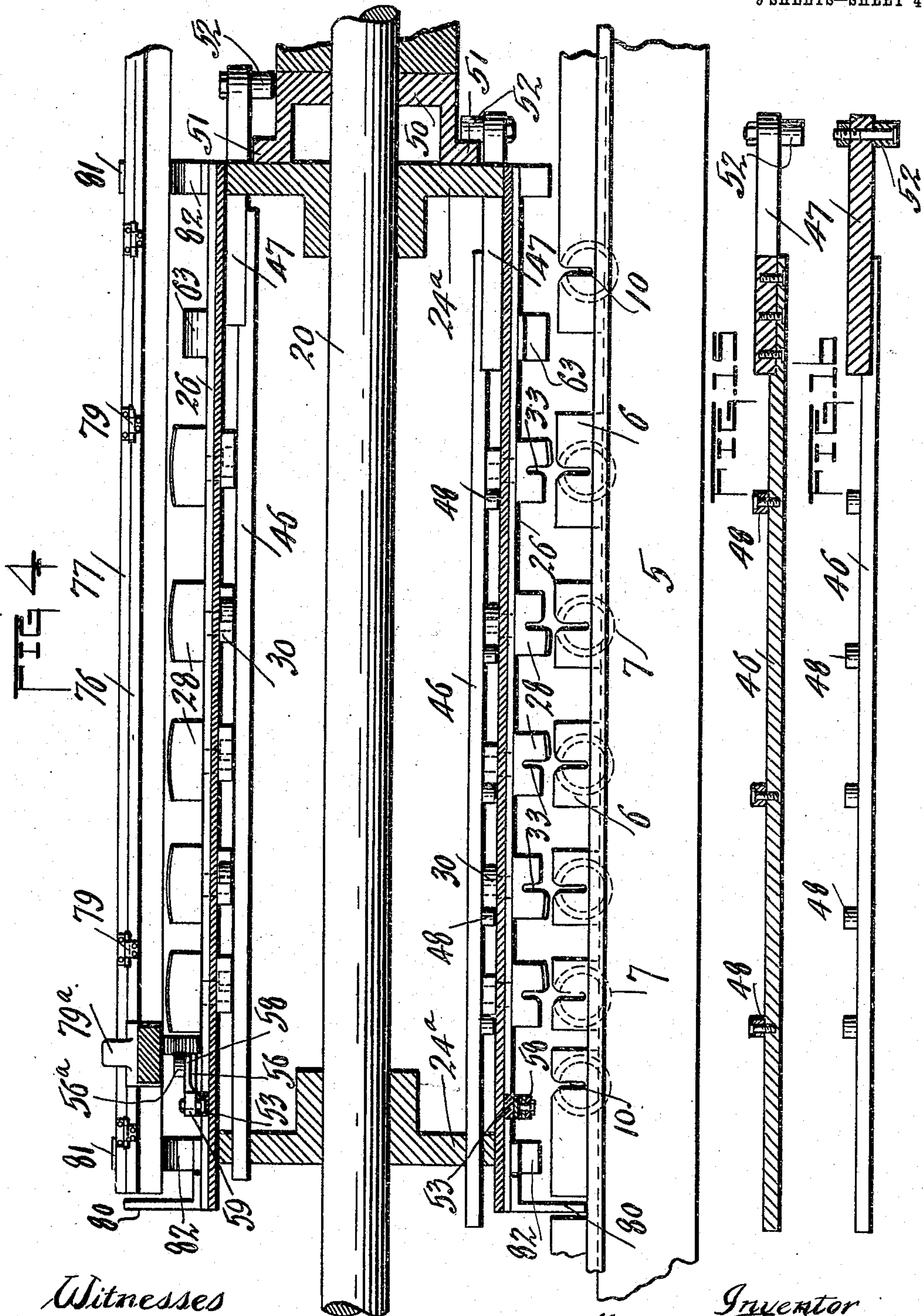
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9 SHEETS—SHEET 4.



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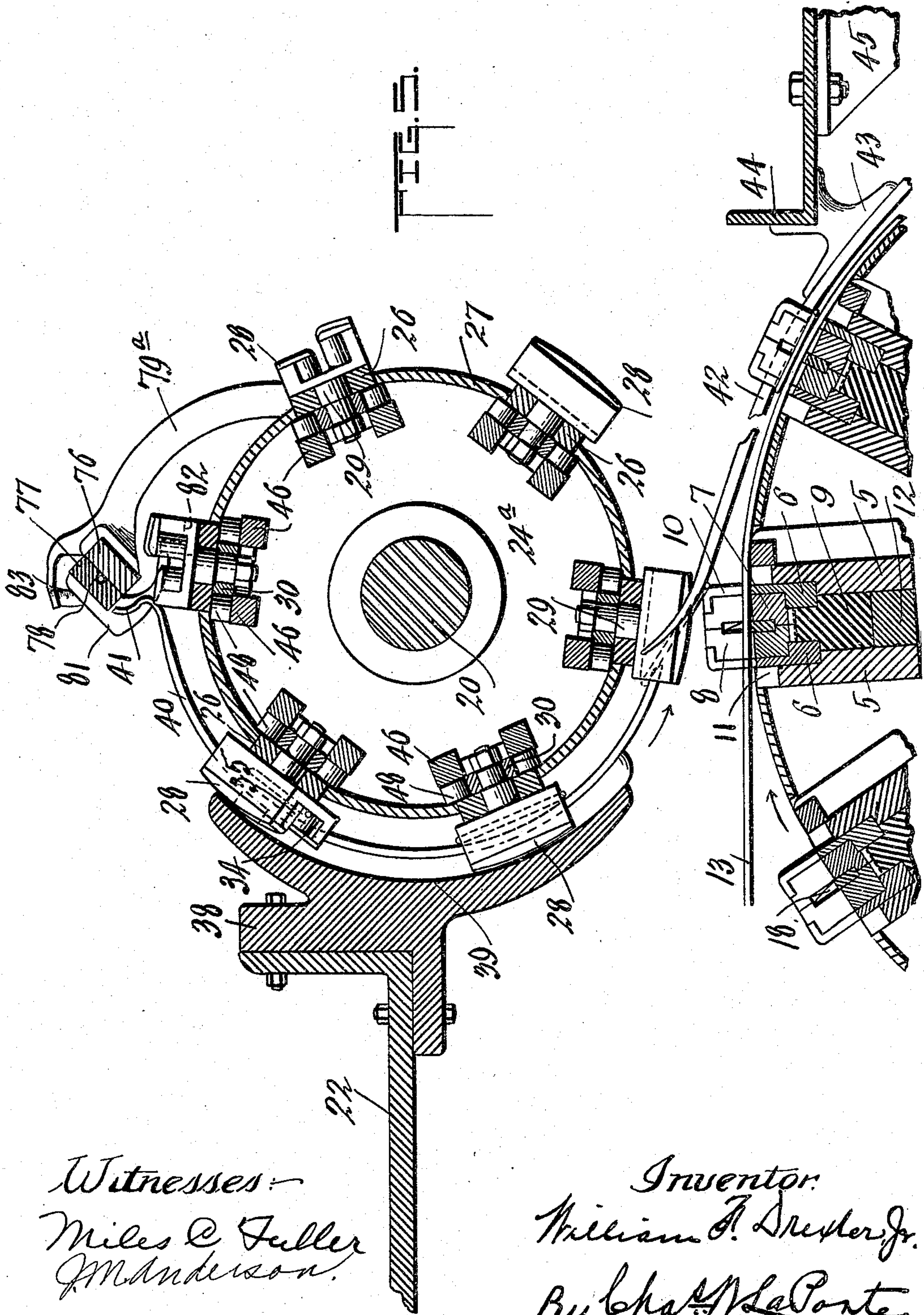
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9 SHEETS—SHEET 5.



Witnesses:
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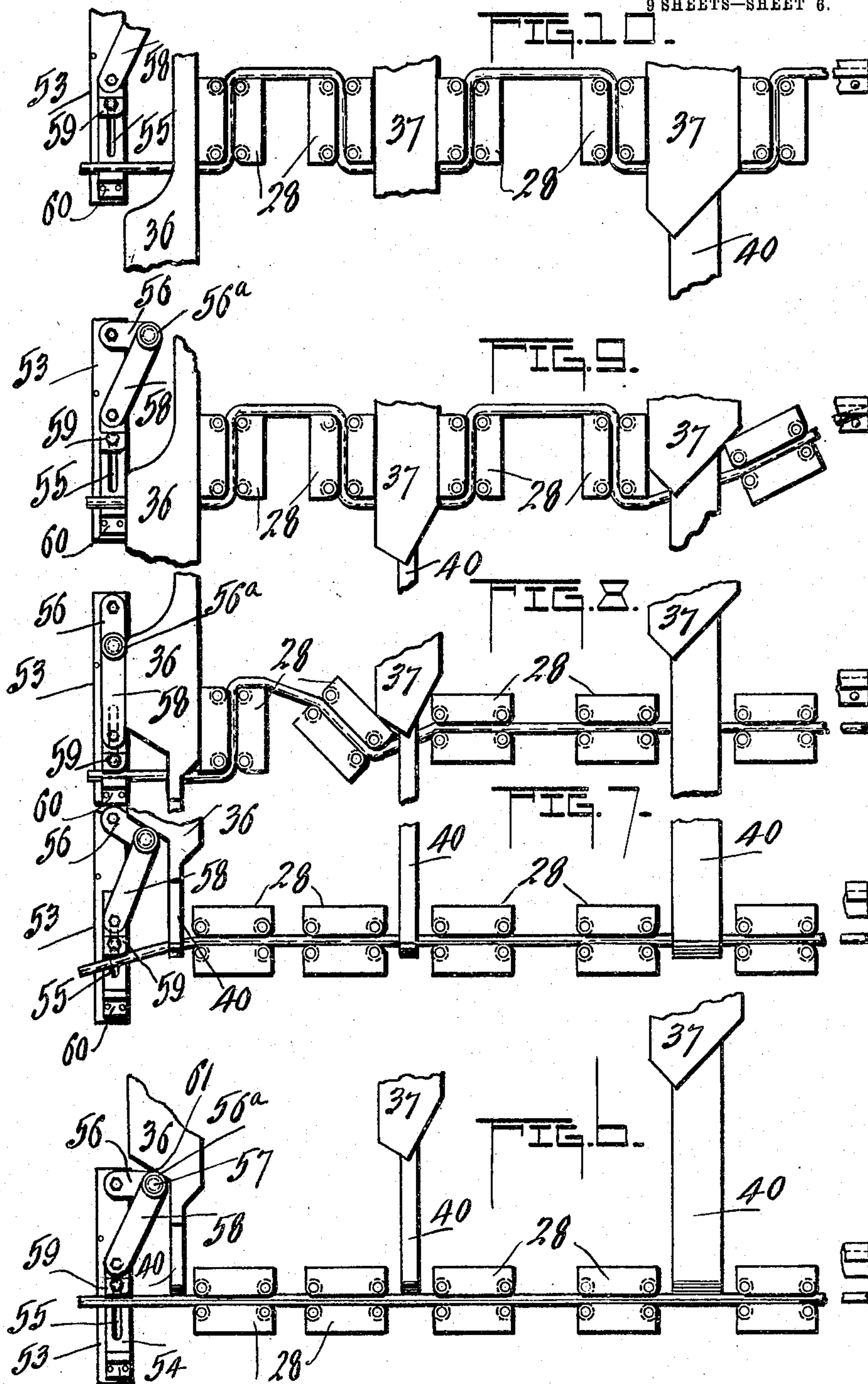
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930,944.

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9 SHEETS—SHEET 6.



Witnesses: 60
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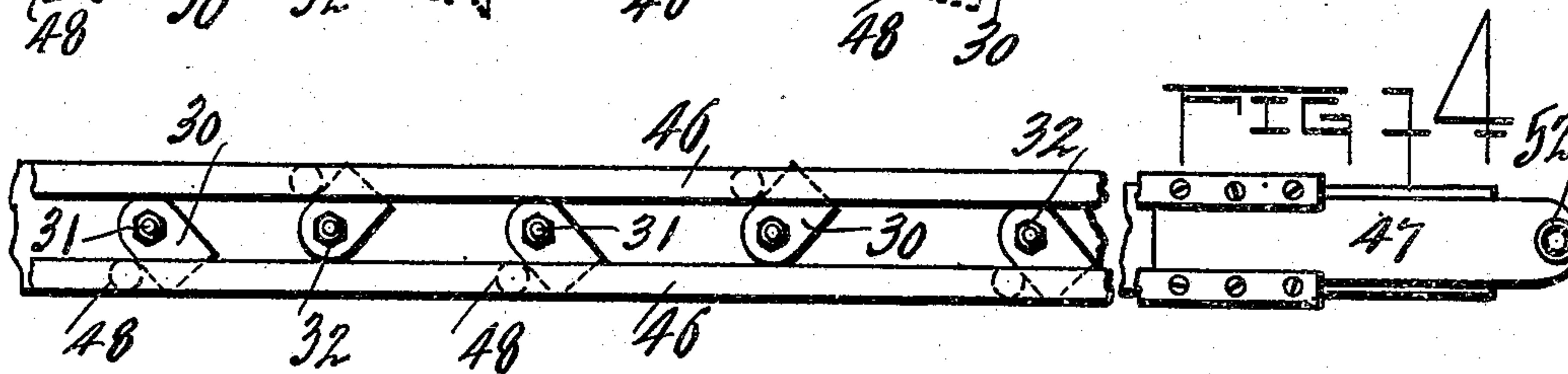
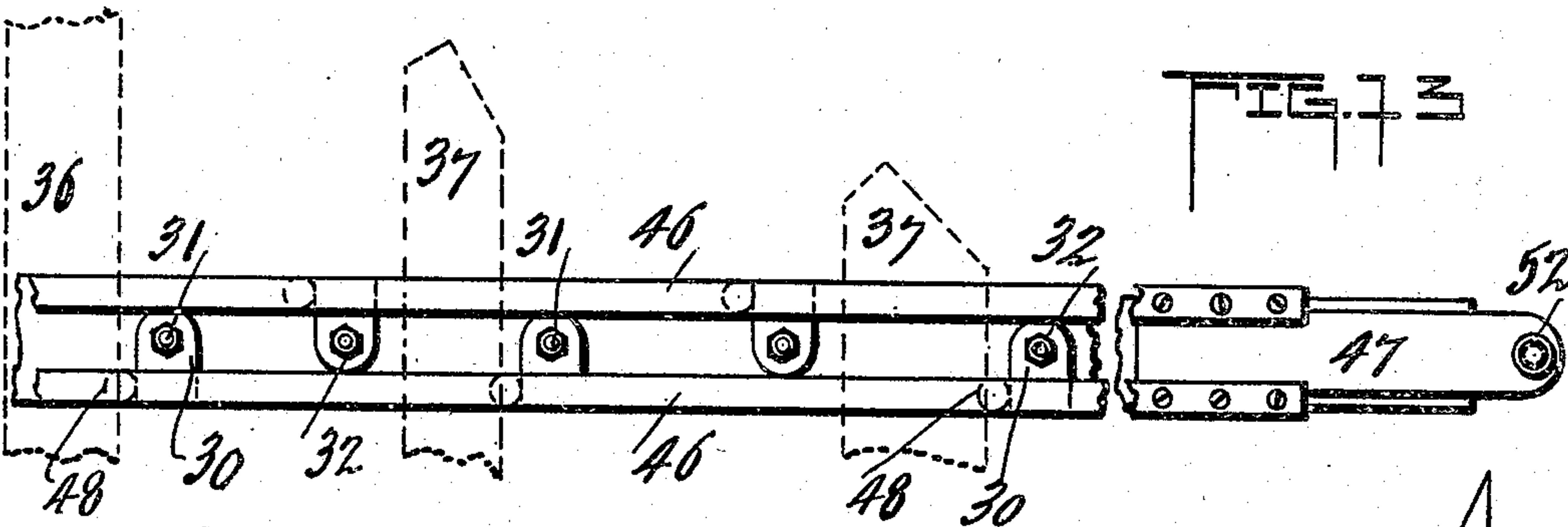
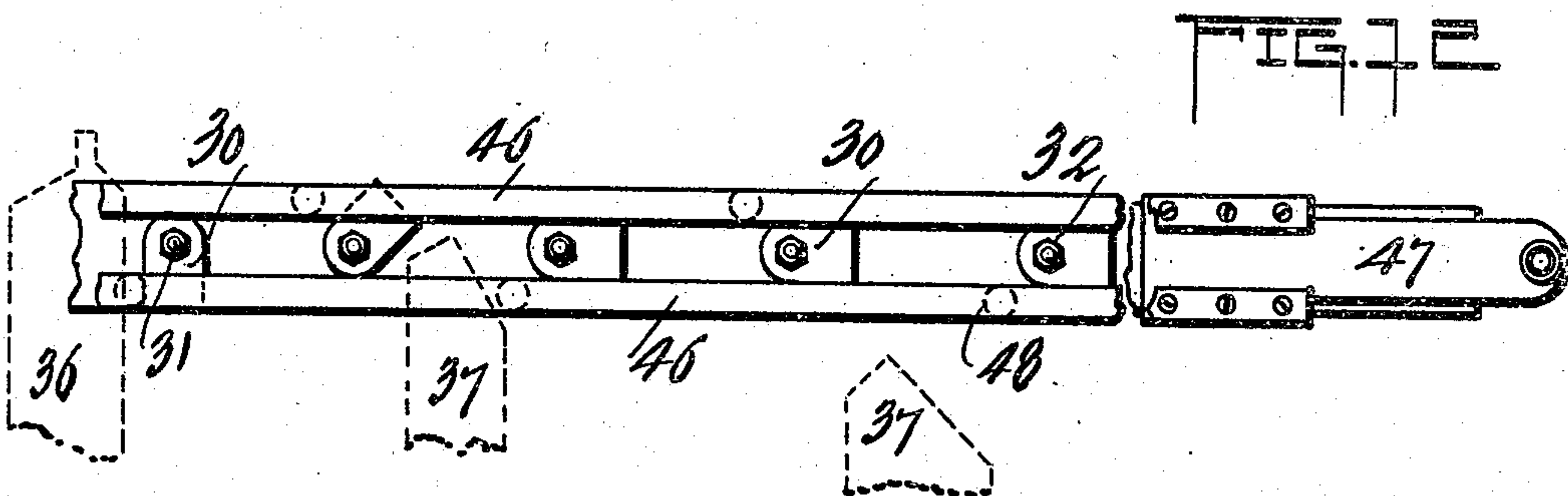
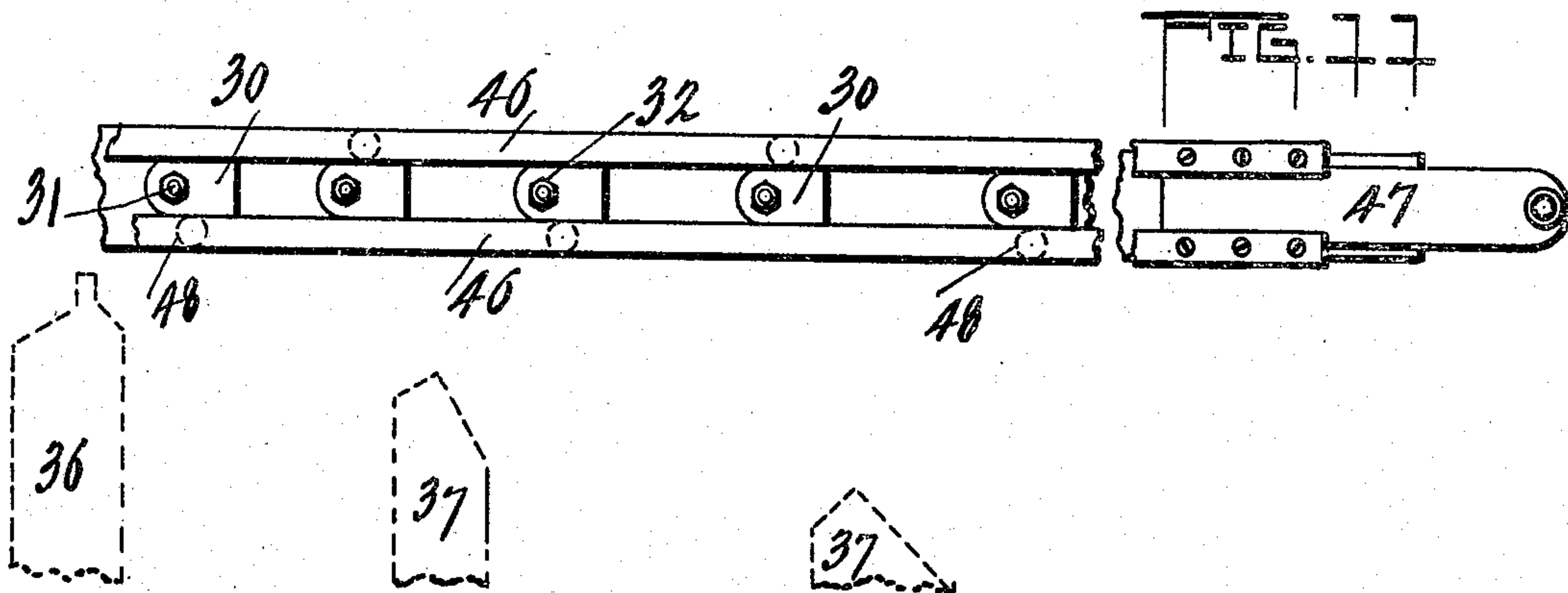
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APPLICATION FILED AUG. 10, 1906.

930,944.

Patented Aug. 10, 1909.

9 SHEETS—SHEET 7.



Witnesses:-
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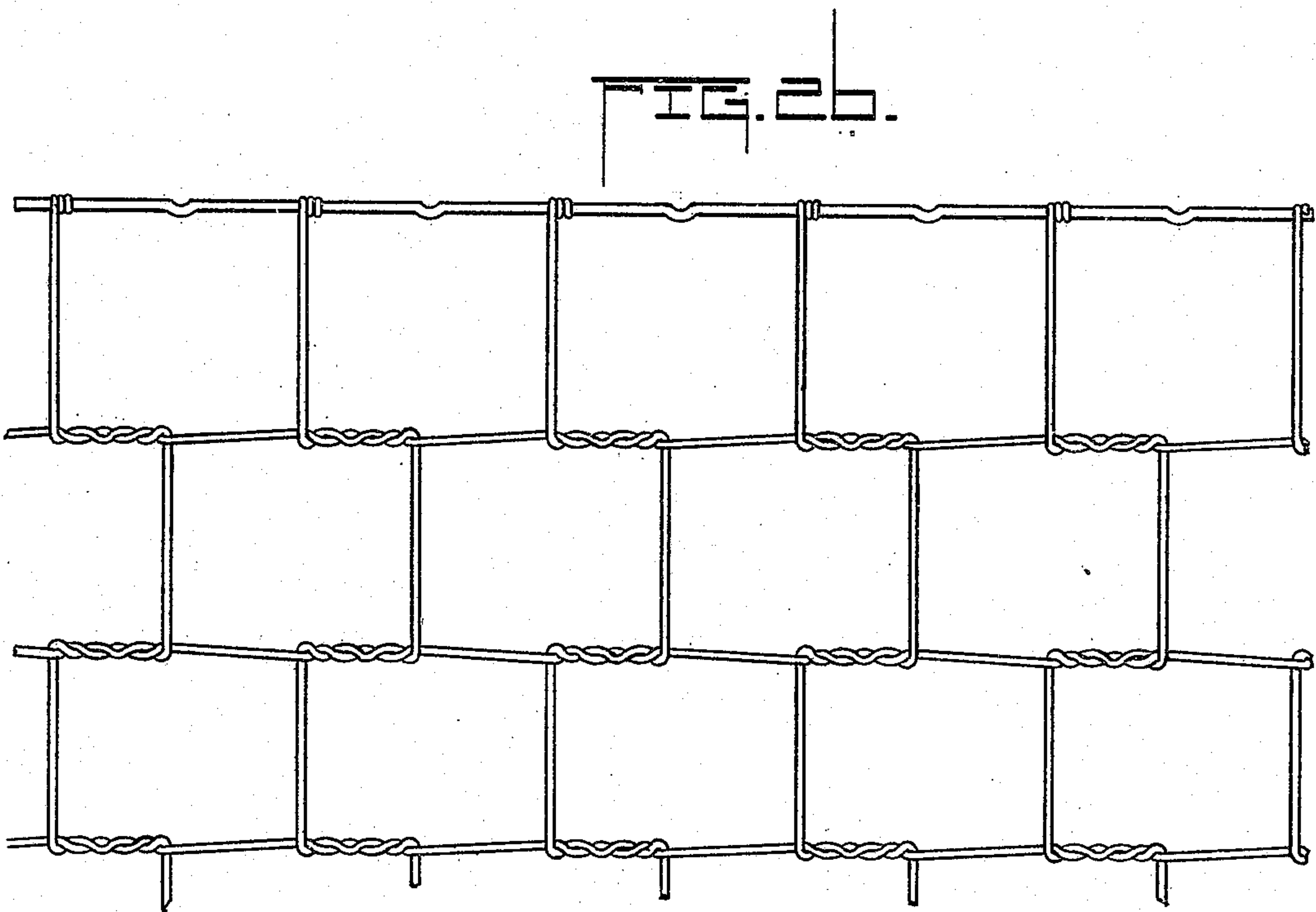
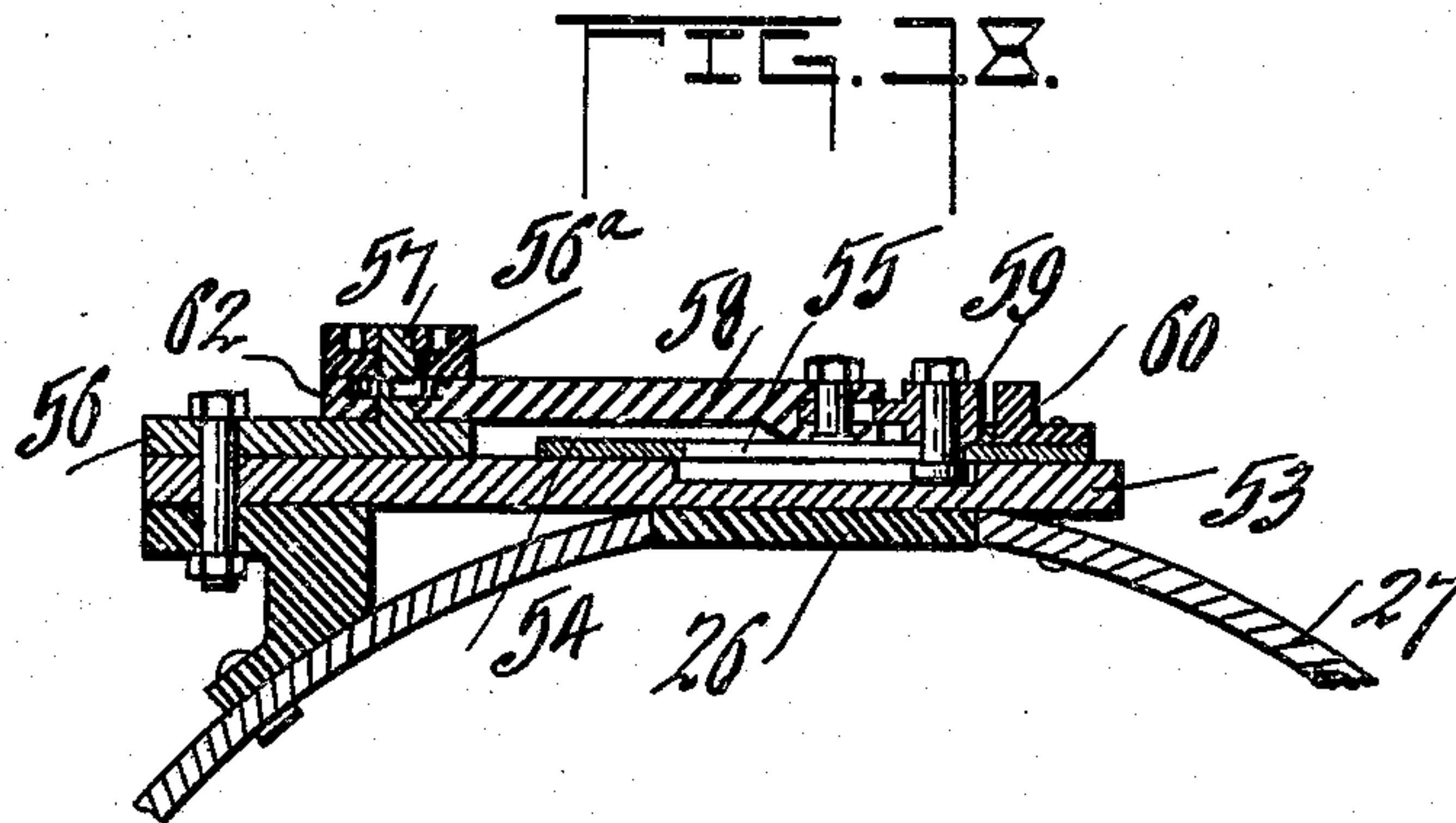
Inventor.
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Chas. H. LaPorte Atty.

W. F. DREXLER, JR.
WIRE FABRIC MACHINE.
APPLICATION FILED AUG. 10, 1906.

930,944.

Patented Aug. 10, 1909.

9 SHEETS—SHEET 8.



Witnesses:
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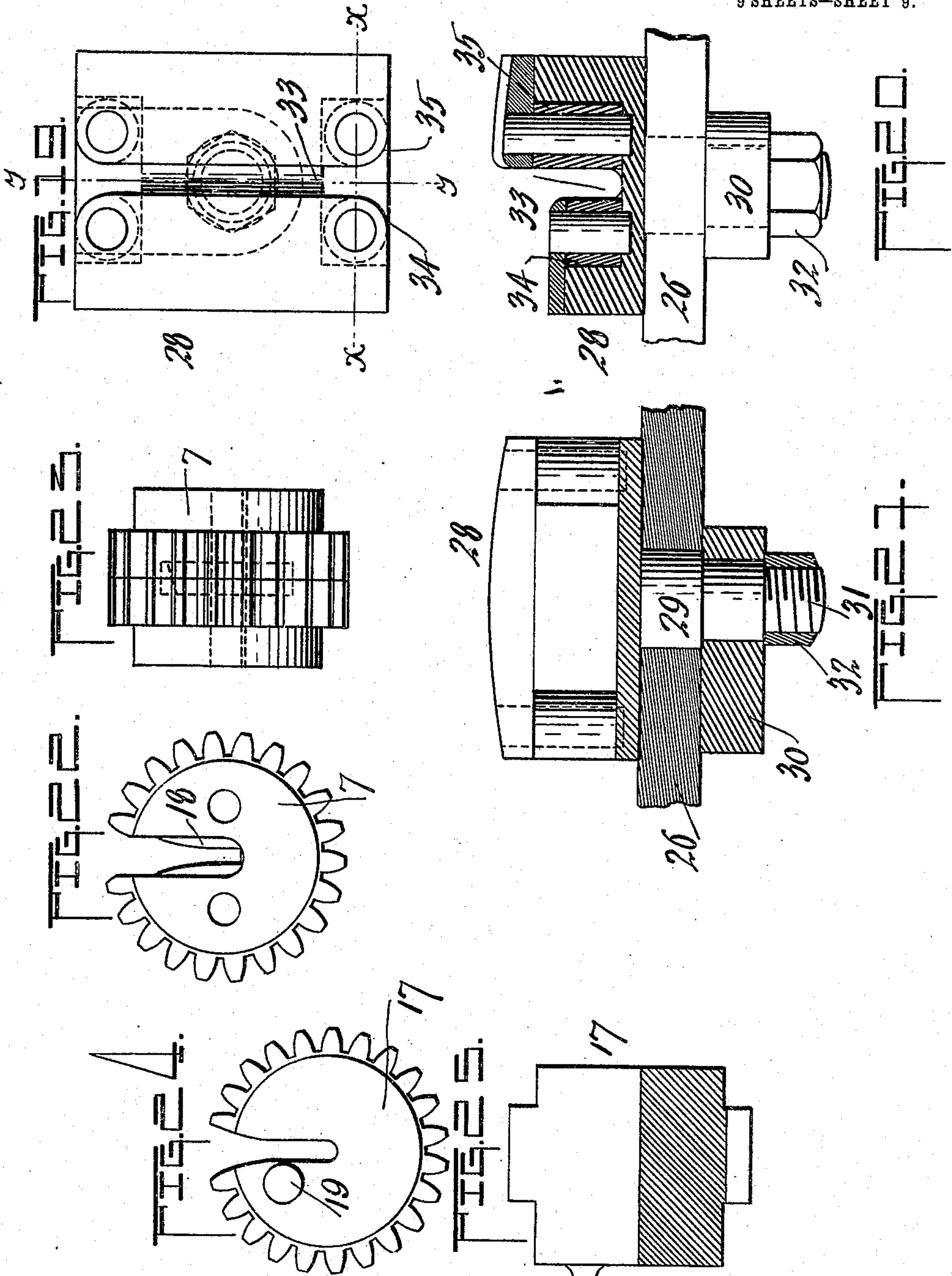
Inventor:
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WIRE FABRIC MACHINE.
APPLICATION FILED AUG. 10, 1906.

930,944.

Patented Aug. 10, 1909.

9 SHEETS—SHEET 9.



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UNITED STATES PATENT OFFICE.

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WIRE-FABRIC MACHINE.

No. 930,944.

Specification of Letters Patent.

Patented Aug. 10, 1909.

Application filed August 10, 1906. Serial No. 330,073.

To all whom it may concern:

Be it known that I, WILLIAM F. DREXLER, Jr., a citizen of the United States, residing at Morton, in the county of Tazewell and State of Illinois, have invented certain new and useful Improvements in Wire-Fabric Machines; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same.

This invention has reference to machines for the manufacture of wire fence fabric and relates particularly to an improvement to that type of fence weaving machines wherein the twistors for intertwisting the wires which form the fabric are revolubly mounted on a twister support adapted to travel in a continuous orbit.

One of the objects which I have in view is a support adapted to travel in a continuous orbit on which is mounted a series of rows of forming blocks or dies adapted to receive stay blanks as the said support is revolved and to shape the said stay blanks into the form in which the said stays will appear when woven with a series of longitudinal stringer or strand wires, and to means for delivering the formed stays to a series of rows of twistors revolubly mounted in a support adapted to travel in a continuous orbit.

A further object of the invention is a revoluble drum on which is pivotally mounted a series of longitudinal and circumferential rows of forming blocks or dies and to means for oscillating the forming blocks or dies in each row in one direction during a partial rotation of said drum and for returning the same to their normal positions during the further rotation of said drum.

A further object of the invention consists in means for feeding and simultaneously straightening a stay blank; a revoluble drum provided with a series of rows of movably supported forming blocks or dies for receiving said stay blanks and shaping the same after said stay blanks have been severed into their proper lengths; means for severing the stay blanks; means for actuating the said forming blocks or dies for shaping the stay blanks into a suitable form; means for discharging the formed stays from the said drum during its rotation, and means for returning the stay forming blocks or dies to

their normal positions on the drum after the discharge of the formed stays therefrom.

For a further and full description of the invention herein and the merits thereof, and also to acquire a knowledge of the details of construction of the means for effecting the result, reference is had to the following description and drawings hereto attached.

While the essential and characteristic features of the invention are susceptible of modification, still the preferred embodiment of the invention is illustrated in the accompanying drawings, in which:—

Figure 1 is a general plan view in outline of one form of wire fence machine with my improvements attached thereto, parts of the frame and support being shown as broken away; Fig. 2 is a front elevation of the devices seen in plan in Fig. 1; Fig. 3 is an end view looking at the right hand side of Fig. 2; Fig. 4 is an enlarged longitudinal cross section through the stay forming drum and showing a portion of a twister support; Fig. 5 is a transverse cross section through the stay forming drum and parts coöperating therewith and also showing a cross section of a portion of the twister support and twistors mounted therein; Figs. 6, 7, 8, 9 and 10 show in plan a partial row of stay forming blocks or dies as the same appear when they receive a stay blank, as the stay is held preparatory to the blocks being oscillated to form the stay and the different steps in the operation of moving said forming blocks or dies to form the said stay blanks into suitable form; Figs. 11, 12, 13 and 14 are bottom plan views of parts connected with the lower faces of the forming blocks or dies and their positions are similar to the positions of the parts shown in Figs. 6, 8 and 10 respectively, with the exception that Fig. 14 shows a bottom plan view of such parts as they are being returned to their normal positions; Figs. 15 and 16 are sectional views in elevation taken longitudinally through Fig. 14, for the purpose of showing in detail the construction of certain plates and bars to which are attached rollers for operating the forming blocks or dies; Fig. 17 is an end view of the stay forming drum showing the position of the cam and rollers which ride over the same, adapted to return the stay forming blocks or dies to their normal positions; Fig. 18 is an enlarged longitudinal cross section through certain

clamping parts which are employed for gripping the stay blanks, preparatory to the stay blanks being bent into suitable form by the stay formers or dies; Fig. 19 is a plan view of one of the stay forming blocks or dies; Fig. 20 is a vertical cross section on the line $x-x$ of Fig. 19; Fig. 21 is a longitudinal section on the line $y-y$ of Fig. 19; Figs. 22 and 23 show enlarged front and edge views of a twister for twisting the intermediate portions of a stay to the strand or stringer wires; Figs. 24 and 25 show a face and sectional view of a twister adapted to coil or wrap the ends of a stay about the selvage or margin wires; Fig. 26 shows a section of one form of fence adapted to be made on my machine.

On Jan. 9, 1905, William Grimm and myself filed an application for patent for improvements in wire fabric machines, which was given Serial No. 240,375. This machine consisted of a revoluble drum adapted to move in a continuous orbit, having a series of rows of twisters revolubly mounted thereon and adapted to receive a series of previously formed stays which were automatically delivered to the rows of twisters as they moved into position. The revoluble twister drum in the present application is somewhat similar to that described in the application above referred to with certain exceptions which will be hereinafter noted, but attention has been called to this application as it is thought unnecessary to show and describe a complete twister drum, with the twist-ers thereon, and the mechanism which is employed for actuating the said twist-ers during the movement of the drum. Except, that in the present application the ends of the stays are adapted to be coiled about the selvage or margin wires instead of being intertwisted therewith.

One form of fence has been shown in the drawings (Fig. 26) and yet it is to be understood that with slight modifications the style of fence may be changed. That is to say, while in the present application I prefer to show that the fabric is made with the ends of the stays coiled or wrapped about the margin or selvage wires, yet, it could be arranged so that the ends of the stays would be intertwisted or interlocked with the margin or selvage wires, substantially in the same manner as they are shown in the application for improvements in wire fence machines above referred to.

Attention is here called to the application for wire fence filed by William Grimm on June 14, 1905, bearing Serial No. 265,283, which shows several different forms of fabric which may be made on this machine, however, Fig. 3 in such application for improvements in wire fence, illustrates the preferred form. Attention is further called to the application for patent filed by William Grimm and myself on Sept. 13, 1905, bearing Serial

No. 278,213, for improvements in wire stay bending machines, wherein stay forming blocks or dies are employed, which are in some respects similar to the stay forming blocks or dies shown and described in this application.

In the present application the twister drum is adapted to be provided with a series of longitudinal and circumferential rows of revolubly mounted twist-ers, the spacing of the twist-ers being at graduated distances apart necessitating the stay forming blocks or dies being correspondingly arranged; however, it is to be understood that they may be placed at uniform distances apart if it is so desired. By spacing the twist-ers and forming blocks at graduated distances apart it insures the manufacture of a wire fence fabric where the longitudinal stringer or strand wires are at graduated distances, producing a fabric where the meshes at the bottom of the fabric are very close together. The longitudinal, stringer or strand wires, and the selvage or margin wires may be fed to the twister drum from a series of spools, reels or coils of wires, in any suitable manner, the twister drum serving as a positive feed for drawing the said wires from the reels, spools or coils and together with the stays delivering the same in the form of a finished fabric to a suitable wrapper or take-up that rolls up the finished fabric. During the passage of the longitudinal wires of the fabric over the twister drum, stays are adapted to be deposited in the twist-ers and the twist-ers are actuated during a partial revolution of the drum for intertwisting or interlocking the stays with the longitudinal wires where they intersect, all of which will become apparent and be better understood from the following description.

Like numerals of reference indicate corresponding parts throughout the figures.

In the drawings a support which will be hereinafter referred to as the twister drum, comprises a shaft 1 which is adapted to be journaled at its opposite ends in boxings formed upon or attached to uprights or standards 2, forming a part of the main frame of my machine. In the drawings there is only one of the standards or uprights 2 shown, as the machine is of considerable length and only one end of the machine is shown. The standards 2 at their lower front ends are adapted to be connected by the braces or sills 3 and they may be otherwise braced if it is so desired. The twister drum further consists, of the disks 4 which are secured to and suitably spaced apart on the shaft 1. Interposed and extending between the said disks are a series of pairs of parallel frame supports 5, see Fig. 5, which are suitably spaced apart. At intervals throughout the length of these supports are secured plates 6 in which are revolubly mounted

twisters 7, the same having slotted portions 8 for the reception of certain wires and provided with toothed peripheries whereby each row of twisters may be actuated simultaneously through the agency of rack bars 9, all of which is best seen in Fig. 5. The plates 6 are slotted at 10 to correspond to the slots 8 in the twisters 7, and the supports 5 are likewise slotted at 11 which correspond with the slots in the plates 6 and the twisters 8. The rack bars are adapted to have longitudinal movement between the parallel supports 5 and are reciprocally mounted on rests or bars 12 to which the lower edges of the supports 5 are connected. The supports for the rack bars, the rack bars, the plates which serve as bearings for the twisters, and the twisters, are all shown in a general way, and while the twister drum has been illustrated in outline and generally referred to, no means have been shown for operating the rack bars as this is not thought to be material in this case as it is intended that the twisters may be actuated either by rack bars, or some other longitudinally movable means or gearing, if it is so desired.

The longitudinal wires, such as stringer, strand, margin or selvage wires, are generally referred to as 13, see Fig. 5, and are fed to the twister drum in the manner heretofore indicated, by being passed partially around the drum and through the slots in the plates 6 and also the slots in the twisters 7. It is intended that when the stays are dropped onto the twister drum, portions of the stays will be seated in the slots of the plates 6 and also the slots of the twisters 7 and when the said twisters are actuated they will be rotated a sufficient number of times to intertwist or interlock that portion of the stays seated in the plate 6 and the twisters 7, with the stringer wires 13, substantially as is shown in Fig. 26 which illustrates a section of a fabric. It is intended that the twister drum shall be revolved in a continuous orbit, which will facilitate in the continuous manufacture of woven fabric, the stays which will cross the stringer wires being deposited onto the twister drum and into the twisters during the continuous rotation of said twister drum.

Any suitable means may be employed for transmitting motion from a suitable source of power to the shaft 1; but in Fig. 3 on the far end of the shaft 1, I have shown an enlarged gear wheel 14 which intermeshes with the pinion 15 carried on a driving shaft 16 which may be connected by a belt or some other suitable means with a suitable source of power, the shaft 15 being journaled in an extension of the frame from the uprights or standards 2.

In Fig. 26 the section of the fence fabric there shown, shows that the portions of the stays which intersect with all of the intermediate stringer wires are preferably inter-

locked by a right and left intertwist of the said stays with the stringer wires, this is accomplished through the provision of that form of slotted twister which is shown in Fig. 5 and best seen in detail in Figs. 22 and 23. Fig. 26 also shows that the ends of the stays are coiled or wrapped about the selvage or margin wires. This I accomplish by placing at the end of each series of twisters a slotted twister which is indicated as 17, best seen in Figs. 24 and 25. The twisters 17 differ from the twisters 7 in that the twisters 7 have clamping parts 18 which serve to clamp the wires which are seated in the said twisters, while the outside or selvage twisters 17 are minus the parts 18 employed in the twisters 7; the ends of the stays are dropped alongside of and adjacent to one face of the twisters 17, on which said face is provided a coiling pin 19, adapted through the rotation of the said selvage twisters to engage with the free ends of the stays and coil or wrap them about the selvage or margin wires extending through the twister 17.

I will now describe the forming means co-operating with the twister drum, for receiving successively stay blanks and bending the said stay blanks into suitable form and depositing the formed stays into each row of twisters as they are successively brought into position by the continuous rotation of the twister drum; and in connection with said forming mechanism, I will describe the means for feeding the said stay blanks thereto, cutting such stay blanks into proper length, and the manner of depositing the same on to the forming mechanism and for holding one end of the stay blanks preparatory to the operation of the forming mechanism for bending the stay blanks; the description to also include means partially overlying the twister drum which discharges or insures the delivery of the formed stays into the rows of twisters as they come into proper alignment with said forming mechanism.

20 denotes a longitudinally supported shaft, preferably located in vertical alignment and parallel with the axis of the twister drum shaft 1. The shaft 20 is journaled at its opposite ends in brackets 21 which are suitably secured to a frame part 22 supported at its opposite ends on the standards or uprights 2. Said shaft 20 receives its power from the shaft 1 through and by means of the gear 23 on the shaft 1 which intermeshes with the gear 24 on the shaft 20. On the shaft 20 are revolvably carried a pair of spaced disks or drum heads 24^a to which are secured the opposite ends of a series of longitudinal bars 26 which are preferably spaced equidistant from each other around the heads or disks 24^a, substantially as seen in Fig. 5 and interposed between the said bars and having their opposite ends secured to the heads or disks 24^a are a series of filler plates

27. The heads or disks 24^a, the bars 26 and plates 27 form the foundation of the former drum on which are pivotally mounted the forming blocks or dies 28 which are arranged in a series of longitudinal and circumferential rows on the drum composed of the heads 24^a, bars 26 and plates 27. Such forming blocks or dies are arranged in a series of rows and are pivotally connected with the bars 26, being preferably spaced on said bars at graduated distances for the purpose of forming stays to be interweaved with a series of runner wires so that the meshes of the fabric when completed will be at graduated distances from the bottom to the top of said fabric. Each forming block or die 28 has a central depending stud 29 which passes through the bars 26; and on said depending studs 29, just below the bars 26, are secured the cam blocks 30; and for holding such cam blocks and the dies in working position on the bars 26, the lower ends of the studs 29 are threaded as at 31 and are adapted to be engaged by the nuts 32. The body portions of the forming blocks or dies 28 are preferably made rectangular in form and with a longitudinal groove 33 extending down into and through the same. I have provided the forming blocks or dies with the body portions thereof upon the opposite sides of the slots or grooves 33 higher on one side than on the other, for purposes which will become apparent and at the opposite ends of the said slots or grooves and upon the opposite sides and at each end thereof I have provided the rollers 34 and 35. The forming blocks or dies 28 are so positioned on the bars 26 to which they are connected that the stay blanks when they are dropped on the drum supporting the said forming blocks or dies will fall first upon the low side of the said blocks or dies and in the movement of the forming drum will, by suitable means be forced against the higher portions of the blocks and caused to drop into the slots 33 of said blocks or dies, preparatory to the operation of the blocks for bending right angle portions into the stay blanks. In their normal position the forming blocks or dies 28 have their slots or grooves 33 extending longitudinally with the axis of the drum on which they are supported and they remain in this position during the rotation of the said drum until after a row of formers have received a stay blank, when by the rotation of the drum, the said blocks or dies are caused successively to make suitable turns on the bars 26; alternate blocks swinging in the same direction, thus forming angular portions in the stay blanks; and after the proper bending of the stay blanks the drum rotates into a position where a row of forming blocks or dies overlies and is co-incident with a row of twistors on the twister drum when the formed stays are caused to be discharged

into the said twistors, after which and during the remainder of the rotation of the former drum, the blocks or dies are returned to their normal positions with the slots or grooves extending longitudinally with the axis of the drum. The stays which are used for making the said fabric are preferably provided with right angle portions; consisting respectively of alternate vertical and horizontal portions, the horizontal portions to be intertwisted with the running wires of the fabric and the vertical portions to extend between adjacent longitudinal wires and the opposite ends of said stays to be coiled or wrapped about the margin or selvage wires. By vertical and horizontal portions are meant the portions of the stays, which assume those positions when the fabric has been placed in a vertical position. To form such angular portions in the stays, it is only necessary to oscillate the forming blocks 28 one-quarter way around as shown in Fig. 10.

In Fig. 4 it will be noted that the forming blocks are made to coincide with each of the intermediate twistors on the twister drum and by reason of the marginal twistors being adapted to coil the opposite ends of the stays about the margin wires, there is no necessity of providing a forming block or die for the marginal twistors as the stay blanks are left straight, substantially as appears in Fig. 10 of the drawings.

In the rotation of the former drum, a means is provided, by which each forming block beginning with that on the left hand, is operated so that adjacent blocks move in opposite directions, each successive block almost making its complete turn, before the next in line starts to operate. This operation is carried out successively with each row or set of blocks during the continuous rotation of the former drum.

The means for actuating the forming blocks or dies to partially rotate them on their pivots consists of a series of wedging bars 36 and 37. The wedging bars 37 being similar, are given a corresponding numeral and the wedging bar 36 serving the additional function of operating suitable clamping parts is given a distinguishing numeral from the other wedging bars, so as to avoid confusion, and have preferably concave faces to adapt them to ride over the surface of the former drum as the same is rotated for the purpose of engaging the forming blocks or dies during the revolution of the drum. The wedging bars are further disposed on a stationary support in such a way as to turn successively the blocks in each row beginning with the left hand block, each making almost its complete turn before the next to its right is engaged, adjacent blocks moving in opposite directions. To the support 22 is suitably secured a plate or bar 38 having a concave face 39, see Fig. 5, to

which the wedging bars 36 and 37 are adapted to be secured.

As will be noted in the drawings, particularly Figs. 6, 7 and 8, the wedging bars 36 and 37 are provided with wedge or cam faces adapted to engage with the forming blocks or dies 28, substantially as seen in Fig. 8, for swinging the said blocks one-quarter way around on their pivots for shaping a stay blank into the form shown in Fig. 10. To insure the deposit of the stay blanks, after they are straightened and cut, into a row of forming blocks or dies 28, I provide a series of guide fingers 40, some of which may be secured to and project up from the wedging bars 36 and 37, and others which are shown in plan in Fig. 1 and which are alternately disposed to those which are carried by the wedging bars 36 and 37 are secured to and project up from the plate or bar 38. The upper outer ends of the guide fingers 40 are curved as shown at 41 in Fig. 5, against which a stay blank is dropped from the straightener and guided in its fall on to the low sides of the forming blocks or dies 28 as they move into position during the rotation of the forming drum. They further assist in its deposition by forcing it into the former slots during the rotation of said former drum. The guide fingers which have been referred to as being attached to the wedging bars 36 and 37 may be formed integral with the said bars, if it is so desired, and the said fingers extend downwardly and forwardly from the lower ends of the wedging bars 36 and 37 and the plate or bar 38, as best seen in Fig. 5. The lower ends of said guide fingers terminate at a point just above the twister drum where it is adapted to discharge the formed stay blanks from the forming blocks or dies into the twisters 7 and 17. By the time that the forming blocks or dies 28 have reached the lower forward ends of the guide fingers 40, the said blocks or dies have been swung sufficiently on their pivots, so as to shape the stay blanks into the form shown in Fig. 10, and the said blocks or dies remain in this position until after the discharge of the formed stays therefrom, when, by means which will be described, the blocks are returned to the position shown in Fig. 6. To prevent accidental displacement or discharge of the stay blanks from the forming blocks or dies, it is provided that the wedging bars and guiding fingers will ride above the stay blanks in the rotation of the forming drum, as the slots or grooves in the forming blocks or dies are deep enough so that the stay blanks will ride beneath the said wedging bars as the wedging bars engage the forming blocks or dies to oscillate them on their pivots, this is very clearly seen in Figs. 9 and 10 of the drawings.

The means for insuring the discharge or removal of the formed stay blanks from the

forming blocks or dies as they coincide and overlies a row of twisters in the movement of the twister drum, consists of a series of discharge fingers 42 which are secured at a suitable point in their length to brackets 43 attached to a frame 44 supported by up-rights 45 from the cross brace 3, as best seen in Figs. 2 and 5. The fingers 42 project upwardly and rearwardly and are concave, or shaped to conform to the surface of the twister drum, as will be seen in Fig. 5 and their upper rear ends are curved upwardly or opposite to the body portions thereof so as to have a convex lower face as shown. The said fingers 42 are interposed and ride between the twisters and bearing plates supporting the same on the twister drum and the upper ends thereof are interposed and ride between the forming blocks or dies on the forming drum, all of which will be seen from an examination of Figs. 2 and 5. As the forming blocks or dies leave the lower forward ends of the guiding fingers 40, the stay blanks are caused to engage with the upper rear ends of the discharge fingers 42 and they are forced down on to the twister drum and into the twisters, as will be seen from an examination of Fig. 5 of the drawings; the forming blocks and twisters as above described, coincide as the forming blocks leave the lower ends of the guiding fingers 40 and the upper rear ends of the discharge fingers terminate at or near this point to insure the discharge of the stays into a row of twisters, as they coincide with a row of forming blocks or dies. The discharge fingers extend down and over the surface of the twister drum to a point below that at which the twisters begin to operate, to insure the stays remaining on the drum and in the twisters until they are locked there by the revolving twisters. It is preferable to set the twisters of each row in operation at a given point in the movement of the drum, and if it is desired the mechanism for actuating the said twisters may be so arranged that one or more rows of twisters may be actuated simultaneously, although it is not intended to place any limitation on the number of rows which may be actuated at a time.

Extending longitudinally through the forming drum and reciprocally supported therein are a series of pairs of bars 46, one pair of bars for each row of forming blocks or dies and disposed below the same in the said drum, see Fig. 4. These bars at one end are reciprocally mounted in one of the heads or disks 24^a and the opposite ends of the said bars are suitably secured to an elongated head 47 which are reciprocally mounted and extend through the opposite head or disk 24^a, best seen in Fig. 4 of the drawings. It is intended that the outer face of the bars 46 shall be on a plane with the

inner faces of the cam blocks referred to as 30 carried by the studs 29 of the forming blocks or dies 28; and said cam blocks when the forming blocks or dies are swung on their pivots are adapted to swing across the outer faces of the bars 46. That is to say, the cam blocks of the alternate forming blocks or dies are adapted to swing across the opposite bars 46 of each pair of bars as best seen in Figs. 13 and 14 of the drawings. With this arrangement I have provided a series of alternately spaced rollers 48 which are revolvably attached to the outer face of the bars 46; those on the extreme left of each set are adapted to be engaged by the left hand cam blocks 30 when they are swung in the operation of the first forming block or die 28 of each row, while all of them are employed in returning the forming blocks to their normal position by engaging said cam blocks. In Fig. 11 of the drawings, a bottom plan view of the bars 46 is shown and their position together with the cam blocks 30 corresponding to the position of the forming blocks or dies when they receive a stay blank preparatory to shaping the same. As the wedging bars 36 engage the first forming block or die to the left of each row of said blocks or dies and the same is oscillated on its pivot, the cam block attached thereto will engage its respective roller 48 and reciprocate the pair of bars 46 lying beneath that row of forming blocks or dies, in one direction or to the left when looking at Figs. 4 and 12. Each pair of bars 46 when projected in the manner just indicated, through the operation of the first forming block or die of each row thereof, will remain in such position until after the discharge of the formed stay into a corresponding row of twisters on the twister drum. The function of the bars 46 and rollers 48 is to return the forming blocks or dies to their normal positions after the discharge of a stay therefrom and when they are projected in one direction through the operation of the first block or die of each series they are simply placed in position to adapt the rollers 48 attached thereto to engage with the cam blocks 30 for returning the forming blocks or dies to their normal positions.

On one end of the shaft 20, preferably the right hand end thereof looking at the machine from the front, is supported a stationary head 50, which is secured to the bearing of the said shaft; and attached to the periphery of the head 50 or formed integral therewith, is a cam 51. To the outer ends and inner faces of the heads 47 to which each pair of bars 46 are connected, are revolvably connected rollers 52, the inner ends of which ride around the periphery of the head 50 and the said rollers are adapted to ride on the cam 51. When the bars 46 are projected to the left, the rollers 52 are brought adja-

cent to that portion of the cam 51 which lies in juxtaposition to the head or disk 24^a for a considerable portion of its length and at a suitable point in the revolution of the forming blocks between the time the stays are expelled and again received, the rollers 52 begin to travel adjacent to a sinuous or irregular portion of the cam 51, see Fig. 2, which is such as to move the head 47 and the bars 46 to the right, or in a direction opposite to that previously described, when the same were moved through the actuation of the first forming block or die of each series. The movement of the bars 46 through the action of the rollers 52 as they ride over the sinuous or irregular portion of the cam 51 will cause the rollers 48 to engage and oscillate the cam blocks 30 in the manner shown in Fig. 14, which will return the said forming blocks or dies to their normal or initial positions.

In depositing a stay blank into a row of forming blocks or dies on the forming drum, the longer portions of the said stay blanks are preferably at the right hand end of the machine when looking at the front, so that when the said stay blanks are formed into the right angle portions the slack of the said stay blanks will be drawn from the longer portion of the said stays. And to prevent the left hand end of the stay blanks from being projected toward the right as they are formed into their right angle portions, I arrange to clamp or grip the left hand end of each of said stay blanks during the rotation of the forming drum, and at such a time before or just at the beginning of the operation of the first forming block or die as will hold the said stay during the oscillation of said first forming block or die. The clamping or gripping means just referred to, consists of a series of base plates 53, one for each row of forming blocks or dies 28 and secured to said plates 53 are bars 54 provided with elongated slots 55. To one end of the base plates are pivotally connected crank arms 56, to which at 57 are pivotally connected longer arms or reaches 58; and at the junction of the said arms and reaches are carried rollers 56^a. The arms 58 have a pivotal connection at their opposite ends with the gripping blocks 59 which are slidably mounted on the bars 54 and retained in working position thereon by pins or studs which operate in the slots 55 of the said bars 54, as best seen in cross section in Fig. 18. Coöperating with the gripping blocks 59 are companion blocks 60 which are secured to the bars 54, as shown in the figures. When the stay blank is dropped into a row of forming blocks or dies 28, as seen in Fig. 6 and just prior to the wedging bar 36 engaging with the first forming block or die 28 a cam face 61 thereof will engage the rollers supported by arms 57 and 58, as above stated, and will move the arms in the

manner seen in Fig. 7, sliding the gripping block 59 along on the bar 54 until the stay has been forced against said gripping block 60 for firmly holding the said stay blank at this end, until, the first forming block or die 28 has been oscillated or turned one-quarter way around as shown in Figs. 8 and 9, when that portion of the wedging bar 36 will have passed beyond the pivotal connection on the reach 58 with the crank arm 56 when the coil spring 62, see Fig. 18, will operate to return the crank arm 56, the reach 58 and the gripping block 59 to their normal or initial position as shown in Fig. 9.

As the forming drum is revolved, there is provided means for holding the right hand end of the stay blank as the last block of the series of forming blocks or dies of each row is operated, so that the free end of the stay blank will extend longitudinally with the opposite end thereof, both of which ends serve as the portions of the stay which are adapted to be coiled or wrapped around the selvage wires of the fabric. Attached to the surface of the forming drum and spaced at suitable intervals around the same I have provided the engaging blocks 63 with which the right hand end of a stay blank will engage as the last block of a series is being rotated, substantially in the manner seen in Fig. 9 and after the last forming block has completed its movement the right hand end of the stay blank will have assumed a position shown in Fig. 10.

The wire which is fed across the machine and from which the stay blanks may be severed, may be fed to the said machine from a coil of wire or from spools or reels on which the said wire is wrapped. It is preferable to feed the wires from which the stay blanks are severed, through a suitable straightening and guiding device and while I have shown and will refer to one form of straightening and guiding device, it is to be understood however, that any suitable form serving the purpose, may be substituted. And while I have shown that a series of similar cutting members are adapted to and movable with the forming drum, it is understood that both of the cutting members severing a stay blank, from a length of wire, may form a part of the straightening and guiding means. In fact, there are several well known straightening and guiding devices which might serve the purpose equally as well as the one herein adopted and I do not wish to be confined in the present device to such straightening and guiding mechanism.

The straightening and guiding means consists of a series of vertically and horizontally rotatable members 64 and 65, see Figs. 1 and 2, which are journaled in a suitable support 66. The feeding rollers for advancing the wire from which the stay blanks are severed are indicated as 67 and 68 which are jour-

naled on short spindles 69 which have a bearing in suitable boxings attached or secured to the support 66 and the manner of transmitting motion to said feeding rollers, consists of a short driving shaft or spindle 70 on one end of which is a sprocket pinion 71 driven by a sprocket chain 72 from any suitable source of power; and on the opposite end of the said short shaft or spindle 70 is a bevel gear 73 which intermeshes with the bevel gear 74 carried on the shaft or spindle on which is carried the lower feeding roller 68, and on such shaft is also carried a spur pinion which meshes with the spur pinion on the shaft or spindle on which is carried the feeding roller 67. These parts are all best seen in Figs. 1 and 2. The support 66 in advance of the feeding rollers 67 and 68 is provided with a bearing block 75 through which the stay wire is adapted to be fed and the front face of the said block is adapted to serve as one of the cutting members for severing the stay wire into proper lengths. The stay wire passes from the block 75 through a guide consisting of the hinged bars 76 and 77; the latter of which is provided with a wire groove, 78, see Fig. 5. The parts 76 and 77 are adapted to be hinged together throughout their length at short intervals as at 79 and in such a manner that the bar 77, may, at predetermined intervals, swing upwardly and away from the bar 76 to allow a stay wire blank, after it has been severed from a length of wire, to be dropped on the curved forward ends of the guiding finger 40 and from which these wires find their way into the grooves or slots of the succeeding rows of the forming blocks or dies. The guiding bars 76 and 77 may be supported in any suitable manner but I have shown the same supported by the brackets 79^a, one of which has its lower end connected with the frame 44 and the other is supported from one of the standards or uprights 2, see Figs. 1 and 2.

On the forming drum is suitably supported a series of cutting members 80, one each located at the left hand end of each row of forming blocks or dies, as shown, and said cutting members are adapted to co-act with the cutting face of the block 75 for severing a stay blank from the coil of wire as each row of forming blocks or dies move into position to receive the same from the guiding bars 76 and 77. The cutting members are so positioned on the forming drum with respect to the forming blocks or dies and the means for operating the same, that a wire stay blank is severed in sufficient time to enable their discharge, by means to be described, from the guiding bars 76 and 77, so that they will find their way into the slots or grooves of a row of forming blocks or dies when they have moved into position, through the rotation of the drum, for receiving the same. In this connection it might be said,

that the cutting means for severing a stay blank from a length of wire may be so positioned that more or less of an end of a stay may be left at the left hand end thereof, so that when the end of the stay is coiled or wrapped around a margin or selvage wire, that it may be completely wrapped through the rotation of the selvage twisters around the selvage or margin wires or a short length left to serve as a barb, and this is also true with respect to the length of the stay blank which may be correspondingly lengthened or shortened so as to form a barb or not, at the opposite end of the said stay, if it is so desired. The bar 77 is raised through the action of the forming drum and may be returned by any suitable means; in this instance the return of the bar has been accomplished through a yielding means. At or near the opposite ends of the bar 77 are attached or secured arms 81 which extend downwardly and forwardly and beneath the bar 76, as best seen in Fig. 5, and with the ends of the extensions of said arms are adapted to engage a series of blocks 82 arranged in a circumferential row on the forming drum and at the opposite ends of each row of forming blocks or dies, see Fig. 1. These blocks, during the rotation of the forming drum, successively engage with the arms 81 and swing the bars 77 upwardly, which said movement will release a stay blank from said bars, and allow the same to fall on the forming drum. As the blocks 82 disengage themselves from the arms 81, the said bar 77 might possibly, through gravity, drop back to its normal or initial position, but to obviate the danger of the said bar not returning to its original or initial position, I provide the springs 83 which engage at one end with extensions of the brackets 79^a and at their opposite ends with the bar 77, as best seen in Fig. 5.

Having thus fully described my invention, what I claim and desire to secure by Letters Patent of the United States, is:—

1. In a wire fence machine, the combination of a traveling former and a traveling twister adapted to co-incide at predetermined intervals.

2. In a wire fence machine, the combination of a traveling former and a traveling twister adapted to move in opposite directions and to co-incide at predetermined intervals.

3. In a wire fence machine, the combination of rotating forming means and rotating twisting means adapted to co-incide at predetermined intervals.

4. In a wire fence machine, the combination of rotating forming means and rotating twisting means, which are adapted to revolve in opposite directions and to co-incide at predetermined intervals.

5. In a wire fence machine, the combination of a traveling former, and means for operating the said former at predetermined intervals during its travel.

6. In a wire fence machine, the combination of a row of traveling formers, and means for actuating the said formers at predetermined intervals during their travel.

7. In a wire fence machine, the combination of a row of traveling formers spaced at graduated distances apart and means for actuating the said formers at predetermined intervals during their travel.

8. In a wire fence machine, the combination of a row of traveling formers spaced at graduated distances apart, and means for successively actuating the adjacent formers during their travel.

9. In a wire fence machine, the combination of a series of formers adapted to travel in an endless orbit, and means for intermittently actuating the said formers at the same point in travel.

10. In a wire fence machine, the combination of a row of formers adapted to travel in an endless orbit, and means for intermittently successively actuating the said formers and at the same point in their travel.

11. In a wire fence machine, the combination of a rotary drum, a series of longitudinally and circumferentially arranged formers on said drum, and means for successively actuating each row of formers during the movement of the drum.

12. In a wire fence machine, the combination of a rotary drum, a series of longitudinally and circumferentially arranged formers on said drum, and means for intermittently actuating each longitudinal row of formers and for successively actuating the formers of each row.

13. In a wire fence machine, the combination of a rotary drum, a series of longitudinally and circumferentially arranged formers on said drum, the formers of each row being spaced at graduated distances apart, and means for successively actuating the formers of each row at the same point in their travel.

14. In a wire fence machine, the combination of a series of traveling formers, means adapted to be engaged by the formers in their travel for actuating the said formers, and means independent of said first-named former-actuating means for returning the formers to their initial positions.

15. In a wire fence machine, the combination of a series of traveling formers, stationarily supported means adapted to be engaged by the formers for operating the same, and reciprocally supported means for returning the formers to their initial positions.

16. In a wire fence machine, the combination of a series of traveling formers suitably

spaced apart, and means adapted to ride between certain of said formers during the movement thereof for actuating the same.

17. In a wire fence machine, the combination of a series of traveling formers, means adapted to ride between certain of said formers for moving the same in one direction, and longitudinally movable means beneath the formers for returning the same to their initial positions.

18. In a wire fence machine, the combination of a rotary drum, a series of formers carried by the drum and suitably spaced apart, means adapted to engage with said formers during the rotation of the drum for actuating the same, and means for returning the formers to their initial positions.

19. In a wire fence machine, the combination of a rotary drum, a series of formers pivotally mounted on said drum, means for oscillating the said formers in one direction during a partial movement of the drum, and means for returning the said formers to their initial positions during the further movement of the drum.

20. In a wire fence machine, the combination of a series of traveling formers, each of which is provided with a wire-receiving groove, and means for actuating the said formers in transit.

21. In a wire fence machine, the combination of a series of traveling formers spaced at graduated distances apart, which are provided with wire receiving grooves, and means for successively actuating the adjacent formers in transit.

22. In a wire fence machine, the combination of a rotary drum, a series of formers pivotally mounted thereon, means for swinging the said formers in one direction, and means for returning the formers to their initial position.

23. In a wire fence machine, the combination of a rotary drum, a series of formers pivotally mounted thereon, and provided with a wire receiving groove, means for swinging the said formers in one direction, and means for returning the formers to their initial position.

24. In a wire fence machine, the combination of a rotary drum, a series of formers pivotally mounted thereon, which are provided with wire receiving grooves, and means for actuating the said formers in transit.

25. In a wire fence machine, the combination of a rotary drum, a series of formers pivotally mounted thereon, which are provided with wire receiving grooves, means for moving the formers in one direction in transit, and means for returning the said formers in transit.

26. In a wire fence machine, the combination of a rotary drum, a series of formers pivotally mounted thereon, means for de-

positing a stay blank into the formers, means for actuating the formers in transit, and means for discharging the stay from the former in transit.

27. In a wire fence machine, the combination of a series of traveling formers, arranged in a longitudinal row, and means for swinging adjacent formers in opposite directions.

28. In a wire fence machine, the combination of a rotary drum, a series of formers pivotally mounted thereon, means for depositing a stay blank into the formers, means for actuating the adjacent formers in opposite directions and in transit, and means for discharging the stay from the former in transit.

29. In a wire fence machine, the combination of a rotary drum, a series of longitudinally and circumferentially disposed formers pivotally mounted on said drum, and means for oscillating the adjacent formers in corresponding circumferential rows in opposite directions during the movement of said drum.

30. In a wire fence machine, the combination of a row of traveling formers suitably spaced apart and provided with wire-receiving grooves, means for depositing a stay blank in the grooves of said formers, and means for oscillating adjacent formers in opposite directions to facilitate in bending right angle portions in the said stay during the travel of the formers.

31. In a wire fence machine, the combination of a row of traveling formers, a row of traveling twistors adapted to co-incide at intervals with said formers, means for depositing a stay blank into the formers, means for actuating said formers to bend said stay into a suitable form, and means for discharging the formed stay into the row of twistors when they coincide with the formers.

32. In a wire fence machine, the combination of a row of traveling formers suitably spaced apart and provided with wire-receiving grooves, a row of traveling twistors adapted to co-incide at intervals with the said formers, means for depositing a stay blank in the formers, means for moving adjacent formers during their travel in opposite directions to bend right-angle portions in said stay blank, and means for discharging the formed stay blank into a row of twistors when they co-incide with the formers.

33. In a wire fence machine, the combination of means for forming alternate horizontal and vertical portions in stay blanks, and means for intertwisting by a right and left twist the horizontal portions of said stay blanks with strand wires to form a fence fabric.

34. In a wire fence machine, the combination of means for forming angular portions in stay blanks, and means traveling in an end-

less orbit for subsequently receiving said stay blanks and intertwisting the same with strand wires to form a fence fabric.

35. In a wire fence machine, the combination of means for forming angular portions in stay blanks, said means adapted to travel in an endless orbit, and means for intertwisting said stays with strand wires to form a fence fabric.

36. In a wire fence machine, the combination of means for forming angular portions in stay blanks, said means adapted to travel in an endless orbit, and means traveling in an endless orbit for intertwisting the stay blanks with strand wires to form a fence fabric.

37. In a wire fence machine, the combination of means for forming angular portions in a stay blank, means separate from said forming means for subsequently receiving and intertwisting intermediate portions of said stay blanks with intermediate strand wires of fence fabric, and means for coiling the opposite ends of the stay blanks around the marginal wires of said fabric.

38. In a wire fence machine, the combination of traveling means for forming angular portions in a stay blank, means for intertwisting intermediate portions of said stay blank with intermediate wires of fence fabric, and means for coiling the opposite ends of the stay blanks around the marginal wires of said fabric.

39. In a wire fence machine, the combination of traveling means for forming angular portions in a stay blank, and traveling means for intertwisting intermediate strand wires of a fabric and for coiling the opposite ends of said stay about the marginal wires of said fabric.

40. In a wire fence machine, the combination of means adapted to travel in an endless orbit for forming angular portions in a stay blank, and means adapted to travel in an endless orbit for intertwisting intermediate portions of said stay blank with a series of intermediate strand wires of a fabric and for coiling the opposite ends of said stay blank about the marginal wires of said fabric.

41. In a wire fence machine, the combination of a row of wire connecting devices, through which strand wires are carried, means for depositing a stay in said devices, and means for forming angular portions in said stay during its movement to the twisters.

42. In a wire fence machine, the combination of a row of traveling twisters and coilers at the opposite ends of said row, through which intermediate strand wires and marginal wires are carried, and a traveling stay carrier adapted to deposit a stay with intermediate portions thereof into the twisters to be intertwisted with the strand wires and the opposite ends thereof to be engaged by the coilers for wrapping the same about the marginal wires aforesaid.

43. In a wire fence machine, the combination with a wire feed containing a straightener, of a row of twisters, means for severing a stay length, and means for depositing said severed stay length onto said twisters.

44. In a wire fence machine, the combination of stay blank feeding means, containing a straightener, stay severing means, a plurality of twisting devices arranged in a row, and feeding means interposed between the blank feeding means and straightener for depositing said stays onto the twisters and for shaping said blank preceding their delivery to the twisters.

45. In a wire fence machine, the combination of mechanism for projecting and straightening a stay blank from a length of wire, means for severing the stay blank from the length of wire, a row of traveling wire connecting devices, and traveling means for receiving the severed stay blank from the straightener and for depositing it onto the row of connecting devices.

46. In a wire fence machine, the combination of mechanism for projecting and straightening a stay blank from a length of wire, means for severing the stay blank from the length of wire, wire connecting mechanism adapted to travel in an endless orbit, and means traveling in an endless orbit for receiving the stay from the straightener and delivering it to the wire connecting mechanism.

47. In a wire fence machine, the combination of mechanism for successively projecting and straightening a series of stay blanks, a series of rows of wire connecting devices adapted to travel in an endless orbit, and a series of rows of receiving and delivering members, adapted to receive successively straightened stays and for depositing them into the succeeding rows of the wire connecting devices.

48. In a wire fence machine, the combination of mechanism for successively projecting and straightening a series of stay blanks, a series of rows of wire connecting devices adapted to travel in an endless orbit, a series of rows of forming members adapted to travel in an endless orbit, and for receiving the successively straightened stays, to shape the same in transit, and to deliver such formed stays to the wire connecting devices.

49. In a wire fence machine, the combination of a series of twisting devices adapted to engage longitudinal wires of a fence fabric, and stay feeding and forming mechanism adapted to deliver a stay to said twisters with portions thereof intersecting the said longitudinal wires.

50. In a wire fence machine, the combination of a series of twisting devices adapted to engage longitudinal wires of a fence fabric, and stay feeding and forming mechanism adapted to simultaneously feed a stay to the

twisters and transverse of the runner wires and during the feeding thereof shape said stays with angular portions which intersect with said runner wires.

5 51. In a wire fence machine, the combination of a series of rows of traveling twisting devices, traveling feeding and forming mechanism for receiving and forming a stay blank and successively delivering the same to the
10 rows of twisting devices, and gripping means adapted to travel with the feeding and forming mechanism for engaging one end of the stay blanks during their movement to the twisters and the forming of said stays.

15 52. In a wire fence machine, the combination of a rotary drum, a series of twisters disposed in longitudinal and circumferential rows on said drum, a supplemental drum, a series of forming members disposed in longitudinal and circumferential rows thereon,
20 means for depositing stay blanks into each longitudinal row of formers on the supplemental drum, gripping means cooperating with the formers for holding one end of the
25 said stay blanks during the movement of the supplemental drum, means for actuating the said formers, and means for discharging said stays from the formers into the said twisters.

30 53. In a wire fence machine, the combination of a traveling support, a row of forming members pivotally mounted on said support, means for oscillating the said members, and gripping means carried by said support at one end of the row of the formers.

35 54. In a wire fence machine, the combination of a traveling support, a series of rows of forming members pivotally mounted on the said support, means for oscillating the successive rows of the said formers, and gripping
40 means movable with said support and disposed at one end of each row of the said formers.

45 55. In a wire fence machine, the combination of a rotary drum, a row of formers pivotally mounted on the said drum, means for oscillating the said formers, and reciprocally mounted means carried by said drum for returning said formers to their initial position.

50 56. In a wire fence machine, the combination of a rotary drum, a row of formers pivotally mounted on said drum, a means for operating the former at one end of said row, and means for successively actuating adjacent formers thereafter in said row, and gripping
55 means mounted on said drum and disposed at one end of said row of formers and adapted to be actuated by the means for operating the first former.

60 57. In a wire fence machine, the combination of a traveling support, a row of suitably spaced formers pivotally mounted on said support, means adapted to be engaged by said formers in the movement of their support for oscillating the said formers, and re-

ciprocally mounted means for returning the 65 said formers to their initial position.

58. In a wire fence machine, the combination of a traveling support, a row of suitably spaced formers pivotally mounted on said support, means adapted to be engaged by 70 said formers in the movement of their support for oscillating the same, reciprocating means adapted to return the said formers to their initial positions, and a cam adapted to actuate the said reciprocating means. 75

59. In a wire fence machine, the combination of a traveling support, a row of suitably spaced formers pivotally mounted on said support, means adapted to be engaged by said formers in the movement of their support 80 for oscillating the same, reciprocally mounted means on said support adapted to have a preliminary and predetermined movement imparted thereto through the action of the first former of said row, and mechanism 85 disposed at one end of said support for imparting a reversed movement to said reciprocating means and for returning the said formers to their initial positions.

60. In a wire fence machine, the combination of a traveling support, a row of suitably spaced formers pivotally mounted thereon, cam blocks connected with said formers, means adapted to be engaged by said formers in the movement of their support for oscillating the same, a longitudinally movable frame in said support, a series of rollers having a staggered arrangement on said frame, one of said rollers adapted to be engaged by the cam block on the first actuated former 100 for moving the said frame in one direction, and means for moving the said frame in the opposite direction to cause said rollers to engage the cam blocks of each of said formers for returning the formers to their initial positions. 105

61. In a wire fence machine, a forming block provided with a wire receiving groove equal to its length and opening out of the upper longitudinal face thereof, and rollers 110 disposed at the opposite ends of said groove.

62. In a wire fence machine, a forming block provided with a wire receiving groove equal to its length and opening out of the upper longitudinal face thereof and a pair of 115 rollers disposed at the opposite ends of said block and on the opposite sides of said groove.

63. In a wire fence machine, a forming block having a wire receiving groove extending longitudinally therethrough and separated by walls, one of which is higher than the other, and rollers journaled in the ends of said block upon the opposite sides of said groove. 120

64. In a wire fence machine, a forming 125 member provided with a wire receiving groove, a stud depending from said member, and a cam block attached to said stud.

65. In a wire fence machine, a forming member provided with a wire receiving groove, a stud depending from said member, and a cam block spaced from the lower face of said member and attached to said stud.

66. In a wire fence machine, a forming member provided with a wire receiving groove, rollers journaled in said member at the opposite ends of said groove, a stud depending from said member, and a cam block attached to said stud.

67. In a wire fence machine, the combination of a traveling support, a forming member having a wire receiving groove, a stud for pivotally connecting the member to the said support, and a cam block secured to said stud.

68. In a wire fence machine, the combination of a traveling support, a forming member having a wire receiving groove, rollers journaled in said member at the opposite ends of said groove, a stud for pivotally connecting the member on said support, and a cam block secured to said stud.

69. In a wire fence machine, the combination of a traveling support, a row of suitably spaced forming members each having wire-receiving grooves, studs projecting from said members for pivotally connecting the same to said support, cam blocks secured to said studs, and a reciprocally mounted frame in the said support provided with rollers adapted to engage the cam blocks aforesaid of each member.

70. In a wire fence machine, the combination of a rotary drum, a series of rows of twistors mounted thereon, a drum mounted above the twister drum, a series of rows of stay forming blocks mounted on said drum, means for simultaneously actuating both of said drums, means for depositing stay blanks into the rows of forming blocks in transit, means independent of the forming drum for actuating the forming blocks, and means for discharging the stays from the forming blocks into the twistors of the twisting drum.

71. In a wire fence machine, the combination of a rotary drum, a series of rows of twistors mounted thereon, a drum mounted above the twister drum, means for simultaneously actuating the said drums, a series of rows of forming blocks mounted on said drum, and adapted to coincide with the rows of twistors on the twister drum, means for delivering stay blanks to each row of forming blocks in transit, means independent of the forming drum for actuating the said forming blocks in transit, and means for discharging stays from each successive row of forming blocks as they coincide with the successive rows of twistors.

72. In a wire fence machine, the combination of a rotary drum, a plurality of rows of twistors mounted thereon, a forming drum mounted above the twister drum, means for

operating said drums in unison, a plurality of rows of forming blocks mounted on the forming drum, a stay blank feeder, including a wire straightener and guide, means carried by the forming drum for operating the guide to deposit stay blanks into the forming block of the forming drum, means for operating the forming blocks in transit, and means for depositing the formed stays into the twistors of the twisting drum.

73. In a wire fence machine, the combination of a rotary drum, a plurality of rows of twistors mounted thereon, a forming drum mounted above the twister drum, means for operating said drums in unison, a plurality of rows of forming blocks mounted on the forming drum, a stay blank feeder, including a wire straightener and guide, means carried by the forming drum for operating the guide to deposit stay blanks into the forming blocks of the forming drum, means independent of the forming drum for operating the forming blocks to shape the stay blanks in transit, and means operable between the forming blocks for discharging the stays into the successive rows of twistors.

74. In a wire fence machine, the combination of a row of twistors, a row of oscillatory forming members adapted to act on a stay blank as it is fed to said twistors, and means for operating each of said forming members in succession.

75. In a wire fence machine, the combination of a row of twistors capable of inter-twisting a plurality of wires from the center of their bodies outwardly, means for feeding strand wires to said twistors, means for feeding stay wires to said twistors, and formers interposed in said feed adapted to produce a plurality of right angle bends in said stays, just prior to their reception by the twistors.

76. In a wire fence machine, the combination of a row of slotted twister wheels each provided with a gear, operable means associated with said gears, means for feeding strand wires to said twistors, means for feeding stay wires to said twistors, and forming members interposed in said feed adapted to produce a plurality of right-angle bends in said stays, just prior to their reception by the twistors.

77. In a wire fence machine, the combination of a row of slotted twister wheels each provided with a gear, operable means associated with said gears, means for feeding strand wires to said twistors, a guide mounted above the twistors, means for feeding stay sections to said guide to be subsequently delivered to said twistors, and forming members interposed between said guide and twistors, adapted to produce a plurality of right-angle bends in said stay sections prior to their delivery to the twistors.

78. In a wire fence machine, the combination of a row of slotted twister wheels each

provided with a gear, operable means connected with said gears, means for feeding strand wires to said twist-ers, a guide mounted above said twist-ers, means for feeding stay sections to said guide to be subsequently delivered to said twist-ers, pivotally mounted forming members interposed between said guide and twist-ers adapted to produce a plurality of right-angle bends in said stays prior to their delivery to the twist-ers, and means for operating said forming members.

79. In a wire fence machine, the combination of a row of twist-ers, means for operating said twist-ers, a guide mounted above said twist-ers, means for feeding strand wires to said twist-ers, means for feeding to said guide a wire blank from which stay sections are severed, severing means for operating upon

said wire blank, and interposed means for forming in said stay sections a plurality of right-angle bends, just prior to the delivery of said stays to said twist-ers.

80. In a wire fence machine, the combination of a plurality of rows of traveling stay-forming members, means for moving said rows of formers in unison, and means for operating certain of the rows of forming members in one direction, while certain of the rows of forming members are being operated in the opposite direction.

In testimony whereof I affix my signature, in presence of two witnesses.

WILLIAM F. DREXLER, JR.

Witnesses:

BEN HAUTE,

CHAS. N. LAPORTE.