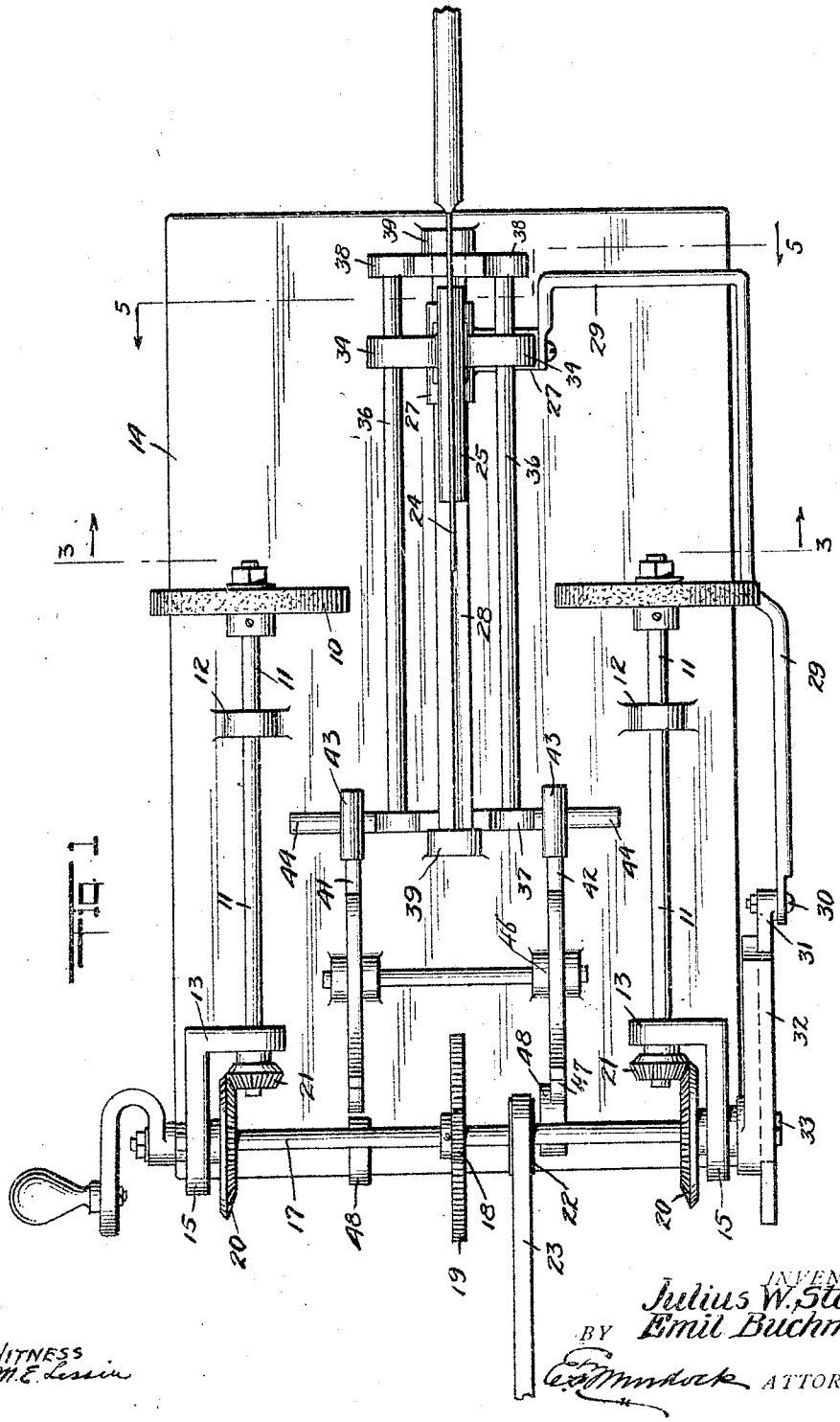
Jan. 15, 1924. 1,480,791

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MACHINE FOR SHARPENING CUTLERY

Filed Jan. 19, 1921 3 Sheets-Sheet 1



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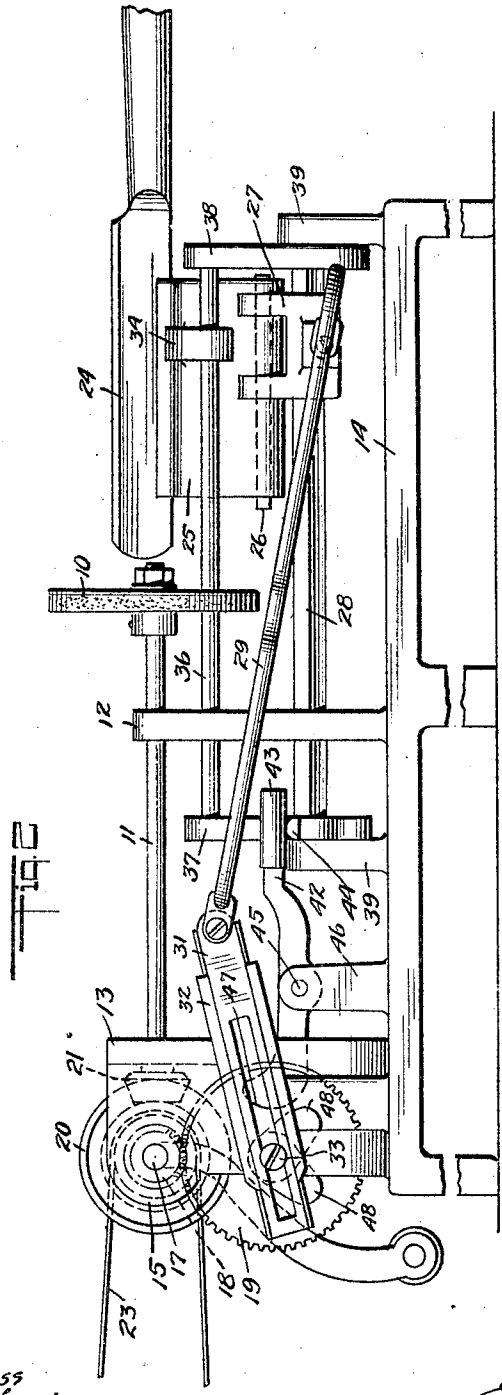


Fig. 2

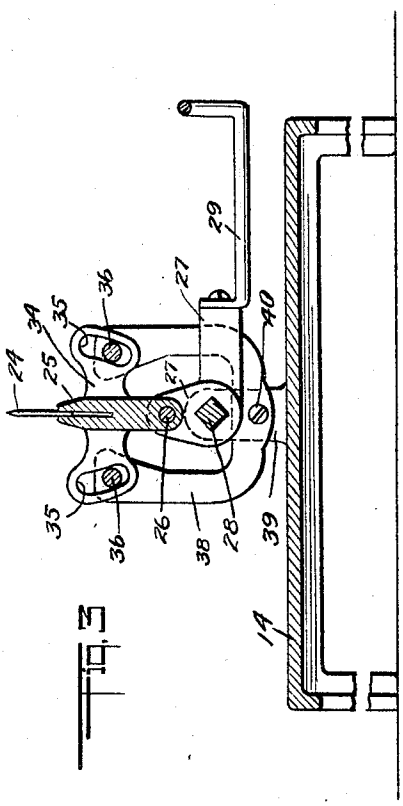


Fig. 3

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Fig. 5

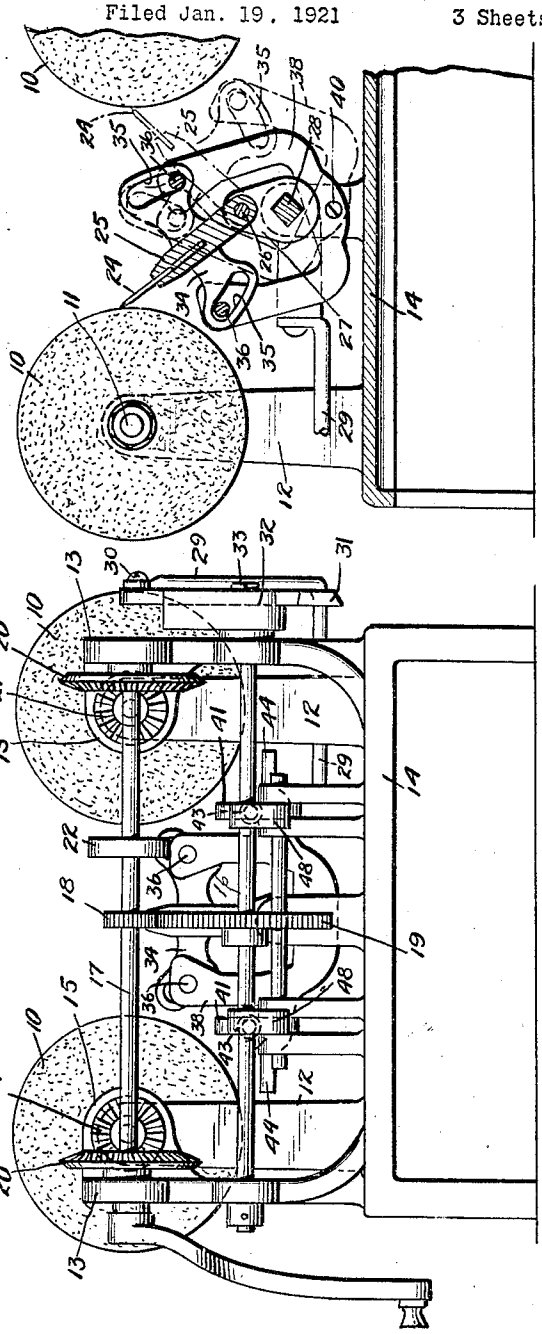


Fig. 4

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UNITED STATES PATENT OFFICE.

JULIUS W. STEIN AND EMIL BUCHMAN, OF NEW YORK, N. Y.

MACHINE FOR SHARPENING CUTLERY.

Application filed January 19, 1921. Serial No. 438,404.

To all whom it may concern:

Be it known that we, JULIUS W. STEIN and EMIL BUCHMAN, citizens of Poland, and residents of New York city, in the county of Bronx and State of New York, have invented a certain new and useful Improvement in Machines for Sharpening Cutlery, of which the following is a full, clear, and exact description.

Among the principal objects which the present invention has in view are: to automatically grind the cutting edge of knives or other cutlery; to grind the opposite sides of a blade successively, the grinding members operating against said blades in the same relative direction; to reciprocate the blades during the process of grinding to form an even edge on the cutlery, to provide a machine which will perform its operations on blades of various lengths and styles; to operate the machine by hand or motor at will; and to simplify the construction and arrangement of the machine.

Drawings.

Figure 1 is a plan view of a machine of the character mentioned, constructed and arranged in accordance with the present invention.

Figure 2 is a side view of the same.

Figure 3 is a vertical section, the section being taken as on the line 3—3 in Fig. 1.

Figure 4 is an end view of the machine.

Figure 5 is a cross section, the section being taken as on the line 5—5 in Fig. 1.

Description.

As seen in the drawings, the grinding members are preferably wheels 10 which are disposed at opposite sides of the machine where they are mounted on driven shafts 11 that have bearings in standing brackets 12 and 13. The brackets 12 and 13 are suitably raised up from a bedplate 14 upon which the various parts of the machine are mounted.

The bearings 13 are preferably bracket extensions of the brackets 15. The brackets 15 support bearings for the driving and driven shafts 16 and 17 respectively. The shafts 16 and 17 are operatively connected by pinions 18 and the large gear wheel 19. The ratio between the wheels 18 and 19 establishes the relative speeds at which the two shafts 16 and 17 are rotated, the object being to diminish the speed in the transmission from the shaft 17 to the shaft 16. An increase in the relative speeds between the shaft 17 and the shafts 11 is provided in the disproportion of the bevel wheels 20 and their associated pinions 21, the latter being considerably smaller to impart to the shafts 11 and the wheels 10 mounted thereon, a very high rate of rotary speed.

The shaft 17 is furnished with a pulley 22 by means of which if desired the shaft 17 may be directly driven from an independent prime mover a belt 23 as shown in Fig. 1 of the drawings, being employed for connecting the said pulley and prime mover.

The rate of speed by which the grinding wheels 10 are driven, insures the proper grinding of a blade 24 whenever the same is held in contact with either of the grinding wheels. Blades such as indicated by the numeral 24 are held in a spring vise 25 which is pivotally mounted by the shaft 26 in the ends of a yoke 27. The yoke 27 is slidably mounted on a rectangular guide bar 28 and is reciprocated thereon by means of a connecting rod 29. The rod 29 is pivotally connected by the screw bolt 30 to an adjustable extension arm 31 which is slidably mounted in the crank arm 32. A set screw 33 normally maintains the position of the extension arm 31 in the crank arm 32. The arm 32 is cranked by the shaft 16 on which it is rigidly mounted.

As the shaft 16 is driven from the shaft 17 through the intermediary of the pinion 19 and gear wheel 18 the rotation of the said shaft 16 and of the arm 32 connected therewith is relatively slow therefore the movement of the vise 25 and of the blade 24 held therein, is likewise slow, as compared with the rotation of the wheels 10. By means of the extension arm 31 the length of the movement of the vise is governed. This is so arranged that the blade 24 is completely turned to present the edge to one or other of the wheels 10 before the end of the blade comes in contact therewith, and so as to maintain the same in contact with the said wheel during the entire advance or recession of the said blade. To rock the vise 25 and blade 24 held therein, the vise 25 has laterally extended link arms 34 at the ends whereof are formed elongated openings 35. The openings 35 extend in guide shafts 36 as best seen in Fig. 3 of the drawings. The shafts 36 are parallel and extend between the rocking cradles 37 and 38, one of which

is situated at the opposite extremities of the path provided for the vise 25.

The cradles 37 are pivotally mounted on standards 39 by means of pivoted shafts 40. The structure including the cradles 37 and 38 and the shafts 36, is rocked by means of the beater arms 42. The arms 41 and 42 each have a pipe roller 43 at its outer end which engage the extension 44. The extensions 44 are structurally united with the cradle 37 therefore the distribution of either of the extensions 44 rocks the said cradle and through the said cradle the structure embodying the cradle 38 and shafts 36. The blade 24 is so adjusted in the vise 25 that when the said structure is so rocked, the side of the edge of the knife to be ground bears against the periphery of one of the wheels 10. As the vise 25 and blade 24 mounted therein rocks on the shaft 26 the angle at which the blade is presented to the grinding wheel in the various operations, is constant.

The beater arms 41 and 42 are pivotally mounted on a shaft 45 which has bearings in standards 46. The inner ends of the arms 41 and 42 have each a foot 47 which is disposed so as to engage each one of the tappets 48 which are mounted on the shaft 16. The tappets 48 correspond in number to the arms 41 and 42 and are extended in relatively opposite directions so as to move the arms 41 and 42 successively and at equal intervals.

When a machine is operated whether driven by hand or by power, the shaft 16 is slowly rotated to crank the arm 32 and extension 31 thereon, with the result that the connecting rod 29 and the yoke 27 connected therewith are reciprocated lengthwise of the bar 28 and of the shafts 36. Correspondingly, the vise 25 and blade 24 mounted therein, is reciprocated. The length of the reciprocation desired is arranged for by releasing the screws 33 and adjusting the arm 31 in the arm 32. At each extremity of the throw or reciprocation of the vise 25 due to the function of a crank, the said vise is held relatively stationary or with very little movement. It is during these periods of rest, or while the ends of the crank arm is passing the dead centers that the tappets 48 influence one or other of the beater arms 41 and 42 to rock the cradle 37 and structure associated therewith, embodying the cradle 38 and the guide shafts 36. By this means there is insured that at the beginning of each reciprocatory movement of the vise 25, the cutting edge of the blade 24 has been moved from the path of one or the other of the said wheels.

The result of this operation is that each side of the cutting edge of the blade 24 is ground to the same degree at the completion of the operation.

While we have indicated and described the attachment of the present machine to a motor by means of the belt 23 and pulley 22, it will be understood that any suitable motor and any suitable transmission could be employed. Also it will be understood that the ratio of speed between the shaft 17 and the shafts 11 and wheels 10 mounted thereon may be varied to increase or diminish the rate of peripheral speed of the said wheels 10.

Claims.

1. A machine as characterized comprising a rocking cradle; a vise slidably mounted in said cradle; a plurality of abrasive members disposed at opposite sides of said cradle; means for reciprocating said vise lengthwise of said cradle; and means for rocking said cradle in timed relation with said reciprocating mechanism for rocking said cradle when said vise approximates the opposite ends of said cradle, said means embodying a plurality of beater arms engaging said cradle, one at each side thereof, and a driven shaft having cams for rocking said beater arms in timed relation with said reciprocating mechanism.

2. A machine as characterized comprising a rocking cradle; a vise slidably mounted in said cradle; a plurality of abrasive members disposed at opposite sides of said cradle; means for reciprocating said vise lengthwise of said cradle; and means for rocking said cradle during the intervals between the reciprocatory movements of said reciprocating mechanism.

3. A machine as characterized comprising a rocking cradle; a vise slidably mounted in said cradle; a plurality of abrasive members disposed at opposite sides of said cradle; means for reciprocating said vise lengthwise of said cradle, said means embodying a rotary crank arm and a connecting rod, a rod operatively connecting said vise and said crank arm, and means for rotating said crank arm; and means operatively connected with said crank arm for rocking said cradle toward said abrasive members alternately and in correspondence with the movement of said crank arm and during the periods when the same is passing the dead centers thereof.

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