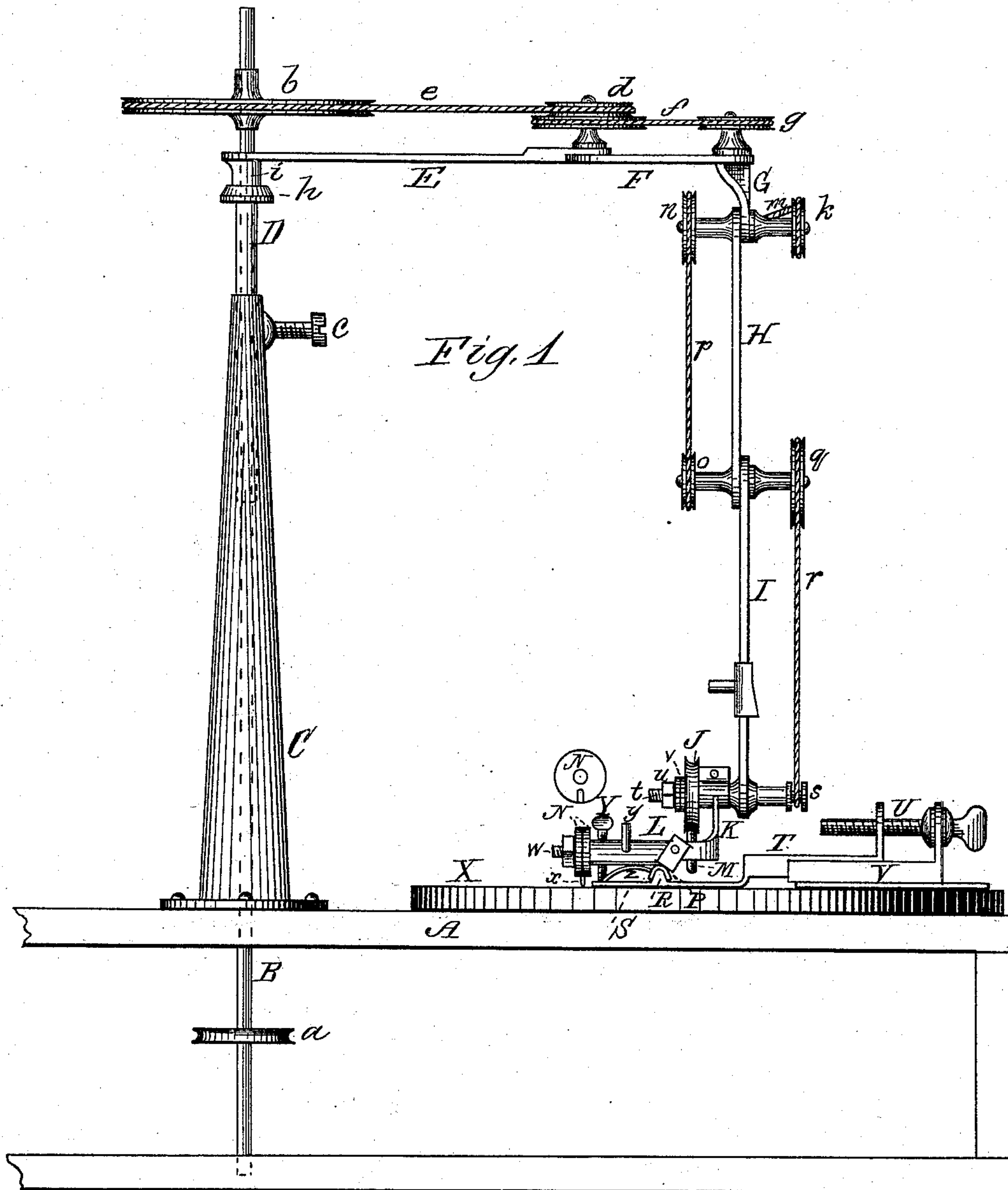


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No. 219,514.

Patented Sept. 9, 1879.



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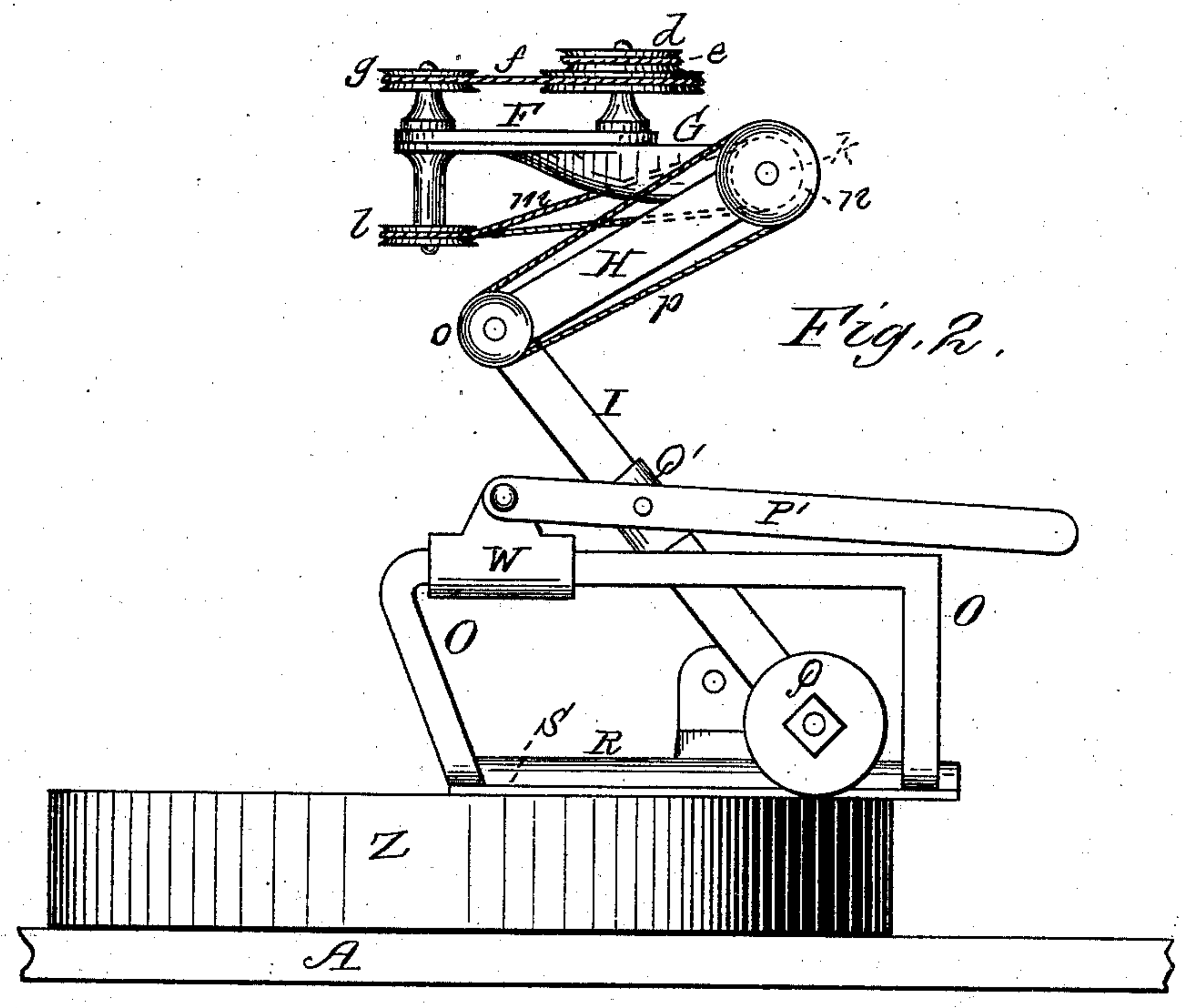
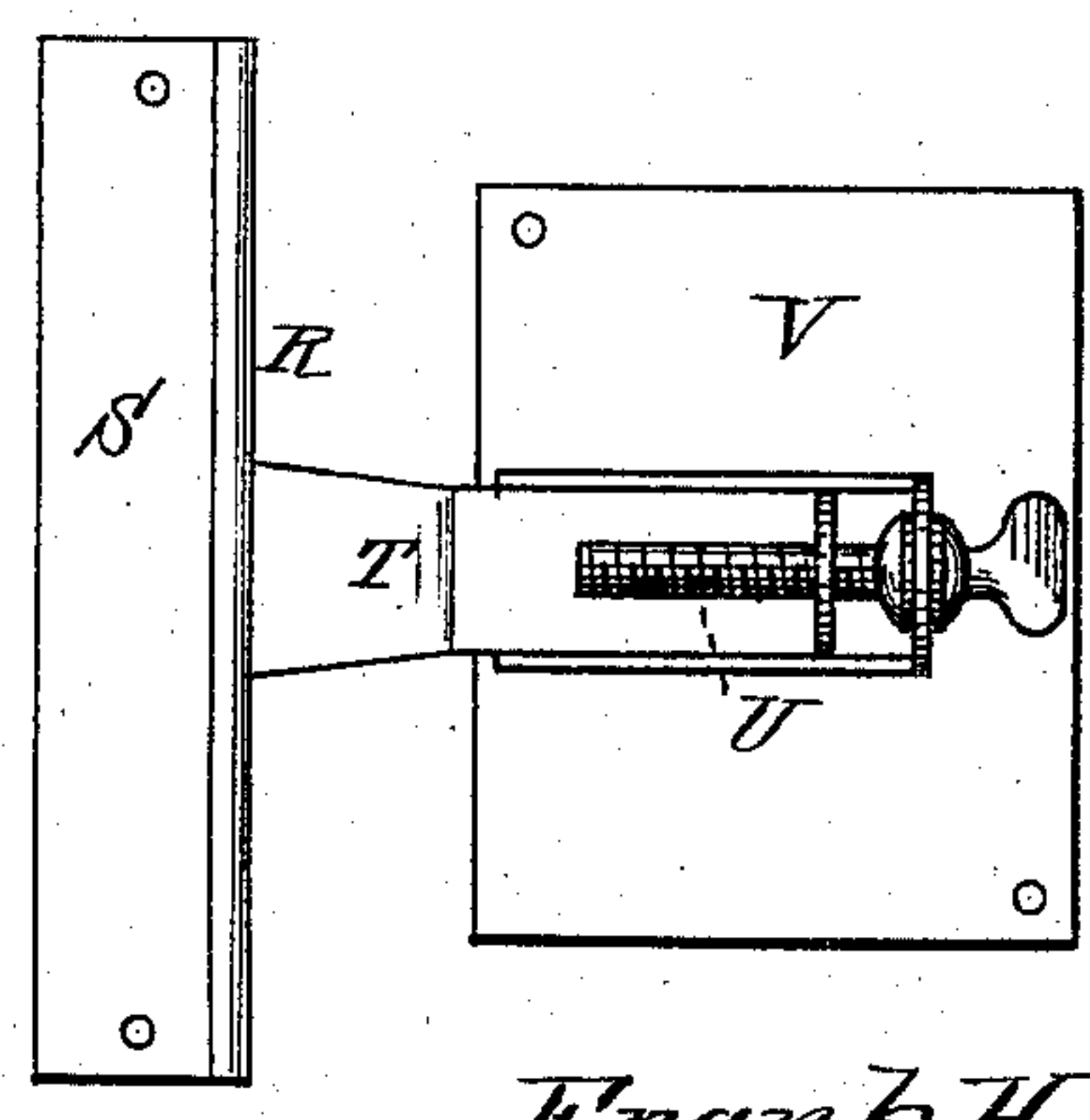


Fig. 3.



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# UNITED STATES PATENT OFFICE.

FRANK H. PLUMMER, OF EPSOM, NEW HAMPSHIRE.

## IMPROVEMENT IN MILLSTONE-DRESSING MACHINES.

Specification forming part of Letters Patent No. **219,514**, dated September 9, 1879; application filed August 8, 1879.

*To all whom it may concern:*

Be it known that I, FRANK H. PLUMMER, of Epsom, in the county of Merrimack and State of New Hampshire, have invented a new and valuable Improvement in Millstone-Dressing Machines; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawings, making a part of this specification, and to the letters and figures of reference marked thereon.

Figure 1 of the drawings is a representation of a side elevation of my invention. Fig. 2 is a view, showing the jointed arms and rest to be applied when using an emery or other grinding wheel. Fig. 3 is a top-plan view of the slab and table.

This invention has relation to machines for dressing millstones; and the object thereof is to employ a machine that may be readily set up and work upon any part of the stone at any angle or draft from the center, and equally well on either a right or left hand stone.

A further object of the invention is to adapt the machine to work on any portion of the stone, as required, and stones of various sizes, and accomplish a variety of forms of dress, as well as any draft in the dress.

The invention consists in the various details of construction, as will be hereinafter described, and subsequently pointed out in the claims.

In the accompanying drawings, A represents the floor of the mill. A vertical spindle, B, passes up through the floor A, and up through a stand or hollow post, C, bolted or otherwise secured to the floor. A pulley, *a*, is rigidly connected to the spindle at a point below the floor, for imparting motion to the spindle by a suitable belt from an engine or other power.

At the upper end of the spindle B is a large driving-pulley, *b*, and below said pulley a lengthener, D, which is in form of a sleeve, to encircle the spindle and pass down a short distance into the post C. The post C forms a support to steady the spindle B and hold it in a vertical position while it is caused to revolve by means of a belt upon the pulley *a*.

The lengthener or sleeve D may be adjusted vertically by raising or lowering the same, and

is held at the desired height by a set-screw, *c*, passing through the upper end of the post C, and against the lengthener D. To this lengthener D is secured a horizontal arm, E, which may be termed the "main arm" of the machine. It is for the purpose of raising this arm E that the lengthener or sleeve D is employed, which adjustment is required when working on the runner, as the latter is higher from the floor of mill when turned over to dress than the bed-stone.

The main arm E upon its outer end has a double pulley, *d*, over which passes a belt, *e*, from the pulley *b*, and from the largest grooved circumference of the pulley *d* passes a belt, *f*, to a pulley, *g*, upon the end of an arm, F.

In place of the lengthener being continuous and the arm E loosely connected thereto, so as to allow of its swinging horizontally, the sleeve or lengthener D may be shortened and provided at its upper end with a Babbitt-metal bearing-shoulder, *h*, and a short socket, *i*, connected to the end of the arm E, which passes around the spindle and rests upon the shoulder, which arrangement will admit of vertical adjustment of the arm, and at the same time of its swinging horizontally around the spindle.

From the outer end of the arm F projects an arm, G, to which is journaled a pulley, *k*, having its axis at right angles to a pulley, *l*, said pulley being secured to the shaft of the pulley *g* and revolving with it, a belt, *m*, passing over said pulleys for communicating motion to the pulley *k*; which, in turn, communicates motion to a pulley, *n*. This last-mentioned pulley is at the outer end of the arm G, and upon the same shaft with the pulley *k*; and from the arm G is an upright arm, H, to the lower end of which is a pulley, *o*, of smaller diameter than the pulley *n*, the two being connected together by a belt, *p*.

To the arm H is secured an arm, I, and opposite the pulley *o* is a larger pulley, *q*, from which passes a belt, *r*, to a small pulley, *s*, upon one end of a horizontal shaft, *t*, in the lower end of the arm I, through which the shaft passes.

The shafts upon which the several pulleys are attached form pivotal bearings for the several arms, so that each arm is free to turn upon



the other, thereby having a series of jointed arms, so that the adjustment required can be obtained for working on any part of the stone at any angle or draft from the center, as well as adapting it to work on either a right or left hand stone.

The belts of the several pulleys communicate motion to the shaft *t*, which has secured to its end a grooved friction-wheel, *J*, by a suitable nut, *u*, and washer *v*. To the shaft *t* is secured a carriage, *K*, said carriage having pivoted thereto a section, *L*, which forms a bearing for a journal, *w*, the journal having upon its rear end a leather or other suitable friction-wheel, *M*; and upon the front end of the journal are rigidly secured two collars, *N*, having countersunk holes or recesses upon their inner faces, near their periphery.

The diamond, as represented at *x*, is held between these countersunk holes or recesses by clamping the two collars *N* together by screwing the clamping-nut *y* up against them. As motion is given to the shaft *t* the wheel *J* revolves with it, and by frictional contact with the wheel *M* it also revolves rapidly, carrying with it the journal *w*, with its collars and diamond *x*, said diamond extending beyond the periphery of the collars sufficiently to cut the lines on the face of the stone.

The section *L* has upon its under side a grooved tongue, *P*, running at right angles to the journal *w*, which fits upon a track, *R*, of a slab, *S*. This slab is provided with an arm, *T*, for engaging with an adjusting screw-rod, *U*, upon a table, *V*, rigidly connected to the stone or floor of the mill. This attachment, consisting of the friction-wheels, carriage, and the section, with its journal *w* and diamond *x*, is used only for cracking or cutting the fine lines into the face of the stone *X* by taking or moving the diamond backward and forward upon the face of the stone, which is accomplished by sliding the section *L* in either direction upon the track *R*, the section being provided with a handle for this purpose.

The section *L*, upon its under side, is provided with two springs, *z*, for the purpose of raising the diamond off the face of the stone when not pressed down by the handle, in order to move the diamond from one line to another. The section *L* is also provided with a set-screw, *Y*, near the diamond, to regulate the depth of the cut.

It will be noticed that the section *L* is pivoted to the carriage *K*, so as to allow the diamond to rise and fall and still have the friction-wheels operate together; and the carriage may have a slight sidewise motion or remain stationary, as desired.

When it is required to use a grinding-wheel, either of emery, corundum, or other suitable material, for grinding off the high places upon the face of the runner *Z*, the attachment, consisting of the friction-wheels, carriage, and section, is removed by loosening the nut *u*, and in place of said attachment the grinding-wheel *Q* is placed upon the end of the shaft

*t*, and made to revolve by the several belts and pulleys hereinbefore described, a bevel grinding-wheel being used when it is desired to grind the furrows in the face of the stone deeper.

The table *V* is preferably kept stationary upon the stone by suitable weights, and as the cracking or cutting of one line upon the face of the bed-stone *X* is completed the slab *S* is moved by the action of the adjusting-screw *U* from one line to another. A rest consisting of the frame *o* is employed, said frame being attached to the slab *S*, the frame acting as a rest to steady the grinding-wheel *Q*, when used, and keep it in a true line for the furrow and regulate the pressure of the wheel upon the stone.

To the horizontal arm of the rest *o* is a sleeve, *W*, which slides on said arm, and to this sleeve *W* is a pivoted handle, *P'*. This handle *P'* is removably connected to a pin on a sleeve, *Q'*, said sleeve sliding on the arm *I*, and the pin acts as a fulcrum and pivotal center for the arm or handle *P'*, which arrangement admits of the grinding-wheel being moved along the face of the stone and guided in its course.

The several jointed arms and the manner of connecting and supporting the main arm on the vertical spindle admit of the distance from the center and outside of the stone being lengthened or shortened; also the main arm can be swung off from over the stone very quickly, leaving the stone free to apply the "red-staff" to test the trueness of the stone.

In large mills, where it is required that the stones should be dressed in the shortest space of time possible, two machines can be employed, one at work upon the runner and the other at work upon the bed-stone, thereby greatly facilitating the process of dressing, both in time and quality of the work.

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

1. In a millstone-dressing machine, the combination, with the spindle *B*, post *C*, and lengthener *D*, with the bearing-shoulder *h* and set-screw *c*, of the main arm *E*, formed with sleeve or socket *i*, the main arm having the several jointed arms with belts and pulleys connected thereto, substantially as and for the purpose set forth.

2. The combination, with the main swinging arm *E*, having connected thereto the several jointed arms, belts, and pulleys, of the shaft *t*, friction-wheels *J* *M*, for operating the diamond *x*, substantially as and for the purpose described.

3. In a stone-dressing machine, the shaft *t*, friction-wheel *J*, and carriage *K*, in combination with the section *L*, carrying journal *w*, friction-wheel *M*, and the collars *N*, for holding the diamond *x*, substantially as and for the purpose specified.

4. The combination, with the carriage *K*, of



the section L, with set-screw Y, and springs z, substantially as and for the purpose set forth.

5. The carriage K and pivoted section L, with grooved tongue P, in combination with the adjustable slab S, having track R, substantially as and for the purpose specified.

6. In a stone-dressing machine, the rest o, rigidly secured to the slab S, in combination with the sliding sleeves W Q' and the piv-

oted handle P', substantially as and for the purpose described.

In testimony that I claim the above I have hereunto subscribed my name in the presence of two witnesses.

FRANK H. PLUMMER.

Witnesses:

CYRUS O. BROWN,  
JOHN BROWN.