

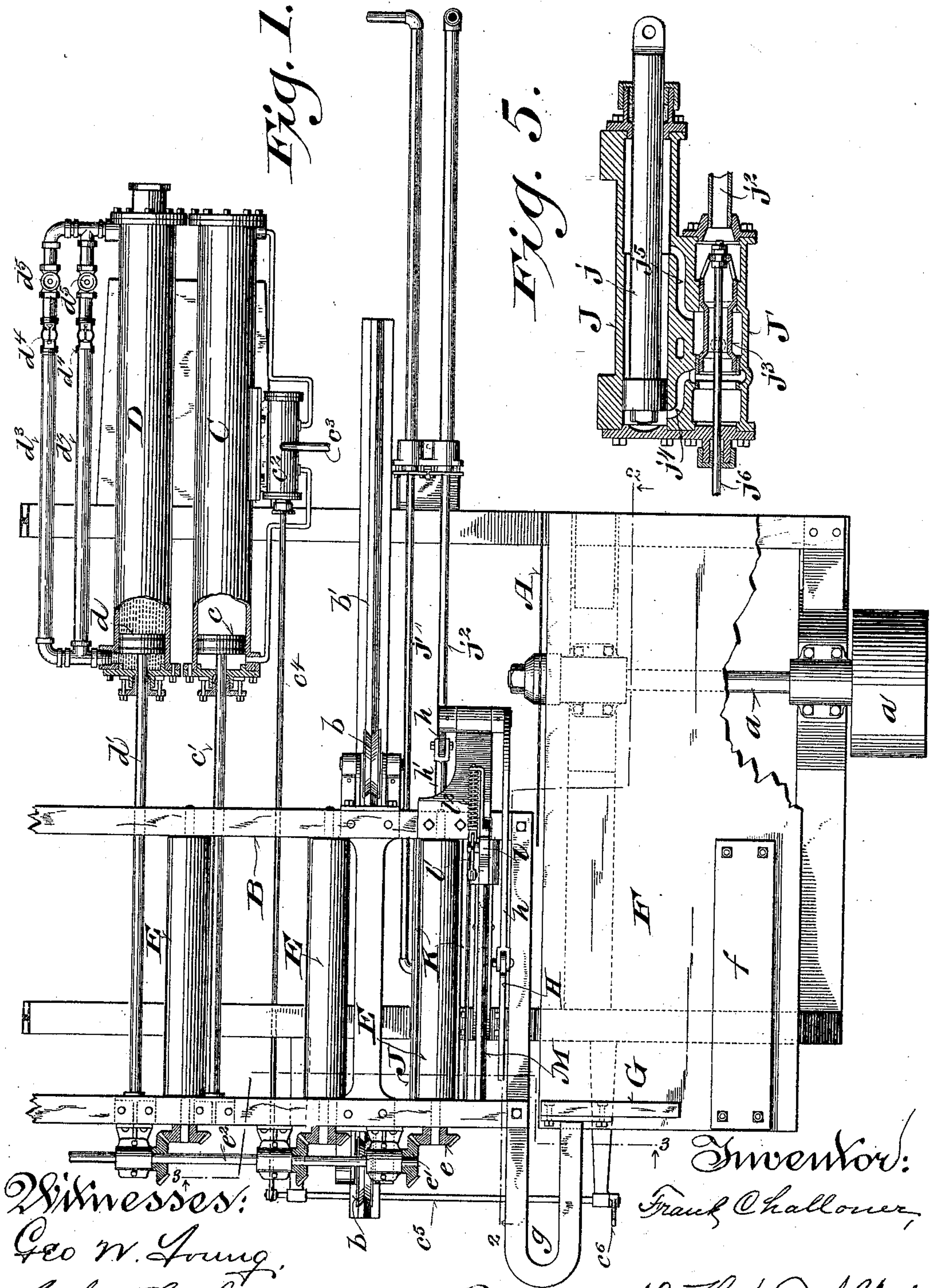
(No Model.)

F. CHALLONER.
CUT-OFF MACHINE.

3 Sheets—Sheet 1.

No. 603,498.

Patented May 3, 1898.



Witnesses:
Geo W. Young,
Chas. L. Cox.

Inventor:
Frank Challoner,

By Walter Pordes and others
Attorneys.

(No Model.)

3 Sheets—Sheet 3.

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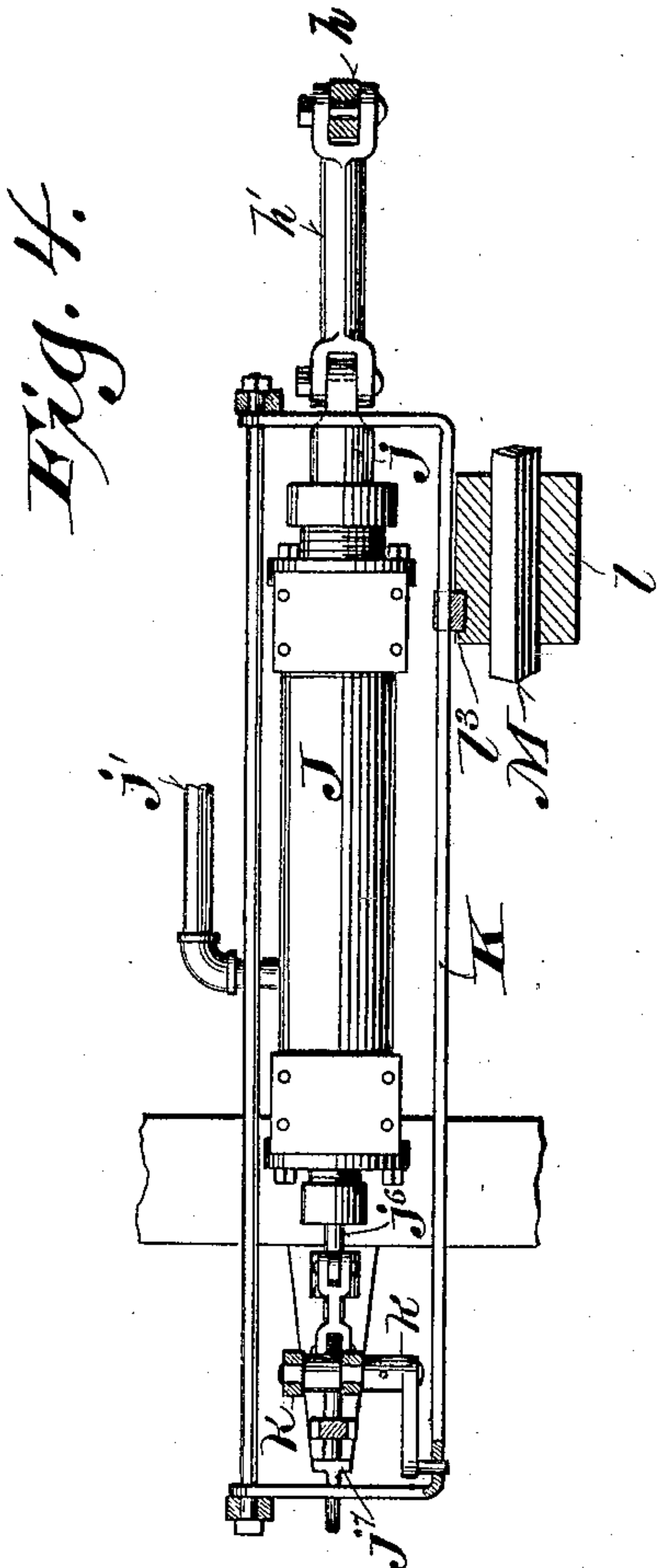
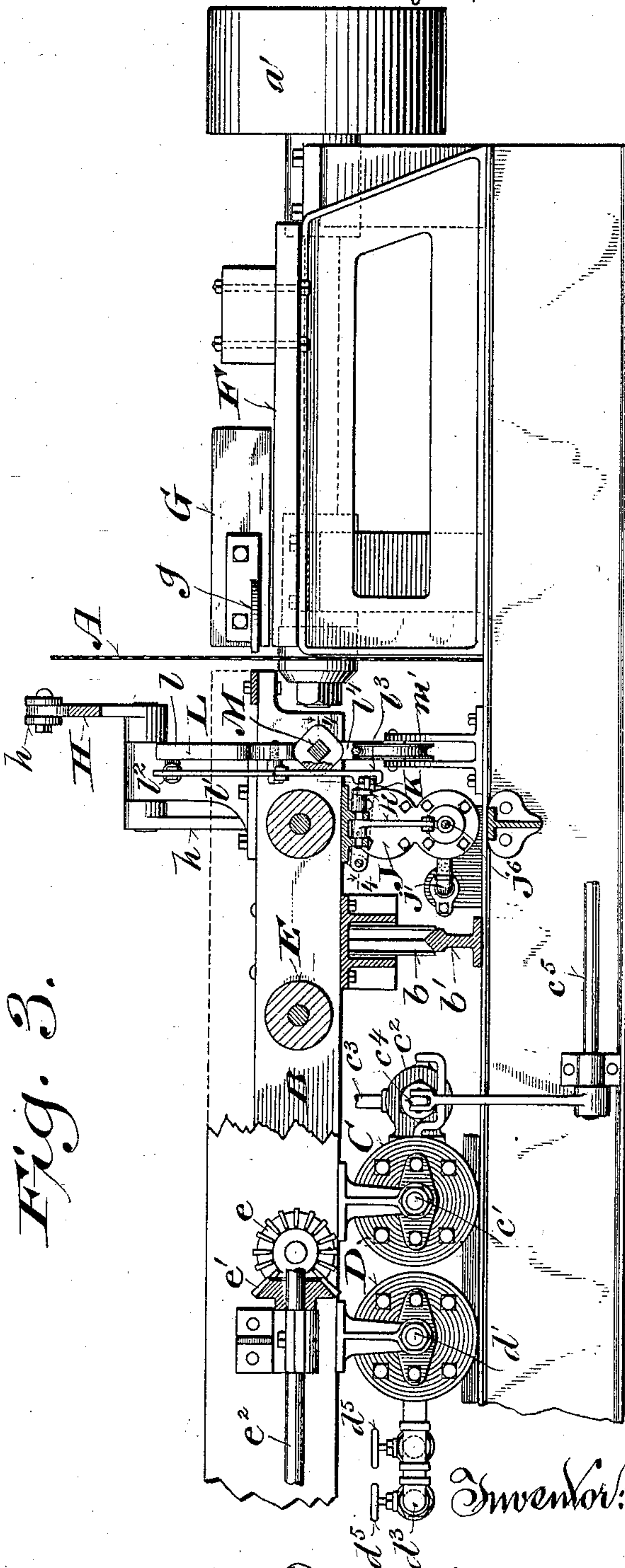








Fig. 3.



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UNITED STATES PATENT OFFICE.

FRANK CHALLONER, OF OSHKOSH, WISCONSIN.

CUT-OFF MACHINE.

SPECIFICATION forming part of Letters Patent No. 603,498, dated May 3, 1898.

Application filed December 14, 1894. Serial No. 531,819. (No model.)

To all whom it may concern:

Be it known that I, FRANK CHALLONER, of Oshkosh, in the county of Winnebago and State of Wisconsin, have invented certain new and useful Improvements in Cut-Off 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 pertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

The main object of my invention is to facilitate cutting timber to certain desired lengths for various purposes, and incidentally thereto to automatically grasp and hold a number of sticks or pieces of timber firmly together in proper position and to regulate and control the movements of the carriage.

It consists of certain novel features in the construction and arrangement of the component parts of the machine, hereinafter particularly described, and pointed out in the claims.

In the accompanying drawings like letters designate the same parts in the several figures.

Figure 1 is a plan view of my improved machine, certain parts being shown in section or broken away to more clearly disclose the construction. Fig. 2 is a vertical section in a plane indicated by the line 2 2, Fig. 1. Fig. 3 is a vertical section lengthwise of the carriage in a plane indicated by the line 3 3, Fig. 1. Fig. 4 is a horizontal section on the line 4 4, Fig. 3, showing the clamp-actuating cylinder and associated parts in plan view; and Fig. 5 is a vertical longitudinal section of said cylinder and its associated valve-case and valve.

A designates the saw, mounted upon a horizontal arbor a , which is provided with a pulley a' .

B represents one end of a reciprocating carriage, which is provided with truck-wheels $b b$, guided and arranged to travel on a suitable track or way b' parallel with the plane of the saw. It will be understood that the opposite end of the carriage, which is not shown, is to be supported in like manner by a parallel rail and similar truck-wheels.

C is a cylinder placed between and parallel with the carriage-ways and provided with a

piston c , which is connected by a rod c' with the front or opposite side of the carriage.

c^2 is a valve having connections with opposite ends of the cylinder C and a steam or other fluid-pressure supply connection c^3 . The valve proper, which may be of the ordinary slide or piston type, is connected by a rod c^4 with an arm on a rock-shaft c^5 , extending along the front side of the machine parallel with the carriage and provided in a position within convenient reach of the operator with a lever-arm or handle c^6 .

D is a cylinder like or similar to the steam or carriage-actuating cylinder C, placed alongside thereof and parallel therewith. It is provided with a piston d , which is connected by a rod d' with the front side rail of the carriage-frame. The opposite ends of this cylinder, which is filled with oil or other suitable liquid, are connected by two by-passes or pipes d^2 and d^3 , which are provided with oppositely-opening check-valves $d^4 d^4$ and with cut-off or regulating valves $d^5 d^5$. By this means the advance and return movements of the carriage may be adjusted as desired and its movement in either direction checked at the proper point.

The carriage is provided at suitable intervals with rollers E E, placed crosswise therein or parallel with the carriage-ways and journaled at the ends in the side rails of the carriage-frame. They are each connected by bevel-gears e and e' with and are turned on the upper side toward the saw by a shaft e^2 , arranged lengthwise of the carriage and having any suitable driving connection. (Not shown.)

F is a platform placed over the saw arbor and frame on the opposite side of the saw from the carriage in position to support and catch the overhanging ends of sticks of timber carried by the carriage. It has on the upper side, parallel with the plane of the saw, a stop-block or gage f for determining the length of the blocks or sections into which the sticks of timber are to be cut. This gage may be made laterally adjustable, if desired. To the front side of the adjacent end of the carriage B is attached by means of a U-shaped arm g a follower or pusher G in line with the front rail of the carriage-frame. This serves to support the projecting ends of the sticks

of timber as they are cut off by the saw and to thrust them forward on the platform F out of the way when they are severed.

H is a top clamp pivoted to and supported 5 by the overhanging arm of an angular lever h above the end rail of the carriage next to the saw. The lever h is fulcrumed to a bracket attached to the rear side rail of the carriage-frame and is connected at its lower 10 end, opposite that to which the clamp is attached, by a link h' with the piston j of cylinder J (shown in detail in Fig. 5) and attached to the under side of the carriage, as shown in Figs. 2 and 3, parallel with the car- 15 riage-ways. This cylinder is provided on the under side with a valve-case J', which has telescoping steam or other fluid-pressure supply and discharge connections j^1 and j^2 , respectively. The valve-case is provided with 20 a piston-valve j^3 , which has a passage through it and stands normally as shown in Fig. 5. In this position the front end of the cylinder communicates through passage j^4 and said valve with the exhaust-pipe j^2 and the rear 25 end of the cylinder through passage j^5 and the valve-case with the supply-pipe j^1 , thus holding the piston j in the position in which it is shown in Fig. 5. The valve-rod j^6 is linked to one arm of a bell-crank lever k , the 30 other arm of which engages a U-shaped bar K, hinged or pivoted at its ends in a line parallel therewith and with the carriage-ways to the under side of the carriage. j^7 is a stop arranged in the path of said valve-rod to in- 35 sure restoring the valve j^3 to its normal position when the carriage returns to its starting-point.

L designates an automatic trip or valve-actuating device mounted upon and movable 40 endwise of a squared bar M, which is secured at its ends in the side rails of the carriage parallel with the carriage-ways. It consists of an upwardly-projecting arm having a sleeve loosely fitted on the bar M and con- 45 nected below it with a weight m^2 by a cord m , passing over a sheave m' , and of an angular lever fulcrumed at or near its elbow to the base of said arm and connected at its upper end with said arm by a pivot-rod and com- 50 pression-spring l^2 and at its lower end by a link l^3 with the bar K, said link having a sliding connection at its lower end with said bar, as seen in Fig. 3. The arm l has on the under side of its sleeve an extension l^4 , and the 55 bracket by which the pulley m' is carried has an extension m^3 , projecting into the path of said extension l^4 and serving as a stop for the trip L, whereby the latter is engaged and held in the position shown in Fig. 2 on the rear 60 side of the carriage when the latter returns to its normal position. By the term "front" as herein used I intend to designate that side of the machine on which the operator's lever c^6 is located.

65 My improved machine operates as follows: A number of sticks of timber being placed upon the carriage and resting upon the roll-

ers E E are moved endwise, while the carriage stands in the position shown in Figs. 1 and 2, against the stop or gage f . The operator 70 then through the lever c^6 and its connections, hereinbefore explained, starts the carriage forward toward the saw. As the carriage advances the trip L is held by the weight m^2 against the stop m^3 until it is engaged by the 75 adjacent stick or sticks of timber, and sufficient pressure is exerted thereon to force the lever l' backward against the tension of spring l^2 . This operates through the link l^3 to lift the bar K and through it and its con- 80 nections, above mentioned, to shift valve j^3 to the left, as shown in Fig. 5, thereby reversing the supply and exhaust connections of cylinder J. When this takes place, the piston j will obviously be thrust to the right, and, act- 85 ing through lever h , will force the clamp H down upon the sticks of timber upon the carriage, binding them firmly together and holding them in place while they are severed by the saw. The piston j and the clamp will be 90 held in the positions last mentioned until the carriage in its return movement causes the extension l^4 on the trip to engage with the stop m^3 . When this takes place, the timber on the car- 95 riage will be moved out of engagement with the trip, or the pressure thereon will be removed, so that the spring l^2 can thrust the upper end of lever l' forward and through its connec- tions restore the valve j^3 to its original posi- 100 tion, whereupon the position of the piston j will be reversed and the clamp H will be raised thereby out of engagement with the timber on the carriage. In case said spring fails from any cause to restore said valve to its normal position this will be effected by the 105 engagement of the valve-rod j^6 with stop j^7 . The several sticks or pieces of timber being now free are moved endwise by the rollers E E against the gage-stop f , and the operations above mentioned are repeated until the sev- 110 eral sticks of timber are all cut into the desired lengths. With each advance stroke of the carriage-actuating piston c the controlling-piston d forces the oil or other retarding liquid contained in cylinder D through the 115 pipe or passage d^2 , and with the return stroke of the piston c such oil or liquid is forced back through the passage d^3 . By the adjustment of the valves d^5 the area of the by-passages may be more or less restricted and the ad- 120 vance and return movements of the carriage regulated as desired.

In places where the use of steam or other fluid-pressure is impracticable or inconvenient for actuating the clamping device other 125 mechanical means, such as the weight of the clamp itself or a separate weight or spring, may be employed, and the details of construction may be variously modified within the spirit and intended scope of my invention. 130

I claim—

1. In a cut-off machine the combination with the saw, of a reciprocating carriage provided with a vertically-movable clamp and a

horizontally-movable arm or part constructed and arranged when the carriage moves forward to press and hold the timber against the front side of the carriage, and means for operating said clamp controlled by said arm, substantially as and for the purposes set forth.

2. In a cut-off machine the combination with a saw and reciprocating carriage, of a vertically-movable clamp connected with and overhanging the carriage, a cylinder attached to the carriage, provided with a piston which is connected with said clamp and having a telescoping fluid-pressure-supply connection, a trip mounted upon the carriage and connected with the valve controlling the admission of the fluid-pressure medium to said piston, substantially as and for the purposes set forth.

3. In a cut-off machine the combination with the saw and a reciprocating carriage, of a clamp connected with said carriage, a cylinder attached to said carriage and provided with a piston which is connected with said clamp, a valve controlling the admission and exhaust ports of said cylinder, a vertically-movable bar hinged or pivoted to the carriage parallel with its line of travel and connected with the stem of said valve, and a trip movably mounted upon said carriage and having a sliding connection with said bar, substantially as and for the purposes set forth.

4. In a cut-off machine the combination with the saw and a reciprocating carriage, of a clamp connected with said carriage, a cylinder attached to the carriage and provided with a piston which is connected with said clamp, a valve controlling the admission and exhaust ports of said cylinder, a rod or bar hinged to said carriage in a line parallel with its travel and connected with said valve, a trip mounted and movable on said carriage parallel with its travel, and having a retarding connection operating in opposition to the advance movement of the carriage, and a sliding connection with said hinged bar, substantially as and for the purposes set forth.

5. In a cut-off machine the combination with the saw and a reciprocating carriage provided with clamping mechanism for holding material thereon in position to be sawed, and comprising a cylinder, piston and controlling valve, of trip mechanism comprising a bar or rod hinged to the carriage parallel with its line of travel, and connected with said valve, an arm mounted and movable upon said carriage parallel with said rod or bar and connected by a cable or chain passing over a sheave with a weight which opposes its advance movement, and a lever fulcrumed to said arm and having a yielding connection therewith, and a sliding connection with said rod or bar, substantially as and for the purposes set forth.

6. In a cut-off machine the combination with the saw and a reciprocating carriage, of an angular lever fulcrumed to a suitable support at one side of the carriage, a clamp piv-

oted to the end of said lever overhanging the carriage, a cylinder attached to said carriage and provided with a piston which is connected with the other arm of said lever, and a valve controlling the admission and exhaust ports of said cylinder and having telescoping supply and exhaust connections, substantially as and for the purposes set forth.

7. In a cut-off machine the combination with the saw and a reciprocating carriage, of a vertically-movable clamp connected with and overhanging said carriage adjacent to the plane of the saw, a cylinder attached to said carriage and provided with a piston which is connected with said clamp, a valve controlling the operation of said piston, a trip mounted and movable upon said carriage parallel with its line of travel, and having actuating connections with said valve and a retarding connection operating in opposition to the advance movement of the carriage, and a stop arranged to arrest said trip in its return movement with the carriage at the desired point, substantially as and for the purposes set forth.

8. In a cut-off machine the combination with a reciprocating carriage, of an actuating cylinder and piston connected therewith, and a retarding cylinder provided with a piston also connected with said carriage and having by-passes between its opposite ends provided with oppositely-opening check-valves and with regulating-valves, substantially as and for the purposes set forth.

9. In a cut-off machine the combination with a reciprocating carriage and its actuating mechanism, of a controlling cylinder containing a suitable retarding fluid and provided with a piston which is connected with said carriage, and by-passes connecting the ends of said cylinder and provided with oppositely-closing check-valves and with regulating-valves, substantially as and for the purposes set forth.

10. In a cut-off machine the combination with the saw, of a reciprocating carriage provided with a vertically-movable clamp, an arm or part movable horizontally upon said carriage in a direction parallel with its travel, means tending to hold said arm or part from advancing with the carriage, a stationary stop arranged to engage and arrest said arm or part when the carriage approaches its starting-point in its return movement, and means for operating said clamp controlled by said arm, said arm and clamp cooperating to hold the timber firmly in place upon the carriage while it is being cut off by the saw, substantially as and for the purposes set forth.

In testimony that I claim the foregoing as my own I affix my signature in presence of two witnesses.

FRANK CHALLONER.

Witnesses:

E. R. HICKS,

W. W. KIMBALL.