

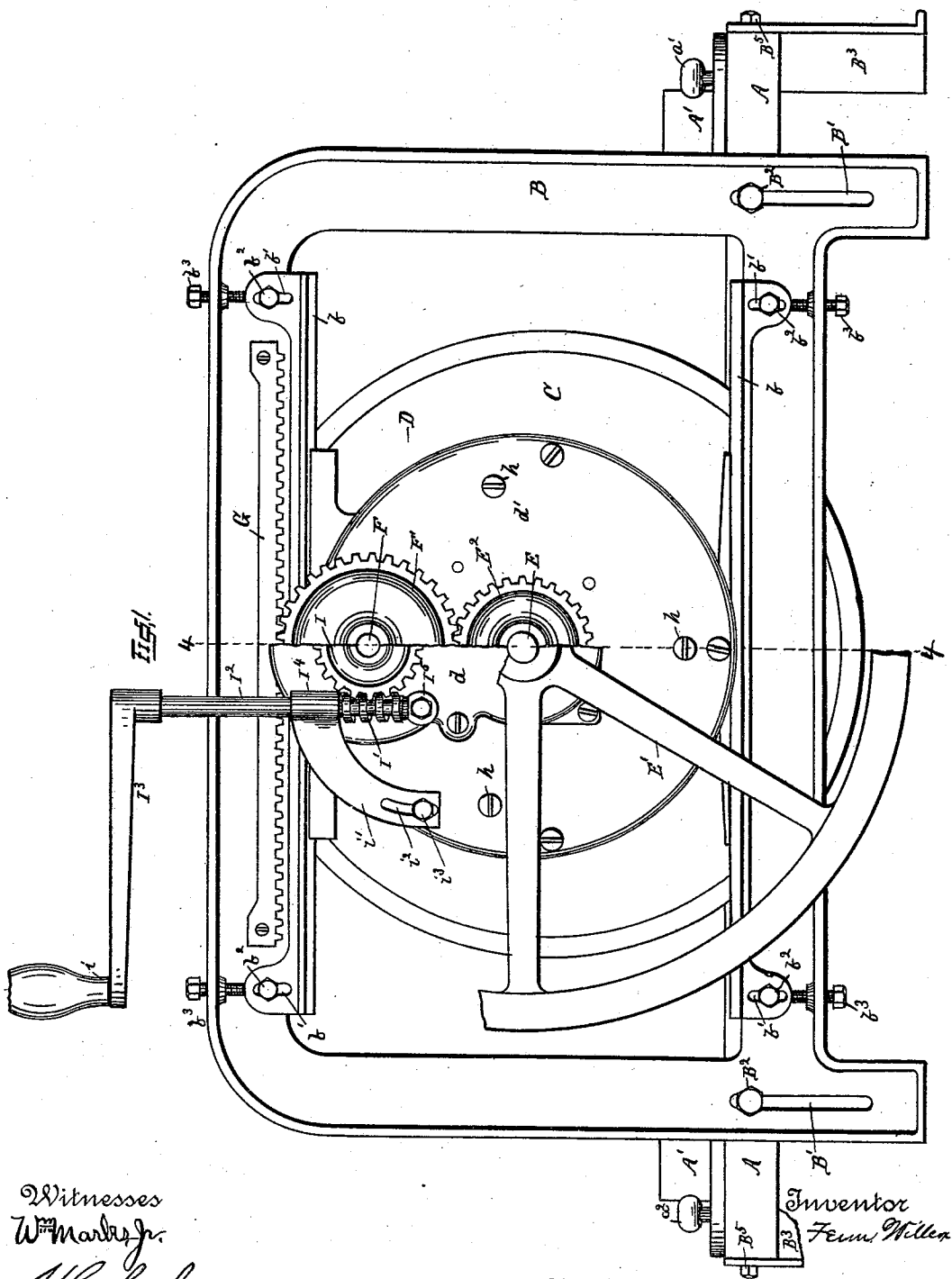
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4 Sheets—Sheet 1.

F. WILLCOX.
CUTTING MACHINE.

No. 529,005.

Patented Nov. 13, 1894.



Witnesses
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H. Hall

By Attorneys
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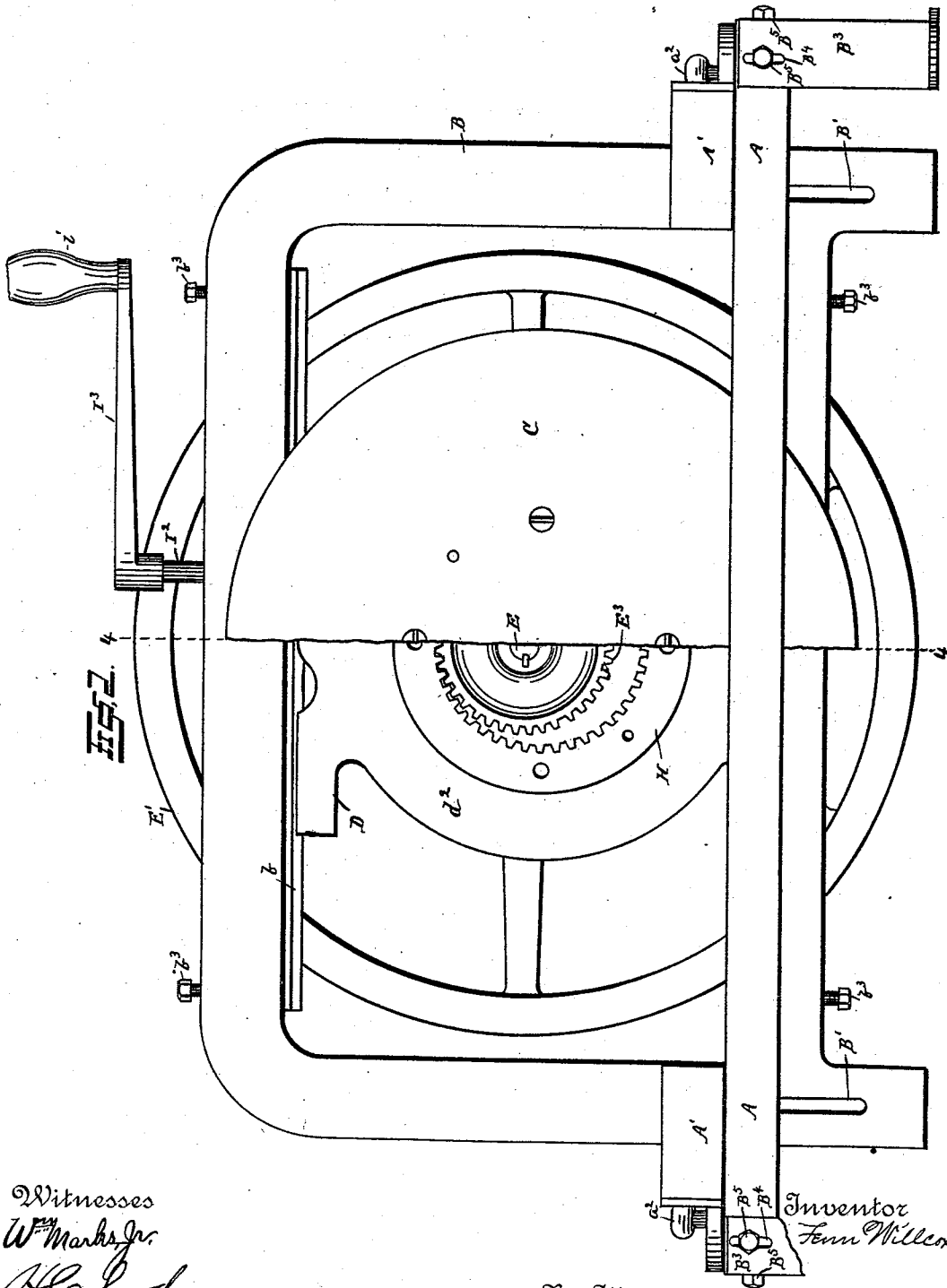
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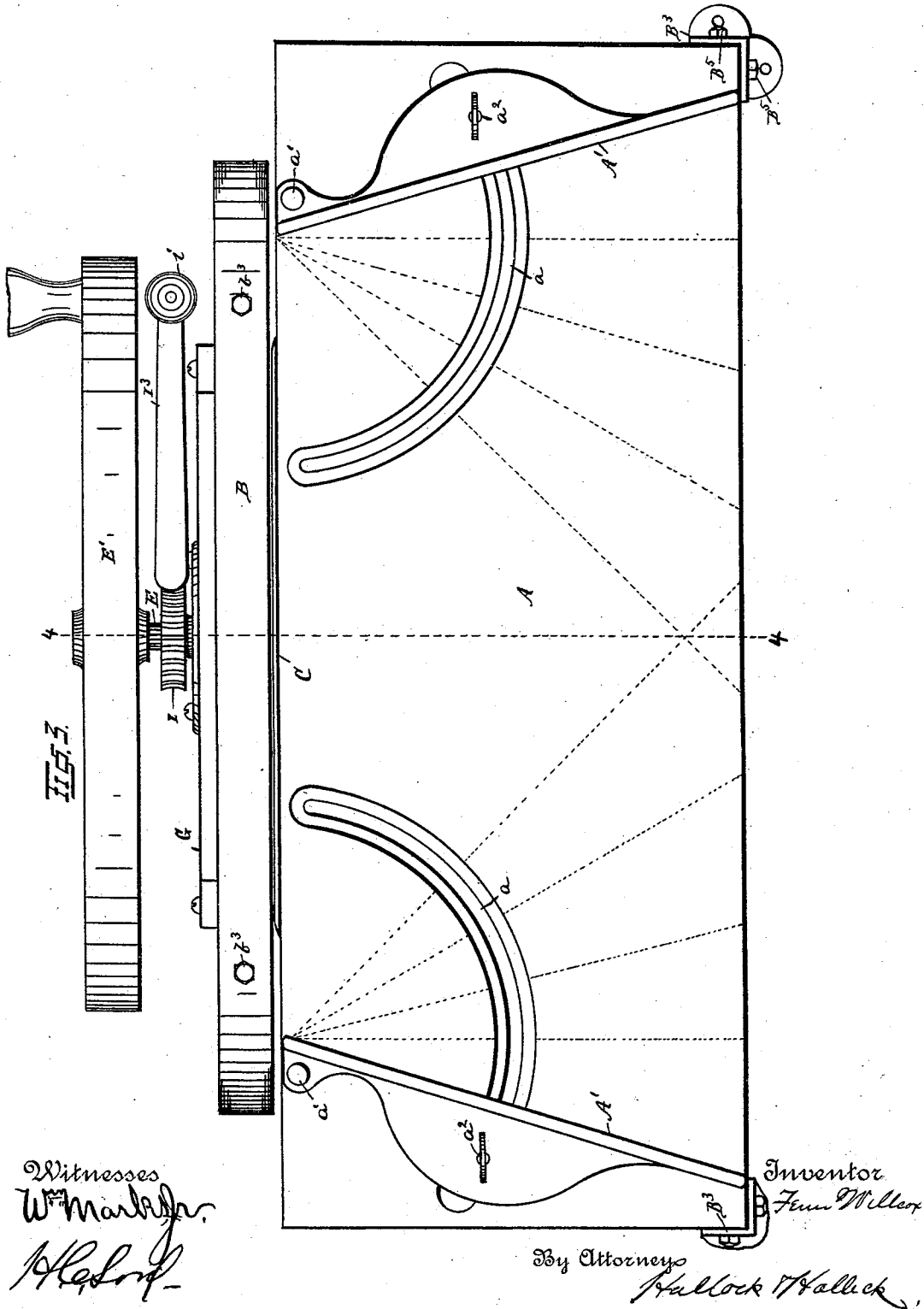
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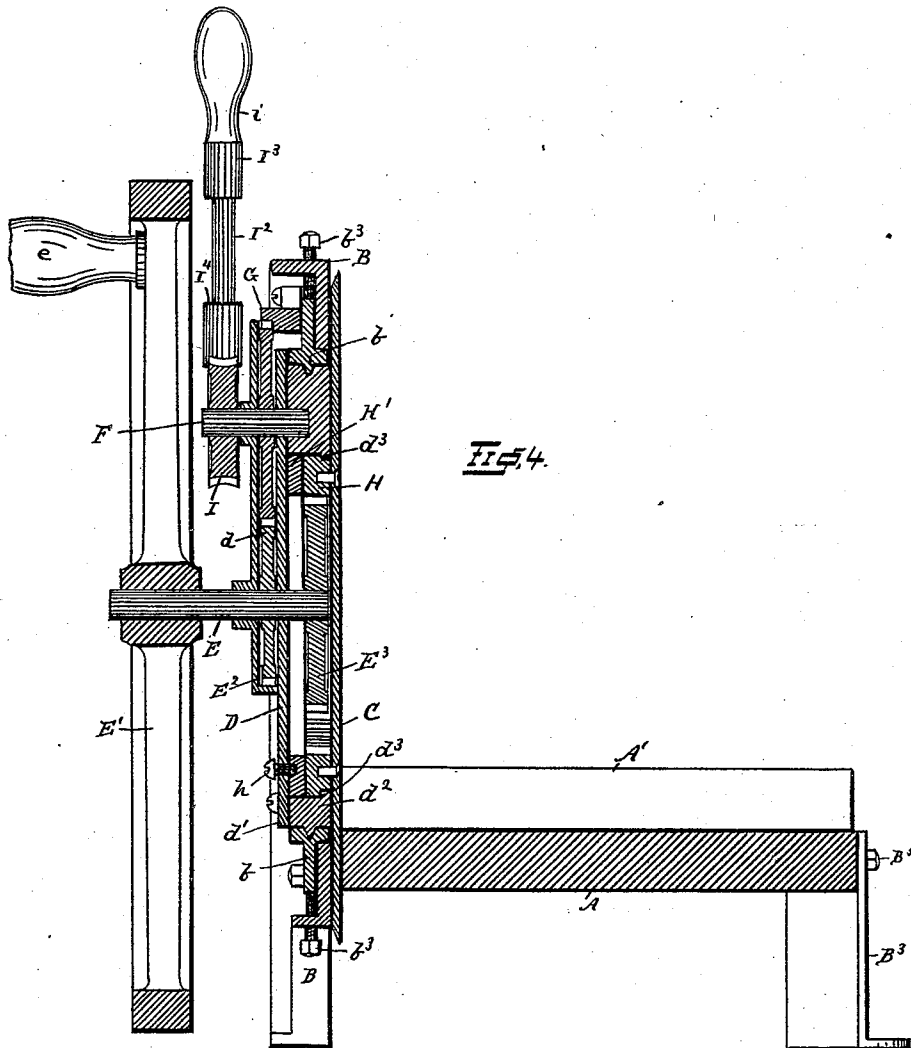
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F. WILLCOX.
CUTTING MACHINE.

No. 529,005.

Patented Nov. 13, 1894.



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UNITED STATES PATENT OFFICE.

FENN WILLCOX, OF NEWARK, NEW JERSEY, ASSIGNOR OF ONE-HALF TO
B. F. WILLCOX, OF NEW YORK, N. Y.

CUTTING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 529,005, dated November 13, 1894.

Application filed December 27, 1893. Serial No. 494,899. (No model.)

To all whom it may concern:

Be it known that I, FENN WILLCOX, a citizen of the United States, residing at Newark, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in Cutting-Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to cutting machines, and consists in certain improvements in the construction thereof as will be hereinafter fully described and pointed out in the claims.

The invention is especially designed for cutting or trimming the edges or ends of strips of lumber when it is desired to make a beveled joint.

The invention is illustrated in the accompanying drawings as follows:

Figure 1 is a rear elevation of the machine, a part being broken away showing the inner construction. Fig. 2 is a like view of the front part of the machine, a part of the cutting blade being removed showing the mechanism immediately in the rear of said blade. Fig. 3 is a plan of the machine. Fig. 4 is a section on the line 4--4 in Figs. 1, 2 and 3, the point of view being to the right of Fig. 1 and to the left of Figs. 2 and 3.

A marks the platform of the machine; the frame extending upwardly therefrom; *b*, slides on the upright frame; C, a circular cutting blade; and D, the carriage which slides in the slides, *b b*, and carries the cutting blade to and from its work.

In operation, the strip of lumber to be trimmed is placed on the platform at the desired angle, and the cutting blade is driven through it, the movement of the cutting edge being rotatively downward, and the movement or feed of the carriage horizontal. The mechanism for accomplishing these movements is as follows: The slides, *b*, are adjusted by means of the adjusting screws, *b*³, and are then set and securely held in place by the set screws, *b*², which are passed through the slots, *b*¹, in the slides, and then screwed into the frame, B. The carriage is seated on the slides so as to move readily in either di-

rection. A shaft, E, is journaled in the carriage, and the drive wheel, E', is keyed thereon at its rear end. A belt may be applied to this wheel, if very heavy work is intended, but in the ordinary machine, a handle, *e*, is provided so that the wheel may be turned by hand. Inside of this wheel and a little space from it, a small gear, E², is keyed to the shaft. This gear meshes with an intermediate gear, F', which is supported by a shaft, F, also journaled in the carriage. This intermediate gear in turn meshes with a rack, G, which is attached, parallel to the slides, *b*, to the frame of the machine. A plate or shield, *d*, is placed over these gears and covers them. This completes the mechanism by means of which the carriage is given its movement, which may be called the feed movement of the machine. By interposing the intermediate gear, the carriage is made to move in the same direction as the drive wheel, that is, it takes the same direction that the drive wheel would take, if it were rolling on a surface. The feed movement may be varied with relation to the rotative movement of the cutting blade by making the gear, E², larger when it is desired that the machine shall have a faster relative feed movement and smaller when it is desired that the feed should be relatively less.

If desired, the cutting blade may be attached directly to the shaft, E, but as it is subjected to great strain, and it is necessary that the driving part to which it is attached should be free from any play or false motion in order that the cutting blade may be held true to its work, I prefer the construction shown. A gear, E³, is keyed to the front end of the shaft, E. This gear meshes an internal gear, H, which is journaled in the carriage, the wearing surface being its outer periphery. It is seated against a shoulder, *d*³. The carriage is made in two parts, *d*¹ and *d*². The internal gear, H, is placed in its bearing; a washer, H', (shown in Fig. 4) is placed back of it; and the parts of the carriage fastened together. Set screws *h* are passed through the part, *d*¹, against the washer, H', and the internal gear, H, is adjusted to its seat, (the shoulder, *d*³) by means of the set screws. The cutting blade is attached to the internal gear,

H. By this construction the driving part (gear, H) to which the blade is attached has a very large bearing which is subjected to no strain except what is incident to the cutting blade, and its wear can be readily taken up and the parts adjusted.

In order that greater power can be applied to the machine when it is desired to do heavier work than is practical with the drive wheel, I provide the following mechanism: A worm gear, I, is keyed on an extension of the shaft, F. This is meshed by a worm, I', to which is attached a worm rod, I², and is turned by a crank, I³, having a handle, i. The worm rod is journaled in a hinged bearing, I⁴, and a bearing, I⁵, to which a segmental plate i', is attached. A set screw, i², is passed through a segmental slot i³, in this plate, and screwed into the carriage. It will be readily seen that the worm may be swung into and out of engagement with the worm gear, and held in place by the set screw, i². The worm is designed to be used where large or hard strips of lumber are to be trimmed, and the drive wheel to be used with small strips of soft wood.

It will be noted that the arc of cutting edge of the blade is on a slant to the platform. In order that this slant may be kept uniform as the blade wears, or varied, if desired, the platform is so attached to its standards, that it may be raised or lowered with relation to the cutting blade. This, of course, will so change the relative positions of the blade and platform, as to change the slant of the arcs of the cutting edges where they pass through the strips being cut. To accomplish this result, the frame B, is slotted at B' and the set screws, B², passed through them and screwed into the platform. The front corners of the platform are supported by standards, B³, which are slotted both at the sides and in front at B⁴, and set screws, B⁵, are passed through them and screwed into the platform. By loosening the screws the platform may be adjusted to any desired position, and secured in that position by re-setting the screws.

The platform, as is common in this style of machine, is provided at each end with guides, A', which are pivoted at a', on which they may be swung to any desired angle. Segmental slots, a, are cut through the platform, and set screws, a², are passed through the guides and the slots, and screwed into a clamp nut (not shown) on the under side of the platform. By means of these set screws, the guides may be secured at any desired angle. The dash lines indicate the usual gradations marked on these machines.

In nearly all work done on this class of machine both guides are used alternately, being set at the same, but opposite angles. It will be noted that in my device, a single cutting blade is used for both guides, the cut-

ting edge of which has a downward rotative movement when used with either guide; and the cutting blade being a full circle and the power being derived from a crank movement, any desired length of cutting edge may be passed through a cut to any given feed, thus insuring a clean cut.

What I claim as new is—

1. In a cutting machine, the combination with the platform and the frame of the machine having slides thereon; of a carriage seated on said slides and adapted to travel thereon; a main shaft journaled in said carriage; a circular cutting blade that is rotated by and in the same direction with said main shaft; a feed gear on said main shaft; an intermediate gear that meshes said feed gear; a rack attached to the top of the frame of the machine and which engages said intermediate gear; and means of driving said main shaft.

2. In a cutting machine, the combination with the platform and the frame of the machine having slides thereon; of a carriage seated on said slides and adapted to move thereon; a main shaft journaled in said carriage; a drive gear on the front end of said shaft; an internal gear that meshes said drive gear; a circular cutting blade attached to said internal gear; and mechanism for rotating said main shaft and imparting a feed movement to said carriage.

3. In a cutting machine, the combination with the platform and frame of the machine having slides thereon; of a carriage seated on said slides and adapted to move thereon; a main shaft journaled in said carriage; a drive gear on the front end of said shaft; an internal gear that meshes said drive gear and which is journaled and seated in said carriage; means of holding said internal gear to its seat; a circular cutting blade attached to said internal gear; and mechanism for rotating said main shaft and imparting a feed movement to said carriage.

4. In a cutting machine, the combination with the platform and frame of the machine having slides thereon; of a carriage seated on said slides and adapted to move thereon; a circular cutting blade carried by said carriage; mechanism for rotating said cutting blade and imparting a feed movement to said carriage; a drive wheel attached to said mechanism; a worm gear also connected with said mechanism; a worm for driving said worm gear and adapted to be thrown into and out of engagement with the said gear; and means for driving said worm.

In testimony whereof I affix my signature in presence of two witnesses.

FENN WILLCOX.

Witnesses:

MATTIE MOSON,
E. S. EDWARDS.