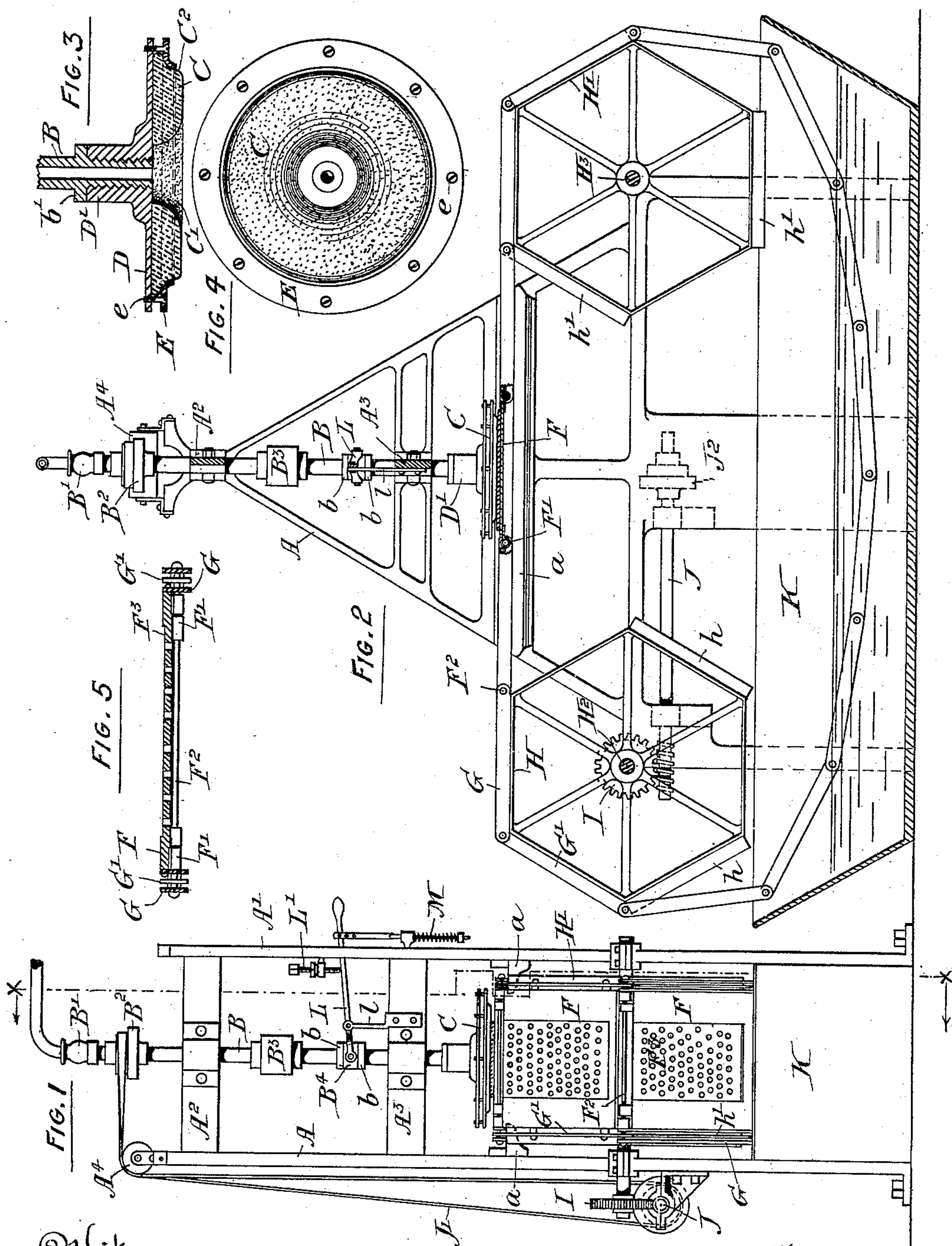


(No Model.)

R. M. PRICHARD.
SURFACING MACHINE.

No. 395,631.

Patented Jan. 1, 1889.



Witnesses.
Wm P. Forst.
O. M. Davis.

Inventor.
Richard Morris Prichard
Per Attys:-
Lyster & Kelland

UNITED STATES PATENT OFFICE.

RICHARD MORRIS PRICHARD, OF NEW ROCKLAND, QUEBEC, CANADA, AS-
SIGNOR OF ONE-HALF TO JOHN JONES WILLIAMS, OF SAME PLACE.

SURFACING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 395,631, dated January 1, 1889.

Application filed July 25, 1887. Serial No. 245,209. (No model.)

To all whom it may concern:

Be it known that I, RICHARD MORRIS PRICHARD, machinist, of New Rockland, in the county of Richmond and Province of Quebec, Canada, have invented certain new and useful Improvements in Slate-Surfacing Machines; and I do hereby declare that the following is a full, clear, and exact description of the same.

10 This invention has reference to apparatus for smoothing and polishing the surfaces of school-slates, which operation heretofore has been performed either by hand or by driving the slates between two abrading-rollers, at a
15 great loss from breakage, &c.

The invention embraces an arrangement whereby water is introduced between the grinding-surface and the material being operated upon at a central point, from which it is
20 driven outwardly, so as to keep the material free from dirt and allow the grinder to work more effectively upon it. This arrangement consists in having the revolving shaft on the end of which the grinder is secured made hol-
25 low, so that water run into it from any convenient source will pass through a central aperture in the grinding-disk and be spread centrifugally by the revolution of the same.

Other features are, first, the manner in which
30 the grinder is secured to the end of the revolving shaft, and, secondly, a revolving endless table for carrying the slates under the grinder, this table being washed at a point in its revolution, so as to be in a clean condition to
35 receive the slates.

The grinder is secured to the end of the shaft in the following manner: On the end of the shaft is screwed a flat metal disk, against the outer face of which the annular grinder,
40 of the required material, is held by a metal ring of greater diameter, clipping its depressed outer edge, and secured to the disk by suitable screws, &c., outside grinder.

The table for carrying the slates may be
45 described as an endless chain of carriers linked together and carried over two hexagonal drums provided with teeth to fit the links, one of which is operated from the main shaft through any suitable mechanism. These
50 carriers, after disposing of the slates, pass

through a trough of water arranged under the machine.

For full comprehension, however, of the invention reference must be had to the annexed drawings, in which—

Figure 1 is an end view of my machine; 55
Fig. 2, a longitudinal vertical sectional elevation of same on line X X, Fig. 1. Fig. 3 is a vertical section of grinder secured to end of hollow shaft; Fig. 4, a bottom view of same, 60
and Fig. 5 a transverse section of one of the carriers of the revolving table.

Similar letters of reference indicate like parts.

A A' are suitable side frames, with horizon- 65
tal guides *a a* formed on their inner sides for the endless table, to be hereinafter described, to work on, and connected transversely by cross-pieces A² A³, in which are formed bear-
ings for the vertical hollow shaft B. On this 70
shaft B is carried a cup, B', on its upper end, into which is led the end of a suitable water-supply pipe; a cone-pulley, B², from which the drums carrying the endless table are to be operated, as will be hereinafter described; a 75
main pulley, B³, to receive a belt from any operating mechanism, and a clutch-collar, B⁴, connected with an adjusting device, to be hereinafter described, for adjusting the shaft and
80 with it the grinder C, secured to its lower end. The shape of this grinder and manner of securing it to the lower end of the shaft B will now be described. The grinder, as shown in section in Fig. 3, is a flat annular disk, C, of the required material, having a central open- 85
ing, C'.

D is a flat metal disk, with a collar, D', formed on its upper side, by which it is screwed upon the lower end of shaft B, which is also threaded to receive it up as far as the 90
rigid collar *b'* on the shaft.

E is a metal ring arranged concentrically with the grinder-disk C and upon the depressed annular surface C², and secured to the disk D by screws *e*, so as to hold the grinder- 95
disk firmly between it and the face of the disk D, and in case it should break at any time prevent the parts from flying out.

F F are the slate-carriers, preferably formed of thin pieces of metal of suitable size, perfo- 100

rated, as shown in Fig. 5, to allow dust and dirt to fall through, and having eyes $F' F'$ formed at each end, so that a number of them can be hinged together by means of pins F^2 ,
 5 passed through the eyes $F' F'$ in the usual way, and when so connected form an endless band. These plates $F F$ are provided with slight depressions or seats F^3 on their upper sides, in which the slates may rest.

10 $G G$ are double links extending along both sides of each alternate carrier, through the ends of which and those of the single links $G' G'$, extending along the sides of the other carriers, the ends of the pins F^2 also pass, and are
 15 then headed to hold all together in the usual way.

$H H'$ are hexagonal drums mounted on shafts $H^2 H^3$, carried in bearings formed in the side frames, $A A'$, and having teeth or
 20 projections $h h'$, formed on three alternate sides, which fit the double links $G G$, connected with the carriers. The shaft H^2 has a gear, I , mounted on one end, which is turned by the worm on shaft J , carried in suitable
 25 bearings from side frame, A , and revolved by means of a band, J' , taken from the cone-pulley B^2 over roller A^4 , mounted on the top of side frame, A , to another cone-pulley, J^2 , on the worm-shaft J .

30 K is the water-trough placed between the side frames, $A A'$, and extending the full length of the machine.

The adjusting device before mentioned consists of a lever, L , forked at one end to
 35 fit and be pivoted to the loose collar B^4 , held in place on the shaft B between two rigid collars, $b b$. This lever is fulcrumed to the standard l from cross-piece A^3 , and used to raise or lower the shaft B , and with it the
 40 grinder C , for operation on different thicknesses of material. A set-screw, L' , is carried in a projection from the side frame, A' , to keep the lever L in the desired position, and when any unevenness in the material occurs, tending to raise the shaft, it is free to
 45 rise, and is prevented from too sudden a return by the coiled spring M acting upon the outer end of the lever to ease it down.

The operation is as follows: The shaft B is

revolved at a high rate of speed, and from 50 the cone-pulley B^2 , through belt J' and cone-pulley J^2 on worm-shaft J , a slower motion is imparted to the drum H by the gear I on its shaft intermeshing with the worm on shaft J . The teeth on this drum fit in the double links 55 $G G$ and work the endless band of carriers, which bears, when under the grinder, on the guides $a a$ in the side frames, and is made of sufficient length to allow a certain amount of slack to drag through the water-trough K . 60 The slates X are laid on the carriers at one end of the machine, and taken by them under the grinder-disk C , where one side will be surfaced or polished, and thence to the other end of the machine, where they are removed from 65 the carriers in any convenient manner, and, to save time, taken to another similar machine to have the other side surfaced.

It will be seen that the water descending the hollow shaft B will be spread centrifugally, 70 so that all dirt and dust will be thrown outward and off the slates being ground.

The number of grinding-disks in a machine is not confined to one, as more can be employed according to the purpose for which it 75 is designed, and they may be of different material and abrading quality.

What I claim is as follows: -

In a school-slate-surfacing machine, the combination of a vertical hollow revolving 80 shaft adapted to be rotated by any suitable means, frame of machine having suitable bearings for such shaft, an annular grinder rigidly secured on end of said shaft and revolving with it, the endless band of plane- 85 surface slate-carriers for carrying the slates under the grinder, supports for such endless band while passing under said grinder, drums adapted to be rotated by any suitable means for operating such band, and a water-trough 90 through which such endless band passes, as set forth.

Dated at Richmond, Quebec, this 11th day of July, 1887.

RICHARD MORRIS PRICHARD.

In presence of—

HARVEY V. BROWN,

GEORGE KINCH.