

(No Model.)

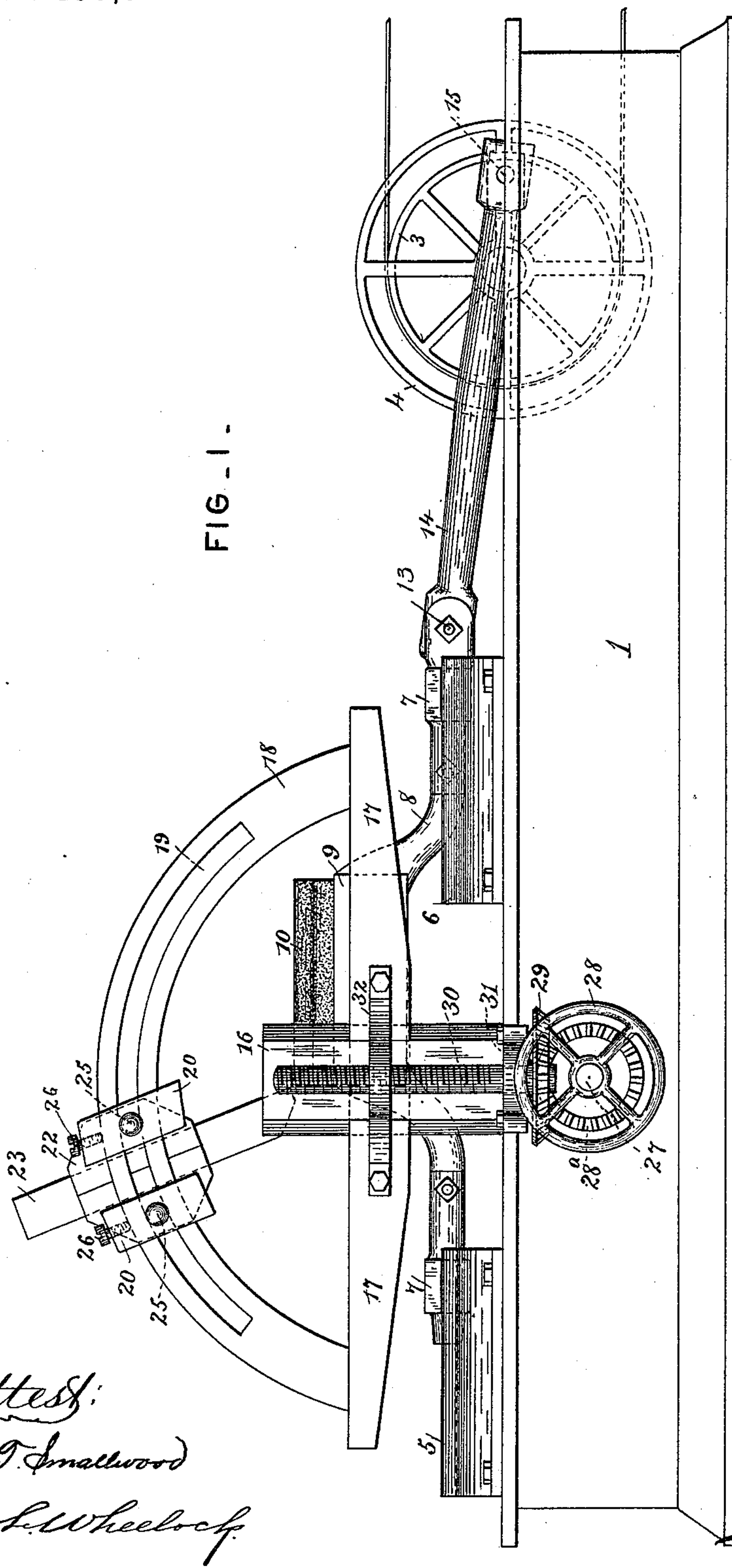
2 Sheets—Sheet 1.

J. B. HASTINGS.
METAL GRINDING MACHINE.

No. 438,581.

Patented Oct. 14, 1890.

FIG. 1.



Attest:
Geo. T. Smallwood
Geo. L. Wheelock

Inventor.
John B. Hastings.
by *Knights Bros.*
attys.

(No Model.)

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FIG. II.

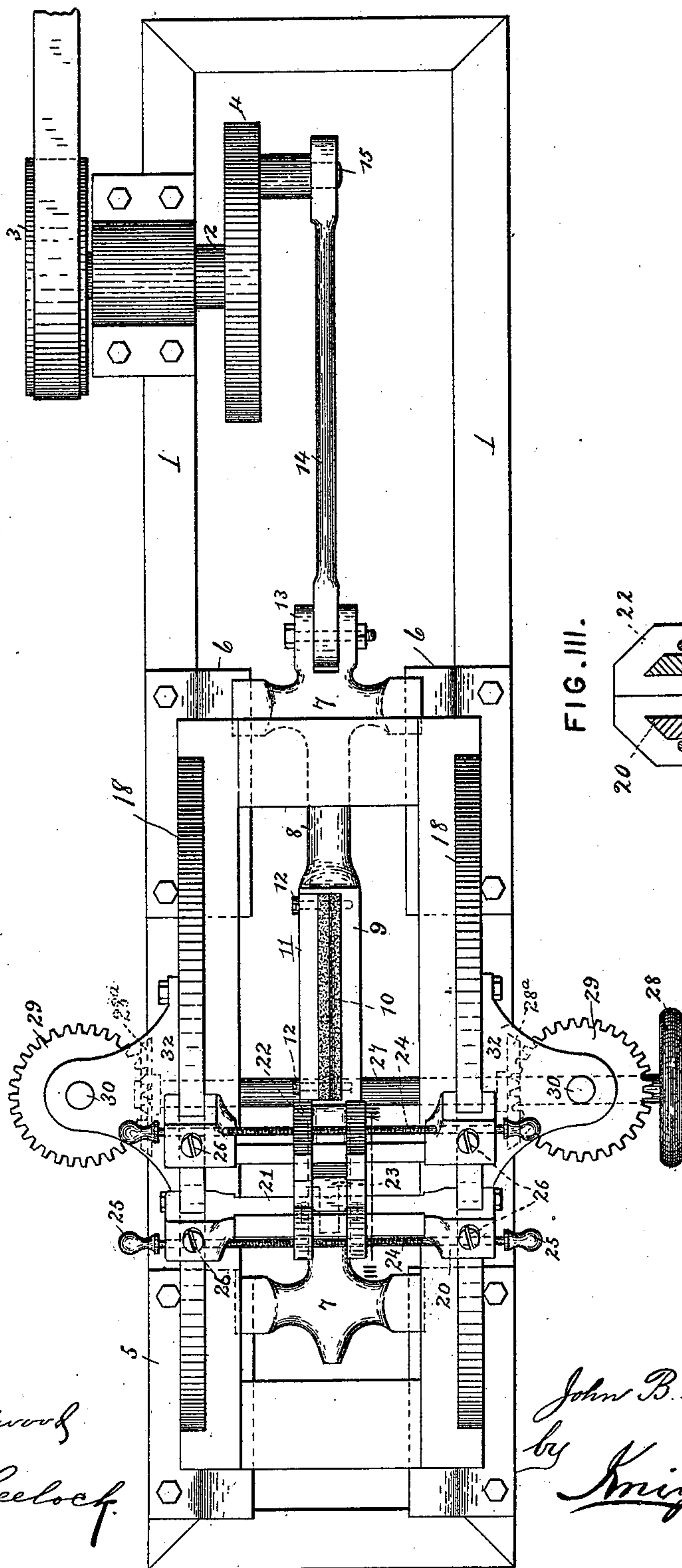
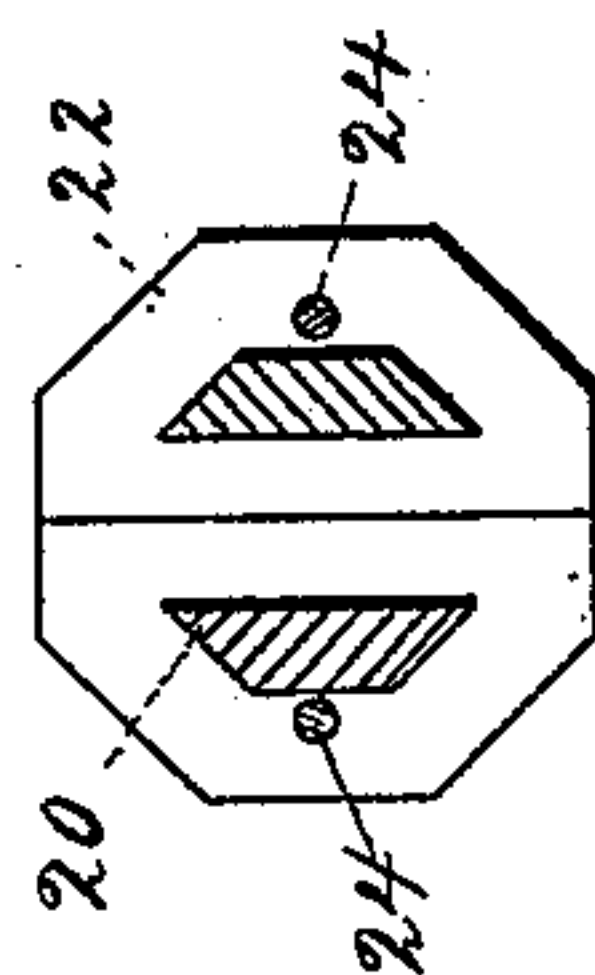


FIG. III.



Attest:

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UNITED STATES PATENT OFFICE.

JOHN B. HASTINGS, OF JACKSON, OHIO.

METAL-GRINDING MACHINE.

SPECIFICATION forming part of Letters Patent No. 438,581, dated October 14, 1890.

Application filed January 20, 1890. Serial No. 337,528. (No model.)

To all whom it may concern:

Be it known that I, JOHN B. HASTINGS, a citizen of the United States, residing at Jackson, in the county of Jackson, State of Ohio, have invented certain new and useful Improvements in Metal-Grinding Machines, of which the following is a specification.

My invention relates to those grinding-machines for sharpening or shaping various tools of whatever nature or construction; and it consists in certain features of novelty to be hereinafter described, and then particularly pointed out in the claims.

In order that my invention may be fully understood, I will now proceed to describe it with reference to the accompanying drawings, in which—

Figure I is a side elevation of my machine. Fig. II is a plan view thereof; and Fig. III is a section on the line III III, Fig. II.

Referring to the drawings, 1 represents the bed of the machine, on which the various parts are mounted.

2 represents a shaft journaled in one side of the bed, 3 a belt-pulley, and 4 the drive-wheel, said pulley and wheel being arranged on opposite sides of one side of the bed.

5 6 are two pairs of parallel guide-pieces, fixed to the sides of the bed near one end of the same and projecting inwardly, for guiding and providing ways for the two cross-heads 7, which are connected by a beam or reciprocating carrier 8, curved upwardly at its center and providing a table 9 in a longitudinal recess, in which suitably-shaped emery or other grinding pieces 10 are secured by means of a removable side piece 11 and screws 12. Connected at one end by a pivot-pin 13 to the reciprocating carrier 8 is a pitman 14, pivoted at the other end on a wrist-pin 15, projecting from the drive-wheel 4. By this means the beam 8 is reciprocated back and forth from the belt-pulley.

16 16 are standards projecting up from each side of the bed and made dovetailed to fit in dovetail recesses in the sides of the base 17 of the vertically-adjustable tool-supporting frame. Fixed on each side of the base 17 are semicircular or curved guide-pieces 18, on which the clamping mechanism for holding the tools to be ground is adjustably secured

in position above the grinding-pieces supported in the reciprocating table. Formed in the curved pieces 18 are slots 19, running lengthwise thereof. Fitted on the curved pieces are four yokes 20—two on each—the opposite ones of which are connected by dovetailed cross-bars 21, that pass through dovetailed openings in the clamping-jaws 22. These jaws are adjusted to clamp the tool 23, held therein by means of screw-threaded rods 24, that pass through the yokes 20 and slots 19, and are provided at their outer ends with knobs 25. A portion of each rod from the center outwardly is provided with a right-hand screw-thread and the other portion is provided with a left-hand screw-thread, and these screw-threaded portions engage in correspondingly screw-threaded openings in the clamping-jaws, so that when the cross-bars are brought together as close as possible and the screw-rods turned to cause the jaws of each pair to approach one another the tool is clamped tightly between them. The tool may be set at the desired angle above the grinding-piece by means of set-screws 26, passing through the yokes and engaging the curved pieces 18.

The tool shown in the drawings is a pointer-die for a nail-machine, the grinding-piece having an angular edge; but, as I have before intimated, any kind of tool may be ground in my machine that is adapted thereto, the emery or other grinding pieces being shaped according to the shape to be produced on the tool.

The height of the tool-supporting frame is adjusted by the following mechanism: 27 represents a shaft journaled transversely in the bed 1, one end of which is provided with a hand-wheel 28 or the equivalent for turning it. On each side of the bed, near each end of the shaft 27, is a bevel gear-wheel 28^a, each of which meshes with a horizontal bevel gear-wheel 29 at the lower end of a vertical shaft 30, one being on each side of the bed. Near their lower ends these shafts 30 have bearing in ears 31, and above these ears 31 the shafts are screw-threaded and engage in screw-threaded openings in the ears 32, so that when these shafts 30 are turned through the medium of the horizontal shaft 27 the tool-supporting

me is raised and lowered to a height that
1 accommodate conveniently the tool or
other appliance sharpened or ground.

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

1. In a metal-grinding machine, the combi-
nation of a longitudinally-reciprocating table
or support for the grinding material, the ver-
10 tically-adjustable tool-supporting frame ex-
tending longitudinally of the table, and the
independently-adjustable clamping mechan-
ism on said frame adapted to be adjusted
vertically and longitudinally on said frame,
15 substantially as set forth.

2. In a metal-grinding machine, the combi-
nation of a reciprocating table or support for
the grinding material, a tool-supporting frame
having curved portions extending longitudi-
20 nally of the line of reciprocation of the table
and the tool-clamping mechanism adjustable
on said curved portions, substantially as set
forth.

3. In a metal grinding-machine, the combi-
25 nation of a reciprocating table or support for
the grinding material, a tool-supporting frame
having curved pieces or guides on each side
of said table, and a clamping mechanism for
the tool, having clamping-jaws between said
30 curved pieces or guides, and operating-rods
for said jaws passing transversely through
slots in said curved pieces, substantially as
set forth.

4. In a metal-grinding machine, the herein-
35 described clamping mechanism for the tool
to be ground, having two opposite pairs of
clamping-jaws, cross-bars on which each pair
is fitted, and operating-rods having right and
left screw-threads working in corresponding
40 openings in the jaws, and a support, said
mechanism being adjustable on said support,
as set forth.

5. In a metal-grinding machine, the herein-
described clamping mechanism for the tool
45 to be ground having paired jaws, cross-bars

on which said jaws are movable, rods having
right and left screw-threads working in cor-
responding openings in the jaws, and operat-
ing-knobs for said rods, and adjustable means
for supporting said cross-bars, substantially 50
as set forth.

6. In a metal-grinding machine, in combi-
nation with supporting-pieces, the herein-de-
scribed clamping mechanism consisting of
jaws, cross-bars on which the jaws slide, yokes 55
at the ends of said cross-bars fitted on said
supporting-pieces, and operating-rods having
right and left screw-threads working in cor-
responding openings in the jaws, substan-
tially as set forth. 60

7. In a metal-grinding machine, the combi-
nation of a tool-supporting frame, dovetailed
standards by which said frame is guided at
each side, and mechanism for raising and
lowering said frame, substantially as set forth. 65

8. In a metal-grinding machine, the combi-
nation of the bed, standards thereon, a tool-
supporting frame guided on said standards,
and mechanism for raising and lowering said
frame, consisting of a rotary shaft having a 70
turning device, bevel gear-wheels on said
shaft, vertical shafts having bevel gear-wheels
at their lower ends meshing with aforesaid
gear-wheels, ears projecting from the bed in
which the vertical shafts are journaled, and 75
ears projecting from the supporting-frame,
having screw-threaded openings for the re-
ception of screw-threaded portions of the ver-
tical shafts, substantially as set forth.

9. In a metal-grinding machine, the combi- 80
nation of the bed, parallel guideways there-
on, cross-heads sliding in said ways, a beam
connecting said cross-heads at their mid-
lengths, having a table for holding the grind-
ing material, and mechanism for reciprocating 85
the latter, substantially as set forth.

JOHN B. HASTINGS.

Witnesses:

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R. H. JONES.