

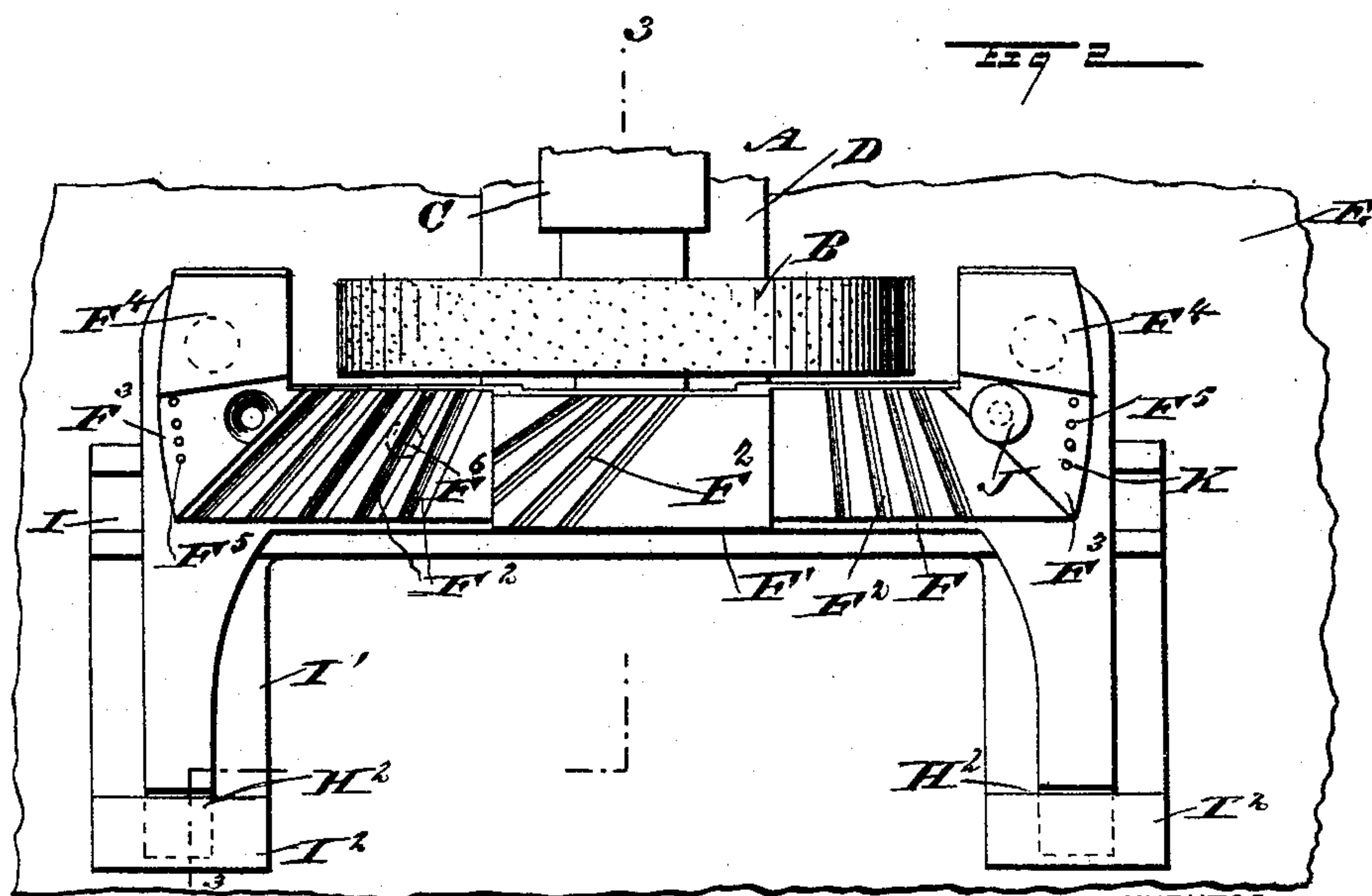
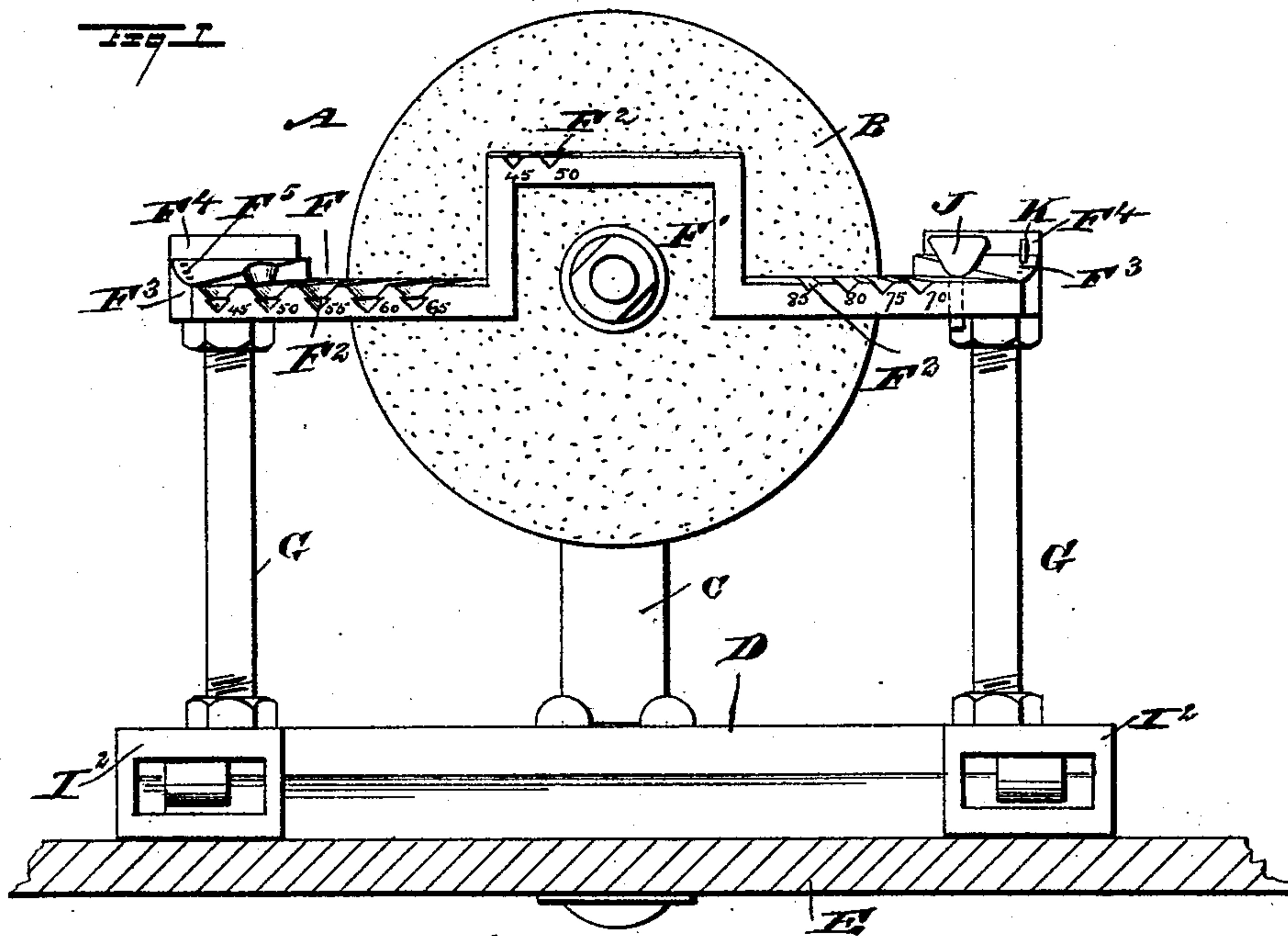
(No Model.)

2 Sheets—Sheet 1.

D. L. BROWN.
TOOL REST FOR GRINDING MACHINES.

No. 483,042.

Patented Sept. 20, 1892.



WITNESSES:

W. Walker
C. Sedgwick

INVENTOR

D. L. Brown
BY Munn & Co
ATTORNEYS.

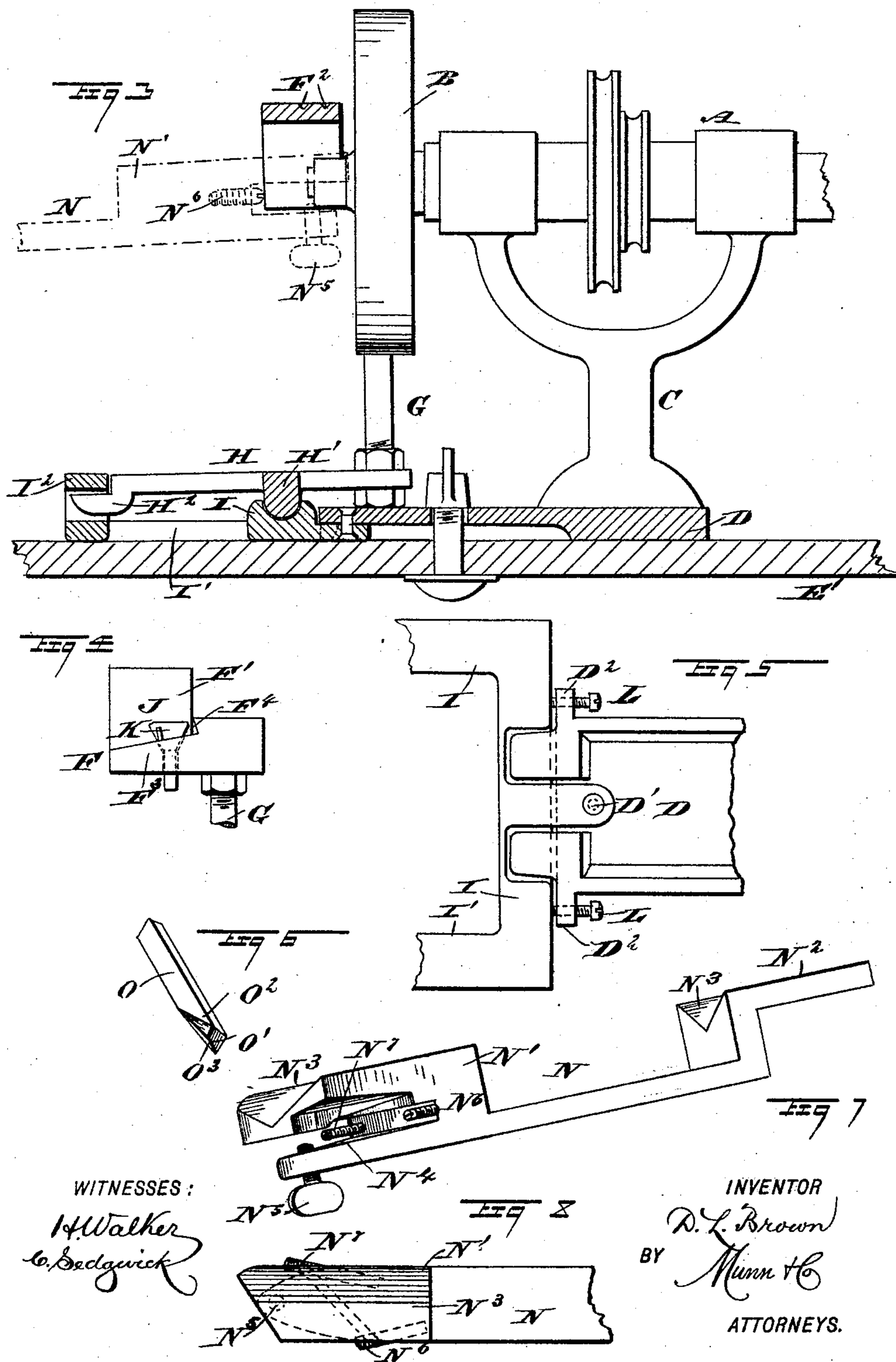
(No Model.)

2 Sheets—Sheet 2.

D. L. BROWN.
TOOL REST FOR GRINDING MACHINES.

No. 483,042.

Patented Sept. 20, 1892.



WITNESSES:
H. Walker
C. Sadgwick

INVENTOR
D. L. Brown
BY Munn & Co
ATTORNEYS.

UNITED STATES PATENT OFFICE.

DARWIN L. BROWN, OF DETROIT CITY, MINNESOTA.

TOOL-REST FOR GRINDING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 483,042, dated September 20, 1892.

Application filed May 4, 1892. Serial No. 431,786. (No model.)

To all whom it may concern:

Be it known that I, DARWIN L. BROWN, of Detroit City, in the county of Becker and State of Minnesota, have invented a new and Improved Tool-Rest for Grinding-Machines, of which the following is a full, clear, and exact description.

The object of the invention is to provide a new and improved tool-rest more especially designed for use on grinding-machines, and which is simple and durable in construction and arranged for conveniently and accurately grinding tools such as are used by engravers, carvers, watchmakers, &c.

The invention consists of a bar adapted to extend across the face of the grinding-wheel and formed with shoulders and grooves extending at angles to the face of the grinding-wheel.

The invention also consists of certain parts and details and combinations of the same, as will be hereinafter described, and pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a front elevation of the improvement as applied. Fig. 2 is a plan view of the same. Fig. 3 is a sectional side elevation of the same on the line 3 3 of Fig. 2. Fig. 4 is an end view of the bar. Fig. 5 is an inverted plan view of a modified form of guide. Fig. 6 is a perspective view of the tool. Fig. 7 is a perspective view of a modified form of rest, and Fig. 8 is a plan view of the same.

The improved tool-rest is applied to a grinding-machine A of any approved construction and provided with the usual grinding-wheel B, of emery or other suitable material. The grinding-wheel B is journaled in suitable bearings C, supported on a base D, adapted to be fastened in any convenient manner to a table or other support E.

The tool-rest proper consists of a bar F, extending across the front face of the wheel B, the said bar being supported at its ends on posts G, erected on a frame H, formed on its underside with a transversely-extending slide H', preferably made semicircular and fitted to slide in guideways I, held on the table E and connected with the base D either rigidly

by means of rivets or by a pivot D', as shown in Fig. 5, and hereinafter more fully described. The slide H' serves as a fulcrum to tilt the frame H, so that the rear bar F is moved toward or from the face of the grinding-wheel B.

In order to limit the tilting motion of the frame H and the bar F, the outer ends of the said frame are formed with lugs H², engaging keepers I², formed on rearwardly-extending arms I' of the guideway I. The keepers I² permit the lugs H² to slide transversely on shifting the said frame H, and at the same time the keepers limit the up-and-down swinging motion of the said lugs, thus regulating the tilting movement of the bar F toward and from the face of the grinding-wheel B. The bar F is formed at its middle with a U-shaped offset F', as plainly shown in Fig. 1, to permit the bar to readily pass over the projecting end of the spindle of the grinding-wheel B.

On the top of the bar F are formed channels or grooves F², extending at an angle to the face of the grinding-wheel B, the said angle varying according to the desired bevel intended to be given to the cutting end of the tool. The channels or grooves F² are usually made V-shaped and extend throughout the width of the bar F, so that the shank of the tool to be ground is firmly supported in the respective channel during the operation of grinding the end thereof on the face of the grinding-wheel B. The grooves or channels F² may be slightly undercut at the bottom, so as to permit irregular edges of the tool-shanks to pass into the under-cuts, so that the sides of the shank rest firmly on the sides of the V-shaped channels or grooves. As shown in Fig. 1, the angle of the various grooves or channels is marked on the front edge of the bar F to enable the operator to quickly select the proper groove.

It will be readily understood that the tool, resting with its shank in one of the channels or grooves F² and pressed with its end against the face of the grinding-wheel B, will have this end ground to a bevel corresponding to the angle formed by the face of the bevel of the respective groove. The grooves or channels F² are of varying sizes and depth to accommodate the various-sized tool-shanks. The various channels or grooves extend at differ-

ent angles to the face of the grinding-wheel B, so that any desired sharp or blunt bevel can be given to the end of the tool.

In order to grind the belly surface on the shank of the tool, the ends F^3 of the bar F are formed with shoulders F^4 , extending at an obtuse angle to the face of the wheel B, the said angle being about one hundred and seventy-five degrees. The top surface of each end F^3 is slightly inclined and the shoulder F^4 is slightly beveled, so as to firmly support the sides of the shank of the tool and also to accommodate larger or smaller shanks on the shoulders F^4 .

In order to hold the shank of the tool in place while resting on the shoulder F^4 at either end of the bar F, a pin J is provided, the head of which is made conical and adapted to engage the outside edge of the shank of the tool to hold the same in place against the shoulder. The pin J is inserted in a suitable aperture formed in each end F^3 of the bar F, as will be readily understood by reference to Fig. 2. In each end F^3 is also formed a series of apertures F^5 , adapted to be engaged by a pin K, against which the shank of the tool may be placed, instead of resting the said shank against the entire surface of the shoulder F^4 . This is necessary in case the operator desires to grind a belly surface on the shank of the tool of less than one hundred and seventy-five degrees.

As shown in Fig. 5, the guideway I can be adjusted relative to the base D so as to bring the bar F into the proper position relative to the face of the grinding-wheel B. For this purpose the connection between the guideway I and the base D is made by means of a pivot D' , as above described, and screws L are employed screwing in lugs projecting from the sides of the base D and engaging the outer edge of the guideway I as will be readily understood by reference to Fig. 5. Now by adjusting the screws L the proper angle can be given to the guideway I, so that the slide H' of the frame H is in the proper position to hold the plate F in alignment with the face of the grinding-wheel B. For very large tools, twist-drills, &c., I provide a resting-plate N, adapted to be secured to the plate F, for holding the plate N in proper position relative to the face of the grinding-wheel B. (See dotted lines in Fig. 3.) This auxiliary plate N is formed at its ends with two offsets N' and N^2 , each formed on top with a large V-shaped groove N^3 , the two grooves being in alignment with each other, as will be readily understood by reference to Fig. 7. The lug N' is undercut, as at N^4 , so as to form a forked end adapted to engage the plate F. A set-screw N^5 screws in the under side of one of the fork-arms and engages a dent or recess F^6 , formed in the under side of bar F to fasten the plate in place, at the same time permitting the plate to swing sufficiently for properly grinding the tool and to adjust it to the proper angle

relative to the face of the grinding-wheel B. In order to obtain this proper angle, set-screws N^6 and N^7 screw in the offset N' in the under-cut N^4 , the said set-screws abutting against the front edge of the bar F, (see Fig. 3,) so as to bring the V-shaped grooves N^3 into the proper position or angle relative to the face of the grinding-wheel. As shown in Fig. 3, the plate N inclines slightly downward, so as to give proper clearance for the cutting-edge of the tool supported in the V-shaped grooves N^3 . The set-screws N^6 and N^7 serve to limit the swing motion of the plate N, the latter assuming an angle of fifty-nine degrees when the set-screw N^6 abuts on the front edge of bar F. This angle of fifty-nine degrees is the one to which twist-drills, for instance, must be ground for the tool to do proper cutting, as is well understood in the art of grinding tools such as twist-drills.

The operation is as follows: When the several parts are in position as shown in Figs. 1, 2, and 3, the shank of the tool O to be ground is placed in one of the channels or grooves F^2 with the front end toward the face of the grinding-wheel B. When the end of the tool is in close proximity to the grinding-wheel, the operator slightly tilts the frame H, so that the bar F moves toward the grinding-wheel, whereby the end of the tool is brought in contact with the revolving grinding-wheel, so that the latter grinds the end of the tool and forms the desired bevel O' thereon. When this has been done, the operator then takes the tool and places it against the shoulder F^4 on one end of the plate F and then again tilts the frame H, as above described, so that the belly surface O^2 will be ground on the shank O by the latter coming in contact with the face of the grinding-wheel B. The operator then takes the tool and places it on the other shoulder F^4 on the opposite end of the plate F and repeats the same operation, so that the other belly surface O^3 is ground on the shank of the tool O, the two bevels of the belly surface corresponding, so that the tool is properly ground. For grinding additional sharper bevels on the belly surfaces the operator rests the tool against the pin K, which is set into the desired aperture F^5 in the row of apertures on each end F^3 of the plate F. The above operation is then repeated—that is, the frame H is tilted so as to tilt the plate F with the tool thereon toward the face of the grinding-wheel.

It will be seen that this entire tool-rest is very simple and durable in construction, can be readily applied to any grinding-machine, and is easily adjusted to hold the plate F in the proper position relative to the face of the grinding-wheel. The frame H and consequently the plate F are made to slide transversely, so that the entire face of the grinding-wheel B is utilized when grinding the tools, and is consequently uniformly operated, thus preventing unevenness on the face of the grinding-wheel.

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

1. A tool-rest provided with a bar adapted to extend across the face of the grinding-wheel and formed at each end with a shoulder for resting the shank of the tool thereon while grinding a belly surface on the tool, substantially as shown and described.
2. A tool-rest provided with a bar adapted to extend across the face of the grinding-wheel and formed with grooves or channels for the reception of the tool-shanks, the said grooves or channels being arranged at angles to the face of the wheel, substantially as shown and described.
3. A tool-rest for grinding-machines, provided with a bar formed at the middle with an offset and provided on its top surface with channels or grooves for the reception of the tool-shanks, the said grooves or channels being arranged at angles to the face of the grinding-wheel, substantially as shown and described.
4. A tool-rest provided with a bar adapted to extend across the face of the grinding-wheel and formed at each end with a shoulder for resting the shank of the tool thereon while grinding a belly surface on the tool, and pins having conical heads adapted to be placed in the ends of the said plate opposite the said shoulders, substantially as shown and described.
5. A tool-rest for grinding-machines, provided with a bar adapted to extend across the face of the grinding-wheel and formed at its ends with rows of apertures and a pin adapted to engage the said apertures to form a rest for the shank of the tool, substantially as shown and described.
6. A tool-rest for grinding-machines, provided with a bar adapted to extend across the face of the grinding-wheel and formed at its ends with rows of apertures, a pin adapted to engage the said apertures to form a rest for the shank of the tool, and a second pin formed with a conical head adapted to be supported on the end of the bar, substantially as shown and described.
7. A tool-rest for grinding-machines, comprising a frame mounted to tilt and a bar supported on the said frame and extending across the face of the grinding-wheel, the said

bar being formed at each end with a shoulder and on its top surface with grooves or channels extending at angles to the face of the grinding-wheel, substantially as shown and described.

8. A tool-rest for grinding-machines, comprising a frame mounted to slide transversely and adapted to be tilted and a bar supported on the said frame and extending across the face of the grinding-wheel, the said bar being provided on its top surface with grooves or channels extending at angles to the face of the grinding-wheel, the ends of the said bar being formed with pins or shoulders on which are rested the shanks of the tools to be ground to belly surfaces, substantially as shown and described.

9. A tool-rest for grinding-machines, comprising a frame mounted to slide and to tilt, a guideway for the said frame and adapted to be adjusted relative to the grinding-machine, and a bar supported by the said frame and adapted to extend across the face of the grinding-wheel, the said bar having a series of rests for the shanks of the tools to be ground, substantially as shown and described.

10. A tool-rest for grinding-machines, comprising a bar and a tool-supporting plate having a forked end engaging the said bar and means for attaching the plate to the bar, but permitting a swinging motion of the plate, substantially as shown and described.

11. A tool-rest for grinding-machines, comprising a bar and a tool-supporting plate having a forked end engaging the said bar, means for attaching the plate to the bar, but permitting a swinging motion of the plate, and set-screws adapted to abut on the edge of the said plate to limit the swinging motion of the latter, substantially as shown and described.

12. A tool-rest for grinding-machines, comprising a plate provided with offsets having V-shaped grooves in alignment with each other, one end of the said plate being forked for engagement with a supporting-bar, a screw engaging a dent or recess in bar for holding the plate, and set-screws to limit the swinging motion of the plate, substantially as shown and described.

DARWIN L. BROWN.

Witnesses:

JOSEPH R. HOLTON,
ELBRIGE HASKINS.