May 20, 1924. 1,494,594

J. K. DIAMOND

CUTTING MACHINE

Filed July 3, 1923 2 Sheets-Sheet 1

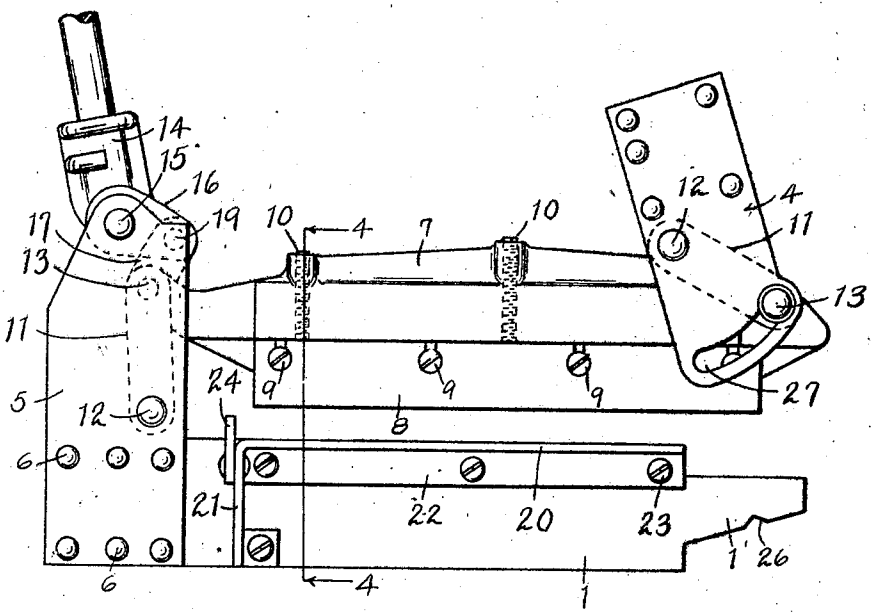


Fig. I.

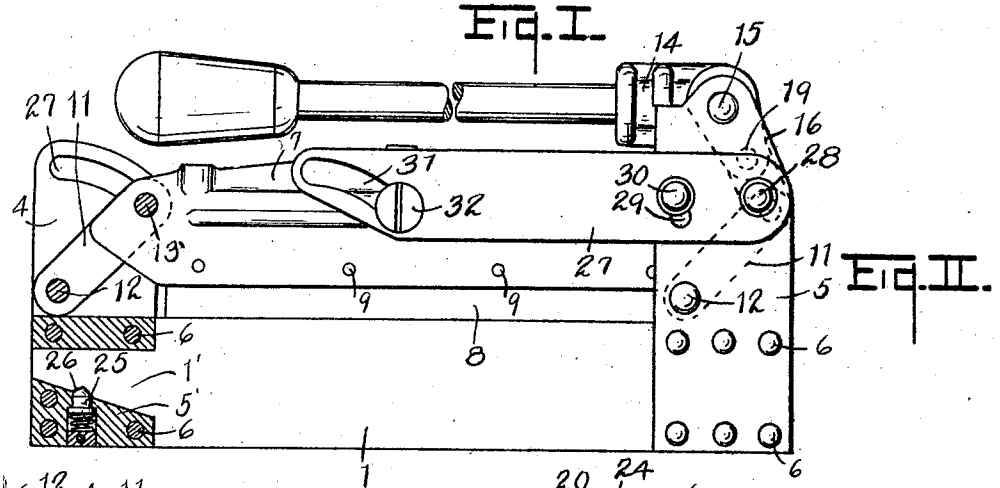


Fig. II.

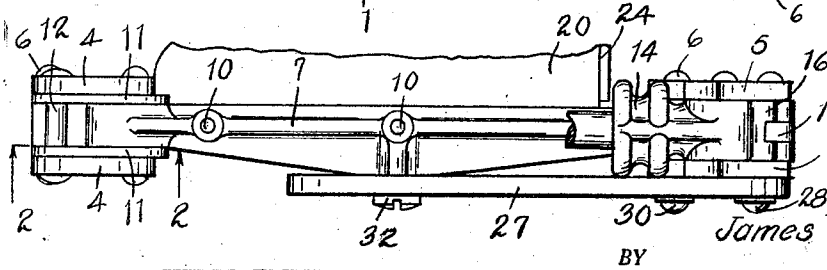


Fig. III.

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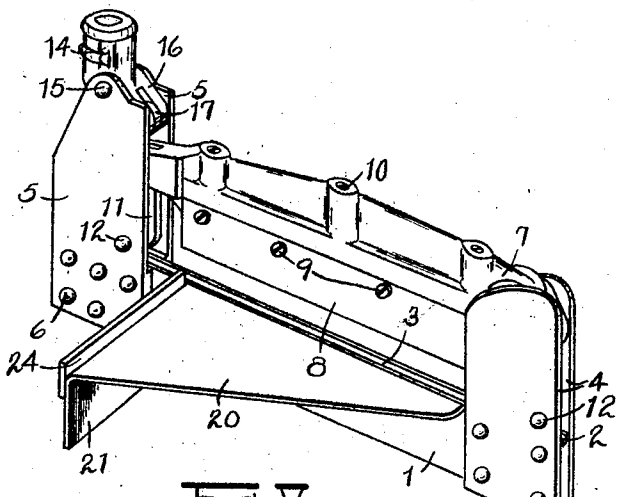


Fig. V.

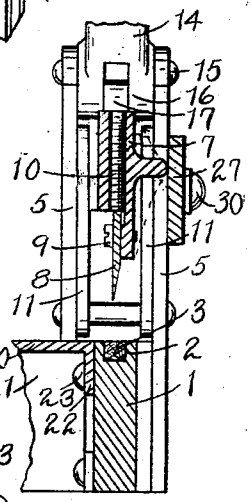


Fig. IV.

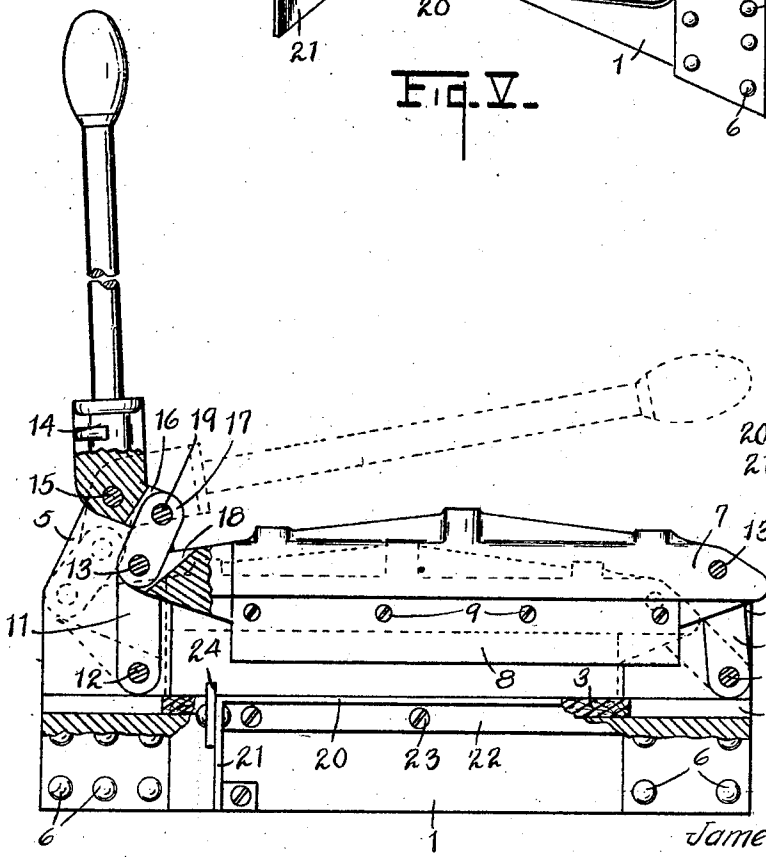


Fig. VI.

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UNITED STATES PATENT OFFICE.

JAMES K. DIAMOND, OF GRAND RAPIDS, MICHIGAN.

CUTTING MACHINE.

Application filed July 3, 1923. Serial No. 649,251.

To all whom it may concern:

Be it known that I, JAMES K. DIAMOND, a citizen of the United States, residing at Grand Rapids, county of Kent, State of Michigan, have invented certain new and useful Improvements in Cutting Machines, of which the following is a specification.

This invention relates to improvements in cutting machines.

My improved cutting machine is especially designed by me for cutting belts. My improvements may, however, be readily adapted for use in machines for cutting paper and the like.

The main object of the invention is to provide an improved cutting machine which is comparatively simple in structure and comparatively light in weight so that it may be readily transported and at the same time is very powerful so that it may be effectively used for cutting belts and the like.

A further object is to provide an improved cutting machine in which large belts may be positioned for cutting without the necessity of passing the belt lengthwise into the machine.

Further objects, and objects relating to structural details, will definitely appear from the detailed description to follow.

I accomplish the objects of my invention by the devices and means described in the following specification. The invention is clearly defined and pointed out in the claims.

A structure which is a preferred embodiment of my invention is clearly illustrated in the accompanying drawing, forming a part of this application, in which:

Figure I is a front elevation of my improved cutting machine with the handle partially broken away, the machine being opened for the adjustment of the work therein;

Fig. II is a rear elevation partially in vertical section on a line corresponding to line 2—2 of Fig. III with the parts in actuated position;

Fig. III is a plan view with the table partially broken away;

Fig. IV is a detail vertical section on a line corresponding to line 4—4 of Fig. I;

Fig. V is a front perspective view of a modified form of my invention in which the machine cannot be opened to permit the belt being adjusted laterally thereto, the actuating handle proper being removed from its socket; and

Fig. VI is a front elevation partially in vertical longitudinal section.

In the drawing similar reference characters refer to similar parts throughout the several views, and the sectional views are taken looking in the direction of the little arrows at the ends of the section lines.

Referring to the drawing, I provide a bar-like base 1 which is horizontally disposed on edge. This base piece has a longitudinal channel 2 in its upper edge in which the cutting bar of wood or suitable material 3 is disposed. At one end of this base piece are the fixed plate-like uprights 5, these uprights being disposed on the sides of the base piece and secured thereto by means of the rivets 6. At its other end the bar 1 has a tapered portion 1′ with which the removable uprights 4, 4 are engaged, these removable uprights being connected by a spacing block 5′ conformed to receive the tapered part 1′ of the base, these parts being a sliding fit so that when engaged the uprights 4, 4 are effectively supported. A spring catch or detent 25 is provided for retaining the removable uprights, the tapered base member being notched at 26 to receive this detent.

The cutter bar 7 is provided with a blade 8, the blade being secured by means of the screws 9, thrust screws 10 being provided for adjustment of the blade. The blade is supported by pairs of links 11 carried by the pivots 12 on the uprights 4 and 5, the links being a swinging fit between the uprights and embracing the sides of the cutter bar, being secured thereto by the pivots 13, so that the cutter bar is guided and supported against lateral movement. The uprights 4 have segmental slots 27 therein which are engaged by the pivot 13 which permits the swinging of the detachable uprights 4 to an inverted position above and resting upon the knife bar as shown in Fig. I, in which position a belt may be introduced laterally into the machine.

The actuating lever 14 is pivoted at 15

and provided with an inwardly projecting slotted arm 16. This slotted arm is connected by the actuating link 17 to the cutter bar which is recessed at 18 to receive the link, the link being engaged with the pivot 13 at this end of the cutter bar and connected to the lever by the pivot 19. The pivots 15, 19 and 13 are so arranged that a toggle action is secured as the cutter bar approaches the limit of its stroke. This is particularly desirable in a cutter of this character for cutting belts and the like.

To support the cutter bar when the detachable uprights 4 are disengaged from the base I provide a supporting arm 27 which is pivoted at 28 on one of the fixed uprights 5 and provided with a slot 29 engaged by the pin 30 on the upright, thereby supporting the arm for limited pivotal movement. The arm has a segmental slot 31 in its outer end engaged by the pin 32 on the cutter bar, thus providing a sliding connection for the cutter bar to the arm, permitting the actuation of the cutter bar, and at the same time the arm forms an effective support for the cutter bar when the detachable uprights 4 are disengaged. The arm is supported for limited pivotal movement so that the cutter cannot be operated without the removable uprights 4 being in proper position to support the knife and sustain the cutting strains. The supporting arm serves the double purpose of supporting the cutter to facilitate adjustment and also supports the knife so that it cannot fall on the operator.

I provide a work-table 20 which is formed of a sheet-metal stamping having a flange 21 at one end forming a support or rest and a flange 22 at its inner end secured to the side of the base piece by means of the screws 23. A work guide 24 is secured at one end of the table.

In the modification shown in Figs. V and VI the uprights 4 are fixed to the base piece the same as the uprights 5. The arm and its connections are eliminated from this embodiment as they are not necessary.

With this arrangement of parts I secure a cutter which is very light in weight and at the same time is strong and durable and easy to manipulate.

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

1. In a cutting machine of the class described, the combination with a horizontally disposed bar-like bed-piece, a pair of fixed uprights secured to the sides of said bed-piece to project upwardly at one end thereof, the other end of said bed-piece being tapered, a pair of removable uprights having a spacing block at their lower ends removably engageable with the tapered end of said bed-piece, a cutter bar provided with a blade, pairs of supporting links therefor pivoted between said fixed uprights, said links being a swinging fit between said uprights and embracing the sides of said cutting bar whereby it is laterally supported, said removable uprights having segmental slots therein with which the pivot connecting the links to said cutter bar engages permitting the swinging of the removable uprights to a position above the cutter bar, an actuating lever pivoted between said fixed uprights and having an arm at its inner end projecting over said cutter bar, and an actuating link connecting said lever to said cutter bar.

2. In a cutting machine of the class described, the combination with a horizontally disposed bar-like bed-piece, a pair of fixed uprights secured to the sides of said bed-piece to project upwardly at one end thereof, the other end of said bed-piece being tapered, a pair of removable uprights having a spacing block at their lower ends detachably engaged with the tapered end of said bed-piece, a cutter bar provided with a blade, pairs of supporting links therefor pivoted between said fixed uprights, an actuating lever pivoted between said fixed uprights and having an arm at its inner end projecting over said cutter bar, and an actuating link connecting said lever to said cutter bar.

3. In a cutting machine of the class described, the combination with a bed-piece, fixed uprights at one end of said bed-piece, removable uprights at the other end of said bed-piece, a cutter bar provided with a blade, pairs of supporting links therefor pivoted between said fixed uprights, said links being a swinging fit between said uprights and embracing the sides of said cutting bar whereby it is laterally supported, said removable uprights having segmental slots therein with which the pivot connecting the links to said cutter bar engages permitting the swinging of the removable uprights to a position above the cutter bar, a supporting arm mounted on one of the fixed uprights for limited pivotal movement and having a segmental slot in its outer end engaged by a pin on said cutter bar whereby the cutter bar is supported when the removable uprights are disengaged from the bed-piece, an actuating lever pivoted between said fixed uprights, and an actuating link connecting said lever to said cutter bar.

4. In a cutting machine of the class described, the combination with a bed-piece, fixed uprights at one end of said bed-piece, removable uprights at the other end of said bed-piece, a cutter bar provided with a blade, pairs of supporting links therefor pivoted between said fixed uprights, said

links being a swinging fit between said uprights and embracing the sides of said cutting bar whereby it is laterally supported, said removable uprights having segmental slots therein with which the pivot connecting the links to said cutter bar engages permitting the swinging of the removable uprights to a position above the cutter bar, an actuating lever pivoted between said fixed uprights, and an actuating link connecting said lever to said cutter bar.

5. In a cutting machine of the class described, the combination with a bed-piece, fixed uprights at one end of said bed-piece, removable uprights at the other end of said bed-piece, a cutter bar provided with a blade, supporting links therefor pivoted between said fixed uprights, a supporting arm mounted on one of the fixed uprights for limited pivotal movement and having a segmental slot in its outer end engaged by a pin on said cutter bar whereby the cutter bar is supported when the removable uprights are disengaged from the bed-piece, an actuating lever pivoted between said fixed uprights, and an actuating link connecting said lever to said cutter bar.

6. In a cutting machine of the class described, the combination with a bed-piece provided with fixed uprights at one end and removable uprights at the other, a cutter bar provided with a blade, supporting links therefor pivoted to said fixed uprights and cutter bar, said removable uprights having segmental slots therein with which the pivot connecting the links to the cutter bar engages, a supporting arm mounted on one of the fixed uprights for limited pivotal movement, said cutter bar having a sliding connection with said supporting arm permitting the movement of the cutter bar and supporting it when the removable uprights are disengaged from the bed-piece, and an actuating means for said cutter bar mounted on said fixed uprights.

7. In a cutting machine of the class described, the combination with a bed-piece provided with fixed uprights at one end and removable uprights at the other, a cutter bar provided with a blade, supporting links therefor pivoted to said fixed uprights and cutter bar, a supporting arm mounted on one of the fixed uprights for limited pivotal movement, said cutter bar having a sliding connection with said supporting arm permitting the movement of the cutter bar and supporting it when the removable uprights are disengaged from the bed-piece, and an actuating means for said cutter bar mounted on said fixed uprights.

8. In a cutting machine of the class described, the combination with a bed-piece provided with fixed uprights at one end and removable uprights at the other, a cutter bar provided with a blade, supporting links therefor pivoted to said fixed uprights and cutter bar, said removable uprights having segmental slots therein with which the pivot connecting the links to the cutter bar engages, and an actuating means for said cutter bar mounted on said fixed uprights.

9. In a cutting machine of the class described, the combination with a bed-piece provided with fixed uprights at one end and removable uprights at the other, a cutter bar provided with a blade, supporting links therefor pivoted to said fixed uprights and cutter bar, a supporting arm mounted on one of the fixed uprights, said cutter bar having a sliding connection with said supporting arm permitting the movement of the cutter bar and supporting it when the removable uprights are disengaged from the bed-piece, and an actuating means for said cutter bar.

10. In a cutting machine of the class described, the combination of a horizontally disposed bar-like bed-piece provided with pairs of uprights, a cutter bar, pairs of supporting links therefor pivoted between said uprights, said links being a swinging fit between said uprights and embracing the sides of said cutter bar whereby the bar is laterally supported, an actuating lever pivoted between one pair of said uprights and having an arm at its inner end projecting over said cutter bar, and an actuating link connecting said lever arm to said cutter bar, the end of the cutter bar being recessed to receive said actuating link which is engaged with the pivot of the adjacent supporting links, the pivot connecting the actuating link to the actuating lever being disposed so that a toggle action is secured as the cutter bar approaches the end of its work stroke.

11. In a cutting machine of the class described, the combination of a horizontally disposed bar-like bed-piece provided with pairs of uprights, a cutter bar, pairs of supporting links therefor pivoted between said uprights, said links being a swinging fit between said uprights and embracing the sides of said cutter bar whereby the bar is laterally supported, an actuating lever pivoted between one pair of said uprights and having an arm at its inner end projecting over said cutter bar, an actuating link connecting said lever arm to said cutter bar, the end of the cutter bar being recessed to receive said actuating link which is engaged with the pivot of the adjacent supporting links, the pivot connecting the actuating link to the actuating lever being disposed so that a toggle action is secured as the cutter bar approaches the end of its work stroke, and a work-table secured to one side of said bed-piece between said uprights.

12. In a cutting machine of the class de-

scribed, the combination of a bed-piece provided with pairs of spaced uprights, a cutter bar, supporting links therefor pivoted between said uprights, an actuating lever pivoted between one pair of said uprights and having an arm at its inner end projecting over said cutter bar, and an actuating link connecting said lever arm to said cutter bar, the pivots for said actuating link and lever being disposed so that a toggle action is secured as the cutter bar approaches the end of its work stroke.

In witness whereof, I have hereunto set my hand and seal.

JAMES K. DIAMOND. [L. S.]