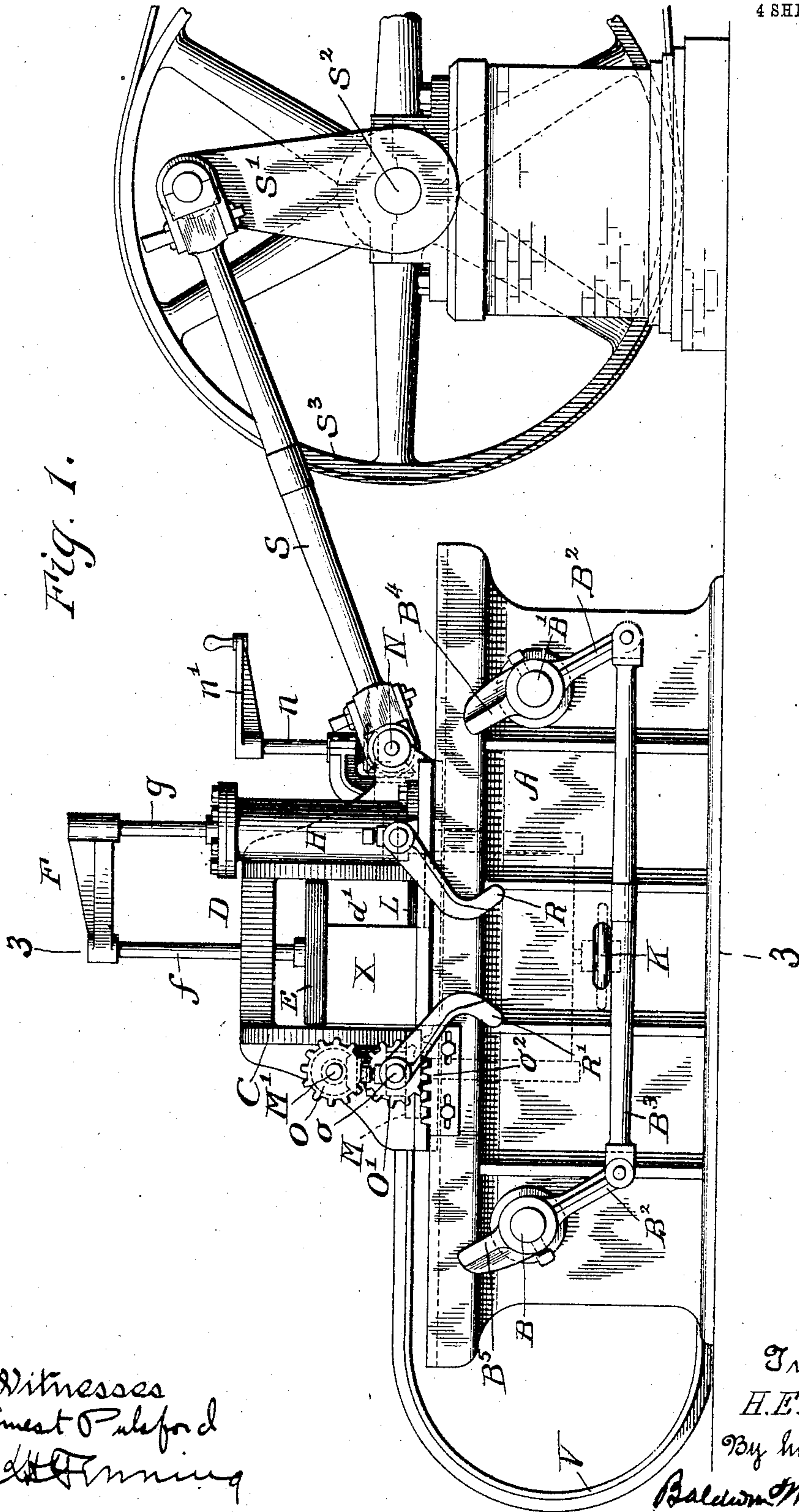


No. 786,560.

PATENTED APR. 4, 1905.

H. E. GRIMSLEY.
VENEER CUTTING MACHINE.
APPLICATION FILED JUNE 30, 1904.

4 SHEETS—SHEET 1.



Witnesses
Ernest Paleford
Adm. Fanning

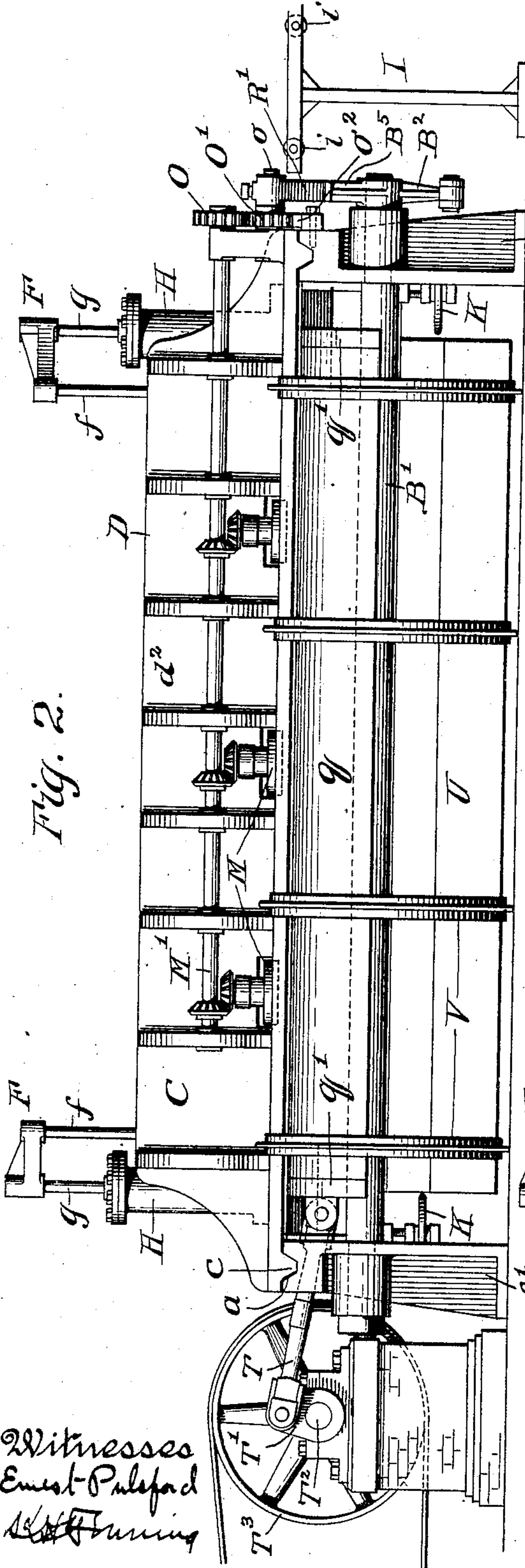
Inventor
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No. 786,560.

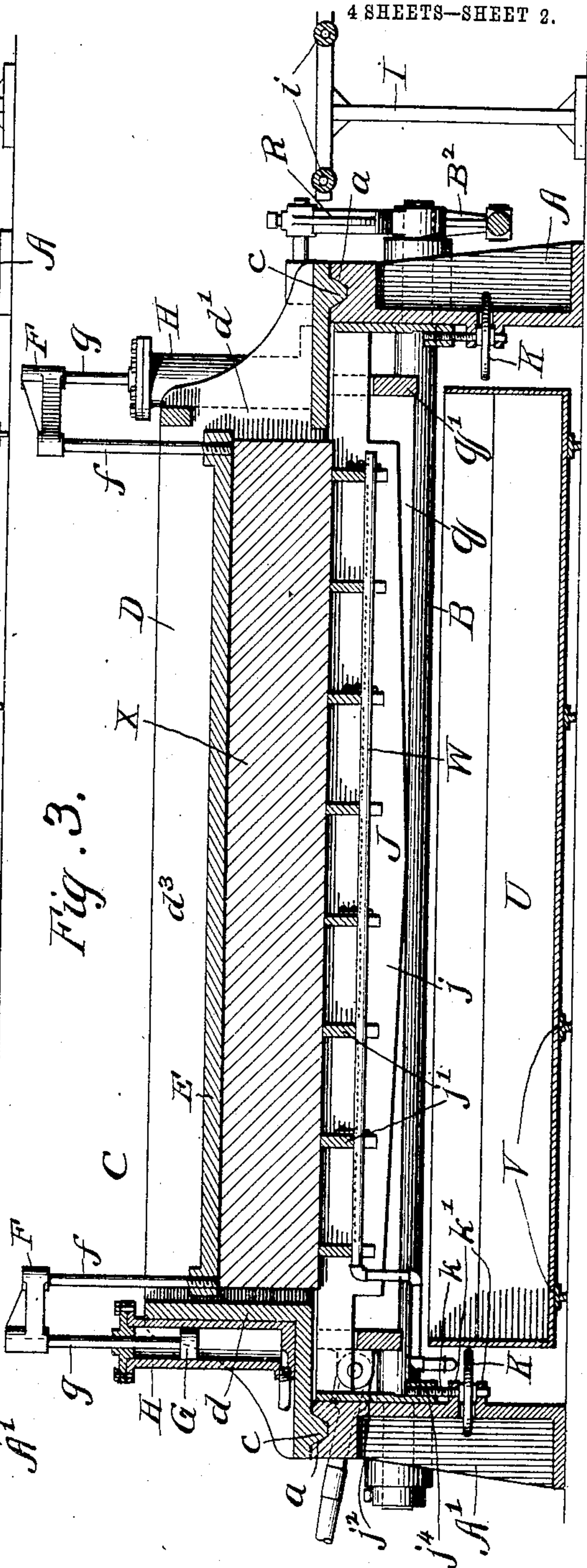
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4 SHEETS—SHEET 2.



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4 SHEETS—SHEET 3.

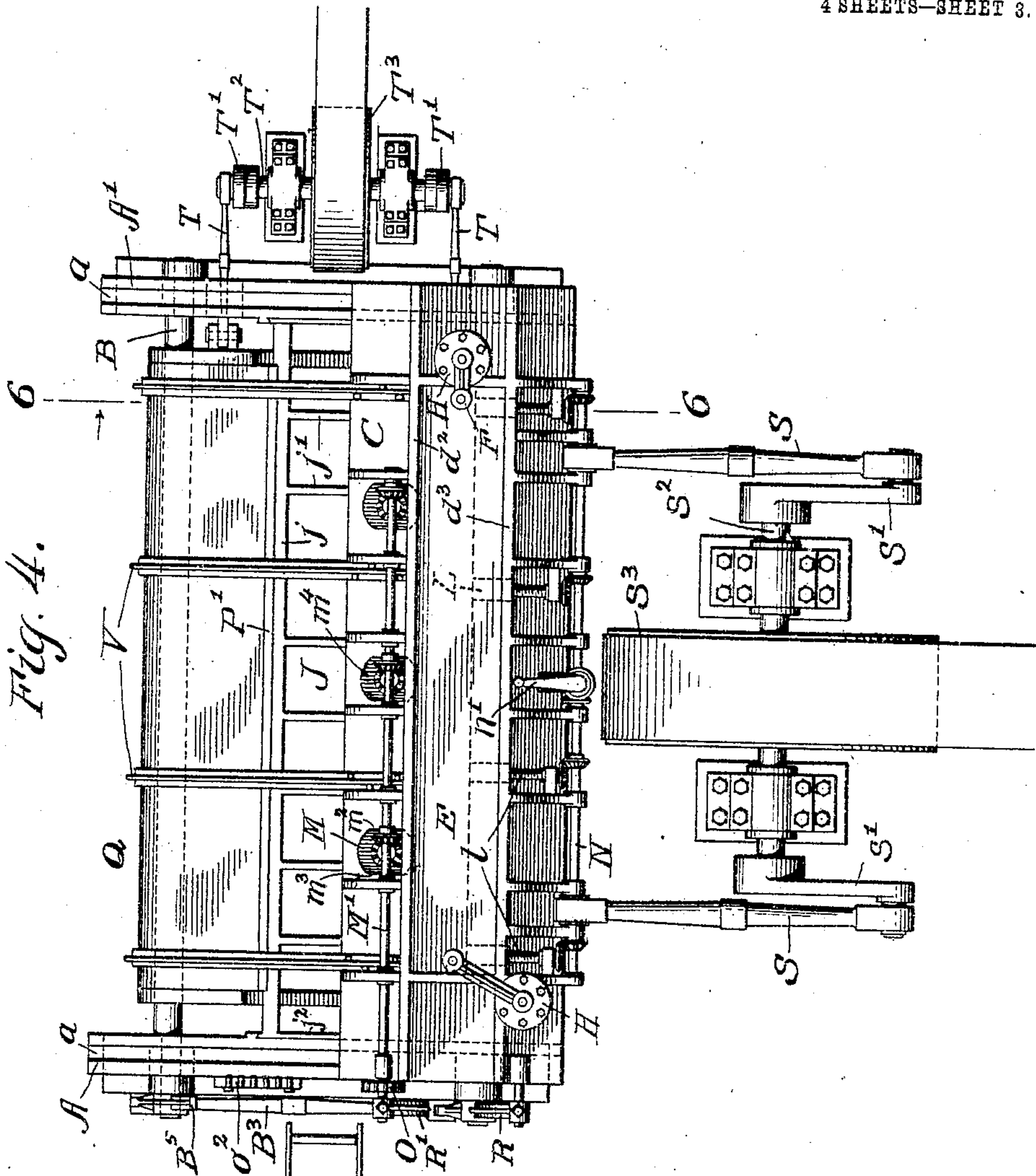


Fig. 4.

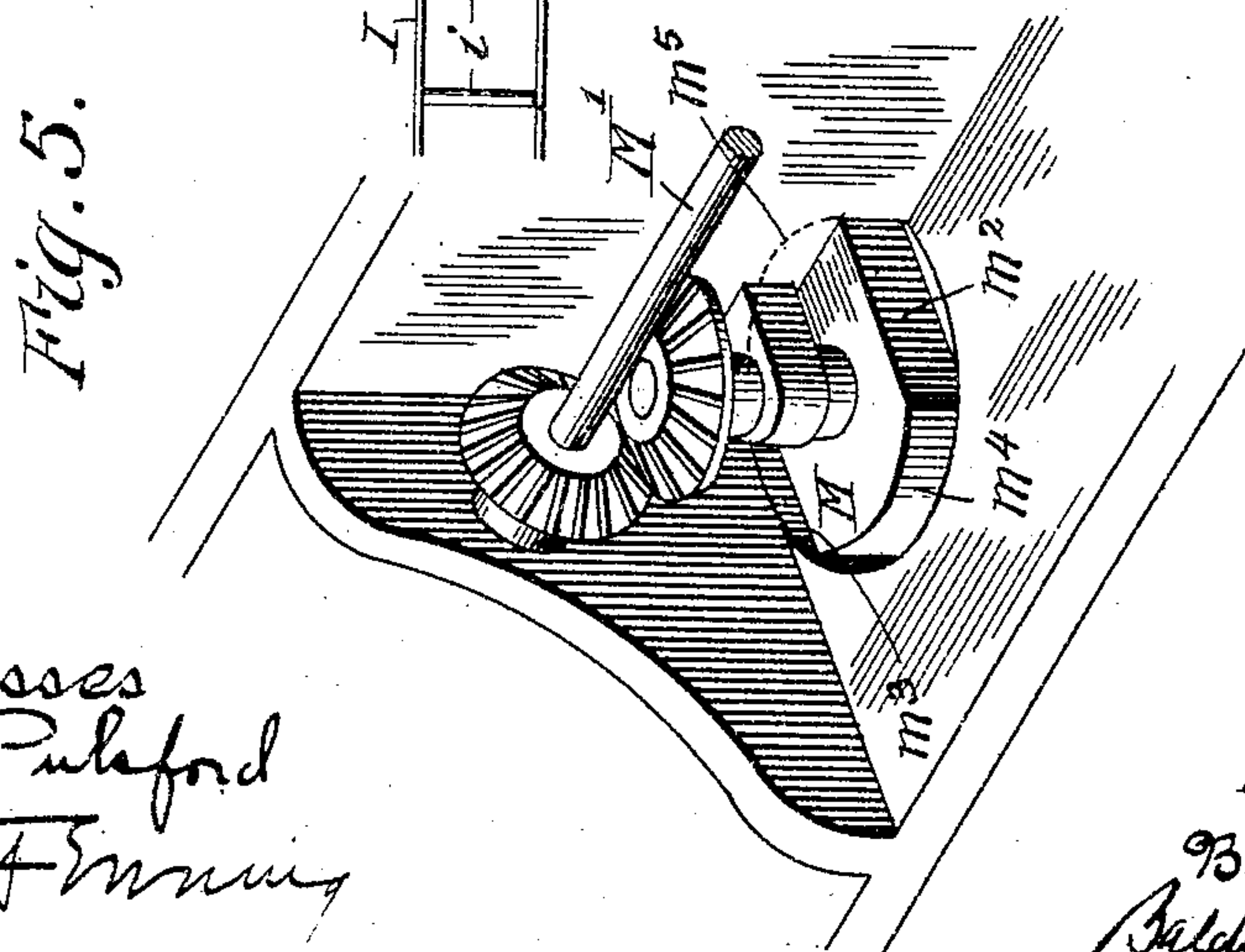


Fig. 5.

Witnesses
Ernest Puhford
[Signature]

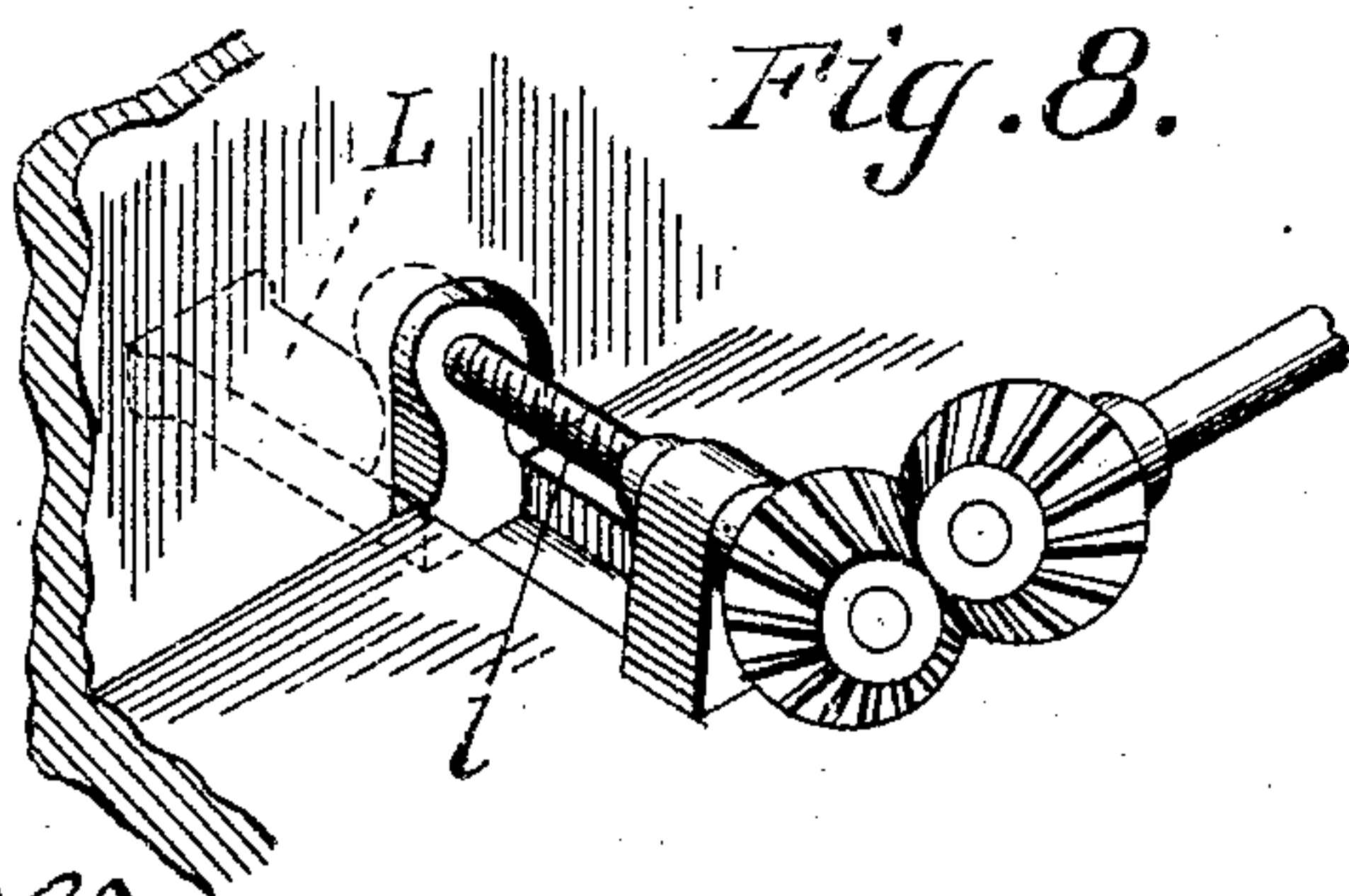
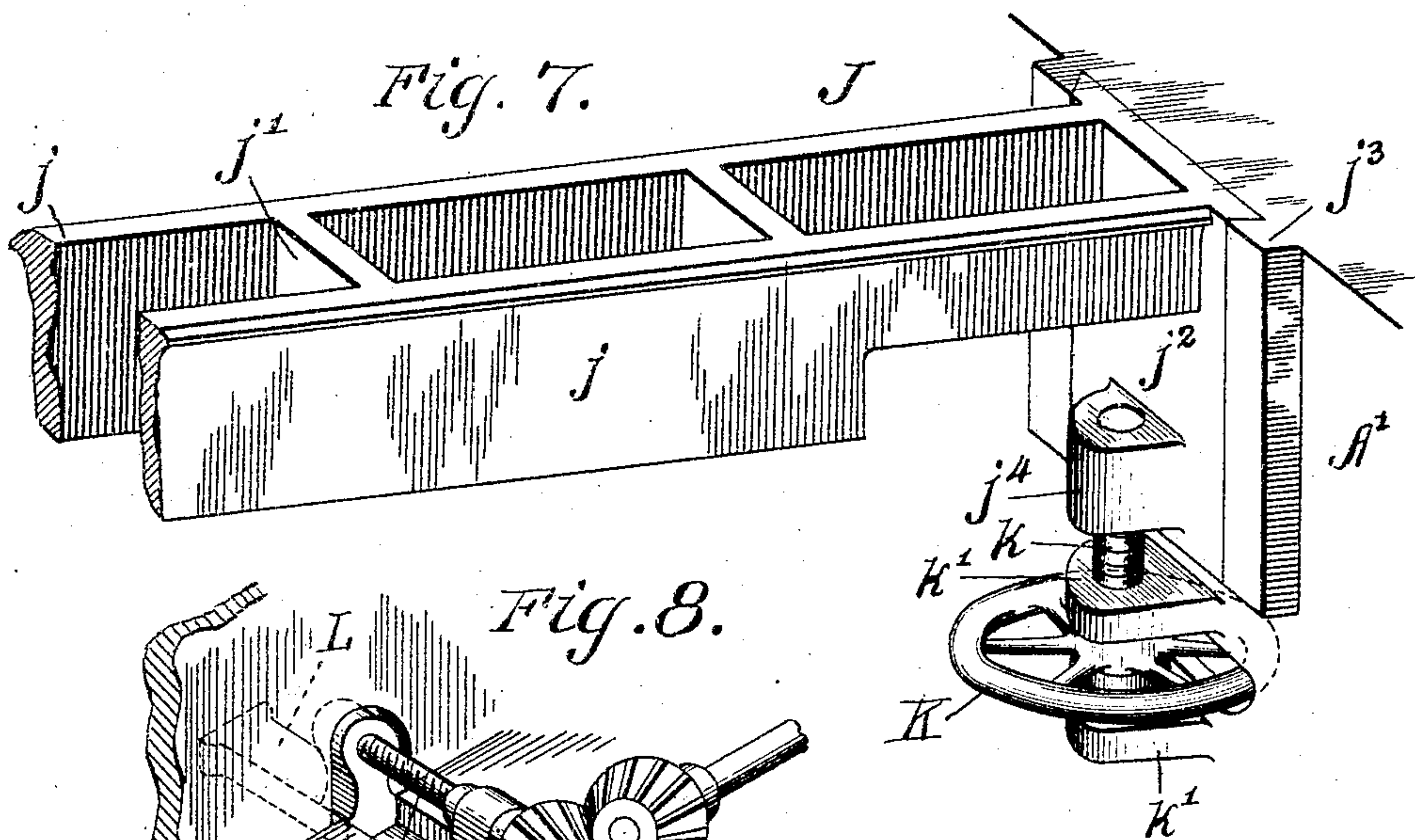
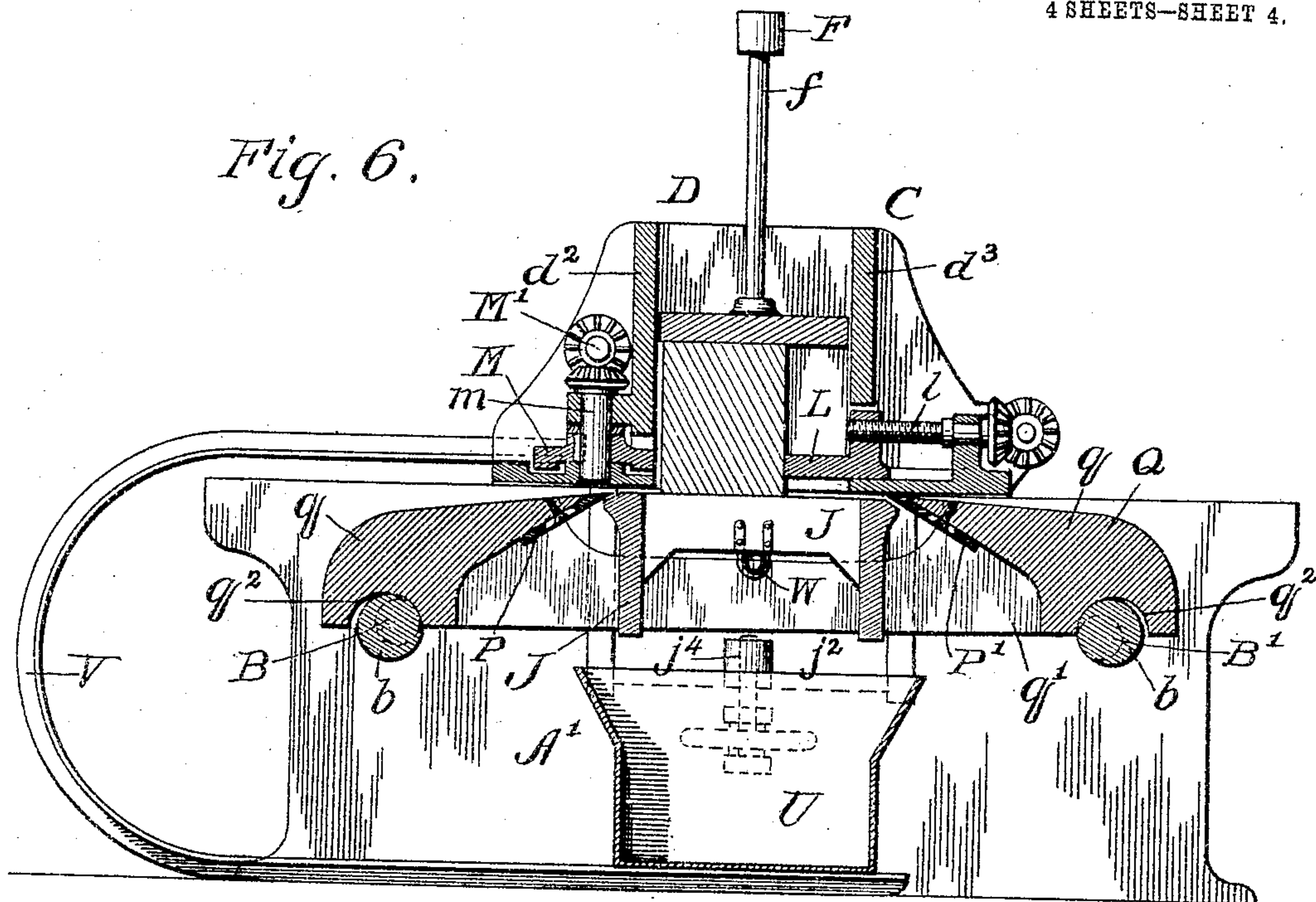
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4 SHEETS--SHEET 4.



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UNITED STATES PATENT OFFICE.

HARMON EDWARD GRIMSLEY, OF WINSTON SALEM, NORTH CAROLINA,
ASSIGNOR OF ONE-HALF TO GEORGE A. GRIMSLEY, OF GREENSBORO,
NORTH CAROLINA.

VENEER-CUTTING MACHINE.

SPECIFICATION forming part of Letters Patent No. 786,560, dated April 4, 1905.

Application filed June 30, 1904. Serial No. 214,714.

To all whom it may concern:

Be it known that I, HARMON EDWARD GRIMSLEY, a citizen of the United States, residing at Winston Salem, in the county of Forsyth and State of North Carolina, have invented certain new and useful Improvements in Veneer-Cutting Machines, of which the following is a specification.

This invention relates to machines for cutting thin slices, slabs, or sheets of veneer from blocks or bolts of wood, and particularly from quartered oak.

My invention especially relates to the class of such machines in which the bolt or block of wood from which the veneer is to be cut is mounted in a reciprocating carriage which moves back and forth past a slicing-knife. In such machines usually a single knife is employed and cutting is done during one stroke of each reciprocation, no work being done during the back stroke, and usually the block or bolt on the back stroke moves in contact with the knife, thus causing it to wear unduly and sometimes injuring the bolt.

According to my invention the block or bolt of wood from which the veneer is to be cut is mounted in a reciprocating carriage, beneath which are arranged two knives, which cut veneer from the bolt during each stroke of the machine, and the arrangement is such that after a knife has cut veneer from the bolt it is lowered or withdrawn out of the way of the bolt, so that on the return stroke the latter does not move in contact with the knife. The knives are mounted in a frame which reciprocates to a limited extent in a direction transverse to the movement of the bolt-carrying carriage, and this frame is mounted on eccentric bars, which at proper times are automatically shifted, so as to give a tilting movement to the knife-frame in order to alternately withdraw one knife and present the other. The bolt or block is fed to the knives by gravity; but a stay-log is preferably employed, which adds weight to the block and insures the proper engagement thereof with the knives. This stay-log descends by gravity, but is raised by power.

The bolt is securely held in the carriage by clamps on opposite sides of the carriage. One set of clamps is operated by gearing to press the bolt against clamping-disks, which have flattened portions and curved portions and which are automatically turned, so as to alternately engage and release the bolt. In this way the bolt is securely held while being cut and is automatically released and fed toward the knives immediately after the veneer is cut from it. The carriage is provided with a frame which supports a receptacle into which the veneer descends immediately after it is cut from the bolt. The receptacle reciprocates with the carriage and receives the veneer in successive slices, as it is cut in such manner that the two successive slices may lie flat upon each other, and thus match. The receptacle when full may be easily removed from the frame and a new receptacle may be supplied to receive more veneer. Mounted to slide in the main frame is a bolt-supporting frame or gage on which the bolt at times rests and which may be adjusted in such manner as to govern the thickness of the veneer cut from the bolt.

Other features of the invention will be hereinafter more particularly referred to.

In the accompanying drawings, Figure 1 shows a front elevation of my improved veneer-cutting machine. Fig. 2 shows a left-hand end elevation thereof. Fig. 3 shows a longitudinal section on the line 3 3 of Fig. 1. Fig. 4 is a plan view. Fig. 5 is a detail view in perspective of part of the clamping mechanism. Fig. 6 shows a transverse section on the line 6 6 of Fig. 4. Fig. 7 is a detail perspective view of the supporting frame or gage which governs the thickness of the veneer cut by the knives. Fig. 8 is a detail view in perspective of part of the bolt-clamping mechanism.

The main frame of the machine comprises front and rear frame-pieces A A', which may, if desired, be bolted down to any suitable support. These frame-pieces are connected by shafts B B', hereinafter more particularly referred to. The frame-pieces A have grooves

a , which receive ribs c on the under side of the frame of the carriage C, which carriage is adapted to reciprocate back and forth on said frame-pieces A A'. The carriage is formed with a box or receptacle D to receive the block or bolt X from which the veneer is to be cut. This box is closed at one end d and is open at the opposite end d' . It is open at top and bottom and closed on opposite sides $d^2 d^3$. A stay-log E fits the box or receptacle D and is adapted to move up and down therein. It is connected at opposite ends to rods f , depending from cross-heads F, which are in turn connected to the rods g of the pistons G, operating in steam-cylinders H. The arrangement is such that while the stay-log may descend slowly by gravity it can be raised quickly by steam. The block or bolt X is introduced into the box D through the open end d' thereof. The bolt is fed to the machine over rollers i , mounted on a frame I, and from these rollers it passes through the opening d' into the box D and rests on the frame J. This frame, as shown clearly in Fig. 7, consists of two parallel frame-pieces j , connected by cross-pieces j' . At their ends the side pieces j are formed with slides j^2 , fitting guides j^3 on the frame-pieces A A'. Each of these slides j^2 has a lug j^4 , with which engages a screw k , connected with a hand-wheel K, arranged between lugs k' on the frame-pieces A A'. By manipulating the hand-wheels K the frame may be raised or lowered to a proper extent to hold the bolt X at the desired elevation to give the desired depth of cut or thickness of veneer. When the gage-frame is once adjusted, no further adjustment need be given to it until the desired number of bolts are cut up into veneer of the desired thickness. Then if it be desired to change the thickness of veneer the hand-wheels may be operated to a proper extent. When a bolt has been inserted into the box D and the stay-log has been lowered upon it in the manner indicated in Figs. 3 and 6, the clamping-blocks L are made to engage the bolt and move it toward the clamping cam-wheels M. The blocks L are engaged by screws l , which are geared, in the manner indicated in Fig. 6 and also in Fig. 4, with a shaft N, which is geared, in the manner clearly indicated, with an upright shaft n , carrying a crank-handle n' . By turning this handle the clamping-blocks L may be moved back and forth to the desired extent. The cam-wheels M are carried by short shafts m , each of which is geared, in the manner clearly indicated in Figs. 2 and 6, with a horizontal shaft M', which is mounted in suitable bearings on the carriage and carries at its front end a spur-wheel O, gearing with another spur-wheel, O', on a stud-shaft o . This last-mentioned spur-wheel O' is adapted at times to gear with a rack of teeth O², secured to the front frame-piece A. This rack may be adjustable in the manner indicated in

Fig. 1. As shown, it has six teeth adapted to mesh with twelve teeth in the wheel O'. As shown in Figs. 4 and 5, the wheels M have flattened opposite sides $m^2 m^3$ and curved opposite sides $m^4 m^5$. When the flattened sides are presented to the interior of the box D, the wheels do not engage the bolt X; but when the curved sides are thus presented they engage the bolt and, in connection with the clamping-blocks L, securely hold it. In Fig. 6 the wheels M are out of engagement with the bolt; but if the carriage is moved in either direction the shaft M' will be turned through the gearing before described, and the wheels M will be given a quarter-turn, so as to cause them to engage the bolt. At the proper time these wheels are given another quarter-turn, which will cause them to disengage from the bolt. This operation will be referred to again hereinafter.

The knives P P' are attached to a knife-frame Q, consisting of heavy end pieces q , connected at front and rear by cross-pieces q' , and this frame rests on the bars B B', hereinbefore referred to. These bars are mounted in suitable bearings in the frames A A' and while they have no endwise movement therein are free to turn to a limited extent. They have eccentric portions b , which enter curved grooves q^2 in the under sides of the end pieces q of the knife-frame. These grooves are of somewhat greater diameter than the eccentric portions of the bars B B', as indicated in Fig. 6.

To the bars B B' are attached arms B², joined by a connecting-rod B³. Each bar B B' also carries a projecting arm or finger B⁴ B⁵, which is adapted to engage a hook R or R', pivotally connected with some part of the carriage C in the manner clearly shown in Fig. 1. The carriage is reciprocated by means of pitmen S, connected with crank-arms S', radiating from a driving-shaft S², carrying the belt-pulley S³. The knife-frame is connected by pitmen T with crank-arms T' on a driving-shaft T² carrying a belt-pulley T³. The arrangement is such that the knife-frame is reciprocated to a limited extent as the carriage moves transversely across the knives. In this way a clean easy cut is made.

Referring now to Figs. 1 and 6 and assuming that the carriage C is moving to the right by means of the gearing before described, the clamp-wheels M will be made to firmly engage the bolt, which will slide over the gage-frame J. At this time the knife P' is raised and cuts veneer from the bolt. Immediately after the veneer is cut the hook R engages the arm B⁴. This causes the bars B B' to be turned in their bearings in such manner as to depress the knife P', so that as the carriage retreats the knife P' will be out of contact with the bolt while the knife P is raised into operative position. As the carriage further moves to the left the spur-wheel O' engages the rack O²

and a quarter-turn is given to the clamp-wheels M and the bolt lowers onto the gage-frame J. As the carriage continues its movement to the left the clamp-wheels are turned to a greater extent and their circular or cam portions are made to engage the bolt, now set to its new position, and hold it securely. Then the bolt engages the knife P and another slice of veneer is cut. As the carriage moves farther to the left the hook R' engages the arm B⁵ and shifts the knives, so as to lower the knife P and elevate the knife P'. The operations are repeated in a similar manner. As the veneer is cut it passes between the knives and the gage-frame J and falls into a receptacle U, which extends from one end of the machine to the other and is supported on frame-bars V, attached to the carriage, extending over the left-hand end of the machine and down under the knife-frame. These frame-pieces hold the receptacle U immediately beneath the knife which is doing the cutting, and after this knife has cut its slice of veneer the receptacle is carried by the carriage over to a position beneath the other knife. Therefore the receptacle receives successive slices of veneer from the bolt, which will lie flat upon each other with the grain matching. The knives P P' may be adjusted when ground in the manner indicated in Fig. 6. After the bolt is cut down to the spalt the stay-log E may be quickly raised by steam in the manner before described and the spalt may be withdrawn endwise. Preferably the bolts are steamed before each slice of veneer is cut from it by means of a perforated steam-pipe W, connected in any suitable way with a boiler supplying live steam.

I claim as my invention—

1. A veneer-cutting machine comprising a reciprocating bolt-carrier, a knife-frame reciprocating transversely to the direction in which the bolt-carrier moves, knives carried by the knife-frame for cutting veneer at each stroke of the bolt-carrier, and mechanism for moving the knife-frame to withdraw each knife to a definite extent from the path of the bolt after it has cut a slice of veneer therefrom without interfering with the transversely-reciprocating movement of the knife-frame.

2. A veneer-cutting machine comprising a bolt-carrier, a crank-operated pitman connected therewith for reciprocating it, a knife-frame, a crank-operated pitman connected therewith for reciprocating it transversely to the direction from which the bolt-carrier moves, knives mounted on the knife-frame and adapted to cut veneer from the bolt during each stroke thereof, and means operated by the bolt-carrier at the end of each stroke for tilting the knife-frame to withdraw each knife from the bolt immediately after it has cut a slice of veneer therefrom.

3. A veneer-cutting machine comprising a

reciprocating bolt-carrier, a knife-carrying frame reciprocating transversely thereto, bars having eccentric portions on which the knife-carrying frame rests, and means for turning said bars to cause the knife-carrying frame to tilt at the end of each stroke of the bolt-carrier.

4. A veneer-cutting machine comprising a reciprocating bolt-carrier, a knife-carrying frame reciprocating transversely thereto, bars having eccentric portions on which the knife-carrying frame rests, and means operated by the bolt-carrier for turning said bars to cause the knife-carrying frame to tilt at the end of each stroke of the bolt-carrier.

5. A veneer-cutting machine comprising a reciprocating bolt-carrier, a knife-frame carrying two oppositely-inclined knives, bars having eccentric portions on which the knife-carrying frame rests, connections between said bars by which they are made to move coincidentally, and devices carried by the bolt-carrier for turning said bars to cause the knife-carrying frame to tilt and thus move one knife out of the path of the bolt while causing the other knife to move into the path thereof.

6. A veneer-cutting machine comprising a rapidly-reciprocating bolt-carrier, devices for clamping the bolt in the carrier, a knife-frame reciprocating transversely to the direction in which the bolt-carrier moves, oppositely-inclined knives carried by the knife-frame for cutting veneer at each stroke of the bolt-carrier, mechanism for moving the knife-frame to withdraw each knife from the path of the bolt after it has cut a slice of veneer therefrom, and means for releasing the bolt-clamping devices at the end of each stroke of the knife-frame.

7. A veneer-cutting machine comprising a supporting-frame, a bolt-carrier mounted to reciprocate on said frame, a knife-carrying frame mounted to reciprocate transversely beneath the bolt-carrier, a vertically-adjustable supporting frame or gage beneath the bolt-carrier and between the knives, and a pipe attached to the supporting frame or gage for steaming the bolt while the veneer is being cut therefrom.

8. A veneer-cutting machine comprising a reciprocating bolt-carrier, a knife-frame below it carrying two knives, a removable receptacle for receiving a plurality of sheets of veneer from the knives and a frame attached to the bolt-carrier and extending beneath the knives which supports the veneer-receiving receptacle and carries it alternately from knife to knife whereby successive sheets of veneer are received and piled in the receptacle.

9. A veneer-cutting machine comprising slicing-knives, a bolt-carrier, a stay-log carried thereby and free to move with the bolt toward the knives by gravity, steam-cylinders at opposite ends of the stay-logs, their pistons and

connections between the pistons and the stay-log whereby the stay-log may be rapidly raised by steam after the bolt has been cut up.

10. In a veneer-cutting machine, the combination of a bolt-carrier, clamping-blocks mounted thereon, screws for operating said clamping-blocks, a handle, gearing connecting said screws with the handle whereby the blocks may be simultaneously moved into engagement with the bolt, cam-wheels adapted to engage the bolt, gearing for coincidently operating said cam-wheels and means for periodically turning the said wheels to cause them to engage the bolt and to disengage therefrom.

11. In a veneer-cutting machine, the combination of a bolt-carrier, and clamping devices comprising cam-wheels adapted to engage the bolt, gearing for coincidently operating said cam-wheels, and means for periodically turning the said wheels to cause them to engage the bolt and to disengage therefrom.

12. In a veneer-cutting machine, the combination of a reciprocating bolt-carrier, a knife-frame beneath it carrying two knives,

and clamping devices comprising cam-wheels adapted to engage the bolt, gearing connecting said cam-wheels with each other and devices for setting said gearing into operation as the bolt-carrier reciprocates to cause said cam-wheels to alternately engage the bolt and to be alternately released therefrom, for the purpose specified.

13. A veneer-cutting machine comprising a bolt-carrier provided with a box for the bolt open at top and bottom and at one end, a roller-carrying frame opposite the open end of the box for receiving the bolt and guiding it into the box, a stay-log, means for raising it by steam, clamping devices operating through the sides of the box for holding the bolt in place and a knife-carrying frame reciprocating beneath the bolt-carrier.

In testimony whereof I have hereunto subscribed my name.

HARMON EDWARD GRIMSLEY.

Witnesses:

HENRY S. FOY, Jr.,
FLOYD J. GAITHER.