A. R. MURRAY.

TRAVERSE HEAD SHAPING MACHINE.

APPLICATION FILED JUNE 1, 1908.

950,783.

Patented Mar. 1, 1910.

4 SHEETS—SHEET 1.

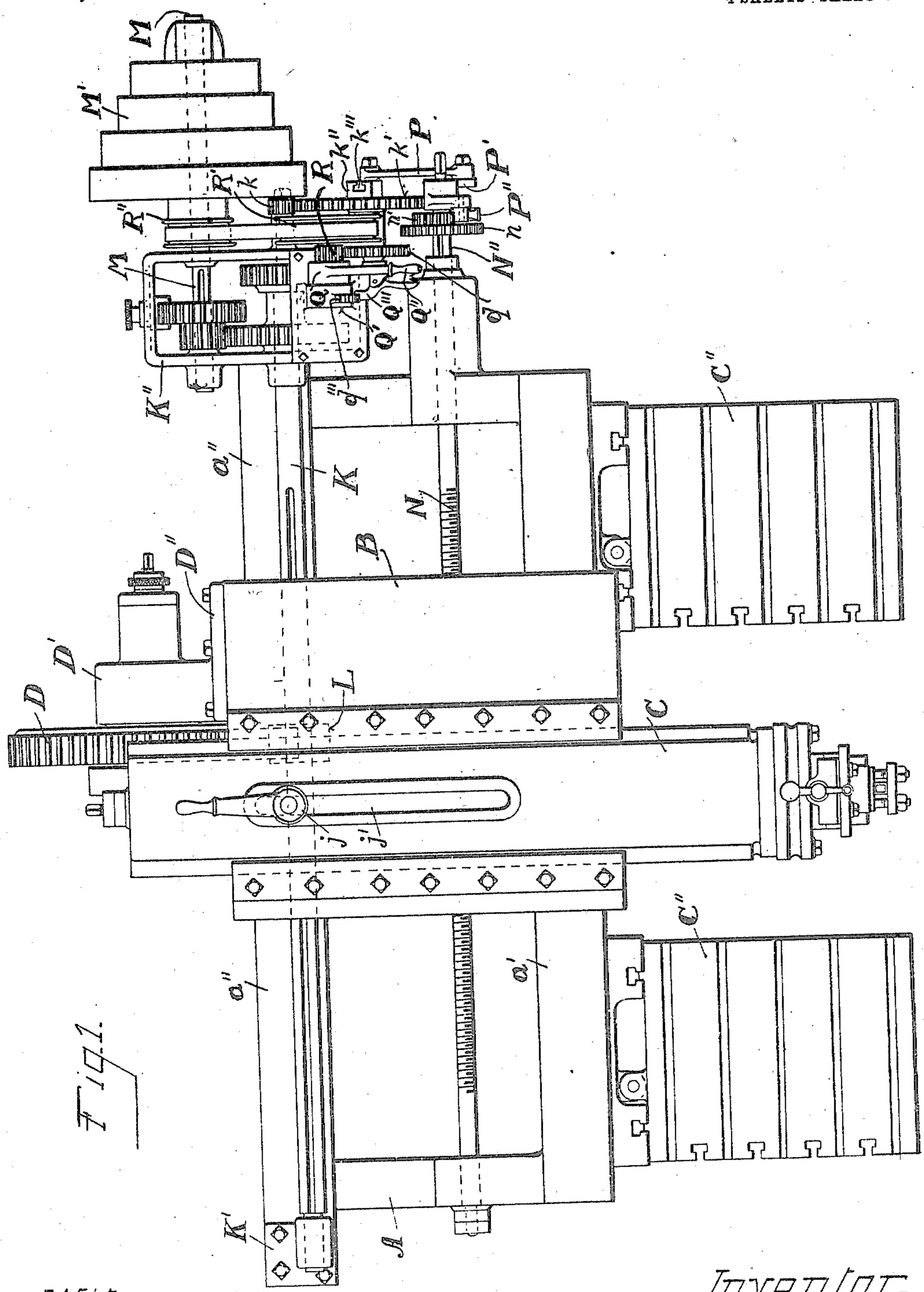

Fig. 1.

Witnesses.
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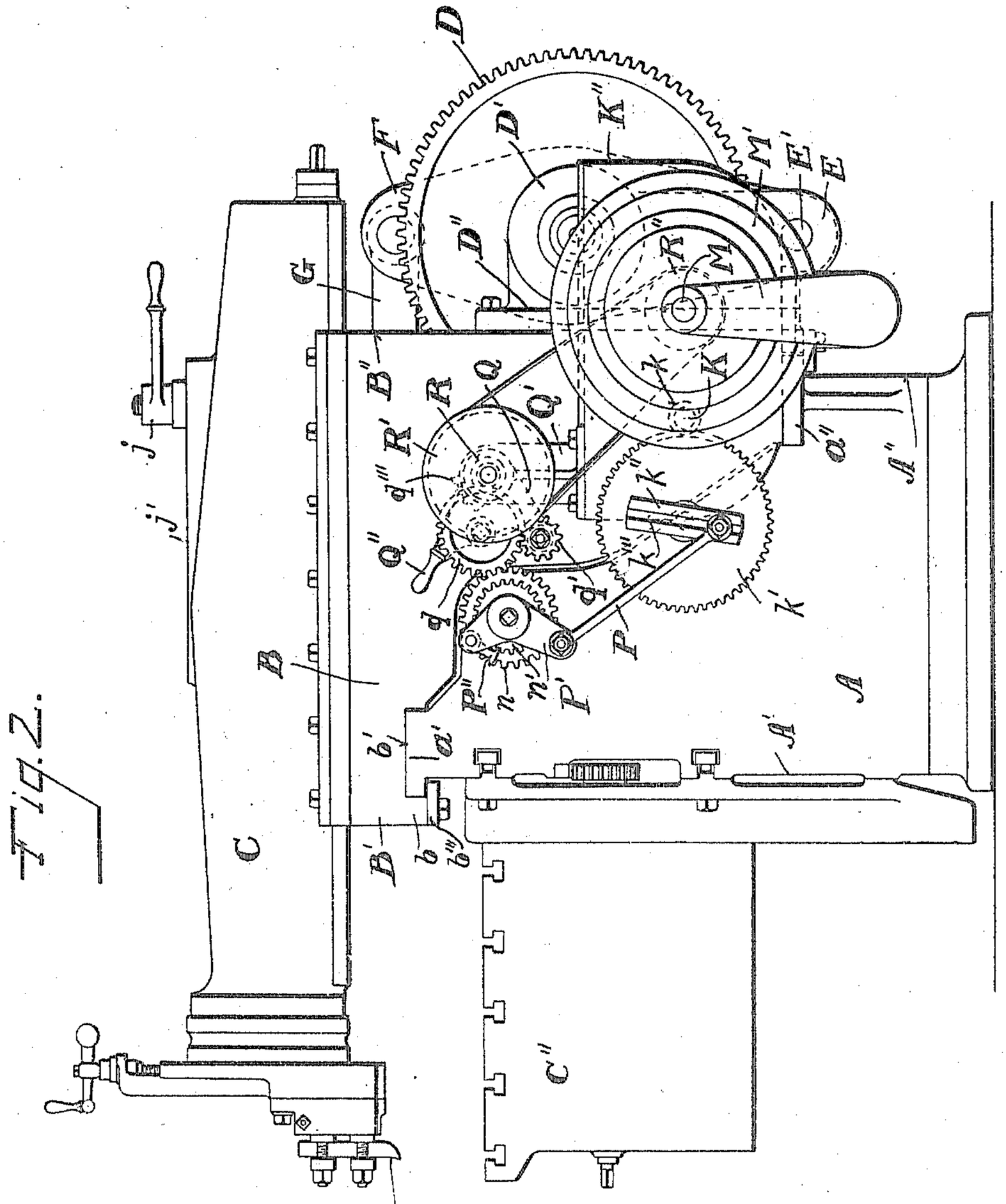

FIG. 2.

Witnesses.
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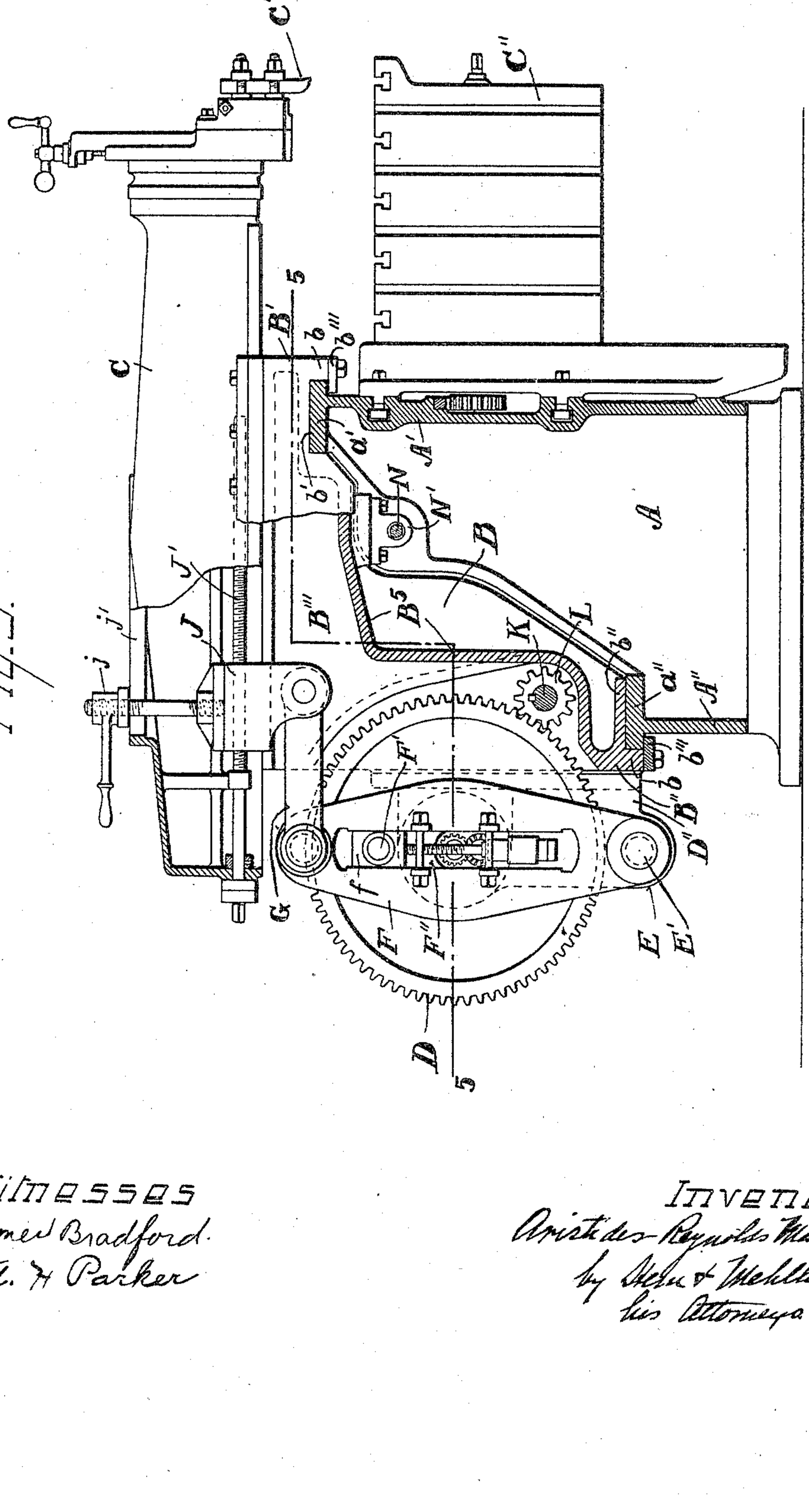

FIG. 2.

Witnesses
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4 SHEETS—SHEET 4.

Fig. 5.

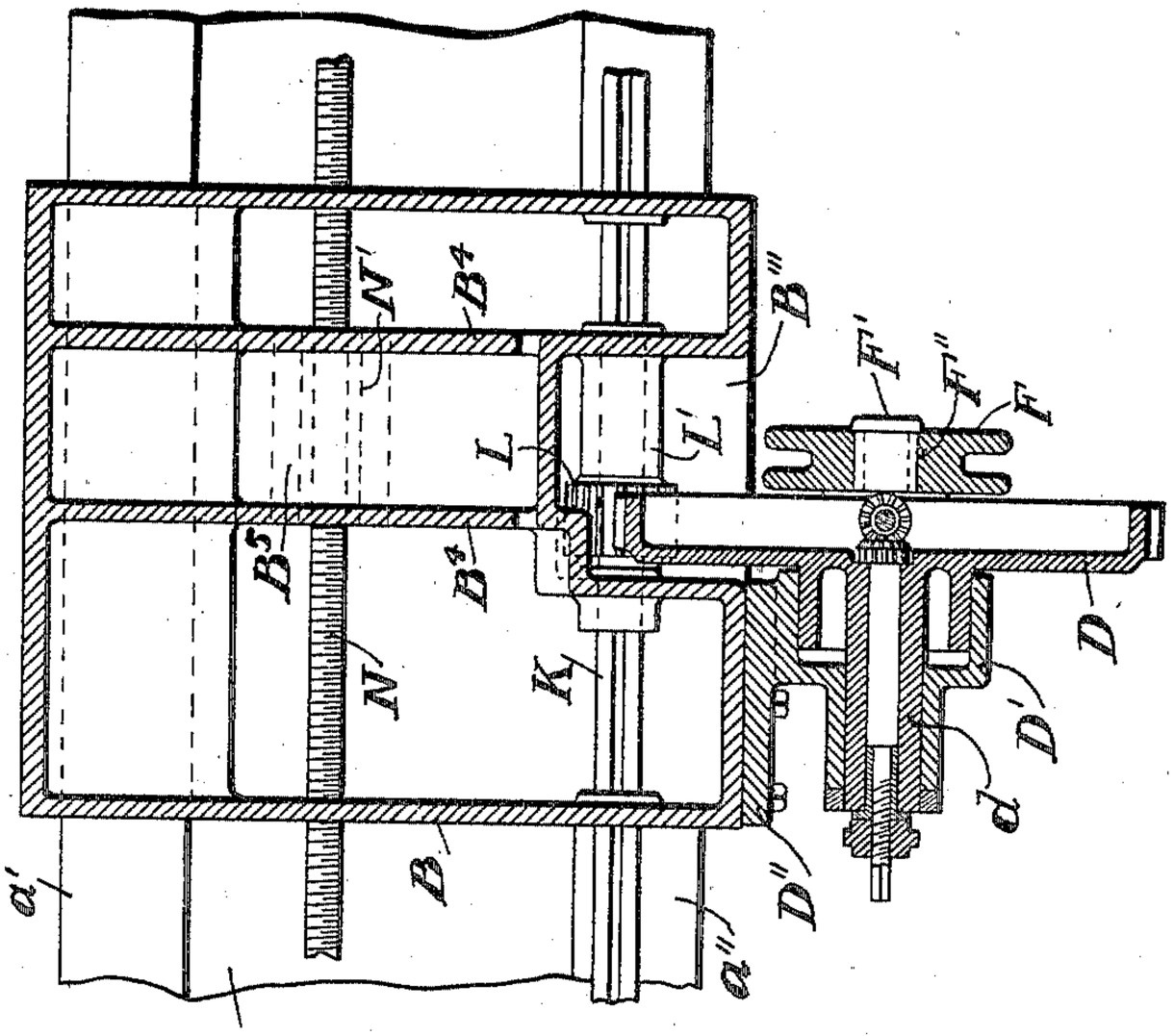
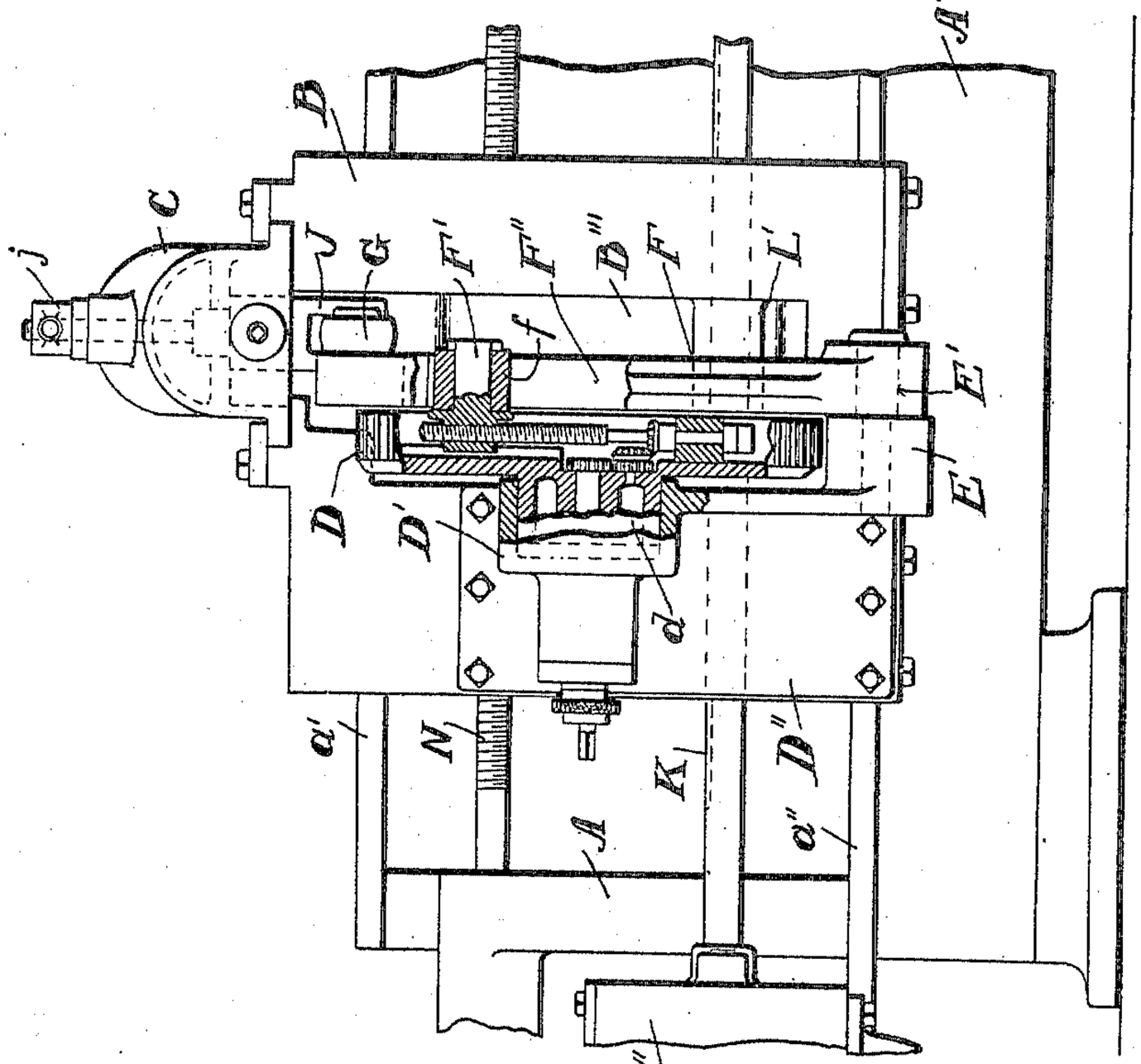


Fig. 4.



Witnesses.
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UNITED STATES PATENT OFFICE.

ARISTIDES REYNOLDS MURRAY, OF CINCINNATI, OHIO, ASSIGNOR TO THE CINCINNATI SHAPER COMPANY, OF CINCINNATI, OHIO, A CORPORATION.

TRAVERSE HEAD-SHAPING MACHINE.

950,783. Specification of Letters Patent. Patented Mar. 1, 1910.

Application filed June 1, 1908. Serial No. 435,893.

To all whom it may concern:

Be it known that I, ARISTIDES REYNOLDS MURRAY, a citizen of the United States, and a resident of Cincinnati, in the county of Hamilton and State of Ohio, have invented a certain new and Improved Traverse Head-Shaping Machine, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, which form a part of my specification.

My invention relates to a traverse head shaper. Its object is to produce such a shaper in which a minimum of weight in the bed is combined with a maximum of resistance against the back-action of the tool.

Another object of my invention is to mount the crank arm and gear in the traveling saddle in such a way that the thrust of the crank will act directly in line with the tool and in the same plane, thereby insuring a more accurate cut and to a great extent diminishing the "chattering" of the tool.

The stroke adjusting mechanism in my improved machine is all within easy reach of the operator. The machine is also provided with means to produce a quick traverse of the saddle in either direction, which is so arranged with reference to the feed screw mechanism that the two cannot possibly be thrown into operation simultaneously, thus preventing any possibility of a break in the gearing.

The various advantages of my improved machine will appear more fully as I proceed with my specification.

In the drawings, Figure 1 is a top plan view of my improved traverse head shaping machine; Fig. 2 is an end elevation of the same, looked at from the driving end; Fig. 3 is a vertical section through the bed of the machine, showing the traverse saddle and ram partially broken away to a central vertical section; Fig. 4 is a rear view of the traverse saddle with the crank gear shown partly in section; and Fig. 5 is a horizontal section through the saddle on the line 5—5 of Fig. 3.

A is the bed, B, the traverse saddle, and C, the ram. The bed is in section, as indicated in Fig. 3, with the front wall A′ extending up almost to the ram and the rear wall A″ extending but a short distance above the base. Each of said walls are provided with bearing plates a' and a'', said plates running the length of the bed and projecting laterally beyond said walls. The traverse saddle B is in vertical section substantially similar to that of the bed except that it is reversed, with the short side B′ in front and the longer side B″ in the rear. It is provided with bearing surfaces b' and b'' which slide upon the plates a' and a'' of the bed. At the forward and rear sides of the saddle are formed depending flanges b which engage respectively the front and rear edges of the bearing plates a', a'', and plates b''' are bolted to the under edges of said flanges b, in position to engage the under surfaces of the projecting edges of the bearing plates a', a''. The ram C is mounted on the traverse saddle in the usual manner as indicated in the drawings.

C′ is the tool and C″, the table. No particular description of these parts is necessary.

D is the crank gear. It is supported in a housing D′ (see Figs. 4 and 5) made integral with a bracket-plate D″ which is secured to the rear wall of the saddle B. The saddle B is provided with a pocket B^3 in which are located the driving pinion and part of the crank gear and in which room is provided for the reciprocation of the crank arm and pitman. This pocket has the side walls B^4 and the bottom wall B^5. The crank hub d and the housing D′ may be of any suitable construction, preferably such as that illustrated in the drawings, to give a long bearing for the crank gear D. The bracket-plate D″ is prolonged downward toward the bottom of the saddle, where it is provided with a boss E in which is secured a pin E′, on which the crank arm F is journaled.

G is the pitman pivoted at one end to the crank arm F and at the other end to a block J which is adjustably mounted in the ram C. By means of a screw J′ and the usual clamping mechanism j engaging in a slot j' the position of the block J in the ram may be adjusted as desired to control the position of the ram with reference to the driving arm. It will be noted that the pitman G is in substantially the horizontal plane of the cutting edge of the tool C′ and that its action is in line with the tool.

F′ is the crank pin journaled in the block f which works in the slot F″ of the crank arm F. Any suitable mechanism for adjust-

ing the position of the crank pin block *f* with reference to the journal pin E′ of the crank arm may be used.

K is the driving shaft. It is supported in a standard K′ mounted on the rear bearing plate *a″* of the bed at one end and at the other end, in the speed box K″, which is secured to the opposite end of said bearing plate. The rear bearing plate is prolonged at both ends beyond the bed for this purpose. A pinion L is located in the pocket B^3 of the saddle and is feathered on the driving shaft K in engagement with the crank gear D. The pinion is held in proper position in the pocket by means of the bearing L′.

M is the power shaft, journaled in the speed box and driven by the cone M′. The speed box is provided with any suitable system of change speed gearing,—for example, that illustrated in the drawings,—by means of which the shaft M is geared to the shaft K.

N is the feed screw suitably supported at its opposite ends in the bed, and threaded through a standard N′ secured to the under wall B^5 of the pocket B^3 in the head, as is clearly to be seen in Fig. 3. The shank of the screw N is prolonged beyond the bed at N″ (see Figs. 1 and 2) and is there provided with the ratchet *n′* and the gear *n*, the two secured rigidly together or made integral and feathered on said shank. The driving shaft K is projected beyond the speed box and there provided with a pinion *k* which meshes with a crank gear *k′* suitably journaled on the speed box. This crank gear is provided with a driving arm *k″* in the slot *k‴* of which is secured a pitman P pivotally connected to one end of the bell crank lever P′. The other end of the bell crank lever carries a feed pawl P″ which normally engages the ratchet *n′*. Gravity keeps the pawl in engagement with the ratchet. It is apparent that by this construction the bell crank lever P′ will oscillate backward and forward as the driving shaft K is rotated intermittently, thereby rotating the screw N and causing the feed of the saddle B.

To provide for the quick traverse of the saddle I have adopted the following arrangement:—A swinging arm Q is trunnioned on a bracket Q′ secured in any convenient manner to the top of the speed box. Mounted on the journal of this arm is a pinion R and a pulley R′, the two being constructed to rotate together. The pulley R′ is belted to a pulley R″ mounted on the power shaft between the cone and the speed box. Pinions *q q′* are mounted on studs on the arm Q, each in engagement with the other, and the larger one *q* in engagement with the pinion R. The arm Q is provided with an operating handle Q″ and a spring controlled detent Q‴ which engages a notched segment *q‴* formed on the upper side of the bracket Q′. By this arrangement the arm may be held in the desired position. The arm Q and the gears *q q′* are so arranged that when the gear *n* is moved along the screw shank N″ into line with them, either *q* or *q′* may be brought into engagement with this gear, the detent Q‴ locking them in that position. When a quick traverse is required the gear *n* is moved along the shank N″ into line with these gears. As the gear *n* and ratchet *n′* are secured together, this withdraws the ratchet *n′* from a position to be acted upon by the pawl P″ and thus prevents the ordinary intermittent feed of the saddle. In the position described either of the gears *q* or *q′* is brought into engagement with gear *n*, as desired, the one causing the screw to rotate in one direction and the other to rotate in the opposite direction.

The operation of my improved traverse head shaping machine is apparent from the above description, and also its several advantages. By making the front wall of the bed higher than the rear wall, and the saddle to correspond therewith an immense leverage is obtained to withstand the action of the tool. In addition room is thus given to mount the crank gear and pitman in the head below the ram so as to have the stroke of the crank arm directly in line with, and in substantially the same plane as the cutting edge of the tool. It is also apparent that the operator may readily reach the mechanism by which the stroke of the ram is regulated.

Having thus described my invention, what I desire to claim as new and to cover by Letters Patent is:—

1. A traverse head shaping machine comprising a bed having front and rear walls, the front wall extended above the rear wall, and a traverse saddle, the saddle having its rear wall projected below the front wall to correspond with and bear upon the walls of the bed.

2. A traverse head shaping machine comprising a bed having front and rear walls, the front wall extended above the rear wall, a saddle constructed to traverse said bed, a ram slidably mounted on said saddle, and mechanism located in the saddle below the ram adapted to reciprocate the ram.

3. In a traverse head shaping machine a bed having front and rear walls, the front wall extended above the rear wall, a saddle constructed to traverse said bed, having its rear wall extended below its front wall, a pocket formed in said saddle, open at the rear and at the top, a bracket secured to the rear wall of said saddle adjacent said pocket, a crank gear journaled on said bracket with its forward edge projecting into said pocket, a crank arm operated by said crank gear journaled at the lower end of said bracket, the ram slidably mounted on the saddle, a

block adjustably secured to the ram and projecting into the pocket in said saddle and a pitman pivotally connected to the block and to the operative end of the crank arm.

4. In a traverse head shaping machine a bed having front and rear walls, the front wall extended above the rear wall, a saddle constructed to traverse said bed, having its rear wall extended below its front wall, a pocket formed in said saddle, open at the rear and at the top, a bracket secured to the rear wall of said saddle adjacent said pocket, a crank gear journaled on said bracket with its forward edge projecting into said pocket, a crank arm operated by said crank gear journaled at the lower end of said bracket, the ram slidably mounted on the saddle carrying the tool, a block adjustably secured to the ram and projecting into the pocket in said saddle, and a pitman pivotally connected to the block and to the operative end of the crank arm, said pitman acting in direct line with and in substantially the same plane as the cutting edge of the tool.

5. A traverse head shaping machine comprising a bed having front and rear walls, the front wall projected above the rear wall, a saddle constructed to traverse said bed and having its rear wall extended below its front wall, both the saddle and bed having engaging flanges adapted to anchor the saddle to the bed, a ram slidably mounted on said saddle, a pocket, open at the rear and at the top, formed in said saddle, a bracket-plate secured on the rear face of the saddle adjacent said pocket, a crank gear journaled on said bracket, a crank arm operated by said crank gear pivoted near the lower end of said bracket, a ram slidably mounted on the saddle, a block adjustably secured to the ram projecting into the pocket in said saddle, a link connecting said block and the operative end of the crank arm, a driving shaft mounted at the rear of said bed and a pinion located in the pocket in the saddle in engagement with the crank gear, said pinion being feathered to the driving shaft.

6. A traverse head shaper comprising the bed, the traverse saddle, the crank gear and crank arm located in said saddle, the driving shaft, the pinion located in said saddle in engagement with the crank gear and feathered to said driving shaft, the feed screw, the standard secured to the saddle through which said feed screw is threaded, the power shaft, and gearing intermediate said power shaft and said driving shaft, a pinion mounted on the driving shaft, a ratchet and gear secured together and feathered on the shank of the feed screw, mechanism intermediate the pinion on the end of the driving shaft and said ratchet to intermittently rotate the ratchet, an arm adjacent the plane of the gear secured to the ratchet, intermeshing gears carried by said arm, mechanism between said gears and the power shaft to rotate said gears, said arm being arranged to bring either of said gears selectably into engagement with the gear on the screw shank when said gear is brought into line with them.

7. In a traverse head shaper, in combination with the bed, the saddle, the driving shaft, the feed screw, and the power shaft, a ratchet and gear secured together and feathered to the shank of the feed screw, mechanism intermediate the driving shaft and said ratchet adapted to rotate the same intermittently, a swinging arm, intermeshing gears carried by said arm, mechanism intermediate said gears and the power shaft adapted to rotate said gears, and said swinging arm being constructed to bring either of said gears carried thereby into engagement with the gear feathered to the shank of the feed screw, when said gear is moved into line with said gears.

8. A traverse head shaper comprising a bed having front and rear walls, the front wall being extended above the rear wall, bearing plates on the upper edges of each of said walls, the rear bearing plate extended beyond the bed, a saddle traversing said bed having its rear wall extended below its front wall, the walls of the saddle having downwardly extending flanges engaging the outer edges of the bearing plates of the bed, plates secured to the under edges of said flanges in engagement with the under projecting edges of the bearing plates of the bed, a ram slidably mounted on the saddle, mechanism mounted in the saddle to reciprocate the ram, a speed box mounted on the rear bearing plate of the bed beyond the bed, a driving shaft journaled at one end in said speed box and at the other end in a bracket secured to said rear bearing plate, a power shaft journaled in said speed box, and change gearing located in said speed box intermediate said power shaft and said driving shaft.

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