

(No Model.)

4 Sheets—Sheet 1.

J. H. HASKINS.
TACK DRIVING MACHINE.

No. 453,175.

Patented May 26, 1891.

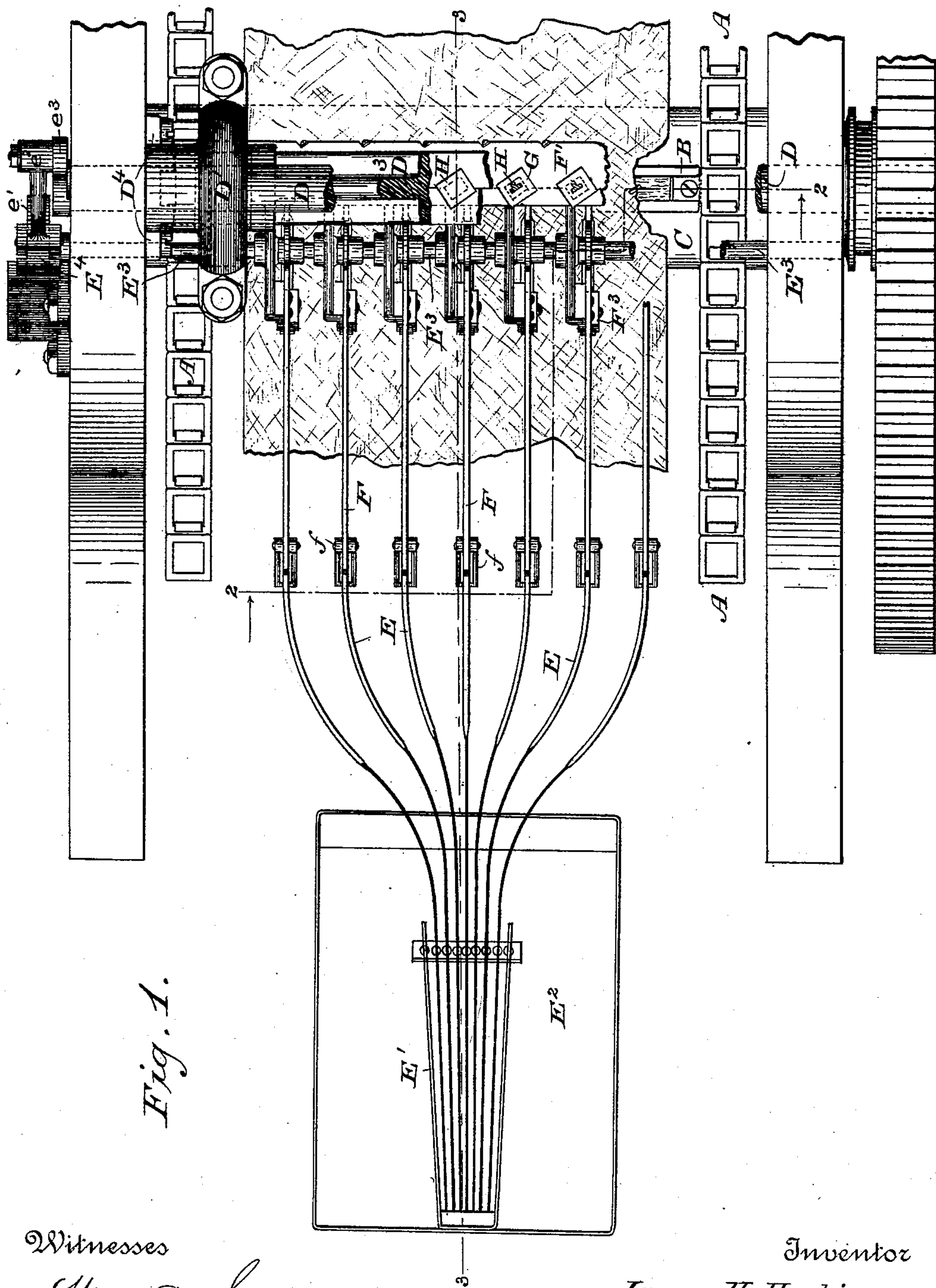


Fig. 1.

Witnesses

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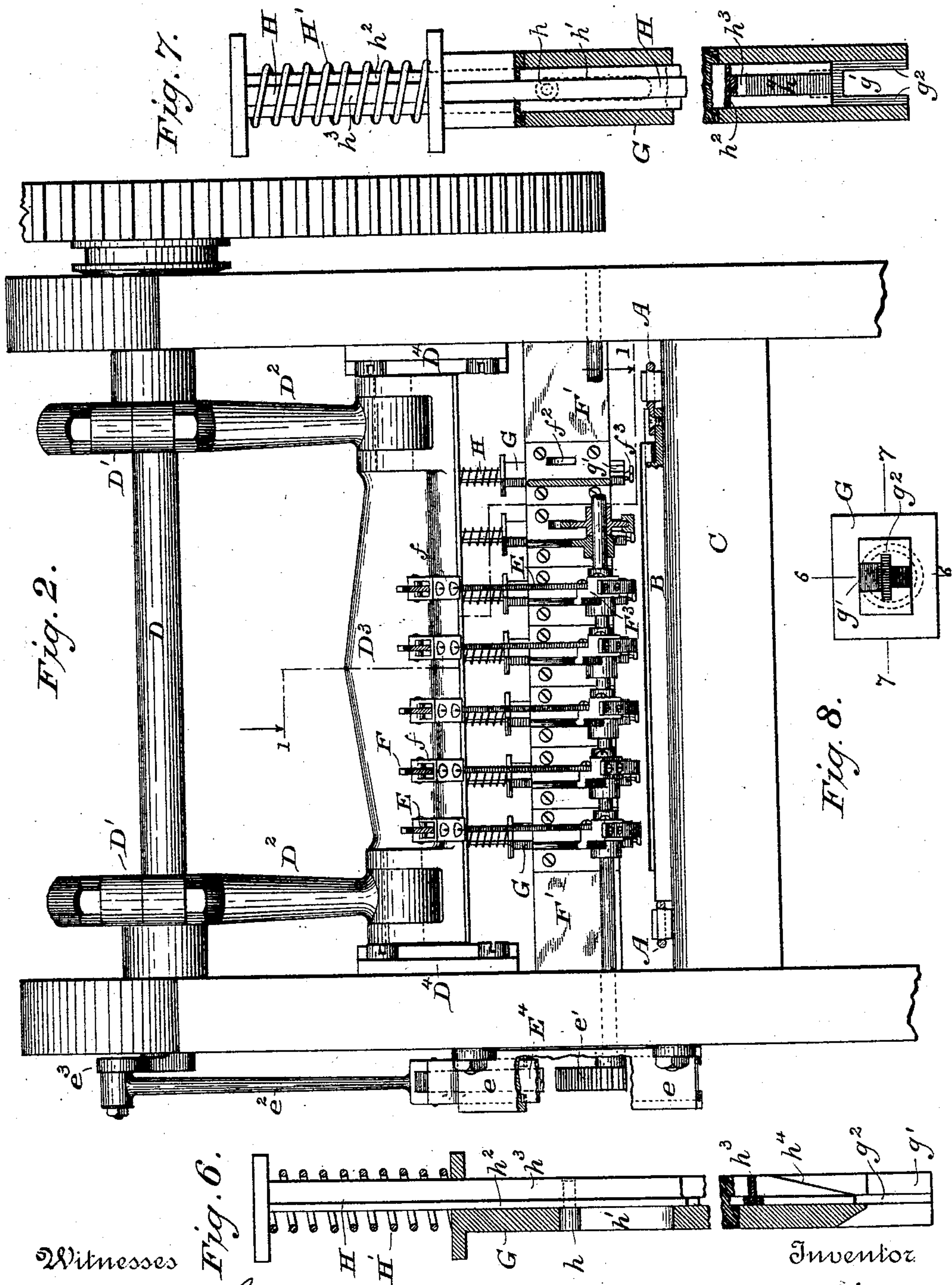
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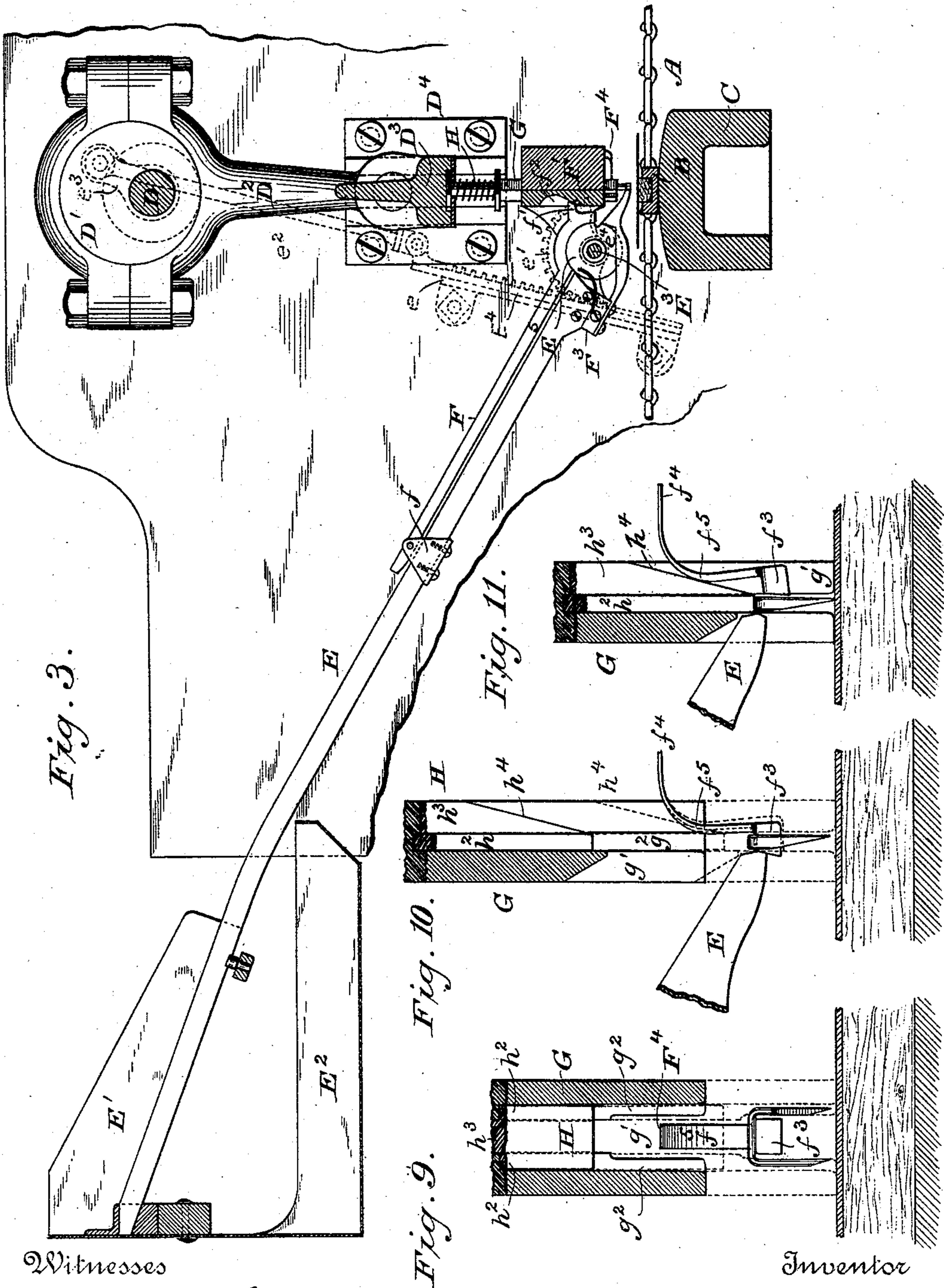
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Fig. 4.

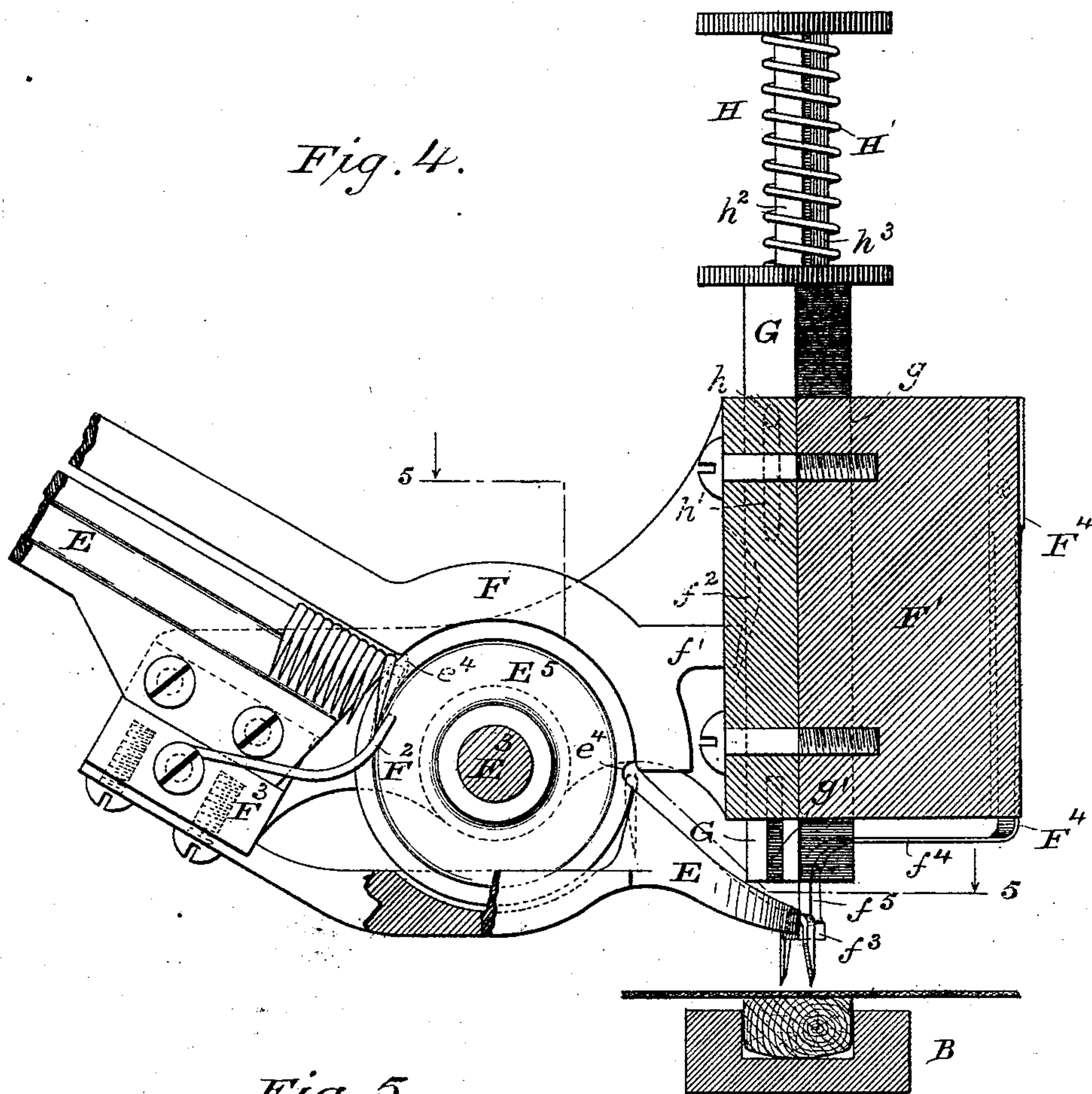
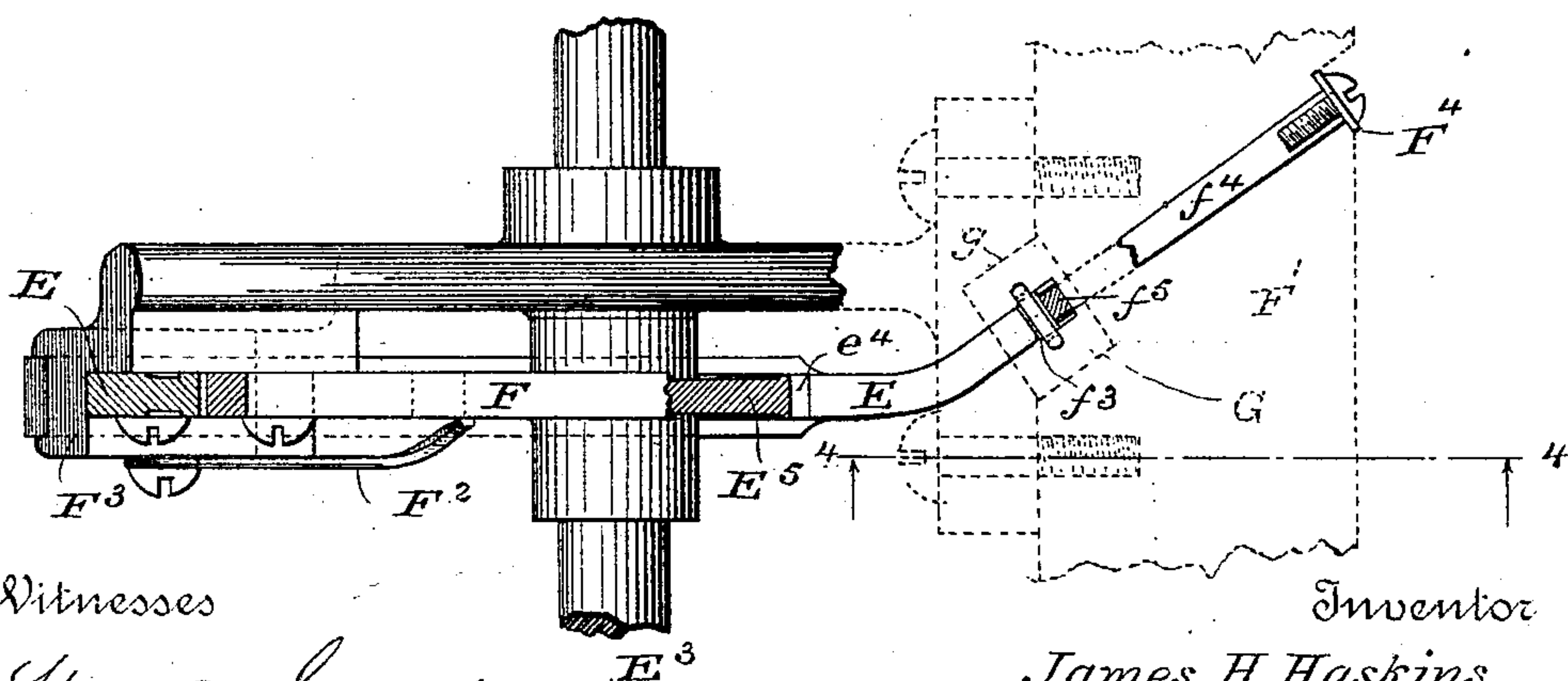


Fig. 5.



Witnesses

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UNITED STATES PATENT OFFICE.

JAMES H. HASKINS, OF CHICAGO, ILLINOIS, ASSIGNOR TO THE MCCORMICK HARVESTING MACHINE COMPANY, OF SAME PLACE.

TACK-DRIVING MACHINE.

SPECIFICATION forming part of Letters Patent No. 453,175, dated May 26, 1891.

Application filed February 4, 1889. Serial No. 298,581. (No model.)

To all whom it may concern:

Be it known that I, JAMES H. HASKINS, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Tack-Driving Machines, of which the following is a specification.

My improvement relates, primarily, to mechanism for use in machines for applying slats to canvas aprons for harvester-conveyers and similar purposes, such as invented by John F. Kingwill, of this city, and made the subject of an application filed by him in the Patent Office of the United States on the 1st day of March, 1886, Serial No. 193,964, and it will accordingly be described in connection with certain features of such a machine, without, however, intending thereby to limit it to any such specific use.

The invention consists partly in a novel feed device for supplying the tacks to the operation of the drivers; further, in improvements in the drivers themselves and in the guide for such drivers; also, in improvements in the mode of operating the drivers, and finally in various subordinate features and details of construction hereinafter described and claimed.

In the drawings, Figure 1 is a top plan view of so much of a slat-tacking machine having my invention applied thereto as is necessary to an understanding of the latter, parts, however, being broken away on the correspondingly-numbered line in the ensuing figure; Fig. 2, a rear elevation of said machine, broken away, however, on the correspondingly-numbered line in the preceding figure; Fig. 3, a vertical longitudinal section through said machine on the line 3 3 in the first figure; Fig. 4, an enlarged detail of the tack feeding and driving mechanism in section on the correspondingly-numbered line in the fifth figure; Fig. 5, an enlarged detail on the same scale as the preceding figure and sectioned on the line 5 5 of said last figure; Fig. 6, an enlarged detail of a tack-driver and its guide, partly in section on the line 6 6 in the eighth figure; Fig. 7, also an enlarged detail of the parts in the preceding figure, partly in section on the line 7 7 in the eighth figure; Fig. 8, a bottom plan view of the tack-driver and its guide,

which latter also finally serves as a guide for the tack which is being driven; and Figs. 9, 10, and 11 are details, further enlarged over the preceding, of the tack-driver and its guide, explaining the mode of engaging and driving the tacks.

A represents the chains of a slat-conveyer, substantially such as shown in the before-mentioned Kingwill machine, and B one of the slat-carriers extending transversely of the machine from one chain to the other at right angles to the movement of the conveyer and having a slat resting therein.

C is the anvil, over which the carrier is drawn by the chains and upon which it temporarily rests while the tack-drivers descend and insert a gang of tacks. Vertically above this anvil, or nearly so, is the intermittently-driven plunger-shaft D, having eccentrics D', which turn in yokes or straps at the upper end of links D², and these are hinged or pivoted at their lower ends to the plunger-head D³, which works in slideways D⁴, attached to the respective sides of the frame, the relations being such that as the slat, or whatever it may be, is brought to rest on the anvil the plunger-head descends to actuate the drivers and insert the tacks. As thus far described and lettered the parts are, or may be, substantially identical to those heretofore employed in said Kingwill machine and in other tack-driving machines.

The description of the improved drivers and their guides and of the manner in which they are operated will come more naturally after the description of the tack-feeding devices.

The tacks which I prefer to use are double-pointed or staple tacks, and therefore I will describe the feed and driving devices as adapted to the employment of such tacks; but the principle of the invention may be applied to the use of single-pointed tacks, as will be presently explained. At a point suitably elevated above the anvil and the receiving devices commences a number of tackways E, consisting of bars set edgewise and of sufficient thickness to be properly saddled by and guide a staple-tack. There will be as many of these tackways as of drivers, and they will lead downward and be spread outward from

each other so as to conduct each to its respective driver. At the upper end, however, they will be massed together almost parallel and with but sufficient space between them to allow tacks that fail to saddle them to fall through freely. Along the massed length they will be inclosed at the head and sides by a hopper E' , which may be termed the "sorting-hopper," and which, together with the "ways," will in practice have a slight vibratory or sidewise reciprocation. Located beneath the sorting-hopper and extending some distance beyond it is a receiving-hopper E^2 , from which the tacks may be scooped or shoveled up and thrown into the sorting-hopper, each to find its respective way or to fall through the interstices back into the receiving-hopper. The tackways are intercepted before they quite reach the gang-drivers by a transverse shaft E^3 , which is intermittently rocked once to each descent and rise of the plunger-head by means of a rack E^4 , moving in guides e at one end of the machine, the pinion e' , with which said rack engages, and a link e^2 , connected with the crank e^3 on the plunger-shaft, or by other suitable means, and it carries one or more intermittent feed-disks E^5 , according to the number of tackways, each of which corresponds with and is in the same plane as the proximate parts of the upper and lower sections of the tackways. Each disk has a single notch e^4 , so located that as the shaft is rocked in the descent of the plunger this notch will be carried up over and back to the terminus of the upper section of the corresponding tackway, which comes to a point or is otherwise brought into practical contact with the periphery of the disk, and when the reverse movement of the shaft takes place, as the plunger-head rises such notch will be carried up over and down until it reaches the upper end of the lower section of said way, which is also in practical contact with the periphery of the disk and is in line, or thereabout, with the sloping upper edge of the upper section, where it reaches the disk, so that the notch when it reaches the second section will be considerably lower than when it reaches the first. The upper portion of the feed-disk rises above the sloping line of the tackway, and so serves to form a cut-off between the two sections, and to further insure this cut-off action it is saddled by a gravity-bar or cut-off bar F , which is hinged to inverted bridges f , secured to the under side of the tackway and set out therefrom sufficiently to allow the tacks to pass through. From the pivotal point the gravity-bar is parallel with the tackway, but raised sufficiently above it to permit the heads of the tacks to pass freely until it reaches the cut-off disk, where it is curved over and rests upon the upper periphery of such disk, its lower end descending nearly to the lower section of the tackway and being separated therefrom only by the width of the notch in the disk. It also

may have a stop-finger f' , playing in a slot f^2 in the cross-bar F' , which serves to support the direct drivers and their guides and may therefore be called the "cross-guide." This finger serves to prevent it from sinking so far from any cause as to prevent the free feed of the tacks until they reach the disk and from resting too heavily on the latter. Now it will be evident that, the notch in the cut-off disk being of just sufficient depth and width to admit the head of a single tack, whenever the disk is rocked over and upward to bring the notch to the upper section as the plunger descends it will receive a single tack from said upper section, and then, when it is rocked over and downward as the plunger-head ascends, it will carry a tack up with it, beneath the gravity-bar or cut-off bar, or any spring-pressure that may be used in lieu of the latter, and will deliver such tack to the lower section of the tackway, down which it will then be free to slide to take the place of the tack just driven when the plunger-head last descended.

To prevent the point of the tack resting against the cut-off disk from being tipped or thrown out by the pressure of the row of tacks behind it before or at the moment it is received in the feed-notch, a bent wire or spring-stop F^2 is attached to the bracket F^3 , which supports the lower end of the tackway from the cross-guide, and arranged so that its end comes against the side of the cut-off disk and receives and sustains the point of the tack, as shown in Fig. 4, until it has been separated from the others and carried up beneath the cut-off bar by the motion of the disk.

In driving staple-tacks to unite canvas aprons to their slats it is important that they shall be driven diagonally of the length of the slats. Therefore the lower section of the tackway is curved beyond the cut-off disk, as in Fig. 5, to deliver the tack at a suitable angle to a saddle f^3 , set out from a spring F^4 , bolted at its upper end to the front of the cross-guide and extended down along the face thereof and turned, as at F^4 , to pass about horizontally under said cross-guide and finally bent downward on a curve f^5 until it becomes nearly perpendicular and terminates in the saddle, the last-mentioned curve being intended to be struck by a cam or wedge, so as to push the saddle out of the way at the proper moment, as presently explained.

G represents the drive-guides, which, to prevent twist and for convenience in constructing, are rectangular in cross-section. They are supported in oblique ways g in the cross-guide, and instead of being rigid there-with are intended to play up and down in said ways, their normal position being somewhat above the saddle and its spring, which latter enters through a cross-slot g' in their lower ends until its perpendicular lower part is brought adjacent to the driveway g^2 , as shown in Fig. 10, and the tack, as it rests

upon the saddle, is brought immediately beneath the driveway, so that when the guide descends it may receive the tack in such driveway and pass over and along it until it comes into contact with the material resting on the anvil, when it will stop and hold the tack in position for the descent of the driver, as indicated in Figs. 9 to 11, the saddle remaining, however, undisturbed for the moment.

10 H is the driver, having a disk at its upper end which enters a groove on the under face of the plunger-head and is secured therein by a plate. It is connected with its guide by means of a pin h , entering a longitudinal slot
15 h' in one side of said guide, this slot being of sufficient length to allow the guide to shut down over the tack and come to a stop before any relative movement takes place between it and the driver. Between the head of the
20 latter and the head of the guide the driver is encircled by a coiled spring H' of sufficient strength to force down the guide with the descent of the plunger-head and bring it firmly against the object to be tacked before the
25 driver itself begins to move along the slot in the side of the guide. Thus it will be evident that the tack will be received and supported in the driveway in the guide before the driver is carried down upon its head. The main
30 part of the driver is a flat bar h^2 of the thickness and width corresponding to the head of the tack and so just filling the driveway, but at right angles to this bar it has a central longitudinal rib h^3 , which extends or may extend
35 entirely through that side of the guide that is entered by the curved and perpendicular reach of the saddle-spring, and at the lower end this rib has a bevel h^4 , which, as the driver continues to descend after the
40 guide comes to a stop, strikes against the curved part of the saddle-spring and pushes the latter outward, withdrawing the saddle from beneath the head of the tack before the latter is struck by the driver itself, as represented in Fig. 11, so that the further descent
45 of the driver will force the tack home.

I do not intend to be limited to the specific construction herein described so long as the principle of my invention is not departed
50 from—as for instance, the tack-guides instead of being slotted and adapted to be saddled only by staple-tacks may, together with the cut-off disk, have a groove or channel for the purpose of feeding single-pointed tacks. The
55 receiving-guide need not necessarily be rectangular in outline so long as it is prevented from twisting in the cross-guide. The tacks need not be driven obliquely, the cut-off bar may be represented by a suitable springsaddling the upper part of the cut-off disk. The
60 latter may be rocked or oscillated by different mechanism from that shown, and the method of delivering tacks to the tackways may be varied from that explained.

65 I claim—

1. The combination, substantially as here-
inbefore set forth, with a tackway and a

driver, of a notched cut-off disk and a rock-shaft upon which the latter is mounted.

2. The combination, substantially as here-
inbefore set forth, with a tackway and a
70 driver, of the notched cut-off disk, the rock-shaft upon which it is mounted, and the cut-off bar saddling the upper periphery of said disk.

3. The combination, substantially as here-
inbefore set forth, with a tackway and its
75 driver, of the notched cut-off disk, the rock-shaft upon which it is mounted, the cut-off bar saddling the upper periphery of said disk, and the inverted bridge by which it is pivoted to the tackway at a distance from said disk.

4. The combination, substantially as here-
inbefore set forth, with a tackway, of the
85 notched cut-off disk located between the upper and lower sections thereof, the saddle to which the lower section of said tackway delivers, the spring by which said saddle is supported, the reciprocating driver-guide arranged to descend over the tack carried by
90 said saddle, the driver playing through said guide and having a spring interposed between itself and the latter, and the bevel at the lower end of said driver, whereby the saddle-spring is forced aside and the saddle withdrawn from the tack as the driver descends.

5. The combination, substantially as here-
inbefore set forth, with the tackway and the
100 notched cut-off disk reciprocating therein, of the cut-off bar above said tackway and disk, and the spring-stop resting against the side of said disk at the lower end of the first section of the tackway.

6. The combination, substantially as here-
inbefore set forth, of the plunger-shaft, the
105 plunger-head, the cross-guide, the driver-guide playing therein, the driver connected to said guide by a pin playing in a vertical slot in one of its sides, and the spring interposed between the driver and its guide.

7. The combination, substantially as here-
inbefore set forth, with the tack-guides and
115 their cut-off disks, of the rock-shaft upon which the latter are mounted, the pinion on said rock-shaft, the rack engaging with said pinion, the crank upon the plunger-shaft, and the pin connecting the rack with said crank.

8. The combination, substantially as here-
inbefore set forth, of the notched cut-off disk,
120 sectional tackways having the lower section curved to deliver the tack obliquely, the cross-guide, the driver-guide arranged obliquely to the cross-guide and reciprocating therein, the driver playing through said latter guide, and
125 the spring between the driver and the driver-guide, whereby the latter is first carried down over the tack and the driver then further descends to carry said tack home.

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Witnesses:

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