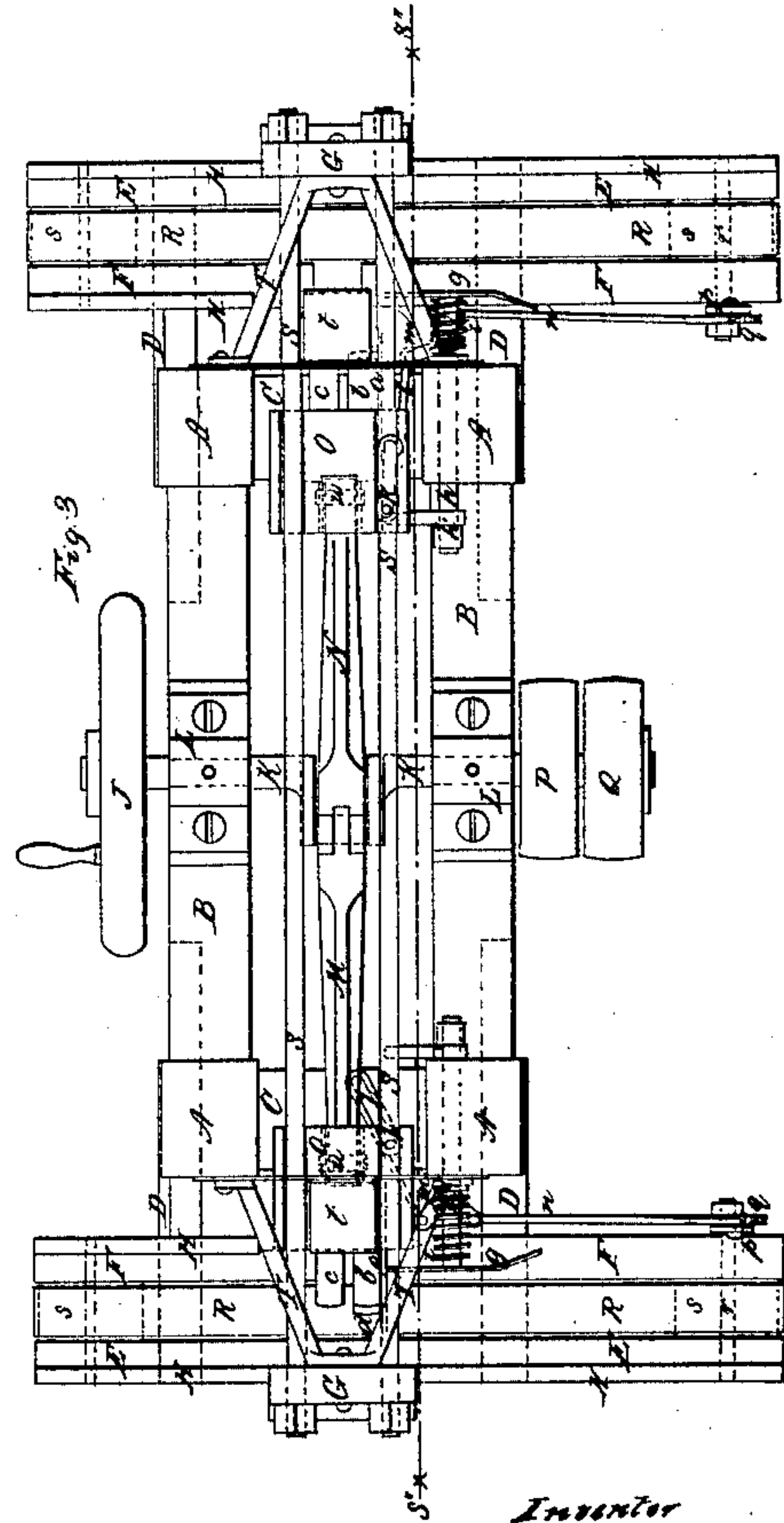
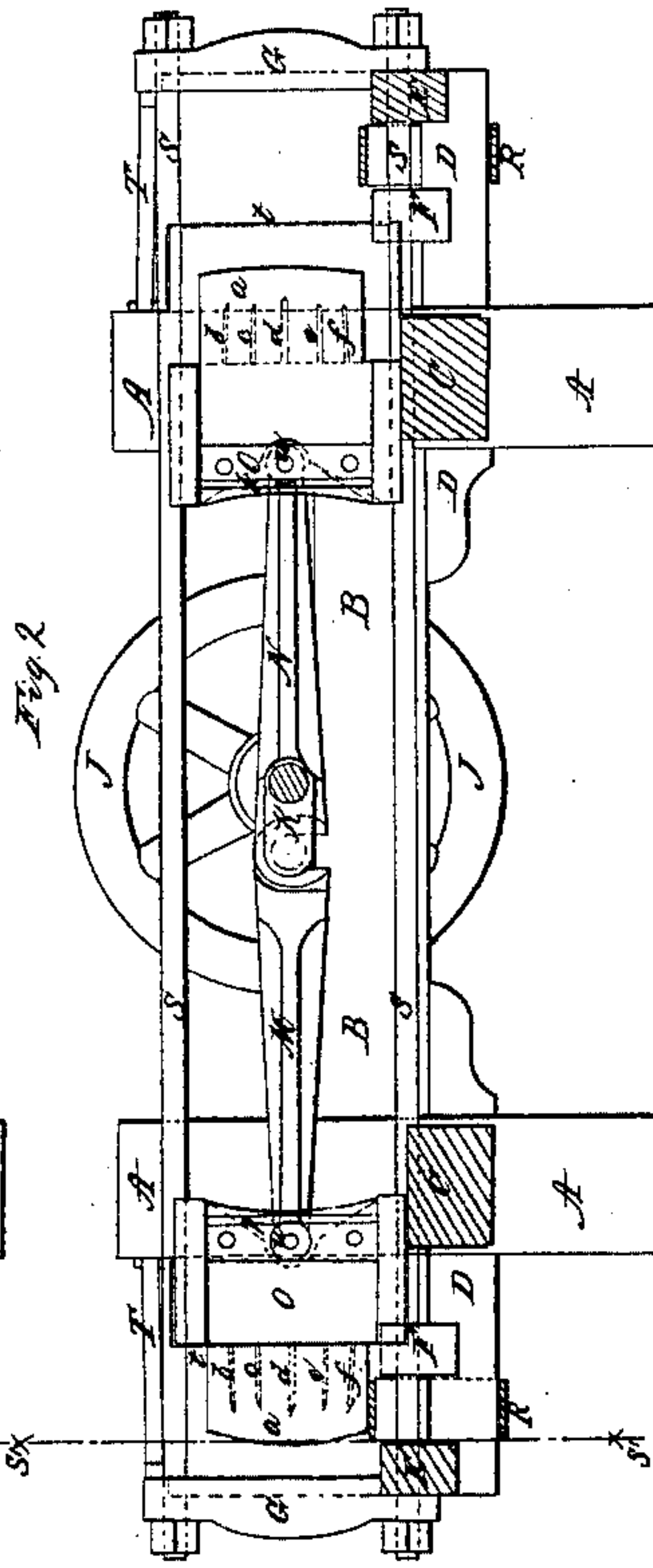
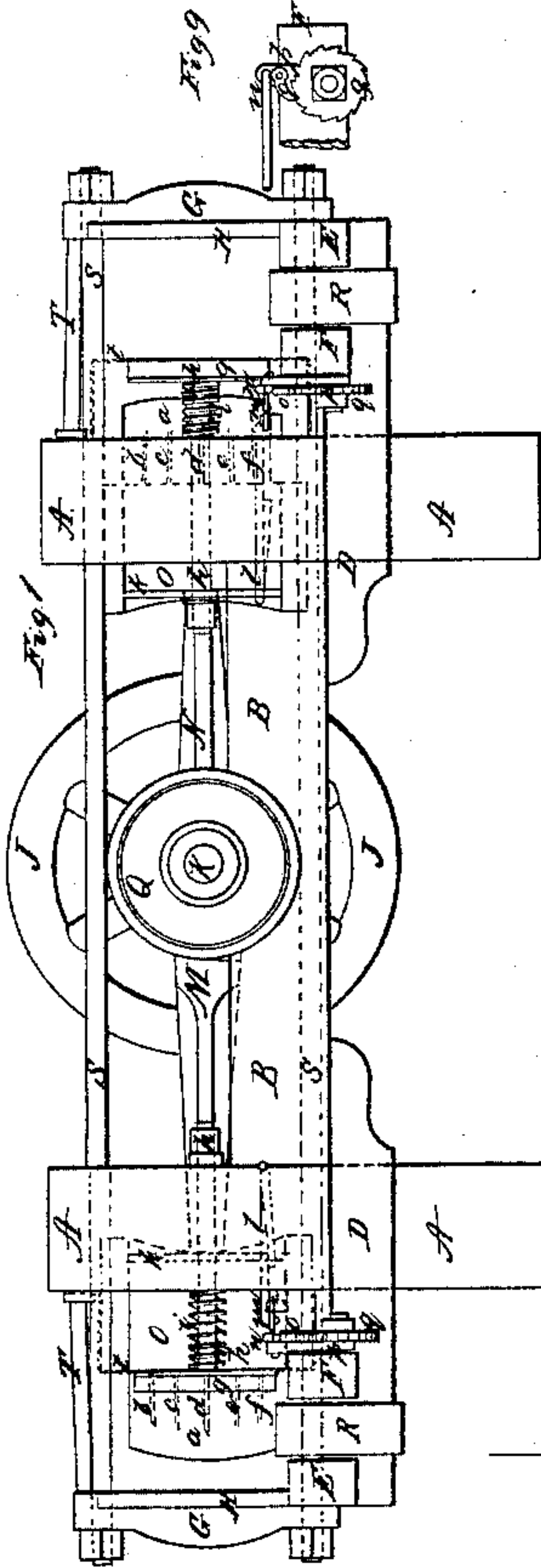
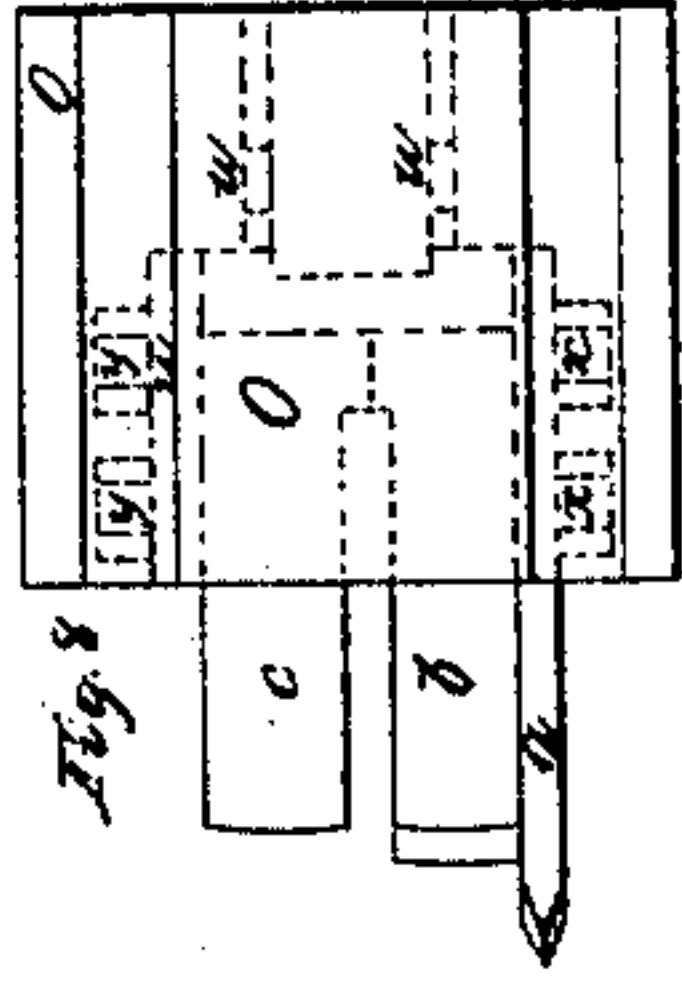
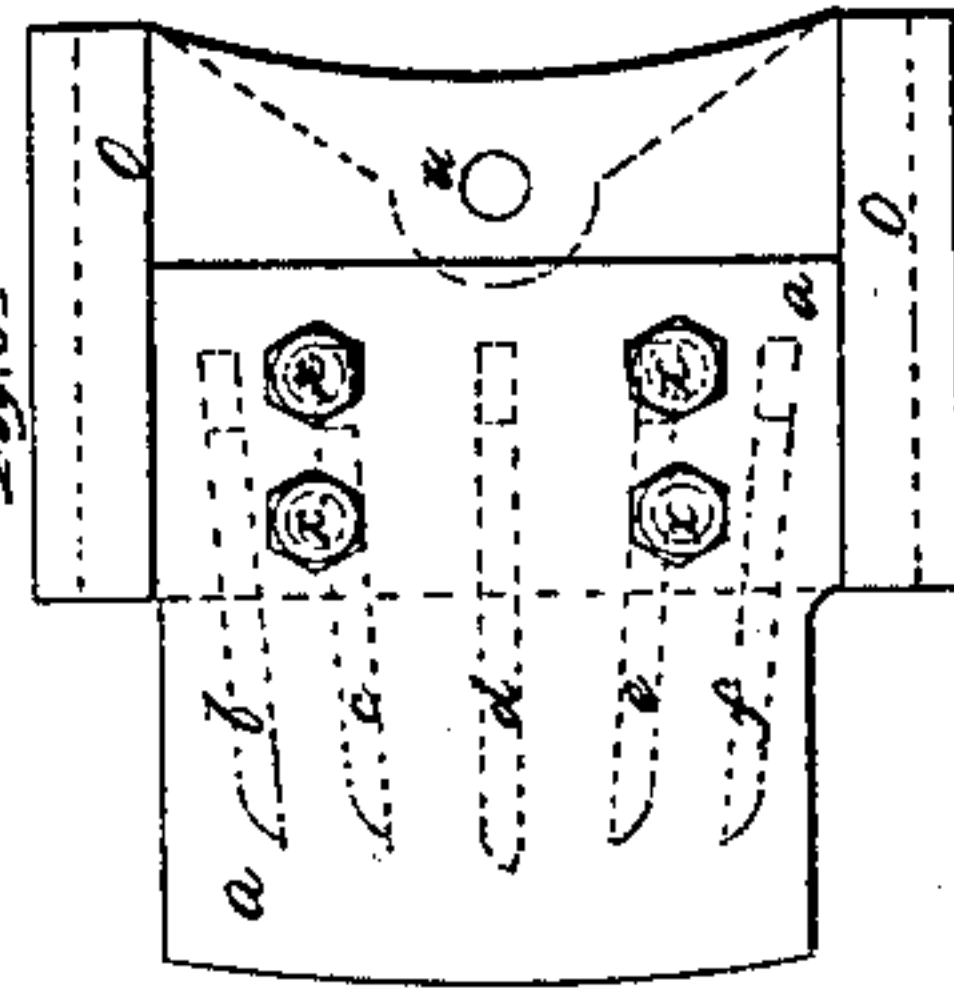
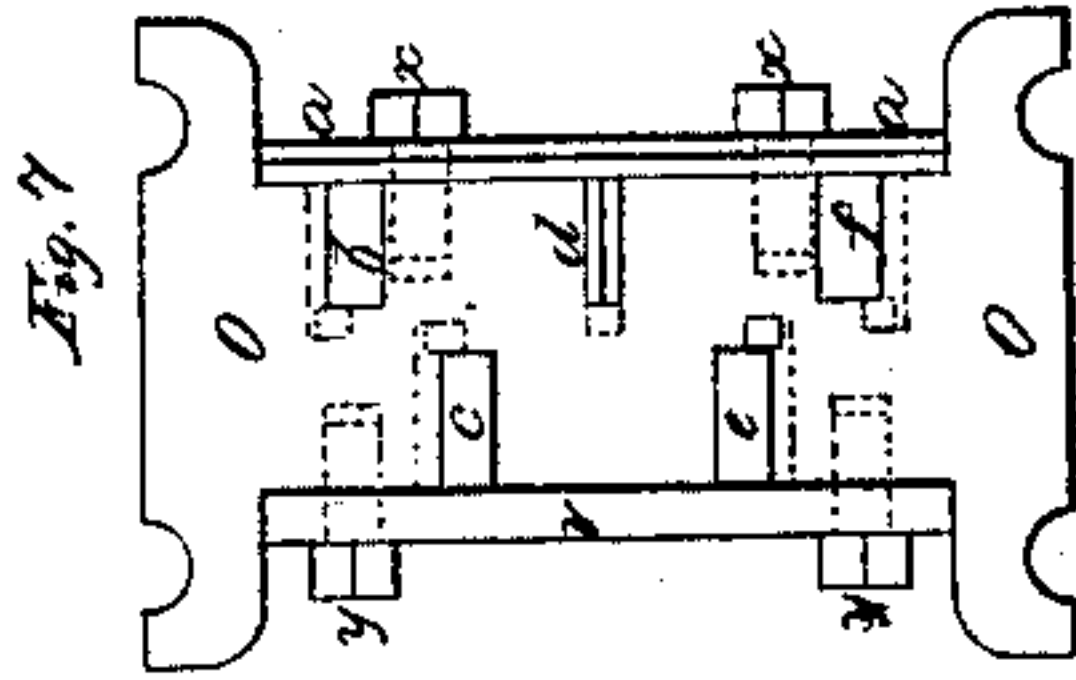
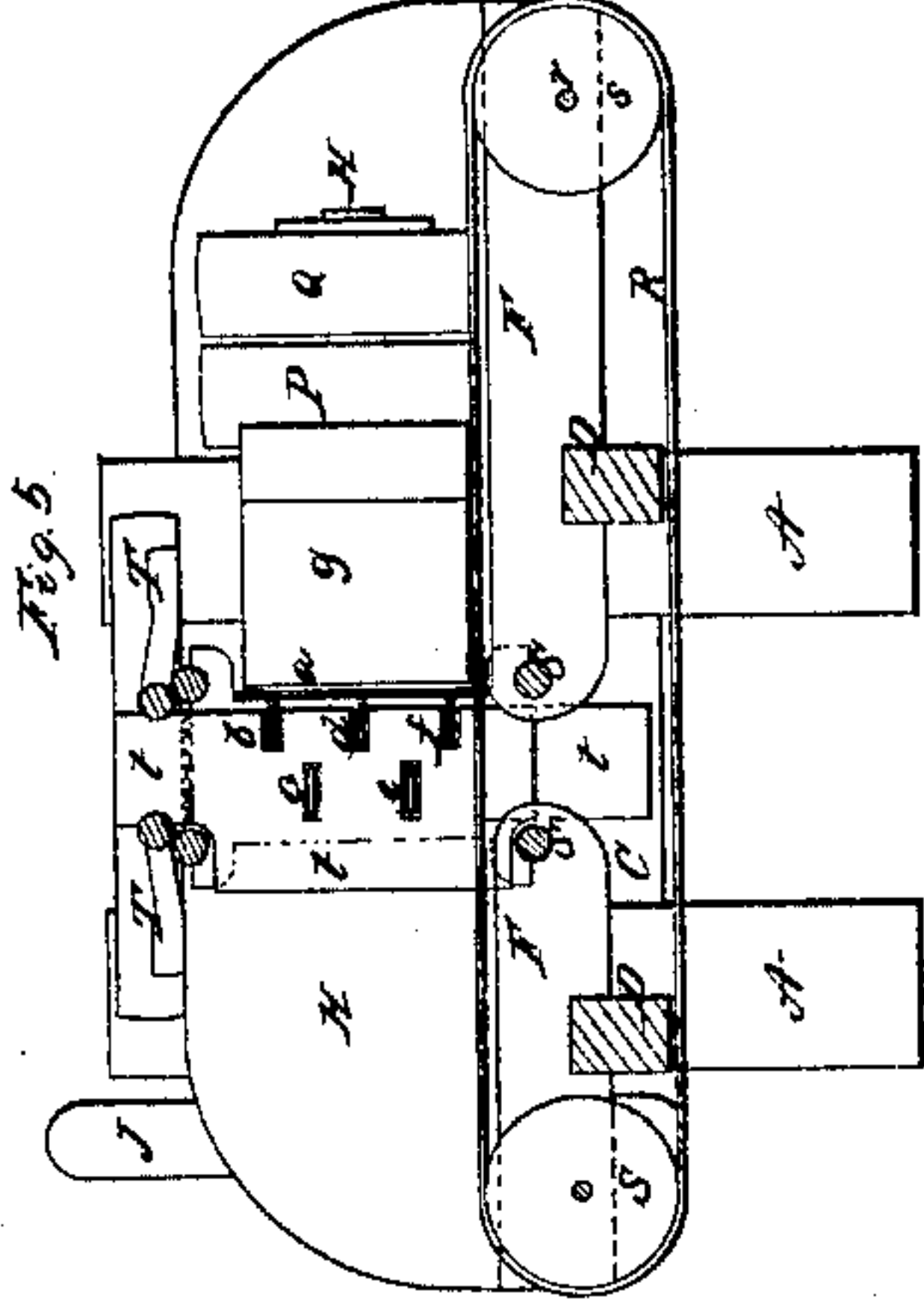
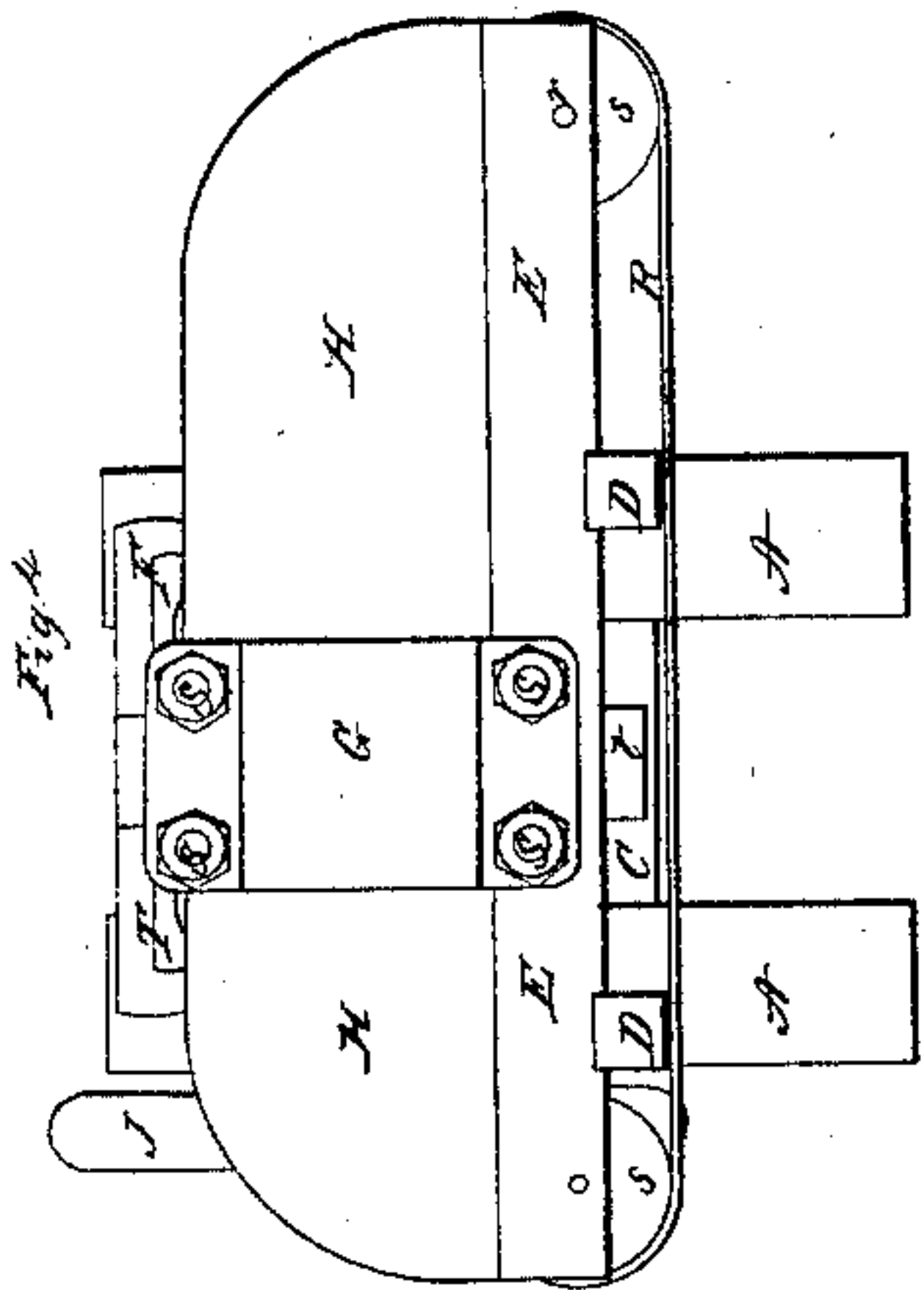


*E. Davis,*  
*Splitting Wood.*

*No 24,735.*

*Patented July 12, 1859.*



*Witnesses*  
*George Allison*  
*of Larson*

*Inventor*  
*Darius A. Davis*



# UNITED STATES PATENT OFFICE.

DARWIN A. GREENE, OF NEW YORK, N. Y., ADMINISTRATOR OF E. DAVIS, DECEASED.

## MACHINE FOR SPLITTING FIRE-WOOD.

Specification of Letters Patent No. 24,735, dated July 12, 1859.

*To all whom it may concern:*

Be it known that ELIAS DAVIS, deceased, of the city, county, and State of New York, has invented new and useful Improvements on Wood-Splitting Machines; and I, DARWIN A. GREENE, his administrator, of the city, county, and State aforesaid, do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure I represents a longitudinal elevation of the machine. Fig. II a longitudinal section made in a plane shown by the red line S' S' in Fig. III. Fig. III represents the plan. Fig. IV an end elevation. Fig. V a transverse section in a plane shown by the red line S' S' in Fig. II. Figs. VI, VII and VIII are elevation, end view and plan in detail of a portion of the machine and Fig. IX is an elevation in detail of another portion of the same.

The same letters of reference refer to like parts in all the figures.

The nature of the invention of the improved wood splitting machine consists of a set of duplicate, horizontal acting knives, operating upon the wood, while resting against two vertical stationary plates, which are connected together by four bolts, also forming guides for the reciprocating crossheads, having the knives secured to them; the wood before and after the operation of splitting is brought forward by two endless belts, which are advanced by ratchets, rods and levers, operated by the crossheads while in motion. The whole is arranged upon a strong wooden framing; a crankshaft fitted to bearings upon the central part of the same, gives motion to the crossheads by means of two connecting rods.

To enable others skilled in the art to make and use the invention, I will describe its construction and operation.

A, A, A, A are four vertical posts, and B B two horizontal beams; mortised and secured to the vertical posts C C, are two crosspieces of timber, which connect the vertical posts; at the side of each vertical post A, and projecting beyond the main framing, are timbers D D, supporting at each end the timbers E F F; upon the outside timbers E E rest the guards H H, and also upon part of the inside timbers F F; these are firmly secured to the framing, and also

to the central plates G G of wood or iron, which latter are provided with holes, to pass the four bolts S S S S, which are provided with nuts on both ends. A brace T is bolted to the top of each central plate G, extending to the top of the vertical posts A, being bolted to them.

The bearings L L are fitted and secured to the top of the framing B B and are bored and fitted to the journals of the crankshaft K K; the crankshaft is turned at one end, to receive the loose and fast pulleys P and Q, and at the other end, to receive the fly-wheel J. The crankpin at the center of the shaft is turned to receive the ends of the connecting rods M and N, the other ends of which are fitted to the crossheads O O, in which they vibrate upon pins u u. The crossheads O, O are provided at top and bottom with semicircular grooves, sliding upon the circular rods S, S, S, S.

The slabbing knife *a*, is secured to the side of each crosshead, by four screw-bolts *x*, *x*, *x*, *x* as represented more clearly in Figs. VI, VII and VIII, the five smaller knives *b*, *c*, *d*, *e*, *f* not projecting as much as the knife *a*, have a projection at the end, whereby they are held in a corresponding groove within the crosshead, and are at their ends fitted into the latter; the end of the slabbing knife *a*, as well as an additional plate *v*, which is bolted to the crosshead with four bolts *y* *y* *y* *y*, press upon the sides of the smaller knives, holding them firmly into their places; the peculiar position of the knives is as follows: The slabbing knife *a*, the first one acting upon the wood, in the operation of splitting, is the longest, projecting from the crosshead O; upon its face and at right angles with the knife *a*, are fitted the knives *b*, *d*, *f* and beyond these, a space being left between them and the following knives, are secured the knives *c* and *e*; the knives *b*, *f* and *c*, *e* are inclined with their cutting edges toward each other, and the central knife *d* projects sufficiently in advance of the other to allow its cutting edge to enter the wood up to the thickness of the blade before the knives *b*, *c*, *e*, *f*, come in contact with the wood. Metal plates *t* *t* in front of each crosshead are secured to the framing A A, and cross-timber C; they are provided with holes to allow the knives *b* *c* *d* *e* *f* to pass through them; the movable plates *g* *g*, beside the stationary plates *t*, are secured to the end of square rods *h* *h*; spiral springs



i i bearing against the framing A, and the  
 back of the plates *g g*; the square rod *h*  
 passes through part of the framing, and a  
 catch *h'* is secured to the end of the rod.  
 5 A vertical rod *h*, secured in each crosshead  
 O, in the extreme backward movement of  
 the latter, bears against the catch *h'*. Be-  
 tween the horizontal framing H F, H F,  
 move the endless belts R R at both ends of  
 0 the machine; each belt is supported, and  
 kept in tension by two rollers *s s*, secured by  
 pins to the framing, and are fitted to rotate  
 freely; the roller at the end of the belt  
 which receives the wood to be split, is se-  
 5 cured to its pin *r*, which has its bearing in  
 the framing; the pin *r* projecting inside  
 and beyond the framing, receives first the  
 rocking arm *p*, fitted to vibrate freely, and  
 next a ratchet wheel *q*, secured by a nut to  
 0 the end of the pin *r*; the top of the rocking  
 arm *p*, receives the end of the rod *n*, which  
 forms a loop, or is bent to enter the hole in  
 arm *p*; the other end of the rod *n* is bent to  
 fit the end of lever *m*, the fulcrum of the  
 5 latter being fitted upon a pin secured to the  
 framing; the opposite end of lever *m*, re-  
 ceives the rod *l*, bent to fit the hole in the  
 end of the lever, and the other end of rod *l*  
 forms an elongated loop, which passes  
 0 around the vertical rod *h*, secured to the  
 crosshead O; a catch *o* operates the ratchet  
 wheel *q*, is secured to the rocker *p*.  
 Its operation is as follows: The belt oper-  
 ating the machine being passed from the  
 5 loose pulley P upon the fast pulley Q, re-  
 volves the crankshaft K, giving motion to  
 the connecting rods M and N, and horizontal  
 vibratory motion to the crossheads O O, and  
 the knives *a, b, c, d, e, f* secured to each of  
 0 the latter; the crossheads sliding between  
 the rods *s s s s*. The wood to be split, pre-  
 viously cut into proper lengths, is laid upon  
 the endless belts R R, and by means of  
 5 ratchet wheel *q* and catch *o*, actuated by the  
 rods *n l* and lever *m*, the wood is gradually  
 advanced toward the slabbing and splitting  
 knives *a, b, c, d, e, f*; the advance of the  
 belt R, occurs at the backward movement of  
 the knives, and after the knives have re-  
 0 ceded behind the stationary plates *t*, leaving  
 the wood at liberty, and previous to the ad-  
 vance of the belt R, also the movable plate  
*g* is drawn back by means of catch *h'* and

rod *h*, which however during the return  
 movement of the crosshead O, and before 55  
 the knives operate upon the wood, is al-  
 lowed, by means of spring *i*, to press firmly  
 against the wood, which is behind that por-  
 tion of wood, to be acted upon by the knives.  
 The length of the loop at the end of the rod 60  
*l*, passing around the vertical rod *h*, deter-  
 mines the amount of rotation of the ratchet  
 wheel *q*, or the advance of the belt R, and  
 the proper position of the catch *h'*, at the  
 end of rod *h* will cause the movable plate *g* 65  
 to recede, previous to the advance of the  
 belt, and again to return, pressing against  
 the wood, before the operation of splitting  
 and after the advance of the belt R is com-  
 pleted. During the operation of splitting 70  
 the wood presses against the plates G G at  
 each end of the machine, and as the knives  
 are receding, while there is yet a tendency  
 of the wood to adhere to the knives *a, b, c,*  
*d, e, f*, the wood presses against the station- 75  
 ary plate *t*; after the operation of cutting  
 the wood, it passes on upon the endless belts  
 R R, and between the vertical plates H H,  
 at the end of which it leaves the machine.

The operation of the knives while slabbing 80  
 and splitting the wood is as follows: The  
 slabbing knife *a* having partly entered the  
 wood, the central knife *d* is forced in, up  
 to the thickness of its blade, to spread the  
 wood when the knives *b* and *f*, are allowed 85  
 to enter; knives *e* and *c* at the same time  
 acting upon a portion of the wood already  
 divided or split by the knives *a, b, d* and *f*;  
 however before the action of the knives *e*  
 and *c* takes place upon the same portion of 90  
 wood, previously acted upon by the other  
 knives, crosshead O recedes, the wood is  
 advanced with the belt R, and a new por-  
 tion of wood is acted upon by knives *a, b,*  
*d* and *f*. 95

I claim—

The slabbing knife *a*, and splitting knives  
*b, c, d, e, f* as secured to one crosshead O  
 acting simultaneously at the forward move-  
 ment of the latter, substantially as described 100  
 and for the purpose set forth.

DARWIN A. GREENE,

*Administrator of Elias Davis, deceased.*

Witnesses:

GEORGE ALLISON,  
 H. LAWSON.