No. 611,985. Patented Oct. 4, 1898.

N. C. WRIGHT.

EXCAVATOR.

(Application filed Feb. 8, 1898.)

(No Model.) 4 Sheets—Sheet 1.

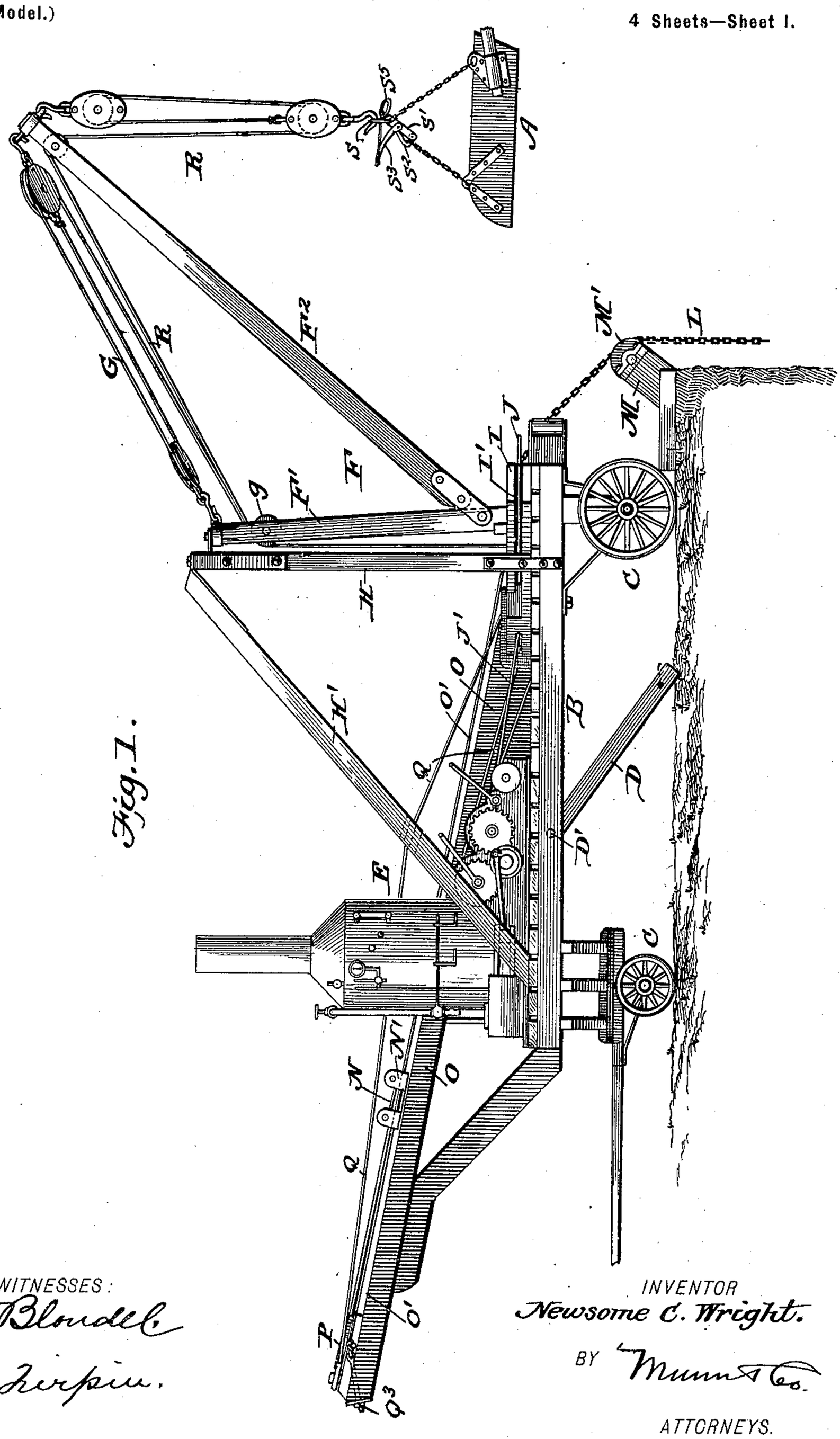

Fig. 1.

WITNESSES:
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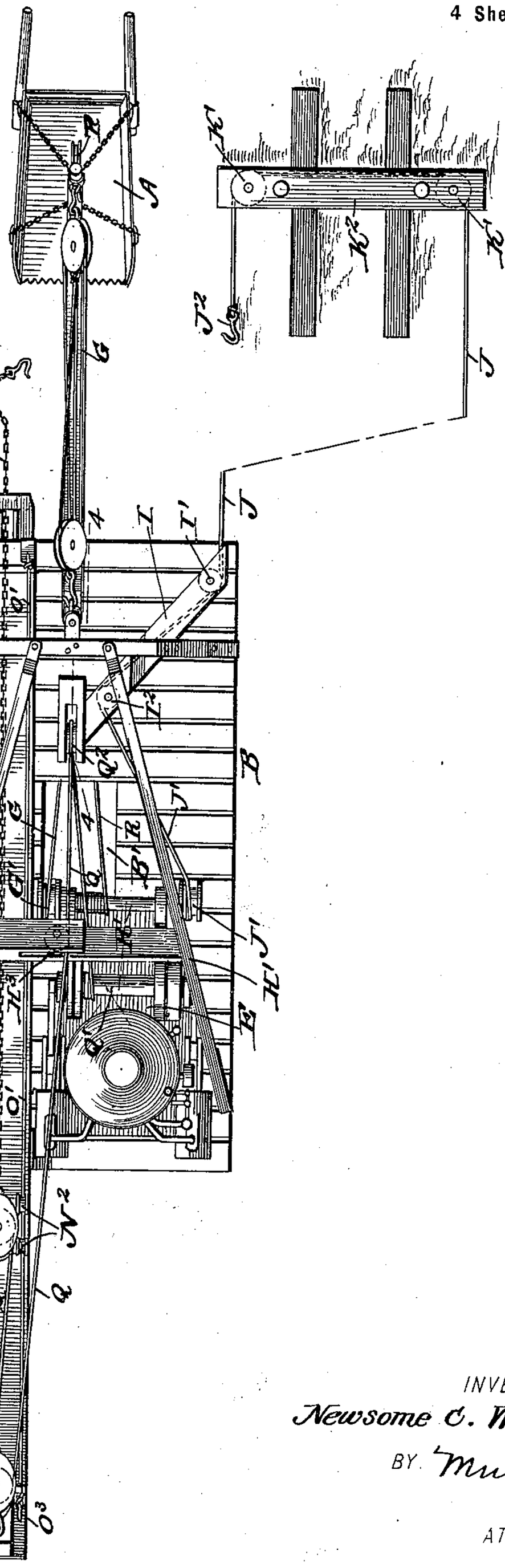

Fig. 2.

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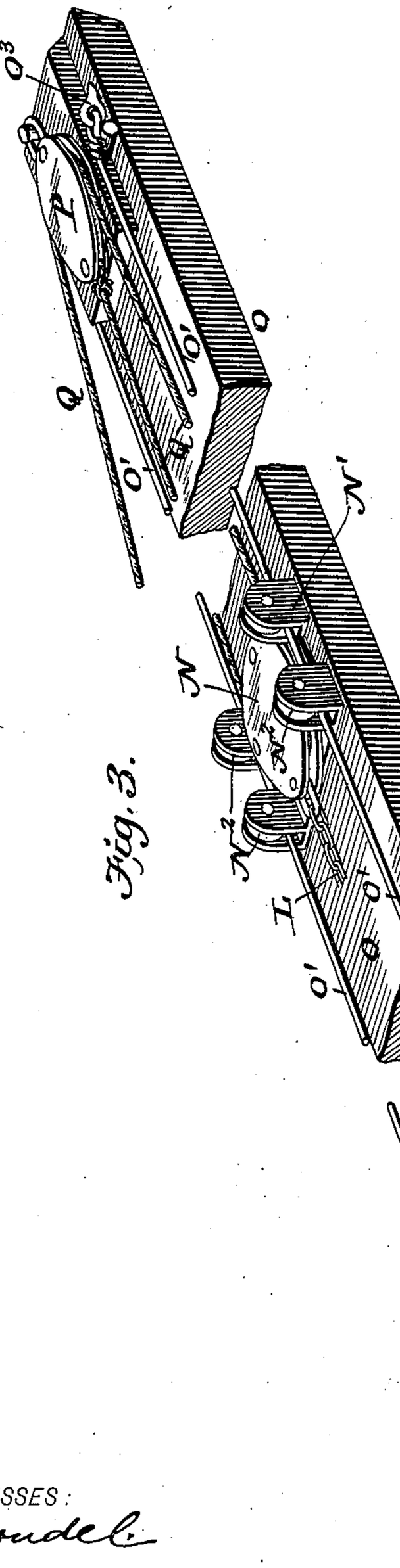

Fig. 3.

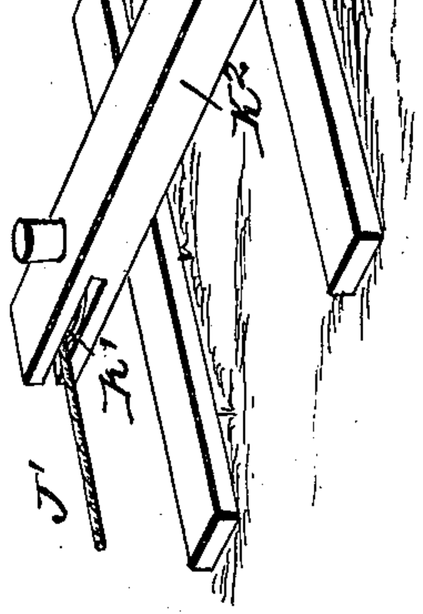

Fig. 8.

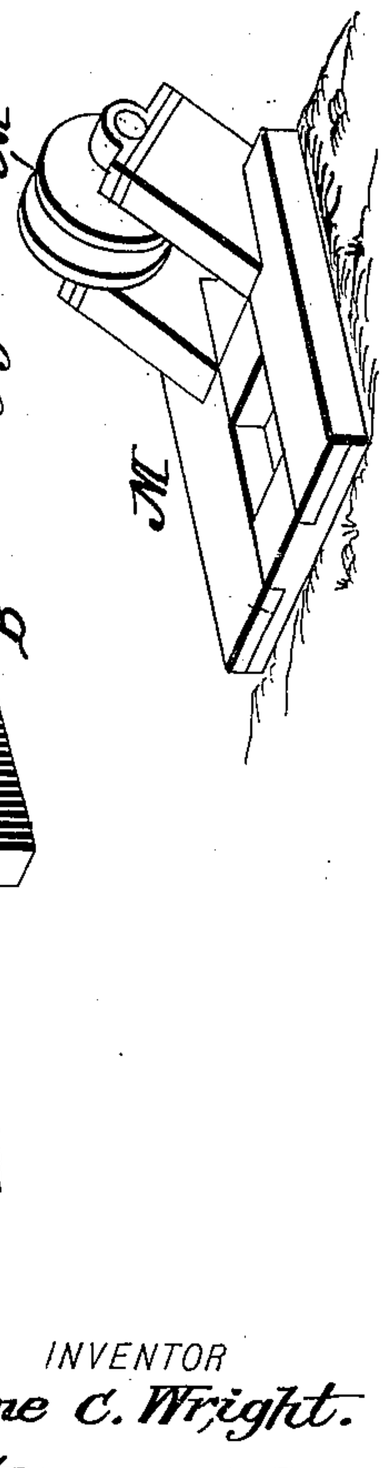

Fig. 7.

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(Application filed Feb. 8, 1898.)

(No Model.) 4 Sheets—Sheet 4.

Fig. 5

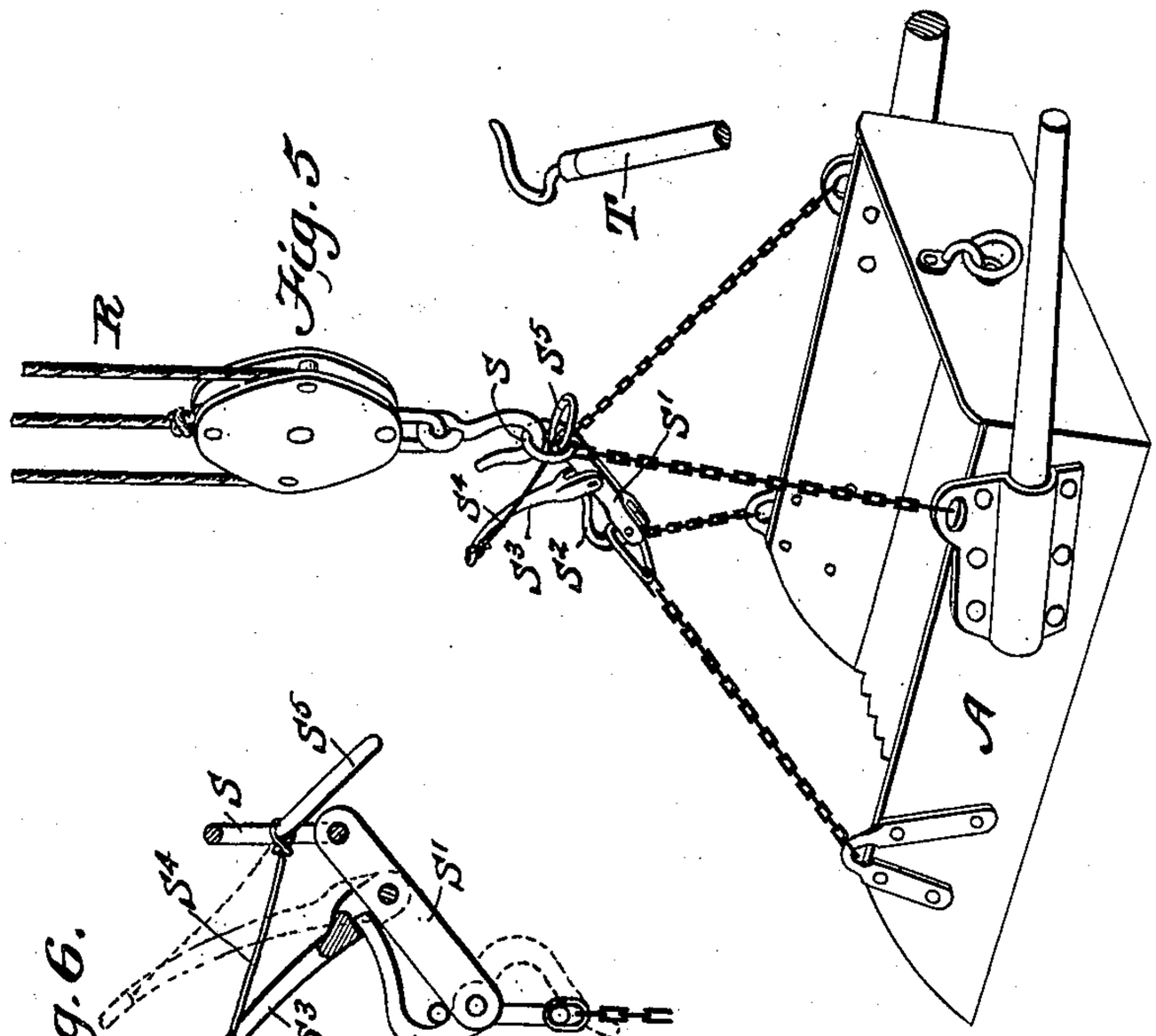

Fig. 6.

Fig. 4.

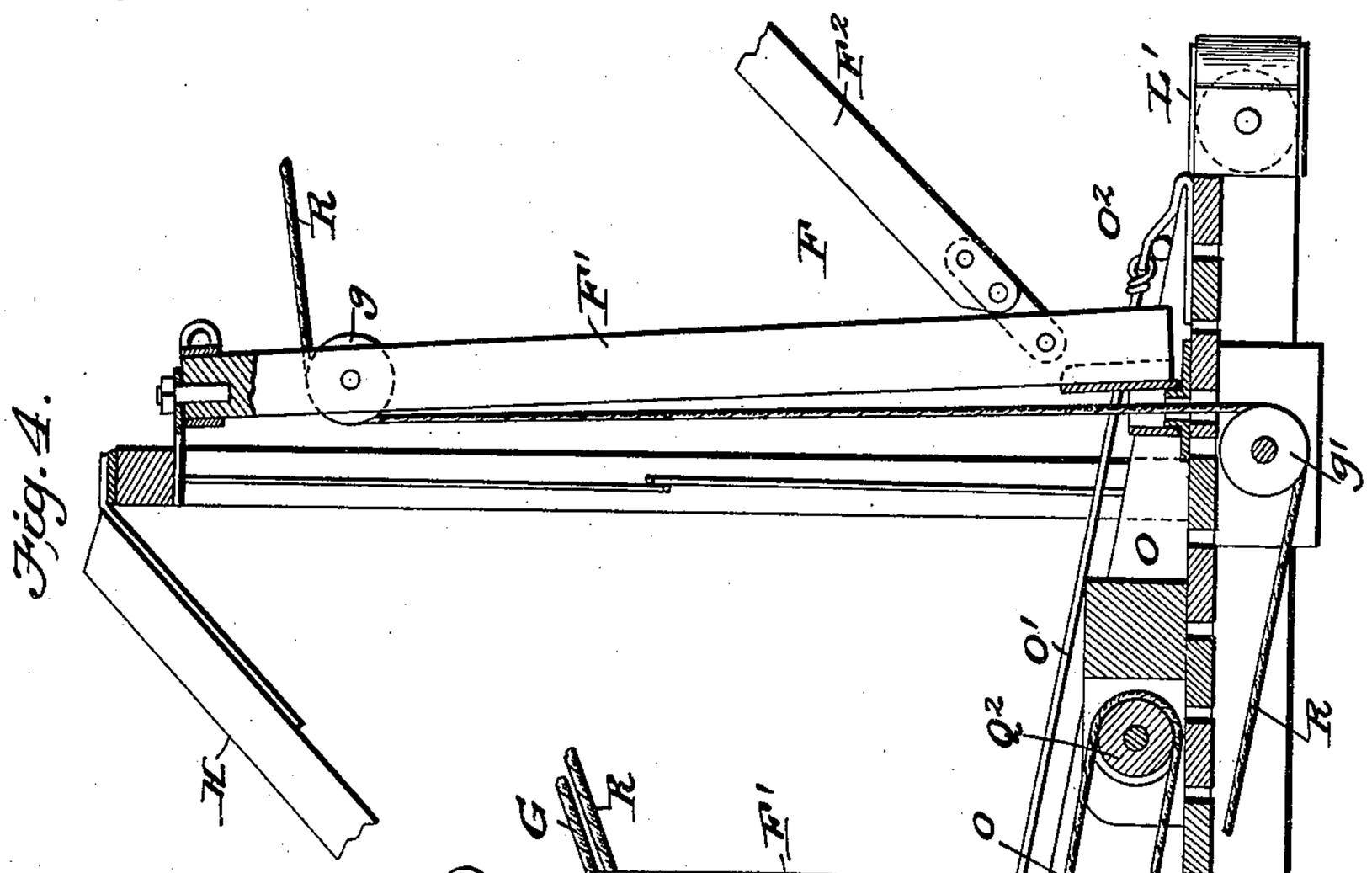

Fig. 9

WITNESSES:

W. B. Blondell.

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UNITED STATES PATENT OFFICE.

NEWSOME C. WRIGHT, OF NASHVILLE, TENNESSEE.

EXCAVATOR.

SPECIFICATION forming part of Letters Patent No. 611,985, dated October 4, 1898.

Application filed February 8, 1898. Serial No. 669,563. (No model.)

To all whom it may concern:

Be it known that I, NEWSOME C. WRIGHT, a citizen of the United States, residing at Nashville, in the county of Davidson and State of Tennessee, have invented a new and useful Improvement in Excavators, of which the following is a full, clear, and exact description.

My invention is an improved excavator designed and adapted especially for use in excavating foundations, sewers, ditches, and other excavations; and the invention consists in certain features of construction and combinations of parts, as will be hereinafter described, and pointed out in the claims.

In the drawings, Figure 1 is a side elevation, and Fig. 2 is a top plan view, of my excavator. Fig. 3 is a perspective view of the traveling block-frame and the guideway therefor. Fig. 4 is a detail section on about line 4 4 of Fig. 2. Fig. 5 is a perspective view of the scoop and the parts immediately connected therewith. Fig. 6 is a detail view of the dumping mechanism, parts being broken away and others shown in section. Figs. 7 and 8 are detail views of the guide-frame, and Fig. 9 is a detail perspective view of the upper portion of the upright shaft of the derrick-crane.

By my invention I provide, in connection with a scraper A, means for dragging such scraper to fill the same, means for elevating said scraper when full, for returning the scraper, when dumped, to position to be refilled, and for accomplishing such results expeditiously and with ease.

The main frame of the apparatus includes a platform B, which to render it portable may preferably be mounted on wheels C, in which case I prefer to provide the chock-bars D, pivoted at D′ so they may be dropped to the position shown in Fig. 1 to anchor the apparatus in position.

The platform B may be framed and braced in any desired manner, and is provided at about its middle with a well-hole B′, through which pass several of the lines, presently described, on their way to their respective drums of the hoisting-machine. This hoisting-machine E may preferably be an engine having the several drums, one for each of the operating-lines presently described, and the specific construction of said engine is not claimed as my invention and taken alone forms no part of my present invention, and hence need not be described in detail herein. On the platform I mount the crane F, which is preferably a derrick-crane having the upright shaft F′ and the boom F^2, whose upper end may be adjusted by means of the line G, which is directed over suitable blocks and over a pulley *g*, thence under a pulley *g′*, thence up through the well-hole B′, and is secured to its respective drum G′. By this construction the boom can be raised or lowered, as desired, to suit the circumstances and the work being done.

The upright F′ is journaled to an upright frame H, which is stayed by strut-braces H′, having a cross-brace H^2, carrying a pulley H^3, which guides the line for operating the traveling block-frame, as presently described.

On the platform I mount guide-pulleys I′ and I^2, preferably in a beam I and forming guides for the backing-line J, which leads to the drum J′, and also passes around pulleys K′ in an anchor-frame K^2, arranged on the side of the excavation opposite the excavator, the line J having a hook J^2, by which it may be connected with the scraper for the purpose of returning the empty scraper in the operation of the apparatus.

For the purpose of dragging the scraper forward I provide a line L, which may be a heavy chain, as shown, and is passed between and over suitable guide-rollers, as shown at L′ in Figs. 1, 2, and 4, so the line L will be properly directed and guided whether it comes from either side in scraping or up from below, should it be desired to use said line for hoisting, as will be understood from Fig. 1, in which case I prefer to provide a guide-frame M, having a guide-pulley M′, as shown in Fig. 1.

In excavating and like operations involving the use of pulley-blocks for the purpose of securing greater power it is found that when the blocks are dragged over the ground the dirt not only greatly impairs their usefulness, but the resulting wear is very great because of the grinding of the dirt, and the pulley-blocks will last but a short while. To avoid this and to furnish a clean even way for the pulley-blocks, I support the same in a frame and provide a way on which said frame

is movable. In the construction shown the pulley-block N is supported in a frame N′, movable on the way O, which is provided with wires or rails O′, on which run pulleys N^2 on the frame N′, the line L being connected to the guide-frame, so it will be dragged up by the movement of said frame and may be returned by the scraper as the latter is retracted by the drag-line J, as before described.

The way O is preferably inclined from its front end at L′ upward toward its rear end and may be extended rearwardly beyond the platform for the purpose of securing a greater movement of the guide-frames N′ or for other purposes desired. The rails O′ may be cables or rods fixed at one end at O^2 and having at their ends adjusting means at O^3, so they may be tautened as desired. At the upper rear end of the way O, I provide a pulley-block P, and the line Q for operating the block-frame N′ is passed around the pulleys in such frame and in the pulley-block P, passes thence over the pulley H^3, thence over a pulley Q^2, and thence to its operating-drum Q′. By this construction great power can be exerted in drawing the block-frame N′ back along its guideway, and such block-frame will at all times have a clean way, which may be lubricated when necessary in any desired manner.

The scraper A may be hoisted when necessary by the line L, as before described; but ordinarily I lift it by the hoisting-line R, which is directed over suitable guide-pulleys, thence up through the well-hole B′, and is secured to its drum R′, by which means the scraper can be hoisted by the crane and then swung to either side and dumped. To permit its dumping, I prefer to provide a tripping mechanism, as shown in detail in Fig. 6, in which the link S for connection with the hoisting devices is connected with a bar S′, to which is pivoted a hook S^2 for securing the front lines of the scraper and a latch S^3 for securing said hook, the latch having a tripping-line S^4 and a ring S^5, which may be operated by a hook on a rod T, (see Fig. 5,) carried by the man who operates the tag-line. In the operation of this construction when the parts are as shown in Fig. 5 and in the full-line position shown in Fig. 6 the hook will be held in position to secure the front line of the scraper, so the latter may be lifted with its contents, and when swung to the desired position a pull may be exerted on the ring S^5, either by means of the rod T or otherwise, and the latch be thrown to the dotted position Fig. 6 to release the hook, when the scraper will dump as desired.

In the use of my invention it will be seen the apparatus is supported on the ground-level and may work to any desired depth and at any distance necessary, inasmuch as in cases where one movement of the block-frame N′ will not pull a sufficient distance the pull may be made in sections and the block-frame returned for each pull, lengths of chain L being supplied and removed as necessary. By working from the ground-surface and to any desired depth and delivering the excavated material to the ground-surface the improved apparatus possesses advantages over the ordinary steam-shovel.

If at any time soil is too heavy for the direct operation of the scraper, it may be removed and plows connected with the line L, and by the use of right-hand plows at one side and left-hand plows at the other the side walls of an excavation may be carried down straight. The soil when loosened can be removed by the scraper.

Where desired, the guideway O may be made in sections for convenience in handling, such sections being secured together to form the guideway when desired.

It will be understood that the several drums are under the control of the operator, so any one or more of the lines may be operated as desired.

In the use of my apparatus I furnish means by which the scraper may be operated for the purpose of filling it and for dragging it to the hoisting devices, may then be hoisted and swung to any point, may then be dumped and returned to a point over the excavation and lowered thereinto, and then by the backing-line be returned for a new operation.

Where desired, the guideway, with the traveling pulley-block frame, may be applied to any ordinary form of derrick having power hoisting mechanism and be operated in substantially the manner as described.

When in the course of excavating heavy stones are met with, they may be readily handled by any suitable form of grab or tongs applied to the hoisting-line, and in the course of building the walls such grabs or tongs may, with the hoisting devices, be utilized in setting the heavy stones.

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

1. In an apparatus substantially as described, the combination of a bed-frame or platform, power hoisting mechanism thereon and a longitudinally-extended guideway, a derrick on said platform, the block-frame movable along the guideway, the hoisting-line, the backing-line and the line for operating the block-frame, such lines being connected with their respective drums of the hoisting mechanism, substantially as set forth.

2. An apparatus substantially as described, comprising a frame or platform, a guideway thereon, a block-frame movable on the guideway, a pulley-block connected with said frame, a line extended from said frame for connection with the parts to be operated thereby and a guide at the front end of the guideway for said connecting-line, substantially as set forth.

3. The combination of the bed or platform, the guideway extended longitudinally thereon, the guide-rollers at the front end of said guideway, the pulley-block at the rear end of

said guideway, the block-frame sliding on the guideway, the line extended from said block-frame between the guide-rollers at the front end thereof, and the line for operating said block-frame, substantially as set forth.

4. In an apparatus substantially as described, the combination of the platform, the derrick having a pivoted upright bar, the upright frame to which said bar is pivoted the strut-braces for said upright frame, the cross-brace between said strut-braces and provided with a guide-pulley, the guideway extended longitudinally on said platform and provided with the traveling pulley-block frame, the line connected with said pulley-block frame and extended over the guide-pulley of the cross-brace, the power mechanism having a drum to which said line is connected, and means whereby the pulley-block frame may be connected with the devices it operates, substantially as set forth.

5. An apparatus substantially as described, comprising the platform, the derrick-crane, the guideway, the block-frame movable on said guideway, the line for operating said block-frame, the hoisting-line, and the line for adjusting the boom of the derrick, the backing-line, and the engine having drums to which the several said lines are connected, substantially as set forth.

6. In an apparatus substantially as described, the combination of a suitable platform or frame, a guideway extended longitudinally thereon, guide rails or wires secured at one end extended longitudinally of the guideway and adjusting connections for the other ends of said wire, and the block-frame movable longitudinally of the guide-frame and having portions engaging the wires or rails substantially as set forth.

7. An apparatus substantially as described comprising the main frame, the derrick on the same, the guideway mounted on the main frame and extended rearwardly from the derrick and elevated toward its rear end the block-frame traveling in said guideway, the line for operating said block-frame and the line for connecting said block-frame with the device to be operated substantially as set forth.

8. An apparatus substantially as described comprising the main frame, the guideway extended over the main frame and supported at its front and rear ends thereon and the lines for operating the block-frame and for connecting it with the device to be operated, such lines being also extended over the main frame substantially as set forth.

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Witnesses:
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PERRY B. TURPIN.