No. 648,499. Patented May 1, 1900.

J. KOENIG.

GRINDING, POLISHING, OR BUFFING MACHINE.

(Application filed Aug. 28, 1899.)

(No Model.) 3 Sheets—Sheet 1.

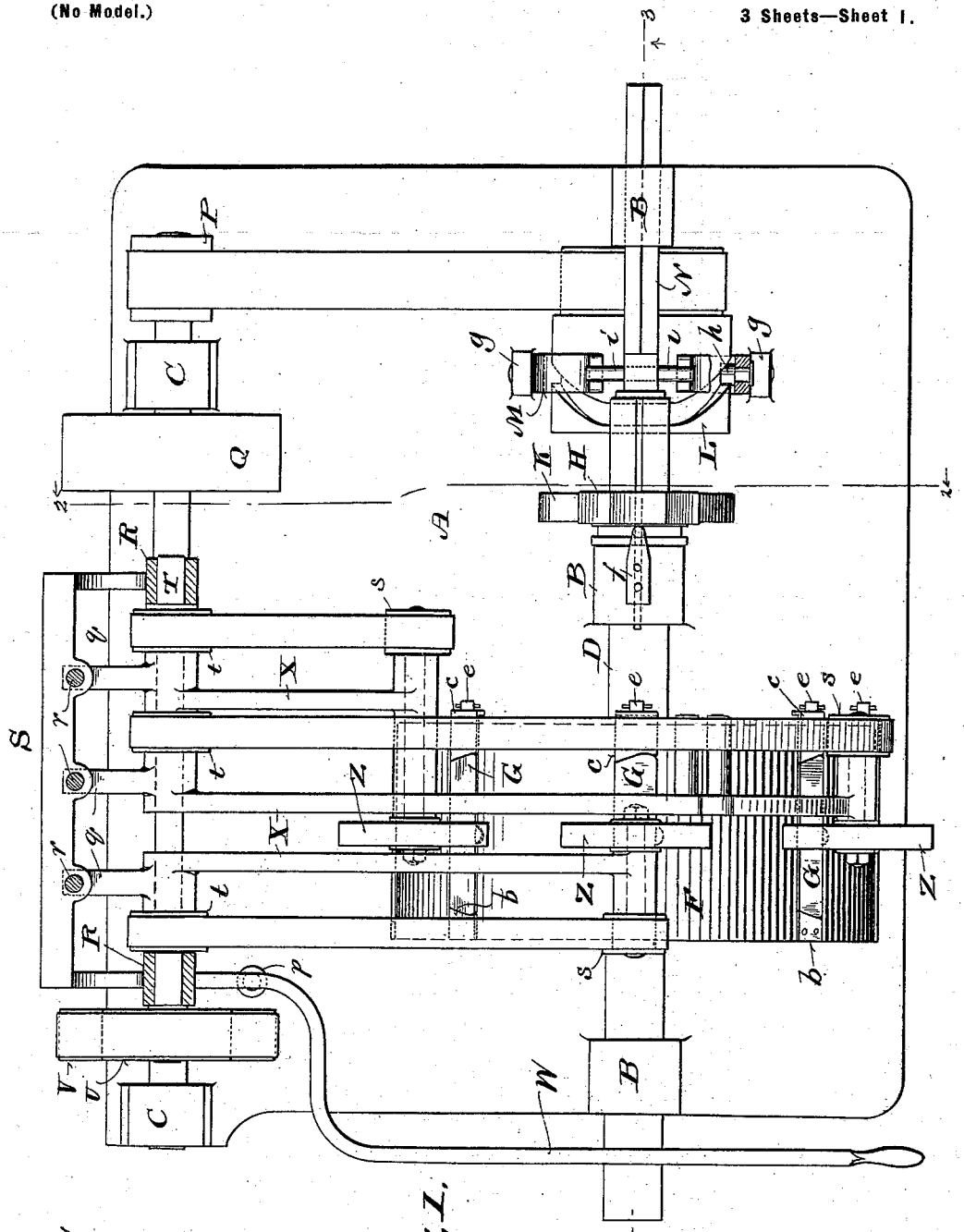

Fig. 1.

Witnesses:
Chas. W. Young
N. E. Oliphant

Inventor
Joseph Koenig
By H. G. Underwood
Attorneys

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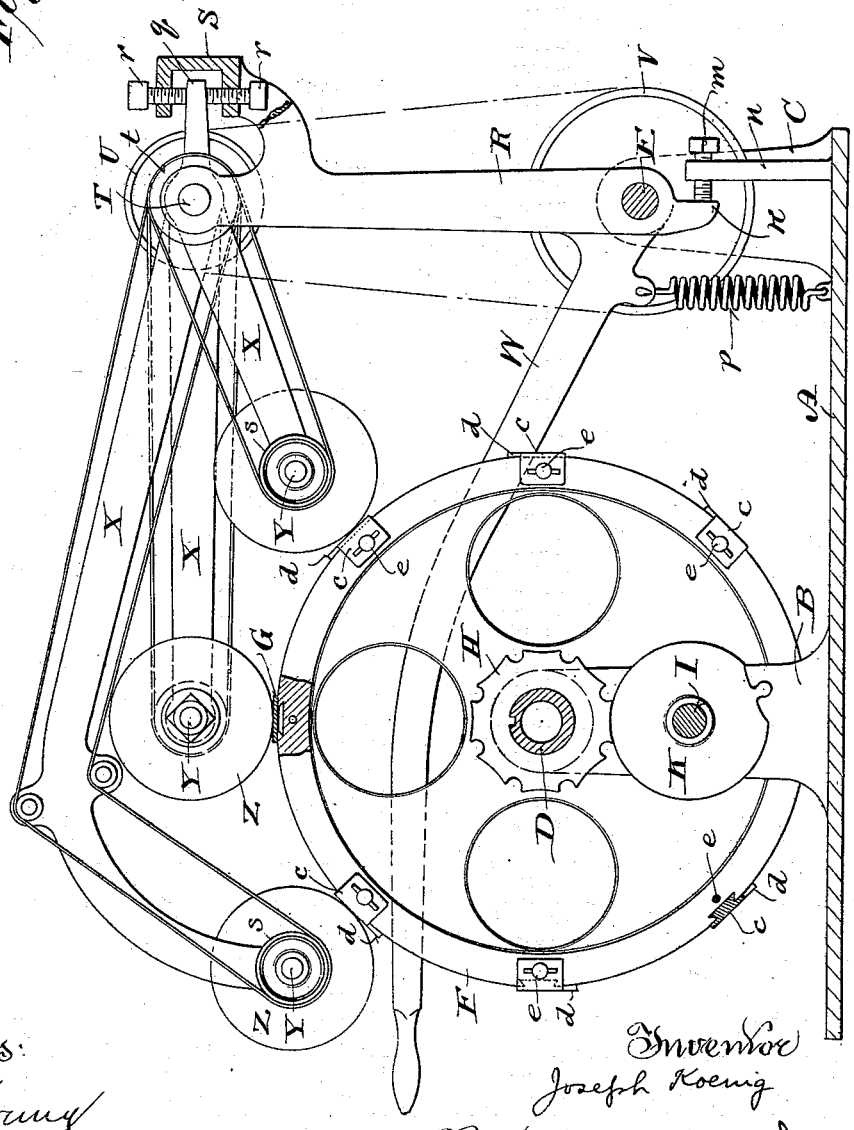
Fig. 2.



Witnesses:
Geo. W. Young
W. E. Oliphant

Inventor
Joseph Koenig
By H. G. Underwood
Attorney

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Fig. 3.

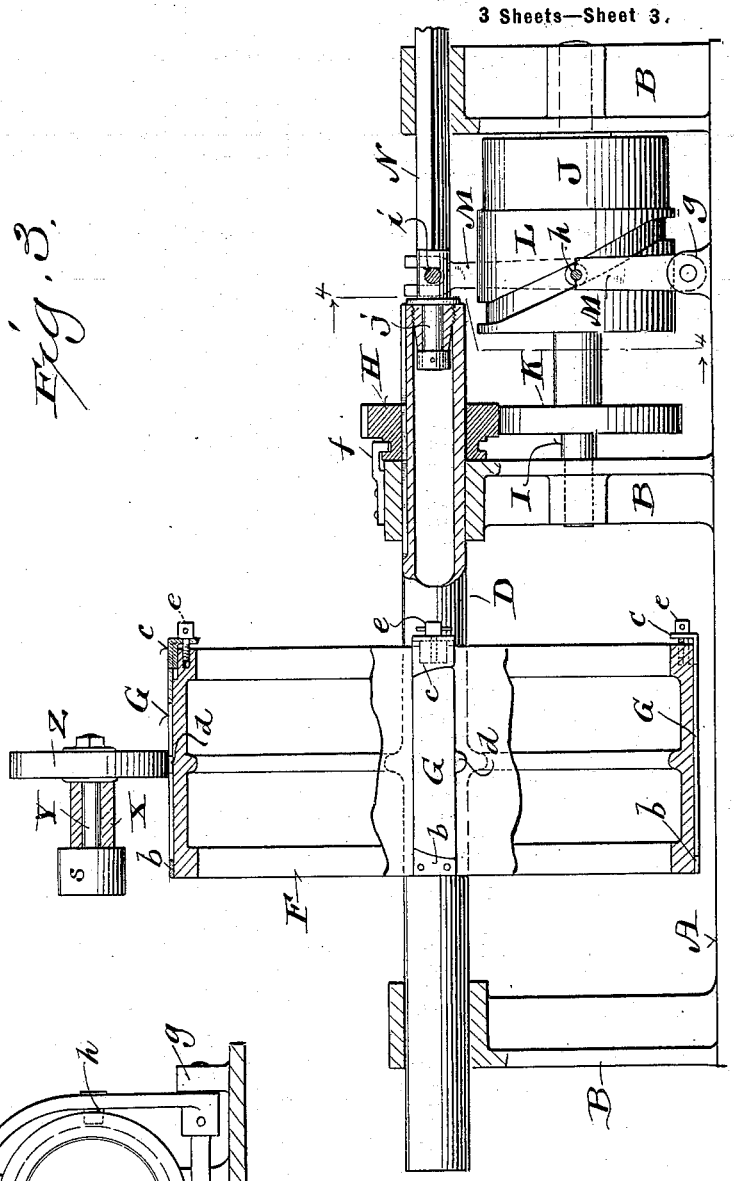
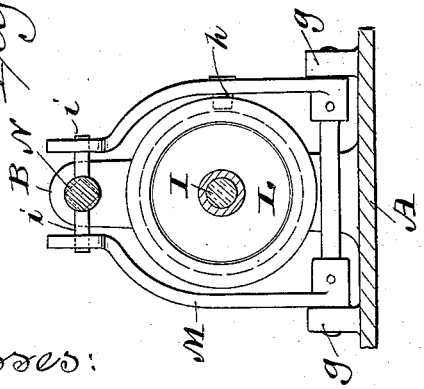


Fig. 4.



Witnesses:
Geo. W. Young
N. E. Oliphant

Inventor
Joseph Koenig.
By H. G. Underwood.
Attorneys

UNITED STATES PATENT OFFICE.

JOSEPH KOENIG, OF TWO RIVERS, WISCONSIN, ASSIGNOR TO THE ALUMINUM MANUFACTURING COMPANY, OF SAME PLACE.

GRINDING, POLISHING, OR BUFFING MACHINE.

SPECIFICATION forming part of Letters Patent No. 648,499, dated May 1, 1900.

Application filed August 28, 1899. Serial No. 728,673. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH KOENIG, a citizen of the United States, and a resident of Two Rivers, in the county of Manitowoc and State of Wisconsin, have invented certain new and useful Improvements in Grinding, Polishing, or Buffing Machines; and I do hereby declare that the following is a full, clear, and exact description thereof.

My invention has for its object to provide simple economical machines for grinding, polishing, and buffing flat articles, especially metal toilet-comb blanks; and it consists in certain peculiarities of construction and combination of parts hereinafter particularly set forth with reference to the accompanying drawings and subsequently claimed.

Figure 1 of the drawings represents a plan view of a grinding, polishing, or buffing machine constructed according to my invention, partly in horizontal section; Fig. 2, a vertical transverse section of the same indicated by line 2 2 in Fig. 1, certain of the parts being broken; Fig. 3, an elevation illustrating parts of the machine in vertical longitudinal section, the plane of the view being indicated by line 3 3 in Fig. 1; and Fig. 4, a detail vertical transverse section of a portion of the machine, the plane of this view being indicated by line 4 4 in Fig. 1.

Referring by letter to the drawings, A indicates the horizontal base of my improved machine, provided with front standards B and rear standards C at intervals of its length. A longitudinally-grooved hollow shaft D turns in a pair of the front standards, and another shaft E turns in the rear standards.

Fast on shaft D is a drum F, and projecting from one edge of the drum at regular intervals of its periphery are a series of blocks *b*, between which and other blocks *c*, in dovetail sliding connection with the opposite edge of said drum, metal comb-blanks G or other flat devices are clamped against stay-lugs *d*, radiating from the aforesaid drum midway of its face. The blocks *c* have inwardly-extending outer flanges, and set-screws *e* are engaged with these flanges and the rim of the drum.

A wheel H is in spline connection with the longitudinally-grooved portion of shaft D, and a stay-hook *f*, fast on one of the standards B, engages an annular groove in the hub of said wheel, the latter being provided at regular intervals of its periphery with notches that correspond in number to the work-clamping mechanism in connection with the aforesaid drum.

Arranged to turn in a pair of the standards B is a shaft I, provided with a driving-pulley J and a one-toothed wheel K, the latter being arranged to have its tooth act in the notches of the wheel H, whereby the latter turns the distance of one notch in every revolution of the latter shaft, the number of notches being equal to the number of work-spaces on the periphery of the drum F aforesaid. A cam-wheel L is fast on shaft I, and a yoke M, in pivotal connection with lugs *g* on the machine-base, has a lug *h* engaging the cam-wheel.

The upper ends of the yoke M are forked and engaged by lateral arms *i* of a partly-polygonal bar N, that is turned around at one end and fitted in a screw-threaded sleeve *j*, held loose thereon by any suitable means, this sleeve being engaged with a tapped end of the shaft D, as clearly shown in Fig. 4. The partly-polygonal bar N is guided in one of the standards B and reciprocated incidental to rotation of the cam-wheel L, the latter being timed, as shown in Fig. 1, to insure of said bar being at rest when the toothed wheel K is operating to turn the notched wheel H the distance of one notch.

From the foregoing it will be understood that I provide for intermittent reciprocating and intermittent rotary movement of the drum F and the material clamped thereon.

The pulley J is driven by a belt trained on another pulley P, rigid with shaft E, the latter being provided with a main driving-pulley Q. (Shown in Fig. 1.)

Loose on shaft E are vertically-disposed arms R, connected by an upper offset angular bracket S, and arranged to turn in the upper ends of said arms is a counter-shaft T, provided with a pulley U in belt connection with a pulley V on shaft E aforesaid. The arms R and bracket S constitute a pivotally-adjustable frame having a depending stop-lug *k* in opposition to a set-screw *m*, that turns in a wing *n* of one of the standards C, and a hand-lever W, extending from said frame, is

connected by a spiral spring p with the machine-base.

Loose on the counter-shaft T are a series of arms X, provided with rear lugs q, interposed between set-screws r, that turn in parallel horizontal flanges of the bracket S, constituting part of the pivotally-adjustable frame. Each arm has its free end in the form of a bearing for an arbor Y, to which a grinding, polishing, or buffing wheel Z is made fast, and a pulley s on each arbor is in belt connection with another pulley t on the counter-shaft T aforesaid. The arms X are of different lengths, and the several wheels Z are positioned to act individually upon as many different blanks G, held upon the periphery of the drum F above specified, the several wheels being in operation at the same time. The pressure of the wheels is regulated by adjustment of the set-screws r, and the pivotal frame above specified is operated to bring said wheels in and out of contact with the material to be ground, polished, or buffed, set-screws m serving to limit movement of said frame in one direction.

All the wheels Z are in line peripherally of the drum F, and as the latter is automatically traveled in either direction longitudinally of the machine the several wheels operate on as many opposing devices clamped on said drum. Owing to intermittent rotary movement of the drum each of the devices clamped thereon is operated upon by each of the several wheels in the time required for a complete revolution of said drum.

The general construction and arrangement of parts herein set forth constitute a practical application of my invention; but the mechanical details of the machine may be more or less varied without departure from the scope of said invention.

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

1. In a grinding, polishing or buffing machine, a drum having intermittent reciprocative movement and intermittent rotary movement, a grinding, polishing or buffing wheel arranged to operate upon material held on the periphery of the drum transversely of the same at regular intervals, and means for driving the wheels.

2. In a grinding, polishing or buffing machine, a drum having intermittent reciprocative movement and intermittent rotary movement a plurality of grinding, polishing or buffing wheels arranged in successive order to operate upon material held on the periphery of the drum transversely of the same at regular intervals, and means for driving the wheels at the same time from a single shaft.

3. In a grinding, polishing or buffing machine, a drum having intermittent reciprocative movement and intermittent rotary movement, a tilt-frame, arms in pivotally-adjustable connection with the tilt-frame, spindles carried by the arms, means for driving the spindles, and grinding, polishing or buffing wheels arranged in successive order on said spindles to operate upon material held on the periphery of the drum transversely of the same at regular intervals.

4. In a grinding, polishing or buffing machine, a drum having intermittent reciprocative movement and intermittent rotary movement, work-clamps at regular intervals peripherally of the drum, a spring-and-lever-controlled tilt-frame, means for limiting movement of the tilt-frame in the direction of pull on the part of the spring in connection therewith arms in pivotally-adjustable connection with said tilt-frame, spindles carried by the arms, means for driving the spindles, and grinding, polishing or buffing wheels arranged in successive order to operate upon material held by the clamps on said drums.

5. In a grinding, polishing or buffing machine, a drum having intermittent reciprocative movement and intermittent rotary movement, permanent blocks projecting from one edge of the drum at regular intervals of its periphery, other blocks in adjustable connection with the drum opposite those aforesaid, grinding, polishing or buffing wheels arranged to operate upon material held between each pair of blocks, and means for driving the wheels.

6. In a grinding, polishing or buffing machine, a drum having intermittent reciprocative movement and intermittent rotary movement, permanent blocks projecting from one edge of the drum at regular intervals of its periphery, other blocks in adjustable connection with the drum opposite those aforesaid, stay-lugs radiating from the periphery of said drum to abut material held between each pair of the blocks, grinding, polishing or buffing wheels arranged to operate upon said material, and means for driving the wheels.

In testimony that I claim the foregoing I have hereunto set my hand, at Two Rivers, in the county of Manitowoc and State of Wisconsin, in the presence of two witnesses.

JOSEPH KOENIG.

Witnesses:
J. F. MAGEE,
W. J. WRIETH.