

No. 865,020.

PATENTED SEPT. 3, 1907.

H. DE SMITH.
CUTTING MACHINE.

APPLICATION FILED DEC. 16, 1904.

Fig. 1.

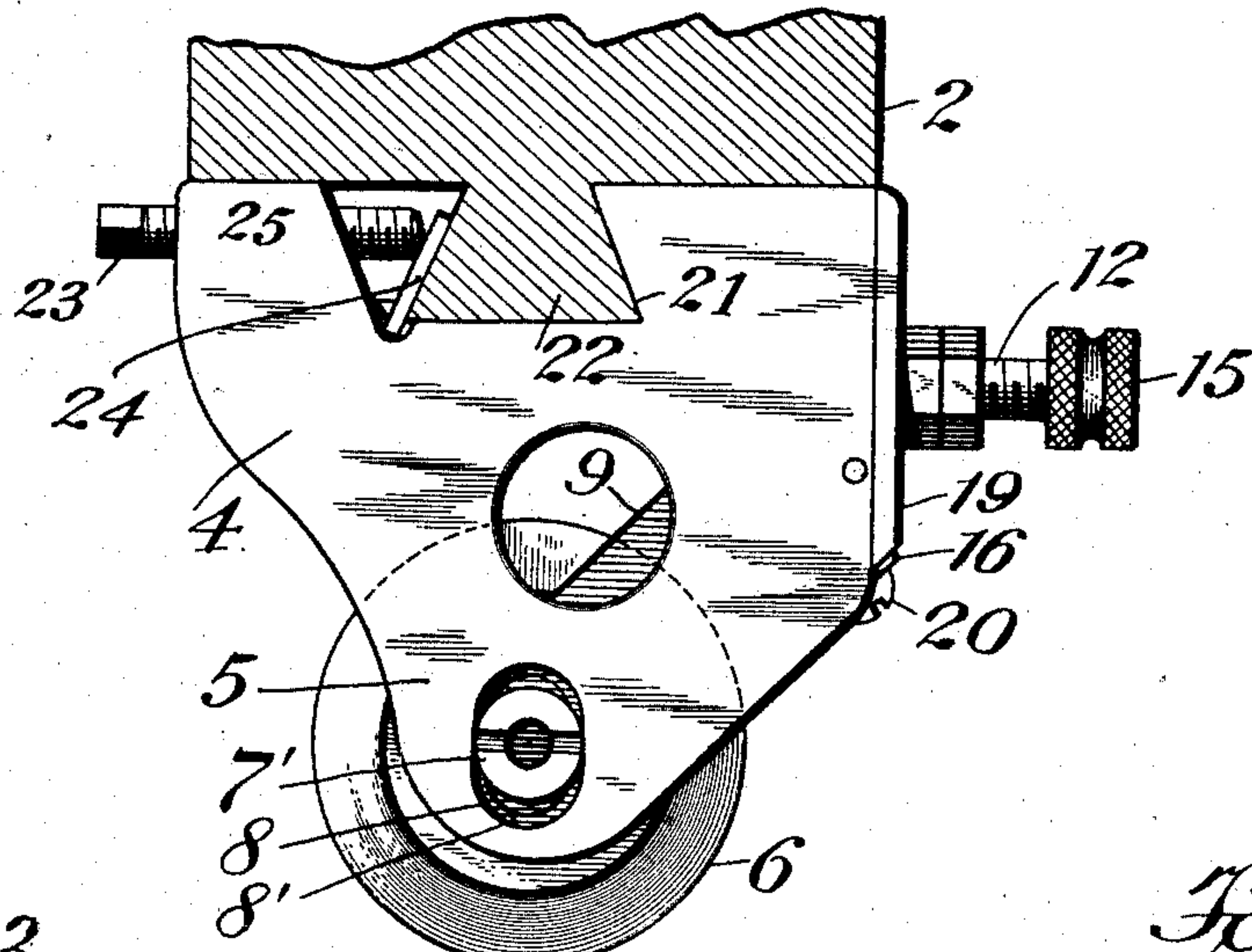


Fig. 3.

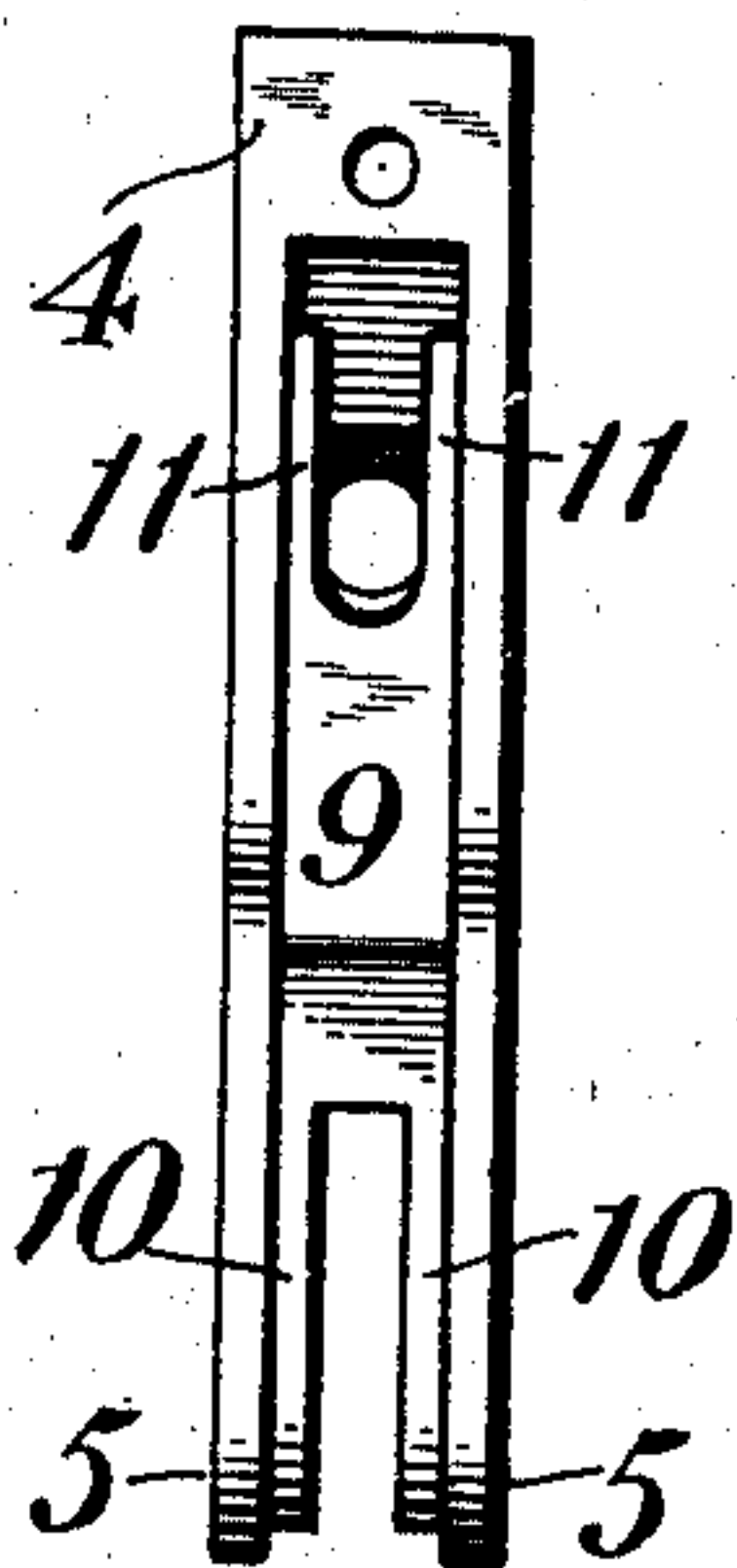
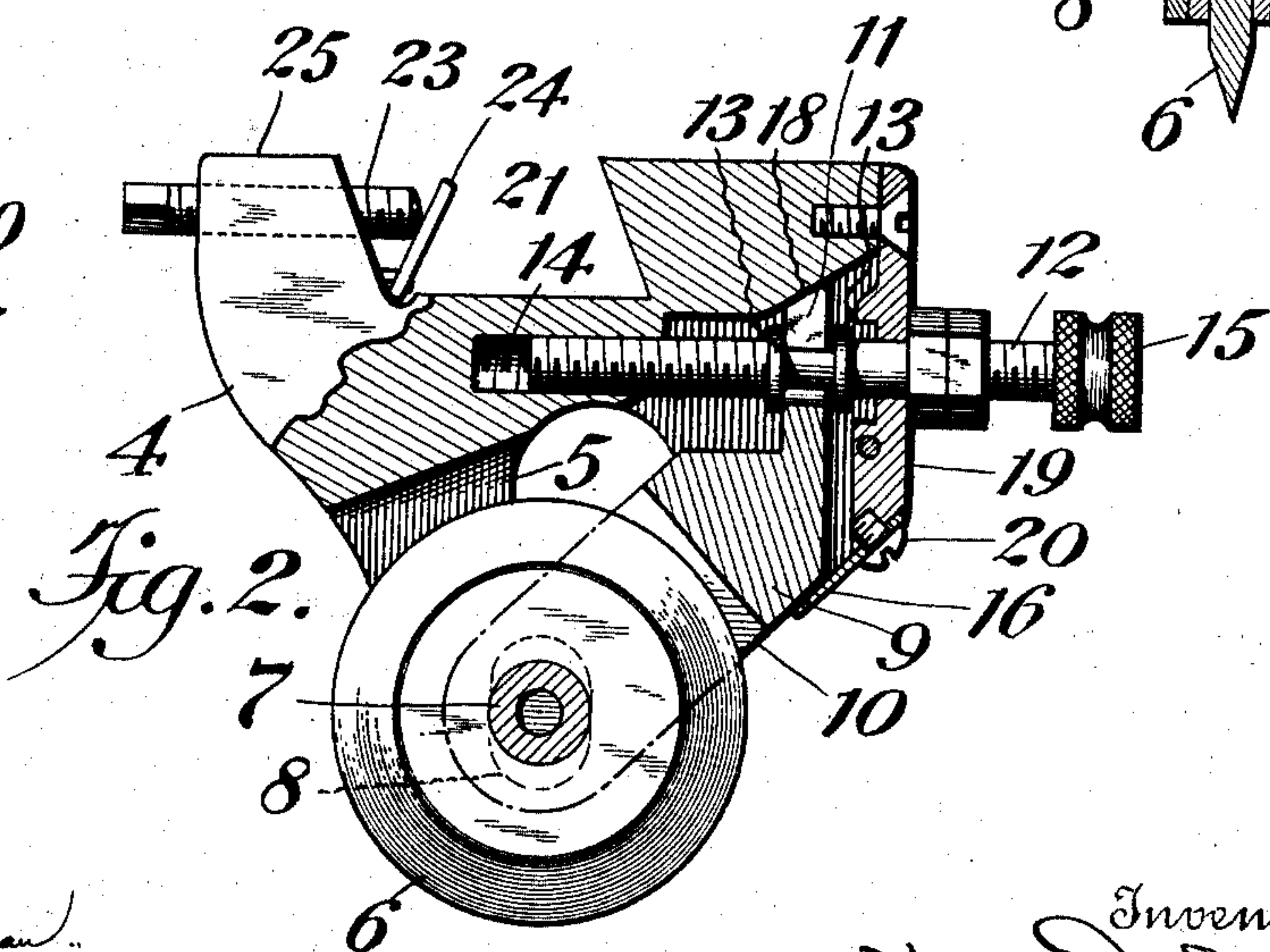
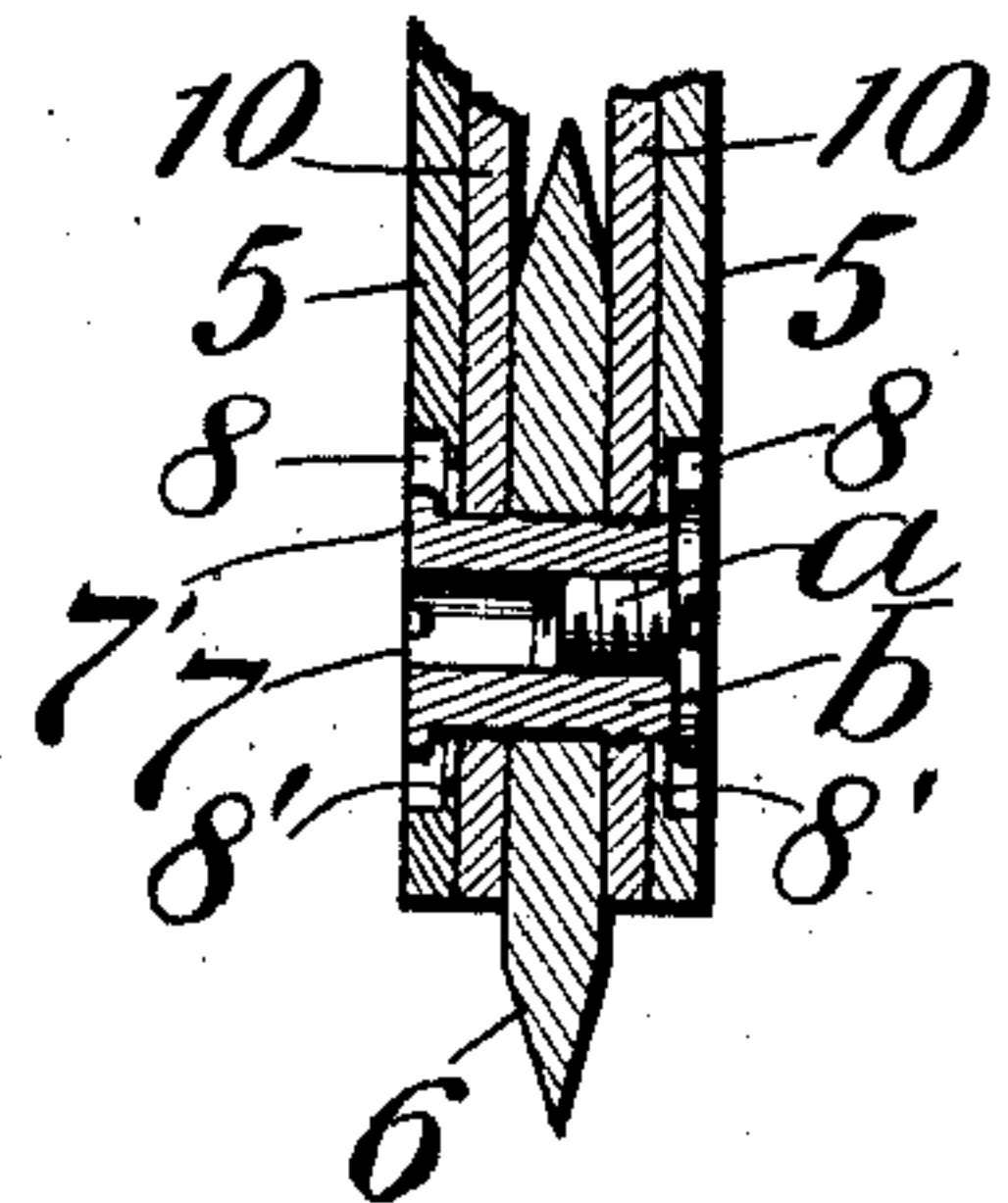


Fig. 4.



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CUTTING-MACHINE.

No. 865,020.

Specification of Letters Patent.

Patented Sept. 3, 1907.

Application filed December 16, 1904. Serial No. 237,112

To all whom it may concern:

Be it known that I, HENRY DE SMITH, a citizen of the United States, and a resident of Rochester, in the county of Monroe and State of New York, have invented certain new and useful Improvements in Cutting-Machines, of which the following is a specification.

This invention relates to cutting machines and more particularly to that class of cutting machines adapted for cutting or scoring paper-board in the manufacture of paper boxes and other articles. A machine of this class usually embodies a bed-roll and a series of cooperating rotary disk-cutters between which the paper-board to be operated upon is passed, the said cutters each being supported by a holder that is removably attached to a so-called "cutter-bar" mounted on the frame of the machine in a position above the bed-roll. In order that the depth of cut made by the cutters in the paper-board may be regulated, the cutters are usually adjustably supported by their holders in a manner to be capable of adjustment toward and from the bed-roll, the means as heretofore provided for effecting such adjustment of the cutters being such as to cause the cutters, when being adjusted, to be moved in a path angularly to a vertical plane intersecting the axis of the bed-roll. Because of such angular path of movement of the cutters, the greatest accuracy is necessary in adjusting the several individual cutters of the series carried by the cutter-bar in order to maintain perfect alinement of the same, as it will be obvious that any slight variation in the distance of movement of the several cutters during adjustment will result in an irregular alinement of the same with respect to a vertical plane intersecting the axis of the bed-roll; in which event the paper-board will be caused to have a tendency to feed in an irregular or circular path through the machine, whereas, when the cutters are in perfect alinement with respect to a vertical plane intersecting the axis of the bed-roll the paper-board will be caused to feed in a straight path through the machine.

Having in mind such facts, it has been one of the main objects of my invention to provide an improved cutter of the character referred to having means whereby the cutter disk, when being adjusted, will be caused to move in the path of a vertical plane intersecting the axis of the bed-roll and so positively insure the perfect alinement of the entire series of cutters on the cutter-bar of the machine in a like plane and their consequent engagement with the paper-board in a line parallel with the axis of the bed-roll. The means for securing such object and others not yet referred to,

will be hereinafter set forth in detail and pointed out in the claims.

Referring now to the accompanying drawings, in which I have shown only so much of a cutting or scoring machine as is necessary to illustrate my invention, Figure 1 is a side elevation of one of my improved cutters attached to a cutter-bar and in operative relation to a bed-roll, the said cutter-bar and bed-roll both being partly broken away and in section. Fig. 2 is a side elevation of the cutter with the cutter-holder and cutter-carrier in section. Fig. 3 is a rear edge view of the cutter-holder and cutter-carrier with the connecting parts removed, and Fig. 4 is a sectional detail through the cutter-disk and certain associated parts.

Similar reference characters designate like parts in the several figures of the drawings.

The cutter-bar 2 and the bed-roll 3 are of usual construction and arrangement as found in most paper-board cutting and scoring machines now on the market, the said cutter-bar being supported centrally above the bed-roll for the support of the cutters and the bed-roll being adapted to carry the paper-board beneath said cutters and hold it in operative engagement therewith to be cut or scored.

The cutter herein shown as embodying my invention comprises a frame or holder 4 having two oppositely-located extension walls 5, 5, between which the cutter-disk 6 is supported in a manner to be capable of adjustment toward and from the bed-roll in the path of a vertical plane intersecting the axis of the latter. Any suitable means may be provided for supporting the cutter-disk in a manner to effect the adjustment referred to, the means as herein shown comprising an axle-pin 7 having the said cutter-disk 6 journaled thereon and being arranged with its opposite ends extending into two vertically elongated slots 8, 8, in the oppositely-located extension walls 5, 5, of the holder 4, which said slots are arranged in a vertical plane intersecting the axis of the bed-roll and constitute a guide for the axle-pin and cutter during adjustment of the same toward and from the bed-roll. As a means for effecting adjustment of the cutter-disk, a so-called "cutter-carrier" 9 is provided which is also movably supported in the space between the extension walls 5, 5, of the holder 4 and is formed at one end thereof with two ears 10, 10, which extend to opposite sides of the cutter-disk 6 and have operative connection with the axle-pin 7 to carry and support the same; the connection between the said axle-pin and the carrier-ears being effected by passing the axle-pin through

openings in the said carrier-ears, as clearly shown in Fig. 4. This cutter-carrier 9 at that end opposite its connection with the axle-pin 7 is provided with a second pair of ears 11, 11, which loosely embrace an adjusting-screw 12 between two shoulders 13, 13, thereon, which said screw is threaded at one end into the holder at 14 and at its opposite end projects beyond the end wall of the holder and is provided with a milled operating head 15. A longitudinal movement of this adjusting-screw is intended to so operate the carrier 9 as to either raise or lower the supported cutter, and to effect this the carrier is yieldingly held by a suitable spring 16 with its upper screw-engaging end bearing against an inclined guiding-wall 18 of the holder 4 whereby, when the screw 12 is turned to impart thereto a longitudinal movement, the engaged carrier 9 will be caused to move either upwardly or downwardly according to the direction of movement of the screw, the upper end of the carrier moving in a diagonal plane as controlled by the guiding wall 18 and the lower cutter-carrying end moving in a vertical plane as controlled by the guiding slots 8, the vertical movement of the carrier with respect to the adjusting-screw during such movement being permitted by reason of the loose connection between the parts.

The spring 16 for vertically supporting the upper end of the carrier 9 and yieldingly holding the same in operative contact with the guiding wall 18 may be of any suitable character and supported in any suitable manner, the same as herein shown being in the form of a flat spring attached at one end to the removable end wall 19 of the holder by means of a screw 20.

The frame or holder 4 of the cutter may be detachably connected in any suitable manner to the supporting cutter-bar 2; the same in the present case being provided in its upper edge with a transverse groove 21 to receive a dovetail projection 22 on the under side of the cutter-bar with which the holder is connected by means of a clamping-screw 23 acting against the said projection through the medium of the usual interposed gib 24. When the holder is thus adapted for clamping connection with the cutter-bar, which is the method of connection usually employed in cutters of this class, it is desirable that the same should be so rigid as to prevent possibility of any such bending or distortion of the same under the outward tension on its arm 25 produced by the clamping action of the screw 23 against the cutter-bar as would tend to throw the cutter out of "true" or otherwise disarrange or interfere with the operation of any of the movable parts. This desired rigidity of the holder is obtained in the present case by forming the holder with the integral extension walls 5, 5, which extend downward at either side of the cutter-disk and, in addition to giving the desired rigidity or stiffness to the holder in the direction of strain produced by the clamping-screw, also operate as a lateral support to the cutter-disk to prevent lateral deflection of the same when acting upon paper-board being fed through the machine. The said extension walls 5, 5, of the holder will preferably be connected at a point adjacent to the cutter in a manner to hold the interposed cutter and cutter-carrier in close relation to each other,

the means as herein shown for so connecting the said extension walls being the axle-pin 7 having a head 7' at each end thereof engaging a flange 8' surrounding the inner edges of the slots 8, 8, in the said extension walls. This axle-pin 7 in the present case comprises two headed screws, one of which, indicated at *a*, is threaded into the end of the other, indicated at *b*, and provides a simple and effective means for taking up wear of the parts between the extension walls 5, 5, of the holder.

What I claim is:

1. In a machine of the character described, the combination with a bed-roll, of a cutter-holder having a cutter-guide arranged in a straight line intersecting the axis of said bed-roll, a cutter adjustably supported by the holder and having connecting means cooperative with said cutter-guide for the guidance of the cutter during adjustment, and means for adjusting the cutter. 75
2. In a machine of the character described, the combination with a bed-roll, of a cutter-holder having a cutter-guide arranged in a straight vertical line intersecting the axis of said bed-roll, a cutter adjustably supported by the holder and having connecting means cooperative with said cutter-guide for the guidance of the cutter during adjustment, and means for adjusting the cutter. 85
3. In a machine of the character described, the combination with a bed-roll, of a cutter-holder having a cutter-guide-slot arranged in a straight line intersecting the axis of the said bed-roll, a cutter, an adjustable carrier for said cutter having connecting means cooperative with the said guide-slot in the cutter holder for the guidance of the carrier and supported cutter during adjustment, and means for adjusting the said carrier and supported cutter. 90 95
4. In a machine of the character described, the combination with a bed-roll, of a cutter-holder having a cutter-guide-slot arranged in a straight vertical line intersecting the axis of the said bed-roll, a cutter, an adjustable carrier for said cutter having connecting means cooperative with the said guide-slot in the cutter-holder for the guidance of the carrier and supported cutter during adjustment, and means for adjusting the said carrier and supported cutter. 100 105
5. An adjustable cutter of the character described, comprising a cutter-holder having two oppositely-located integral extension walls arranged with a space therebetween, a cutter adjustably supported in the space between said extension walls and means for adjusting the cutter relatively to the holder. 110
6. An adjustable cutter of the character described, comprising a cutter-holder having two oppositely-located integral extension walls arranged with a space therebetween, a cutter and a carrier therefor both adjustably supported in the space between said extension walls, and means for adjusting the said cutter and its carrier relatively to the holder. 115
7. An adjustable cutter of the character described, comprising a cutter-holder having two oppositely-located extension walls arranged with a space therebetween and each being provided with an elongated slot registering with each other, an axle-pin movably connecting at its opposite ends with the extension walls through the said elongated slots therein, a cutter mounted upon said axle-pin in the space between said extension walls, and means for adjusting the said axle-pin and supported cutter relatively to the holder. 120 125
8. An adjustable cutter of the character described, comprising a cutter-holder having two oppositely-located extension walls arranged with a space therebetween and each being provided with an elongated slot registering with each other, an axle-pin movably connecting at its opposite ends with the extension walls through the said elongated slots therein, a cutter mounted upon said axle-pin in the space between said extension walls, an adjustable cutter-carrier connecting with said axle-pin, and means for adjusting said carrier. 130 135

9. An adjustable cutter of the character described, comprising a cutter holder having two oppositely-located extension walls arranged with a space therebetween and each being provided with an elongated slot registering with
5 each other, an axle-pin movably connecting at its opposite ends with the extension walls through the said elongated slots therein, the said axle-pin embodying two headed screws one of which is threaded into the other and both being arranged with their heads engaging the opposite ex-
10 tension walls at their outer sides, a cutter mounted upon

said axle-pin in the space between said extension walls, and means for adjusting the said axle-pin and supported cutter relatively to the holder.

Signed at Rochester in the county of Monroe and State of New York this tenth day of December A. D. 1904.

HENRY DE SMITH.

Witnesses:

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