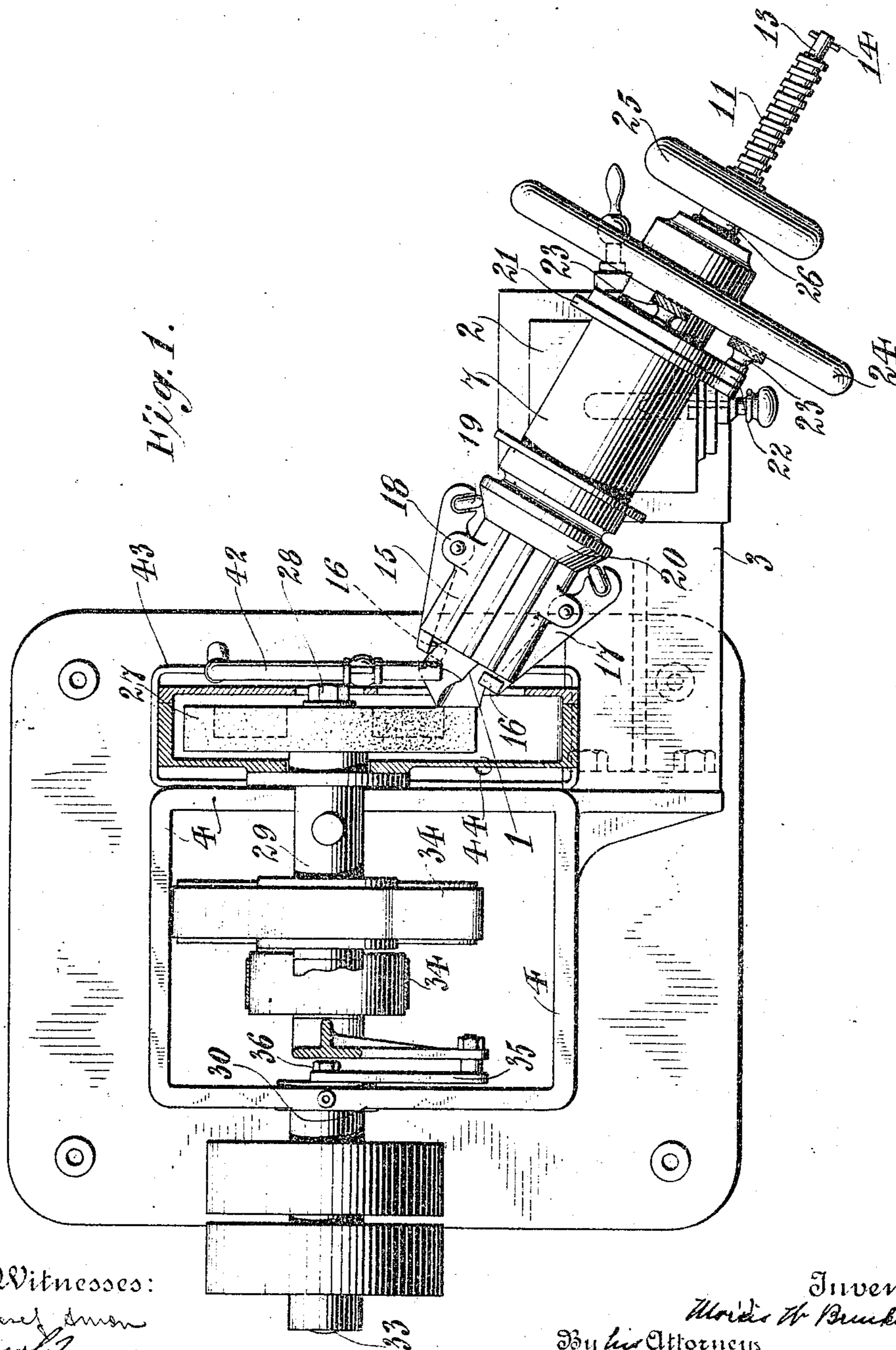


M. W. BRINKMANN.
TOOL SHARPENER.
APPLICATION FILED NOV. 11, 1908.

966,732.

Patented Aug. 9, 1910

4 SHEETS—SHEET 1



Witnesses:
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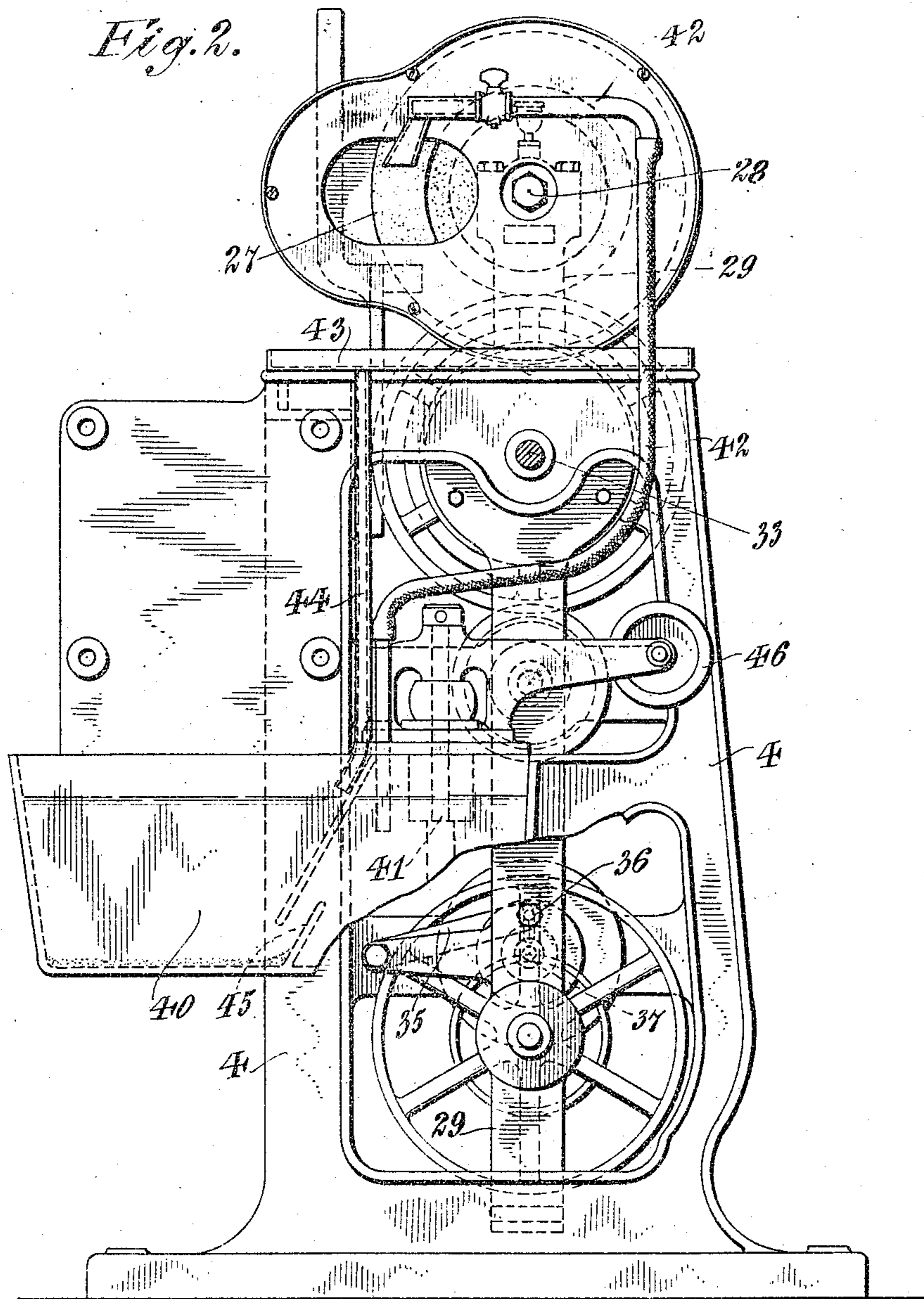
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4 SHEETS—SHEET 2.



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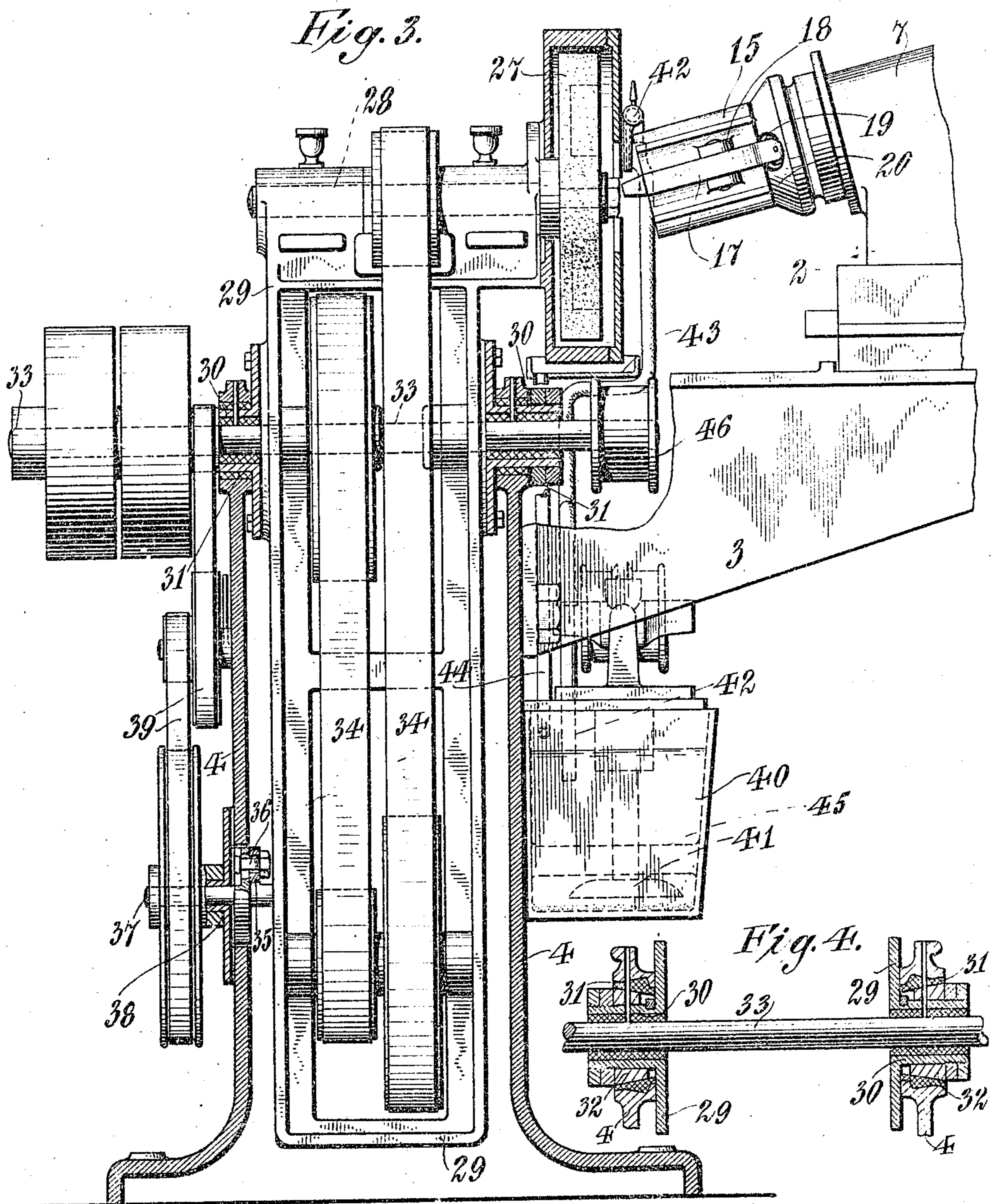
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4 SHEETS—SHEET 3.



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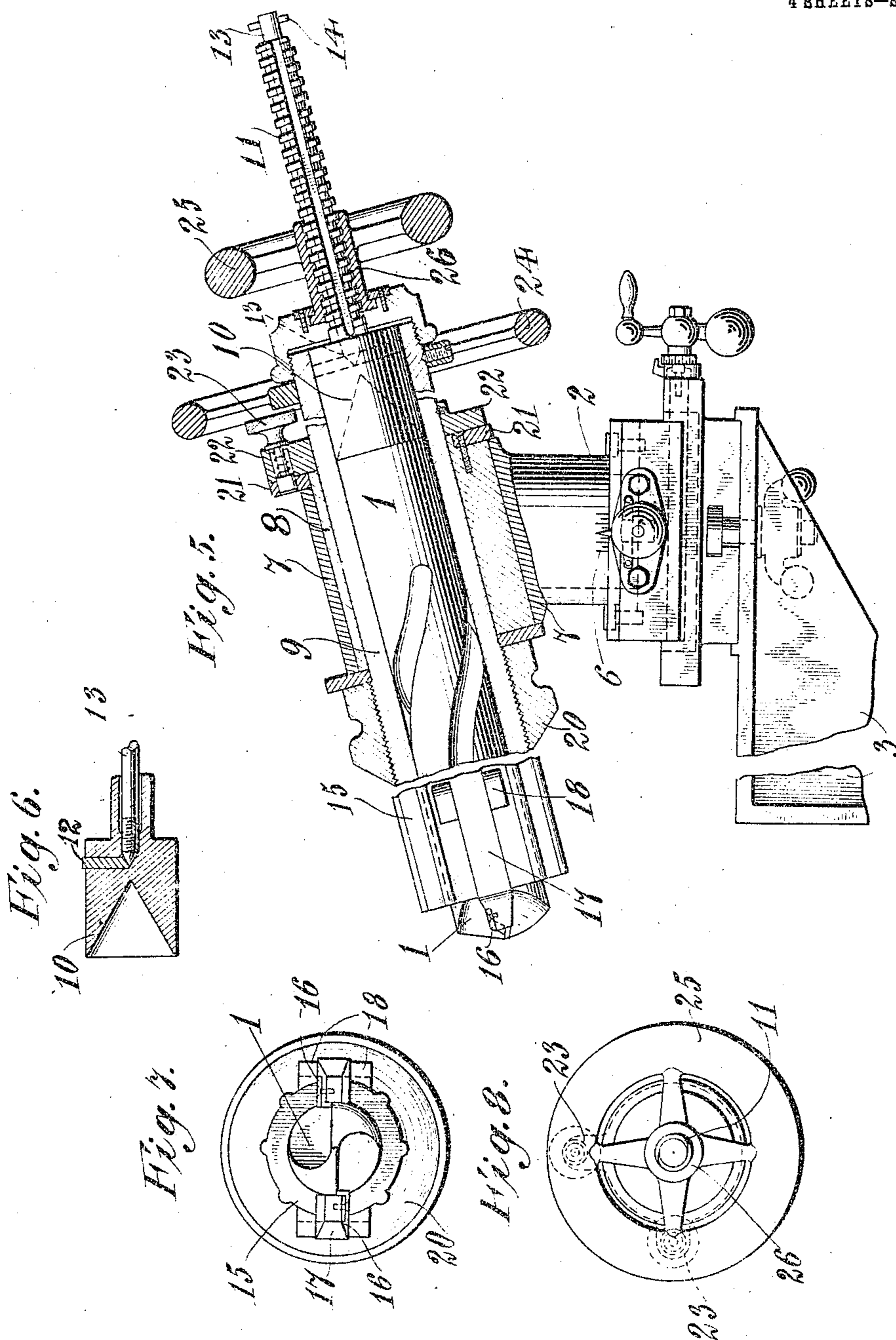
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4 SHEETS—SHEET 4.



Witnesses:
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UNITED STATES PATENT OFFICE.

MORRIS W. BRINKMANN, OF NEW YORK, N. Y.

TOOL-SHARPENER.

966,732.

Specification of Letters Patent.

Patented Aug. 9, 1910.

Application filed November 11, 1908. Serial No. 462,041.

To all whom it may concern:

Be it known that I, MORRIS W. BRINKMANN, a citizen of the United States, residing in the borough of Manhattan of the city of New York, in the State of New York, have invented certain new and useful Improvements in Tool-Sharpener, of which the following is a specification, reference being had to the accompanying drawings, forming a part hereof.

This invention relates to means for sharpening tools, particularly such tools as twist drills, with mathematical accuracy, and consists in the new and novel features of construction and combination of parts herein-after set forth and claimed.

In the accompanying drawings Figure 1 represents a plan view of my improved machine. Fig. 2 represents an end elevation of the same. Fig. 3 represents a side elevation showing the standards and part of the bearings in sections. Fig. 4 is a detail view showing the bearings for the driving shaft and the rocking frame. Fig. 5 is a side elevation partly in section of the tool holder. Fig. 6 is a detail view showing a modified means for centering the tool. Figs. 7 and 8 represent front and rear views respectively of the tool holder.

The tool 1 to be ground, for example a twist drill, is secured in a holder 2 supported by an arm 3 upon standards 4, fitted like the slide rest of a lathe and provided with suitable graduations 6 whereby the position of the holder may be accurately and readily determined. The holder is provided with a hollow head 7 which forms a bearing for a carrier 8 rotatably mounted therein. Said carrier is provided eccentric to its axis and to the axis of the holder with a bearing for a barrel or hollow spindle 9 to receive the tool to be ground. The rear end or butt of the tool seats in a conical recess provided in an aliner 10 movable in the barrel, which centers the rear end of the tool. Said aliner may be fed forward by any suitable means as by threads provided upon a shank 11 formed integral therewith and may be held in its adjusted position by a key 12 actuated by any suitable means, as the beveled or pointed end of a small shaft 13 mounted in the shank 11 and actuated by a handle 14. The point or cutting end of the tool 1 is held in a chuck 15 secured to the barrel 8 and if a tool such as a twist drill is to be ground, the point is further held by oppo-

sitely arranged fingers or extensions 16 that engage behind the heel of the cutting lip. Said fingers or extensions are preferably formed integral with levers 17 pivoted to lugs or extensions 18 secured to the chuck and having their rear ends provided with rollers 19 that engage the beveled face of hardened steel cone 20. Both the carrier and the barrel have flanges 21 and 22 respectively secured to or formed integral therewith, and any suitable means as the stops 23 are provided for the purpose of holding the carrier and the barrel in their adjusted positions, and so as to determine the degree of eccentricity employed. Suitable means as a hand wheel 24 is secured to the barrel and provides means for rotating the same either with or independently of the carrier. A smaller wheel 25 is secured to a sleeve 26 threaded to engage with the shank upon the aliner and feed same forward into contact with the end of the drill.

The grinding device or tool 27, preferably an emery wheel, is keyed upon an arbor 28 mounted in a frame 29, which is adapted to be rocked transversely to the point of the tool to be ground. The frame is provided with a hollow trunnion 30 mounted in bearings 31 provided in the standards 4. Said bearings are formed in part by slip cones 32 which are adjustable so that the bearing can be kept perfectly true. The trunnions are hollow and, in turn, provide bearings for the driving shaft 33 which rotates the grinding device by any suitable means as belts 34. The swinging or rocking movement is imparted to the frame by a crank arm 35 provided with an adjustable pin 36. The crank is secured to a shaft 37 mounted in a bearing 38 provided in the standards 4 and is actuated from the main driving shaft by any suitable means as the belts 39.

If desired a liquid reservoir 40 is secured to the standards, from which a suitable liquid may be supplied to the grinding device by a pump 41 through pipes 42. The liquid after being used is collected by a pan 43 and is returned to the reservoir by a pipe 44. Preferably the reservoir is provided with a narrow partition 45 lengthwise thereof, which separates and collects the particles of metal or emery carried down to the reservoir by the returning liquid. The pump may be actuated by a pulley 46 upon one end of the main driving shaft.

The operation of my machine is as fol-

lows: The drill 1 to be sharpened is placed in the barrel or spindle 9 and is carefully adjusted by means of the fingers 16 engaging the same and the aliner 10 is then caused to engage the end of the drill so that it shall be firmly held and centered. If a twist drill is to be ground the barrel or spindle 9 is fixed to the carrier 8 by means of the stop 23 which is then given a slight to and fro movement which causes the lip of the drill to be ground away. When one lip has been properly ground the carrier and barrel are given a half turn which brings the other lip of the drill adjacent to the grinding device and the operation is repeated. In case a center punch or similar tool is to be ground the carrier is adjusted so as to arrange the axis of the tool at the desired angle to the grinder and the barrel or spindle is rotated independently of the carrier. Since the emery wheel or other grinding device is given a to and fro movement during the grinding operation the wear will be evenly distributed over the face of the wheel thus maintaining a true face, and consequently a much more accurate cut can be obtained than is possible when the emery wheel is in fixed relation to the holder, or when the wear of the wheel occurs practically in one path.

Although I have described one form of mechanism embodying my invention it is obvious that various changes within the skill of the mechanic may be made therein without departing from the spirit of the invention provided the means set forth in the following claims be employed.

I claim as my invention:

1. In a tool sharpener the combination with a holder for the tool to be ground comprising means for rotating said tool, of a grinding device and means to move said grinding device transversely to the axis of the tool during the grinding operation.
2. In a tool sharpener the combination with a holder for the tool to be ground comprising means for rotating said tool, of a grinding device and means to rock said grinding device through a predetermined arc transversely to the point of the tool during the grinding operation.
3. In a tool sharpener the combination with a holder for the tool to be ground and means to rotate said tool eccentrically to the axis of the holder, of a grinding device, and means to rock said grinding device during the grinding operation.
4. In a tool sharpener the combination with a holder comprising a carrier for the tool to be ground rotatably mounted in the holder and means to rotate the tool eccentrically to the axis of the holder, of a grinding device, means for rotating said grinding device, and means for rocking said grinding device during the grinding operation.
5. In a tool sharpener the combination

with a frame movably mounted on hollow trunnions and means for rocking the frame, of a driving shaft rotatably mounted in said trunnions.

6. In a tool sharpener the combination with a frame movably mounted on hollow trunnions, a grinding device mounted on said frame, and means for rocking said frame, of a driving shaft mounted in said trunnions for actuating said grinding tool.

7. In a tool sharpener the combination with supporting standards, of a frame movably mounted in bearings provided in said standards, a grinding tool on said frame, and adjustable means for imparting a rocking movement to said frame and grinding tool.

8. In a tool sharpener the combination with supporting standards, of a frame provided with hollow trunnions mounted in bearings provided in said standards, a grinding tool on said frame, means for rocking said frame, and a driving shaft mounted in said trunnions concentrically therewith and operatively connected with said grinding tool.

9. In a tool sharpener the combination with supporting standards, of a frame movably mounted on said standards, a grinding tool on said frame, a reservoir containing liquid supported on said standards, a pump for supplying the liquid to said grinding tool, means for rocking said frame and means for operating said pump to supply liquid from the reservoir to the grinder.

10. In a tool sharpener the combination with supporting standards, of a frame movably mounted on said standards, means for rocking the frame, a grinding tool on said frame, a gravity separating tank containing liquid supported on said standards, and a pump for supplying liquid from said tank to the grinding tool.

11. In a tool sharpener the combination with a grinding device, of a holder for the tool to be ground, said holder comprising a chuck provided with fingers adapted to engage opposite faces of said tool and hold same in alignment against rotation in the holder, and movable means engaging the end of the tool to center the same.

12. In a tool sharpener the combination with a grinding device, of a holder for the tool to be ground, said holder comprising a chuck provided with oppositely arranged fingers adapted to seat against the edges of said tool and hold same against rotation, and movable means provided with a recess to receive the end of the tool to center the same.

13. In a tool sharpener the combination with a grinding device, of a holder for the tool to be ground, said holder being provided with a conical recess to receive the end of the tool, and means on the holder

to center the tool in said recess, and means to hold same in its adjusted position.

14. In a tool sharpener the combination with a rocking frame and a grinding device 5 mounted on said frame, of a holder for the tool to be ground, means on said holder to center the tool and hold same in its adjusted position, means to rotate the tool during the grinding operation, and means 10 to feed said tool toward the grinder, substantially as described.

15. In a tool sharpener the combination with a rocking frame, a grinding device mounted in said frame and means for rock-

ing said frame, of a holder for the tool to 15 be ground, means on said holder to rotate the tool eccentrically to the axis of the holder, means to center the tool with respect to said holder, and means to hold the tool against movement relatively to said holder, 20 substantially as described.

This specification signed and witnessed this 29th day of October, A. D. 1908.

MORRIS W. BRINKMANN.

Signed in the presence of—

THOMAS J. CANTY,
MARGARET W. BEST.