

L. E. TRUESDELL.

Stone-Dressing Machine.

No. 131,579.

Patented Sep. 24. 1872.

Fig. 1.

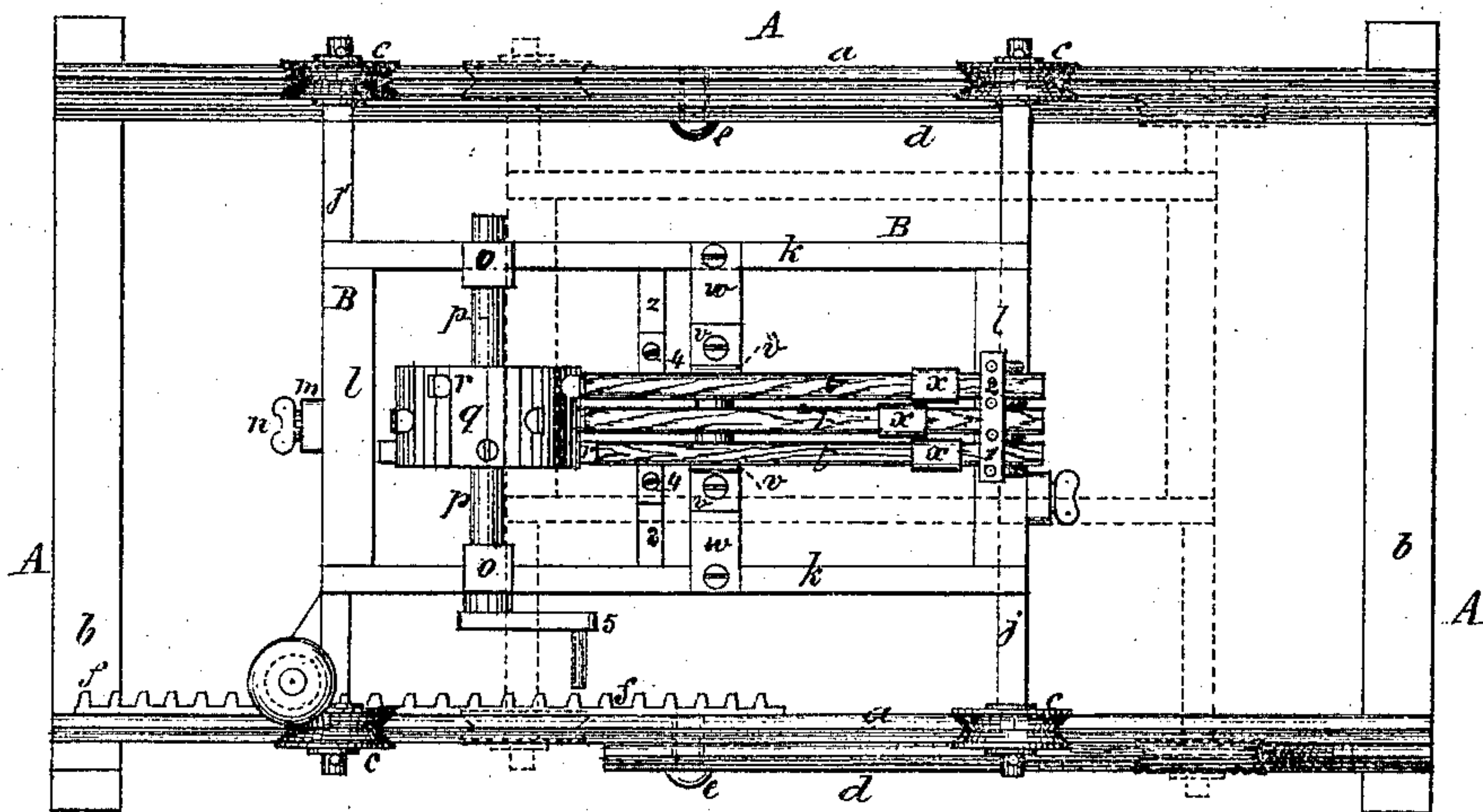


Fig. 2.

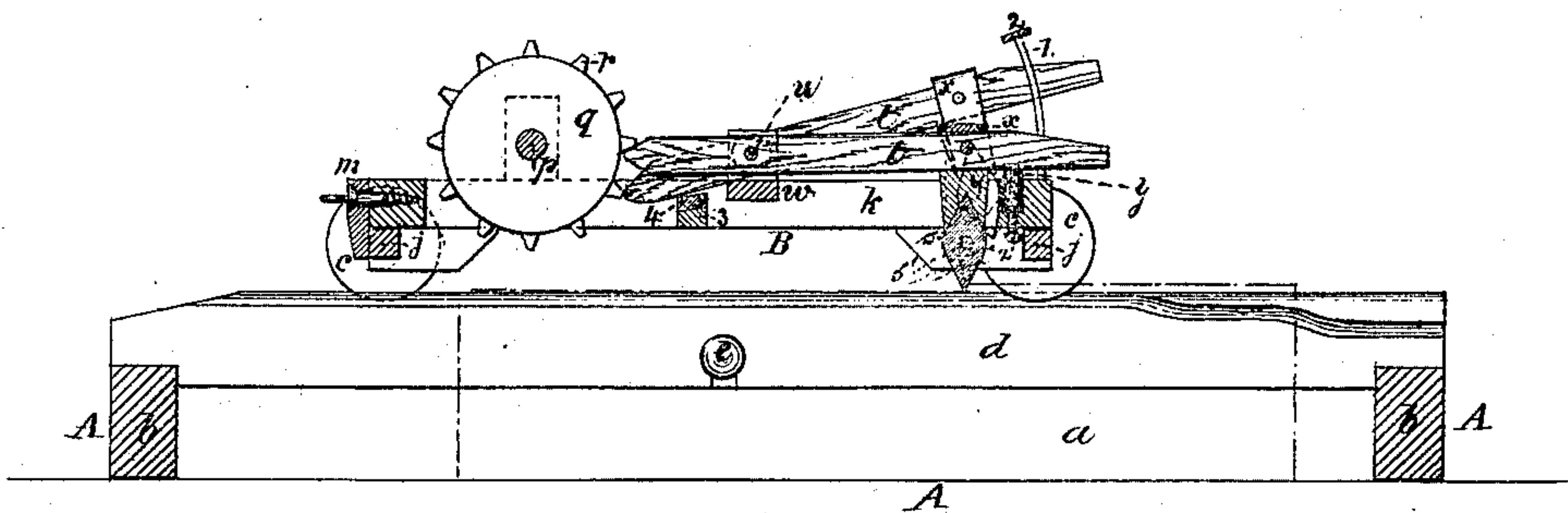
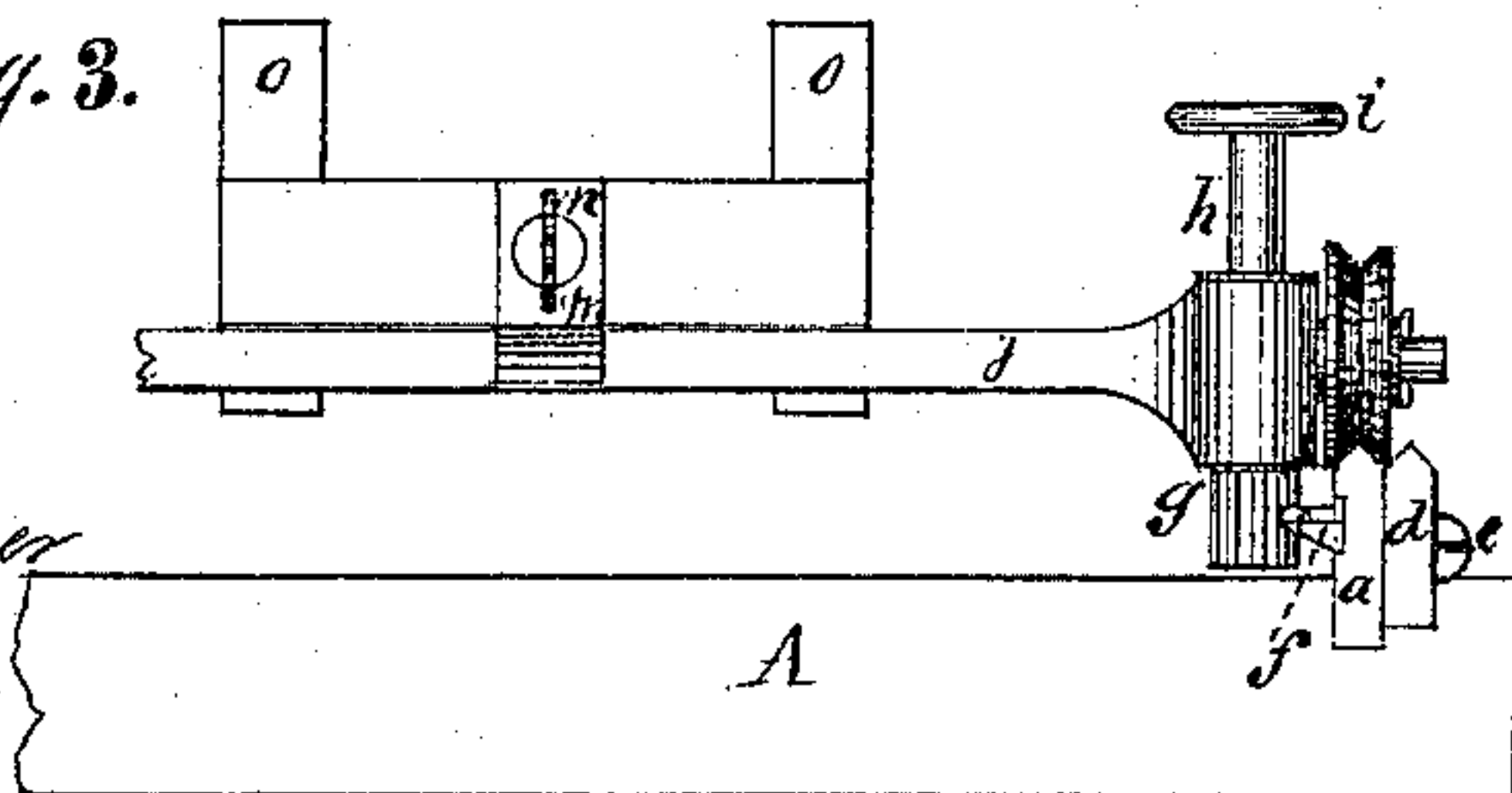


Fig. 3.



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LUCIUS E. TRUESDELL, OF WARREN, MASSACHUSETTS.

IMPROVEMENT IN STONE-DRESSING MACHINES.

Specification forming part of Letters Patent No. 131,579, dated September 24, 1872.

To all whom it may concern:

Be it known that I, LUCIUS E. TRUESDELL, of Warren, in the county of Worcester and State of Massachusetts, have invented certain Improvements in Stone-Dressing Machines, of which the following is a specification, reference being had to the accompanying drawing making part of the same, in which—

Figure 1 represents a plan of a machine having my improvements applied thereto; Fig. 2, a vertical longitudinal section of the same taken through the frame-work of the machine, but showing the tappet or cam-wheel and levers in elevation; and Fig. 3 represents a rear elevation of a part of the machine to illustrate the mode of advancing it as the work progresses.

My improvement consists, first, in combining with the levers that carry the cutting-tools and mechanism which operates them a single carriage capable of being moved back and forth, and from side to side, whereby the construction of the machine is much simplified and its efficiency increased. Secondly, it consists in an improved method of holding and securing the cutting-tools to their holder or operating-lever. Thirdly, it consists in a new and improved mode of regulating and adjusting the depth of penetration of the tool and force of the blow. Fourthly, it consists in a new and improved method of combining the frame and operative parts of the machine with the axle, whereby the former can be moved or adjusted laterally on the latter, and then firmly secured in their new position without change of position of the supporting-wheels of the axle. Fifthly, it consists in combining with the ordinary supporting-frame of the machine supplementary or pattern rails for the support of the traveling-carriage and cutting mechanism, whereby corresponding patterns may be cut on the stone being operated on without any change or rearrangement in the parts of the operative mechanism itself. Sixthly, it consists in combining, with supplementary or pattern-rails and a lower supporting-frame, a traveling-carriage for the support of the operative mechanism, having a lateral adjustment, by means of which the latter can be made to move backward or forward without readjustment by the

same means which effects the same object when mounted on the guide-rails of the lower supporting-frame.

To enable others skilled in the art to make, construct, and use my improvement, I will now proceed to describe it in detail.

The frame A of the machine may be made of any suitable material, and of any required width and length in order to adapt it to the kind of work to be done. It consists of two side beams, *a*, firmly framed together in any suitable manner by means of cross-pieces *b*, and on which they are made to rest. The upper edges of these side beams are beveled, as seen in Fig. 3, in order to form a guide for the truck-wheels *c* of the traveling-carriage B that supports the operative parts of the machine, and for which purpose the wheels are formed with a corresponding groove, as shown in Figs. 1 and 3. The form of the upper edge of the side beams and of the tread of the wheels, however, may be varied in any well-known manner in order to produce the same result, as, for instance, by the various plans adopted in car-wheels and rails to keep the cars on the track. In addition to this carriage-way I use a supplementary carriage-way, formed by the use of two supplementary side beams, *d*, one being arranged at the corresponding side of each of the two regular beams *a*. These beams may be either made to extend from end to end of the frame of the machine like the beams *a*, and made to rest on the cross-pieces *b* like the others, or they may be made to rest at one end on one of the cross-pieces, and at the other upon a screw or other clamp support, *e*, attached to the side of the beams *a*, as shown in Fig. 2, in which event the support is provided with a head so as to clamp, as it were, the supplementary guide-ways to the regular ways *a*. The upper edge of the supplementary ways *d*, like the others, may be beveled and for the same purpose. In addition to which, however, they are intended to be made either in a partially-straight and partially-waved line, as shown in Fig. 2, or in wave lines throughout their entire extent. The object of this is to make a pattern guide-way by means of which the machine can cut or dress the stone according to the pattern on the guide-ways. To this end these are

made removable and also adjustable by slipping in a wedge at either or both ends when they extend the full length of the frame, or by a wedge at one end only when it does not, in which case the other end may be adjusted, if required, by unclamping and then raising or lowering it, as the case may be, and reclamping it when properly adjusted; or one pattern set may be removed entirely and a new set with a different pattern substituted in its stead. On the inside of that one of the side beams *a* which forms the inner rail of the guide-way is secured a rack-plate or bar, *f*, of a length sufficient for all the purposes of the machine—that is to say, long enough to enable the traveling-frame of the machine to be propelled to the extreme end of the guide-ways. This is effected by means of a toothed pinion, *g*, whose shaft *h* is mounted in suitable bearings secured to the frame of the traveling-carriage B, as seen in Fig. 3, and whose teeth mesh with the teeth of the rack-bar *f*. To the upper end of the shaft *h* of the pinion is secured a hand-wheel or lever, *i*, by means of which the operator moves the traveling-carriage B and the operative parts of the machine back or forth, according as the exigencies of the work require. The traveling-carriage consists of two axles, *j*, supported on wheels *c*, one at each end of the axles; on one of these is mounted the shaft *h* of the pinion *g*, but in such a manner as to permit the frame proper that carries the machinery to slide freely from one end of the axle to the other. This frame B consists of two side beams, *k*, framed together at their ends by cross-pieces *l* in any well-known manner. The ends of the side beams *k*, however, are provided with notches of such form and size as to enable them to embrace the top and bottom and inner side of the two axles *j* in such manner as to permit them to slide freely back and forth from end to end of the latter. If thought advisable the lower lip of the notch may be dispensed with; but I prefer to use it as giving more stability to the frame. To the end cross-pieces *l* are secured adjustable clamp-pieces *m* by means of thumb-screws *n*. The object of these is to clamp the frame B to the axles *j* when properly adjusted to the work to be done. For this purpose the length of the axles is made much greater than the width of the frame that considerable lateral adjustment may be made without moving the frame that supports the traveling-carriage. On each side beam *k* of the traveling-carriage, near its rear end, is erected a standard, *o*, in each of which is fitted a bearing for the support of one end of a shaft, *p*. On this shaft is mounted and secured in any well-known manner a tappet or cam-cylinder, *q*. This cylinder is of a length sufficient to receive as many rows of tappets or cams *r* as there are cutting tools or hammers *s* to be operated, and of a diameter including the radial projection of the cams to depress the rear end of the levers *t* that carry the hammers *s* sufficiently in order to give them the necessary

fall to effect the cutting of the stone. The levers *t* which operate the hammers *s* are arranged in a line with each other, and are loosely mounted on a pivotal shaft or rod, *u*, which in turn is secured in any well-known manner to standards *v* erected on and secured to a cross-beam, *w*, framed into the side beams *k* of the frame B of the traveling-carriage. The levers *t* are kept from interfering with each other by means of washers interposed between each and mounted on the pivotal rod *u*. At or near the front end of each of these levers is secured, by screw-bolt or otherwise, a strong metallic plate or clasp, *x*, in such manner as to embrace the upper edge and sides of the levers, but unconnected below, the two ends being made to project below sufficiently far to receive a head-block, *y*. This head-block is formed with a wedge-shaped depression into which the upper end of the tool or hammer *s* fits, and serves to keep the hammer firmly in position when inserted and adjusted for work; or, if desired, it may be made in two parts, and adjustable with a screw so as to adapt it to tools of different sizes. The hammer is secured to the levers and head-block by means of a screw-bolt, *s'*, which is passed through bolt-holes formed in the lower end of the metallic plate or clasp *x*, and through a hole for the purpose in the center of the hammer, and then screwed up tight by nut or otherwise. The hammers for this purpose are made with two cutting-edges, so that they can be turned end for end when the one becomes dull. Of course, if the levers themselves are made of iron, the use of the metallic strap *x* could be dispensed with, in which event the wedge-shaped depression for the end of the hammer could then be made in the lever itself. The hammers or tools are arranged to strike within the frame, the front end of the levers being extended slightly beyond so as to partially or entirely lap over the upper side of the front cross-beam *j*, for a purpose to be hereinafter described. In the front cross-beam *j*, just referred to, and immediately beneath the projected end of lever *t*, are cut a series of holes—say half way through the beam—into which are fitted blocks, *y*, of caoutchouc or India rubber, properly prepared so as to preserve its elastic properties. A screw-bolt, *z*, is then screwed into the lower side of the cross-beam *j*, through an opening cut for the purpose, immediately opposite to and communicating with the hole made for the reception of the caoutchouc block. The upper end of this screw is made to abut against the lower end of the rubber block, so that by adjusting the screw the block can be raised or lowered, as required, in order to make it project more or less above the upper side of the cross-beam *j*. The object of this block is to form an elastic cushion for the end of the levers *t*, (each lever being provided with one,) against which to strike as they reach the end of the fall they are intended to have, and are used to regulate the force of the blow intended to be imparted by the cutting-tools to the

stone. They also serve to impart an elastic as contradistinguished from a dead blow, by means of which a much more effective blow is struck. Instead of making the screw-bolt *a* but directly against the lower end of the blocks, a metallic plate or wooden block, having a surface corresponding in size and shape to that of the rubber block, may be interposed between them, if deemed advisable; or, instead of a rubber cushion, a spiral spring and cushion may be used and adjusted in a similar way; but I prefer the caoutchouc cushion.

From what has been said it will be apparent that the higher you raise the elastic cushion above the beam the less forcible will be the blow, and vice versa.

In order to prevent lateral play of the levers *t* a guide-frame, 1, is secured to the upper side of the cross-beam, having a series of guide-rods so arranged as that one will be interposed between each of the adjoining levers and on the outside of the two outer ones—the whole being securely framed together at the top by means of a cap-plate, 2. Immediately in the rear of the middle cross-beam *w* is arranged another cross-beam, 3, and securely connected to the side-beams in any well-known manner. To the upper side of this beam is secured an elastic cushion, 4, by preference caoutchouc, the latter being arranged so that as the rear end of the levers are depressed by the action of the tappets or cams *r* of the driving-cylinder *q* they will, in turn, be brought in contact with the cushion, the reaction of which will intensify the action of the force of gravity of the weighted or tool end of the levers and cause them to strike a quicker and sharper blow than they otherwise would.

The operation is as follows: The lower frame *A* is first adjusted at the proper height around the stone to be operated on, and for which purpose it may be provided with such legs or supports as may be necessary. The traveling-carriage is then mounted on the rails *a* if for plain straight work, but if for waved or curved work, then the rear wheels only are placed on these rails, while the front wheels are placed on the supplementary or pattern rails *d*. The carriage is then moved by means of the hand-lever *i*, pinion *g*, and rack-bar *f*, so as to bring the hammers in a line with the point at which the work is to be commenced. The frame *B* is then slid along the axles *j* until the hammers are immediately over the point at which it is desired to begin the work. The frame is then made fast to the axles by screwing up the clamps *m*, when the machine is ready for operation. The workman then seizes the handle of the crank-lever 5 and commences to turn, which, through the shaft *p*, sets the tappet-cylinder in motion, depressing and releasing, in turn, the various levers *t*. This he continues until the work is done at that point. He then advances the machine for a new cut by turning the hand-lever *i*, operating the hammers or levers meanwhile, and so on, until the stone has been

dressed or cut as far as desired, when he stops, readjusting the machine laterally for a new cut, as before, and then repeats the cutting operation, in this case, however, moving the machine backward; and these operations he repeats until the whole face of the stone has been dressed, after which the machine is removed and applied to another stone.

Devices other than those described may be used for operating the levers, arranging and adjusting the elastic cushions, and moving the traveling-carriage back and forth, and might be described; but it is not deemed necessary so to do, as I do not deem such changes uncovered or unprotected by this patent, seeing that, from what has already been said, it would now be an easy matter to alter or modify them in many ways without departing from the principle of my invention. Again, the cutting-edges of the tools or hammers, instead of being arranged at right angles to the path of motion of the carriage, may be arranged in a line with the latter, in which event the depression in the head-block will be reversed accordingly, and for which purpose it may be made square, removable and adjustable, and, if necessary, in two parts, so that the size of the depression may be increased or diminished, as may be found necessary to suit tools of different thicknesses and size; and the tappets *r* may be made removable so as to operate certain hammers without operating all, and so as to replace worn ones with new ones. Again, the elastic cushion *y*, instead of being inserted into a socket cut into the upper side of the cross-beam, as illustrated in the drawing, Fig. 2, may be inserted into a socket cut in that part of the under side of the end of the lever which projects immediately over the cross-beam, and made adjustable by means of a screw passing through the lever from the upper side into the socket below, and attached to the cushion in any well-known way, if deemed advisable, so as to retain it in place, while leaving the screw itself free to turn without turning the cushion with it, or it may be made to turn with it. The same is also true of the elastic cushion 4, where, instead of being made in one piece where more than one lever is used, and attached to the upper side of the beam 3, each lever may be provided with a cushion on its under side and rear end for the same purpose. But, as a rule, I much prefer the mode of arranging the cushions illustrated in the drawing.

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

1. The combination of one or more levers, *t*, each carrying a hammer or stone-dressing tool, with a single traveling-carriage capable of being moved back and forth and from side to side, as and for the purpose set forth.

2. In combination with a lever, *t*, having a depression on its under side and operating as described, I claim the head-block *y* and straps

x , or their equivalent, for the purpose set forth.

3. I claim, in combination with a lever, t , carrying a cutting-tool and operating as described, the elastic cushion y , adjusting-screw z , and cross-beam l , whether said cushion and screw are arranged in the cross-beam or in the under side of the lever, for the purpose set forth.

4. The combination of the frame B and operative parts of the machine with the axles j and adjusting-clamps m , substantially as described, and for the purpose set forth.

5. The combination of the supplementary or pattern rails d , lower supporting-frame A, rack-bar f , and pinion g , or their or either of their equivalents, for the purpose set forth.

6. The combination of the supplementary or pattern rails d and lower supporting-frame A with a traveling-frame having a lateral adjustment, for the purposes set forth.

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Witnesses:

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