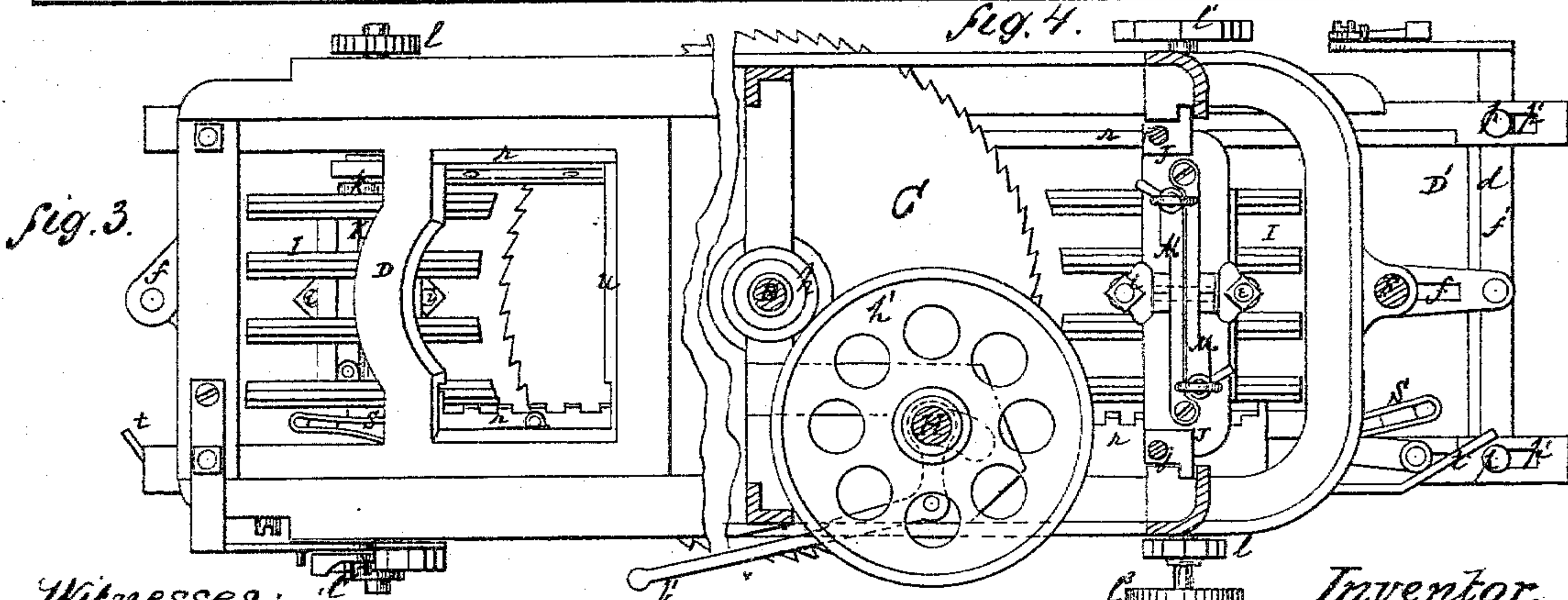
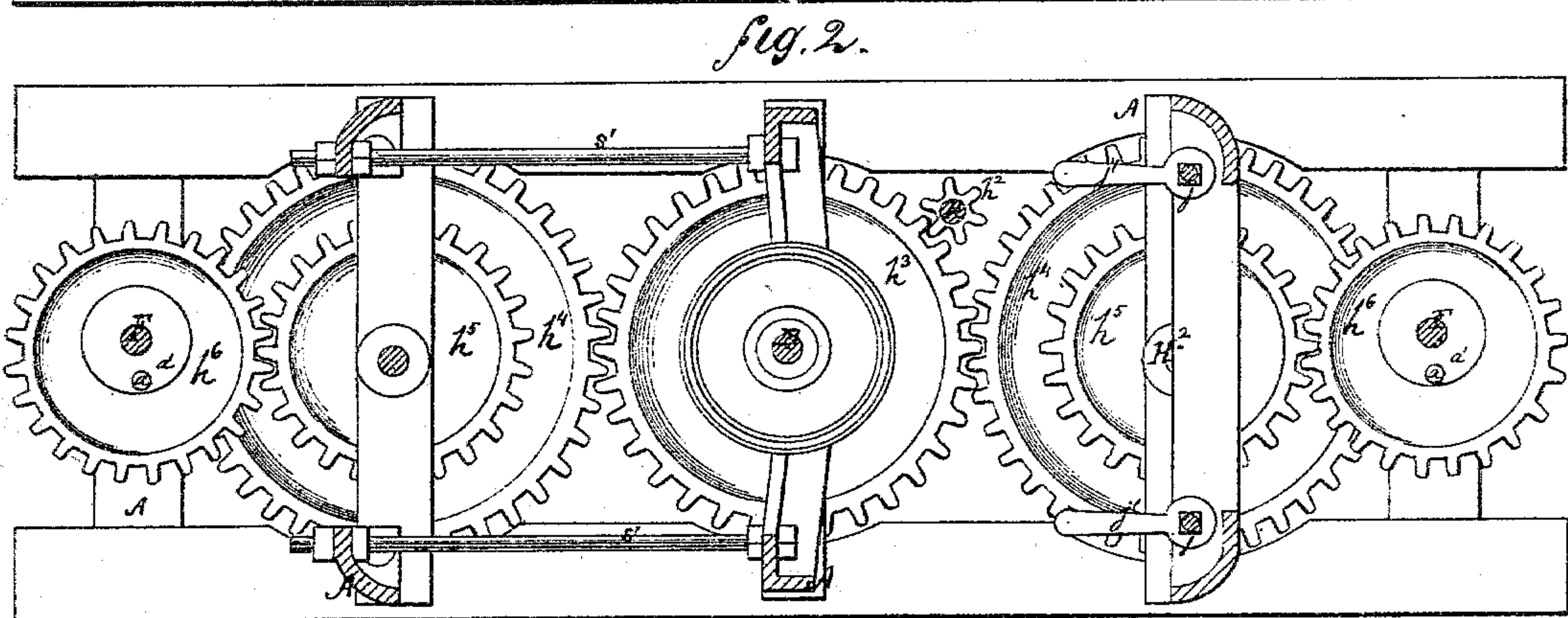
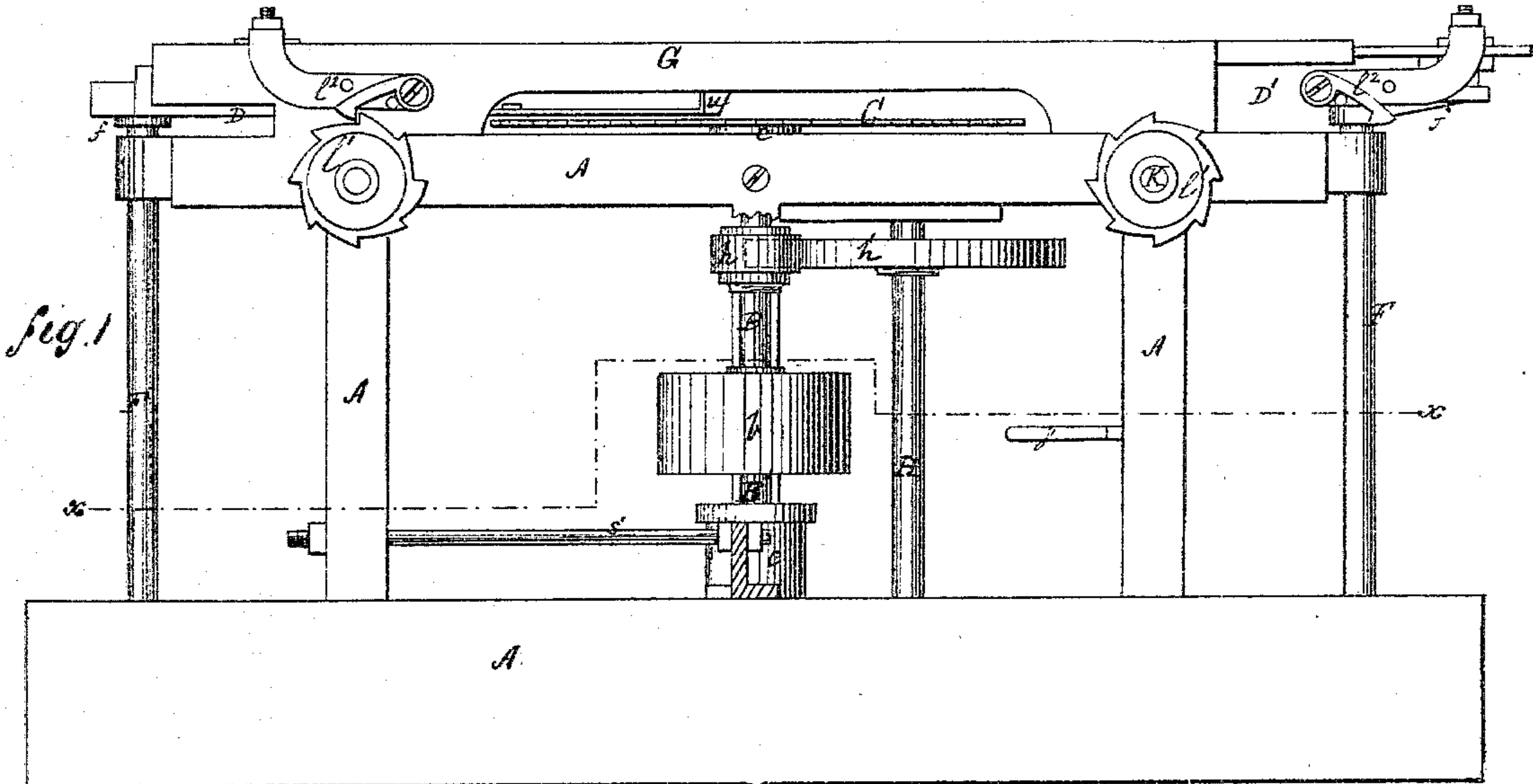


GEORGE CHALLONER.

Improvement in Shingle Machines.

Patented June 13, 1871.

No. 115,932.



Witnesses:  
Victor Hagmann  
Nathan K. Ellsworth.

Inventor.  
George Challoner  
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GEORGE CHALLONER.

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fig. 5.

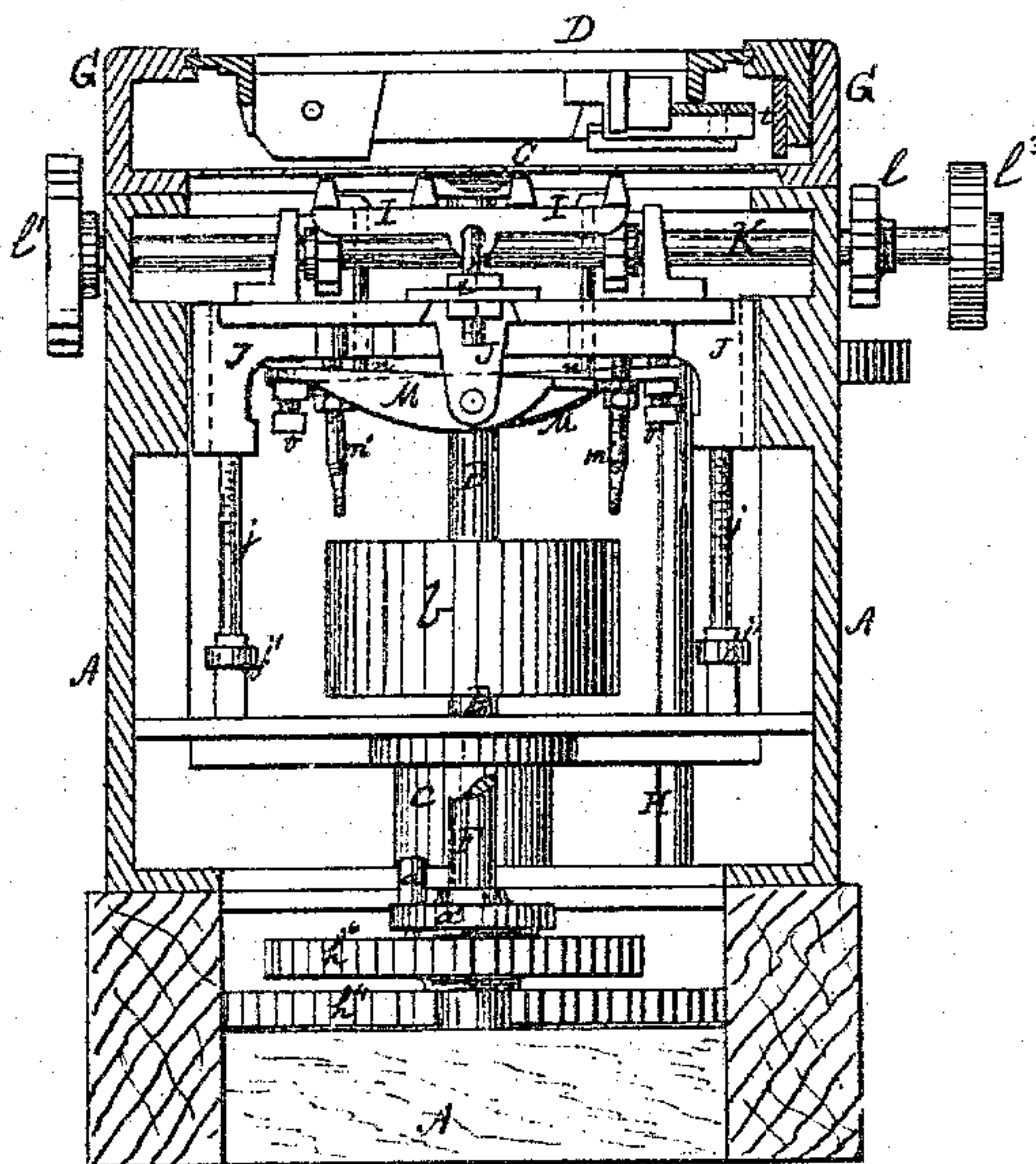


Fig. 6.

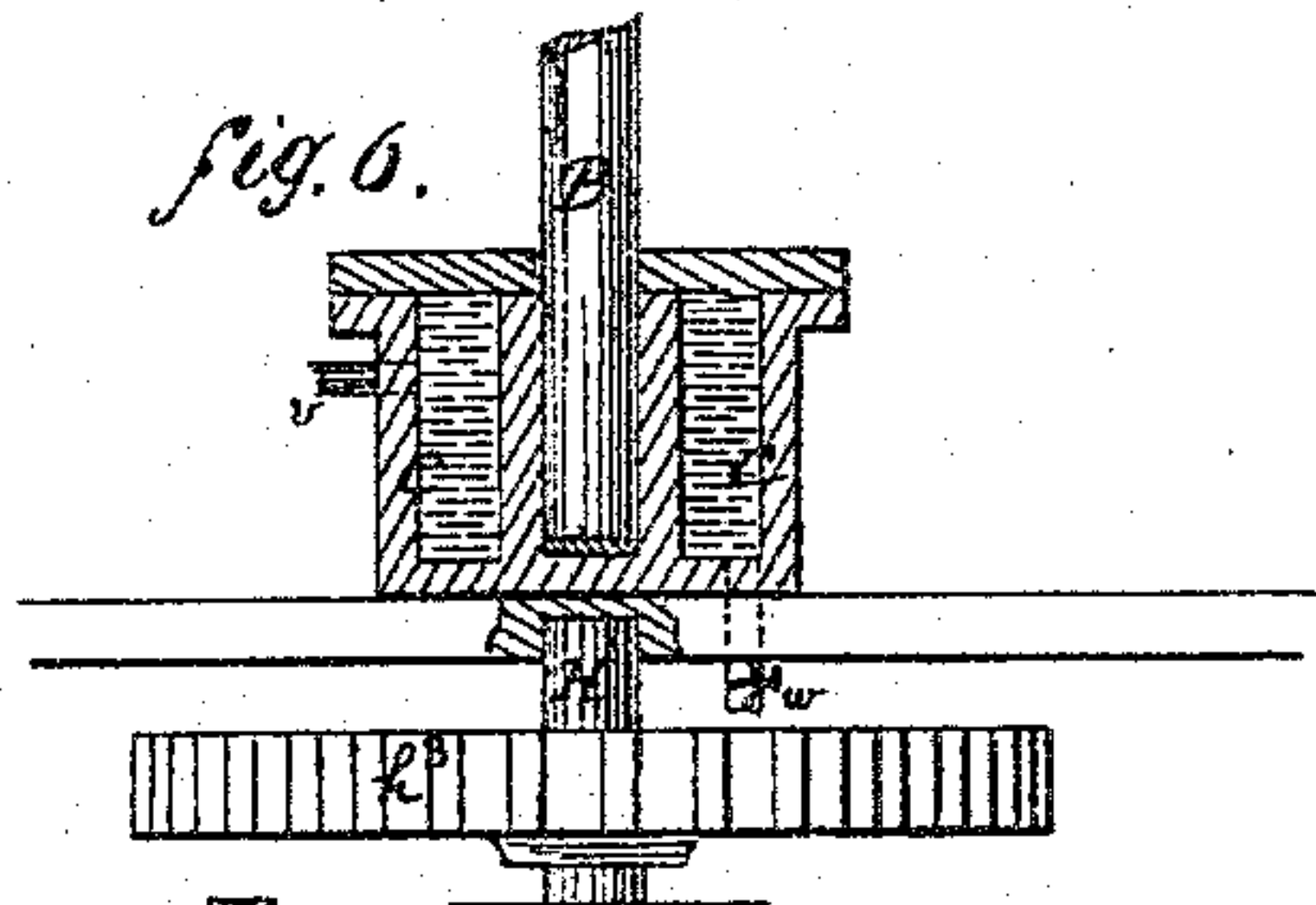
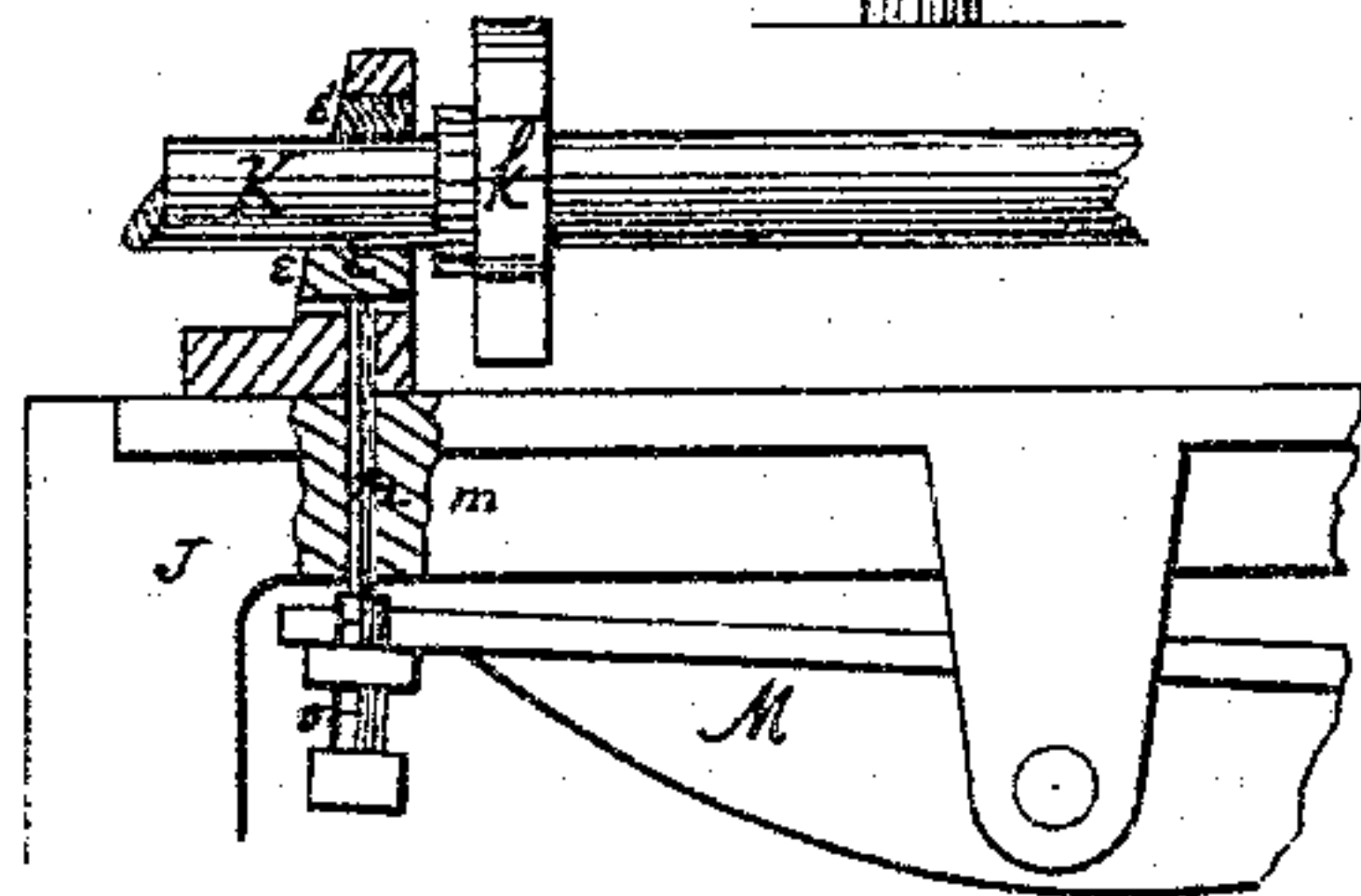


fig. 7.



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# UNITED STATES PATENT OFFICE.

GEORGE CHALLONER, OF OMRO, WISCONSIN.

## IMPROVEMENT IN SHINGLE-MACHINES.

Specification forming part of Letters Patent No. 115,932, dated June 13, 1871.

*To all whom it may concern:*

Be it known that I, GEORGE CHALLONER, of Omro, in the county of Winnebago and State of Wisconsin, have invented an Improved Shingle-Machine; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawing forming part of this specification, in which—

Figure 1 is a side elevation, one of the legs of the frame having been broken away. Fig. 2 is a horizontal section in line *x x* of Fig. 1, showing the parts below said line. Fig. 3 is a top view of one end of the machine. Fig. 4 is a horizontal section in line *x x* of Fig. 1, showing the parts above said line at the right-hand end of the machine. Fig. 5 is a vertical section in line *y y* of Fig. 1. Fig. 6 is a section showing the water-jacket for cooling the saw-mandrel, and the arrangement of the mandrel and the shaft beneath it; and Fig. 7 is a detached sectional view, illustrating the construction of the apparatus for gaging the butts and points of the shingles.

Similar letters of reference in the accompanying drawing denote corresponding parts.

This invention relates to that class of shingle-machines having a horizontal circular saw with two reciprocating carriages; and it consists, first, in an improved construction by which the carriages are so geared that in feeding and giging back the power is applied in the most economical manner, and the movement of the carriages is most convenient for the attendant; secondly, in an arrangement by which any number of shingles can be sawed out without changing butts and points; thirdly, in an improved method of adjusting the feed-table, so as to gage the thickness of the butts and points; fourthly, in an improved means for gaging the thickness of the whole shingle; fifthly, in an improved means for adjusting the feed-table to compensate for the wearing away of the saw; sixthly, in an improved device for operating the block-dogs; seventhly, in an improved device for throwing either carriage out of gear; eighthly, in an improved guard to protect the saw-teeth from accidental injury by the dogs; and ninthly, in an improved method of preventing the mandrel and saw from heating.

In the drawing, A represents the frame of

the machine; B, the saw-mandrel, to which the power is applied by means of a belt-pulley, *b*; C, the saw; and D D', the block-carriages, running in guide-ways G G and operated by means of a vertical shaft, F, having a crank, *f*, the pin on the end of which travels in a lateral groove, *f*<sup>1</sup>, in the under side of the carriage. The shaft F is operated by power derived from the mandrel through a train of gear-wheels, as follows, viz.: from the mandrel to a vertical shaft, H, by means of friction-wheels *h h*<sup>1</sup>; from the shaft H to a shaft, H<sup>1</sup>, by cog gear-wheels *h*<sup>2</sup> *h*<sup>3</sup>; from the shaft H<sup>1</sup> to a shaft, H<sup>2</sup>, by gear-wheels *h*<sup>3</sup> *h*<sup>4</sup>; and from the shaft H<sup>2</sup> to the shaft F by eccentric cog-wheels *h*<sup>5</sup> *h*<sup>6</sup>, said eccentric wheels being so arranged as to feed the carriages slowly forward and gig them rapidly back, the movement of one alternating with that of the other, in order to apply the saw to only one block at a time. The upper end of the shaft H runs in a sliding box controlled by a hand-lever, *b*', by which the friction-wheels can be thrown into or out of gear, and the movement of both carriages started or stopped at pleasure. The eccentric *h*<sup>6</sup> is not keyed to its shaft F, but is held by a pin, *a*, running through a keyed collar, *a*'. By removing either of the pins its shaft F will cease to rotate, and the carriage connected thereto will be stopped without interfering with the operation of the other carriage. The pair of eccentrics *h*<sup>5</sup> *h*<sup>6</sup> and the crank *f* at one end of the machine are not arranged to rotate exactly with the eccentrics and crank at the other end; but they are so arranged that, before one carriage, D, is done feeding, the other, D', is done giging back and has begun to feed. Just as the carriage D' brings its block to the edge of the saw the carriage D begins to gig back, running about twice as fast as the other moves forward. Reaching the end of its movement before the other D' is done feeding, it stops almost or quite still a moment, and then moves forward again, reaching the edge of the saw just as the other is done feeding and ready to gig back. The effect of this is to economize time to the greatest possible degree, since, although both carriages move considerably more than the length of a block, yet no time is wasted thereby, but the saw is always in operation on one block or the other. The block that is to be sawed lies upon an oscillat-



ing bed or "grate," I, supported upon a vertically-adjustable frame, J, by means of two adjustable pivot-rods, *i i*. The height of the grate upon its pivots is intended to be properly adjusted at the works where the machine is made, and to remain permanently as thus fixed; but the frame J is designed to be raised and lowered by the attendant in the mill at any time, for the purpose of giving more or less stock to the shingles; and this operation he easily effects by means of two screw-rods, *j j*, provided with permanently-attached wrenches *j' j'*. For the purpose of tilting the grate on its pivot at each movement of the carriage so as to reverse the butts and points of alternate shingles, I employ a shaft, K, extending horizontally across the machine, and provided with two four-cornered cams, *k k*, the operation of which, in connection with the grate, is the same as in other machines of this class. Whenever the attendant desires to prevent the reversing of the butts and points for the purpose of cutting the shingle more nearly with the grain of the wood, or for any other purpose, he is enabled to do it by means of the following simple device: The ends of the shaft K project from the side of the frame, one end being provided with a gage ratchet and pawl, *l l*, and the other supporting a larger ratchet-wheel, *l'*, which, at every advance of the carriage, is struck and moved forward by an adjustable dog, *l''*, attached to the carriage, so as to bring the cams *k k* properly into operation under the grate to change the inclination thereof. Now, I arrange the teeth of one of the ratchet-wheels in such relation to the teeth of the other that, as the dog *l''* turns the shaft forward at each step, the end of the pawl *l* on the other end of the machine will rest nearly on the middle of one of the inclines forming the teeth of that wheel; and if the attendant then takes hold of a hand-wheel, *l'''*, on the extremity of the shaft, and turns it back so as to bring the end of the pawl against the tooth last passed, the backward movement of the shaft thus effected will set the cams as before, and prevent the changing of the butts and points till after the next shingle has been sawed. This operation may be repeated by the attendant as often and as many times in succession as may be desirable. For the purpose of enabling the attendant to gage the thickness of the butts and points properly, I support the shaft K in vertically-movable boxes *e*, and over each bearing I place a spring or spring pad, *e'*, which presses down upon the shaft. A loose pin, *m*, extends from the sliding box down through the frame J and rests upon the end of a screw, *o*, in an oscillating lever, M, which can be rocked or tilted on its fulcrum by means of an adjusting-screw and nut, *m'*, at its opposite end. Another loose pin, *n'*, rests upon the lever M, near the screw-nut *m'*, and extends up through the frame J to the under side of the grate I, so that, as the lever is rocked on its fulcrum, it tilts the grate by means of the pins *n* and the shaft by means

of the pins *m*, always keeping the cams on the shaft in proper contact with the grate. This apparatus is constructed in duplicate for each carriage, one part operating in connection with one side of the grate and the other with the other side.

It is evident that, by a turn of the screw *m'*, the thickness of the butts and points can be gaged at pleasure. It is not necessary to turn both screws *m' m'* connected with the carriage, since the spring-pad above the bearing on the other side enables the shaft to adjust itself properly when either of the screws *m' m'* is operated.

The means which I adopt for adjusting the movement of the carriage to compensate for the wearing away of the saw are very simple, consisting simply in making the yoke *d*, in the under side of which is the grooved track of the crank-pin, adjustable on the carriage by means of slots and set-screws *p p'*. As the saw gradually wears away and becomes smaller the carriages are set nearer to it, and clamped in that position by the set-screws. The crank-pin is provided with a friction-roller, running in the groove of the yoke. The dogs which hold the block while the saw is operating upon it are represented at *r r*, the former being fixed, and the latter constructed in the form of a horizontally-swinging lever, having a toothed edge to hold the block. While the carriage is feeding, a powerful bent steel spring, *s*, having a rubber pad inserted between its bent arms, as represented in Fig. 3, causes the pivoted dog to hold the block firmly in place; but when the carriage gigs back the outer end of the lever strikes an incline, *t*, which overcomes the force of the spring and opens the jaw, releasing the block and allowing it to drop upon the grate. For the purpose of protecting the saw-teeth from accidental injury by the iron dog *r*, I insert a wooden strip, *u*, under the forward end of the carriage and under the stationary dog, with its under side projecting below the level of the dogs, and lying parallel to the saw and almost in contact therewith. If the saw springs or warps it comes in contact with the guard, and is thereby prevented from striking the dogs. For the purpose of preventing the saw and its mandrel from becoming heated I employ a water-jacket, *c*, around the bearings of the mandrel at the top and bottom. A running stream of cold water flows into the water-space through a pipe, *v*, and discharges through a waste-pipe, *w*, which is provided with a regulating-cock, as shown in Fig. 6.

The machine herein described may be made single instead of double, in which case some of the gear will be rendered unnecessary and may be omitted, and, of course, the adjustment of the parts to operate the two carriages, as herein described, will be dispensed with. The lower end of the saw-mandrel may be supported in a frame, which is made adjustable by means of screw-rods *s'*, for the purpose of keeping the saw in a horizontal position.

Having thus described my invention, what



I claim as new therein, and desire to secure by Letters Patent, is—

1. In a shingle-machine having one horizontal saw and two carriages, the carriages D D' and their operating mechanism, when constructed and combined to operate substantially as and for the purposes herein set forth.

2. The adjustable yoke  $d$ , in combination with the carriage D or D' and the crank-shaft F  $f$ , substantially as and for the purposes set forth.

3. In connection with the eccentrics  $h^5 h^6$  and shaft F  $f$ , constructed to operate as herein described, the pin  $a$  and collar  $a'$ , substantially as herein set forth.

4. In connection with the eccentrics  $h^5 h^6$ ,

the shafts F  $f$  H<sup>1</sup> H<sup>2</sup>, and the gear-wheels  $h^2 h^3 h^4$ , arranged and operating as described, the movable shaft H, the friction-wheels  $h h^1$ , and the hand-lever  $b'$ , substantially as herein set forth.

5. The combination of the gage ratchet and pawl  $l$  with the feed-ratchet  $l^1$  and dog  $l^2$ , substantially as and for the purposes specified.

6. The combination of the pivoted lever M with the pins  $m n$ , the adjusting-screws, and the oscillating grate and cam-shaft, substantially as and for the purposes specified.

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