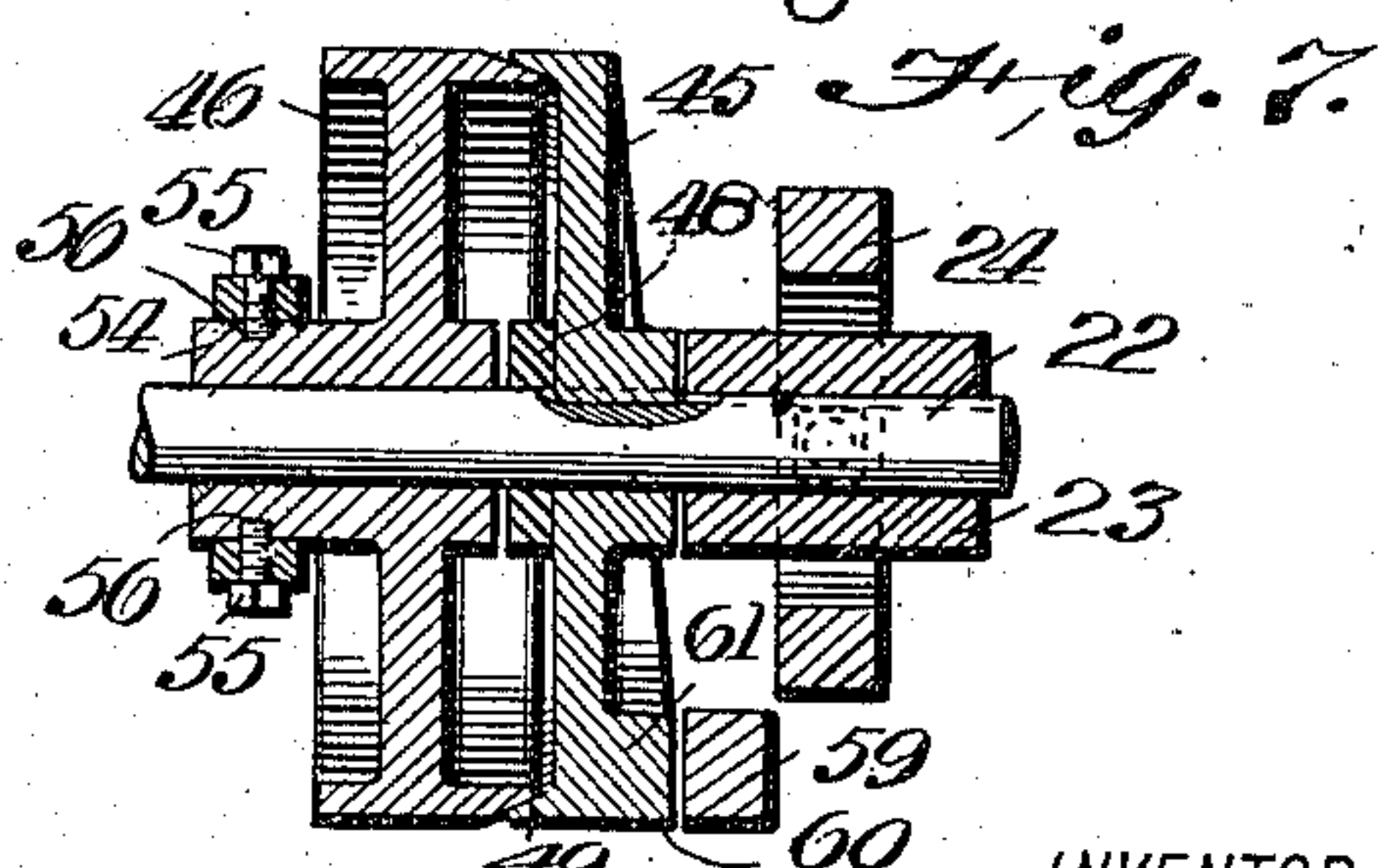
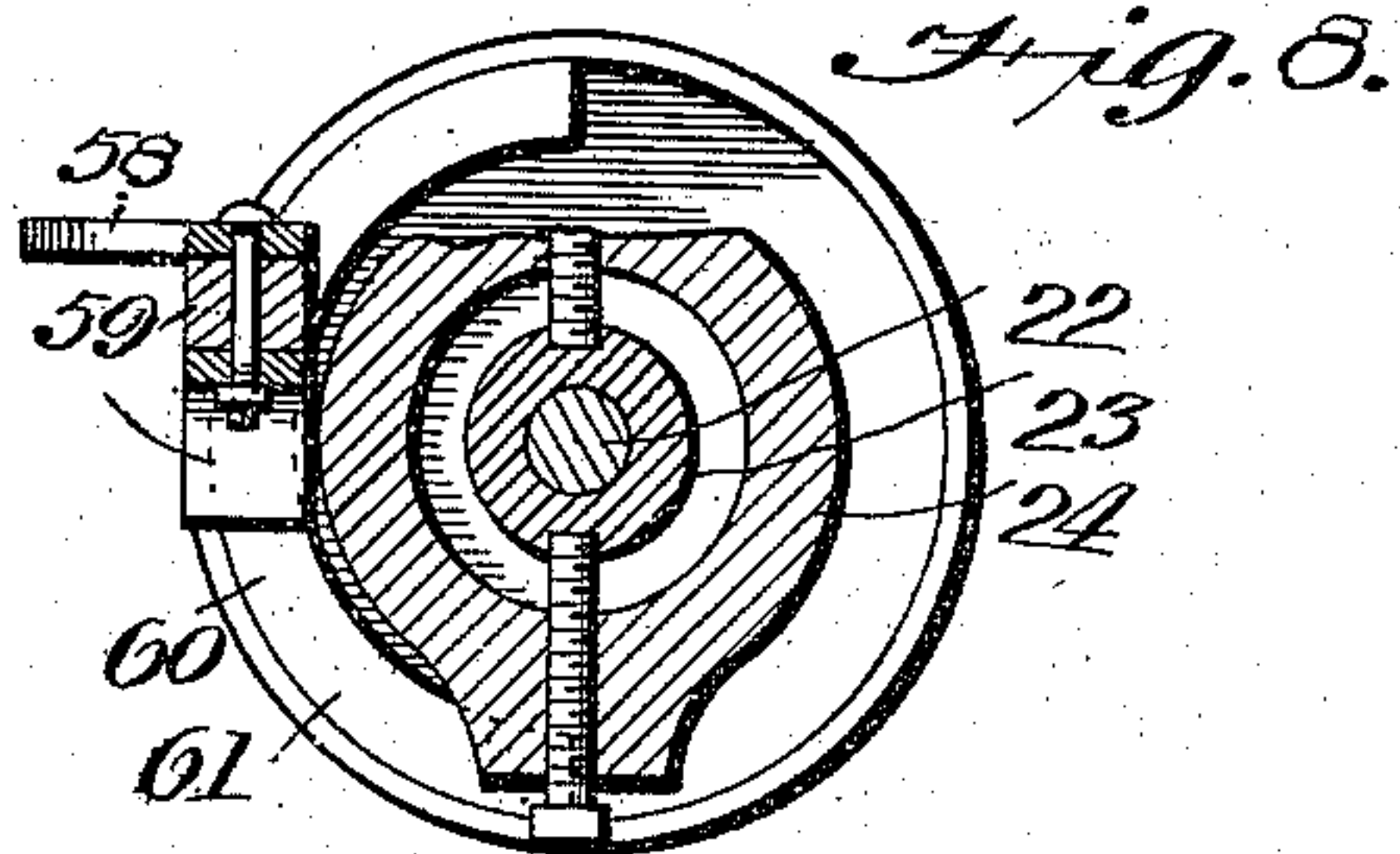
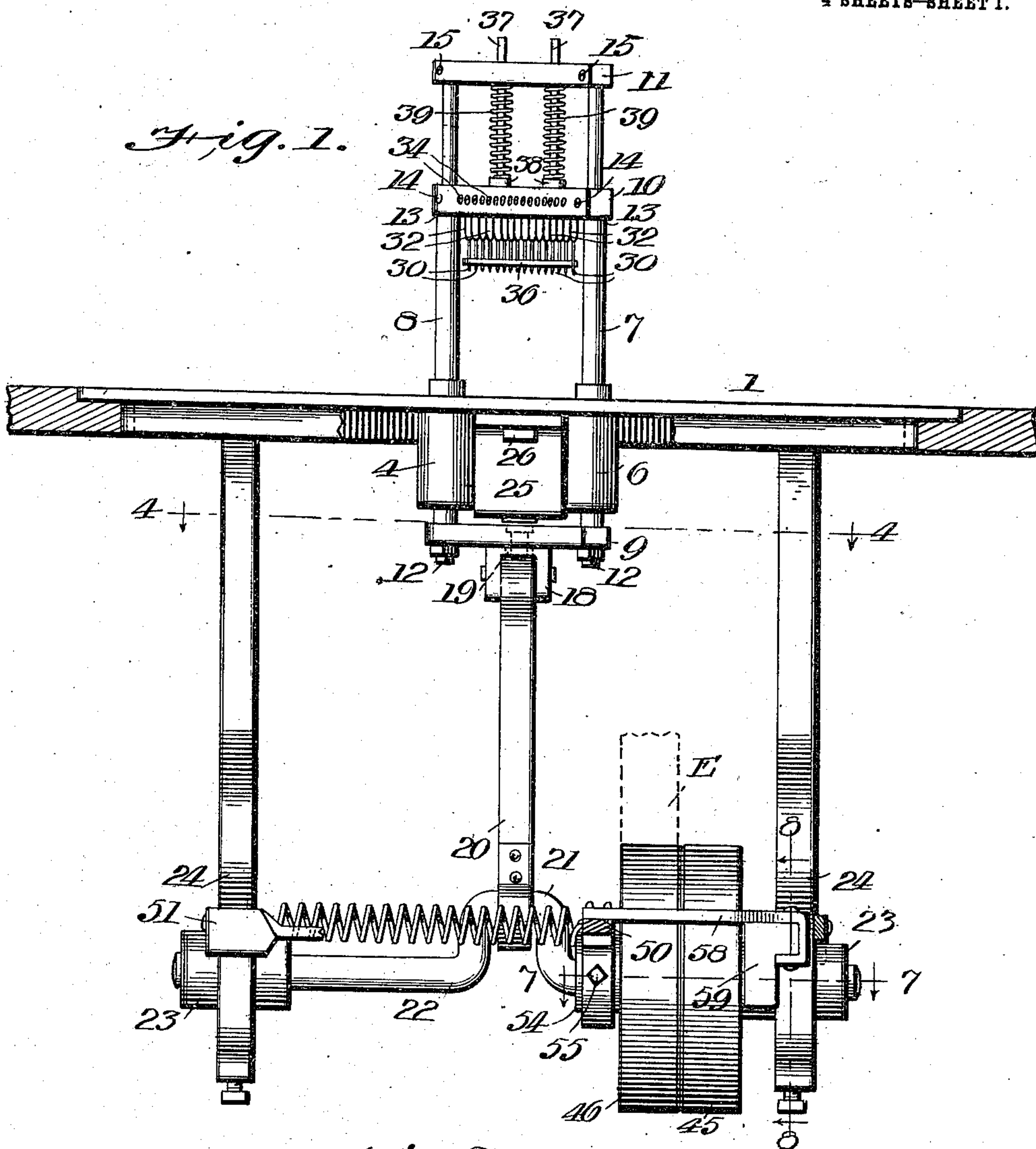


976,033.

D. S. BROWN.  
NEEDLING MACHINE.  
APPLICATION FILED APR. 16, 1909.

Patented Nov. 15, 1910.

4 SHEETS—SHEET 1.



WITNESSES  
*J. C. Barry*  
*C. E. Trimmer*

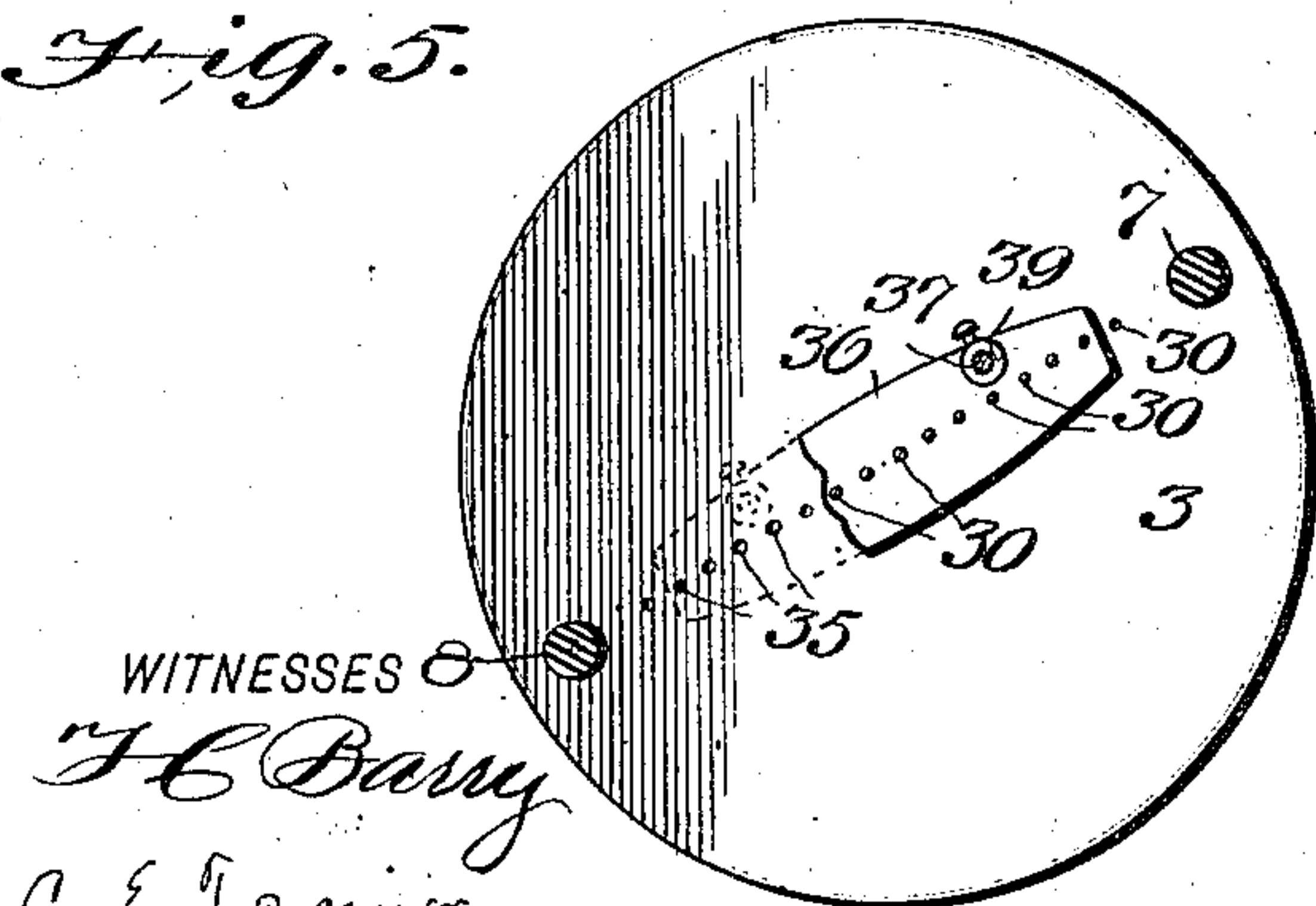
INVENTOR  
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ATTORNEYS

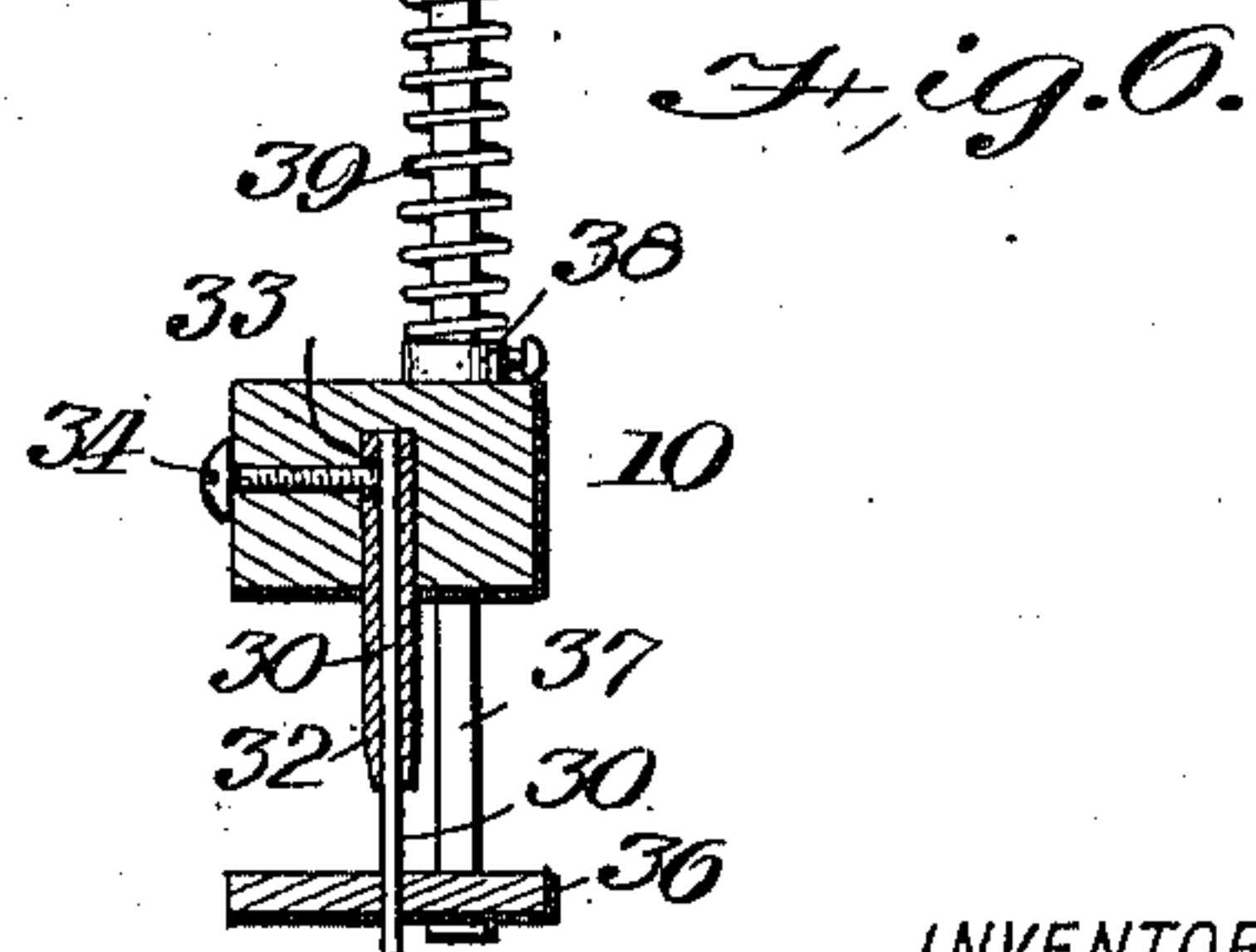
APPLICATION FILED APR. 18, 1909.

Patented Nov. 15, 1910.

4 SHEETS—SHEET 2.



WITNESSES   
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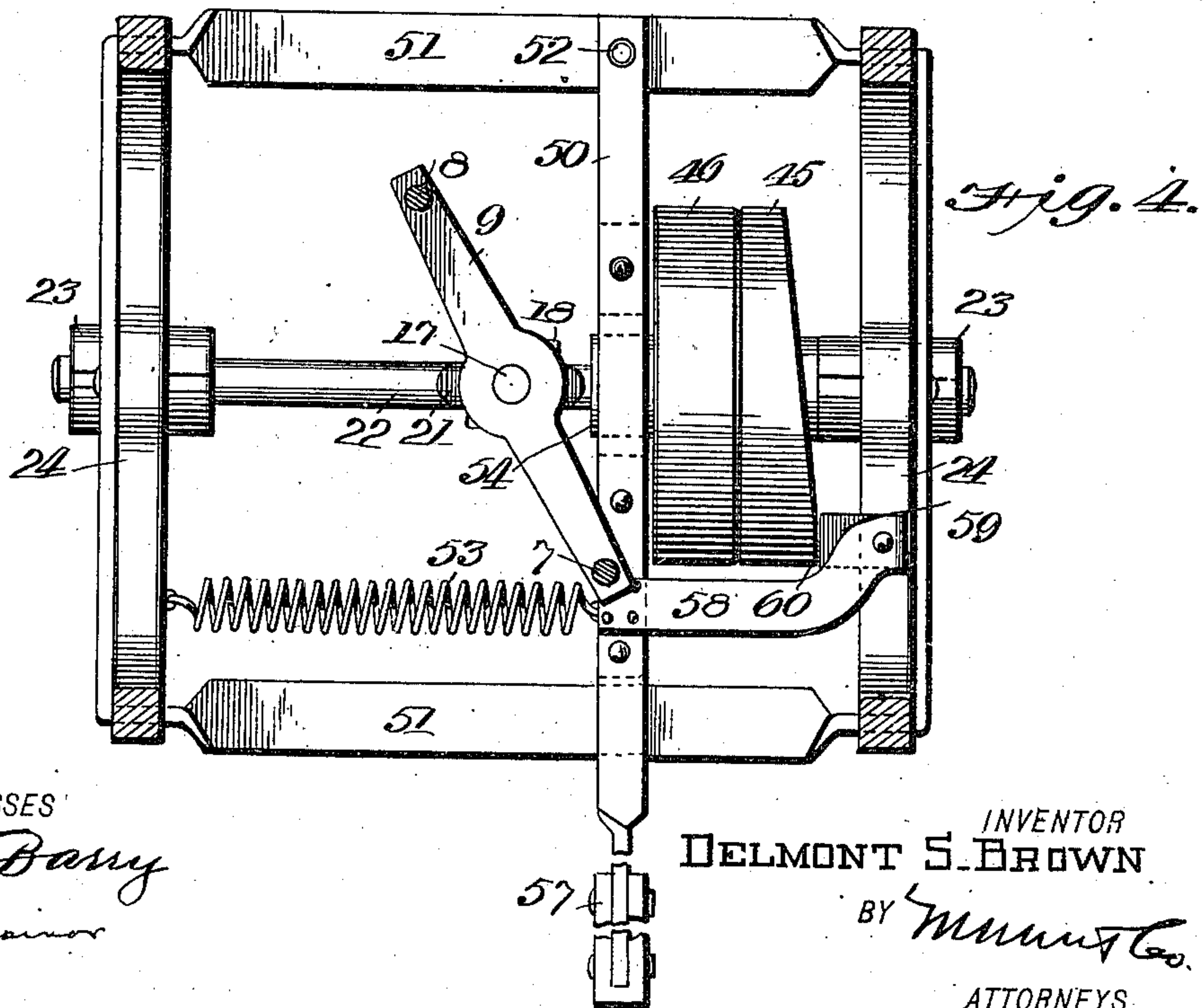
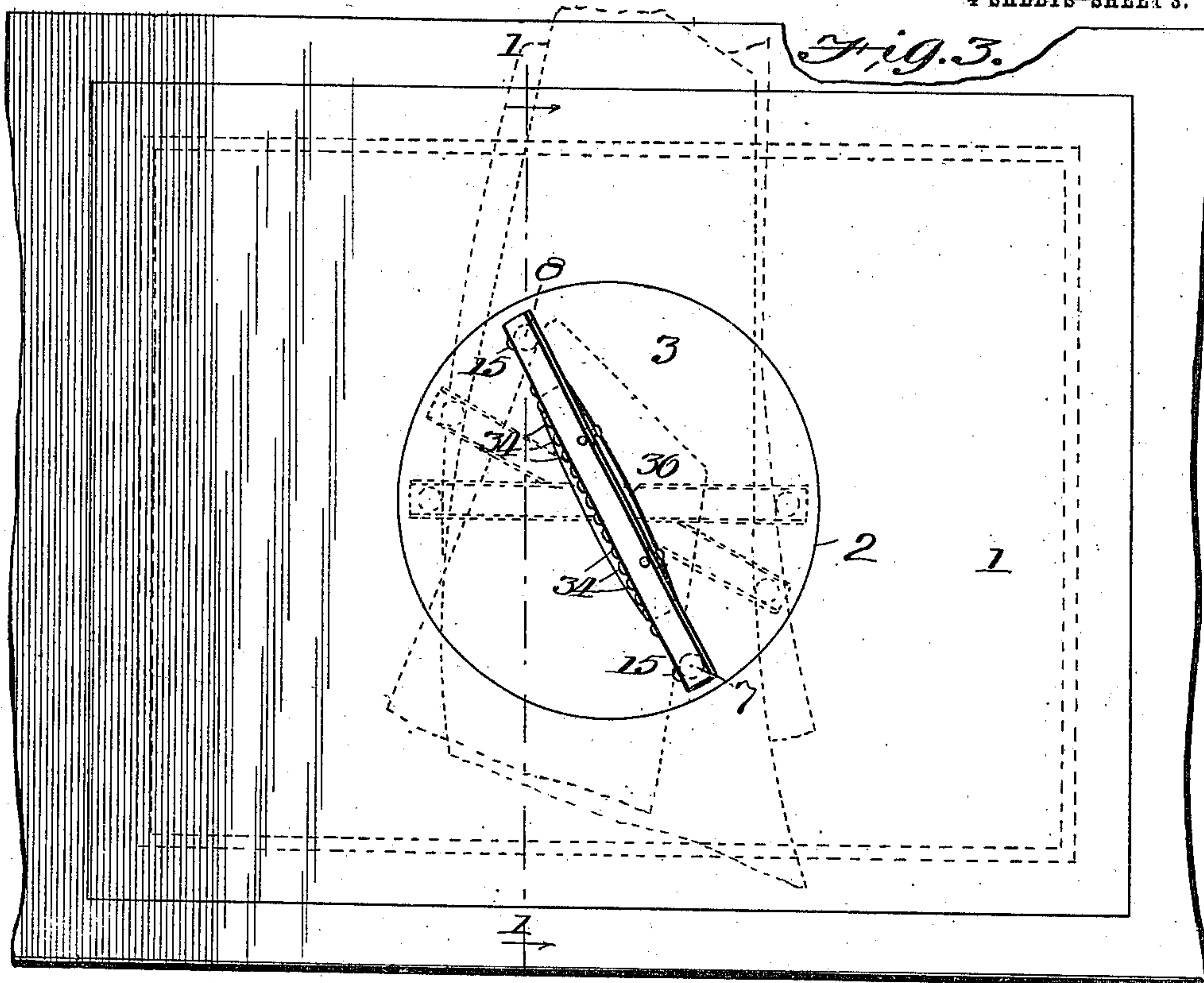


976,033.

D. S. BROWN.  
NEEDLING MACHINE.  
APPLICATION FILED APR. 16, 1909.

Patented Nov. 15, 1910.

4 SHEETS-SHEET 3.



WITNESSES  
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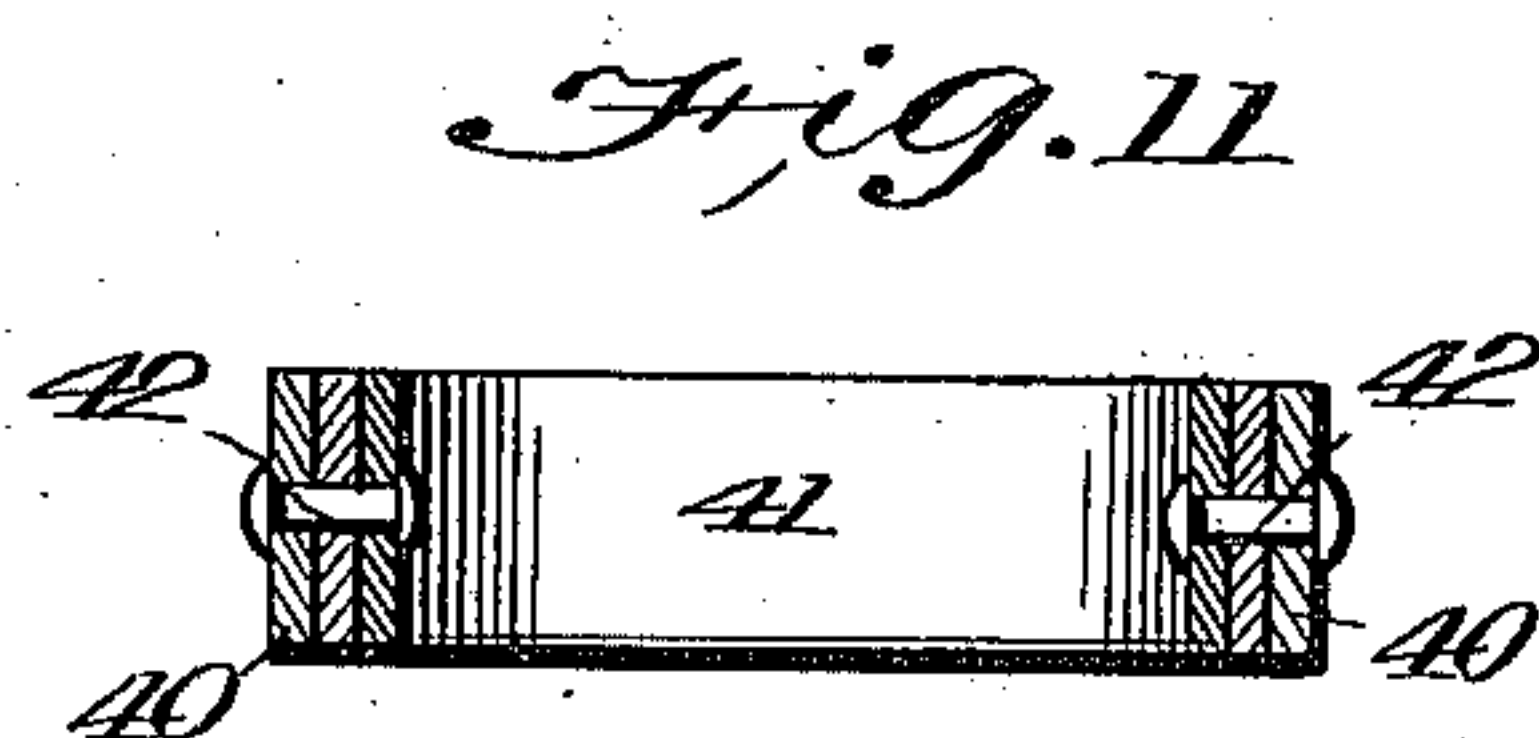
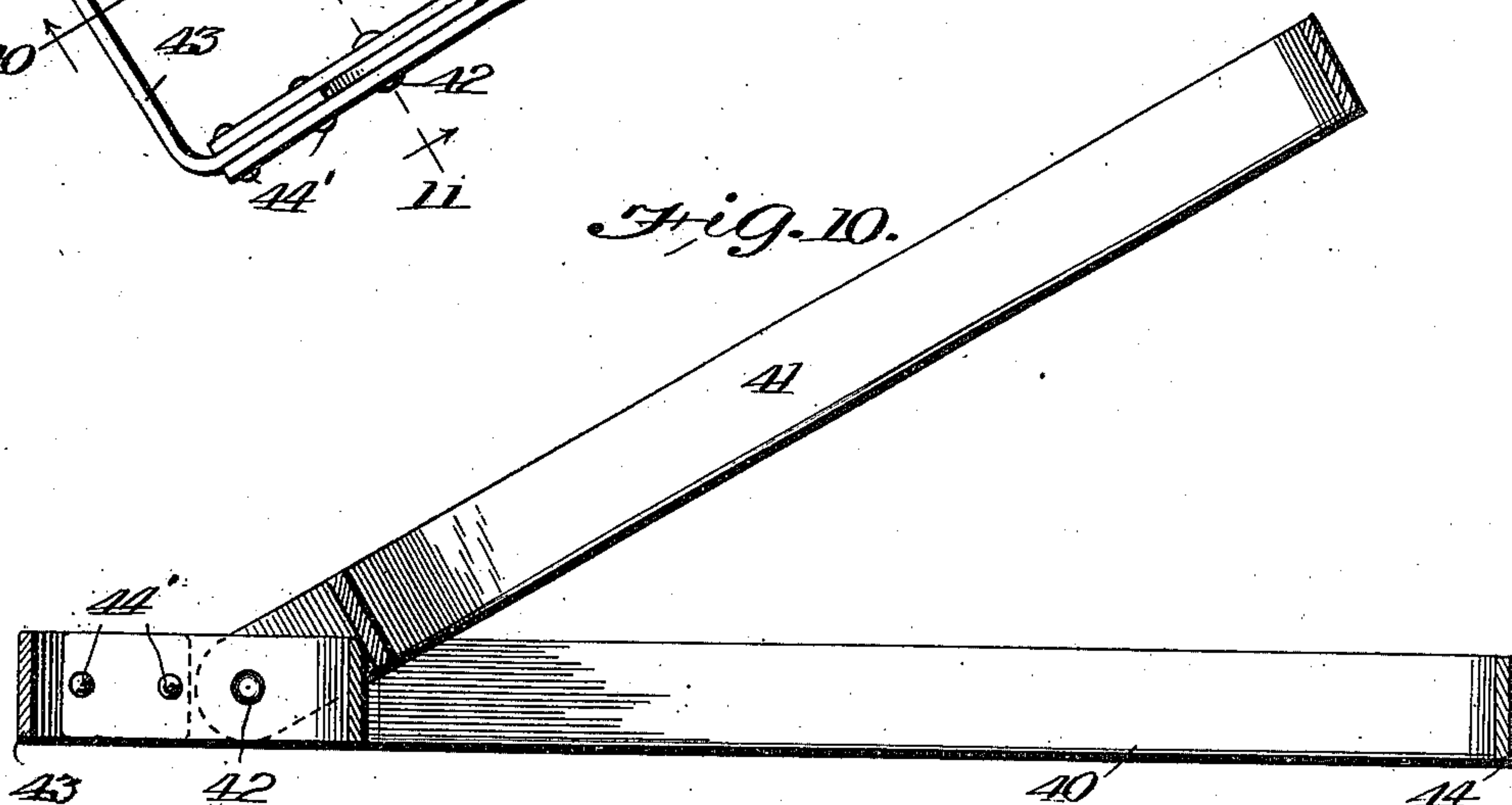
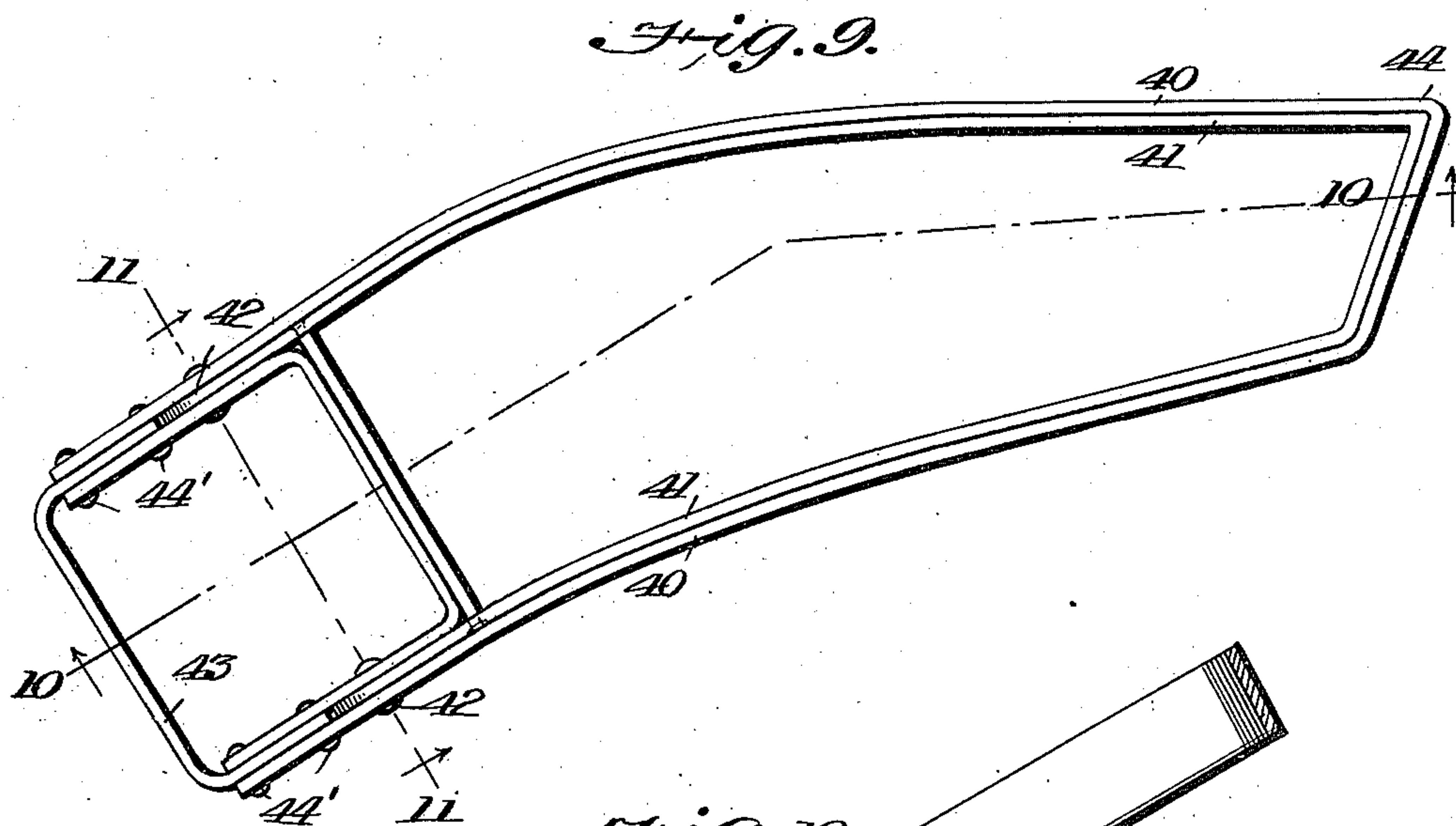
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976,033.

D. S. BROWN.  
NEEDLING MACHINE.  
APPLICATION FILED APR. 16, 1909.

Patented Nov. 15, 1910.

4 SHEETS—SHEET 4.



WITNESSES  
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# UNITED STATES PATENT OFFICE.

DELMONT SEYMOUR BROWN, OF WATERTOWN, NEW YORK.

## NEEDLING-MACHINE.

976,033.

Specification of Letters Patent.

Patented Nov. 15, 1910.

Application filed April 16, 1909. Serial No. 490,249.

*To all whom it may concern:*

Be it known that I, DELMONT S. BROWN, a citizen of the United States, and resident of Watertown, in the county of Jefferson and State of New York, have invented an Improvement in Needling-Machines, of which the following is a specification.

My invention is an improvement in needling machines, and consists in certain novel constructions and combinations of parts hereinafter described and claimed.

The object of the invention is to provide a machine for making the collar pads which are the subject of Letters Patent No. 828,186 issued to me on August 7, 1906. The said pads are formed of a sheet of fabric material having secured thereto a layer of fibrous material, generally curled hair, portions of the hair being drawn through the fabric material whereby to secure the said layer in place.

Referring to the drawings forming a part hereof, Figure 1 is a front view of my improved machine. Fig. 2 is a section on the line 1—1 of Fig. 3. Fig. 3 is a top plan view. Fig. 4 is a section on the line 4—4 of Fig. 1. Fig. 5 is a section on the line 5—5 of Fig. 2. Fig. 6 is a section on the line 6—6 of Fig. 2. Fig. 7 is a section on the line 7—7 of Fig. 1. Fig. 8 is a section on the line 8—8 of Fig. 1. Fig. 9 is a plan view of the pad-supporting frame. Fig. 10 is a section on the line 10—10 of Fig. 9; and Fig. 11 is a section on the line 11—11 of Fig. 9. Fig. 12 is an enlarged perspective view of a needle and its reinforcing sleeve.

In the present embodiment of my invention, the machine proper is supported by a table 1 of any suitable shape and size, and provided at its central portion with a circular opening 2, in which is rotatably mounted a turn table 3, the said turn table being provided with three alined downwardly projecting sleeves 4, 5 and 6, the said sleeves being arranged upon a diameter of the turn table. In the outer sleeves, a frame is slidably mounted, the said frame comprising side rods 7 and 8, and cross bars 9, 10 and 11, one of said cross bars being arranged at each end of the side rods and the other in-

intermediate said ends. The lower cross bar 9 is provided with openings near its ends, and the side rods 7 and 8 are provided with reduced portions passing through the said openings, said reduced portions being screw threaded and engaged by nuts 12, whereby to secure the cross bar to the side rods. The side rods are also reduced at their upper ends to form shoulders 13 at some distance from said upper ends, and the cross bar 10 has its ends provided with openings, through which are passed the reduced portions of the side rods, the cross bar resting upon said shoulders and being secured in position by set screws 14. The extreme upper ends of the side rods 8 are still further reduced to receive end openings in the cross bar 11, and the said cross bar is secured to the side rods by the set screws 15. The lower cross bar 9 is provided with a central opening, and a U-shaped bracket 18 is arranged below the bar and is provided with an opening registering with the opening of the bar, and a bolt 17 is passed through the registering opening and engaged by a nut 19, threaded on to the bolt to retain the bracket in position, while permitting rotation of the bracket with respect to the cross bar. A link 20 has one of its ends pivoted between the sides of the U-shaped bracket, and the other end of the link is journaled in the cranked portion 21, of a shaft 22, journaled in bearings 23 in brackets 24 depending from the table 1.

A bracket 25 is secured to the bottom of the table 1 by bolts 26, the said bracket being U-shaped as shown in Fig. 2, and extending across the circular opening 2 of the table, the distance between the arms of the brackets being approximately equal to the diameter of the opening. A coil spring 27 encircles the sleeve 5, one of the ends 28 of the spring being connected with the bracket 25, and the other end 29 with the table 3, the spring tending to retain the turn table in such position that the sleeves 4 and 6 are in contact with the bracket 25, as shown in Fig. 2.

A plurality of needles 30, having their points barbed as at 31, are connected with the cross bar 10, the said bar being provided



with a plurality of spaced openings for receiving the shanks of the needles, and a reinforcing sleeve 32 encircles each shank, the said sleeve being cut away at its upper  
5 end as at 33, to permit the passage of set screws 34, which traverse the cross bar 10 and engage the shanks of the needle to secure them in position. The table 1 is provided with openings 35 corresponding to  
10 the position of the needles, for permitting the passage of said needles when the frame is in its lower position. A stripping plate 36 is arranged below the cross bar 10, the said plate being provided with openings through  
15 which the needles pass, and the plate is supported in this position by rods 37, passing through the cross bars 10 and 11, and provided with collars 38 for engaging the cross bar 10, whereby to limit the downward  
20 motion of the plate, and coil springs 39 are arranged between the collar and the cross bar 11.

In Figs. 9, 10 and 11, the frame for carrying the fabric material to which the  
25 fibrous material is needled is shown, the said frame comprising an outer section 40 and an inner section 41, the inner section fitting closely within the outer section and being pivoted thereto near one end as at  
30 42, to swing upon said outer section. A handle 43 is connected with the rear end of the outer section for convenience in manipulating the frame, and the parts are connected together by rivets 44'.

35 In operation, the fabric material is placed with its edges between the inner and outer sections of the frame, and the fibrous material is placed upon the upper surface of the fabric material, the said fibrous material occupying substantially the space within the  
40 inner section of the frame, the said frame thus forming a guide to assist in the proper positioning of the fibrous material. After the fibrous material is properly placed upon  
45 the fabric, the shaft 22 is put in rotation by means to be presently described, and the front end 44 of the frame is introduced between the side rods 8 of the needling frame, and pushed steadily transversely of the table,  
50 as shown in the Fig. 3. The movement of the pad-supporting frame tends to swing the needling frame on its vertical axis, so that when the widest part of the pad-supporting frame passes between the side rods  
55 of the needling frame, the said needling frame will take a position at approximately right angles to the movement of the pad-supporting frame.

It will be evident from the description  
60 that when the narrow part of the pad is passing through the needling mechanism, the needling frame will be in a position such that the needles will only engage the pad be-

tween the sides of the frame, and as the wider part of the pad comes into position  
65 for needling, the needling frame will be turned to widen the distance between the lines of perforations formed by the individual needles.

The shaft 22 is provided with a fast pul- 70  
ley 45, and a loose pulley 46, the loose pulley 46 being slidable on the shaft, and the fast pulley 45 is arranged between a collar 48 on the shaft and the bearing 23. The fast pul- 75  
ley 45 has its inner surface cone shaped, as shown in Fig. 7, to form one part of a friction clutch 49, and the loose pulley is provided with the other portion of the clutch, and is moved toward and from the fast pul- 80  
ley by means of a lever 50, pivoted to a rectangular frame 51 as at 52, the frame being connected with the brackets 24 before described. The lever 50 is provided with a  
U-shaped portion encircling the hub 54 of the loose pulley, and set screws 55 traverse 85  
the U-shaped portion and engage a groove 56 in the said hub, the free end of the lever being provided with a grip 57 of wood or other suitable material. A spring 53 is connected with the frame and the lever for nor- 90  
mally retaining the clutch members in disengagement. The peripheral surface of the loose pulley is of considerable width, as shown, to permit its shifting movement without disengaging the belt not shown. 95  
When the pad-supporting frame is introduced between the side rods, a pressure of the knee of the operator against the grip, will move the loose pulley toward the fast pulley whereby to engage the clutch, thus 100  
setting the machine in operation. When the pad is completed, a release of the lever disconnects the clutch, and when the extended portion of the rim of the fast pulley engages the brake shoe, the machine will be stopped 105  
with the needles in the position shown in Fig. 1.

It is desirable that when the machine stops, the needle should be elevated in the position shown in Fig. 1, in order to permit 110  
easy withdrawal of the pad-supporting frame. Since, however, the weight of the frame would tend to cause the shaft to stop with the frame in its lowermost position, the following mechanism is provided to 115  
overcome this tendency. A bar 58 is connected with the lever 50 before mentioned, and the free end of the bar is provided with a brake shoe 59 for a purpose to be presently mentioned. The fast pulley 45 has a portion 120  
of its edge extended as at 60, for engagement by the brake shoe before mentioned, when the clutch is disconnected, and said extended portion is at such point on the periphery of the fast pulley, as to stop the machine with 125  
the needling frame in its upper position. A



counterbalance weight 61 is connected with the fast pulley to counterbalance the weight of the frame.

It will be observed that the pitman 20 has a swivel connection with the needling frame, to permit the oscillation of said frame on a vertical axis, and the pad-supporting frame resembles in appearance embroidery hoops, consisting of one hooped portion fitting into another hooped portion, whereby to properly secure the fabric material in position. The barbs and the needles project toward the points of said needles, whereby to force the fibrous material downwardly and to release it on the upward stroke of the needling frame.

I claim:

1. A machine of the class described, comprising a table provided with a circular opening, a turn table rotatably mounted in the opening, a needling frame slidable vertically in the turn table and rotatable therewith, said frame comprising a pair of side rods, cross bars at the ends of the side rods, said turn table being provided with sleeves, through which the side rods slide, said sleeves being extended to form guides for the frame, an intermediate cross bar connecting the side rods, a plurality of needles detachably connected with said intermediate cross bar, said needles being arranged in spaced relation and having at their points downwardly projecting barbs, a reinforcing sleeve for each of the needles, a plate arranged below the intermediate cross bar and provided with openings through which the needles project, said plate being mounted for yielding movement in an upward direction, a pitman having at one end a swivel connection with the needling frame, a shaft provided with a cranked portion to which the other end of the pitman is connected, stops on the table, a spring for normally retaining the turn table with the sleeves in contact with the stops, and a frame for supporting the article to be needled, said frame comprising inner and outer hooped portions hinged together, one of said portions fitting within the other portion, said frame being of approximately the shape of the article to be formed adapted to oscillate the needling frame when moved therethrough.

2. A machine of the class described, comprising a table provided with a circular opening, a turn table rotatably mounted in the opening, a needling frame slidable vertically in the turn table and rotatable therewith, said frame comprising a pair of side rods, cross bars at the ends of the side rods, and a cross bar intermediate the ends, said turn table being provided with sleeves through which the side rods slide, a plurality of needles detachably connected with

the intermediate cross bar, said needles being arranged in spaced relation, and having at their points downwardly projecting barbs, a reinforcing sleeve for each of the needles, a plate arranged below the intermediate cross bar and provided with openings through which the needles project, said plate being mounted for yielding movement in an upward direction, means for imparting a vertical reciprocating motion to the needling frame, stops on the table, a spring for normally retaining the turn table with the sleeves in contact with the stops, and a frame for supporting the material to be needled, said frame comprising inner and outer hooped sections hinged to each other, the inner section fitting within the outer section, said frame having approximately the shape of the article to be formed adapted to oscillate the needling frame when moved therethrough.

3. A machine of the class described, comprising a turn table mounted for rotation in a horizontal plane, a needling frame slidable vertically in the turn table and rotatable therewith, said frame comprising a pair of side rods, cross bars at the ends of the side rods, and a cross bar intermediate the ends of the side rods, a plurality of needles detachably connected with said intermediate cross bar, said needles being arranged in spaced relation and having at their points downwardly projecting barbs, a reinforcing sleeve for each of the needles, a plate arranged below the intermediate cross bar, and mounted for yielding movement in an upward direction, said plate being provided with openings through which the needles project, means for reciprocating the frame in a vertical direction, stops for limiting the rotation of the turn table in one direction, a spring normally retaining the turn table in contact with the stops, and a frame for supporting the material to be needled, said frame having approximately the shape of the article to be formed adapted to oscillate the needling frame when moved therethrough.

4. A machine of the class described, comprising a turn table mounted for rotation in a horizontal plane, a needling frame slidable vertically in the turn table and rotatable therewith, said frame comprising a pair of side rods, cross bars at the ends of the side rods, and a cross bar intermediate the ends of the side rods, a plurality of needles detachably connected with said intermediate cross bar, said needles being arranged in spaced relation and having at their points downwardly projecting barbs, a plate arranged below the intermediate cross bar, and mounted for yielding movement in an upward direction, said plate be-



ing provided with openings through which the needles project, means for reciprocating the frame in a vertical direction, stops for limiting the rotation of the turn table in one direction, a spring normally retaining the turn table in contact with the stops, and a frame for supporting the material to be needled, said frame having approximately the shape of the article to be formed adapted to oscillate the needling frame when moved therethrough.

5. A machine of the class described, comprising a turn table mounted for rotation in a horizontal plane, a needling frame slidable vertically in the turn table, and rotatable therewith, said frame comprising a pair of side rods, cross bars at the ends of the side rods, and a cross bar intermediate the ends of the side rods, a plurality of needles detachably connected with said intermediate cross bar, said needles being arranged in spaced relation and having at their points downwardly projecting barbs, a stripping plate arranged below the intermediate cross bar and mounted for yielding movement in an upward direction, said plate being provided with openings through which the needles project, means for reciprocating the frame in a vertical direction, means for limiting the movement of the table in one direction, means for permitting a yielding movement of the table in the opposite direction, and a frame for supporting the material to be needled, said frame having approximately the shape of the article to be formed adapted to oscillate the needling frame when moved therethrough.

6. A machine of the class described, comprising a turn table mounted for rotation in a horizontal plane, a needling frame slidable vertically in the turn table and rotatable therewith, said frame being provided with a plurality of downwardly projecting spaced needles arranged transversely thereof, the points of the needles being provided with downwardly projecting barbs, a reinforcing sleeve for each of the needles, a plate provided with openings through which the needles project and mounted to yield upward, means for reciprocating the frame, stops for limiting the rotating movement of the table in one direction, a spring for normally retaining the turn table in contact with the stops, and a frame for supporting the material to be operated upon, said frame being of approximately the shape of the article to be formed adapted to oscillate the needling frame when moved therethrough.

7. A machine of the class described, comprising a turn table mounted for rotation in a horizontal plane, a needling frame slidable vertically in the turn table and rotatable

therewith, said frame being provided with a plurality of downwardly projecting spaced needles, arranged transversely thereof, the points of the needles being provided with downwardly projecting barbs, a stripping plate provided with openings through which the needles project, and mounted to yield upward, means for reciprocating the frame, stops for limiting the rotating movement of the table in one direction, a spring for normally retaining the table in contact with the stops, and a frame for supporting the material to be operated upon, said frame being of approximately the shape of the article to be formed adapted to oscillate the needling frame when moved therethrough.

8. A machine of the class described, comprising a turn table, mounted for rotation in a horizontal plane, a needling frame slidable vertically in the turn table and rotatable therewith, said frame being provided with a plurality of downwardly projecting spaced needles arranged transversely thereof, the points of the needles being provided with downwardly projecting barbs, a yieldingly mounted stripping plate provided with openings through which the needles project, means for reciprocating the frame, means for limiting the movement of the table in one direction, means for permitting a yielding movement of the table in the other direction, and a frame for supporting the material to be operated upon, said frame being of approximately the shape of the article to be formed adapted to oscillate the needling frame when moved therethrough.

9. A machine of the class described, comprising a turn table mounted for rotation in a horizontal plane, a needling frame slidable vertically in the turn table and rotatable therewith, said frame being provided with a plurality of downwardly projecting spaced needles arranged transversely thereof, the points of the needles being provided with downwardly projecting barbs, a yieldingly mounted stripping plate in connection with the needles, means for reciprocating the frame, means for limiting the movement of the turn table in one direction, means for permitting a yielding movement of the table in the other direction, and a frame for supporting the material to be operated upon, said frame being of approximately the shape of the article to be formed adapted to oscillate the needling frame when moved therethrough.

10. A machine of the class described, comprising a turn table mounted for rotation in a horizontal plane, a needling frame slidable vertically in the turn table, and rotatable therewith, said frame being provided with a plurality of downwardly projecting spaced needles arranged transversely thereof, the



points of the needles being provided with downwardly projecting barbs, means for reciprocating the frame, means for limiting the movement of the table in one direction, means for permitting a yielding movement of the table in the other direction, and a frame for supporting the material to be operated upon, said frame being of approximately the shape of the article to be formed adapted to oscillate the needling frame when moved therethrough.

11. A machine of the class described, comprising a turn table mounted for rotation in a horizontal plane, a needling frame slidable vertically in the turn table, and rotatable therewith, said frame being provided with a plurality of downwardly projecting barbed needles arranged transversely thereof, means for reciprocating the frame, means for limiting the movement of the table in one direction, means for permitting a yielding movement of the table in the other direction, and a frame for supporting the material to be operated upon, said frame being of approximately the shape of the article to be formed adapted to oscillate the needling frame when moved therethrough.

12. A machine of the class described, comprising a turn table, a needling frame slidable vertically in the turn table, a plurality of needles connected with the frame, said needles having downwardly projecting barbs, means for reciprocating the frame, a yieldingly mounted stripping plate in connection with the needles, means for limiting the rotation of the turn table in one direction, and a frame for supporting the material to be needled, said frame being of approximately the shape of the article to be formed adapted to oscillate the needling frame when moved therethrough.

13. A machine of the class described, comprising a turn table, a needling frame slidable vertically in the turn table, a plurality of needles connected with the frame, said needles having downwardly projecting barbs, means for reciprocating the frame, a stripping plate in connection with the needles, means for limiting the rotation of the turn table in one direction, and a frame for supporting the material to be needled, said frame being of approximately the shape of the article to be formed adapted to oscillate the needling frame when moved therethrough.

14. A machine of the class described, comprising a turn table, a needling frame slidable vertically in the turn table, a plurality of barbed needles connected with the frame, means for reciprocating the frame, a stripping plate in connection with the needles, means for limiting the rotation of the turn table in one direction, and a frame for sup-

porting the material to be needled, said frame being of approximately the shape of the article to be formed adapted to oscillate the needling frame when moved therethrough.

15. A machine of the class described, comprising a turn table, a needling frame slidable vertically in the turn table, a plurality of barbed needles connected with the frame, means for reciprocating the frame, a stripping plate in connection with the needles, and a frame for supporting the material to be needled, said frame being of approximately the shape of the article to be formed adapted to oscillate the needling frame when moved therethrough.

16. A machine of the class described, comprising a substantially rectangular frame mounted for vertical movement, a plurality of needles provided with downwardly projecting barbs at their points supported by the frame, a yieldingly mounted stripping plate in connection with the needles, means for permitting a yielding rotary movement of the frame on a vertical axis in one direction, means for limiting the movement of the frame in the other direction, and a frame for supporting the material to be needled and adapted to be passed through the needling frame and to oscillate said frame.

17. A machine of the class described, comprising a needling frame mounted for vertical reciprocating movement, and for rotating movement on a vertical axis, a plurality of barbed needles connected with the frame, means for reciprocating the frame, and a frame for supporting the material to be needled movable through the supporting needling frame, said supporting frame being of approximately the shape of the article to be formed adapted to oscillate the needling frame when moved therethrough.

18. In a machine of the class described, a vertically movable needling frame, a shaft provided with a crank portion, a pitman connecting the crank portion and the needling frame, a fast pulley and a loose pulley on the shaft, each of said pulleys being provided with a portion of a friction clutch, means for moving the loose pulley toward and from the fast pulley, and means in connection with said moving means for engaging said fast pulley at a predetermined point whereby to stop the machine with the needling frame in its uppermost position.

19. In a machine of the class described, a reciprocatory needling frame, and a plurality of needles supported by the frame, said frame being mounted for rotary movement on the vertical axis, means for reciprocating the frame, and a frame for supporting the material to be needled, and movable through the needling frame and adapted to oscillate



the same, said supporting frame comprising inner and outer pivotally connected hoop sections, one of said sections fitting within the other section, and a handle connected  
5 with the outermost section.

20. In a machine of the class described, a reciprocatory needling frame, a plurality of needles supported by the frame, said frame being mounted for rotary movement on a  
10 vertical axis, means for reciprocating the frame, and a frame for supporting the material to be needled, said frame having its periphery shaped to correspond with the shape of the article to be formed, and being  
15 adapted to oscillate said needling frame

when moved therethrough, for the purpose set forth.

21. A machine of the character specified, comprising a needling frame, mounted for longitudinal movement and for oscillating  
20 movement on its longitudinal axis, means for moving the frame longitudinally and a work holding frame movable through the needling frame and adapted to oscillate the same.

DELMONT SEYMOUR BROWN.

Witnesses:

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