No. 679,063. Patented July 23, 1901.

J. C. STEEN & C. SEYBOLD.

SHAPING MACHINE.

(Application filed Nov. 23, 1900.)

(No Model.) 3 Sheets—Sheet 1.

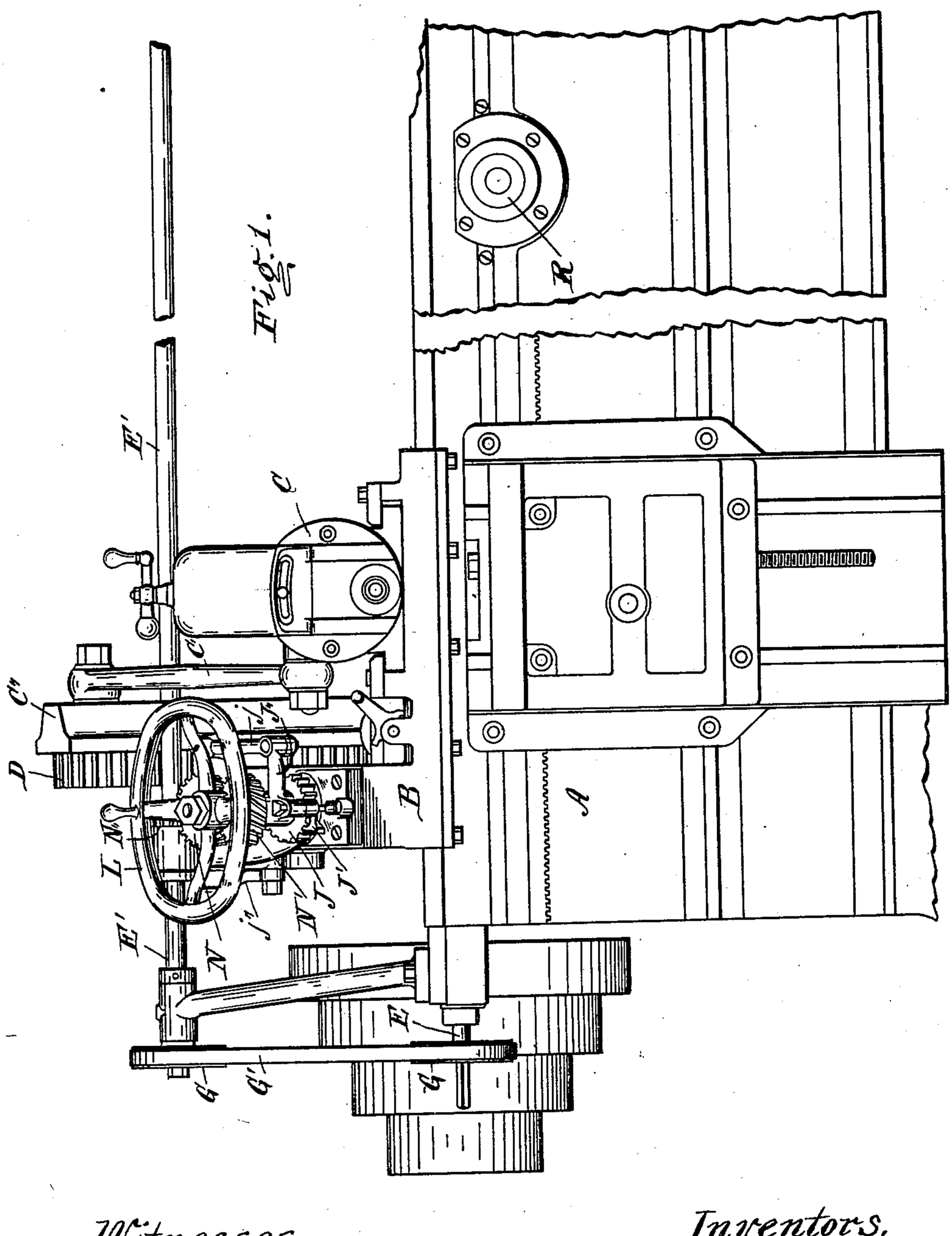

Fig. 1.

Witnesses.
Clarence E. Mehlhope
Edward Haak

Inventors,
James C. Steen
Charles Seybold
by Steen & Steen
their Attorney.

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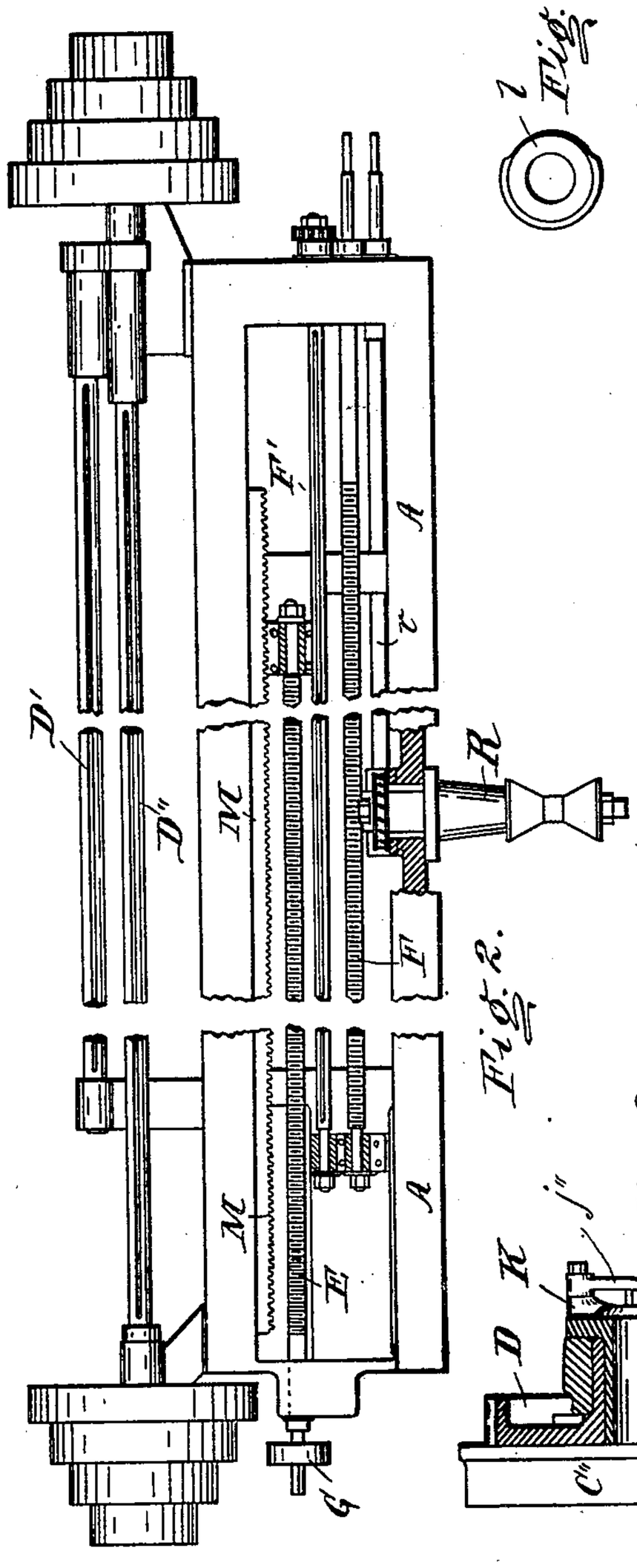

Fig. 2.

Fig. 8.

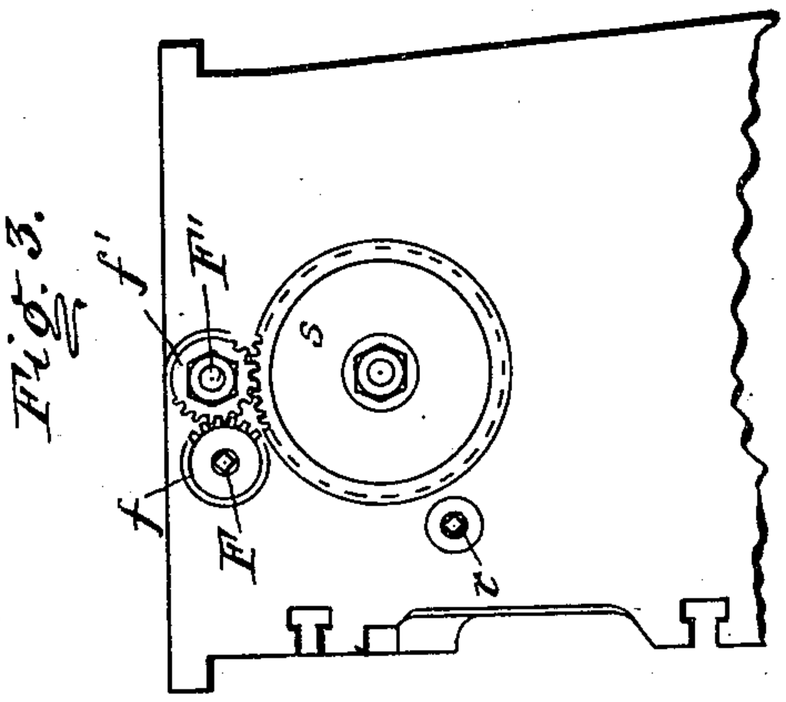

Fig. 3.

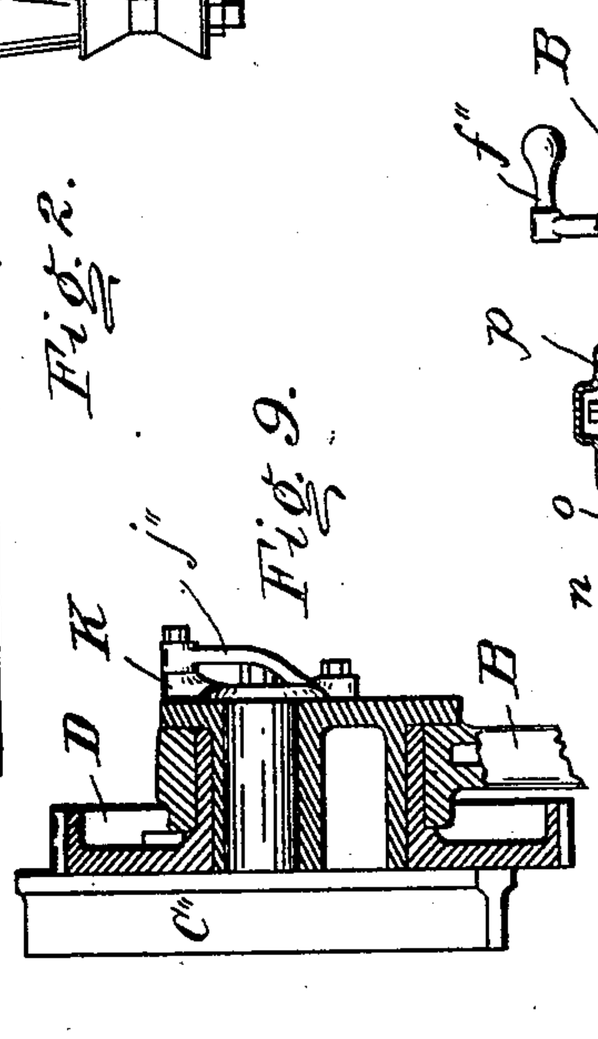

Fig. 9.

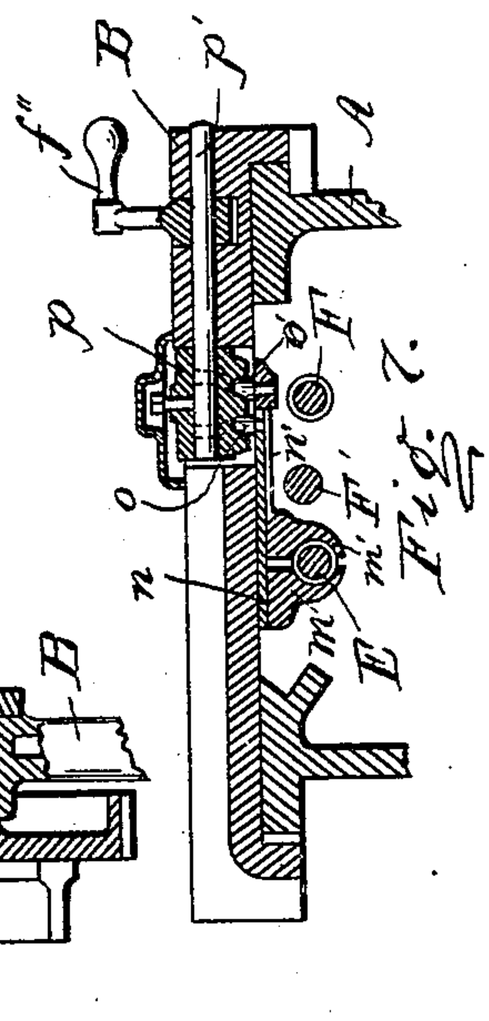

Fig. 7.

Witnesses.
Clarence E. Mehlhope
Edward Haat

Inventors.
James C. Steen
Charles Seybold.
by Arthur Steen
their Attorney.

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J. C. STEEN & C. SEYBOLD.

SHAPING MACHINE.

(Application filed Nov. 23, 1900.)

(No Model.) 3 Sheets—Sheet 3.

Fig. 4.

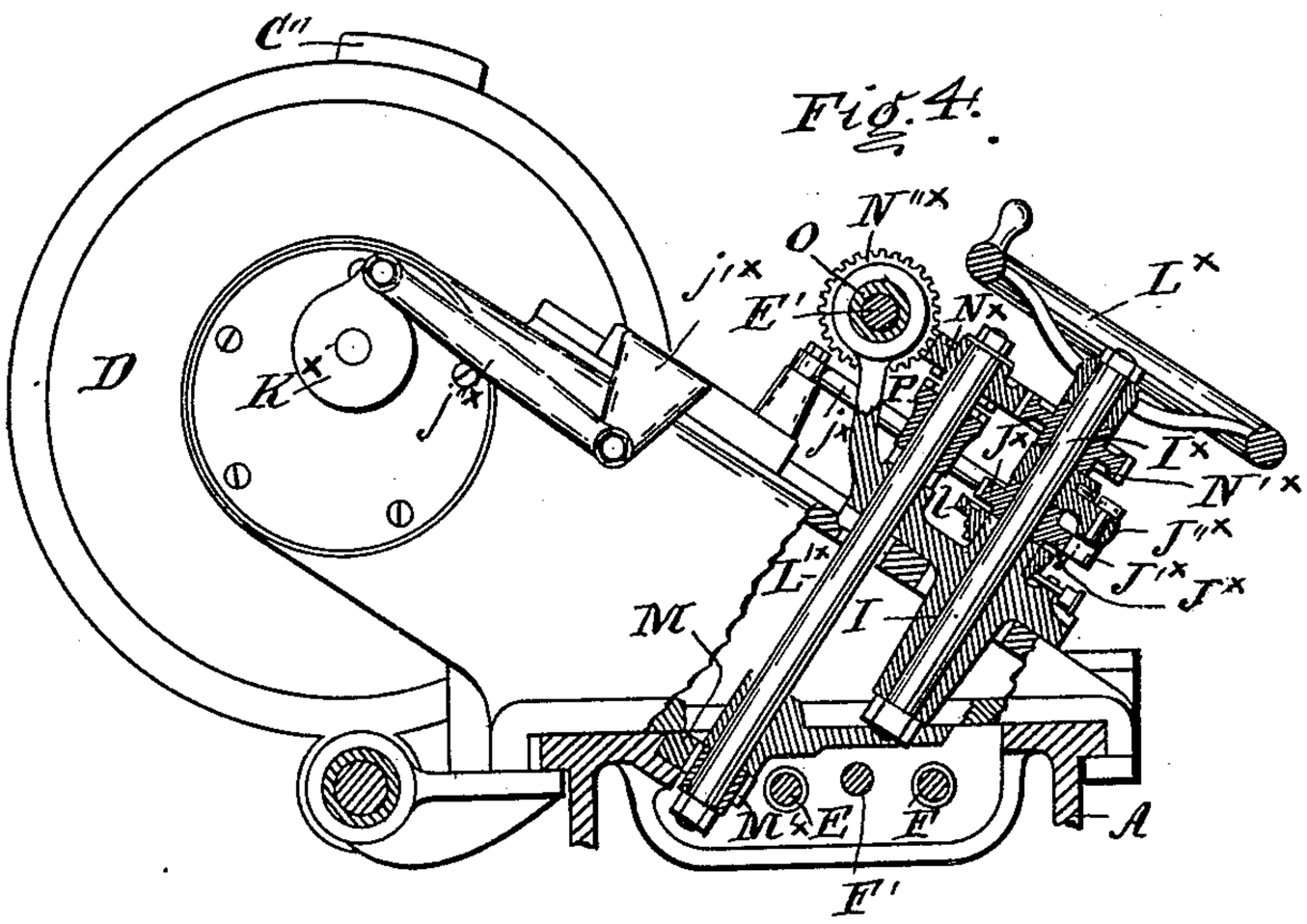


Fig. 6.

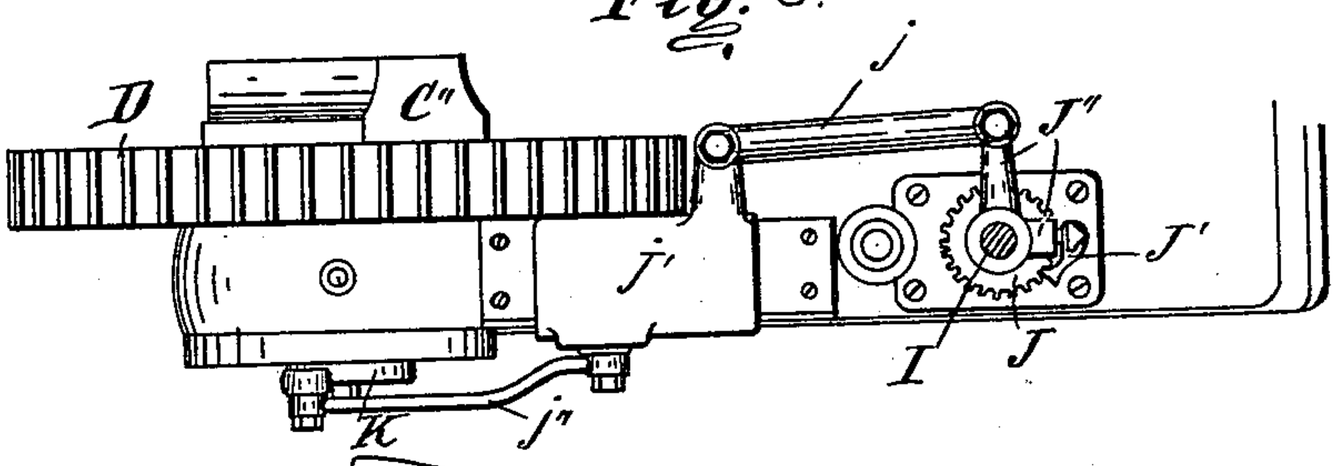
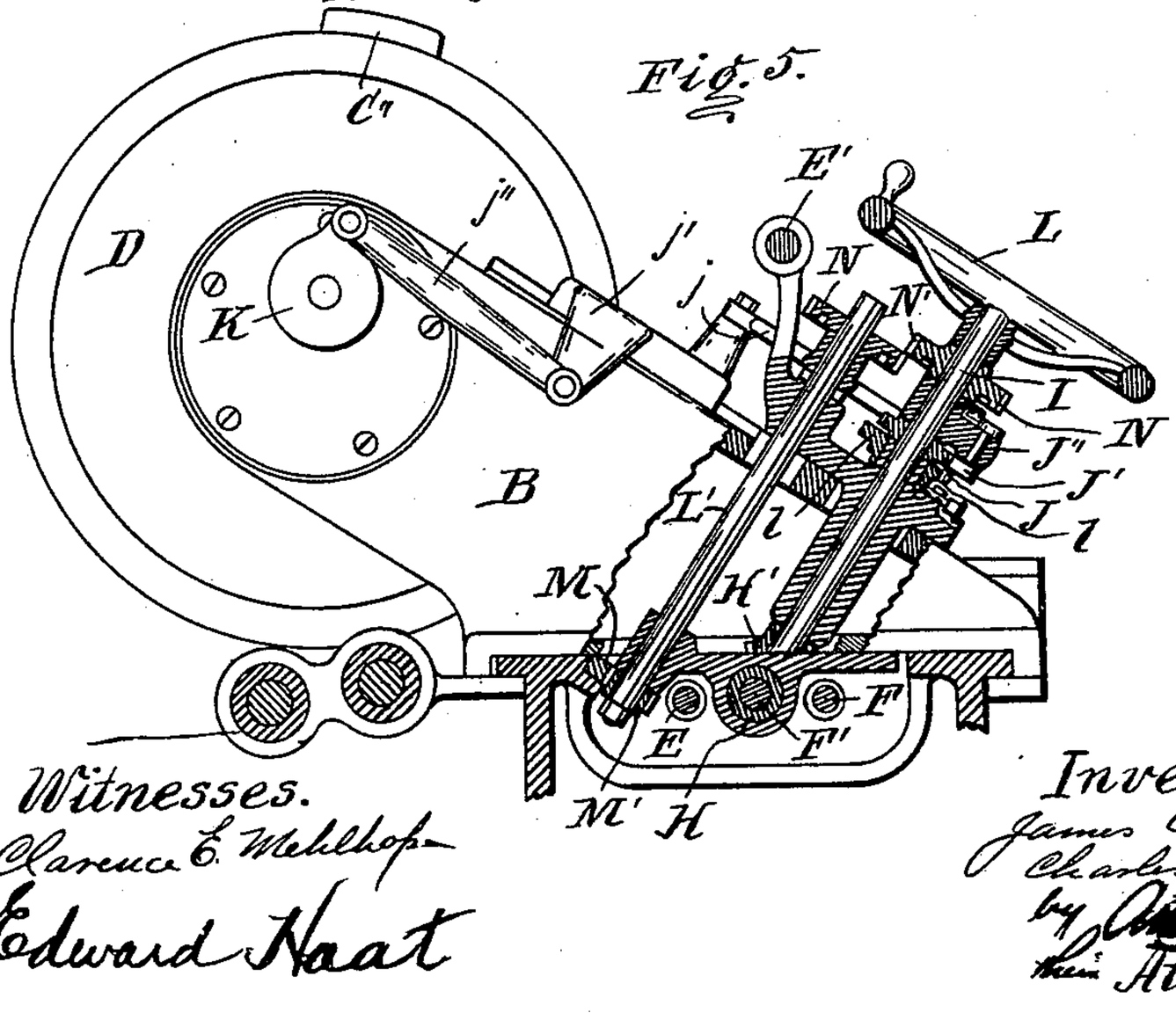


Fig. 5.



Witnesses.
Clarence E. Mehlhop
Edward Haat

Inventors.
James C. Steen
Charles Seybold
by Albert Steen
their Attorney.

UNITED STATES PATENT OFFICE.

JAMES C. STEEN, OF CINCINNATI, AND CHARLES SEYBOLD, OF DAYTON, OHIO, ASSIGNORS TO THE CINCINNATI SHAPER COMPANY, OF CINCINNATI, OHIO.

SHAPING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 679,063, dated July 23, 1901.

Application filed November 23, 1900. Serial No. 37,472. (No model.)

To all whom it may concern:

Be it known that we, JAMES C. STEEN, of Cincinnati, county of Hamilton, and CHARLES SEYBOLD, of the city of Dayton, in the county of Montgomery, State of Ohio, have invented a certain new and useful Improvement in Shaping-Machines, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, which form part of this specification.

Our invention relates to that class of shaping-machines which have a traveling head and may be applied to a machine having either one or two traveling heads.

It relates particularly to the feed mechanism which moves the saddle or head along the bed, and has for its object such a construction of the feed mechanism that it may be controlled by the operator from a position in front of the saddle.

Heretofore the construction in this class of machines has been such that the feed mechanism referred to was located at one end of the bed, and in order to regulate or change the feed or to move the saddle along the bed by hand the operator must leave his position at the saddle, where the tool is in operation, and go to the end of the bed. As the position of the saddle may be at any point of the bed, such an arrangement is awkward and results in much loss of time. Our construction avoids this and also gives better results from the fact that the operator, being able to vary or change the feed or to move the saddle by hand while in his position in front of the saddle, can make these changes with more accuracy.

The advantages of our invention will appear more fully as we proceed with our description.

In the following description the machine referred to and shown in the drawings has two saddles, which are called the "right" and "left" hand saddles, respectively; but of course it is to be understood that our description is intended to be applied to a machine with a single saddle.

In the drawings like letters of reference refer to like parts of the machine.

Figure 1 is a partial front elevation of a shaping-machine, showing the left-hand traveling head with our improvement attached. Fig. 2 is a plan view of the bed. Fig. 3 is a partial end view of the bed looked at from the right hand of Fig. 2. Fig. 4 is a cross-section through the feed mechanism of the left-hand head. Fig. 5 is a cross-section through the feed mechanism of the right-hand head. Fig. 6 is a top plan view of the feed mechanism as used in both heads. Figs. 7, 8, and 9 are detail views which will be described later.

A is the bed or frame of the machine, upon which travels the saddle or head B.

C is the ram, operated in the usual manner through the pitman C′, driving-arm C″, and gear-wheel D, which is operated by the driving-shafts D′ and D″. There is nothing new in this part of the machine, so that no further description is necessary.

The travel of the saddles along the bed is caused by means of the screws E and F, operated, respectively, by the shafts E′ and F′, (seen in Figs. 1 and 2,) the shaft E′ turning the screw E by means of the belt and pulleys G G G′, (seen in Fig. 1,) and the shaft F′ turning the screw F through the gears *f′* and *f*, which are keyed, respectively, to their ends, as seen in Fig. 3. The shafts E′ and F′ are operated in the following manner, first describing the operation of F′:

Looking now at Fig. 5, a bevel-gear H, the hub only of which is seen in the drawings, is feathered or slightly keyed to the shaft F′, said bevel-gear being loosely mounted in the head B. The bevel-gear H engages with a second bevel-gear H′, which is keyed to the shaft I, also mounted in the head B. A ratchet-wheel J is keyed to the shaft I and is engaged by a spring-controlled pawl J′, pivoted to a rocker J″, which is loosely mounted on the shaft I. The rocker J″ is operated through the link *j*, slide *j′*, and rod *j″*, the latter being reciprocated by means of its pivotal connection to a crank K, mounted on the driving-arm C″, as seen in Fig. 9. It is readily apparent that as the crank K turns the pawl J′ will operate the ratchet J, and thus intermittently turn the shaft I, which through the bevel-gears H′ and H turns the shaft F′, and thus turns the screw F, which feeds the saddle. To regulate the amount of

this feed, a plate or disk *l*, provided with a set-screw, is mounted on the bearing of the shaft I, said disk being partly cut away. A projecting pin secured to the pawl J′ bears against the edge of the disk *l* in such a way that the pawl J′ can only operate the ratchet J when the pin travels over the cut-away portion. This construction permits a regulation of the amount of the feed and is substantially the same as that described in Letters Patent No. 654,857, granted to Perin G. March and myself. The shape of disk *l* is shown in Fig. 8 in plan.

To move the saddle along the bed by hand, (referring still to Fig. 5, which shows the right-hand saddle,) a hand-wheel L is secured to the shaft I, which operates the hand-feed as follows: A second shaft L′ is mounted in the saddle B and has keyed to its lower end a gear M′, which engages with a rack M in the bed. A gear N is slidingly keyed to the upper end of said shaft L′ and is adapted when in operative position to engage with a gear N′, keyed to the shaft I. When it is desired to move the saddle by hand, the opening and closing nut which connects the saddle to the screw F (shown in Fig. 7) is disengaged from the screw F by means of the arm *f*″. The gear N is then slid along the shaft L′ until it engages the gear N′. The rotation of the hand-wheel L will then cause the saddle to move along the bed.

We will now pass to a description of the feeding mechanism in the left-hand saddle. The mechanism operating the feed, consisting of the parts $K^{\times}$ $j''^{\times}$ $j'^{\times}$ $j^{\times}$, rocker $J''^{\times}$, pawl $J'^{\times}$, ratchet $J^{\times}$, and shaft $I^{\times}$, are the same in this saddle as in the one just described; but the manner of transmitting the feed from the shaft $I^{\times}$ through the shaft E′ to the screw E is somewhat different and is as follows: A spiral gear $N'^{\times}$ is keyed to the shaft $I^{\times}$ and engages with a spiral gear $N^{\times}$, loosely mounted on the shaft $L'^{\times}$, and the spiral gear $M^{\times}$ engages with another spiral gear $N''^{\times}$, which is loosely mounted in the bearing O and slidingly keyed to the shaft E′. Thus rotation of the shaft $I^{\times}$ is communicated to the screw E through the spiral gears $N'^{\times}$ $N^{\times}$ $N''^{\times}$, the shaft E′, and the belt G′, which latter, it will be remembered, passes around pulleys keyed to the ends, respectively, of the shaft E′ and screw E. In order to operate this saddle by hand, the shaft $I^{\times}$ is provided, as before, with a hand-wheel $L^{\times}$ and the shaft $L'^{\times}$ with the gear $M'^{\times}$, engaging the rack M. A clutch P is slidingly keyed to the shaft $L'^{\times}$ and is provided with teeth which are adapted to engage teeth on the lower side of the gear $N^{\times}$. By sliding this clutch P upward, so as to engage the teeth on the gear $N^{\times}$, said gear $N^{\times}$ is keyed to the shaft $L'^{\times}$, so that the turning of the hand-wheel $L^{\times}$ will be communicated to the shaft $L'^{\times}$, thus causing the saddle to travel along the bed. The clutch P is held in engagement with the gear $N^{\times}$ in any suitable manner, preferably by a flat spring, which is adapted to engage a shoulder on the clutch when said clutch is in engagement with the gear $N^{\times}$. (This flat spring is not shown in the drawings.)

If only one saddle is used, either the construction shown in the right-hand saddle or that shown in the left-hand saddle may be adopted; but that shown in the right-hand saddle is preferable as being simpler and having fewer parts.

The manner of connecting the screws E and F with the left-hand and right-hand saddles, respectively, so that the turning of said screws will cause the saddles to be moved, is by the usual form of opening and closing nut and is shown in Fig. 7. It consists, essentially, of a split nut composed of the two parts *m* and *m*′, which inclose the screw and have threads on their inner sides corresponding to the thread of the screw. The part *m* is connected to a slide *n* and the part *m*′ to a slide *n*′. The slides *n* and *n*′ have pins respectively *o* and *o*′ engaging with cam-grooves in the cam *p*, which is keyed to the shaft *p*′, loosely mounted in the saddle B and adapted to be rotated by the arm *f*″. The grooves in the cam *p* are curved in opposite directions, so that the rotation of the shaft *p*′ by the arm *f*″ will cause the parts *m* and *m*′ of the lock-nut to move in opposite directions, and thus become disengaged from the screw E or screw F, as the case may be. Of course it will be understood that these locking-nuts must be disengaged from either the screw E or the screw F before the corresponding saddle can be moved by means of the hand-wheel.

The shaper is provided with the usual circular attachment R, which is operated by the shaft *r*. Looking now at Fig. 3 it is seen that the gear-wheel *f*′ on the shaft F′ engages with a pinion *s*, pivoted to the end of the bed. When it is desired to use the circular feed, the gear *f* is removed from the end of the screw F and keyed to the end of the shaft *r*. It will then be engaged by the pinion *s*, so that the rotation of the shaft F′ will be communicated to the shaft *r*. In this way the feed of the circular attachment is regulated at the saddle.

Having thus described our invention, what we desire to claim as new and to cover by Letters Patent is—

1. In a shaping-machine having a traverse-head, a feed-screw operating said traverse-head, a driving-arm actuating the ram, and mechanism in said head intermediate the driving-arm and the feed-screw, whereby the feed of the head may be controlled from the head, substantially as described.

2. In a shaping-machine having a traverse-head, a feed-screw operating said head, a driving-arm actuating the ram, and mechanism in said head intermediate the driving-arm and the feed-screw, whereby the feed of the head may be controlled from the head, in combination with a hand-wheel and mechanism intermediate said hand-wheel, and a rack in

the bed, whereby the head may be moved by hand, substantially as described.

3. In a shaping-machine having a traverse-head, a feed-screw and shaft mounted in the bed, gearing intermediate said shaft and feed-screw, a second shaft mounted in the head, gearing intermediate the two shafts, a ratchet-wheel mounted on said second shaft, a pawl engaging said ratchet-wheel, and mechanism intermediate the pawl and the driving-arm, whereby said second shaft is caused to rotate intermittently, substantially as and for the purpose described.

4. In a shaping-machine having a traverse-head, a feed-screw and shaft mounted in the bed, said feed-screw operating the head, gearing intermediate said shaft and feed-screw, a second shaft mounted in the head, gearing intermediate the two shafts, a ratchet-wheel keyed to said second shaft, a pawl engaging said ratchet-wheel, and mechanism intermediate the pawl and the driving-arm, whereby said second shaft is caused to rotate intermittently, in combination with a third shaft, a gear keyed to the end of said shaft and engaging a rack in the bed, and means for gearing the second and third shafts together, whereby the rotation of the second shaft by means of a hand-wheel is communicated to the third shaft, substantially as and for the purpose described.

5. In a shaping-machine having a traverse-head, a feed-screw and shaft mounted in the bed, said feed-screw operating the head, gearing intermediate said shaft and feed-screw, a second shaft mounted in the head, gearing intermediate the two shafts, a ratchet-wheel keyed to said second shaft, a pawl engaging said ratchet-wheel, a pin projecting from said pawl, and engaging the rim of a disk part of which is cut away, and mechanism intermediate the pawl and driving-arm operating the ram, whereby said second shaft is caused to rotate intermittently, substantially as and for the purpose described.

6. In a shaping-machine having a traverse-head, a feed-screw and shaft mounted in the bed, said feed-screw operating the head, gearing intermediate said shaft and feed-screw, a second shaft mounted in the head, gearing intermediate the two shafts, a ratchet-wheel keyed to said second shaft, a pawl engaging said ratchet-wheel, a pin projecting from said pawl, and engaging the rim of a disk part of which is cut away, and mechanism intermediate the pawl and driving-arm operating the ram, whereby said second shaft is caused to rotate intermittently, in combination with a third shaft, a gear keyed to the end of said shaft and engaging a rack in the bed, and means for gearing the second and third shafts together, whereby the rotation of the second shaft by means of a hand-wheel is communicated to the third shaft, substantially as and for the purpose described.

JAMES C. STEEN.
CHARLES SEYBOLD.

Witnesses as to James C. Steen:
FRANK BOWMAN,
VIRGIL BROOKSBANK.
Witnesses as to Charles Seybold:
FRANK H. HERBST,
EDM. LINXWEILER.