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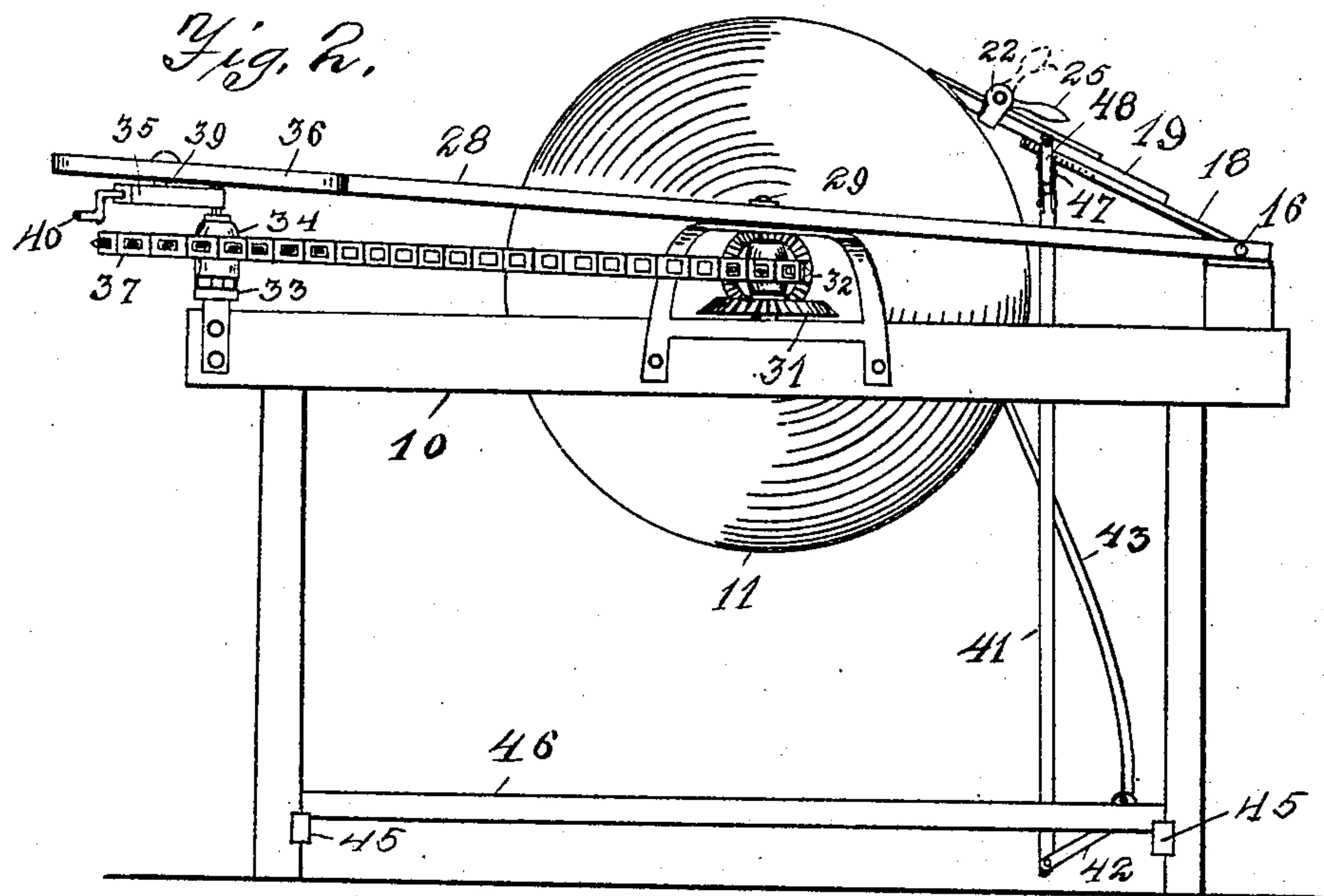
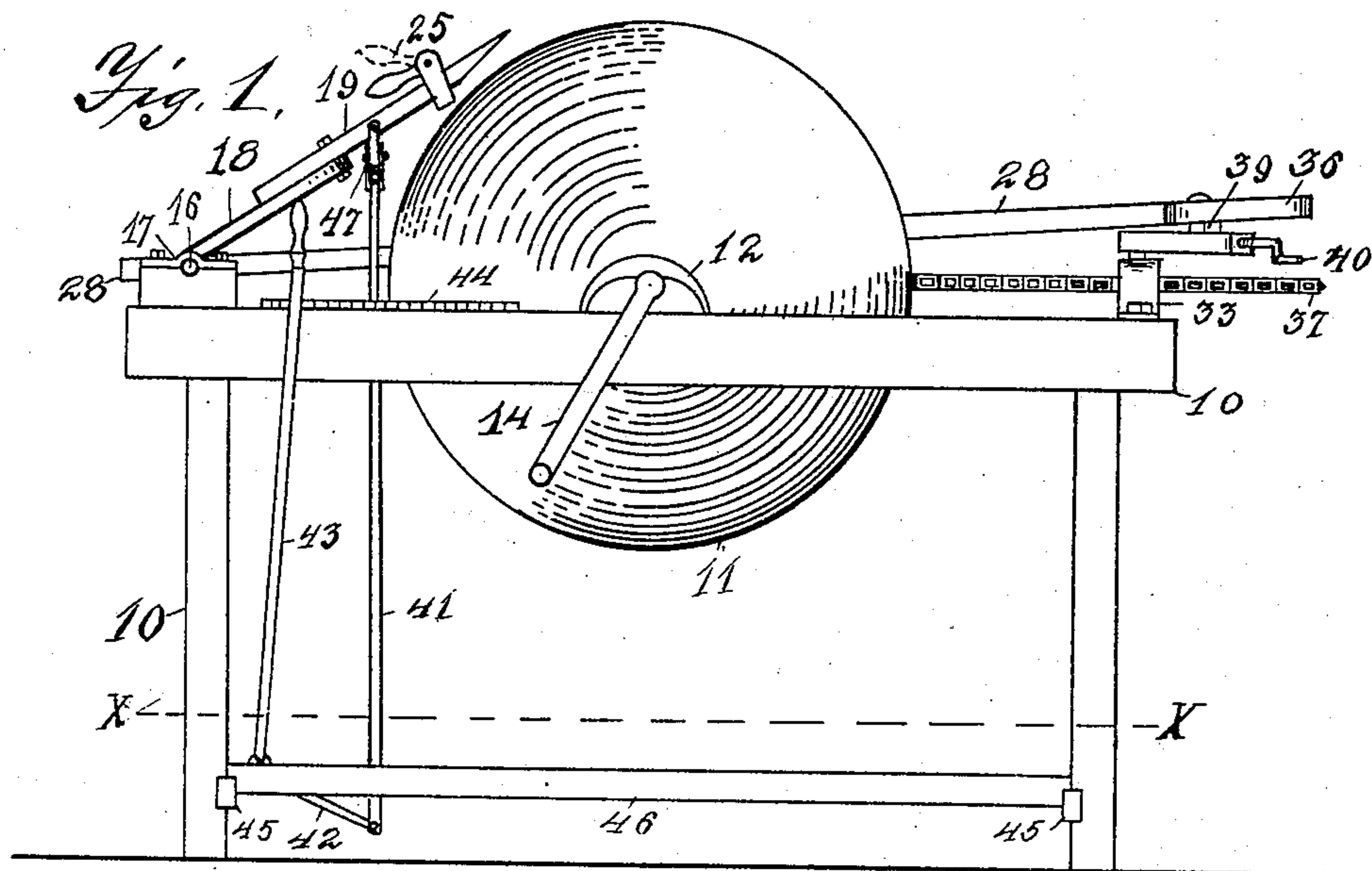
PATENTED NOV. 1, 1904.

S. L. DERBY.
TOOL HOLDER FOR GRINDSTONES.

APPLICATION FILED MAY 31, 1904.

NO MODEL.

2 SHEETS—SHEET 1.



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By

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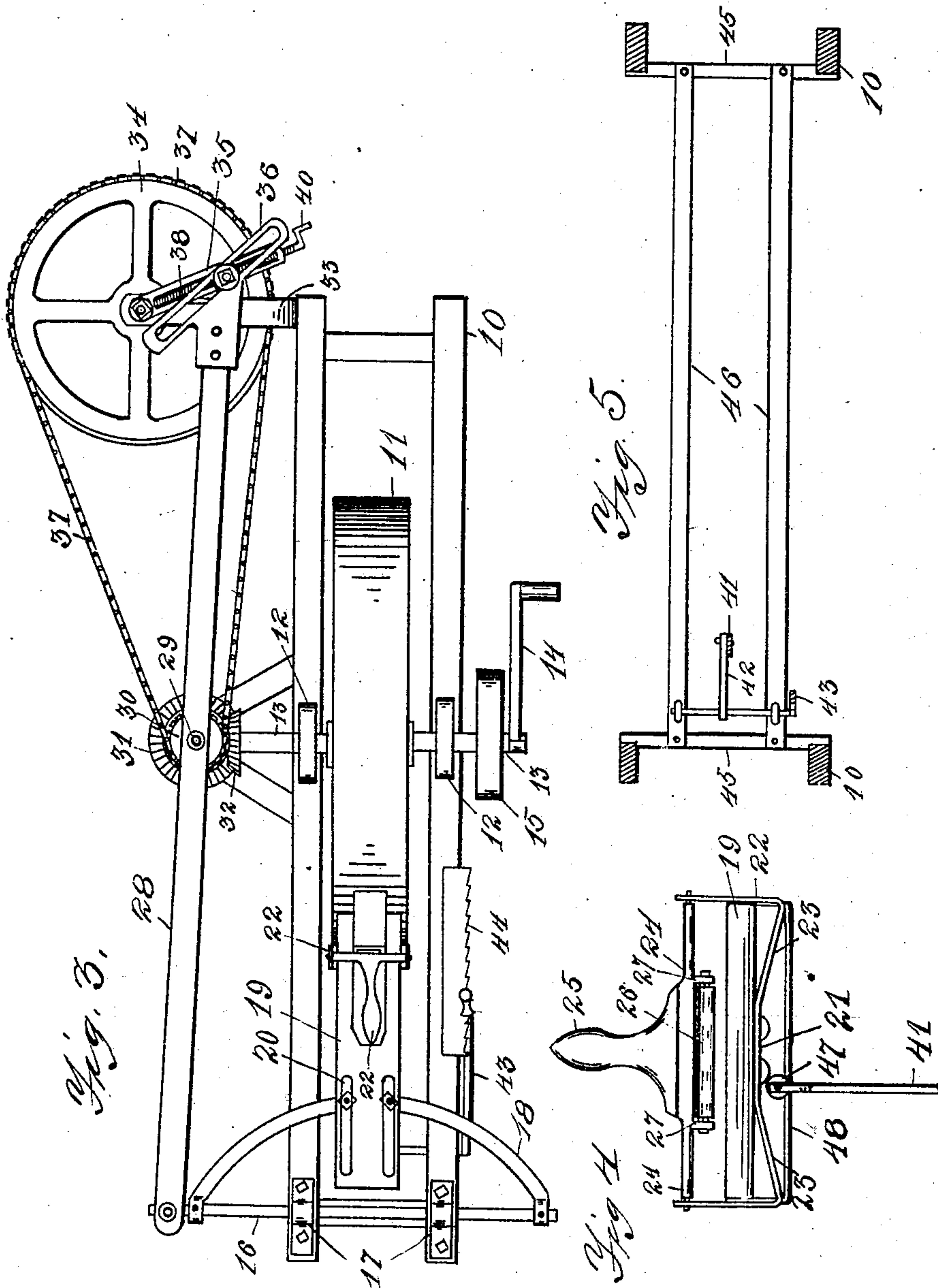
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UNITED STATES PATENT OFFICE.

SILAS L. DERBY, OF FREWSBURG, NEW YORK.

TOOL-HOLDER FOR GRINDSTONES.

SPECIFICATION forming part of Letters Patent No. 774,134, dated November 1, 1904.

Application filed May 31, 1904. Serial No. 210,470. (No model.)

To all whom it may concern:

Be it known that I, SILAS L. DERBY, a citizen of the United States, residing at Frewsburg, in the county of Chautauqua and State of New York, have invented a new and useful Tool-Holder for Grindstones, of which the following, taken in connection with the accompanying drawings, is a full, clear, and exact description.

My invention relates to tool-holders for grinding-machines whereby the tool is given a tension upon the stone and a reciprocatory motion across the stone; and the object of my improvement is to provide improved means for such tension and reciprocating motion for the ordinary grindstone.

In the drawings, Figure 1 is a side elevation of the front or crank side of a grindstone with my attachments. Fig. 2 is a side elevation of the opposite or rear side of the grindstone with my attachment holding a plane-bit for grinding. Fig. 3 is a plan view of a grindstone with my attachment holding a plane-bit. Fig. 4 is an end elevation of the tool-holding spring-clamp and tension-rod attachment. Fig. 5 is a sectional view at line X X in Fig. 1, showing the cross-supports of the frame for the tension-bar.

Similar numerals refer to corresponding parts in the several views.

The numeral 10 indicates the frame for the grindstone 11. Grindstone 11 is mounted in suitable boxes 12 on a shaft 13, which may have the crank 14 or the pulley 15 thereon for turning the same. A cross-rod 16 is mounted on one end of frame 10 in suitable bearings 17, which are raised sufficiently to give the right angle to a tool-holder which is mounted on rod 16 by means of a semicircular bracket-piece 18. Bracket 18 has a tool-holding piece 19 mounted thereon with suitable bolts, the bolts passing through slots 20 in piece 19, which slots are provided for adjusting tool-holder 19 to the size of the stone, thus arranging for the use of the tool-holder on different-sized stones or for adjusting the holder to the wear of the stone and its gradually-diminishing diameter.

Tool-holder 19 is usually given a bevel on the under side of the end corresponding to the shape of the stone and has a spring-clamp

21 attached near this end for holding the tool. Clamp 21 consists of a spring 22, which is bent down at each side 23 away from piece 19, and each end is then bent upward to receive a pivotal cross-head 24, which extends out in a handle 25 and has a small roller 26 on its under side revolvably mounted in lugs 27. It is now apparent that when handle 25 is raised roller 26 will be turned from pressure against a tool and when it is pressed down against it it will rigidly clamp the tool in place, the spring ends 23 drawing downward on the clamping cross-head 24.

A vertical rod 41 is attached to the under side of tool-holder 19 and is pivotally attached at its lower end to the crank-arm 42 of a spring tension-bar 43. A ratchet-piece 44 is attached to frame 10, as shown in Figs. 1 and 3, so that by bending spring-bar 43 forward, as shown in Fig. 2, to any desired notch of ratchet 44 the desired tension may be attained for tool-holder 19. If vertical rod 41 were given a fixed attachment near the center of board 19, the tool would be rounded off on the corners because of the greater draw of rod 41 when board 19 was moved sidewise in either direction. To overcome this difficulty, I attach a bracket 48 in the form of a bale to each edge of board 19, so that it hangs on the under side of the board 19, as shown in Figs. 4, 1, and 2. A small wheel 47 is revolvably mounted in the upper end of vertical rod 41 and bears on the rod of bracket 48, so that the board 19 is at liberty to move to either side with perfect freedom, yet the tension from rod 41 is constant on bracket 48 at a point directly under the bearing-point of the tool on the stone. In this manner I am enabled to make a perfectly-even cut on the edge of the tool as it moves back and forth across the surface of the stone. Vertical bar 41 is made sufficiently stiff to hold firmly in place as the rod of bracket 48 passes back and forth under wheel 47. Frame 10 is made in the usual manner, with the exception of cross-bars 45 at each end, with lengthwise bars 46 thereon, furnishing a pivotal bearing for the tension-bar 42 43, as shown in Fig. 5.

A reciprocatory motion is imparted to the tool-holder by means of a bar 28, which is attached to the outer end of the pivotally-

mounted rod 16. Bar 28 is pivotally mounted on a central pin 29, which pin or shaft also bears a small sprocket-wheel 30 and a bevel-gear 31. A bevel-gear 32 on the end of shaft 5 13 meshes in gear 31.

A bracket 33 on frame 10 supports a large sprocket-wheel 34 in a horizontal position and an adjusting-bracket 35 for the slotted end 36 of bar 28. A sprocket-chain 37 connects sprocket-wheel 30 with wheel 34. The 10 slotted end 36 of bar 28 is preferably given an angle of about forty-five degrees, since this angular slot overcomes all dead-centers and produces a steady even motion, as it starts the bar back at once as soon as it reaches the 15 limit. Bracket 35 is turned by sprocket-wheel 34 and has the screw-rod 38 extending lengthwise of its slotted center, so as to adjust a block 39, having a threaded opening therein to work on screw-rod 38. Block 39 20 supports and is attached to the slotted end 36 of bar 28. Screw-rod 38 has a small crank 40 on its outer end, by means of which the position of block 39 can be quickly changed in 25 the slotted bracket 35.

It is now apparent that by turning crank 40 block 39 is run out or in from the center of wheel 34, and a long or short stroke is given to the bar 28, and consequently to the reciprocating rod or shaft 16, to which bar 28 is 30 attached and upon which tool-holder 19 is mounted. This adjustment of the length of the reciprocating stroke is necessitated because of the difference in width in various 35 tools and knives to be ground and also because of the necessity of keeping the face of the stone level, which, it is readily seen, will be done by the changing of the course of reciprocation over the stone's face, so that it 40 will not follow exactly the same track with each revolution of the stone. Thus a small grindstone-holder may be readily adjusted from a two to a twelve inch stroke or according to the length of bracket-arm 35, slotted 45 bar 28, and shaft 16. The rod of bracket 48 on the under side of board 19 passes back and forth freely under wheel 47 on the upper end of vertical tension-bar 41, and thus gives a perfectly-even tension to the tool on the stone 50 as the tool on bar 19 travels back and forth, whether at a two or a twelve inch stroke, and any degree of tension may be attained by adjusting spring-lever 43 in teeth 44.

I claim as new—

55 1. In combination with a grindstone having a suitable shaft and frame, a tool-supporting piece pivotally mounted on said frame, a tool-holding clamp on said piece consisting of a spring-strap centrally attached to the under 60 side of said piece and deflecting therefrom toward each end, said deflected ends upturned above the sides of said piece, and a clamping-head pivotally mounted in said upturned ends to bear against the tool.

65 2. In combination with a grindstone hav-

ing a suitable shaft and frame, a tool-supporting piece pivotally mounted on said frame, a tool-holding clamp on said piece consisting of a spring-strap centrally attached to the under 70 side of said piece and deflecting therefrom toward each end, said deflected ends upturned above the sides of said piece, a clamping-head pivotally mounted in said upturned ends, and a roller on the inner side of said clamping-head to bear against the tool. 75

3. In combination with a grindstone having a suitable shaft and frame, a tool-holder consisting of a shaft pivotally and slidably mounted on said frame, a bracket-piece spanning said frame and attached to said shaft 80 near its outer ends, a tool-holding piece adjustably attached to said bracket-piece in lengthwise slots, a suitable tool-holding clamp on said piece, and means for reciprocating said tool-holder. 85

4. In combination with a grindstone having a suitable shaft and frame, a tool-holding piece pivotally mounted on said frame, a tension-rod attached to the underside of said tool-holder, a spring bar or lever pivotally mounted 90 on said frame having an arm thereon pivotally attached to said tension-rod, and ratchet-teeth on said frame to engage said spring-bar at different degrees of tension for said tool-holder. 95

5. In combination with a grindstone having a suitable shaft and frame, a tool-holding piece pivotally mounted on said frame, a cross-wise bracket-rod on said piece, a tension-rod 100 having a roller bearing on said bracket-rod, a spring-bar having a leverage attachment to said tension-rod, ratchet-teeth on the frame for said spring-lever, and means for giving a reciprocating motion to said tool-holder.

6. In combination with a grindstone having a suitable shaft and frame, a tool-holder 105 having a shaft pivotally and slidably mounted on said frame, a tool-holding piece attached to said shaft and movable therewith, a tension-rod for said holder, a bar pivotally mounted 110 on said frame having one end attached to said tool-holder shaft and the opposite end engaging a revolubly-mounted crank-arm, and sprocket-wheels and chain and bevel-gears for turning said crank-arm in connection with 115 said grindstone-shaft.

7. In combination with a grindstone having a suitable shaft and frame, a tool-holder pivotally and slidably mounted on said frame, a bar pivotally mounted on said frame having 120 one end attached to said tool-holder and an angular slot in the other end, a revoluble crank-arm on said frame having means for adjustably engaging said angular slot to impart different lengths of reciprocative stroke to 125 said tool-holder, and sprocket-wheels and chain and bevel-gears for turning said crank-arm in conjunction with said grindstone-shaft.

8. In combination with a grindstone having a suitable shaft and frame, a tool-holder 130

consisting of a shaft pivotally and slidably mounted on said frame, a bracket-piece spanning said frame and attached to said shaft near its outer ends, a tool-holding piece adjustably attached to said bracket-piece and having a suitable clamp thereon, a spring tension-lever for said tool-holder, a bar pivotally mounted on said frame having one end attached to said tool-holder shaft and an angular slot in the opposite end, a revoluble crank-arm having means for adjustably engaging said slot and imparting different lengths of reciprocative stroke to said tool-holder shaft, and sprocket-wheels and chain and bevel-gears for turning said crank-arm in conjunction with said grindstone-shaft.

9. In combination with a grindstone having a shaft 13 and frame 10, a tool-holder consisting of a shaft 16 pivotally and slidably mounted on frame 10, a semicircular bracket 18 spanning frame 10 and attached to shaft 16, near the outer ends, a tool-holding piece 19 having the adjusting-slots 20 for attachment to the bracket 18, a tool-holding clamp

on piece 19 consisting of the deflected spring 22 23 and pivotally-mounted clamping-head 24 25 with roller 26, a bracket-rod 48 on piece 19, a tension-rod 41 having a roller 47 bearing on bracket-rod 48, a spring-lever 43 pivotally mounted on frame 10 and having an arm 42 to engage rod 41, ratchet-teeth 44 on frame 10 for engaging lever 43, a reciprocating bar 28 pivotally mounted on frame 10 having one end attached to shaft 16 and the opposite end formed in an angular slot 36, a revolubly-mounted crank-arm having a lengthwise screw-rod 38, a block 39 on screw 58 and slidably connected with slot 36, sprocket-wheels 34 and chain 37 and bevel-gears 31 and 32 for turning crank-arm 35, substantially as and for the purpose specified.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

SILAS L. DERBY.

Witnesses:

A. W. KETTLE,
F. E. BALDWIN.