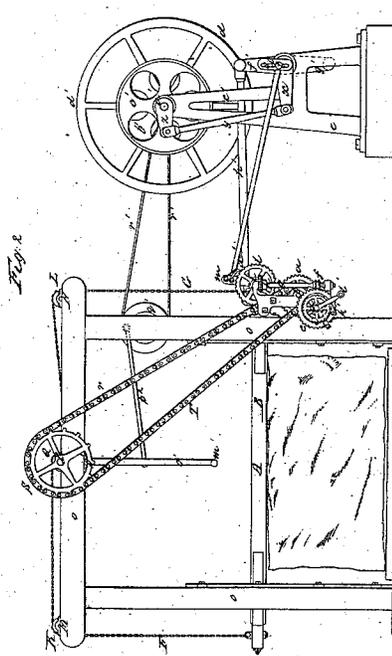
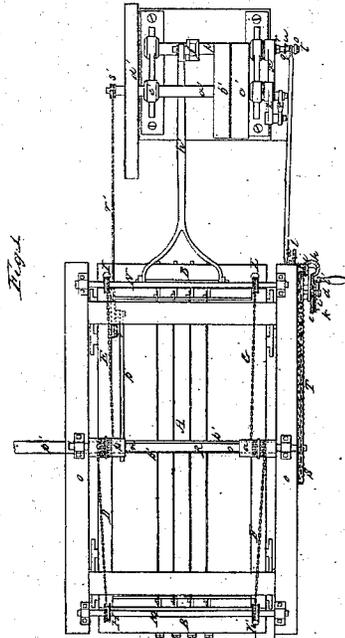
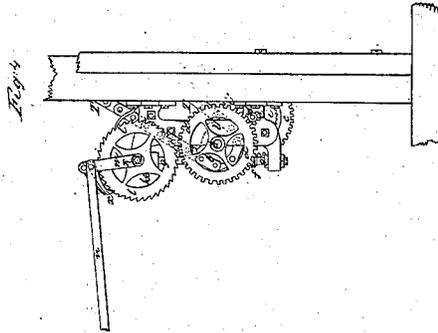
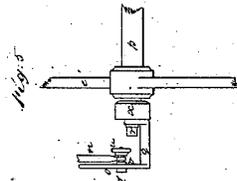
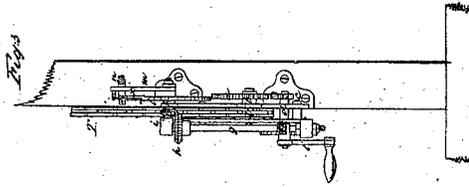
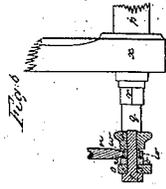


*A. H. Tingley,
Sawing Stone.*

N^o 7201.

Patented Mar. 19, 1850.



UNITED STATES PATENT OFFICE.

A. H. TINGLEY, OF PROVIDENCE, RHODE ISLAND, ASSIGNOR TO E. W. TINGLEY, H. F. TINGLEY, AND A. H. TINGLEY.

MACHINE FOR SAWING MARBLE.

Specification of Letters Patent No. 7,201, dated March 19, 1850.

To all whom it may concern:

Be it known that I, ALBERT H. TINGLEY, of Providence, in the county of Providence and State of Rhode Island, have invented a certain new and useful or Improved Machine for Sawing Marble or other Stone Capable of Being Reduced Thereby; and I do hereby declare that the same is fully described and represented in the following specification and accompanying drawings, letters, figures, and references thereof.

Of the said drawings Figure 1, denotes a top view of my improved machine. Fig. 2 is a front or side elevation of it.

In the same A, represents a gang or series of saws, fixed in a horizontal frame B, suspended over a block of marble C, by four chains D, E, F, G, which respectively depend from and pass over four pulleys or sheaves H, I, K, L, arranged and fixed on two horizontal shafts M, N, which extend across and are supported on the tops of a suitable frame O. The chains extend to and are wound upon two windlasses P, Q, affixed upon a horizontal cross shaft R, which is arranged on the top of the frame O, and midway between the two shafts M, N. Each of the said windlasses has the two chains on the same side of the frame wound upon it, and so wound on it that while the revolution of the windlass in one direction may simultaneously wind the two chains on it, its revolution in the opposite may simultaneously unwind them from it; the first operation serving to raise the gang of saws, and the last operation serving to depress or lower them.

On one end of the shaft R, is a sprocket wheel S. About the periphery an endless chain T, extends, and also around another and smaller sprocket wheel U, disposed as seen in Figs. 2 and 3, the latter of which is an end view of the said last mentioned sprocket wheel and the mechanism adjacent to it.

A toothed gear *a*, is fixed on the inner end of the axle *b*, of the sprocket wheel U, the same being represented in Fig. 4, which denotes a side view of said wheel and the machinery directly over and below it. The said wheel *a*, is made to engage with a small toothed pinion *c*, fixed to a shaft *d*, which has a large gear wheel *e*, fixed on its

other or front end, and which is made to engage with an endless screw or worm *f*, placed on a vertical shaft *g*. On the upper part of this shaft *g*, is a bevel wheel *h*, which takes into a beveled pinion *i*, fixed on a short horizontal shaft *k* on or near the inner end of which a ratchet wheel *l*, is fixed, the whole being arranged and applied together as seen in the drawings. An arm *m*, movable on the shaft *k*, has a small impelling click or pawl *x'*, jointed to its upper end and made to act against the teeth of the ratchet wheel. The upper end of the arm is also jointed to one end of a connecting rod *n*, which at its opposite end is connected with an arm or slotted plate *o*, shaped and made to project from a horizontal rocker shaft *p*, as seen in Figs. 1, 2, and 5; the latter figure being made to represent a side view of the arm and its crank connection with the shaft.

A crank or bent piece of metal *q*, is fastened to the end of the shaft *p*, by means of a screw nut *r*, as seen in Fig. 5; the horizontal part of the crank *q*, being carried below the line of the axis of the shaft produced. To the outer end of the crank *q*, the slotted plate *o*, is affixed, and extends up therefrom as seen in Fig. 5. A slot *s*, is made through this plate for the reception of a screw *t*, which passes through it, and has its head bearing against the plate each side of the slot. A section of the said screw, the slotted plate, the connecting rod *n*, and the screw nut *u*, is given in Fig. 6, which is a horizontal section of the said parts taken in line of the axis of the screw. It will be seen that two cylindrical washers *v*, *w*, are placed on the screw. One of them viz, *v*, is about the diameter of the head of the screw. The other, viz, *w*, is somewhat less in diameter, and is a little larger than the width of that part of the connecting rod placed on it. When the screw nut *u*, is screwed down against the washer *w*, it will cause the screw *t*, to be fixed to the plate *o*, in any position in which the said screw may happen to be placed, or in other words either in line of the axis of the shaft *p*, or at any distance therefrom within the limits of the length of the slot of the plate.

From the shaft *p*, a crank *x*, extends, and is jointed to the lower end of a connect-

ing rod *y*, which, at its opposite or upper end, is jointed to a crank *z*, which extends from another horizontal shaft *a'*, which is the driving shaft of the machine; there being a fast and loose pulley, and a fly wheel fixed on it, *b'*, being the loose pulley, *c'*, the fast one, and *d'*, the fly wheel, all as seen in Fig. 1, the said shaft being supported by a framework *e'*. The driving belt which puts the machinery in operation is carried around the fast pulley.

The rocker shaft *p* has two arms or cranks *f'* *g'* extended in opposite directions from its middle part. A pitman or connecting rod *h'* is jointed at one end to one or the other of these arms, and at the other end of it, it is also jointed to the saw frame B. The object of the two cranks or arms *f'* *g'*, extended in opposite directions above and below the shaft *p*, is to enable the connecting rod or pitman of the saw frame to be applied either to that one which is above the shaft *p*, when the saw frame is above the level thereof, or the other of them, when the said frame is below the said level. Thus the power which impels the saws may be made to operate without a material loss which might accrue were the connecting rod to operate under too much inclination, which it would otherwise attain when the saws approached the lower part of the block of stone. The movement of the plate *o*, is an oscillating one created by that of the rocker shaft to which it is connected. Such movement is communicated to the connecting rod *n*, and the arm *m*, and pawl *x'*, and so as to cause an intermittent rotary movement of the ratchet wheel *i*. The mechanism of which the said ratchet is part, and which was before described, will be put in motion in such manner as to gradually lower the gang of saws. And the extent of such depression in any given time may be regulated by simply increasing or diminishing the distance of the axis of the screw nut *u*, from that of the shaft *p*, produced.

I would remark that the gear wheel *e*, before mentioned is made to run loosely on its shaft, and is connected or locked to it by means of a ratchet wheel *i'*, fixed to the shaft, and a spring click *k'*, fixed to the wheel *e*. If the click *k'*, is lifted out of action with the ratchet wheel, the shaft of the wheel *e*, is left free to be turned by a crank *l'*. By laying hold of the said crank and turning the shaft *d*, it will readily be seen that the saw frame may be either elevated or depressed, at a much faster or quicker rate than it can be by the mechanism before described.

Horizontally and transversely over the block of stone, is a water tube *m'*, which is supported in position by two tubes *n'*, *o'*, which extend down from a hollow rocker

shaft *p'*, to one end of which a hose is attached and made by suitable means to lead water into the shaft, from whence it is made to flow down the tubes *n'*, *o'*, and into the distributing tube *m'*, the lower part of which is punctured with numerous fine holes so placed as to allow the water to fall down upon the saws while they are in operation. A reciprocating movement of the water distributor is given to it by means of a connecting rod *p²* and a pulley *q'* the rod being jointed both to the pulley and one of the upright tubes of the distributor, the said movement being effected when the pulley is put in revolution, the said pulley being rotated by means of an endless band *r'*, which is made to operate around it and a pulley *s'*, fixed on the driving shaft. This movement of the water distributor being back and forth over the stone and in a direction from end to end of it, showers the water upon or over its surface in an equable regular manner, whereby the saws are made to cut or operate to much better advantage than they do when water is applied to them by any of the modes ordinarily adopted.

What I claim as my invention is as follows—that is to say, I claim—

1. The combination of mechanism applied to the sprocket wheels, endless chain windlasses and suspension chains of the saw frame; the said combination being for the purpose of gradually lowering the gang of saws in the proportion required, as the sawing process progresses. This combination consists of the train of mechanism which is applied to the lower sprocket wheel shaft, or axle *b*, and the driving shaft, and intervenes between the two, and is actuated by the revolutions of the driving shaft said train of mechanism consisting of the tooth gear *a*, pinion *c*, gear wheel *e*, endless screw *f*, beveled wheel *h*, pinion *i*, and ratchet wheel *l*, together with the pawl *x'*, arm *m*, connecting rod *n*, slotted plate *o*, rocker shaft *p*, crank *q*, screw *t*, screw nut *u*, washers *v*, *w*, cranks *x* and *z*, and connecting rod *y*, as above specified. Not meaning to claim as any part of the same the crank *l'*, click *k'*, and ratchet wheel *i'*, except in their combination therewith, and for the purpose of enabling a person to raise or lower the gang of saws by applying his hand to the crank; it being understood that when these last contrivances are not used, the wheel *e*, must be firmly fixed to its axis, and not placed loosely thereon as it is when such contrivances are employed.

2. I also claim, the employment of the two arms *f'*, *g'*, extended in opposite directions above and below their rocker shaft, *p*, and used in the manner and for the purpose as specified.

3. I also claim, the vibratory tubular

watering apparatus m' , n' , o' , p' and
mechanism combined with it said mecha-
nism consisting of connecting rod p^2 , pulley
 q' endless band r' and pulley s' , for giving
5 to it a reciprocating movement over the
gang of saws and stone as specified.

In testimony whereof I have hereto set

my signature this first day of October A. D.
1849.

ALBERT H. TINGLEY.

Witnesses:

WILLARD CHASE,
SAML. W. PECKHAM.