No. 724,514. PATENTED APR. 7, 1903.

W. SELLERS.

MACHINE TOOL.

APPLICATION FILED JAN. 16, 1902.

NO MODEL. 2 SHEETS—SHEET 1.

FIG. 2.

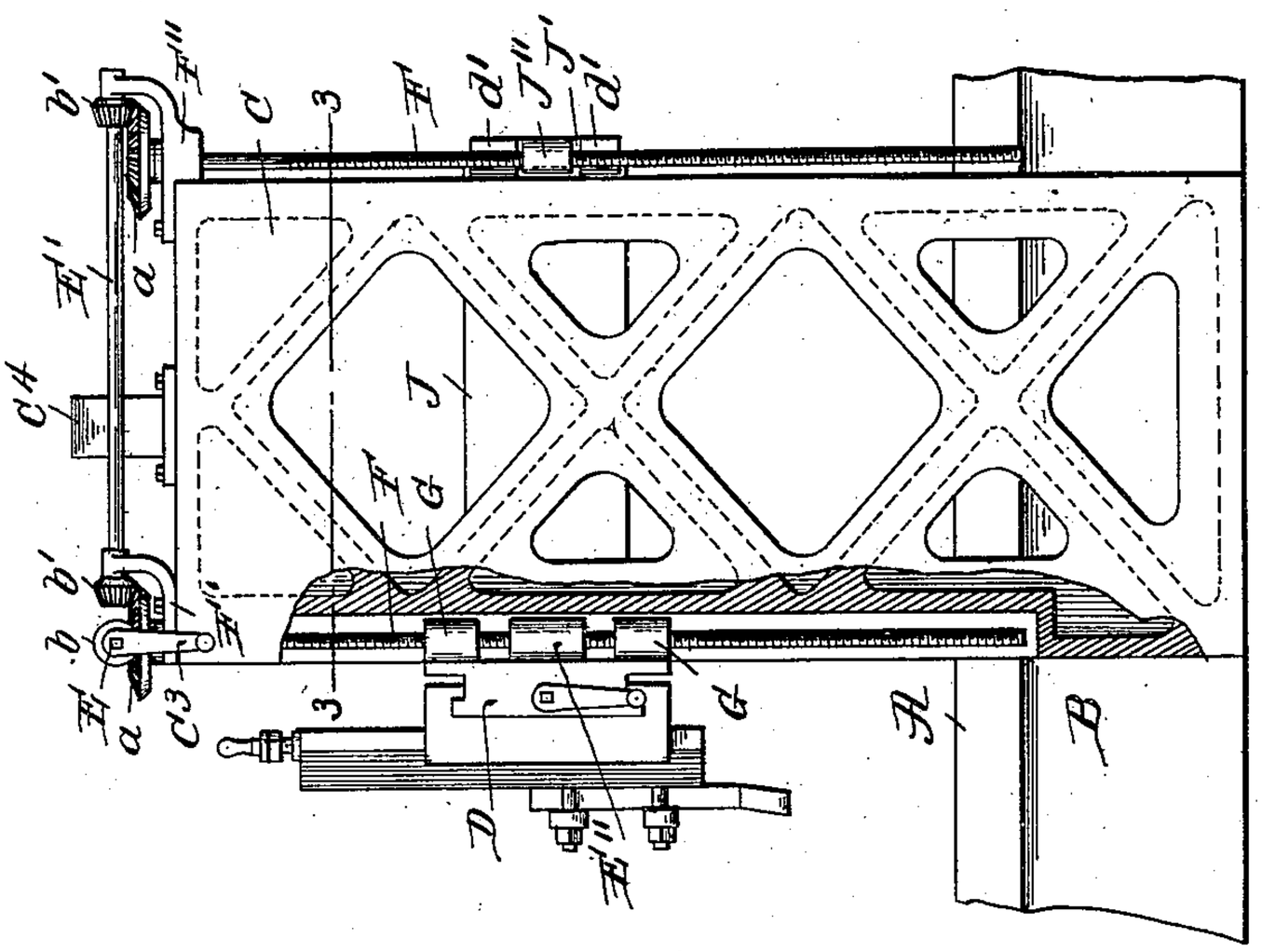
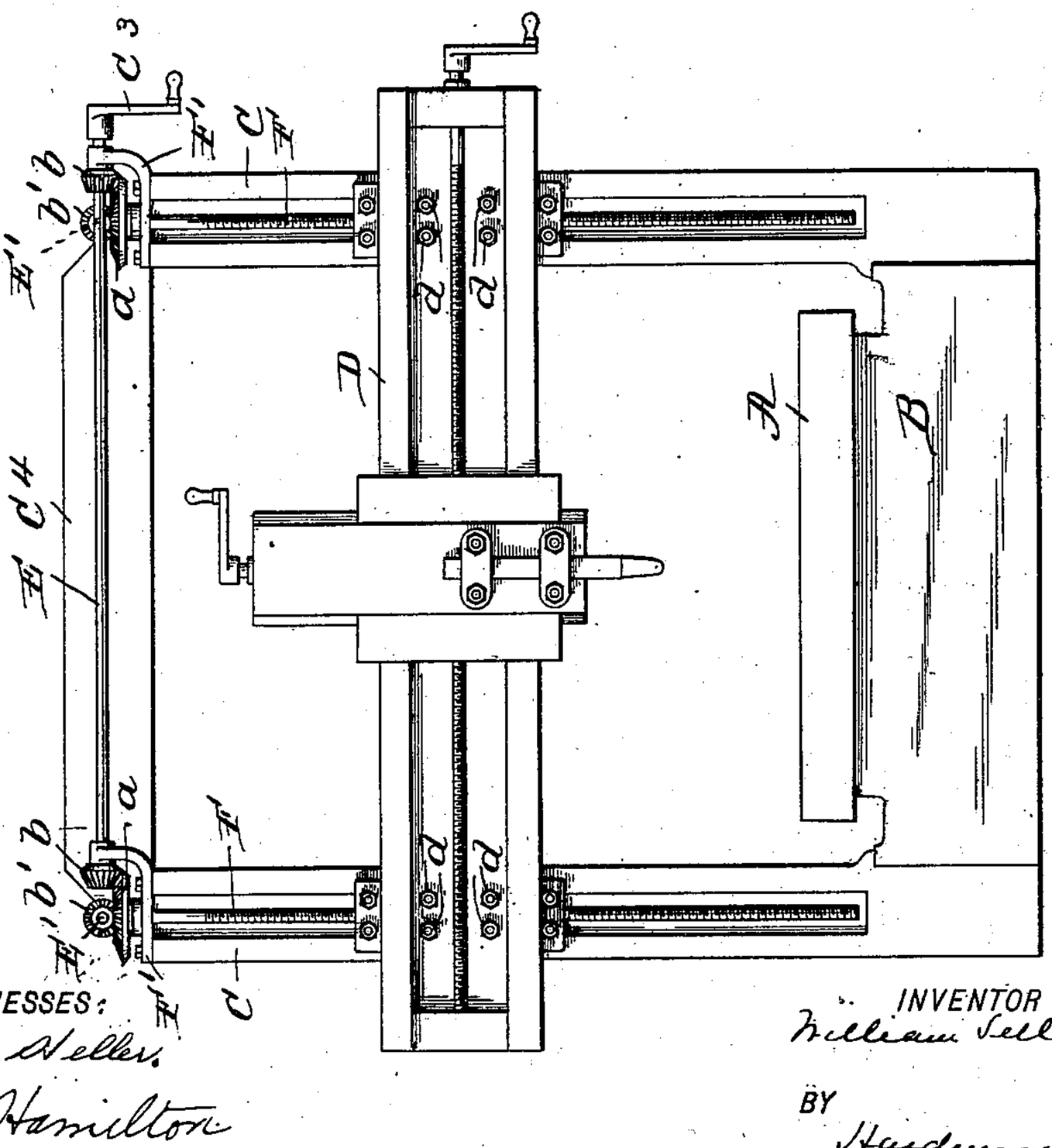


FIG. 1.



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NO MODEL. 2 SHEETS—SHEET 2.

Fig. 3.

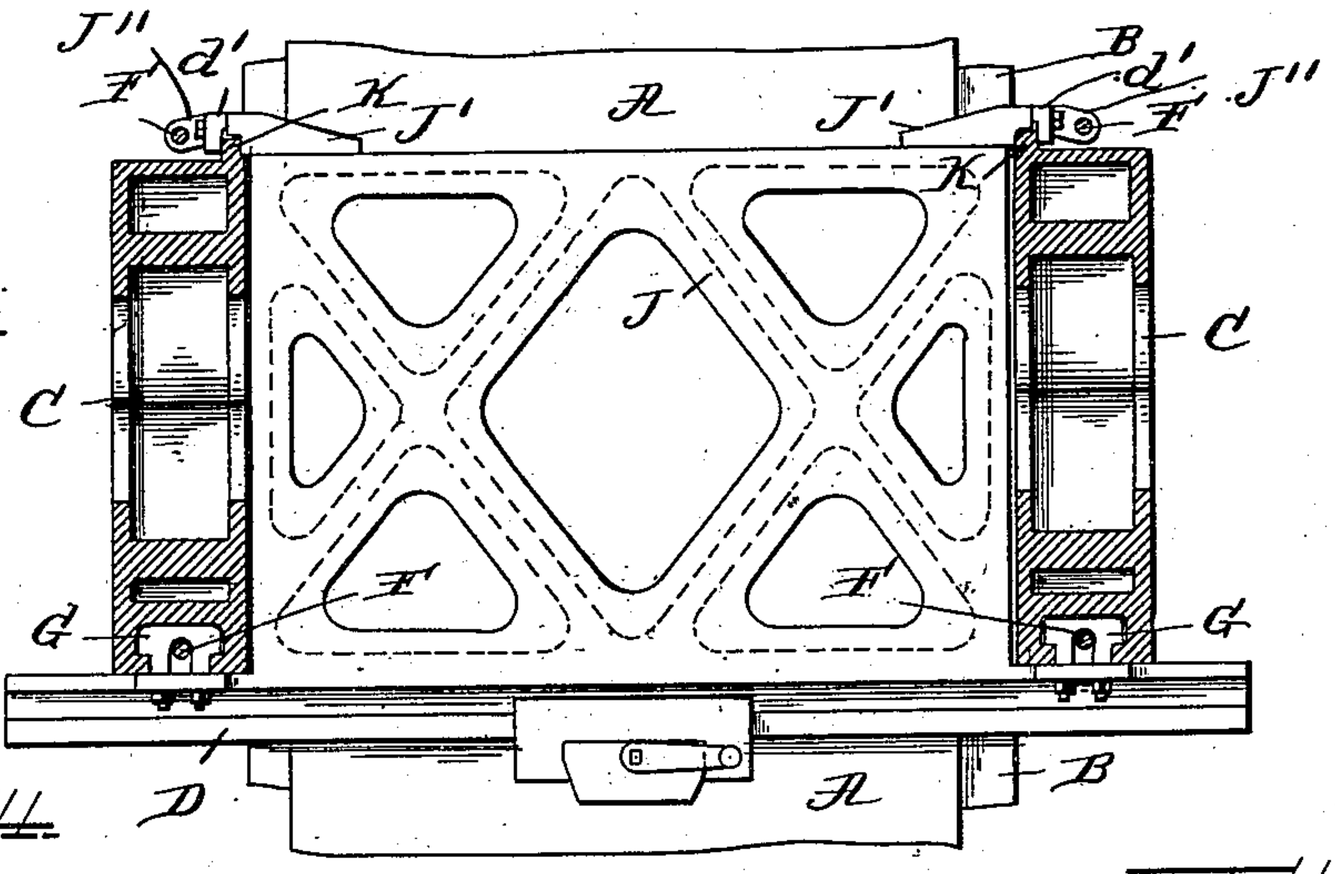


Fig. 4.

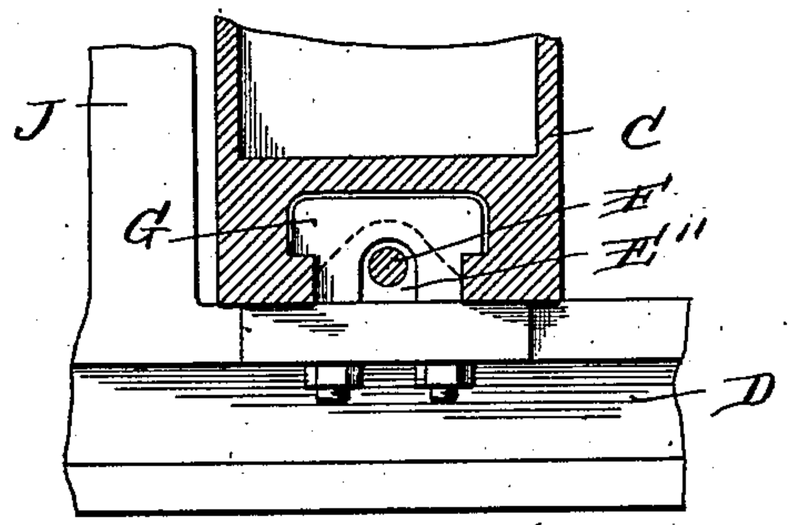


Fig. 6.

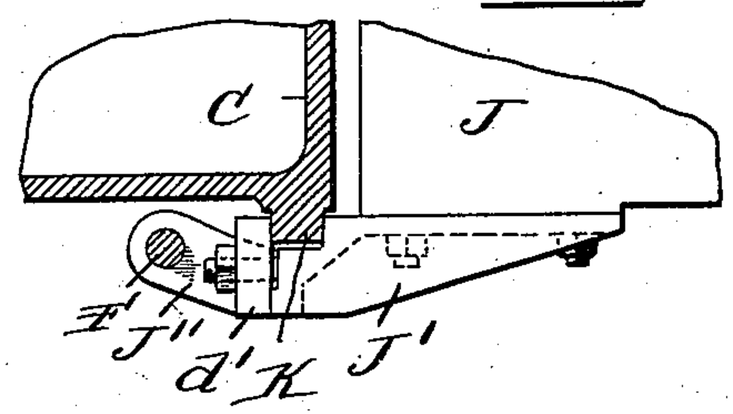


Fig. 5.

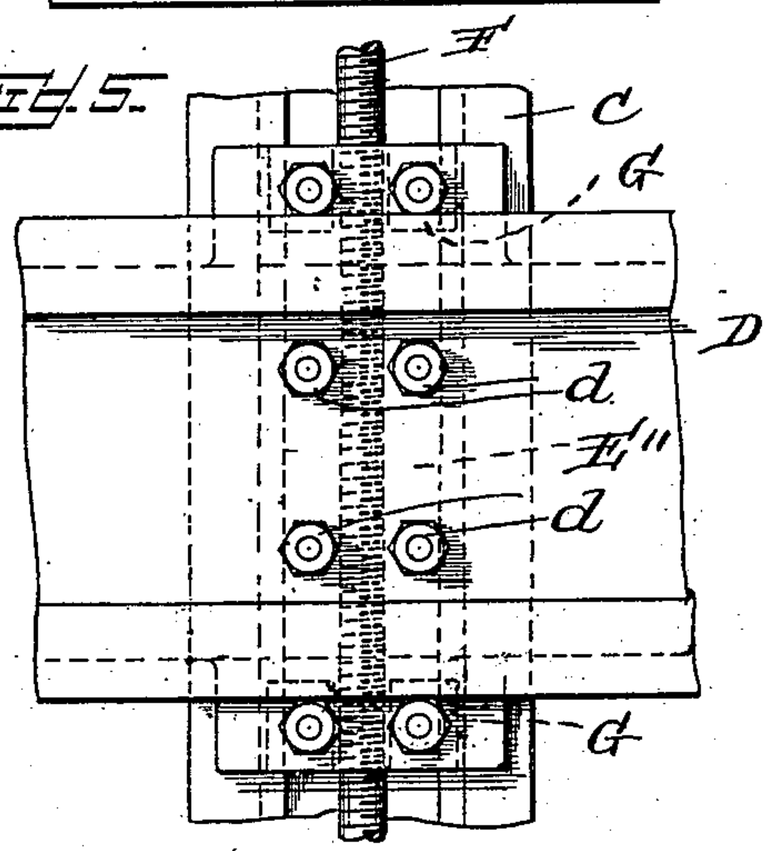
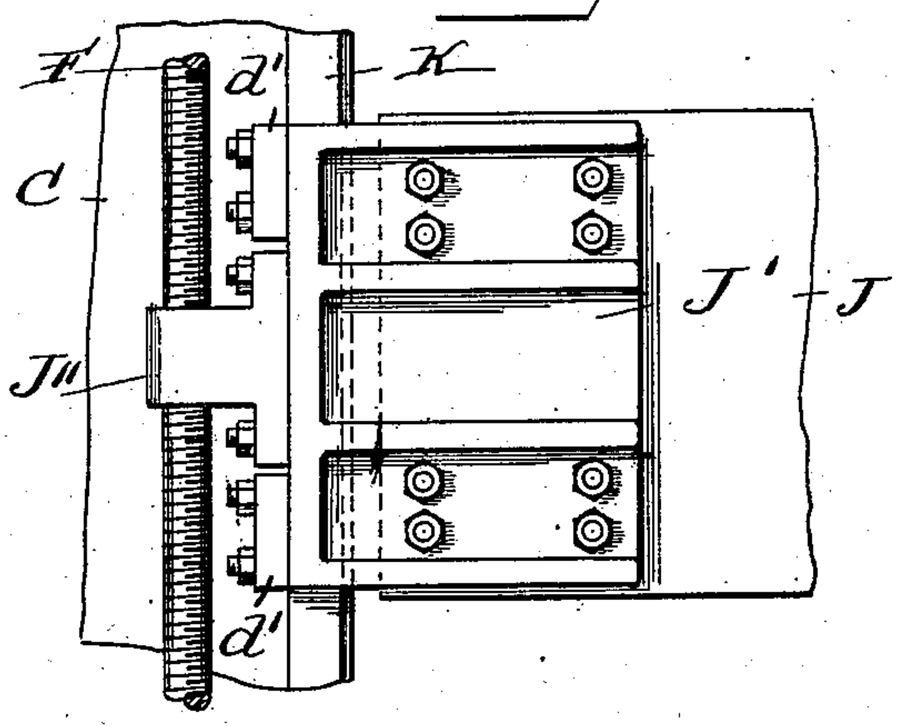


Fig. 7.



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UNITED STATES PATENT OFFICE.

WILLIAM SELLERS, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO WILLIAM SELLERS AND COMPANY, INCORPORATED, A CORPORATION OF PENNSYLVANIA.

MACHINE-TOOL.

SPECIFICATION forming part of Letters Patent No. 724,514, dated April 7, 1903.

Application filed January 16, 1902. Serial No. 89,956. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM SELLERS, a citizen of the United States, residing at Philadelphia, county of Philadelphia, and State of Pennsylvania, have invented a new and useful Improvement in Machine-Tools, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, which form a part of this specification.

My invention relates more particularly to that class of machine-tools in which the cutting-tool is carried by a slide-rest supported by uprights attached to a bed, between which uprights the work is reciprocated or rotated, as in the planing-machine and the boring and turning mill. In such machines as heretofore constructed the cross-head which forms a part of the slide-rest is securable against the face of the uprights, upon which it may be raised or lowered to suit the work to be operated upon. In machines of this character the tool-carrier is movable at right angles with the cross-head, the cutting-tool always projecting below the cross-head, and in large machines it is often required to project very far below. In all cases a tool so supported must cause a considerable torsional strain in the cross-head, and in large machines where the distance between the upright supports is great the distance below the cross-head at which the cutting-tool can work efficiently is comparatively small, because the section of cross-head at the uprights cannot be increased without introducing other elements of disturbance equally injurious. Aside from this the cross-head is only bolted against the face of the uprights, so that it becomes a brace between the two uprights to support the lateral strains thereon within the limits of friction only.

One object of my invention, therefore, is to provide a form of cross-head which shall resist these torsional strains without transmitting them through that section of the cross-head which is bolted to the face of the uprights; another is to provide this form of cross-head with means for bolting it between the uprights, as well as to the face thereof; another is to provide, in addition to the plane surface on the face of the uprights, plane surfaces between the uprights, to which the cross-head may be bolted, whereby the cross-head may be raised, lowered in a vertical line, and properly secured, and another is to provide means for raising and lowering this cross-head between its guiding-surfaces without disturbing its parallelism to the table which supports the work the cutting-tool operates upon. The means by which these objects are accomplished are set forth in the following specification.

In the drawings, Figure 1 is a front view of my improved machine-tool. Fig. 2 is a side elevation of the same with a portion in section. Fig. 3 is a sectional plan view on the line 3 3 of Fig. 2. Fig. 4 is an enlarged detail plan view of the front clamp. Fig. 5 is a front view of the same. Fig. 6 is an enlarged plan view of the rear clamp. Fig. 7 is a rear view of the same.

A is the table of the machine upon which the work is secured. This table is reciprocated or rotated, as the case may be, upon the bed B, to which are secured the uprights C C, connected at the top by the cross-beam C^4.

The cross-head D J is composed of the bar D, which extends across the front of the uprights C C, and integral with the bar D is the cross-beam J, which extends rearwardly between uprights C C. The cross-head D J is securely clamped to the front and rear portions of the uprights preparatory to operating upon the work secured upon the table A below it.

To adjust the cross-head D J vertically, it is suspended by four screws F F F F, one on each front face and one on each rear face of the two uprights C C. Two of these screws F F on the front faces of the uprights are suspended from the stands F′ and F′, secured upon the top of the uprights, so that the screws will pass behind the cross-bar D of the cross-head D J, and to this end these screws are sunk into the front faces of the uprights C and C. The other two screws are suspended from the stands F″ F″, secured upon the top of and over the rear face of the uprights C C. All four of these screws are ro-

tated by bevel-wheels *a a a a*, of like diameter, mounted upon the upper ends of these screws. The bevel-wheels, Fig. 1, on the front of the uprights are geared together by the two pinions *b b*, of like diameter, mounted upon the shaft E, supported by the stands F' F'. The bevel-wheels *a a a a* at the front and rear faces of the uprights are geared together by the pinions *b b b' b'*, of like diameter, mounted upon shafts E' E', supported by the stands F' and F'', and all four of the screws will be rotated together at a uniform velocity by turning the crank-arm C^3, mounted upon the end of the shaft E, Fig. 1. The nuts E'' on the screws F F in the front vertical faces of the uprights C C are bolted to the cross-bar D of the cross-head D J by the screw-bolts *d d d d*, and the nuts J'' on the screws F F on the rear vertical sides of the uprights C are bolted to a stand J', Fig. 7, on the rear vertical side of the frame or beam J, which is a part of the cross-head D J. To this stand J', above and below the nut J'', are clamps *d' d' d' d'*, Fig. 6, to grip the stand J' against the side of the rib K, which extends from bottom to top of the rear vertical sides of the uprights C C, and in the front vertical faces of the uprights the clamps G are mounted above and below the nut E'', Figs. 4 and 5, whereby the cross-head may be raised or lowered and clamped against the face of the uprights and between the uprights, so as to resist strains in every direction.

The apparatus on the cross-bar D for holding and operating the cutting-tool is that in ordinary use and forms no part of the present invention, and as its mode of operation is well known any detailed description thereof is unnecessary.

As in many cases it may be advisable not to extend the cross-head between the uprights so far back as to the rear face of the uprights, I do not limit my invention to a cross-head extending the whole depth of the uprights.

Having now fully described my invention, what I claim, and desire to protect by Letters Patent, is—

1. In a machine of the character described, the combination of a pair of uprights, a cross-head vertically movable on said uprights, said cross-head comprising a tool-carrying member in front of said uprights, and a rearwardly-extending member entering between said uprights, and clamping members to secure the tool-carrying member and rearwardly-extending member of the cross-head to the uprights.

2. In a machine of the character described, the combination of a pair of uprights, a cross-head vertically movable upon said uprights, said cross-head comprising a tool-carrying member in front of said uprights and a rearwardly-extending member entering between said uprights, means to secure the tool-carrying member to the face of the uprights and means to secure the rearwardly-extending member to the adjacent sides of the uprights.

In testimony of which invention I have hereunto set my hand, at Philadelphia, on this 10th day of January, 1902.

WM. SELLERS.

Witnesses:
M. F. ELLIS,
M. M. HAMILTON.