

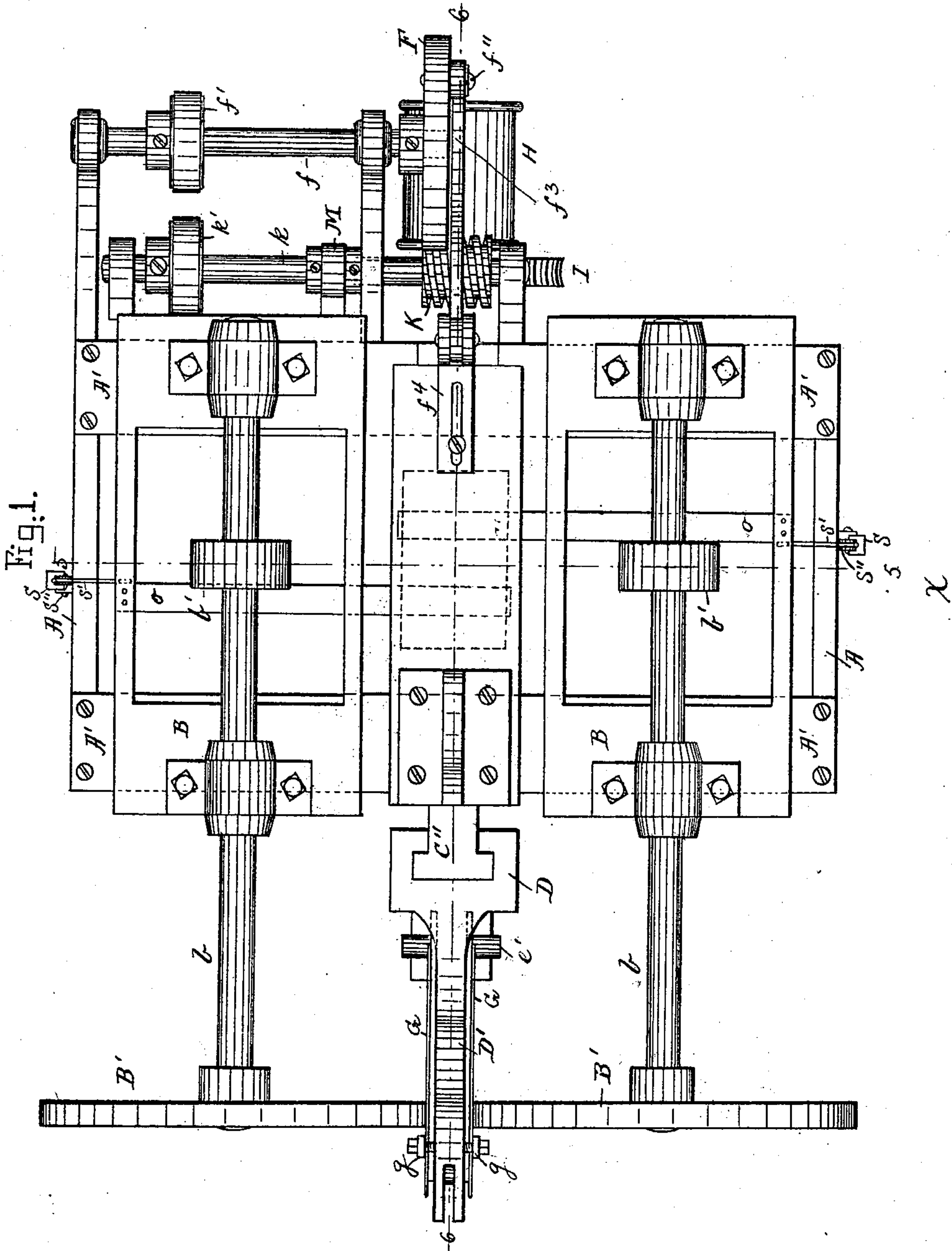
(No Model.)

6 Sheets—Sheet 1.

J. A. CARLSON.
KNIFE GRINDING AND POLISHING MACHINE.

No. 560,390.

Patented May 19, 1896.



Witnesses.

Laird N. Miller
Charles A. Harris

Inventor

John A. Carlson
by Edward Andrew
his atty.

(No Model.)

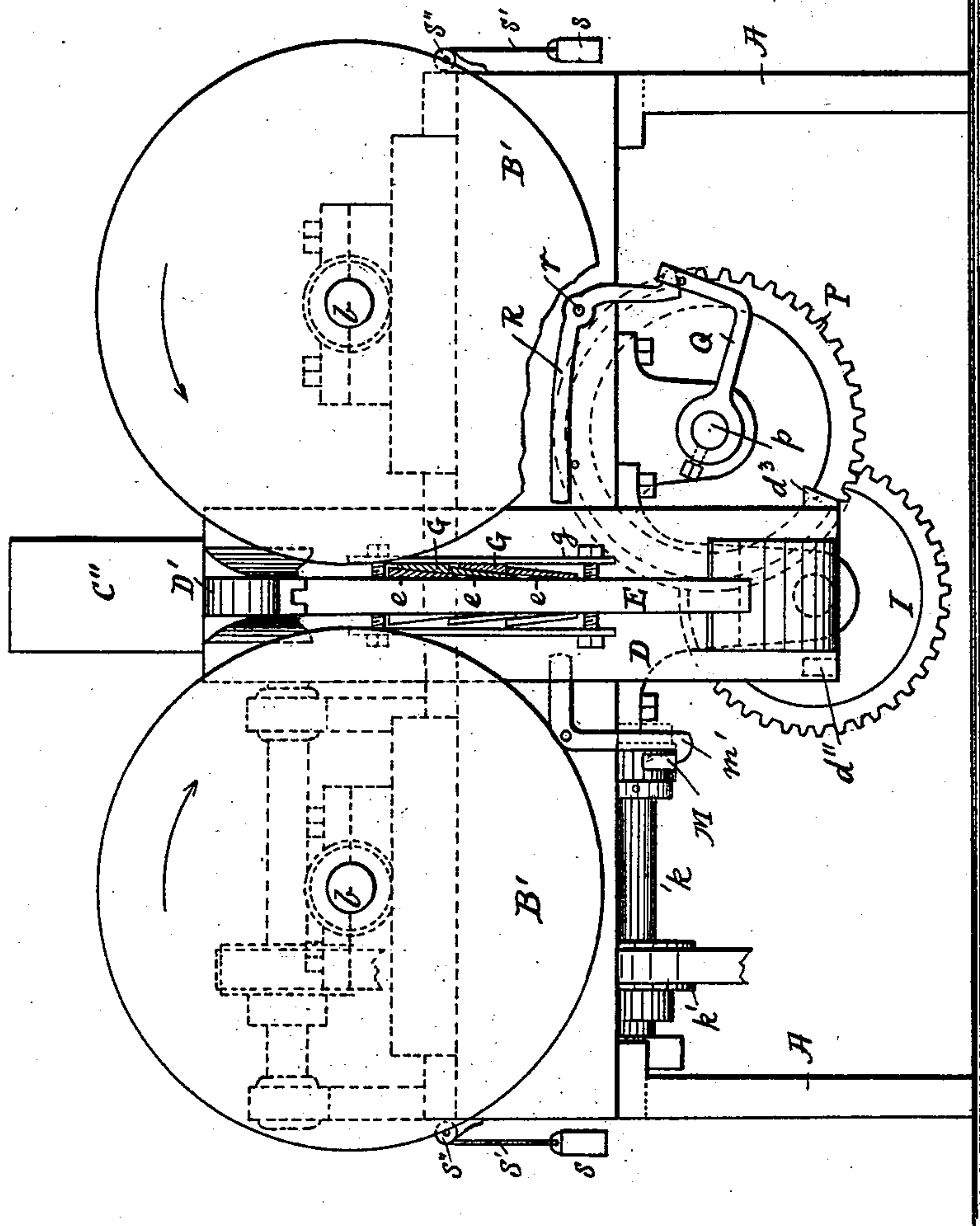
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J. A. CARLSON.
KNIFE GRINDING AND POLISHING MACHINE.

No. 560,390.

Patented May 19, 1896.

Fig. 2.



Witnesses.

Lauritz W. Möller.
Charles A. Harris

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John A. Carlson
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his atty.

(No Model.)

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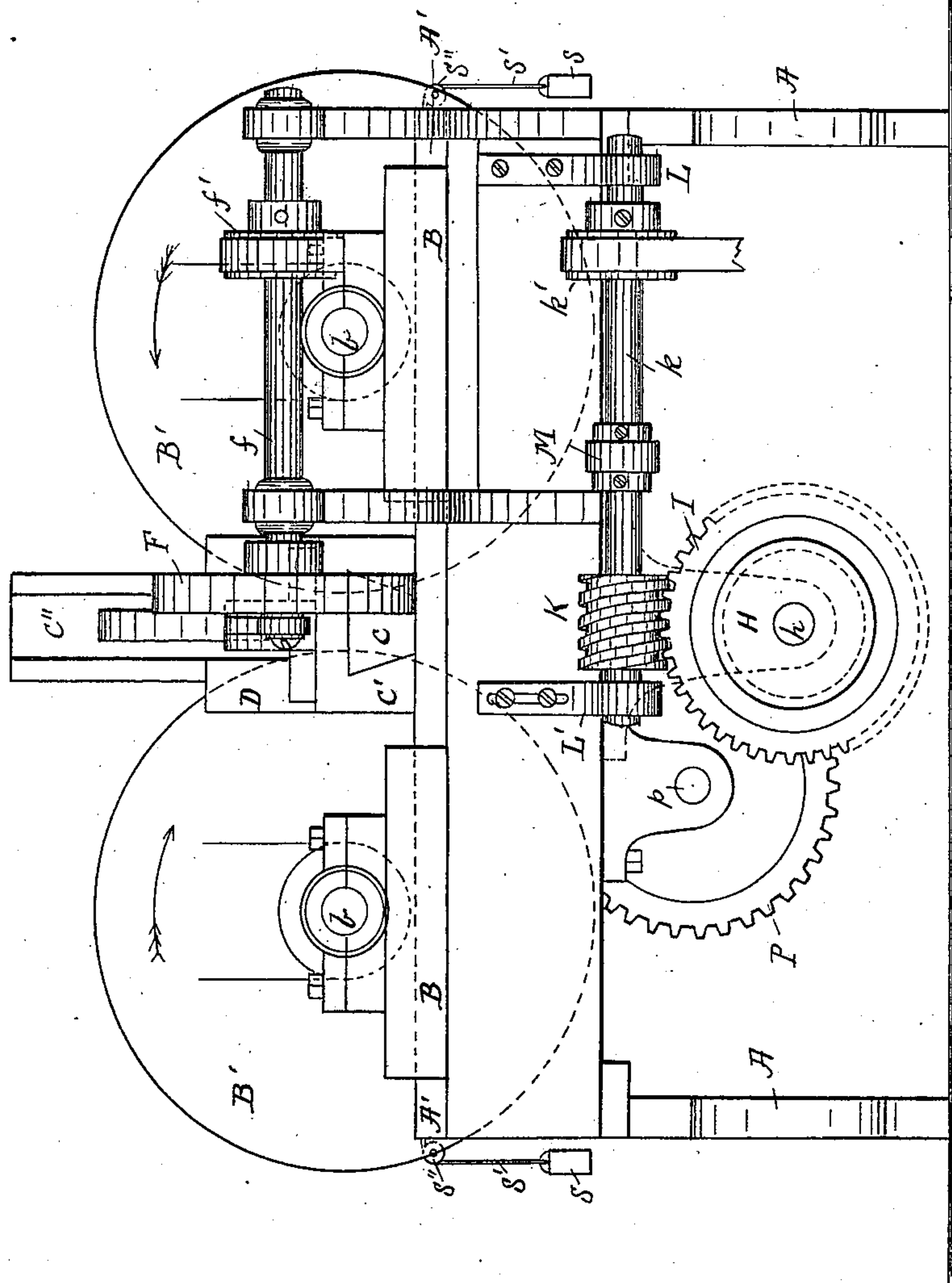
J. A. CARLSON.

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Patented May 19, 1896.

Fi 3



Witnesses.

Lauritz W. Collier.
Charles A Harris

Inventor

John A. Carlson
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his atty.

(No Model.)

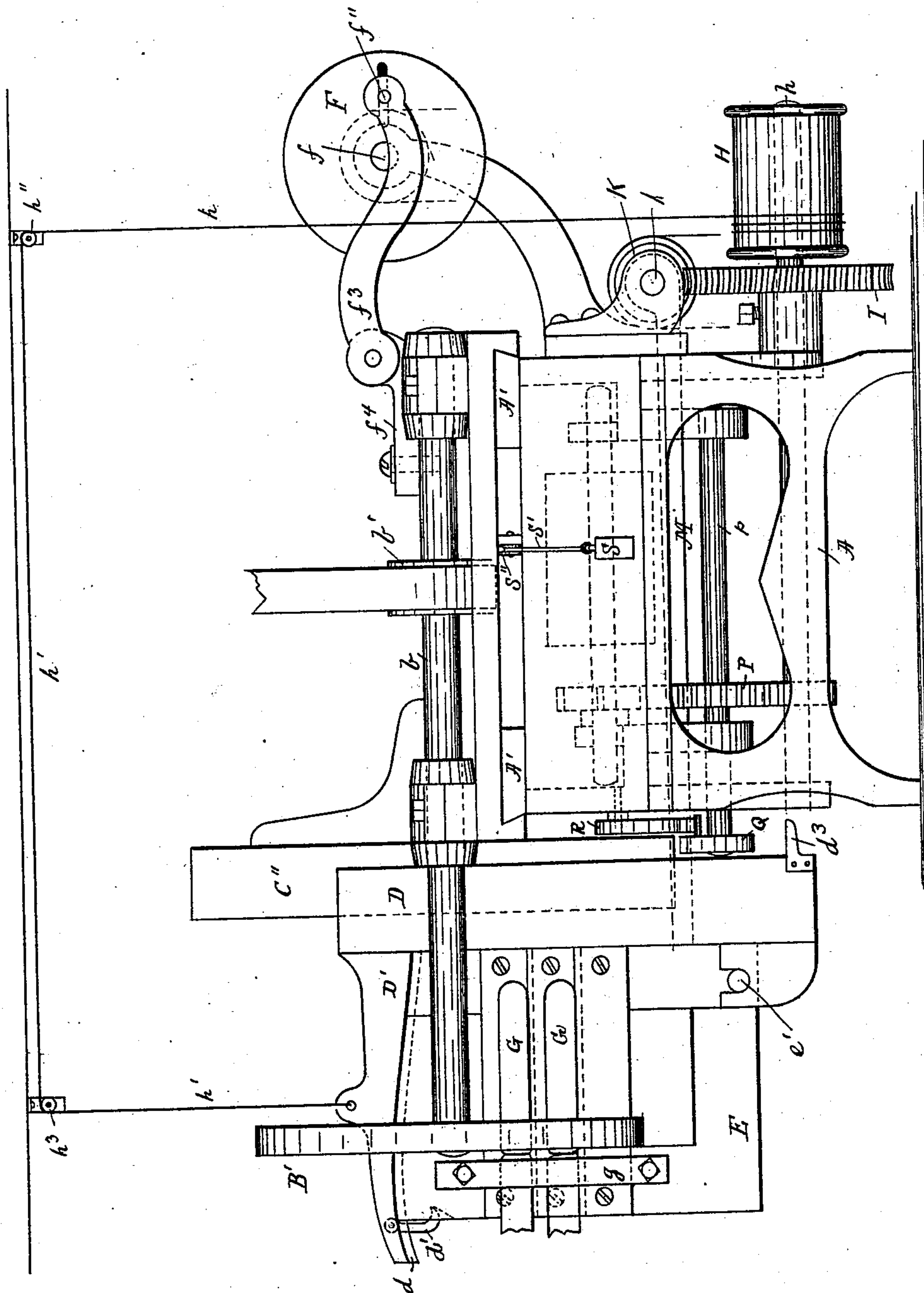
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Patented May 19, 1896.

Fig. 4.



Witnesses.

Lauritz W. Möller
Charles A. Harris

Inventor.

John A. Carlson
by *Alvan Andrieu*
his atty.

(No Model.)

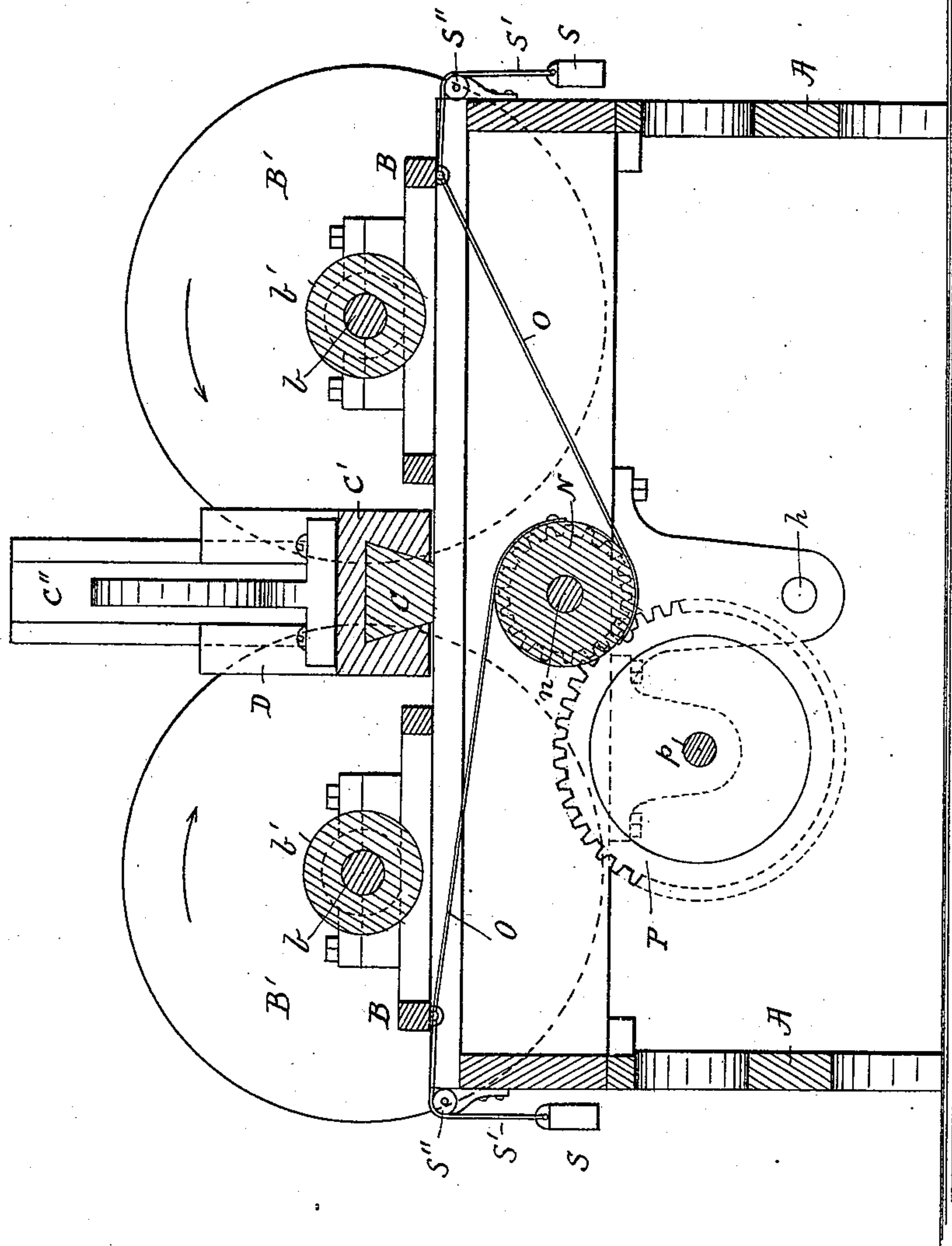
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J. A. CARLSON.
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Fig. 5.



Witnesses.

Lauritz N. Möller
Charles A. Harris

Inventor.

John A. Carlson
by *Alvan Andren*
his atty.

(No Model.)

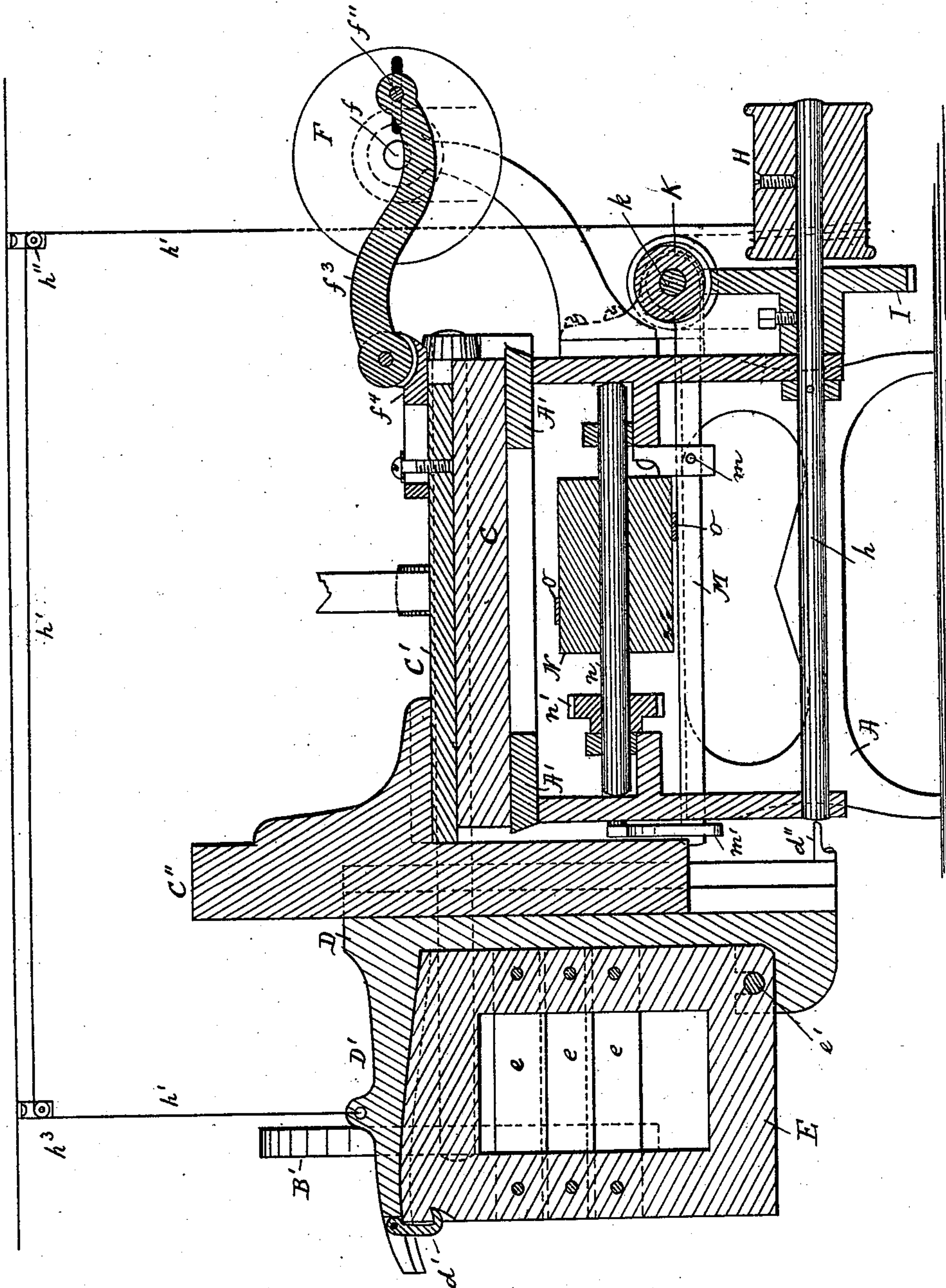
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Patented May 19, 1896.

Fig. 6.



Witnesses.

Lauritz N. Möller.
Charles A. Harris

Inventor

John A. Carlson
by *Alban K. ...*
his atty.

UNITED STATES PATENT OFFICE.

JOHN A. CARLSON, OF SHELBURNE FALLS, MASSACHUSETTS.

KNIFE GRINDING AND POLISHING MACHINE.

SPECIFICATION forming part of Letters Patent No. 560,390, dated May 19, 1896.

Application filed February 15, 1896. Serial No. 579,395. (No model.)

To all whom it may concern:

Be it known that I, JOHN A. CARLSON, a citizen of Sweden, and a resident of Shelburne Falls, in the county of Franklin and State of Massachusetts, have invented new and useful Improvements in Knife Grinding and Polishing Machines, of which the following, taken in connection with the accompanying drawings, is a specification.

10 This invention relates to improvements in knife or tool grinding and polishing machines, and it is carried out as follows, reference being had to the accompanying drawings, wherein—

15 Figure 1 represents a top plan view of the improved machine. Fig. 2 represents a front elevation of the same, showing parts of the knives or tools in section. Fig. 3 represents a rear elevation of the machine. Fig. 4 represents a side elevation seen from X in Fig. 1. Fig. 5 represents a cross-section on the line 5 5 shown in Fig. 1, and Fig. 6 represents a longitudinal section on the line 6 6 shown in Fig. 1.

25 Similar letters refer to similar parts wherever they occur on the different parts of the drawings.

A represents the frame of the machine, provided at its upper portion with longitudinal ways A' A', on which the grinder-wheel carriages B B are guided. In bearings in each of the carriages B is journaled a shaft *b*, to the forward end of which is secured the grinder or polishing wheel or disk B', as shown. To each of the shafts *b* is secured a pulley *b'*, to which a rotary motion is applied in the direction shown by arrows in Fig. 2 by belt-power applied to said pulleys *b' b'*.

40 On top of the frame A is secured a guide or way C, on which is longitudinally movable the carrier C', provided at its forward end with a vertical post C'', on which is vertically adjustable the frame D, to which the knife or tool holder frame E is detachably secured.

45 The carrier C' is reciprocated at a right angle to the motion of the carriages B B by means of a rotary crank-disk F, secured to a shaft *f*, journaled in bearings on the frame A. The shaft *f* is provided with a pulley *f'*, to which rotary motion is conveyed preferably by means of belt-power. To the disk F is

adjustably secured a crank-pin *f''*, to which is pivotally connected the link *f³*, the inner end of which is pivotally connected to a block *f⁴*, adjustably secured to the carrier C', as shown in the drawings. The said link *f³* is pivotally adjusted at its ends to the disk F and block *f⁴*, so as to regulate the length of stroke imparted to the carrier C' according to the length of the knives or tools that are to be ground or polished.

To opposite sides of the tool-holder E are secured wedge-shaped rest-bars *e e*, on and against which the knives or tool-blades G G are secured, preferably by means of suitable clamping-bars *g g*. (Shown in Figs. 2 and 4.)

The tool-holder E may be secured to the vertically-adjustable frame D in any suitable manner. In the drawings I have shown said tool-holder E as detachably pivoted in its lower inner end at *e'* to the frame D and having its upper portion received in a groove *d* in an extension D' on the frame D, as shown in Figs. 2, 4, and 6, and held in position relative to said frame D by means of a suitable locking device *d'*. (Shown in Figs. 4 and 6.)

The frame D and tool-holder E are automatically raised by means of a rotating drum H, secured to a shaft *h*, and from said drum leads a cord, chain, or belt *h'* over suitable guide-pulleys *h'' h³* to the arm D' on the vertically-movable frame D, as shown in Figs. 4 and 6. As soon as the drum H is released the frame D and its tool-holder return by gravity to their lowest normal position.

85 On the shaft *h* is secured a worm-gear I, the teeth of which mesh in a worm K, secured to a shaft *k*, that is journaled in bearings L and L', the latter being vertically adjustable for the purpose of disengaging the worm K from the worm-wheel I when the frame D reaches its highest position, and for this purpose I journal the shaft *k* between its bearings in a lever M, which is pivoted at *m* in Fig. 6 and normally held raised, so as to hold the worm K in engagement with the drum-wheel I, by means of a suitable pivoted hook-lever *m'*, (shown in Figs. 2 and 6,) which is tripped by contact with a projection *d''* on the vertically-movable frame D when the latter reaches its highest position, causing the hook *m'* to be disengaged from the forward end of the lever

M, thus liberating the latter and causing its forward end to drop and its rear end to be automatically raised by its own gravity or by means of a spring, if so desired, by which the worm K is raised out of engagement with the drum-wheel I, thus liberating the frame D and permitting it to descend by gravity to its original normal position. The worm-shaft k is constantly rotated by means of belt-power applied to a pulley k' , secured to said shaft, as shown in Fig. 3.

The abrasive disks $B' B'$ are caused to be held in contact with the knives or tools during the grinding or polishing operation by means of a drum N, secured to a shaft n , journaled in bearings in the frame of the machine. To said drum are attached belts O O, connected in their outer ends to the sliding carriages B B, as shown in Fig. 5.

For the purpose of holding the abrasive disks $B' B'$ in contact with the knives or tools during the grinding or polishing operation I secure to the drum-shaft n a gear n' , the teeth of which mesh in a gear P, secured to a shaft p , journaled in bearings in the frame of the machine. To the outer end of said shaft p is secured an arm or crank Q, adapted to be interlocked with a trip-lever R, pivoted at r , as shown in Fig. 2, thus holding the disks $B' B'$ in contact with the knives or tools during the operation of the machine.

When the frame D reaches its highest position, a projection d^3 on it comes in contact with the trip-lever R and causes it to be disengaged from the crank Q, thereby liberating the disks $B' B'$ from contact with the knives or tools, and when so liberated the said disks and their carriages B B are automatically spread apart by means of weights S S, connected to the outer ends of said carriages B B by means of belts, cords, or chains $S' S'$, guided on pulleys or rollers $S'' S''$, as shown in Fig. 5.

The operation of the machine is as follows:
The knives or tools G to be ground or polished are secured in position on opposite sides of the tool-holder frame E, and the latter is secured to the frame D when such frame is in its lowest position. The disks $B' B'$ are brought in contact with the knives or tools by the interlocking of the crank Q with the lever R, by which arrangement the drum N is turned sufficiently to tighten the belts O O, and thereby causing the carriages B B to be moved toward each other sufficiently to bring the disks $B' B'$ in contact with the knives or tools held by the holders E. The forward end of the lever M is then raised sufficiently to cause the worm K to intermesh with the worm-wheel I and locked in such position by means of the hooked lever m' , as shown in the drawings. The machine is then set in operation, causing the knife-holder E to be moved forward and back across the faces of the rotary disks $B' B'$, by which the latter are brought in contact with the knives or tools G, and at the same

time the said tool-holder E is gradually raised by means of the drum H and cord h' , leading to the frame D, so as to cause all the knives on the tool-holder to be ground or polished. As soon as the tool-holder E reaches its highest position on the frame E the projection d^3 on the frame D comes in contact with the lever R, and thereby liberates the crank Q, when the weights S S, acting on the carriages B B, cause the latter to be spread apart, thus withdrawing the disks $B' B'$ from the tools or knives that have been ground or polished. At or about the same time the projection d'' comes in contact with the hook-lever m' and liberates it from the lever M, causing the worm K to be disengaged from the worm-wheel I, thereby relieving the tension on the cord h' and permitting the frame D and its tool-holder E to descend by gravity to their original lowest position, after which the now-finished knives are removed and others put in their places on the tool-holder and the operation repeated from time to time.

By using disks of proper material they may to equal advantage be used for the purpose of applying varnish or suitable liquid composition to the tools or knives after they have been ground and polished.

By the use of this my improved machine a number of knives or tools may be ground or polished in a very quick and efficacious manner.

What I wish to secure by Letters Patent and claim is—

1. In a tool grinding or polishing machine a vertically-movable and horizontally-reciprocating tool-holder and a pair of rotary disks journaled in carriages movable to and from the tool-holder substantially as and for the purpose set forth.

2. In a grinding and polishing machine a horizontally-reciprocating and vertically-movable tool-holder combined with a pair of rotary disks movable to and from the tool-holder and means substantially as described for automatically separating the rotary disks and liberating the tool-holder and causing it to descend as soon as it reaches its highest position during the grinding or polishing operation as and for the purpose set forth.

3. In a grinding or polishing machine a horizontally-reciprocating carrier, a frame vertically adjustable thereon, a tool-holder detachably secured to said frame in combination with a pair of rotary and laterally-movable disks and means substantially as described for automatically actuating said mechanism as and for the purpose set forth.

4. In a grinding or polishing machine a horizontally-reciprocating carrier and a vertically-adjustable tool-holder mounted thereon combined with a pair of rotary and laterally-movable disks mounted in sliding carriages, a rocking drum having belts connected to said carriages, means for holding said disks in working position, a releasing device and

means for moving said disks substantially as and for the purpose set forth.

5 In a grinding or polishing machine, a horizontally-reciprocating carrier and a vertically-adjustable tool-holder mounted thereon combined with a pair of rotary and laterally-movable disks, means for raising said tool-holder during the grinding or polishing operation and automatic mechanism substantially as described for stopping the tool-
10 holder, raising mechanism at the desired time

and releasing said tool-holder after the work is done as herein specified.

In testimony whereof I have signed my name to this specification, in the presence of 15 two subscribing witnesses, on this 10th day of January, A. D. 1896.

JOHN A. CARLSON.

Witnesses:

ALBAN ANDRÉN,
LAURITZ N. MÖLLER.