

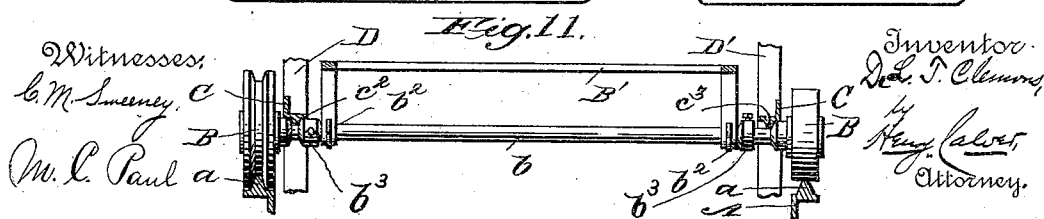
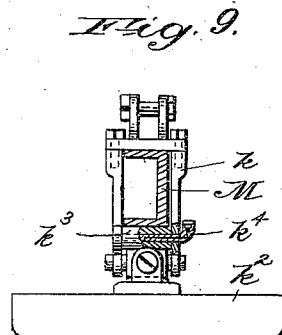
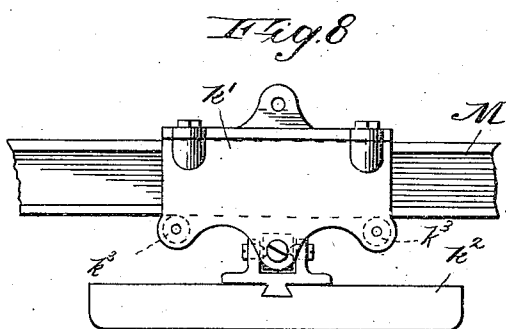
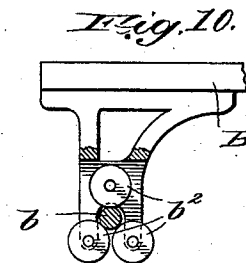
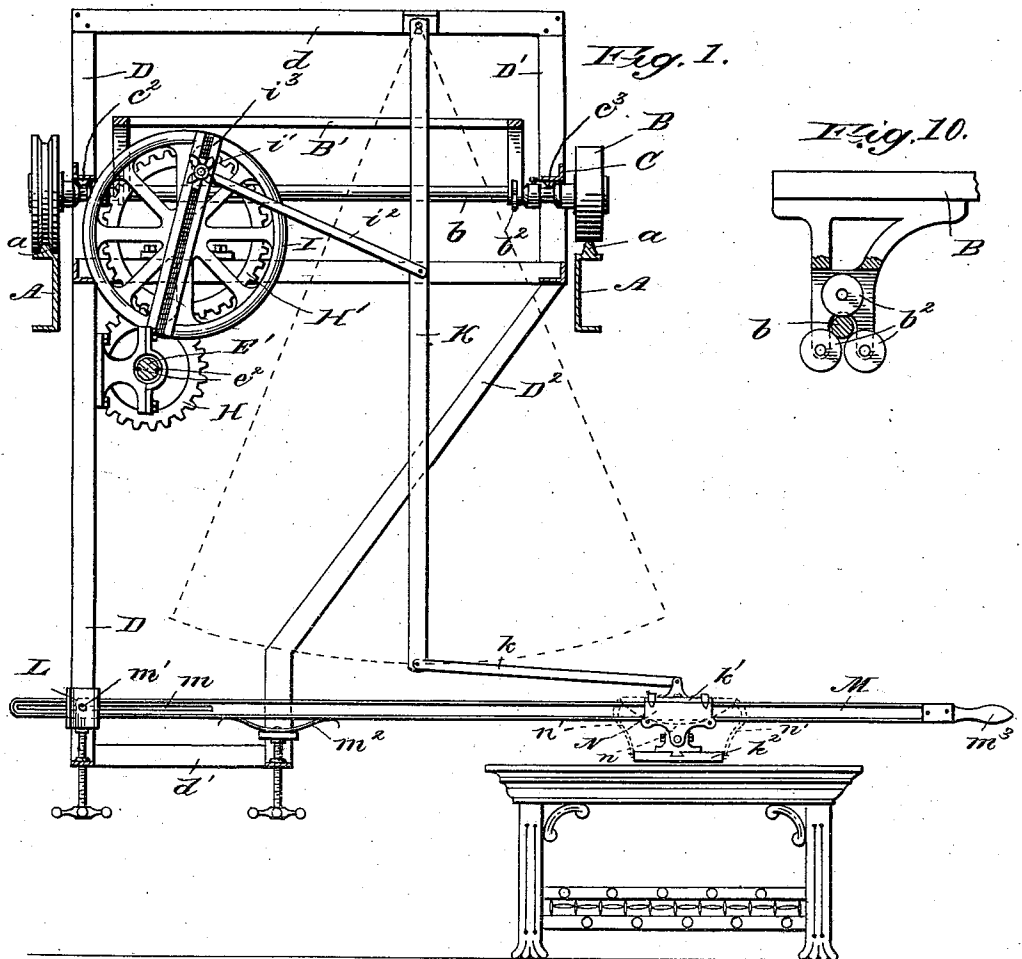
(No Model.)

3 Sheets—Sheet 1.

DE LASKI T. CLEMONS.
POLISHING MACHINE.

No. 549,490.

Patented Nov. 12, 1895.



Witnesses:
C. M. Sweeney, C
M. L. Paul a

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by Henry Calver
Attorney.

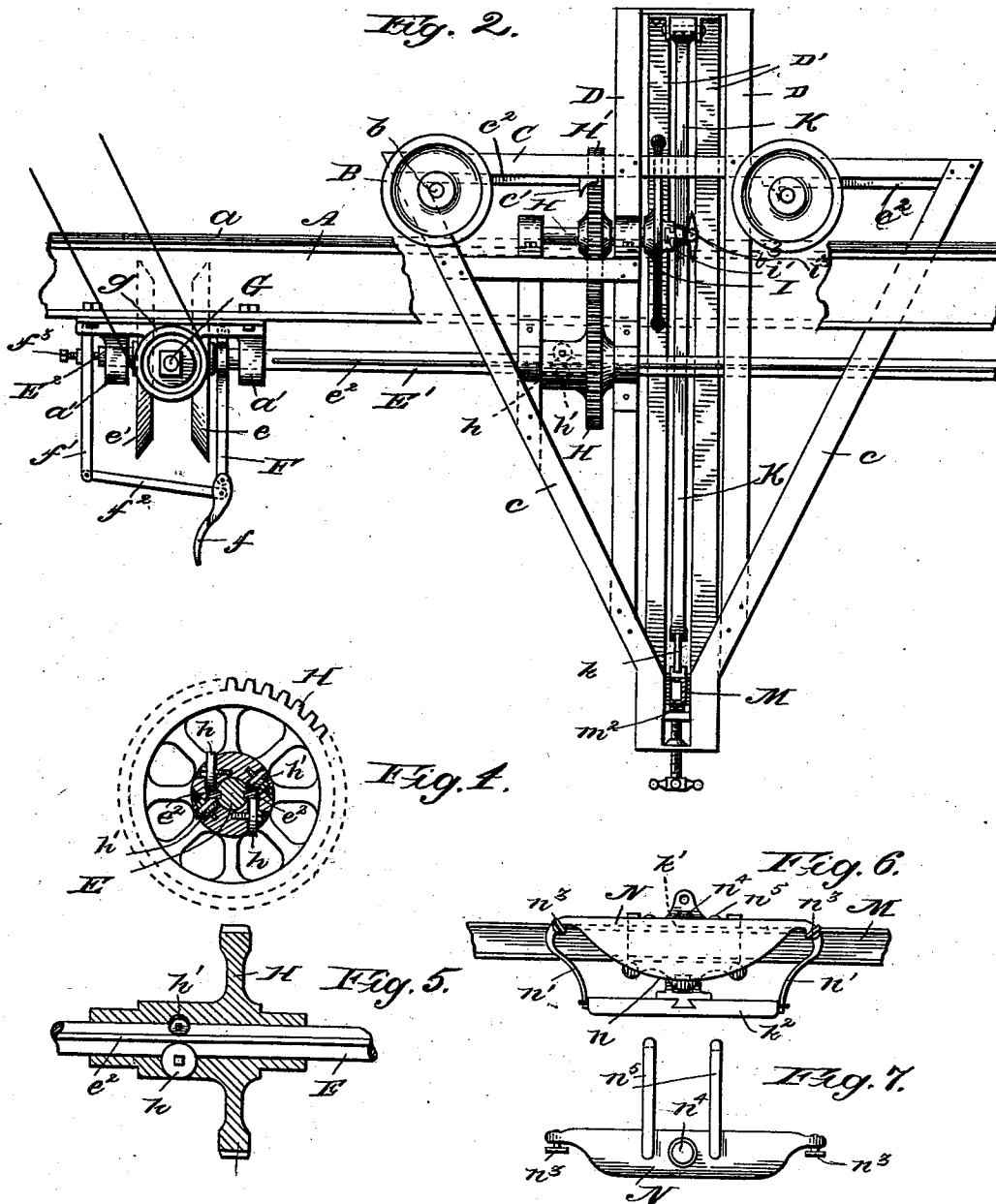
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M. C. Paul

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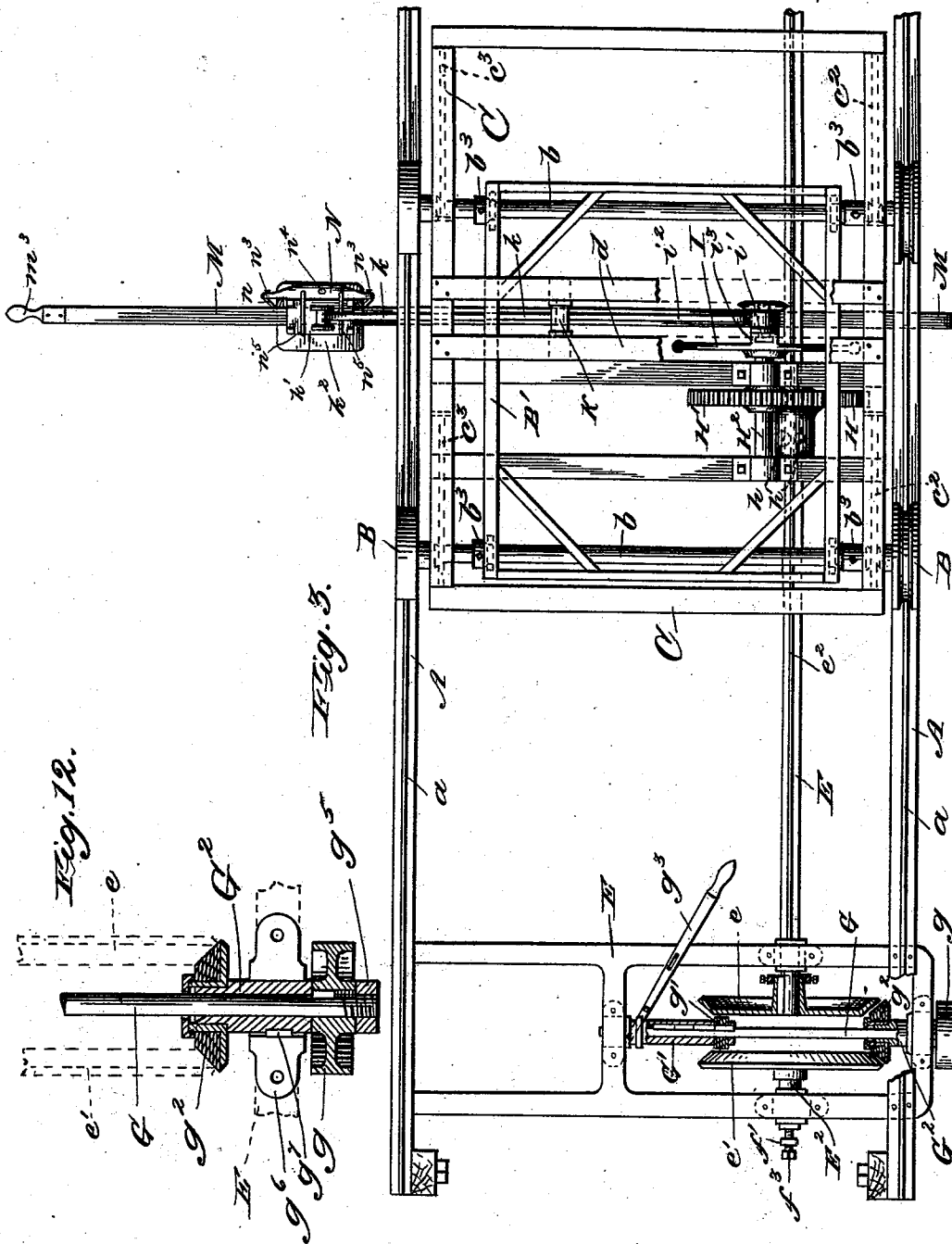
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3 Sheets—Sheet 3.

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POLISHING MACHINE.

No. 549,490.

Patented Nov. 12, 1895.



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UNITED STATES PATENT OFFICE.

DE LASKI T. CLEMONS, OF HORNELLSVILLE, NEW YORK, ASSIGNOR OF
THREE-FOURTHS TO J. M. DEUTSCH, J. PEYTRENET, AND J. F. RICH-
ARDSON, OF SAME PLACE.

POLISHING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 549,490, dated November 12, 1895.

Application filed January 24, 1895. Serial No. 538,117. (No model.)

To all whom it may concern:

Be it known that I, DE LASKI T. CLEMONS, a citizen of the United States, residing at Hornellsville, in the county of Steuben and State of New York, have invented certain new and useful Improvements in Polishing-Machines, of which the following is a specification, reference being had therein to the accompanying drawings.

In finishing the tops of tables, chiffoniers, sideboards, and other articles of furniture which are made of the choicer woods it is necessary, in order to bring out the full beauty of the material used, to impart to these articles a high polish. This finish can only be produced by laborious sandpapering, reducing, and rubbing down, all of which processes, if done by hand, are slow, tedious, and expensive. To provide means for accomplishing this work with celerity and to produce results which are equal to those attained by hand-labor, but at much less cost, machines have been devised, and it is to this class of machines that my invention relates.

My machine possesses as its chief characteristics a traveling frame, a polishing-pad swinging therefrom, suitable actuating mechanism carried by said frame to drive said polishing-pad, and means whereby the operator controls said mechanism and pad.

In the drawings, Figure 1 is a side view, partly in section, of my improved machine. Fig. 2 is a rear view. Fig. 3 is a plan view. Figs. 4 and 5 are detail views of the traveling driving gear-wheel. Figs. 6 and 7 are side and plan views, respectively, of the reservoir for the polishing compound. Figs. 8 and 9 are detail views of the sliding block, which carries the polishing-pad. Fig. 10 is a detail view of one of the depending brackets on the frame in which the axles of the trucks are mounted, showing the antifriction-bearing for the axle. Fig. 11 is a view, partly in section, of the supporting-rails, truck, and connecting-frame to show the adjustable collars for positioning the trucks and frame. Fig. 12 is an enlarged sectional view of the conical friction-pulley and its support to show the means for adjusting the pulley.

Referring to the drawings by letter, A denotes the stationary overhead rails on which

the polishing apparatus is mounted, said rails having ribs *a* formed on their treads. Mounted upon these rails A are two trucks B, which roll thereon, the wheels on one side of the said trucks being flanged to embrace a rib *a*, formed on the tread of one rail A, while the wheels on the opposite side of the truck are smooth and unflanged, the object of this construction of rails and truck-wheels being that in the event of the rails or trucks being slightly out of true there will be no binding of the wheels, so as to interfere with the smooth traveling of the polishing-machine carried on the trucks, as would be the case were the two sets of truck-wheels flanged. Resting on the axles of said trucks, but not secured thereto, is a frame, consisting of an upper rectangular portion C, which has inclined depending arms *c* at its sides, and between which and suitable stops *c'* on the under side of the frame C the axles of the trucks B travel, ribs *c²* *c³* being formed on the under side of frame C, which rest upon the axles of the trucks B and form the bearings for the frame C.

In order that the frame C may always be maintained in a central position between the rails A and the wheels of the trucks B, I provide the adjustable collars *b³*, (see Fig. 11,) which are secured to the axle *b* and between the outer beveled ends of which and the beveled ends of the wheel-hubs the ribs *c²* on the frame C travel.

The axles *b* of the trucks B are connected by means of a frame B', and in brackets depending from said frame are mounted antifriction-wheels *b²*, which are in contact with the said axles, as shown more clearly in Fig. 10. Said frame B' is held in its central position by means of the adjustable collars *b³*, above referred to in connection with the traveling frame C, the beveled inner ends of said collars abutting against the brackets which support the frame B'. Such means are necessary to prevent said frame B' from creeping sidewise on the axles of trucks B as they revolve, as in such case they would interfere with the frame C as it travels to and fro on the axles. At one side of the frame C, at or near the center thereof, are uprights D, extending above said frame and joined by horizontal cross-bars *d* to uprights D' at the op-

posite sides of said frame, the uprights D' having depending inclined extensions D^2 , the vertical lower ends of which are joined by cross-bars d' to the lower ends of the uprights D .

- 5 The structure just described comprises the supporting-framework in which the driving and polishing mechanisms are mounted.

Journalled in suitable hangers a' , depending from a frame E supported by the rails A ,
10 is a shaft E' parallel with said rails and of any desired length. At one end of said shaft E' is mounted a flanged disk e , splined to the said shaft and movable thereon by means of a lever F , pivoted to the bracket
15 from which the hanger e depends, said lever F being pivoted at its lower end to a toggle-lever f . Opposed to said disk e is a second similar disk e' , secured to a short shaft E^2 supported in a hanger a depending from the
20 frame E . Said shaft E^2 , with its disk e' , slides in its bearing toward and from disk e , the movements of said shaft E^2 and disk e' being controlled by the depending lever f' , which is pivoted to the hanger a . The lower end of
25 lever f' is connected to the toggle-lever f by a link f^2 . It is apparent from the foregoing that these disks e and e' are moved toward and from each other as the lever f is thrown in one direction or the other.

30 Mounted in bearings in the frame E at right angles to the shafts E' and E^2 is a driving-shaft G , provided with a pulley g , said pulley being splined to the shaft G (see Fig. 12) so as to be movable lengthwise thereof.
35 G' is a sleeve splined to the said shaft G so as to slide thereon and rotate therewith, the said sleeve being provided with a friction-pulley g' , arranged between the disks e and e' . A sleeve G^2 , mounted in a bracket g^6 on
40 the under side of frame E , forms a bearing for the shaft G . Said sleeve is splined to its supporting-bracket g^6 so that while it is free to move lengthwise with its spline g^7 it is held against rotating with the shaft G . Mounted
45 on the inner end of said sleeve G is a conical friction-pulley g^2 , which bears against the beveled edges of disks e and e' , and in connection with friction-pulley g' drives said beveled disks. The object of mounting the
50 conical pulley g^2 and arranging said sleeve and driving-pulley g so that they are movable longitudinally of the shaft G is to permit the conical friction-pulley g^2 to be adjusted relative to the beveled disks e and e' .
55 The required adjustment is secured by means of a nut g^3 on the end of shaft G . The friction-pulley g' , carried by the sleeve G' , is moved toward and from the centers of the disks e and e' by means of a lever g^3 , which
60 is pivoted to the frame E , the position of said friction-pulley g relative to the centers of said disks e and e' regulating the speed at which the said disks will be driven, as will be readily understood, the said disks e and e'
65 receiving motion from the friction-pulleys g' and g^2 , so as to transmit motion from the shaft G to the shaft E' when the lever f is

moved in a direction to cause the said disks to be closed against the said friction-pulleys. In order to regulate the positions of the friction-disk e' relative to the driving friction-pulleys, I have provided an adjusting-screw
70 f^3 , which is tapped in the lever f' and which screw abuts against the short shaft E^2 , to which the friction-disk e' is secured.

75 The description immediately preceding covers the driving mechanism of my machine, and I will now set forth the connecting mechanism between said driving parts and the polishing-pad and the polishing-pad itself.

80 The shaft E' has fitted to it at diametrically-opposite points longitudinally-arranged wings or ribs e^2 . Mounted on said shaft E' and movable lengthwise thereof is a gear-wheel H , which revolves in bearings on the
85 traveling frame C , and mounted in the hub of this gear-wheel H are small disks or rollers h h' , which rest on the wings or ribs e^2 fitted to the shaft E' , and form means through which a rotary motion is imparted to the gear-wheel H from shaft E' and at the same time act
90 as antifriction-rollers to support said gear-wheel H as it travels lengthwise of shaft E' as the frame C , in which said gear-wheel H is mounted, is moved to the left or right on its
95 supporting-rails A . H^2 is a shaft journaled in bearings just above said gear-wheel H , and supported thereby and meshing with said gear-wheel H is a second gear-wheel H' . A fly-wheel and crank-wheel I is carried at the
100 inner end of shaft H^2 in such position that it is about midway of the traveling frame C . The wheel I is provided with a diametrically-arranged grooved rib i^2 , in which is adjustably secured a crank-pin i' , to which is attached one end of a pitman i^2 , the other end
105 of said pitman being pivotally connected to a lever K , pivoted at its upper end to brackets supported by the horizontal bars d connecting the uprights D D' , so that said lever
110 K is free to swing horizontally.

To the lower end of the lever K is attached one end of a connecting-rod k , the other end of which is joined to a frame k' , which carries the polishing-pad k^2 and which slides on a
115 horizontal controlling-bar M . The stroke of the said polishing-pad is regulated by adjusting the crank-pin i' in the grooved rib i^2 . The frame k' is provided at its lower side with antifriction-rollers k^3 , which are preferably provided with oil-cups k^4 , which are in communication with the axles of said rollers. The
120 rear end of said bar M is pivotally supported by a vertically-adjustable block L placed between the uprights D , said bar being held in said block L by means of a pin m' , passing through a slot m in the bar. The polishing-pad k^2 has a universal joint connection with the frame k' .

130 The bar M is supported near its pivoted end by an adjustable spring-support m^2 , said spring-support normally raising the horizontal bar and its attached sliding block and polishing-pad from its operative position. It

will be seen that bar M can be swung in a vertical plane on its pivot-pin m' , and thus the polishing-pad can be raised from the work or pressed thereon at the will of the operator, who grasps the handpiece m^3 at the outer end of the bar M without moving the traveling frame C. Any pressure to the right or left on the handpiece m^3 will immediately impart a corresponding movement to the traveling frame with its supported mechanism, and the polishing-pad k^2 will thus be carried across the work at right angles to its reciprocating movement.

In the class of work for which this machine is designed it is frequently necessary to use a reducing or polishing mixture, such as pumice-stone and the like, and this polishing mixture is preferably used in some liquid form. It is desirable that the polishing mixture be fed to the pad regularly during the time the pad is at work; but when the machine is at rest the feeding of the liquid should cease. To effect this result I provide a reservoir N, which is mounted on the sliding frame k' by means of arms n^5 and which has a concavo-convex bottom n . Said reservoir is provided at each end with feeding-spouts n' , which run to each end of the pad k^2 and deliver the polishing mixture. These spouts n' are provided with controlling-valves n^3 , by means of which the flow of liquid through them is regulated. In the top of the reservoir N is an opening n^4 , through which it can be filled.

It will be understood that owing to the curved shape of the bottom of the reservoir the liquid contained therein will be carried from one end of the reservoir to the other as the movements of the sliding block on which the reservoir is mounted are reversed, and the liquid will thus be forced out through each feeding-spout alternately and delivered in the path of the pad.

Having described in detail my invention, I will briefly state the operation. Power being applied to the driving-pulley g , the shaft G, on which the friction-pulley g' is mounted, will be revolved, and said friction-pulley g' having been adjusted to obtain the requisite speed the beveled or flanged friction-disks e and e' , between which said friction-pulleys g' and g^2 are located, are forced toward each other by the levers which control them until they are in contact with and receive motion from the driving friction-pulleys. The beveled friction-disks in turn revolve the winged shaft E', which is mounted in fixed bearings relative to the supporting-rails, and it in turn drives the gear-train mounted in the traveling frame which is carried by the trucks on the stationary supporting-rails. The gear-train through the fly-wheel and pitman swings the vertical lever K, which is hung from the traveling frame, and said vertical lever through its connecting-rod reciprocates the sliding frame K and its polishing-pad. The movements of the polishing-pad are con-

trolled at will by the operator by means of the horizontal controlling-bar M, on which the sliding frame is mounted, and the position of the rolling frame in which the polishing mechanism is mounted is also regulated by a side pressure of the said horizontal controlling-bar.

It will be understood that my improved machine may be used not only for sandpapering, rubbing, and polishing furniture and the like, but also for polishing stone, metal, or any other material to which it is desired to impart a fine finish.

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

1. In a polishing machine, the combination with supporting rails, of a traveling frame mounted thereon, a shaft extending parallel to said rails, a stationary frame, mechanism, mounted in said stationary frame, for rotating said shaft, a polishing pad carried by said traveling frame and movable in a plane at right angles to the path of movement of the latter, and mechanism, carried by said traveling frame and operated by said shaft, for giving a horizontal reciprocating movement to said polishing pad.

2. In a polishing machine, the combination with overhead supporting rails, of trucks the wheels of which run upon said rails, a frame loosely mounted on the axles of said trucks, a swinging lever carried by said frame, a polishing pad operated from said swinging lever and having a plane of movement at right angles to the traveling movement of said frame, a crank wheel operatively connected with said swinging lever, a driving gear wheel mounted in said frame and having a geared connection to said crank wheel, a shaft arranged parallel to the said rails and connected to said driving gear wheel to rotate the latter while permitting a movement of said wheel longitudinally of said shaft, and a driving mechanism for said shaft.

3. In a polishing machine, the combination with a polishing pad, of a reservoir or receptacle, for the polishing mixture, which is movable with said pad, and feeding spouts at each end of said reservoir, through which the polishing mixture is fed, alternately, to the surface being polished, as the polishing pad is reciprocated.

4. In a polishing machine, the combination with the reciprocating frame k' and the polishing pad carried thereby, of the reservoir or receptacle N attached to said frame and provided at its opposite ends with spouts n' , said receptacle having a curved bottom so that the polishing liquid therein will be forced outward through the said spouts alternately as the movements of the said frame are reversed.

5. In a polishing machine, the combination with the overhead rails A, of the trucks B running on said rails, the traveling frame loosely mounted on the axles of said trucks,

a swinging lever carried by said frame, a polishing pad connected to said swinging lever, driving mechanism for said swinging lever mounted on said frame, the shaft E' extending parallel with the said rails and having a splined connection with a driving gear wheel forming part of the driving mechanism for said lever, and a driving shaft and suitable connections for rotating said shaft E'.

6. In a polishing machine, the combination with the rails A, a traveling frame mounted thereon, a polishing pad arranged to be reciprocated in a plane transverse to the traveling movements of said frame, driving mechanism carried by said frame for reciprocating said pad, the shaft E' arranged parallel with said rails, and which operates said driving mechanism, the driving shaft G, the friction pulley g' rotating with said shaft, the conical friction pulley g^2 rotating independently of said shaft, the friction disks e and e' constructed to be moved toward and from each other, the levers F and f' , the link f^2 , and the toggle lever f by means of which said friction disks may be forced in contact with the said friction pulleys.

7. In a polishing machine, the combination with the rails A, a traveling frame mounted thereon, a reciprocating polishing pad, and mechanism carried by said traveling frame for operating said pad, of the shaft E' for driving said mechanism, the friction disk e splined to said shaft to be moved lengthwise thereof, the shaft E² longitudinally movable in its bearing, the friction disk e' carried by said shaft E², the levers F and f' , the link f^2 and toggle lever f for forcing said friction disks toward each other, and the driving shaft G provided with suitable friction pulley for rotating said friction disks.

8. In a polishing machine, the combination with the driving shaft G, of the sleeve G' splined to said shaft so as to slide thereon and rotate therewith and provided with the driving friction pulley g' , the conical friction pulley g^2 loosely mounted to rotate independently of said shaft G, the friction disks e and e' between which the said friction pulleys g' and g^2 are mounted, the lever g^3 for moving the said sleeve G' to vary the position of the friction pulley g' relative to the said friction disks, the shaft E' to which the said friction disk e is operatively connected, the rails A, a traveling frame mounted on said rails, a polishing pad connected to said frame, and mechanism carried by said frame, and operated by said shaft E', for imparting a reciprocating movement to the said polishing pad.

9. In a polishing machine, the combination with the rails A, a traveling frame mounted on said rails, a polishing pad connected with said traveling frame and operating mechanism for said pad carried by said frame, of the shaft E' placed parallel to the said rails and having the ribs or wings e^2 , the driving gear-wheel H through which said shaft passes and which forms part of the operating mechanism

for said polishing pad, and anti-friction wheels h and h' mounted in the hub of said gear wheel H and having a rolling contact with the said ribs or wings of the said shaft E'.

10. In a polishing machine, the combination with the rails A and the trucks B running thereon, of a frame C loosely mounted on the axles of said trucks and forming part of the frame work which supports the polishing devices and the operating mechanism for the same, and the frame B' connecting the axles of said trucks and provided with anti-friction wheels b^2 which are in contact with the said axles.

11. In a polishing machine, the combination with the sliding frame k' and its operating mechanism, of the polishing pad k^2 carried by said frame, the pivoted controlling bar M on which the said frame slides and the adjustable spring support on which the said controlling bar rests, said support being arranged between the pivotal point of said bar and its outer end.

12. In a polishing machine, the combination with the supporting rails A, of trucks B traveling on said rails, the frame C loosely mounted on the axles of said trucks and the adjustable collars b^3 on the truck axles to keep said frame C in a central position between the rails A.

13. In a polishing machine, the combination with the supporting rails A, of the trucks B traveling on said rails, the frame C loosely mounted on the axles of the trucks within the rails A, the second frame B' connecting the truck axles and maintaining the trucks in their relative positions on the rails A, and the adjustable collars b^3 on the truck axles, said collars keeping the frames C and B in their relative positions with respect to the supporting rails and each other.

14. In a polishing machine, the combination with the supporting rails A, of a frame C movable thereon, polishing mechanism carried thereby, a driving shaft E' for said mechanism mounted in fixed bearings in close proximity to the path of said traveling frame C, a beveled friction disk e splined to one end of said shaft E', a second similar disk e' mounted on a rotating shaft in close relation to said disk e , means for moving said disks toward and from each other, a shaft G mounted transversely to said shaft E' and occupying a central position between the disks e and e' , a friction pulley g' rotating with said shaft G and movable lengthwise thereof, a conical friction pulley g^2 mounted to rotate independently of shaft G, said pulleys g' , g^2 engaging the friction disks e , e' when the latter are forced together, and means for adjusting said conical pulley g^2 to take up wear.

In testimony whereof I affix my signature in presence of two witnesses.

DE LASKI T. CLEMONS.

Witnesses:

A. C. WARRINER,
JOHN G. TRENKLER.