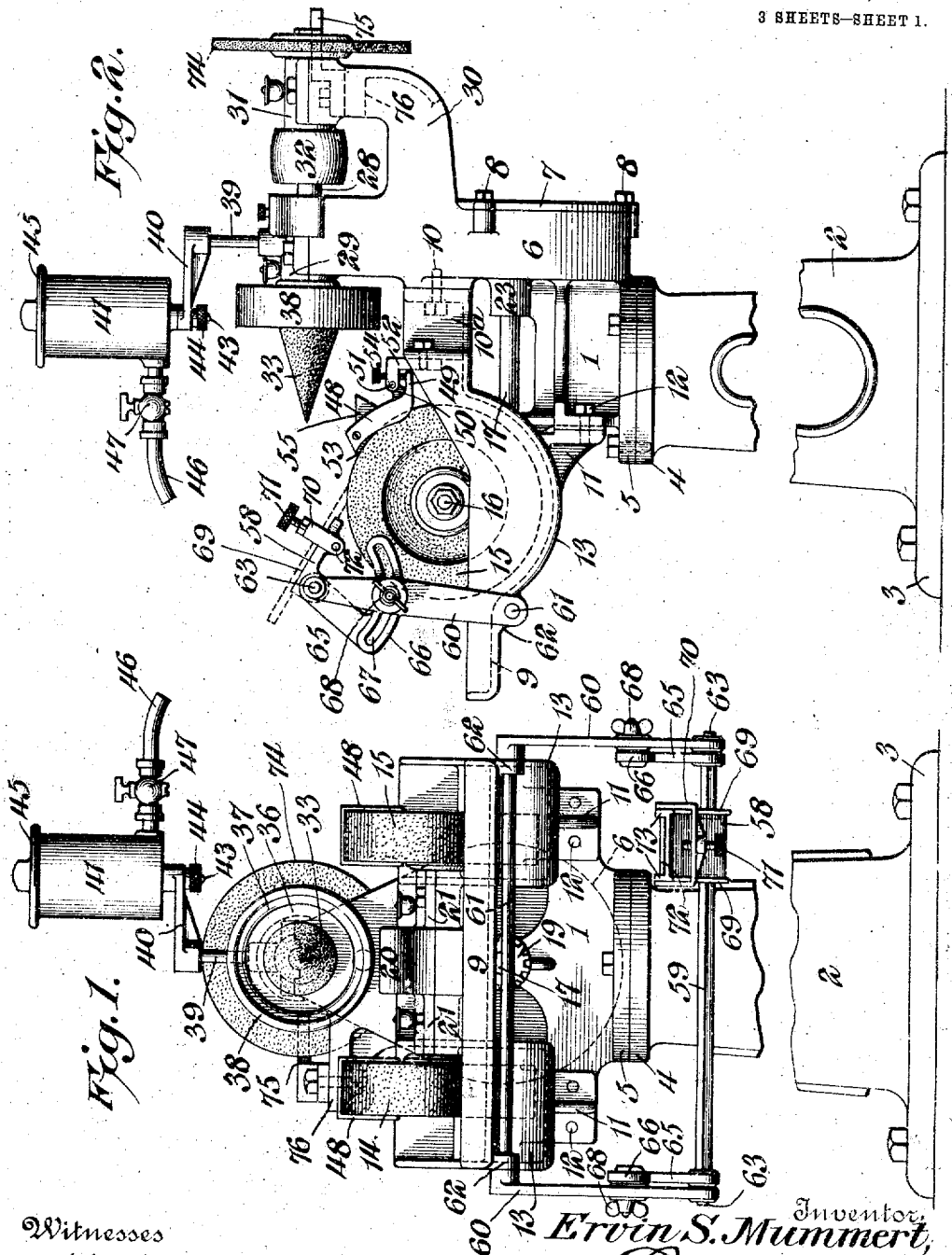


E. S. MUMMERT.
GRINDING MACHINE FOR SHARPENING EDGED TOOLS.
APPLICATION FILED OCT. 16, 1908.

987,589.

Patented Mar. 21, 1911.

3 SHEETS—SHEET 1.



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3 SHEETS—SHEET 2.



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3 SHEETS—SHEET 3.

Fig. 6.

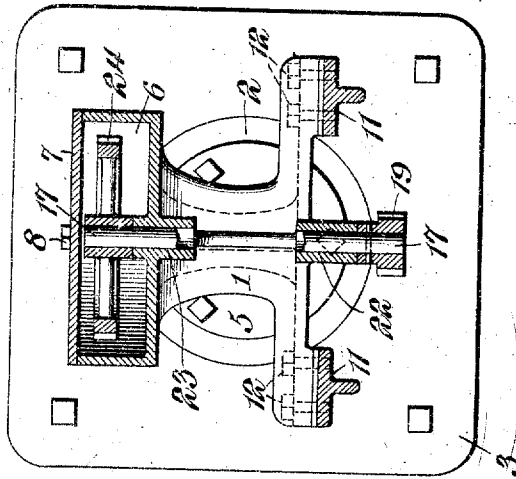


Fig. 7.

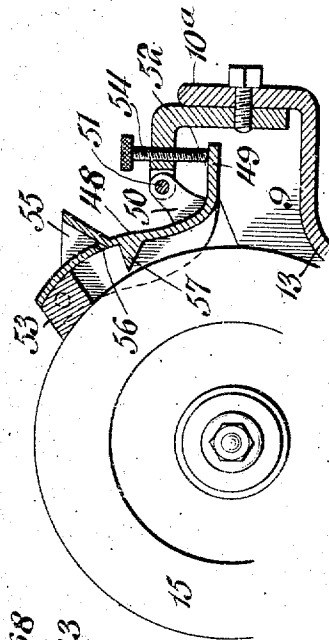
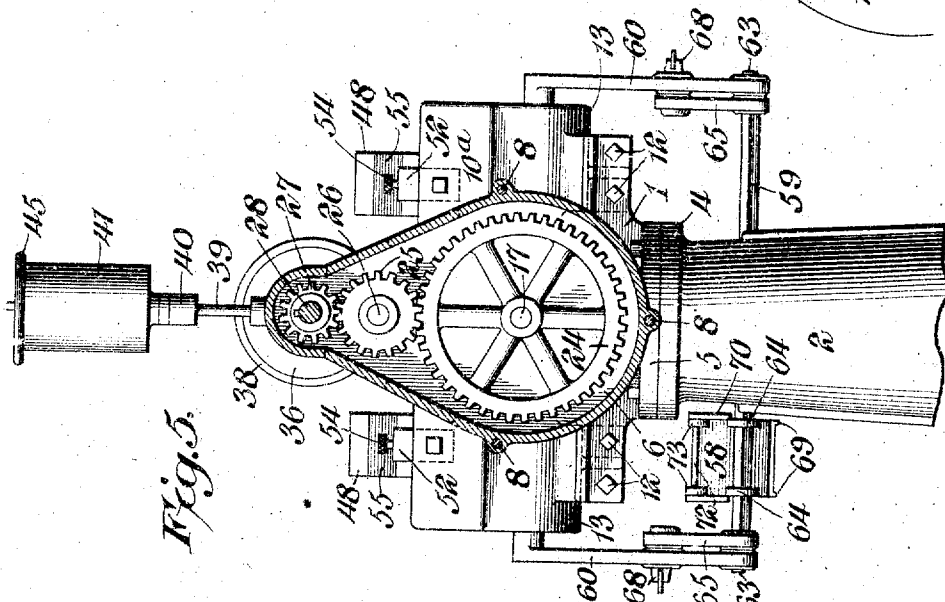


Fig. 5.



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UNITED STATES PATENT OFFICE.

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GRINDING-MACHINE FOR SHARPENING EDGED TOOLS.

987,589.

Specification of Letters Patent.

Patented Mar. 21, 1911.

Application filed October 16, 1908. Serial No. 458,121.

To all whom it may concern:

Be it known that I, ERVIN S. MUMMERT, a citizen of the United States, residing at Hanover, in the county of York and State of Pennsylvania, have invented a new and useful Grinding-Machine for Sharpening Edged Tools, &c., of which the following is a specification.

The invention relates to improvements in grinding machines for sharpening tools, etc.

The object of the present invention is to improve the construction of grinding machines, and to provide a simple, efficient and comparatively inexpensive grinding machine for sharpening all kinds of edged tools, such as are used in pattern shops, planing mills, furniture factories, vehicle works, and all kinds of wood working shops.

A further object of the invention is to provide a grinding machine of this character, having coarse and fine grinding wheels and equipped with an adjustable tool holder, adapted to enable a flat tool, such as a plane bit or chisel to be held in the proper position to impart to the tool the desired bevel, and capable of enabling the tool to be readily transferred from one grinding wheel to the other and of permitting the operator to exert the necessary pressure on the tool for securing the desired abrading action.

Another object of the invention is to equip the machine with a narrow grinding wheel for gumming saws, a grinding cone for sharpening wood working gouges, and to provide compactly arranged gearing for simultaneously actuating the stropping and grinding devices and to arrange the driving belt at the back of the machine so as to be out of the way.

The invention also has for its object to provide means for moistening the grinding wheels to keep them clean and sharp, and at the same time prevent a tool from heating, and to also equip the machine with a device adapted to remove the surplus moistening liquid from the wheels and to keep the liquid from splashing in the face of the operator, and capable also of preventing the wheels from glazing.

With these and other objects in view, the invention consists in the construction and novel combination of parts hereinafter fully described, illustrated in the accompanying

drawings, and pointed out in the claims hereto appended; it being understood that various changes in the form, proportion, size and minor details of construction, within the scope of the claims, may be resorted to without departing from the spirit or sacrificing any of the advantages of the invention.

In the drawings:—Figure 1 is a front elevation of a grinding machine, constructed in accordance with this invention. Fig. 2 is a side elevation of the same. Fig. 3 is a plan view. Fig. 4 is a central vertical sectional view. Fig. 5 is a transverse sectional view, taken substantially on the line 5—5 of Fig. 4. Fig. 6 is a horizontal sectional view, taken substantially on the line 6—6 of Fig. 4. Fig. 7 is an enlarged detail sectional view, illustrating the construction of the guard.

Like numerals of reference designate corresponding parts in all the figures of the drawings.

The frame of the machine comprises in its construction a main casting 1, forming a support and mounted upon a pedestal or column 2 having an enlarged base 3, which is bolted or otherwise secured to the floor, or other supporting surface. The column, which is hollow, consists of a casting and is provided with a flat circular top 4 to which the casting or support 1 is secured. The casting or support, which has a flat circular bottom 5 to fit the top of the column, is provided at the back with a vertical gear case 6, extending above the front portion of the casting or support 1 and having a removable back plate 7, secured to its place by screws 8, or other suitable fastening devices. The front portion of the casting or support 1 receives a pan 9, secured at the rear wall to the gear case by screws 10, or other suitable fastening devices and provided at an intermediate point between its front and rear walls with oppositely disposed depending attaching arms 11, which are fastened by screws 12 to the front of the casting or support 1. The rear attached portion 10^a is located above the plane of the front portion of the pan, as clearly illustrated in Fig. 4 of the drawings, the said rear portion 10^a being extended upwardly and rearwardly, as shown in Fig. 2.

The pan, which is preferably in the form of a casting, is provided at opposite sides with depending segmental troughs or depressions 13, receiving coarse and fine grinding wheels 14 and 15, mounted on a transverse shaft 16, which is journaled in suitable bearings at the inner sides of the troughs or depressions 13 of the pan. One of the grinding stones is comparatively coarse grained and is adapted for fast grinding or quickly roughing down, and the other has a very fine grain and puts on a smooth keen edge. Motion is communicated to the transverse shaft 16 from a lower longitudinal shaft 17 by means of gears 18 and 19, having intermeshing spiral ribs or teeth at their peripheries. The gear 18 is mounted on the transverse shaft at the center thereof, and the pan is provided with an opening for the said gear 18 and is equipped with a removable substantially semi-cylindrical cap 20, having laterally extending bearing coverings or sections 21, secured over the opposite bearings of the pan and detachably mounting the cap 20 thereon. The fastening means for securing the lateral extensions of the cap to the pan retain the transverse shaft in its bearings.

The lower longitudinal shaft is journaled in front and rear bearings 22 and 23 of the casting or support 1, and its front end receives the spiral gear 19, while its rear end extends into the gear case 6 and has mounted on it a vertical gear wheel 24. The vertical gear wheel 24 meshes with an intermediate pinion 25, mounted on a stub shaft 26 and located between the gear wheel 24 and an upper pinion 27 of a longitudinal shaft or spindle 28. The vertical sets of gears extending from the upper shaft or spindle 28 to the lower longitudinal shaft 17 are located at an intermediate point between the ends of the said upper shaft or spindle, and they are continuously lubricated by the gear wheel 24, which is designed to travel in a quantity of oil at the bottom of the gear case, the lubricant being carried upward by the gear wheel 24 to the intermediate pinion, which in turn lubricates the upper pinion.

The front portion of the upper longitudinal shaft or spindle is journaled in a suitable bearing 29 at the top portion of the gear case, and the rear portion of the said shaft or spindle 28 is supported by a pair of substantially L-shaped arms 30, extending rearwardly from opposite sides of the gear case and having their upwardly extending portions arranged at an inclination and united at their upper ends and provided with a bearing 31. The bearings of the transverse shaft and the longitudinal shaft or spindle are preferably lined with suitable metal to reduce the friction to a minimum and are equipped with oil cups. The power is applied to the machine through a pulley 32,

mounted on the upper shaft or spindle and located between the gear case and the upwardly extending portions of the arms. This arranges the belt out of the way and removes it from the front of the machine. 76

The upper longitudinal shaft is equipped at its front end with a horizontal grinding cone 33, provided with a threaded socket 34, arranged on a reduced threaded portion 35 of the shaft or spindle. The grinding cone 75 is designed for sharpening wood working gouges, having inner beveled cutting edges, and it is located centrally of the machine in rear of the transverse shaft opposite the space between the grinding wheels 14 and 15. The grinding cone is also located above the plane of the grinding wheels 14 and 15 and is arranged in convenient reach from the front of the machine. The front end of the shaft or spindle 28 also carries a stopping wheel 36, arranged concentric with the grinding cone at the inner end or base thereof, and provided at its periphery with a forwardly or outwardly projecting annular flange 37, arranged to receive a rim 38 90 of leather, or other suitable stopping material. The leather rim is extended beyond the flange to provide a flexible front or outer portion 38, adapted for stopping the beveled inner edges of the gouges. The solidly 85 supported inner portion of the leather periphery is adapted for stopping straight or flat tools, such as chisels, plane bits, etc.

The gear case is provided at the top with a centrally arranged upwardly extending 100 vertical pivot 39, supporting a horizontally swinging arm 40 upon which is mounted a reservoir or receptacle 41. The reservoir or receptacle 41 is provided with a depending pivot 42, piercing the outer end of the 105 arm and having a lower threaded portion 43 for the reception of a thumb nut 44, which is adapted to clamp the reservoir or receptacle in its adjustment relative to the arm. The reservoir or receptacle, which is 110 preferably equipped with a removable cover 45, is provided with a projecting discharge tube 46, having a suitable cock or valve 47 for controlling the flow of the contents of the reservoir or receptacle. The reservoir or 115 receptacle is capable of rotary movement on the outer end of the arm 40, and it is secured in its adjustment by the thumb nut 44. The arm 40 is adapted to swing horizontally to either side of the machine to permit the dis- 120 charge tube to be positioned for moistening either grinding wheel. When the horizontal arm is swung to either side of the machine, the reservoir may be turned to bring the discharge tube to the front to moisten the 125 grinding wheels, or to arrange the discharge tube at the side out of the way, as illustrated in Fig. 1 of the drawings. The reservoir or receptacle is designed to be supplied with kerosene oil, which moistens the grinding 130

wheels, keeping the same clean and sharp and also preventing a tool from heating, and the grinding wheel from glazing.

The kerosene oil supplied to the grinding wheels for moistening the same accumulates in the troughs or depressions 13 of the pan. In order to prevent the liquid from splashing into the face of the operator, the grinding machine is equipped at the back of each of the grinding wheels with a guard 48, consisting of side walls or flanges and a connecting back portion or wall curved longitudinally and provided at its lower ends with a rearwardly extending projection or arm 49. The guard is also provided at its lower end with an inclined rearwardly projecting lug or ear 50, perforated to receive a pivot 51 and secured by the same to a substantially L-shaped bracket 52. The L-shaped bracket has one of its arms or portions arranged vertically and secured to the inner face of the rear wall of the pan, and the other arm, which is disposed horizontally, extends forwardly and is bifurcated to receive the ear 50. This forms a hinge connection between the guard and the bracket, the former being adjustable to position a block 53 of wood, or other suitable material properly with relation to the grinding wheel. The block 53, which is fastened between the sides or flanges of the guard at the top thereof, bears against the periphery of the grinding wheel and is adapted to scrape off the surplus oil, leaving enough to keep the surface moist. The guard is secured in its adjustment by means of a vertical screw 54, mounted in a threaded perforation of the horizontal arm of the bracket 52 and provided at its upper end with a head and having its lower end engaging the upper face of the lug or arm 49. The screw is adapted to be adjusted to permit the block to rest properly on the periphery of the grinding wheel, and it enables the block to be moved toward the grinding wheel as the parts become worn. The guard is also provided at its upper portion with an exterior recess or cup 55, adapted to receive the kerosene from the moistening device, and arranged to feed the same to the grinding wheel. This recess or cup, which tapers downwardly, is formed by tapering side walls and an inclined rear wall, as clearly illustrated in Fig. 7 of the drawings. The back of the guard is provided at the bottom of the recess or cup with one or more perforations 56, and it has an interiorly arranged lug 57, located beneath the perforation and presenting an inclined upper face, adapted to direct the contents of the cup or recess onto the grinding wheel for moistening the same. In arranging the moistening device, the horizontal arm is first swung to the side of the grinding wheel to be moistened, as illustrated in Fig. 3 of

the drawings, and then the receptacle is partially rotated to swing the discharge tube through an arc indicated by the dotted line 57, which carries the discharge end of the tube 46 to a point directly above the cup or recess of the guard of the right hand grinding wheel. When it is desired to moisten the other grinding wheel, the horizontal arm is partially rotated to swing the moistening device to the opposite side of the machine, and the receptacle or reservoir is turned to carry the discharge tube over the cup or recess. The flow of oil into the cup or recess 55 is controlled by the cock or valve 47 of the moistening device, so that the desired quantity of oil will be fed to the grinding wheels. The lug 57, which is formed integral with the guard, extends from the rear wall to a point adjacent to the periphery of the grinding wheel.

The machine is equipped with a tool holder comprising a tool holding plate or member 58, slidably mounted on a transverse rod 59, which is carried by a pair of links or bars 60, arranged substantially in an upright position, when the tool holder is in position for use, and pivoted at their lower ends to the pan by means of a transverse pintle rod 61. The pintle rod passes through depending ears 62 of the pan and is suitably secured to the lower ends of the links or bars 60. The rod 59, which is squared, as clearly shown in Fig. 4 of the drawings, is provided at its ends with journals or pivots 63, which are arranged in suitable bearings of the links 60, and the said rod is adjustable to change the position of the tool holding plate or member with relation to the links. The tool holding plate or member is provided with ears or flanges 64, having rectangular openings conforming to the configuration of the rod 59 and slidably moving the said plate or member 58 on the rod 59. The tool holding plate or member is adapted to be moved along the rod to arrange it over either of the grinding wheels, and the rod is secured in its adjustment by means of the arms 65, connected with the rod near the ends thereof and provided with arcuate portions or extensions 66, having slots 67 for the reception of clamping screws 68. The clamping screws 68, which pierce the links, extend through the slots of the arcuate portions 66 and are equipped at their outer ends with thumb nuts, adapted to be rotated to clamp and release the said arcuate portions 66. By this construction the tool holding plate or member may be set at any angle with relation to the links, which are freely movable toward and from the grinding wheels to permit the desired pressure to be exerted by the operator on the tool.

The tool holding plate, which is provided at opposite sides with guide flanges 69, is

equipped with a pivoted yoke 70, composed of two sides and a transverse connecting portion and carrying a set screw 71. The sides of the yoke are pivoted by a transverse pin 72 to ears 73, depending from the tool holding plate or member and arranged near the front end thereof. The yoke is adapted to swing backwardly and forwardly to enable it to clamp tools of different shapes, and the clamping screw, which engages the tool, is mounted in a threaded perforation of the top engaging portion of the yoke, as clearly shown in Fig. 4. When the tool holder is not in use, it is swung downward out of the way and is adapted to hang beneath the pan, as illustrated in Fig. 1 of the drawings.

The rear end of the spindle is equipped with a thin or narrow grinding wheel 74, designed for gumming saws, grinding mold bits and various other operations. A substantially L-shaped tool rest 75 is mounted upon an extension 76 of one of the arms 30 of the frame of the machine. The tool rest, which is horizontal, extends across one edge of the rear grinding wheel and radially of the rear or outer face of the same.

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

1. A grinding machine including a pan having spaced troughs or depressions and provided between the same with an aperture, a shaft journaled between the troughs or depressions and extending across the aperture, grinding wheels mounted on the shaft and located at the said troughs or depressions, means for rotating the shaft, said means including a gear mounted on the shaft at the said aperture, and a cap arranged over the aperture and supported upon the walls of the pan and covering the gear.

2. A grinding machine including a pan having spaced troughs or depressions and provided at an intermediate point with an aperture, said pan being also provided between the aperture and the troughs or depressions with bearings, a shaft journaled in the spaced bearings, grinding wheels mounted on the shaft and operating in the troughs or depressions, means for rotating the shaft including a gear located at the said aperture, and a substantially semi-cylindrical cap covering the aperture and receiving the gear and provided with opposite extensions forming covers for the said spaced bearings.

3. A grinding machine including a front transverse shaft; spaced grinding wheels mounted thereon, an upper longitudinal spindle arranged above and in rear of the transverse shaft, a grinding device carried by the front end of the spindle, and means for communicating motion from the spindle to the transverse shaft, said means includ-

ing a set of gears connected with the spindle at a point intermediate of the ends of the same.

4. A grinding machine including a front transverse shaft, spaced grinding wheels 70 mounted thereon, an upper longitudinal spindle located above and in rear of the said shaft, a grinding device carried by the spindle, a lower longitudinal shaft extending rearwardly from the transverse shaft, gearing connecting the front end of the longitudinal shaft with the transverse shaft, and a set of gears connecting the rear end of the longitudinal shaft with the spindle at a point between the ends thereof.

5. A grinding machine including a pan, a transverse shaft extending across the pan, spaced grinding wheels mounted on the transverse shaft, an upper longitudinal spindle located above and in rear of the spaces separating the grinding wheels, a grinding device carried by the spindle, a lower longitudinal shaft mounted below the pan, gearing connecting the longitudinal shaft with the transverse shaft, and other gearing connecting the longitudinal shaft with the spindle.

6. A grinding machine including a support provided at the back with a vertical gear case extending above the front portion of the support, a pan mounted on the support and extending in advance of the same, a transverse shaft journaled in the pan, spaced grinding wheels mounted on the transverse shaft and operating within the pan, an upper longitudinal spindle extending in advance and in rear of the gear case and provided at its front end with a grinding device, a lower longitudinal shaft mounted on the support below the pan, gearing for connecting the front end of the longitudinal shaft with the transverse shaft, and a set of gears arranged within the gear case for communicating motion from the spindle to the lower longitudinal shaft.

7. A grinding machine including a support provided at the back with a gear case extended vertically above the front portion of the support and having rearwardly extending approximately L-shaped arms, a pan mounted on the support and extending in advance of the same, a front shaft arranged transversely of the pan, grinding wheels mounted on the transverse shaft and operating within the pan, a longitudinal spindle supported by the gear case and the said arms and provided at its front end with a rotary device, a lower longitudinal shaft located beneath the pan, gearing connecting the said shafts, and a set of gears arranged within the gear case and extending within the spindle to the longitudinal shaft.

8. A grinding machine including a support provided at the back with a gear case extended vertically, a pan secured at the

back to the gear case and provided with depending attaching arms mounted on the front portion of the support, a front shaft extending transversely of the pan and mounted within the same and having grinding means operating with the said pan, and means for rotating the shaft including a set of gears arranged within the said gear case.

9. A grinding machine including a column provided with a base, a support secured upon the upper end of the column and provided at the back with a gear case extended above the front portion of the support, a pan mounted on the support and projecting in advance of the same, a front shaft extending transversely of the pan, grinding wheels mounted on the front shaft, a longitudinal spindle located above and in rear of the front shaft and extending through the gear case, grinding devices mounted on the spindle at the ends thereof, means for communicating motion from the spindle to the front shaft, said means including a set of gears arranged within the gear case, and means located in rear of the gear case for rotating the spindle.

10. A grinding machine including spaced grinding wheels, a horizontally swinging supporting arm located above and in rear of the grinding wheels, and a pivoted reservoir mounted on the arm and provided with an outlet adapted to be arranged above either of the grinding wheels.

11. A grinding machine including spaced grinding wheels, guards adjustably mounted at the back of the grinding wheels and having cups and provided with means for discharging the contents of the cups upon the grinding wheels, and a reservoir having an outlet and adjustable to arrange the outlet over either of the said cups.

12. A grinding machine including a pan having troughs or depressions, spaced grinding wheels operating in the troughs or depressions, guards located at the back of the grinding wheels and provided with cups having discharge openings for moistening the grinding wheels, and a reservoir provided with an outlet and adjustable to arrange the outlet over either of the said cups.

13. A grinding machine including a grinding wheel, a hinged guard arranged at the back of the grinding wheel and provided with an interior scraping device for removing superfluous moisture from the grinding wheel.

14. A grinding machine including a grinding wheel, a guard pivoted at a point intermediate of its ends at the back of the grinding wheel and provided with a scraping device for removing the superfluous moisture from the grinding wheel, and means engaging the guard at one side of the pivot for adjusting the scraping device

inwardly and outwardly to cause the same to bear against the grinding wheel.

15. A grinding machine including a grinding wheel, a pivotally mounted guard composed of spaced sides and a connecting wall, and a scraping device mounted between the sides of the guard and having its engaging portion located between the said sides and arranged to engage the grinding wheel for removing the superfluous moisture.

16. A grinding machine including a grinding wheel, a pivotally mounted guard composed of spaced sides and a connecting wall curved longitudinally, and a block secured between the sides at one end of the guard and having its engaging portion located between the said sides and arranged to bear against the grinding wheel, said guard being adjustable on its pivot to move the block inwardly as the same becomes worn.

17. A grinding machine including a grinding wheel, and a pivotally mounted guard provided with a scraping device located within the guard and arranged to engage the wheel and having adjusting means for moving the scraping device inwardly and outwardly as the parts become worn.

18. A grinding machine including a grinding wheel, a guard pivotally mounted at an intermediate point and provided at one side of the pivot with interiorly arranged scraping means for engaging the grinding wheel, and an adjusting device engaging the guard at the opposite side of the pivot.

19. A grinding machine including a grinding wheel, a guard located at the back of the wheel and composed of spaced sides, and a connecting back portion, the latter being provided at the bottom with a rearwardly extending arm, a lug extending upwardly from the guard at the inner end of the arm, a bracket pivotally receiving the lug, and a screw mounted on the bracket and engaging the arm.

20. A grinding machine including a grinding wheel, and a guard having spaced sides and provided with an exterior cup, said guard being also provided with interiorly arranged means for directing the contents of the cup upon the grinding wheel.

21. A grinding machine including a grinding wheel, and a guard having spaced sides and provided with an exterior cup, said guard being provided with an interiorly arranged lug located below the cup in position for directing the contents thereof upon the grinding wheel.

22. A grinding machine including a grinding wheel, pivoted links movable freely toward and from the wheel, a rod carried by the links, a tool holder slidable along the rod, and means for adjustably securing the rod to the links.

23. A grinding machine including a grind-

ing wheel, pivoted links movable freely toward and from the wheel, a rod carried by the links, a tool holder slidable along the rod, an arm rigid with the rod and having an arcuate slot, and means operating in the slot for securing the arm to the adjacent link.

24. A grinding machine including a grinding wheel, pivoted links, a rod carried by and pivotally connected with the links, a tool holder slidable on the rod, an arm rigid with the rod and having an arcuate extension arranged across the adjacent links, and means for adjustably securing the extension to the links.

25. A grinding machine including a grinding wheel, pivoted links, a rod carried by and pivotally connected with the links and provided with a polygonal portion, a tool holder slidable along the polygonal portion of the rod and held against rotary movement thereon, and adjusting means for securing the rod in fixed relation with the links.

26. A grinding machine including a grinding wheel, pivoted links, a rod connecting the links, and a tool holder slidable on the rod and provided with a pivoted yoke having clamping means.

27. A grinding machine including a grinding wheel, pivotally mounted links freely movable toward and from the grinding wheel and arranged to swing below the same, a pivotally mounted rod carried by the links, a tool holder slidably interlocked with the rod and movable along the same, and means for adjustably securing the rod to the links to maintain the tool holder in fixed relation with the links without affecting the sliding movement of the former.

In testimony that I claim the foregoing as my own, I have hereto affixed my signature in the presence of two witnesses.

ERVIN S. MUMMERT.

Witnesses:

JULIUS W. FISCHER,
PAUL E. LAU.