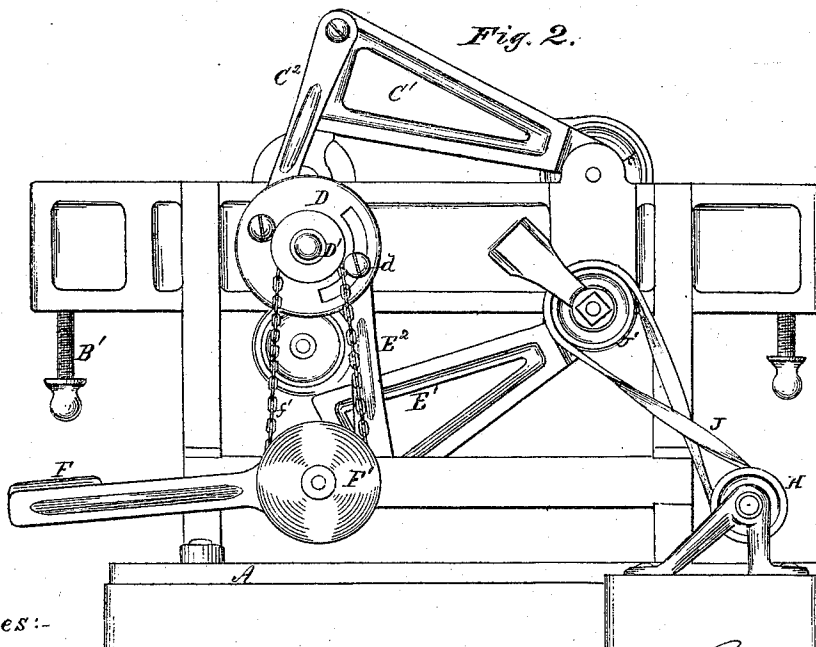
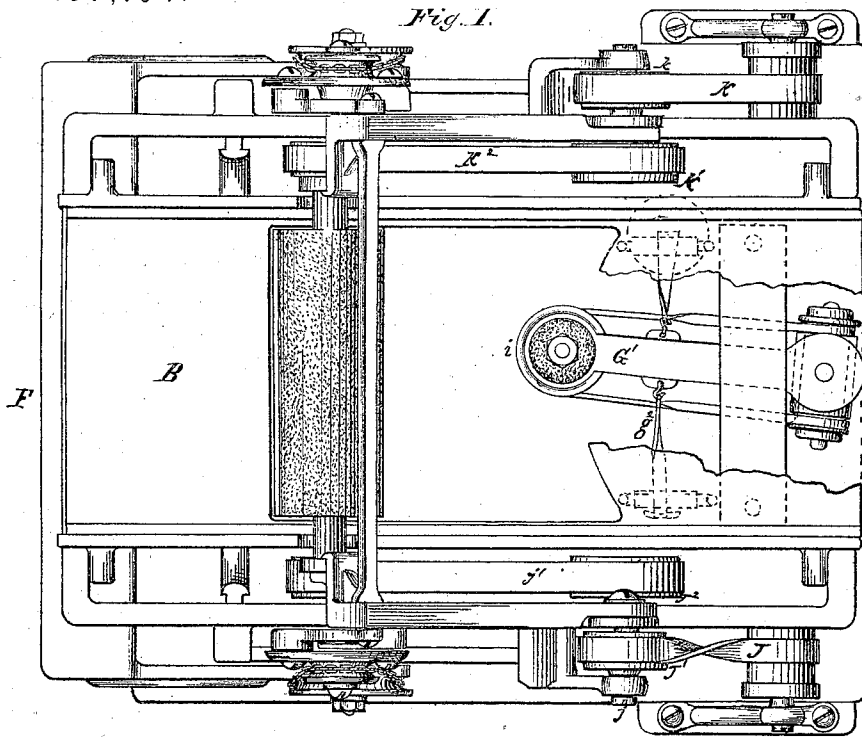


G. H. SPENCER.
Machines for Grinding Metal Castings.
 No. 137,104. Patented March 25, 1873.



Witnesses:-

B. H. Morse
Ballis & Long

Inventor

Geo. H. Spencer
by his atty
Wm. D. Baldwin

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Fig. 3.

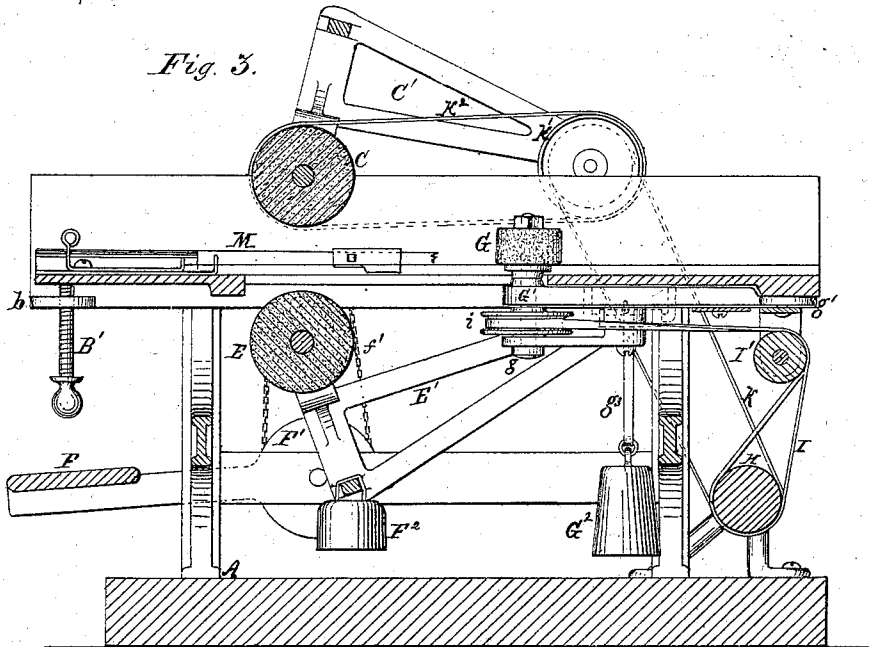
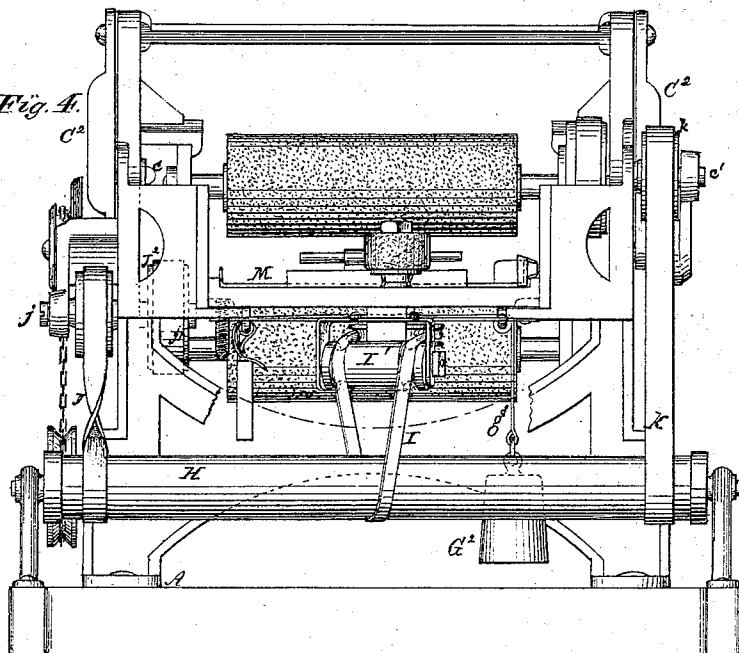


Fig. 4.



Witnesses:

B. H. Morse
Baltis De Long.

Inventor:

Geo. H. Spencer
by his atty.
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UNITED STATES PATENT OFFICE.

GEORGE H. SPENCER, OF YORK, PENNSYLVANIA, ASSIGNOR TO HIMSELF
AND GEORGE P. SMYSER, OF SAME PLACE.

IMPROVEMENT IN MACHINES FOR GRINDING METAL CASTINGS.

Specification forming part of Letters Patent No. 137,104, dated March 25, 1873.

To all whom it may concern:

Be it known that I, GEORGE H. SPENCER, of the borough and county of York, in the State of Pennsylvania, have invented certain new and useful Improvements in Machinery for Grinding Metal Castings, of which the following is a specification:

The object of my invention is quickly and effectually to smooth the surfaces of castings by means of grinding or polishing rollers revolving in contact therewith, and controlled by the operator to adapt them to surfaces of varying outline. The subject-matter claimed is hereinafter particularly specified.

The accompanying drawing represents all my improvements as embodied in a single machine; obviously, however, some of them may be used without the others, and in machines differing somewhat in construction from that herein set forth.

Figure 1 is plan, Fig. 2 a side elevation, Fig. 3 a vertical longitudinal section, and Fig. 4 an end view, of the machine.

A stout frame, A, supports the mechanism. The work rests on a table, B, supported on flanges *b*, and is adjustable vertically by set-screws B', or other equivalent devices. The central portion of the table is cut out, as shown in Fig. 1, leaving an opening in which the smoothing-rollers work. In this instance rollers are adapted to act on the top, the bottom, and one end of a casting. The upper roller C revolves in bearings in a swing-frame, C¹, moving vertically on its pivots *c c*¹. Link-rods C² are pivoted at one end to this frame, and at the other to crank-wheels D rocking in bearings in the frame. The lower roller E is in like manner mounted in a swing-frame, E¹, pivoted underneath the frame. The link-rods E² of this frame are connected with the crank-wheel D by a set-screw, *d*, working in a curved slot, thus enabling the relation of the two rollers to be adjusted at will. A treadle, F, is connected with a sprocket-wheel, F¹, on each side of the frame. Chains *f'* pass round these wheels and over sprocket-pulleys D' on the crank-wheels. By this means the attendant is enabled to move the rollers C E toward or from each other. The lower swing-frame is kept down by a weight, F², when free, and this of course keeps the upper one

raised by means of the link-rods. A third wheel or roller, G, is mounted on a vertical arbor, *g*, and may be adjusted up or down by well-known means. The arbor *g* has its bearings in an arm, G¹, swinging horizontally on a pivot, *g*¹, under the table. A strap, *g*², acts as a stop to limit the movement of this arm in one direction, while a weight, G², attached to a strap, *g*³, passing over a roller and attached to the arm, keeps the roller pressed against the work. Power is communicated to a driving-roller, H, from any suitable prime mover to rotate it. A band, I, from this roller passes over a pulley, I', on the arm G¹, and thence round a pulley, *i*, on the arbor *g*, to drive the grinding-wheel G. A band, J, from the roller H drives a pulley, J¹, on a shaft, *j*. A pulley, J², on this shaft drives a roller on the lower grinding-roller shaft, by means of a band, *j'*. As the shaft *j* forms the pivot of the swing-frame E¹ the latter may be moved up or down without slackening the belt. A band, K, from the opposite end of the roller H drives a pulley, *k*, on a shaft mounted in bearings in the frame. A pulley, *k*¹, on this shaft drives a corresponding pulley on the upper grinding-roller shaft, by means of a belt, *k*².

In operation, the casting to be ground is fastened on a sliding plate, M, by suitable clamps, and shoved in between the grinding-rollers C E until the front edge comes against the vertical grinding-roller G, which smooths or polishes that edge. The upper and lower rollers do the same to the upper and lower sides of the casting, being brought in contact with them by means of the treadle F, as before explained.

The grinding-rollers being driven each independently of the others, one or more of them can be used as needed.

It is obvious that the form and position of the wheel G may be changed to suit the character of the work, and that more than one wheel might be used if needed, these changes involving construction merely, and not skill.

I claim as my invention—

1. The combination of the swing-frame, the grinding-roller mounted therein, the pulley on the axis of the swing-frame, and the belt for driving the grinding-roller, these members be-

ing constructed and operating substantially as set forth, to apply the grinding-roller to the work without slackening the driving-belt.

2. The combination of the two swing-frames, the crank-wheels, the links connecting the two frames to the crank-wheel, and the treadle mechanism for operating the crank-wheels, these members being constructed and operating substantially as set forth, simultaneously to move the upper and lower rollers toward or from the work.

3. The combination of the vertical grinding-roller, its horizontally-swinging arm, and the

driver-pulleys swinging with said arm, substantially as set forth.

4. The combination of the vertically-moving grinding-rollers with the horizontally-moving grinding-roller, these members being constructed and operating substantially as set forth, simultaneously to smooth three sides of a casting.

In testimony whereof I have hereunto subscribed my name.

Witnesses: GEO. H. SPENCER.

HENRY HECKERT,

JNO. A. METZELL.