

No. 765,908.

PATENTED JULY 26, 1904.

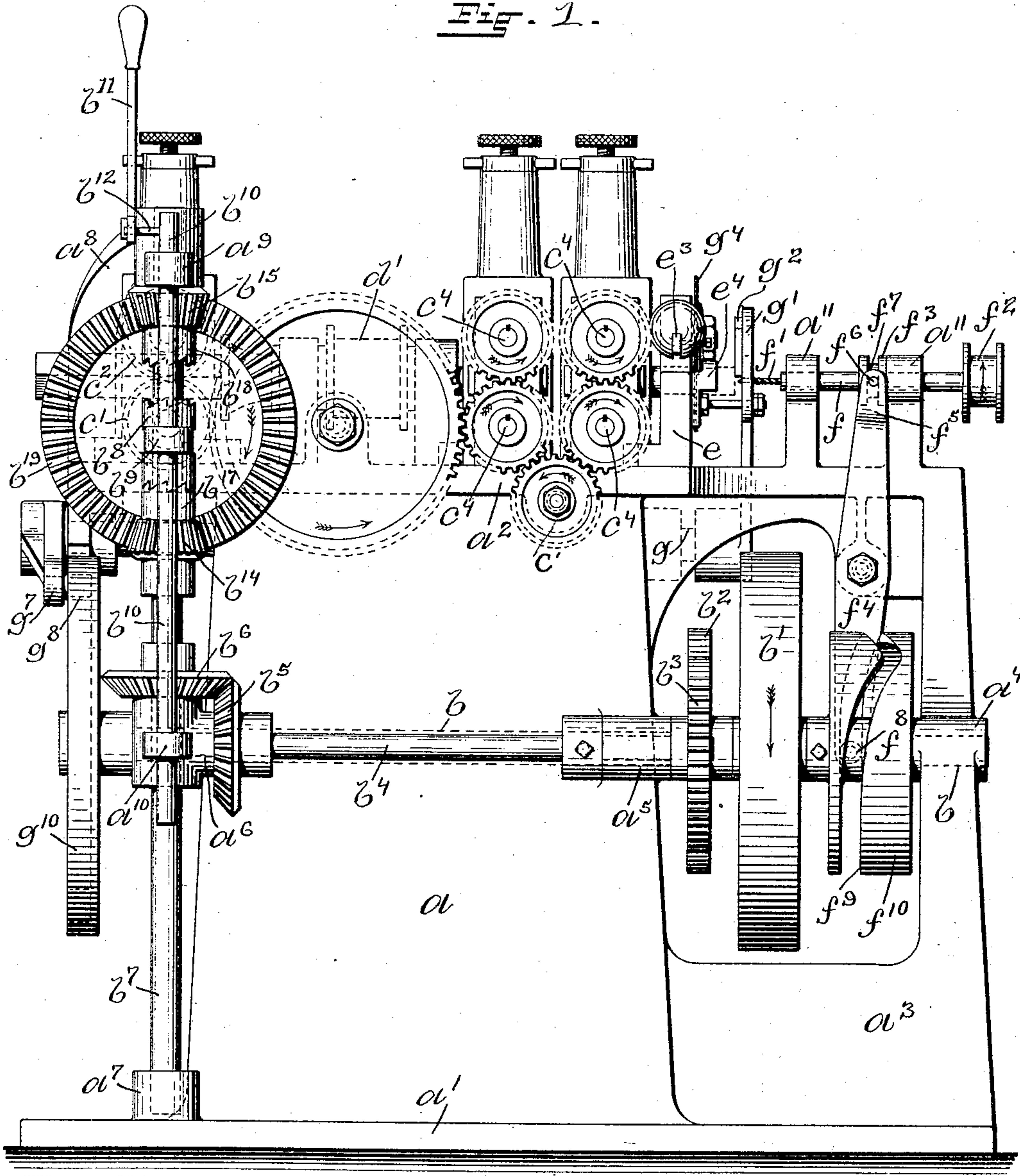
A. J. THORNLEY.
SPOOL MACHINE.

APPLICATION FILED NOV. 28, 1902.

NO MODEL.

5 SHEETS—SHEET 1.

Fig. 1.



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Chas. H. Luther Jr.

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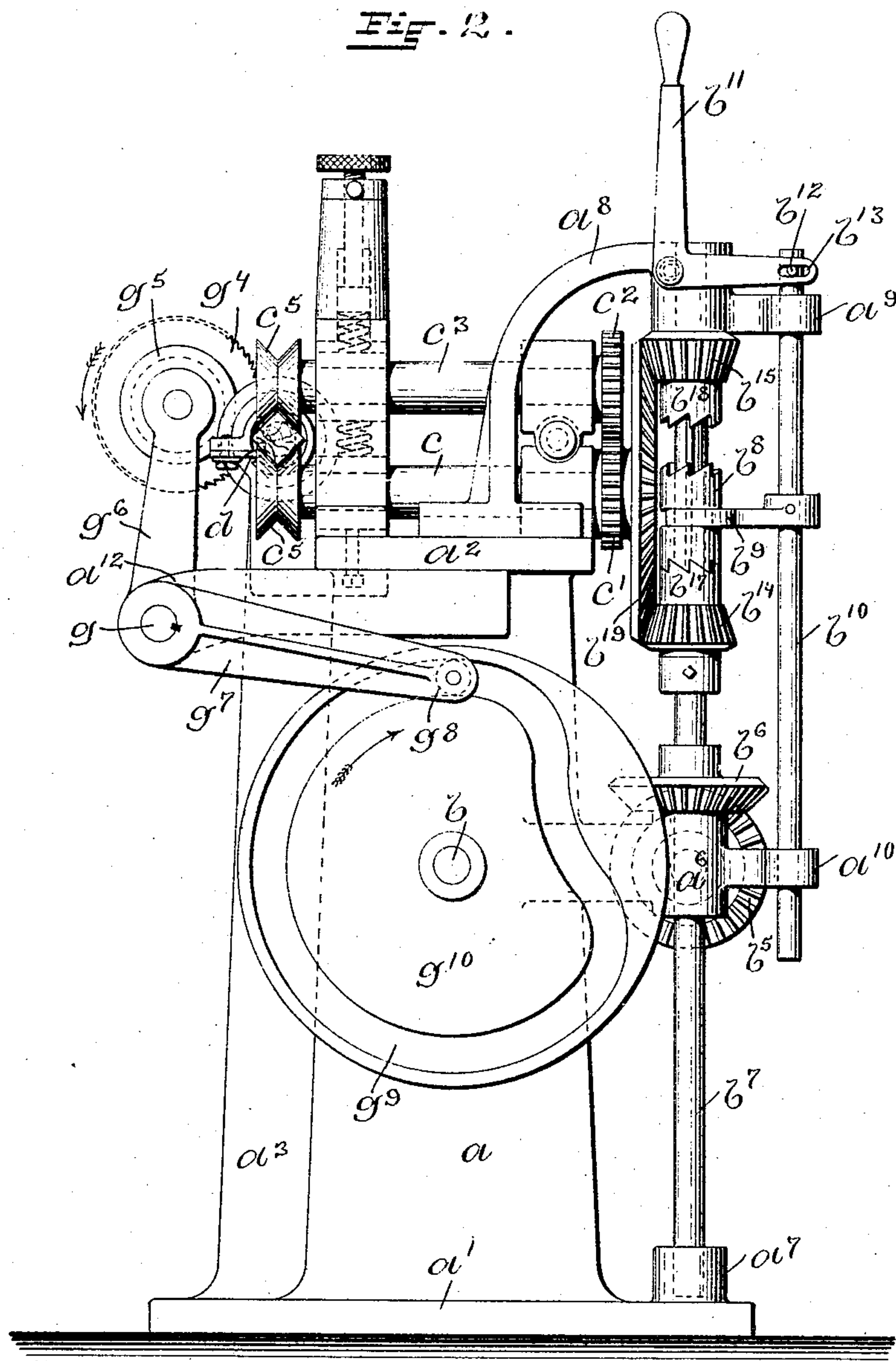
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5 SHEETS—SHEET 2.



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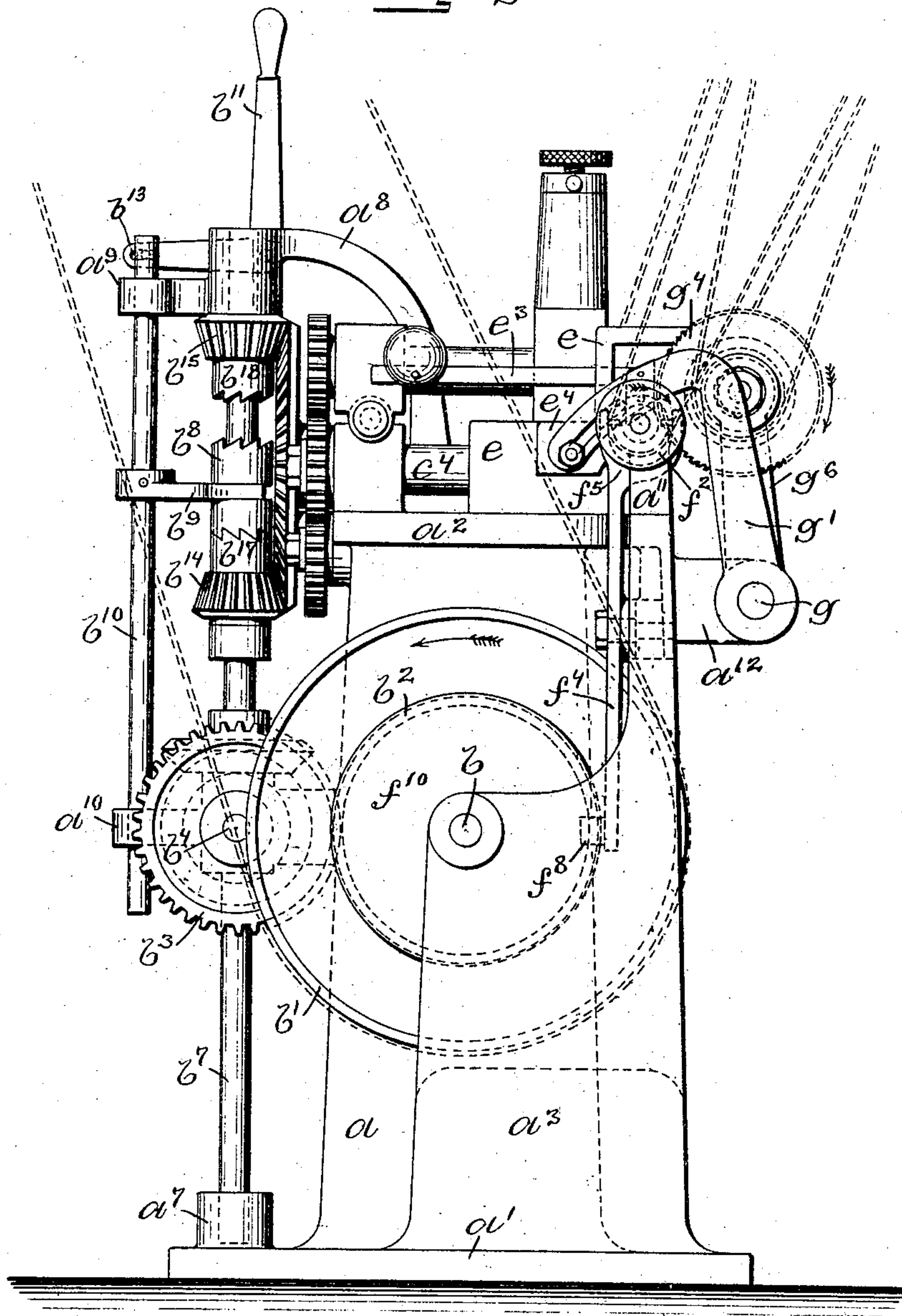
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5 SHEETS—SHEET 3.

Fig. 3.



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5 SHEETS—SHEET 4.

Fig. 4.

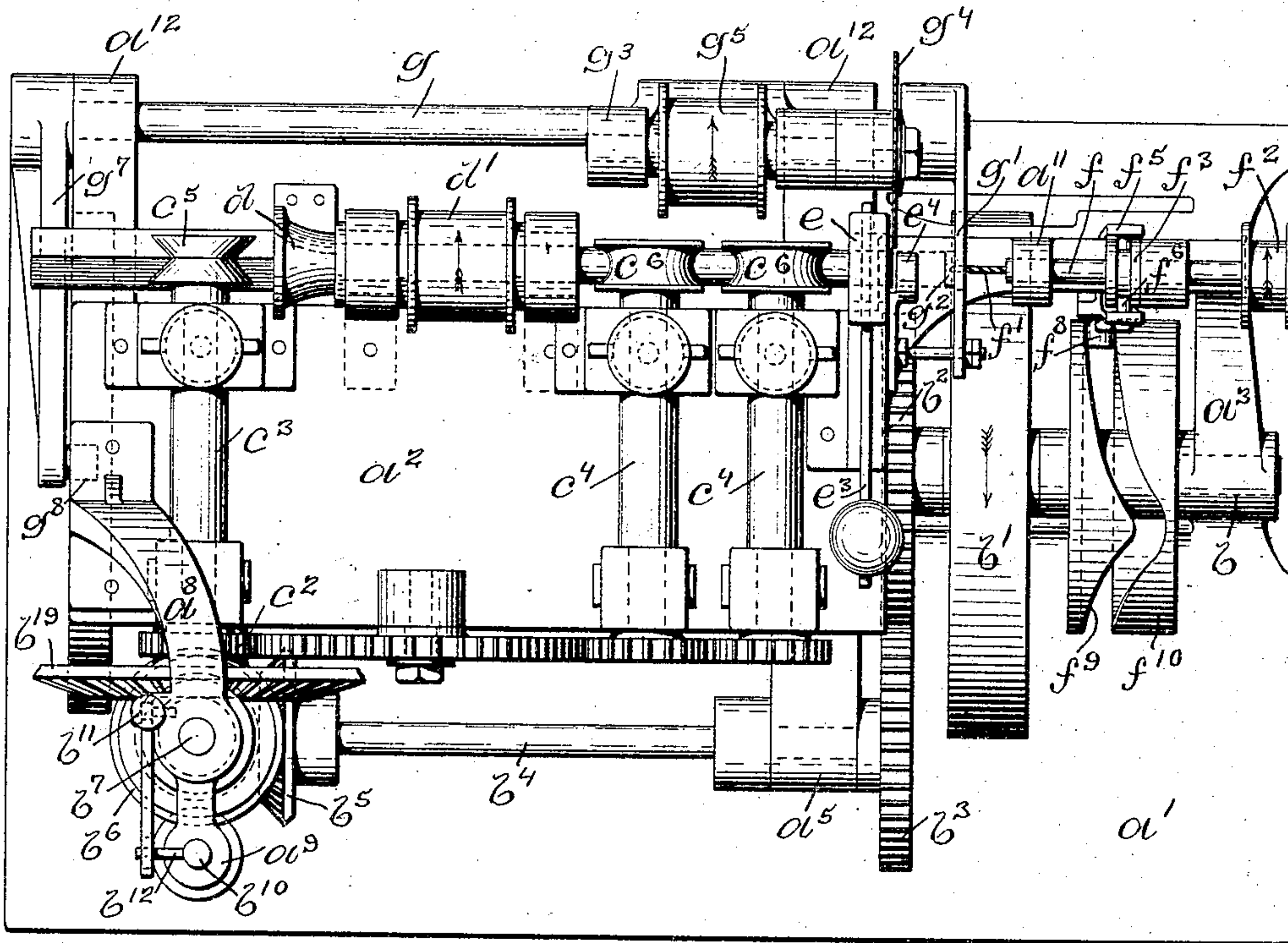
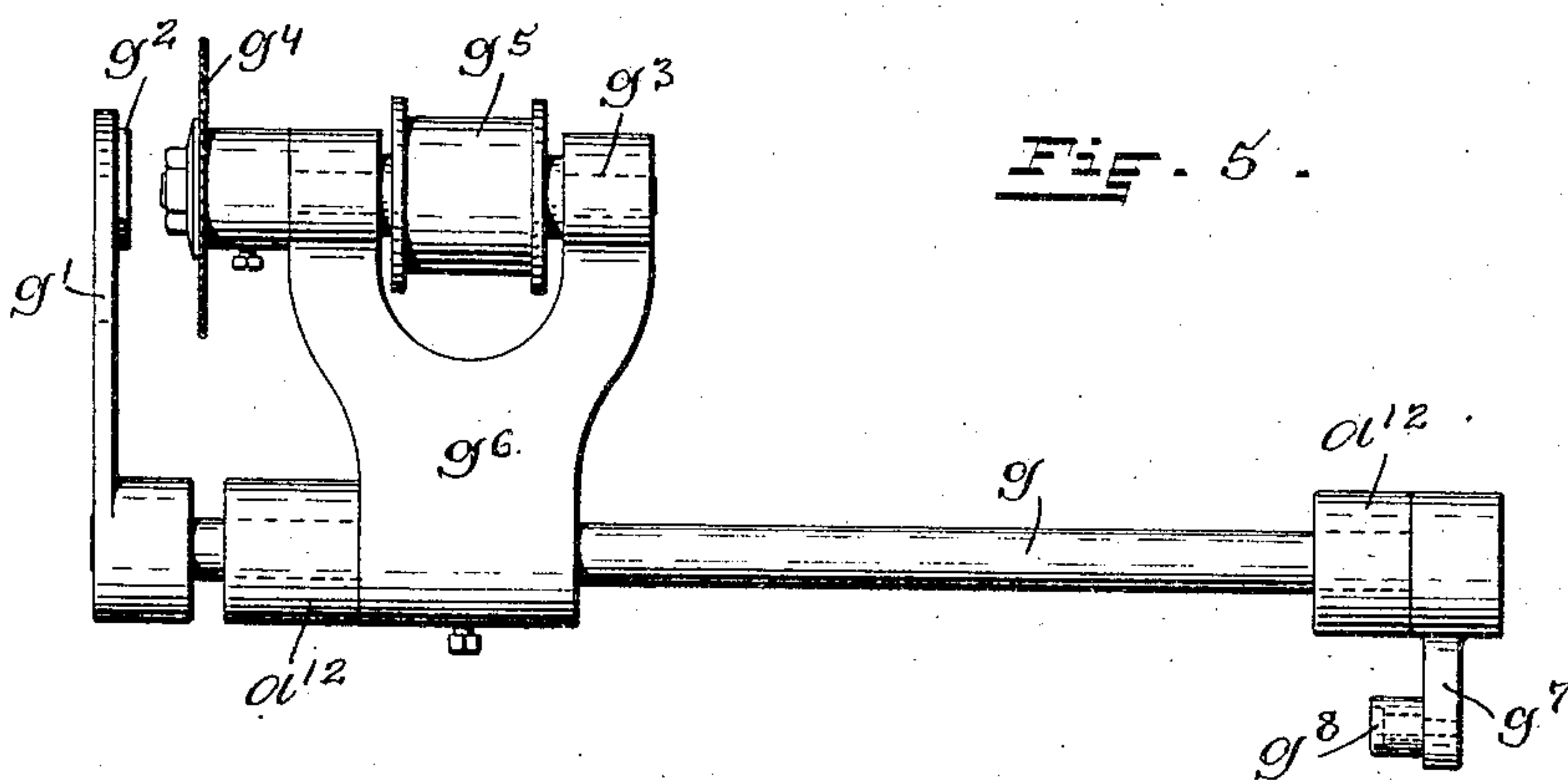


Fig. 5.



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5 SHEETS—SHEET 5.

Fig. 6

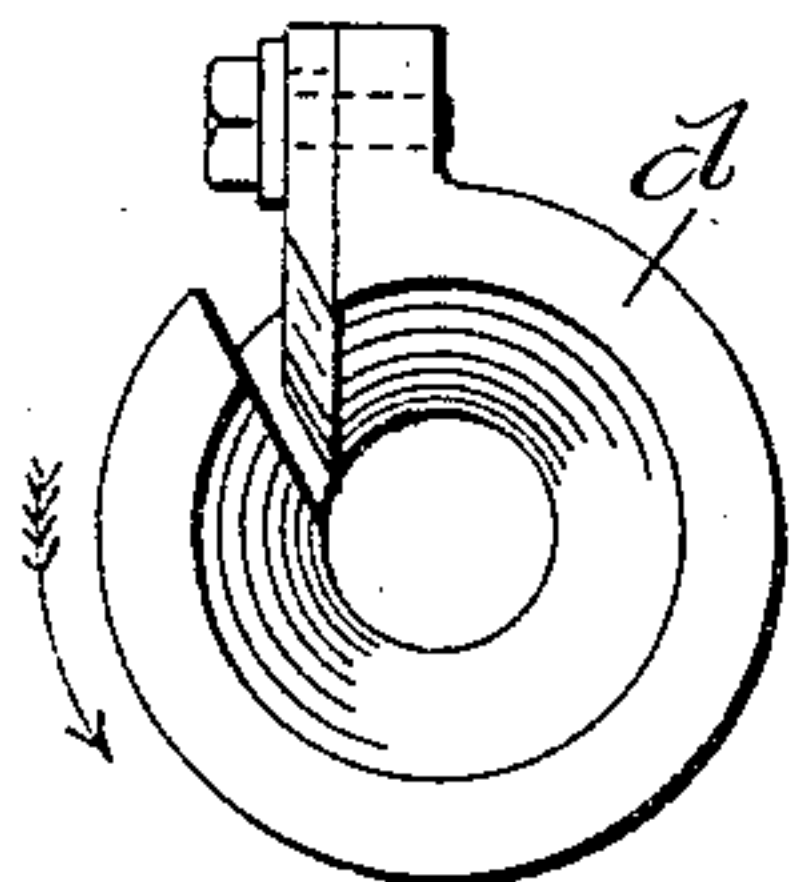


Fig. 7

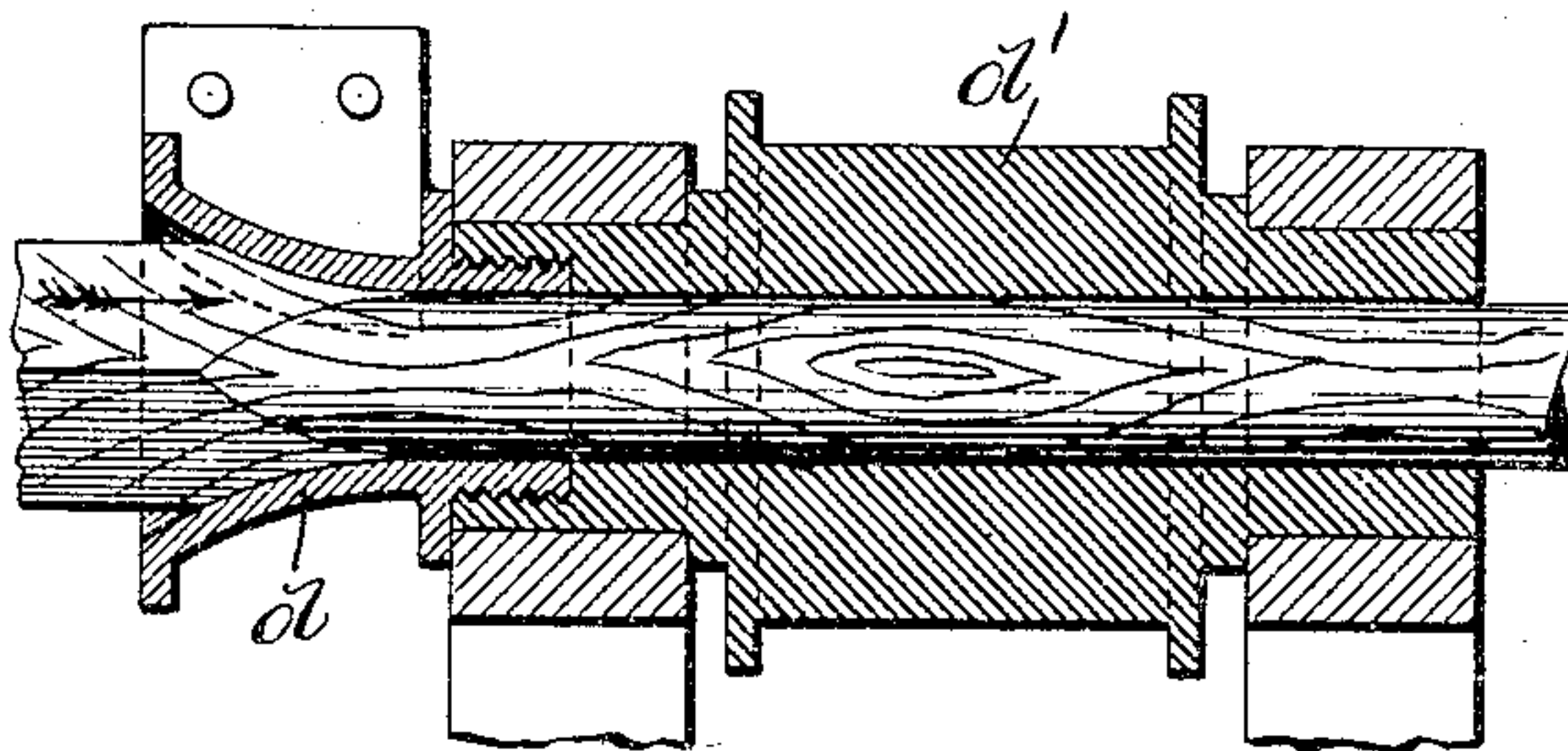


Fig. 8

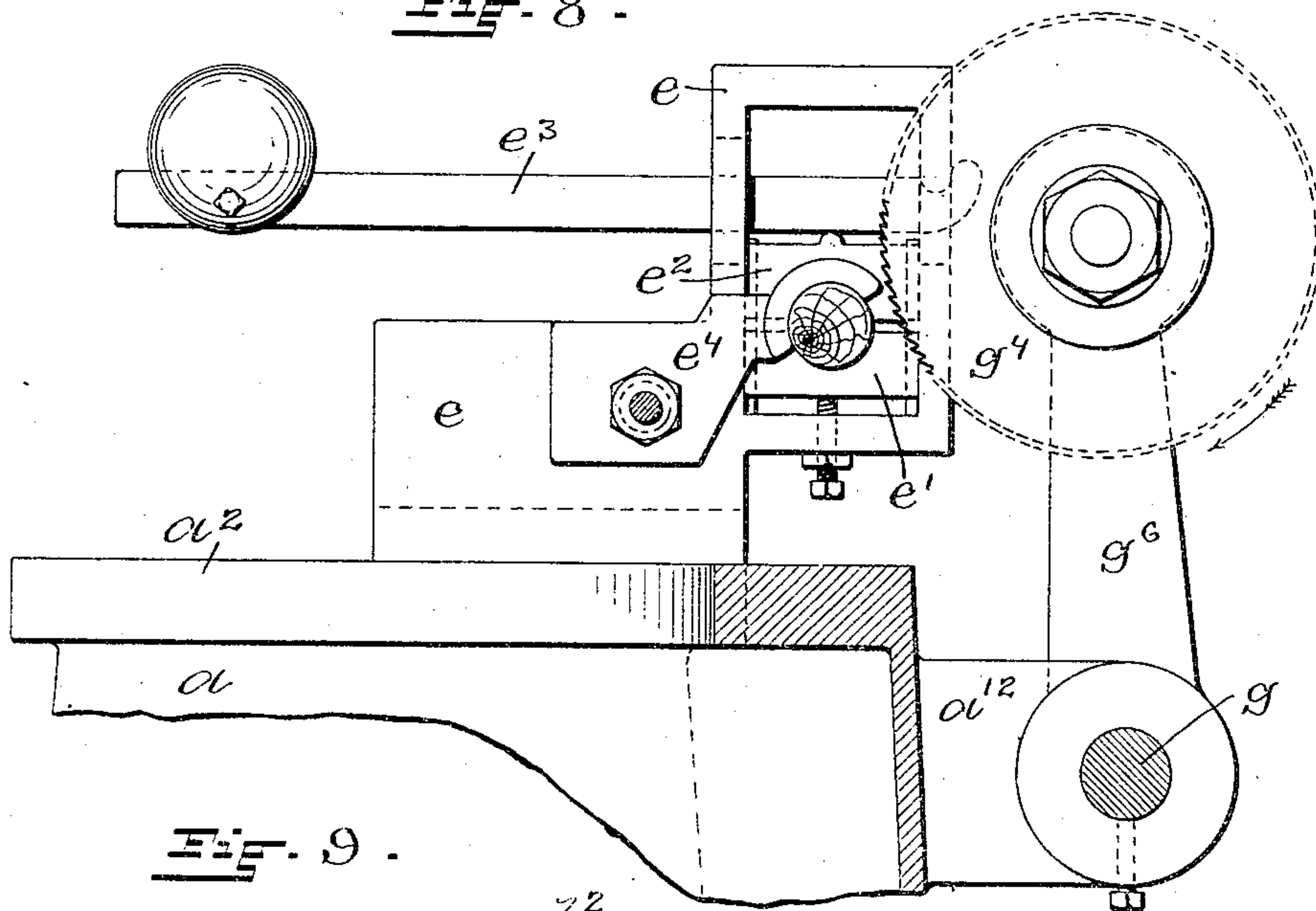


Fig. 9

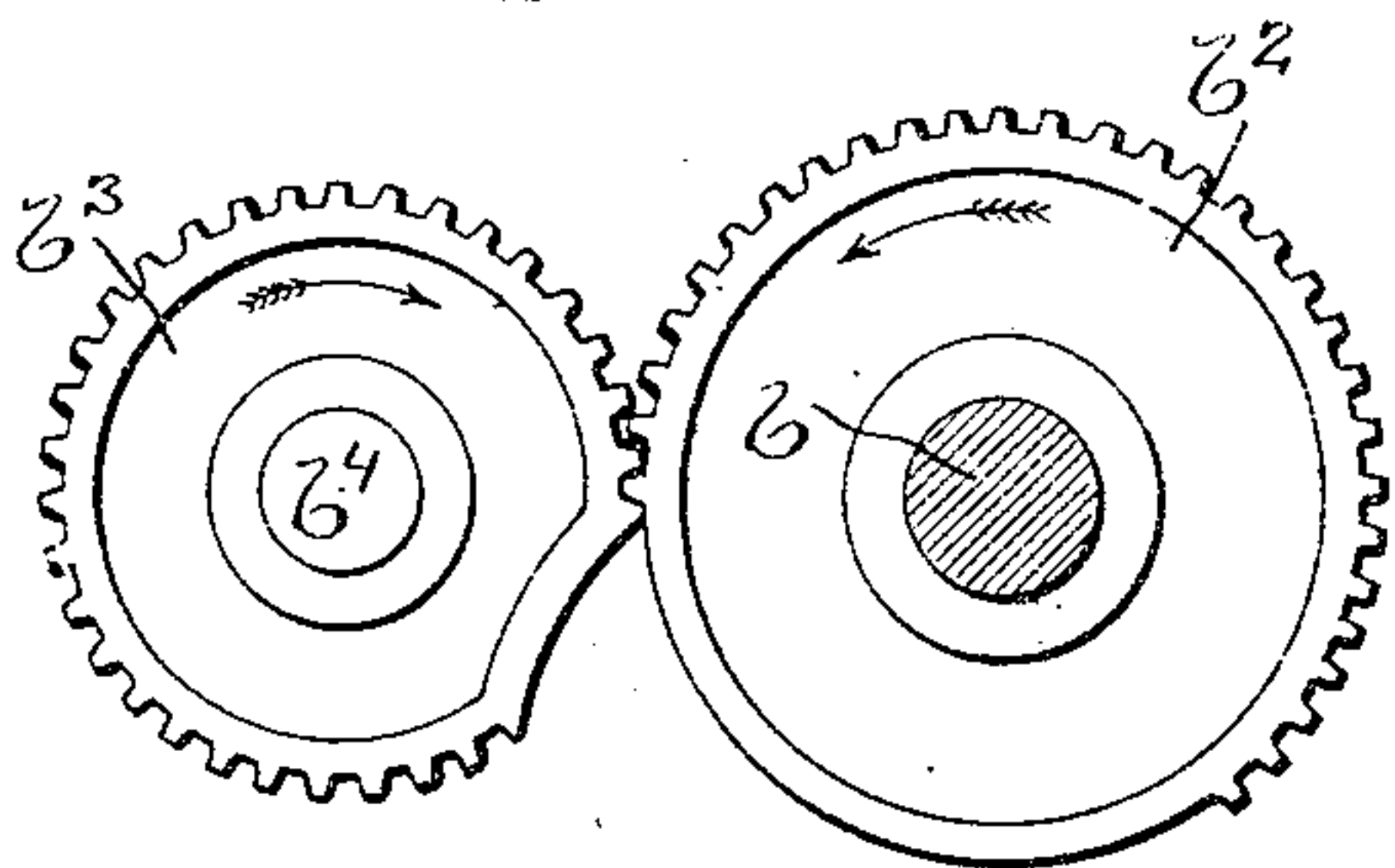
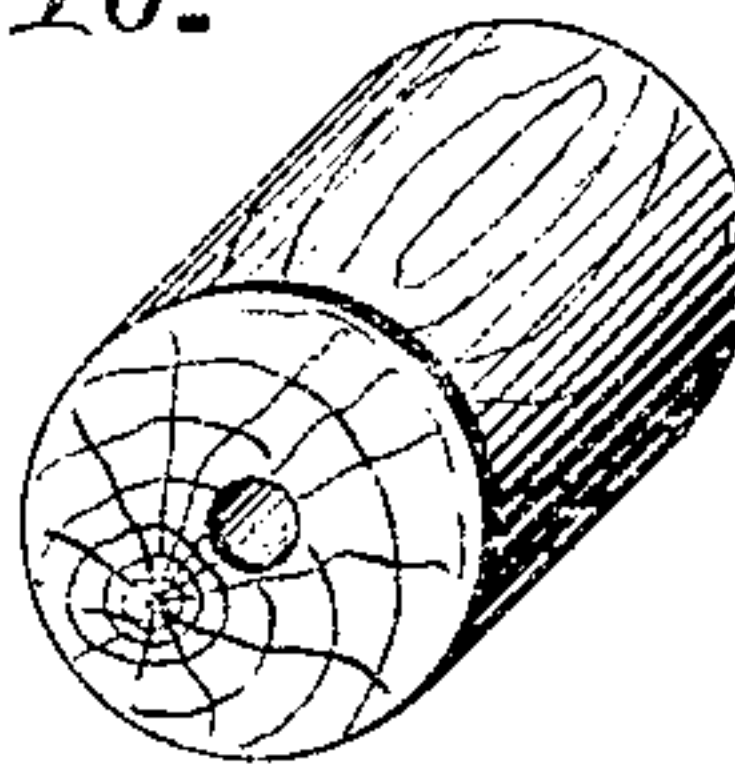


Fig. 10



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UNITED STATES PATENT OFFICE.

ALBERT J. THORNLEY, OF PAWTUCKET, RHODE ISLAND, ASSIGNOR
TO NARRAGANSETT MACHINE COMPANY, INCORPORATED, OF
PAWTUCKET, RHODE ISLAND.

SPOOL-MACHINE.

SPECIFICATION forming part of Letters Patent No. 765,908, dated July 26, 1904.

Application filed November 28, 1902. Serial No. 133,017. (No model.)

To all whom it may concern:

Be it known that I, ALBERT J. THORNLEY, a citizen of the United States, residing at Pawtucket, in the county of Providence and State of Rhode Island, have invented a new and useful Improvement in Spool-Machines, of which the following is a specification.

This invention has reference to woodworking-machines, and more particularly to that class of machines known as "spool-machines" for automatically making spool-blanks from wood.

The object of this invention is to facilitate the operation of making spool-blanks, to make a more perfect blank at a greater speed and at less cost than has heretofore been done.

The invention consists in the peculiar and novel construction of the machine and its parts whereby the stock is automatically fed in the machine and is turned, drilled, and cut off in successive and continuous operations, as will be more fully set forth hereinafter.

Figure 1 is a front view of my improved spool-making machine, showing the main driving-pulley, the gearing from the main shaft to the feed-rolls, the reverse-gearing for running the stock back when required, and the cam for operating the drill. Fig. 2 is a view looking at the left-hand end of the machine, showing the lever for operating the reverse-gearing, the feed-rolls, and the cam with its connecting-lever with the rock-shaft to move the circular saw forward and backward when required. Fig. 3 is a view of the right-hand end of the machine, showing the main shaft and pulley, the drill-arbor and its pulley, and the stop-arm for limiting the forward movement of the work with the belts going to the different pulleys in broken lines. Fig. 4 is a plan view showing the gearing from the main shaft to the feed-rolls, the cutter for turning the stock, the movable stop-arm for limiting the forward movement of the stock, the drill for boring, and the saw-arbor with its pulley and saw for cutting off the finished blank. Fig. 5 is a rear view of the rock-shaft supporting the saw-arbor frames, show-

ing the cam-lever secured on the right-hand end and the stop-arm on the left-hand end, the bearings being broken away from the frame of the machine. Fig. 6 is an enlarged face view of the cutter, which revolves in the direction shown by the arrow. Fig. 7 is an enlarged sectional view taken lengthwise through the shaft-pulley and cutter, showing the stock as it enters the cutter-square in the direction of the arrow and after it has been turned around by the cutter. Fig. 8 is an enlarged detail sectional view showing a part of the frame and bed supporting the rock-shaft bearing, the circular saw for cutting off the blank, the support for the blank, and the tension-guide device for frictionally holding the work in its proper position. Fig. 9 is a view showing the slip-gearing on the main and front shafts to give an intermittent motion to the feed-rolls. Fig. 10 is an isometric perspective view of the completed spool-blank.

In the drawings, a is the frame of the machine, with the base a' , the bed a'' , and the extension a''' , having the bearing a^4 for the right-hand end of the main shaft b . This shaft b , carrying the main pulley b' , extends through the frame a in suitable bearings and carries the slip-gear b^2 , meshing with the slip-pinion b^3 on the front shaft b^4 . The slip-gear b^2 has thirty teeth with a blank space equal to fifteen teeth, and the slip-pinion b^3 has thirty teeth with a blank space equal to five teeth, as shown in Fig. 9. By this slip-gearing an intermittent motion is given from the main shaft to the front shaft b^4 , supported in the bearings a^5 and a^6 on the frame a , and the bevel-gear b^5 , meshing with the bevel-gear b^6 on the reverse-gearing shaft b^7 . This shaft extends upward from the base a' in the bearings a^6 , a^7 , and the bracket a^8 , secured to the bed a .

Splined to the shaft b^7 is the sliding clutch b^8 , operated by the fork b^9 on the rod b^{10} . This rod slides in the bearings a^9 and a^{10} and is controlled by the reversing-lever b^{11} through the pin b^{12} on the rod b^{10} working in the slot b^{13} in the reversing-lever to raise and lower the clutch b^8 , as shown in Figs. 1 and 2.

port e^4 for holding the stock while the circular saw is in operation, as shown in Fig. 8.

On the upper part of the frame extension a^3 and on a line with the center of the cutter d are the bearings a^{11} a^{11} for the drill-arbor f , carrying the drill f' , the pulley f^2 for revolving the drill, and the grooved collar f^3 , as shown in Figs. 1 and 4.

Pivottally secured to a lug on the frame extension a^3 is the lever f^4 , with the fork f^5 on its upper end having the pins f^6 , which enter the groove f^7 in the collar f^3 , and on its lower end the roll f^8 , which enters the groove f^9 in the cam f^{10} on the main shaft b . As this cam revolves it gives a reciprocating motion to the drill-arbor f and the drill f' by the lever f^4 .

Secured to the bed a^2 at the rear of the machine are the bearings a^{12} a^{12} for the rock-shaft g . Fastened to this shaft is the stop-arm g' with the stop g^2 . The saw-arbor g^3 , with the circular saw g^4 and the pulley g^5 , is mounted in the frame g^6 , secured to the rock-shaft g . On the end of the rock-shaft opposite the stop-arm g' is secured the lever g^7 , with the roll g^8 engaging with the groove g^9 in the cam g^{10} on the main shaft b . The rotation of the cam g^{10} gives a reciprocating motion to the saw-arbor, bringing the saw forward and backward at a predetermined time to cut off the spool-blank from the stock.

The several figures in the drawings are all shown in the position the machine would assume when starting to make a spool-blank.

In the operation of the machine power is

the lever g^7 , secured on the end of the rock-shaft. The stop g^2 on the stop-arm g' , secured to the rock-shaft g , moves forward with the saw and out of the way of the blank when the saw has completed its cut, allowing the finished blank to drop out. It then moves back into its former position, forming a stop for the next blank.

If thought desirable, a chute may be placed to receive the completed blank and carry it to a receptacle on the floor or base of the machine.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. In a woodworking-machine for making spool-blanks, a power-shaft, a stop secured to an arm on a rock-shaft, a circular saw supported on and moving with the rock-shaft, a cam on the power-shaft, and a lever connecting the cam with the rock-shaft to partly rotate the rock-shaft and move the stop with the saw forward and out of the way of the blank when the saw has completed its cut.

2. In a woodworking-machine for making spool-blanks, a power-shaft, rolls for feeding stock in the machine to a drill, gearing connecting the power-shaft with the feed-rolls, a drill and arbor supported in bearings on the machine, means for revolving the drill, a cam on the power-shaft, a lever pivoted to the frame of the machine and connecting the cam with the drill-arbor for reciprocating the drill and boring a hole centrally in the end of the stock, means comprising a saw for cutting off the bored blank supported on and moving

with a rock-shaft, and a stop for limiting the movement of the blank and releasing the same after the cut has been made, as described.

3. In a woodworking-machine for making
5 spool-blanks, a main or power shaft, a front shaft parallel with the power-shaft, feed-rolls for feeding stock in the machine, gearing connecting the shafts of the feed-rolls, reversing-gearing intermediate the front shaft and the
10 feed-roll gearing, a lever for operating the reversing-gearing, slip-gearing connecting the power-shaft with the front shaft for giving an intermittent motion to the feed-rolls, means operated from the main shaft to cut off the
15 finished stock, and a stop to limit the movement of the stock, as described.

4. In a woodworking-machine for making
spool-blanks, a power-shaft, V-shaped grooved
20 feed-rolls for feeding square bar-stock to a cutter, gears on the shafts of the feed-rolls, means for transmitting power from the power-shaft to the feed-rolls, a hollow cutter surrounding the stocks, means for revolving the
25 cutter to turn the square bar-stock into a round bar, half-round grooved feed-rolls to secure the round stock from the cutter, gears connecting the V-shaped grooved feed-rolls with the half-round grooved feed-rolls, a frame secured to the bed, a centering and guide block
30 with means for adjusting and shaped to receive the round stock, a tension-block over the stock, a weighted lever pivoted in the frame and bearing on the tension-block to hold the stock in the guide-block, a support adjust-
35 ably secured to the frame for holding the blank while the saw is in operation, and a stop moving with the saw during the act of cutting and passing by the stock to release the same after the cut is finished, as described.

5.- In a machine for the purpose described, 40
the combination with the frame *a*, the power-shaft *b* supported in bearings in the frame, the pulley *b'* on the power-shaft, the slip-gear *b²* on the power-shaft meshing with the slip-
45 pinion *b³* on the front shaft *b⁴*, the bevel-gears *b⁵* and *b⁶* connecting the front shaft with the reverse-gearing shaft *b⁷*, the reverse-gearing connecting the shaft *b⁷* with the feed-roll shaft *c*, the reversing-lever *b¹¹* to operate the revers-
50 ing-gearing through the rod *b¹⁰*, the fork *b⁹*, and the clutch *b⁸*, the feed-rolls *c⁵* *c⁵* on the shafts *c* and *c³*, the feed-rolls *c⁶* *c⁶* on the shafts *c⁴* *c⁴*, and the train of gearing connecting the feed-roll shafts together, the hollow cutter *d*
55 with the pulley *d'* for revolving the cutter, the frame *e* secured to the bed *a²* supporting the guide-block *e'*, the tension-block *e²* and the weighted lever *e³*, the drill-arbor *f* with the drill *f'*, the pulley *f²* and the grooved collar *f³*, the lever *f⁴* pivoted to the frame and con-
60 necting the drill-arbor *f* with the cam *f¹⁰* on the power-shaft *b*, the rock-shaft *g* supported in bearings *a¹²* *a¹²* with the stop-arm *g'*, and stop *g²*, the saw-arbor *g³* with the circular saw *g⁴* and pulley *g⁵* in the frame *g⁶* secured to the
65 rock-shaft, and the lever *g⁷* secured to the rock-shaft and connecting with the cam *g¹⁰* on the power-shaft *b*, through the roll *g⁸* and the groove *g⁹* in the cam, all for the purpose as
70 described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

ALBERT J. THORNLEY.

Witnesses:

ADA E. HAGERTY,
JOS. H. MILLER, Jr.