No. 779,321. PATENTED JAN. 3, 1905.

H. SCHUESSLER.

METAL POLISHING MACHINE.

APPLICATION FILED APR. 20, 1904.

5 SHEETS—SHEET 1.

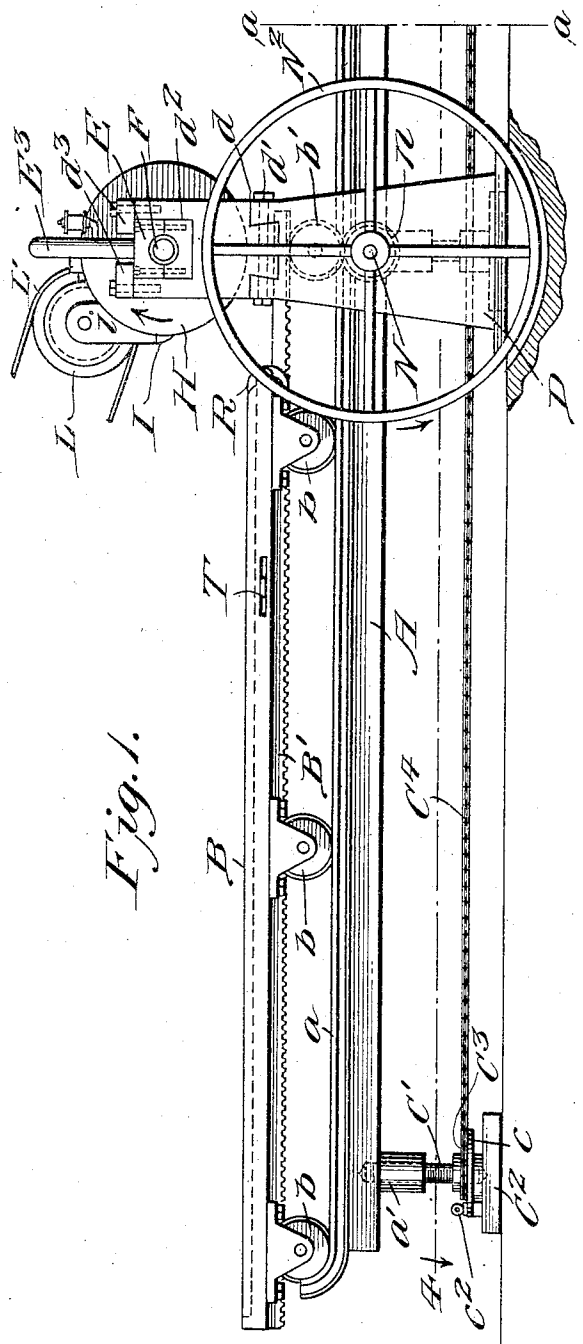


Fig. 1.

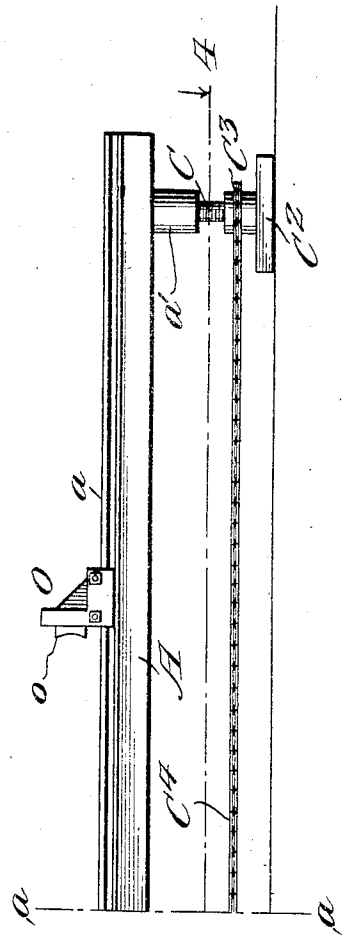


Fig. 1a.

Witnesses

Edwin F. McKee

Inventor

Henry Schuessler

By Victor J. Evans

Attorney

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5 SHEETS—SHEET 2.

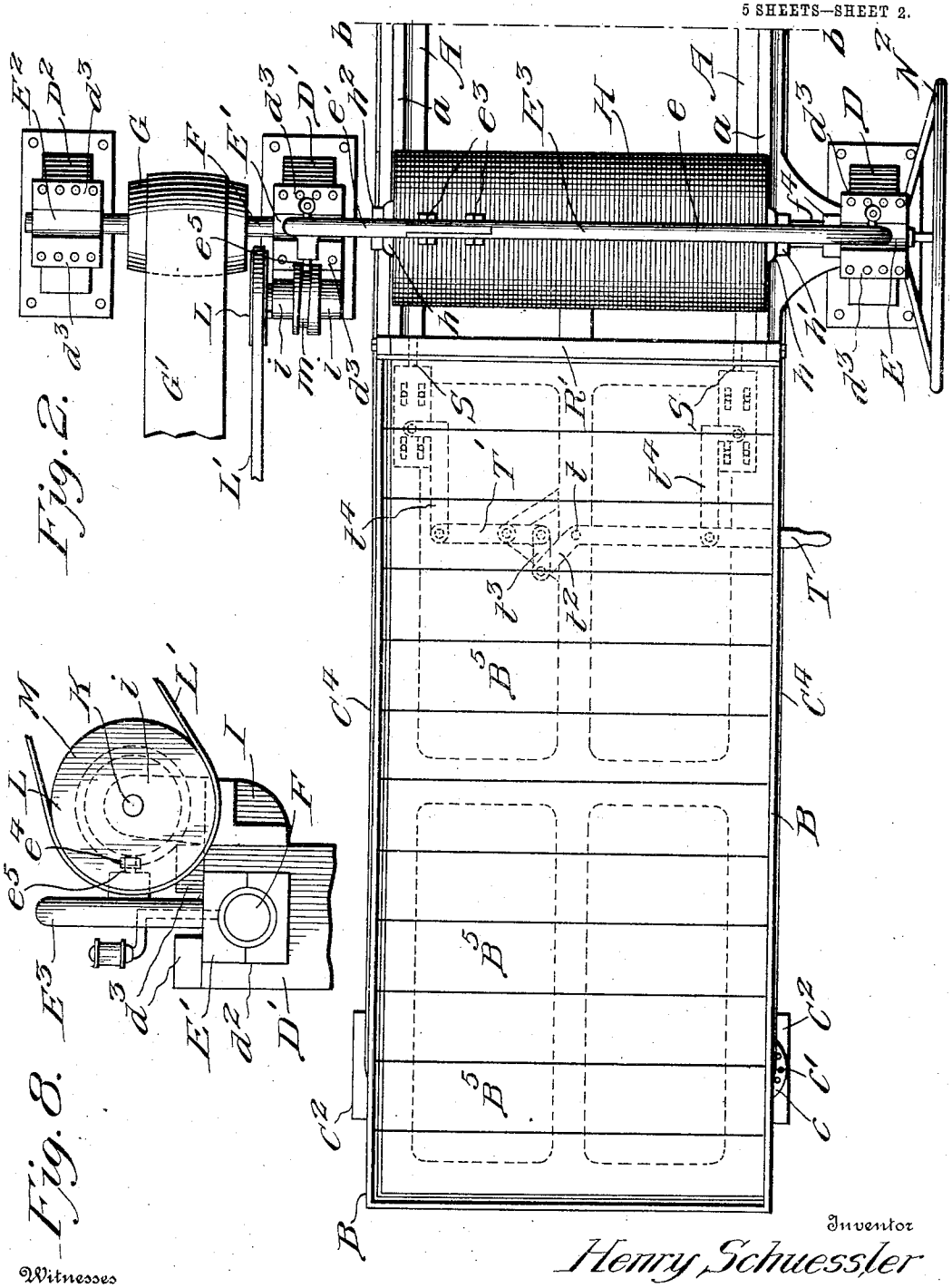


Fig. 2.

Fig. 3.

Witnesses

Edwin F. McKee

S. P. Hollingsworth

Inventor

Henry Schuessler

By Victor J. Evans

Attorney

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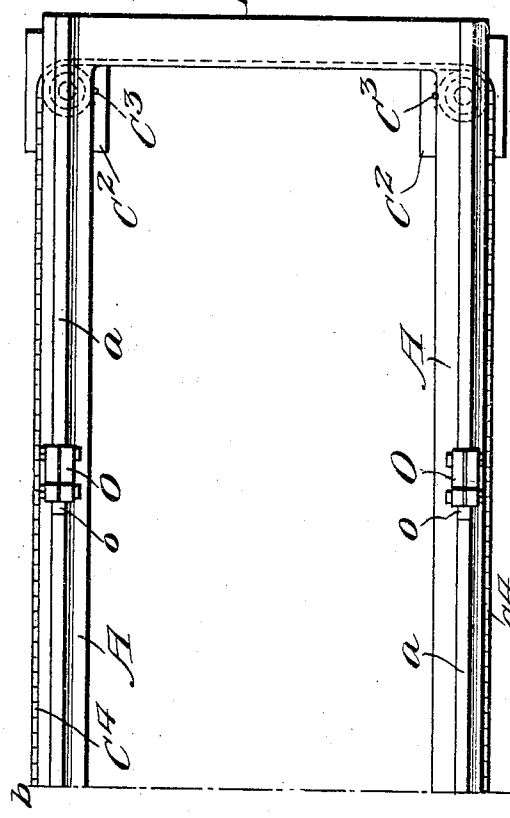
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5 SHEETS—SHEET 3.

Fig. 2a.



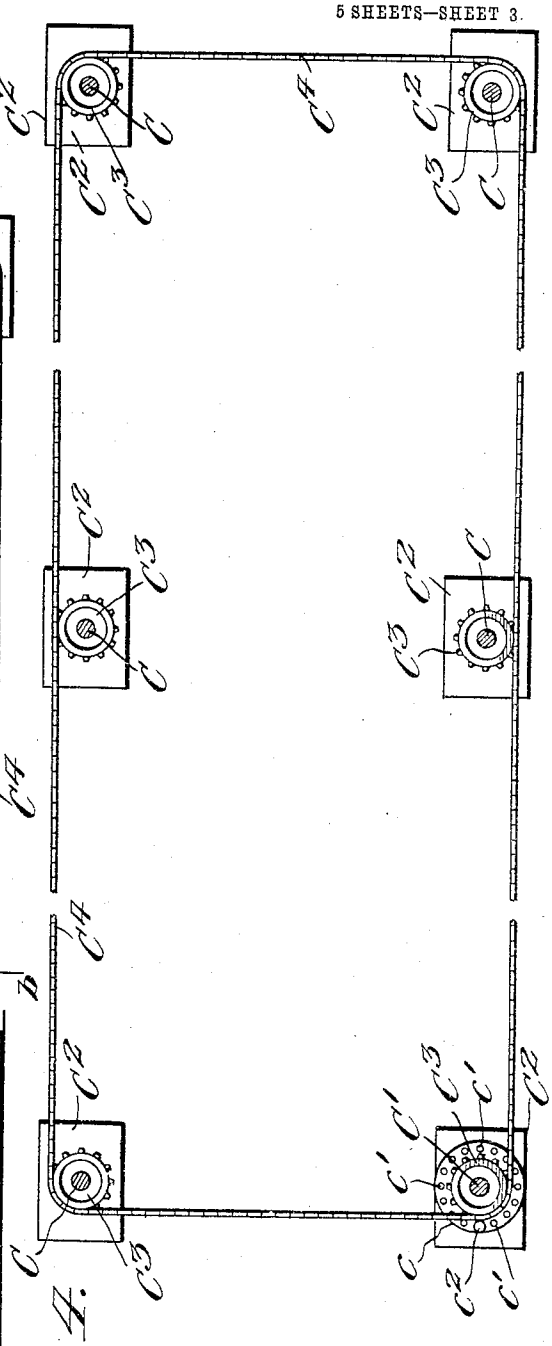


Fig. 4.

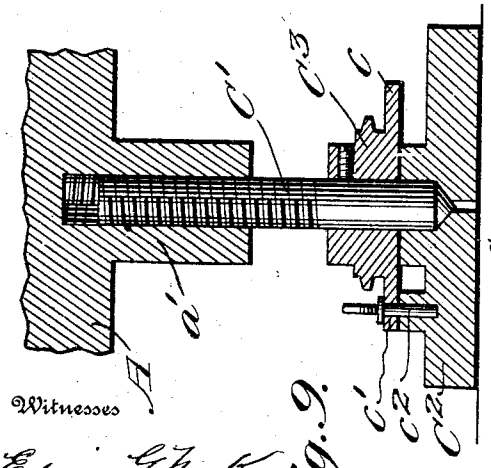


Fig. 9.

Witnesses

Edwin L. McKee

Inventor

Henry Schuessler

By Victor J. Evans

Attorney

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5 SHEETS—SHEET 4.

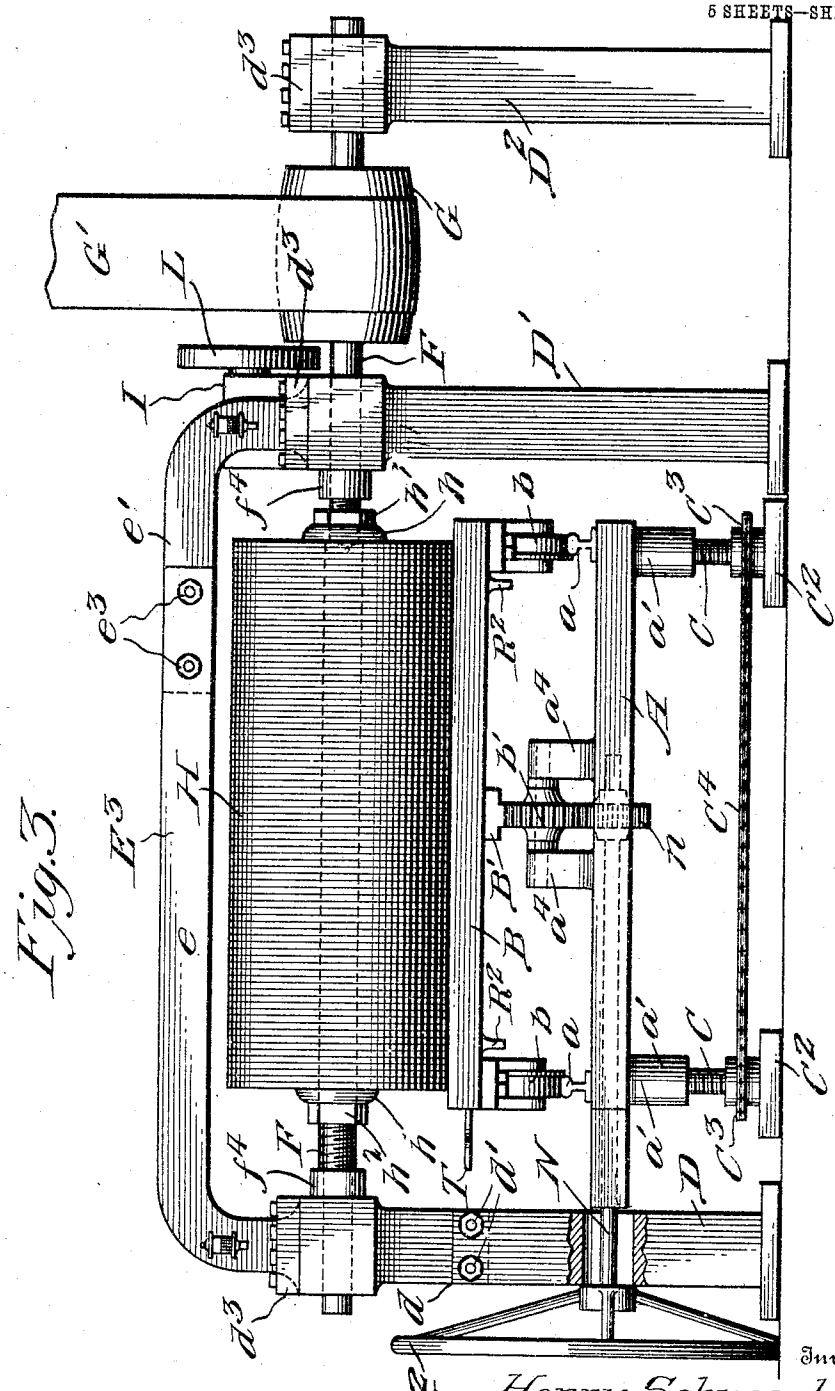


Fig. 3.

Witnesses

Edwin L. McKee

J. Hollingsworth

Inventor

Henry Schuessler

By Victor J. Evans

Attorney

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H. SCHUESSLER.

METAL POLISHING MACHINE.

APPLICATION FILED APR. 20, 1904.

5 SHEETS—SHEET 5.

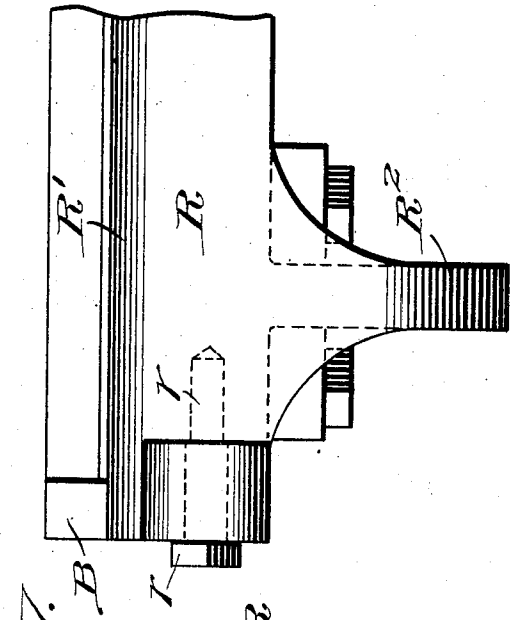


Fig. 7.

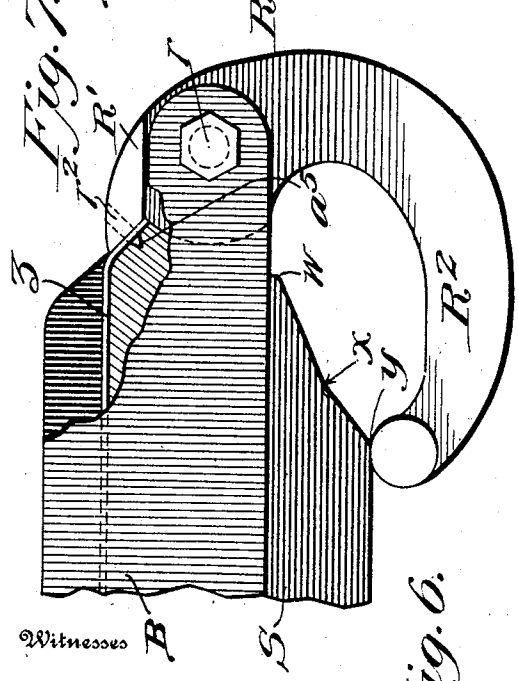


Fig. 6.

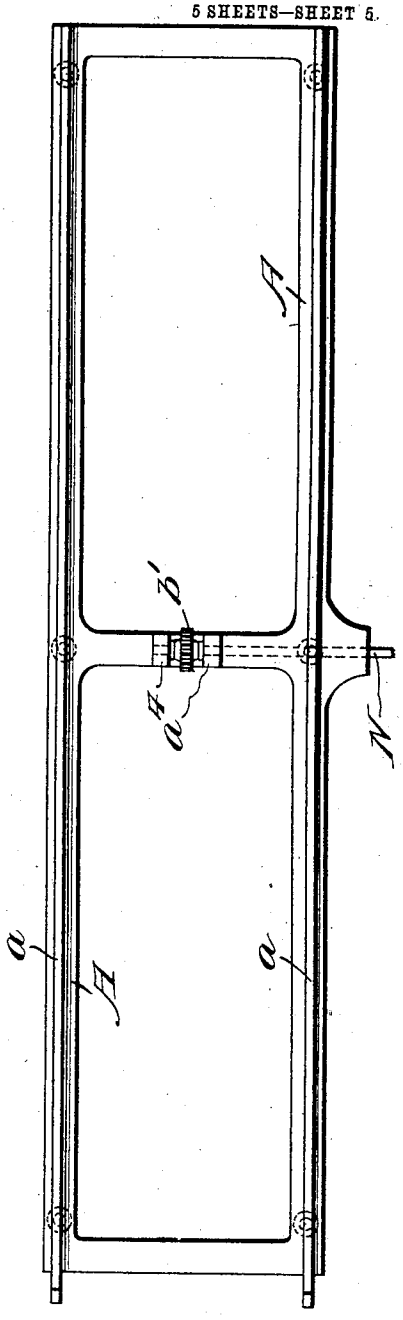


Fig. 5.

Witnesses

Edwin L. McKee

A. P. Ellingsworth

Inventor

Henry Schuessler

By Victor J. Evans

Attorney

No. 779,321. Patented January 3, 1905.

UNITED STATES PATENT OFFICE.

HENRY SCHUESSLER, OF PERU, ILLINOIS, ASSIGNOR, BY MESNE ASSIGNMENTS, TO HIMSELF AND EMIL STROEMER, OF PERU, ILLINOIS.

METAL-POLISHING MACHINE.

SPECIFICATION forming part of Letters Patent No. 779,321, dated January 3, 1905.

Application filed April 20, 1904. Serial No. 204,090.

To all whom it may concern:

Be it known that I, HENRY SCHUESSLER, a citizen of the United States, residing at Peru, in the county of Lasalle and State of Illinois, have invented new and useful Improvements in Metal-Polishing Machines, of which the following is a specification.

This invention relates to a machine for polishing and finishing sheet-metal plates in which a bed-frame, supported by vertically-disposed screws adapted to be turned simultaneously for raising and lowering the bed-frame, carries thereon a longitudinally-movable table on which the sheets to be polished are placed and manually brought beneath a revolving polishing-roll, said roll having a slow axial movement in addition to its rapidly-revolving one.

One object of my invention is to provide means for easily and quickly removing the polishing-roll from its shaft without displacement of said shaft and also to give the roll an axial movement without sliding the shaft in its bearings or the roll on the shaft.

A further object of the invention is to construct the top of the work-table of transversely-placed sections or plates for the purpose of preserving a true plane surface. This object I attain by removing such plates or sections as are not required to support the sheets to be treated from the wearing action of the polishing-roll.

A still further object of the invention relates to means for securing the sheets to be polished to the table, while other objects of the invention not previously mentioned will be disclosed hereinafter and pointed out in the claims.

In the accompanying drawings, Figures 1 and 1ª represent in side elevation my improved polishing and finishing machine. Figs. 2 and 2ª show a plan view of the same. Fig. 3 is an end view. Fig. 4 is a horizontal sectional view on the line 4 4 of Fig. 1. Fig. 5 is a detail view of the bed-frame as viewed in plan. Figs. 6 and 7 are detail views of the clamp for holding the material to be polished. Fig. 8 illustrates in detail the mechanism for vibrating the polishing-roll. Fig. 9 is a sectional view of one of the leveling-screws and its locking arrangement.

Similar letters of reference indicate the same parts in the various figures.

A represents a horizontal bed-frame supporting two rails a, on which the wheels of a work-table B are adapted to travel. The under side of the bed-frame C carries depending screw-threaded sockets a', in each of which a vertical screw C is fitted, the lower ends of said screws being tapered and adapted to turn in sockets formed in floor-plates C^2. Attached to the lower end of each screw C above the floor-plate is a sprocket-wheel C^3. A chain C^4 encircles the entire series of sprocket-wheels (see Fig. 4) to give simultaneous movement to the screws C, whereby the bed-frame A is raised or lowered without affecting its horizontal position. One of the screws, as C′, carries in addition to the sprocket-wheel C^3 a hand-wheel c, provided with a row of concentric perforations c', through one of which perforations a pin c^2 is inserted into a hole in the floor-plate to lock the hand-wheel, and consequently the sprocket-chain C^4, from accidental movement. When it is desired to change the vertical position of the bed-frame, the pin c^2 is withdrawn and the hand-wheel turned or the sprocket-chain moved by hand, thereby rotating the screws and raising or lowering the bed-frame.

Bolted to the floor at or near the longitudinal center of the bed-frame A are three vertical standards D, D′, and D^2, the standard D being on one side of the machine, while those D′ D^2 are on the opposite side. The standard D is made in two parts, Figs. 1 and 3, dovetailed together at d and secured by means of bolts d'. In the upper end of each standard D, D′, and D^2 is formed a rectangular seat or bearing d^2, in each of which one of the journal-boxes E, E′, and E^2, respectively, of similarly external shape, is carried and adapted to slide laterally. Plates d^3, bolted to the top of each standard, project over the journal-box carried thereby and hold it against vertical displacement. The journal-boxes E and E′ are each attached to the respective

parts e e' of a two-part arch-bar or roll-carrying frame E^3, connected together at e^2 by bolts e^3. The journal-boxes may be formed integrally with their respective parts e e' of the arch-bar E^3, or they may be connected thereto by bolts, rivets, or other well-known devices.

A shaft F, carried in the journal-boxes E, E', and E^2, extends crosswise of the bed-frame A and has fixed thereon, between the standards D' and D^2, a pulley G, revolved by a belt G' from some suitable source of power.

A grinding, polishing, or buffing roll H, secured on the shaft F over the bed-frame A, is of such diameter as to operate on an article supported on the truck B as it is carried under the roll. The roll H, which forms no part of this invention, may be secured to the shaft F in the usual manner. I have shown for convenience of illustration a roll made up of a series of disks held on the shaft F by means of pressure-plates h and nuts h' h^2, threaded on the shaft.

It is often necessary to change the roll H for one of a different character or to renew the roll. To accomplish this readily and without removing the shaft F from its bearings E' E^2, I have, as hereinbefore described, divided the standard D and the arch-bar H, so that when the bolts d' and e^3 are withdrawn from the standard and arch-bar, respectively, the upper end of the standard D and the part e of the arch-bar, with its journal-box E, may be removed, the nut h' unscrewed, and the roll H withdrawn from the shaft F.

In this class of machines it is highly advantageous to give the polishing-roll H a lateral movement relative to the work. This lateral movement perfects the finish and prevents streaks or scratches from appearing on the finished surface. To this end I provide the roll-vibrating device shown in Figs. 1 and 2 and in detail in Fig. 8. As there illustrated, a bracket I, bolted to the upper end of the standard D, has formed therewith a bearing i for a shaft K, to which is keyed a driving-pulley L and a cam-wheel M. In the periphery of the cam-wheel M a cam-groove m is cut, which receives a roller e^4, turning on a stud e^5, projecting from the arch-bar E^3. When the pulley L, around which a driving-belt L' passes, is rotated, the cam-groove m, acting on the roller e^4, moves the arch-bar E^3 and the shaft F, carrying the polishing-roll H and driving-pulley G, to and fro across the bed-frame A. The belt L is so geared that the vibratory movement of the roll H shall be comparatively slow. The journal-boxes E and E', connected to the arch-bar or roll-carrying frame E^3, slide in their seats d as the arch-bar is vibrated, the shaft being held against independent endwise movement by collars f^4. The result of this arrangement is to prevent the exposure of the bearing-surfaces of the shaft covered with oil to dust and grit, which are at all times floating in the atmosphere near machines of this character.

The work-table B is supported on wheels b, adapted to travel on tracks a lengthwise of the bed-frame A. A rack B' is secured to the under side of the work-table B in its longitudinal center and is preferably of such length as to always remain in engagement with a pinion b', journaled in bearings a^4 on the bed-frame A. A shaft N, mounted in the bed-frame A, carries at its inner end a pinion n in engagement with the pinion b', while on its outer end is affixed a large hand-wheel N^2, by means of which the work-table may be carried beneath the roll H.

To protect the work-table B from undue wear by the polishing-wheel when operating on sheets of metal shorter than the length of the table, the top of the work-table is made of substantially narrow strips or sections B^5 laid crosswise, all such strips or sections not covered by the sheet under operation being removed, so that in case the work-table be carried under the roll H beyond the end of the aforesaid sheet no damage will result to the true surface of said table.

A stop for limiting the movement of the table B to the length of the article operated upon is shown at O, Figs. 1^a and 2^a, and consists of a bracket for each rail a, adapted to be placed in any position on said rails and clamped thereto by bolts. Buffers, o of rubber, are attached to the brackets, against which the forward wheels of the work-table B strike when the table has completed its movement.

My invention is intended particularly for polishing sheets of metal which are held firmly at one end only. For the purpose of holding such sheets I pivot at r to the forward end of the work-table B a clamp R, which extends entirely across the table. (See Figs. 1, 3, 7, and 8.) The clamp R has a nose R', beveled on its under side to correspond to the inclined end of the work-table and provided with pins r^2, adapted to enter depressions a^5 in the aforesaid inclined end. A curved arm R^2 on each end of the clamp R extends downwardly and rearwardly beneath the table in position to be acted upon by a sliding block or wedge S, operated by a hand-lever T, (see Fig. 2,) pivoted at t to the frame of the table. An extension t^2 of the lever T is connected by a link t^3 to a second lever T', from which and from the lever T an arm t^4 extends forward to the respective sliding blocks or wedges S. A rocking motion imparted to the lever T will cause the blocks or wedges S to slide forward and operate the clamp R. The forward or working edge of each sliding block or wedge is of the peculiar form shown in Fig. 6—that is to say, from the point w rearwardly to the point x the inclination of the wedge is at a small angle downwardly from the horizontal. From the point x to the point y the

angle is greater, while from the point y rearwardly the surface is horizontal. As thus formed the sliding blocks when they first engage with the arms R^2 move the nose R′ slowly, but with great relative power, which forces the pins r^2 through the metal sheet z. When the advancing blocks S have moved sufficiently far to bring the steeper pitch of the blocks into operative relation to the arms R^2, the pins r^2 have punctured the sheet z, and a further movement of the blocks will quickly close the nose R′ on the sheet until it is firmly clamped to the work-table, at which time the horizontal portion of the sliding blocks will have passed over the ends of the arms R^2, locking the clamp securely in its closed position. A reverse movement of the lever T will withdraw the sliding blocks and release the clamp.

A sheet of metal having been clamped to the table, as above described, the operator grasps the hand-wheel N^2 and turns it in the direction of the arrow. Through the pinions n and b' and the rack B′ the table is caused to travel beneath the rapidly-revolving roll H, under which it passes until the forward wheels b of the table strike the stops O, which have been set to arrest the movement of the table at the proper point, or the operator ceases to turn the hand-wheel. A reverse motion of the hand-wheel by the operator will return the table to its first position, or it will be returned by the friction of the roll H on the sheet-metal plate if the hand-wheel is left to turn freely.

It is to be understood that while I have called the polishing medium throughout this specification a "roll" a wheel or belt may be substituted therefor and be within the limit of my invention.

Having thus fully described the invention, what is claimed as new is—

1. In a polishing and finishing machine, the combination of a bed-frame, means for raising and lowering said frame, a work-table longitudinally movable on said bed-frame, a polishing or finishing roll above the plane of said work-table, a roll-carrying frame having journal-boxes for said polishing-roll, and means for axially moving said roll-carrying frame and the polishing-roll.

2. In a machine of the character described, the combination of a bed-frame, means for raising and lowering said frame, a work-table longitudinally movable on said bed-frame, a polishing-roll and its shaft, a roll-carrying frame having journal-boxes for said shaft, slide-bearings for said journal-boxes, and means for moving said roll-carrying frame in an axial direction.

3. In a machine of the character described having rotatable polishing devices, the combination of a two-part roll-carrying frame having bearings for said rotatable polishing devices, and a two-part standard supporting one end of said roll-carrying frame.

4. In a machine of the character described, a polishing-roll, a two-part roll-carrying frame having bearings for the polishing-roll, and standards slidably supporting said roll-carrying frame, one of said standards being divided and separably joined below the axis of the polishing-roll.

5. In a machine of the character described, a polishing-roll and a shaft therefor, a two-part roll-carrying frame having bearings for the said shaft, standards for supporting said roll-carrying frame, one of which is formed in two parts, and means for disconnecting and removing one part each of the carrying-frame and standard to permit the removal of the polishing-roll from its shaft.

6. In a machine of the character described, the combination of a supporting bed-frame, a work-table movable longitudinally thereon, a clamp on said work-table for holding the article to be operated upon, and means for moving said clamp toward the article slowly at first, followed by a more rapid advance.

7. In a machine of the character described, the combination of a work-table, a clamp pivoted at one end thereof and provided with perforating-pins, and a sliding block acting on said clamp, the working face of the block being inclined downwardly at a gradually-increasing angle.

8. In a machine of the character described, the combination of a supporting bed-frame, a work-table movable longitudinally thereon, a clamp pivoted to said work-table for holding the article to be treated, and means for acting on said clamp to rock it slowly at the beginning of its movement followed by a more rapid action and finally to lock it in its closed position.

9. In a machine of the character described, the combination of a work-table, a pivoted clamp extending across the front of the work-table having pins projecting from its clamping-face and operating-arms extending under the table, sliding blocks having working faces inclined at a gradually-increasing angle, and a system of levers for operating the sliding blocks.

10. In a machine of the character described, the combination of a bed-frame, screw-supports for the same, a socketed floor-plate for each screw-support, a sprocket-wheel attached to each screw-support, a chain encircling the series of sprocket-wheels, a hand-wheel on one of said screw-supports, and a locking device for the hand-wheel.

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

HENRY SCHUESSLER

Witnesses:

EMIL STROEMER,

CHRISTIAN SCHAER.