

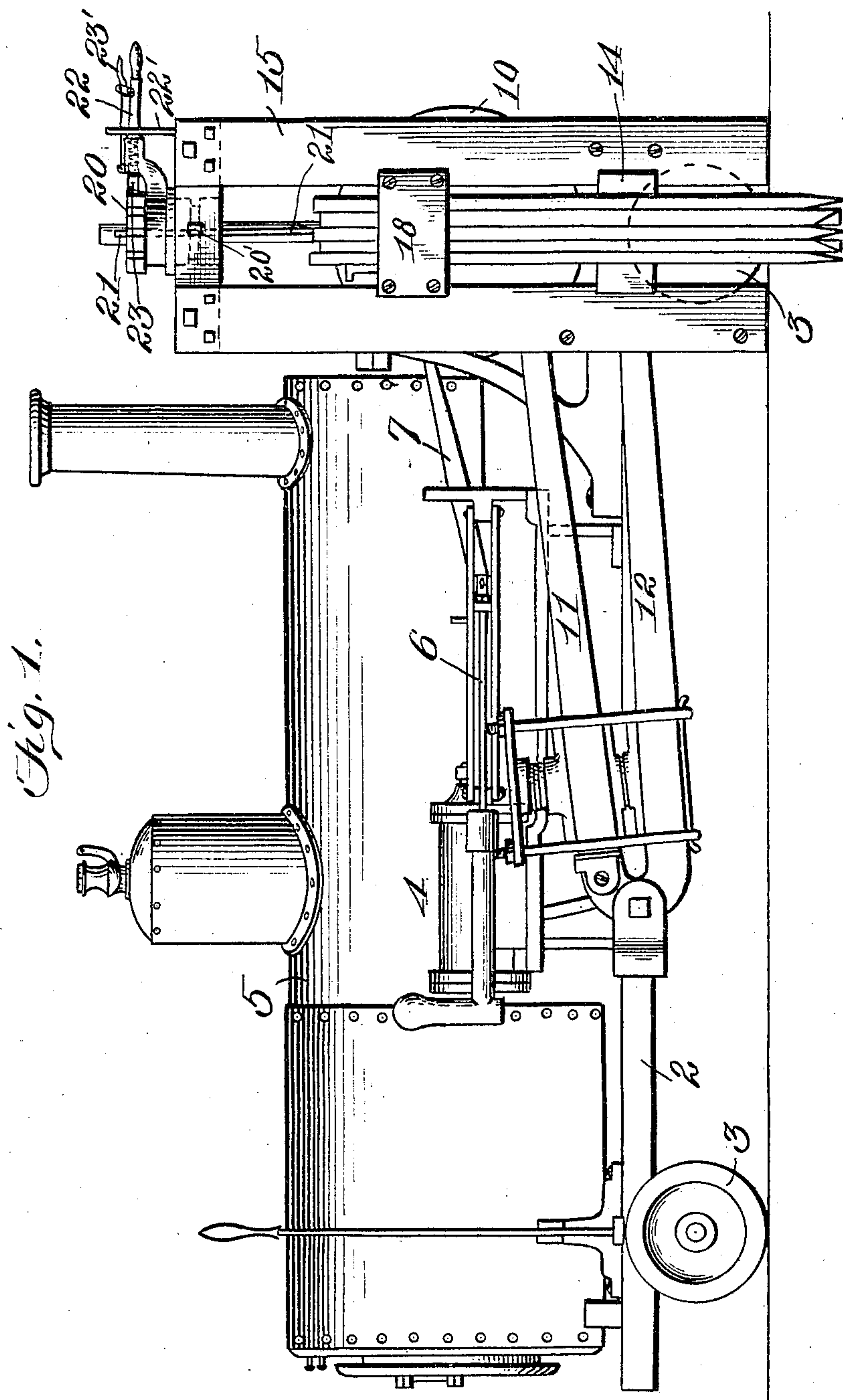
No. 784,268.

PATENTED MAR. 7, 1905.

C. M. LYMAN.
STONE CHANNELING MACHINE.

APPLICATION FILED OCT. 11, 1904.

2 SHEETS—SHEET 1.



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2 SHEETS—SHEET 2.

Fig. 2.

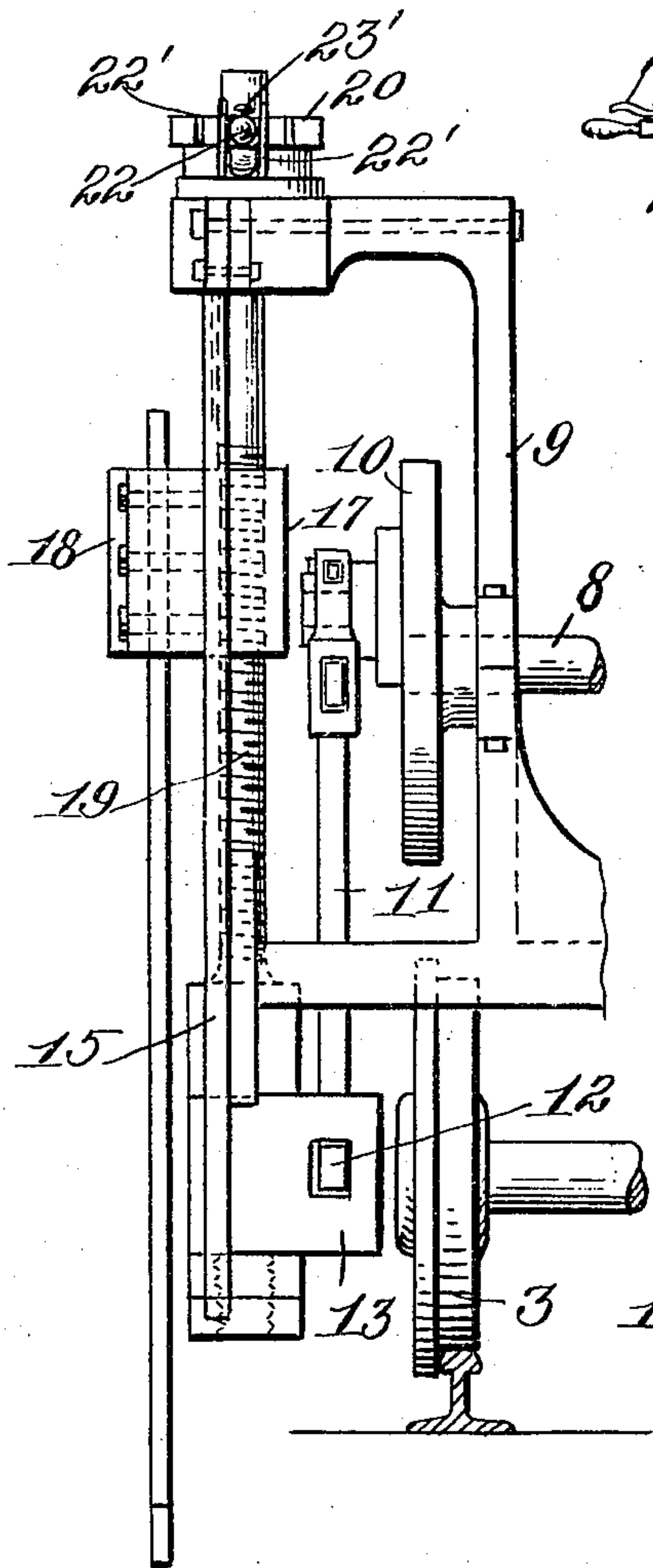


Fig. 3.

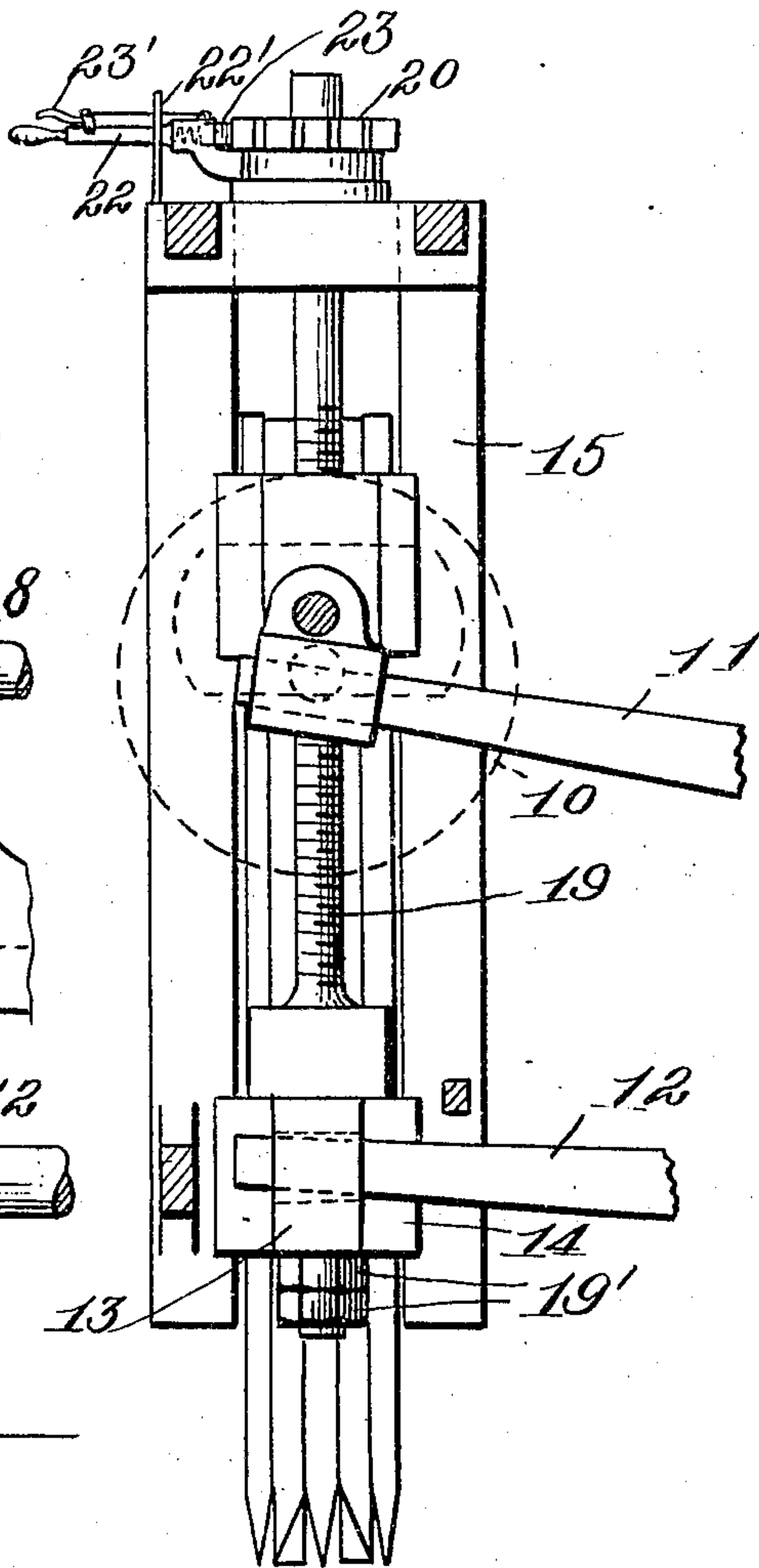


Fig. 4.

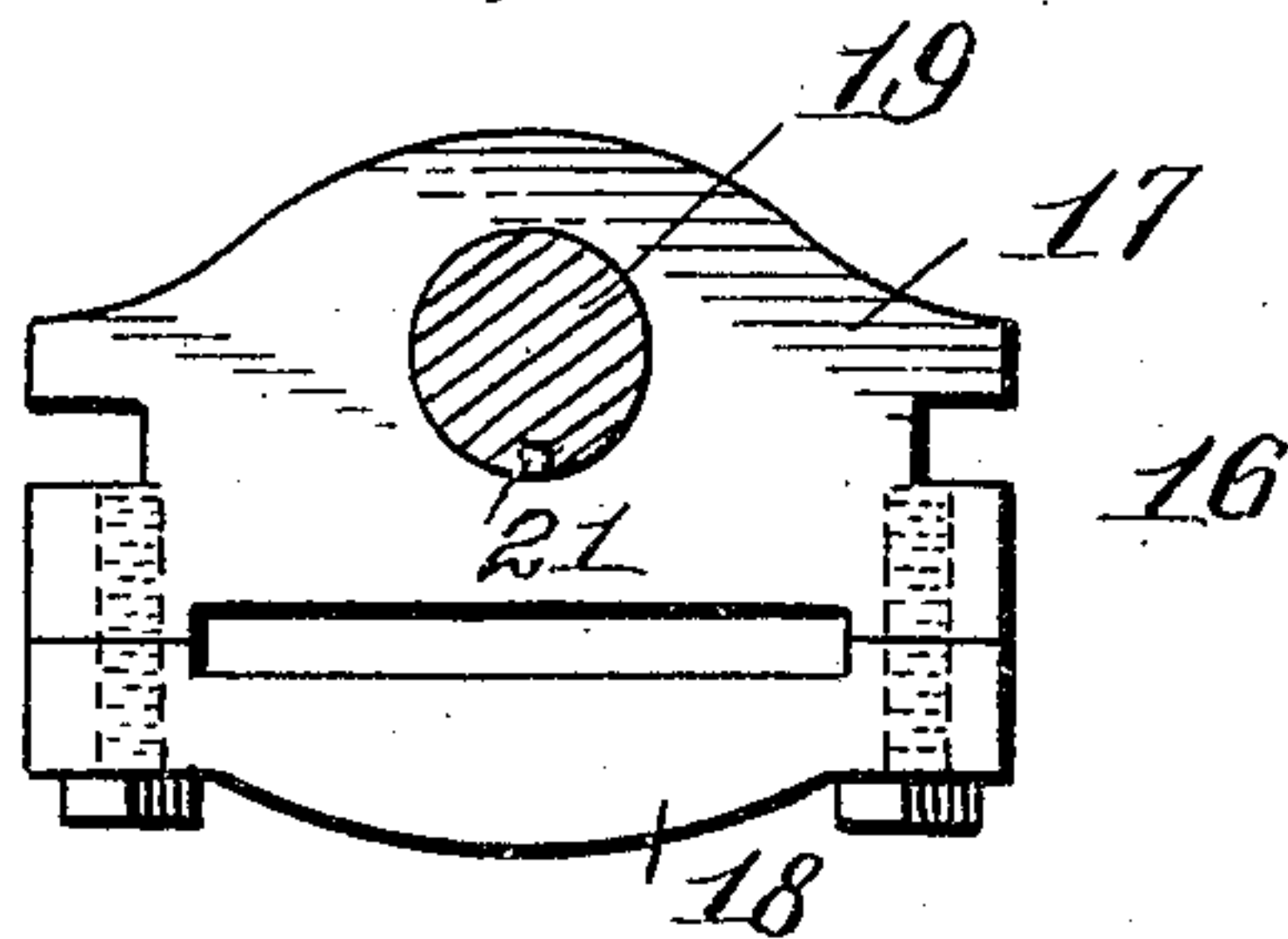
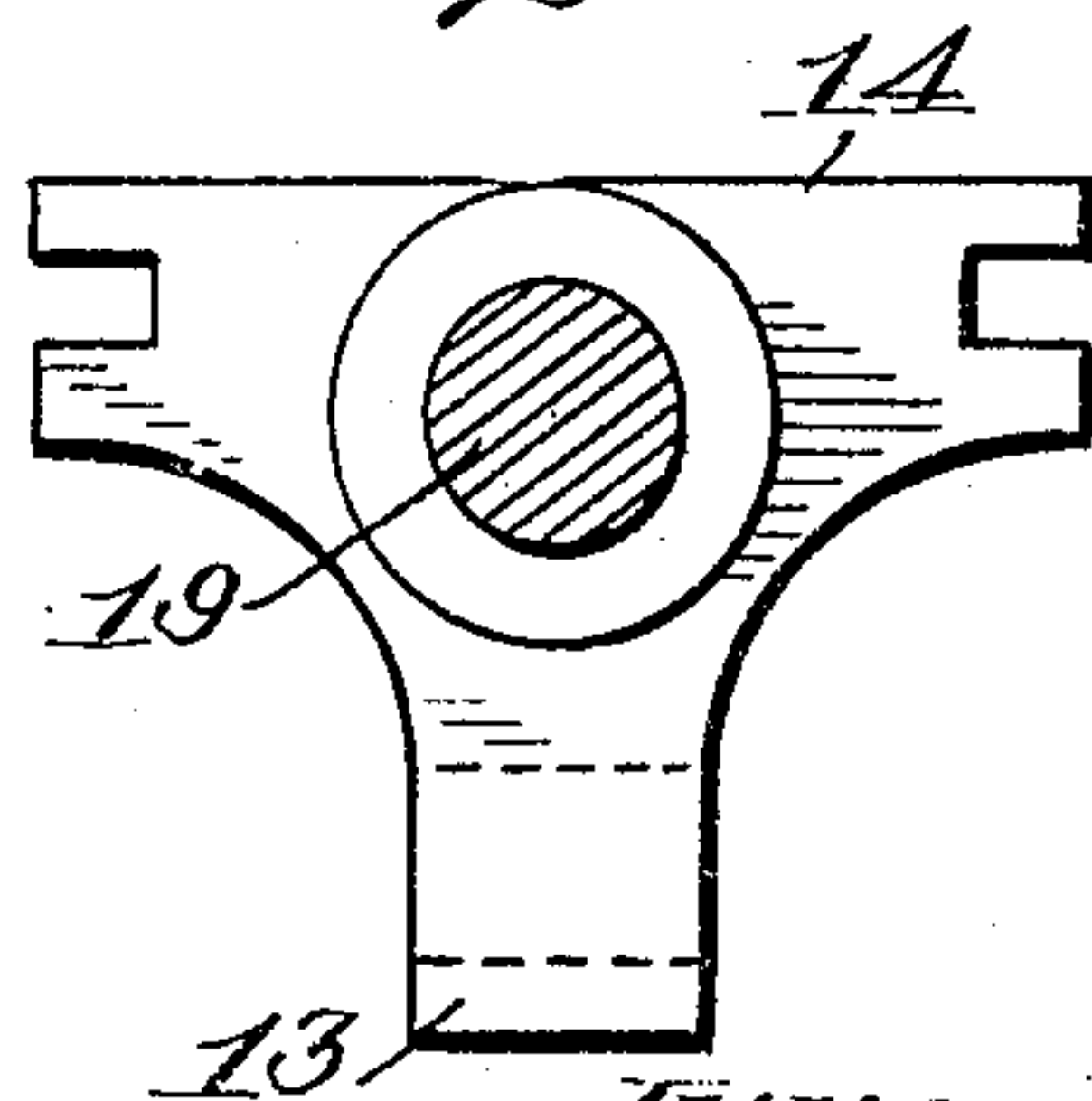


Fig. 5.



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UNITED STATES PATENT OFFICE.

CHARLES M. LYMAN, OF RUTLAND, VERMONT.

STONE-CHANNELING MACHINE.

SPECIFICATION forming part of Letters Patent No. 784,268, dated March 7, 1905.

Application filed October 11, 1904. Serial No. 228,032.

To all whom it may concern:

Be it known that I, CHARLES M. LYMAN, a citizen of the United States, residing at Rutland, in the county of Rutland and State of Vermont, have invented new and useful Improvements in Stone-Channeling Machines, of which the following is a specification.

This invention relates to stone-channeling machines, and while I do not limit myself to the use of my improvements in any particular class of machines I have found them of especial utility in connection with that type of machines known as the "Wardwell" and as illustrated in a number of Letters Patent of the United States—for example, in Patent No. 105,391, of July 12, 1870, to which reference may be had. A machine constructed in accordance with said patent involves in its make-up one or more gangs of drills, and at the present time it is necessary to stop the action of the drilling mechanism each time it becomes necessary to adjust the drills to the depth of the channel being formed or, as it is known in the art, to take up falls. In fact, the adjustment of the drills has to be made each time they cut down into the rock six inches. By virtue of my improvements the disadvantage in question is overcome and in a simple, readily-operable, and feasible manner.

In the drawings accompanying and forming a part of this specification I illustrate in full one simple and convenient organization involving my invention, which I will set forth at length in the following description; but I do not limit myself to the exact disclosure thus made, for certain variations may be adopted within the scope of my claims succeeding said description.

Referring to said drawings, Figure 1 is a side elevation of a stone-channeling machine including my invention. Fig. 2 is a front elevation of the left portion of said machine. Fig. 3 is an inside face view of the drilling mechanism. Fig. 4 is a detail view of an upper or clamping block. Fig. 5 is a similar view of the lower block.

Like characters refer to like parts in the several figures.

The machine involves in its construction a car or vehicle comprising a deck or platform

2 and wheels 3, the latter being intended in practice to travel on parallel rails. (Not illustrated.) The car carries its own motive power, whereby it may be propelled along said rails, and it is also provided in practice with some suitable form of mechanism whereby it may be reversed. The motor illustrated for operating the car consists of a steam-engine, (denoted in a general way by 4,) and the necessary steam for operating which may be generated in the boiler 5, also mounted on said car. From the piston-rod 6 of the cylinder of the engine 4 the pitman 7 extends, the two parts being jointed in any desirable manner. The extreme forward end of said pitman is connected with the crank portion of the crank-shaft 8, supported for rotative motion upon a suitable standard, as 9, rising from the upper forward side of the deck or platform of the car. Upon the outer end of said shaft is fastened in some suitable way for turning motion therewith the disk 10. It therefore follows that upon the action of the engine the disk 10 will be rotated.

Supported upon a common fulcrum or pivot carried by a suitable bearing or bracket are the upper and lower levers 11 and 12, respectively, the upper lever passing freely through an eccentrically-disposed projection on the disk or wheel 10. The lower lever 12 extends through a projection or ear 13, extending inward from the vertically-reciprocative block 14, the opposite sides of which are channeled or grooved to receive the parallel and vertically-disposed side bars of the yoke 15, the upper and transverse portion of which is bolted or otherwise suitably affixed to an offstanding portion of the standard 9. The upper and lower levers 11 and 12 may be associated in the manner shown by the Letters Patent herebefore mentioned or in any other desirable way that may be found expedient.

Above the block 14 is a second block, the same being denoted in a general way by 16 and consisting of a body portion 17 and a clamping or face plate 18. The body portion 17 is vertically channeled along its opposite sides to slidingly fit the side bars of the yoke 15 and is further provided with a recess on its forward face mating with a like recess on the

rear face of the clamping-plate 18, the complementary recesses forming a drill-space to receive and firmly maintain the drills in assembled relation with said upper block or clamp 16. The two parts of the upper block are removably and firmly connected together by screws or other suitable means. The body portion of the upper block or clamp 16 is internally threaded depthwise thereof, the threads engaging the externally-threaded portion of the vertically-disposed feed-screw 19. The lower end of said feed-screw is swiveled to the lower block 14. In fact, said screw passes freely through the block and is provided at its extreme lower end with check-nuts, as 19'. Just above the said block 14 the screw is shouldered or enlarged at 19".

Upon the top of the upper portion of the framework of the machine is shown a ratchet 20, provided internally with a fixed key 21. The said ratchet may be held against vertical movement in any desirable way—for example, by means of a pin or screw 20', fitted into a peripheral groove in the elongated hub of the ratchet. Through said ratchet the feed-screw extends vertically, said feed-screw having a longitudinal channel or keyway to receive the key or feather 21. From this it will be apparent that the ratchet is adapted to impart when rotated, through the intervention of the key, a corresponding rotative motion to the feed-screw. Fulcrumed on the elongated hub portion of the ratchet is the hand-lever 22. The lever, therefore, is capable of free rotative motion with respect to the ratchet. Carried by the lever is a pawl 23, held in its advanced or effective position by means of a spring and adapted to be retracted or drawn back through the agency of a lever 23', carried by the hand or ratchet operating lever. It will therefore be clear that when the lever 22 is operated the ratchet, assuming, of course, that the pawl is in its operative position, will be turned in order to correspondingly turn the feed-screw. When the drills are in operation, the hand-lever 22 fits between two pins on the framework of the machine, each pin being denoted by 22'. One of these pins is removably mounted in order to permit of the proper feeding action of the hand-lever.

When the engine 4 is started, it follows that the disk or wheel 10, through the intermediate parts, will be rotated, thereby imparting an up-and-down vibratory or oscillatory motion to the upper lever 11, a similar motion being transmitted to the lower lever 12 through the customary interposed mechanism. Upon the oscillation vertically of the lower lever it transfers its effect to the lower block 14, to which, it will be remembered, the lower end of the feed-screw 19 is swiveled, thereby to cause the vertical motion of said feed-screw. By virtue of the threaded connection between said feed-screw and the drill-clamping slide or

block 16 the latter is caused to travel up and down upon the yoke 15 and to apply the necessary working movement to the gang of drills. At this point it might be stated that there may be any number of drills in said gang and that the drills may be of any desirable character. The key connection between the feed-screw 19 and ratchet 20 permits free longitudinal movement of said screw relatively to the ratchet during the channeling operation of the gang of drills.

When during the operation of the machine it becomes necessary to lower the drills, this can be quickly and easily accomplished by the manipulation of the hand-lever 22. When said hand-lever is operated, the ratchet 20 is turned, the feed-screw through the intermediate parts being caused to rotate, thereby positively serving to lower the drills by a downward feed to the block 16, which is in the nature of a nut and to which, it will be remembered, said drills are clamped.

By the improvements hereinbefore set forth the efficiency of a machine of the Wardwell type or, in fact, any other stone-channeling machine is materially increased, for I can instantly adjust the drills without the necessity of arresting the driving mechanism therefor. This adjustment has heretofore been a laborious and time-requiring operation in that it was necessary to secure it to stop the engine, release or unclamp the drills, adjust them to the desired extent, and finally reclamp them.

I have described the machine as equipped with only one gang of drills. It may have a plurality of such gangs, such as two, as is ordinarily the case.

I do not limit myself to the exact construction hereinbefore described nor to the arrangement of parts set forth, for these and similar features may be changed within the scope of my claims.

Having described the invention, what I claim is—

1. In a stone-channeling machine, the combination of an upper slide having means for clamping a gang of drills thereto, a lower slide, a feed-screw in threaded engagement with the upper slide and swiveled to the lower slide, and a hand-operable rotary member through which said screw passes, the screw being provided with a longitudinal keyway and said member being provided with a key to fit said keyway.

2. In a stone-channeling machine, the combination of an upper slide having means for clamping a gang of drills thereto, a lower slide, a feed-screw in threaded engagement with the upper slide and swiveled to the lower slide, a hand-operable rotary member through which said feed-screw passes, said screw being provided with a longitudinal keyway and said member being provided with a key to fit said keyway, suitably-associated upper and lower levers, the lower lever being operatively con-

nected with said lower slide, and means for vibrating the upper lever.

3. In a stone-channeling machine, the combination of an upper slide having means for clamping a gang of drills thereto, a lower slide, a feed-screw in threaded engagement with the upper slide and swiveled to the lower slide, a ratchet through which the feed-screw passes, the latter having a longitudinal keyway, and the ratchet having a key to fit said keyway, and a hand-lever provided with a pawl for engaging the teeth of the ratchet.

4. In a stone-channeling machine, the combination of an upper slide comprising a body portion and a removable face-plate having complementary recesses to receive a gang of drills, a lower slide, a feed-screw swiveled to

the lower slide and in threaded engagement with the upper slide, a ratchet through which said feed-screw passes, the latter having a longitudinal keyway and the ratchet being provided with a key to fit said keyway, a hand-lever supported by turning motion about the hub of said ratchet and provided with a pawl for engaging the teeth of the ratchet, a pair of operatively-associated levers one of which is connected with the lower slide, and means for positively operating the other lever.

In testimony whereof I affix my signature in presence of two subscribing witnesses.

CHARLES M. LYMAN.

Witnesses:

FREDERIC GEO. BOTTUM,
GEORGE M. WELLS.