

W. M. HUGHES.

Machines for Facing Cobble-Stones.

No. 146,592.

Patented Jan. 20, 1874.

Fig. 1.

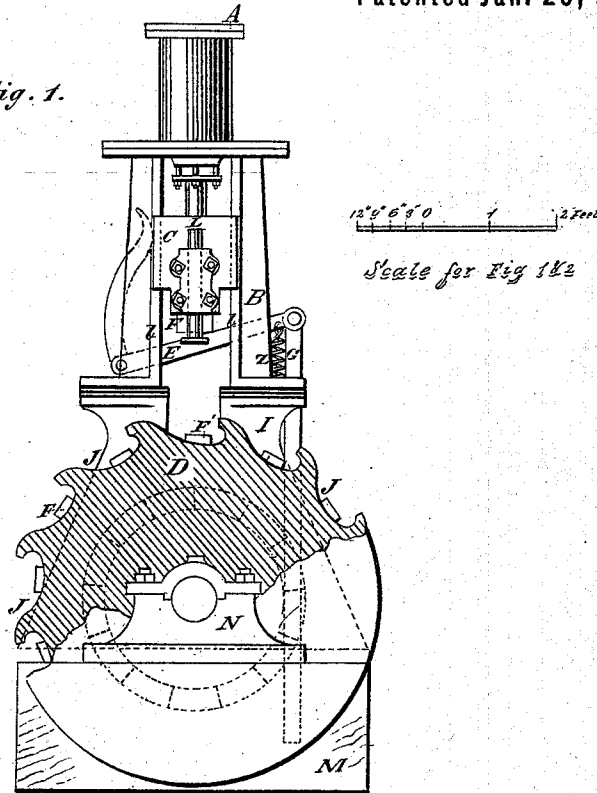
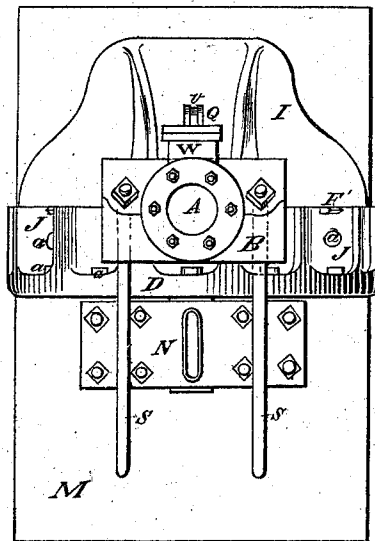


Fig. 2.



Witnesses,  
J. Howard Smith.  
Louis Antetru

Inventor,  
William M. Hughes  
per Sawyer & Ball  
attys

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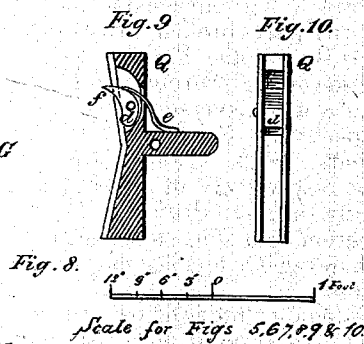
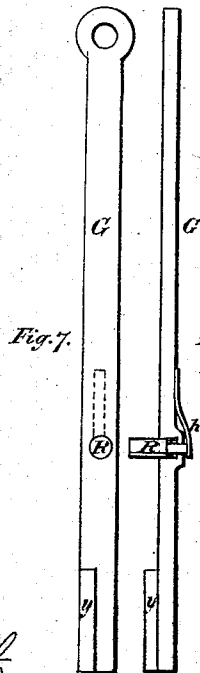
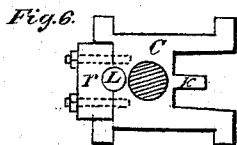
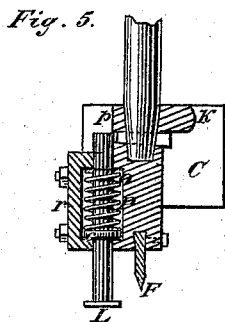
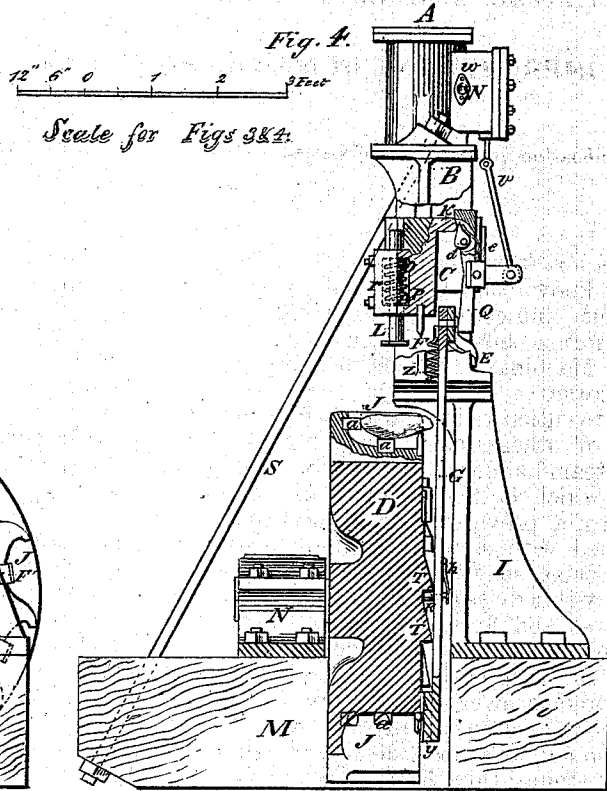
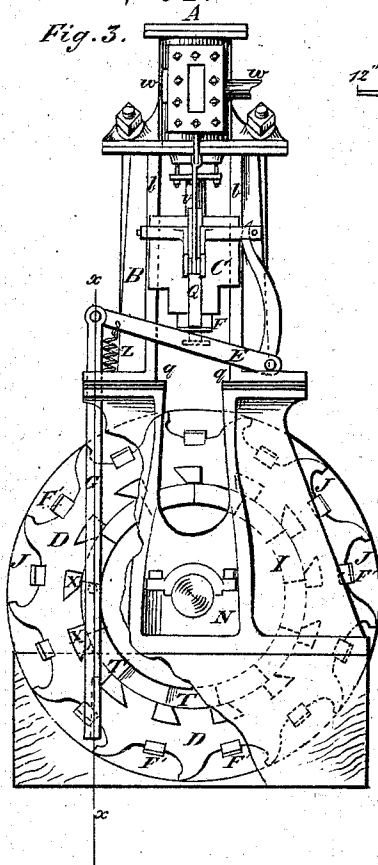


Fig. 8.

Scale for Figs 5, 6, 7, 9 & 10.

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J. Howard Smith.  
Louis. Antier.

Inventor,  
William M. Hughes  
Per Sawyer & Ball  
attys

# UNITED STATES PATENT OFFICE.

WILLIAM M. HUGHES, OF SAN FRANCISCO, CALIFORNIA, ASSIGNOR TO LOUIS DUTERTRE, A. EVERETT BALL, AND E. D. SAWYER, OF SAME PLACE.

## IMPROVEMENT IN MACHINES FOR FACING COBBLE-STONES.

Specification forming part of Letters Patent No. **146,592**, dated January 20, 1874; application filed December 3, 1873.

*To all whom it may concern:*

Be it known that I, WILLIAM M. HUGHES, of the city and county of San Francisco, State of California, have invented a Cobble-Stone-Facing Machine, of which the following is a specification:

My invention relates to a machine for facing cobble or other stones, consisting essentially of a steam-hammer, armed with a clipping-chisel, which is made to actuate a revolving anvil-drum provided with several nests, also furnished with similar chisels or knives, the whole being so arranged that stones may be placed within these nests resting on the contained knives, and for every upstroke of the hammer the anvil-drum shall revolve the distance of one of these nests so as to present a fresh stone, and for every down-stroke of the same the end of a stone shall be caught between the hammer and nest-chisels and clipped off, so that stones thus faced may have an even surface on their cut ends suitable for paving purposes.

Figure 1 is a front elevation of a machine embodying my invention. Fig. 2 is a plan of Fig. 1. Fig. 3 is a rear elevation of the same machine with parts broken away to show more completely the details. Fig. 4 is a vertical transverse section of Fig. 1 through the line *xx*. Figs. 5 and 6 are a transverse vertical section and plan, respectively, of hammer with buffer and attachments. Figs. 7 and 8 are a front and side view, respectively, of the bar G for actuating directly the anvil-drum D. Figs. 9 and 10 are a section and side views, respectively, of the rock-lever Q for regulating the valve movements.

A is a steam-cylinder fitted with piston and hammer C, valve-gearing *v*, steam-chest W, and steam and exhaust piping *w*. B is the upper frame-work which sustains this cylinder with its attachments, and is provided with guides *b b* for the hammer C to slide between up and down on. I is the lower iron frame to which the upper frame B is bolted, and between their junction a layer of vulcanized india-rubber or other elastic packing is placed for the purpose of forming a cushion for the inner projections of this bottom frame *g g*, which receive the hammer at the limit of its down-

stroke, and at the same time to prevent the jarring of the machine by reason of the sudden blows of the same. M is a wooden foundation to which the iron frame-work carrying the machine is bolted, and made firm by long rod stanchion-braces S secured to the top plate of the upper frame B. The hammer C is provided with a recess at the bottom for a chisel-knife, F, to fit into, and has at its rear a hollow space, P, with shaft-bearing *p*, partially covered by a cap, *r*, for the bumper-shaft of a bumper, L, to move up and down in so that its fixed collar *c* may compress or release a spiral spring, O, encompassing this shaft and secured in this hollow space P. This bumper has a bottom plate, and its object is to hold the stones to be cut in advance of the clipping-stroke of the hammer C with knife F, the compression of the spring O allowing it to adjust itself to the size of the stone to be clipped.

For bringing the stones to be faced consecutively under this clipping-hammer, a cast-iron anvil-drum, provided with several nests, J, for holding them, is placed in a vertical position close up to it, resting on a central shaft fitted within the pillow-block N at one end, and a bearing formed in the frame I at the other, and is made to revolve on its shaft the distance for one of these nests by each upstroke of the hammer. This movement is effected by means of a bent lever, E, which rides over the top of the hammer C and is thrown out of place by its upstroke so as to pull up the bar G, which is furnished with a pin, R, that is pressed forward by a spring attached thereto so as to engage equidistant notches T made on this side of the anvil-drum D, and thus turn this drum round, presenting each time a new nest directly in line with and under the hammer. This bar G is also provided with a projecting piece, *y*, that acts against projections X X, which are arranged as an outer circle to the notches T T for holding the drum D in position to receive the down-stroke of the chisel-knife F, and a spring, Z, attached to the lever E, helps this lever and bar G to assume their original position, on the descent of the hammer C, in readiness for the repetition of a similar movement.

Each of these nests J J is furnished with a knife-chisel, F', similar to that of F on the hammer, which is fitted in front of the anvil-drum directly under and in line with this hammer-chisel F', when each nest has consecutively been brought into position, while buffers *a*, made of vulcanized india-rubber, or other elastic material, are fitted into the iron backings and bottoms of these nests, so that a stone, when placed within one of them, is sustained on two of these buffers and the front chisel-knife F', while one end rests also against a rear buffer to relieve the force of the clipping in that direction, and the overhanging end of the stone or cobble is caught on the descent of the hammer between these top and bottom knives F F' and clipped off.

The valve-gearing is also dependent on the rise and fall of the hammer being actuated in its movements by the projecting arm K engaging the rock-lever Q, which is connected to the valve-rod *u*. In the top grooved inclined plane of this rock-lever Q, a catch, *d*, forced forward by a spring, *e*, is fitted so as to cause one end of this catch, *f*, to project. The end K of the hammer C runs into this grooved inclined plane, so that when the hammer is down, and steam is admitted through the piping W, it will immediately cause the hammer to rise, strike this lever Q, and force back the catch *d*, and thus bring the lower projection of the catch forward, only moving the lever Q sufficient to allow a cushion of steam at the top and secure the down-stroke; but the hammer in descending strikes this lower projection of the

catch *d* and forces farther out the lever Q, so as to admit more steam, and thus insure a powerful blow, while the upstroke is reproduced by the striking of the lower part of Q.

I do not claim the knives F F', and I am aware that steam hammers and cylinders are not new; but—

I claim—

1. The arm *k* on hammer, and the manner of attaching the knife F to the hammer, and the manner of operating the valves in the cylinder.

2. A machine for facing stone, consisting of a revolving anvil-drum, D, provided with its nests J J, which is actuated in its movements by steam-hammer C; the bent lever E with spiral spring Z and bar G, pin R, and projection *y* which engages the notches T T, and projections X X; the valve-lever Q with the spring *e* and catch *d*; the bumper L in the hammer, and spiral spring O fitted within the hammer C; the ratchet or notches T T into which the pin R catches to set the revolving drum D in motion, and the projections X X that stop said drum D; the elastic buffers *a a*, provided within the nests J J of the revolving drum D, in combination with the clipping-knives F F' fitted to the hammer C and drum D respectively, in the manner described, substantially as and for the purposes specified.

WILLIAM M. HUGHES.

Witnesses:

LOUIS DUTERTRE,  
A. EVERETT BALL.