

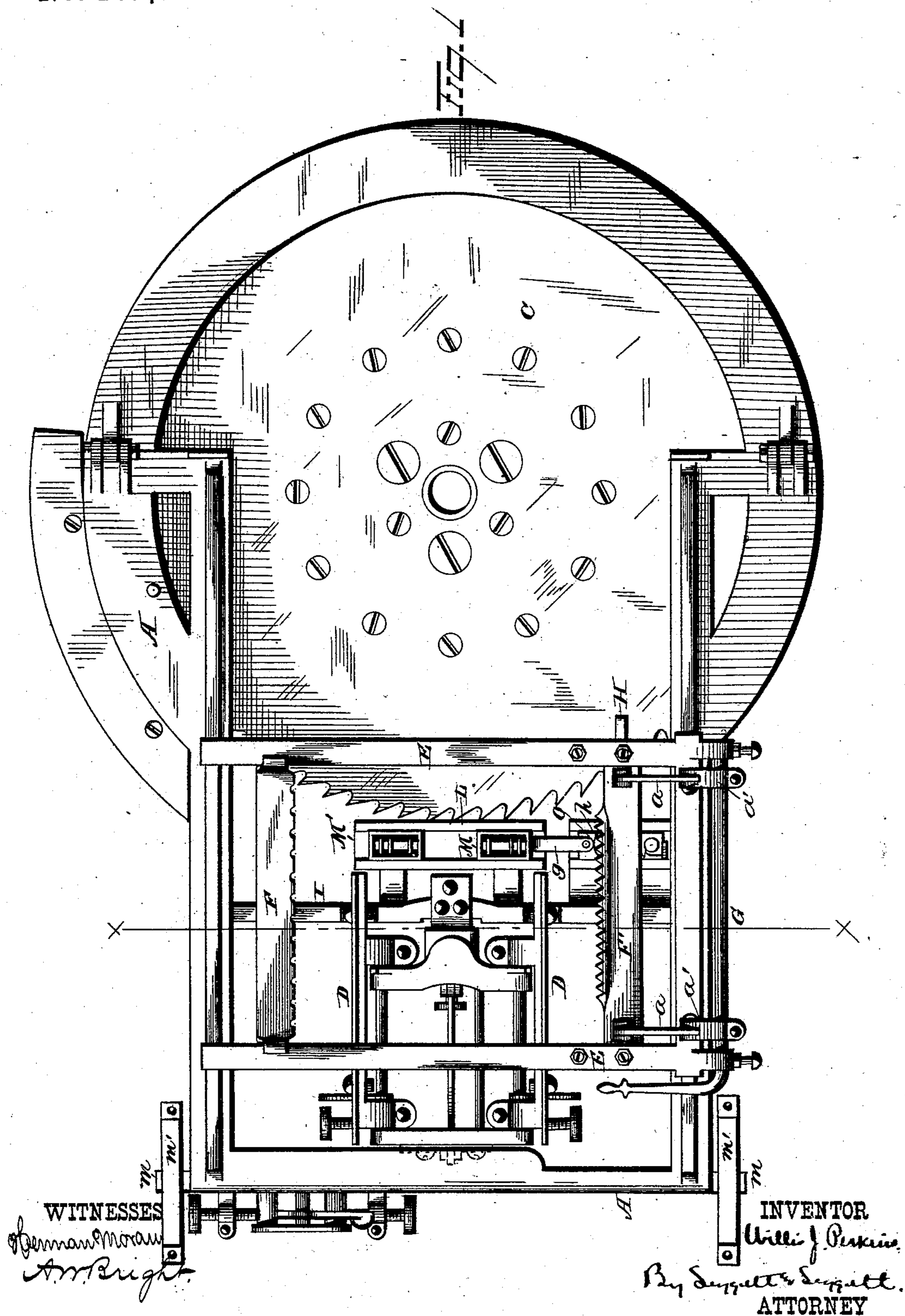
(No Model.)

5 Sheets—Sheet 1.

W. J. PERKINS.
SHINGLE SAWING MACHINE.

No. 272,316.

Patented Feb. 13, 1883.



(No Model.)

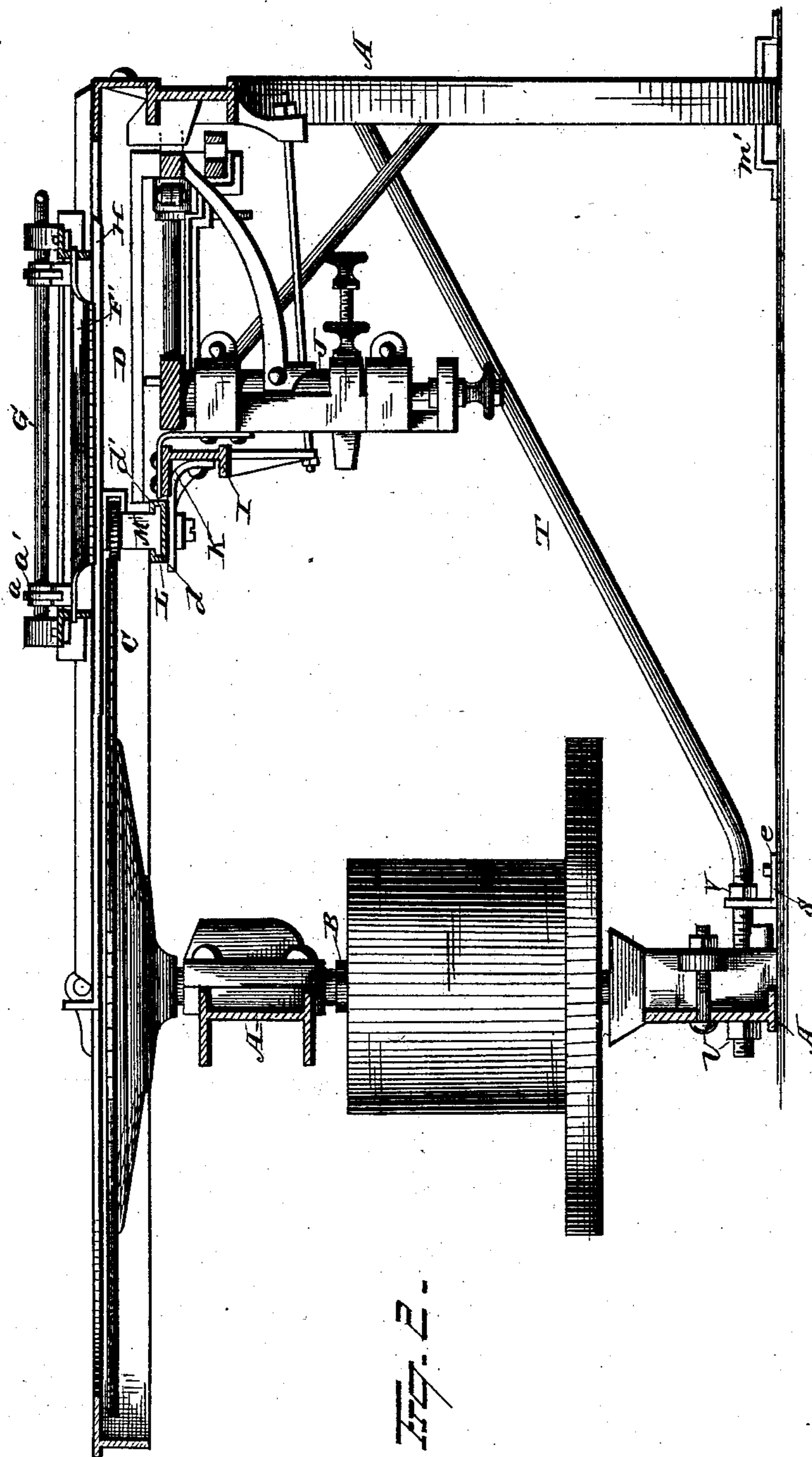
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7-11

WITNESSES

WITNESSES
German Moran.
A. Bright

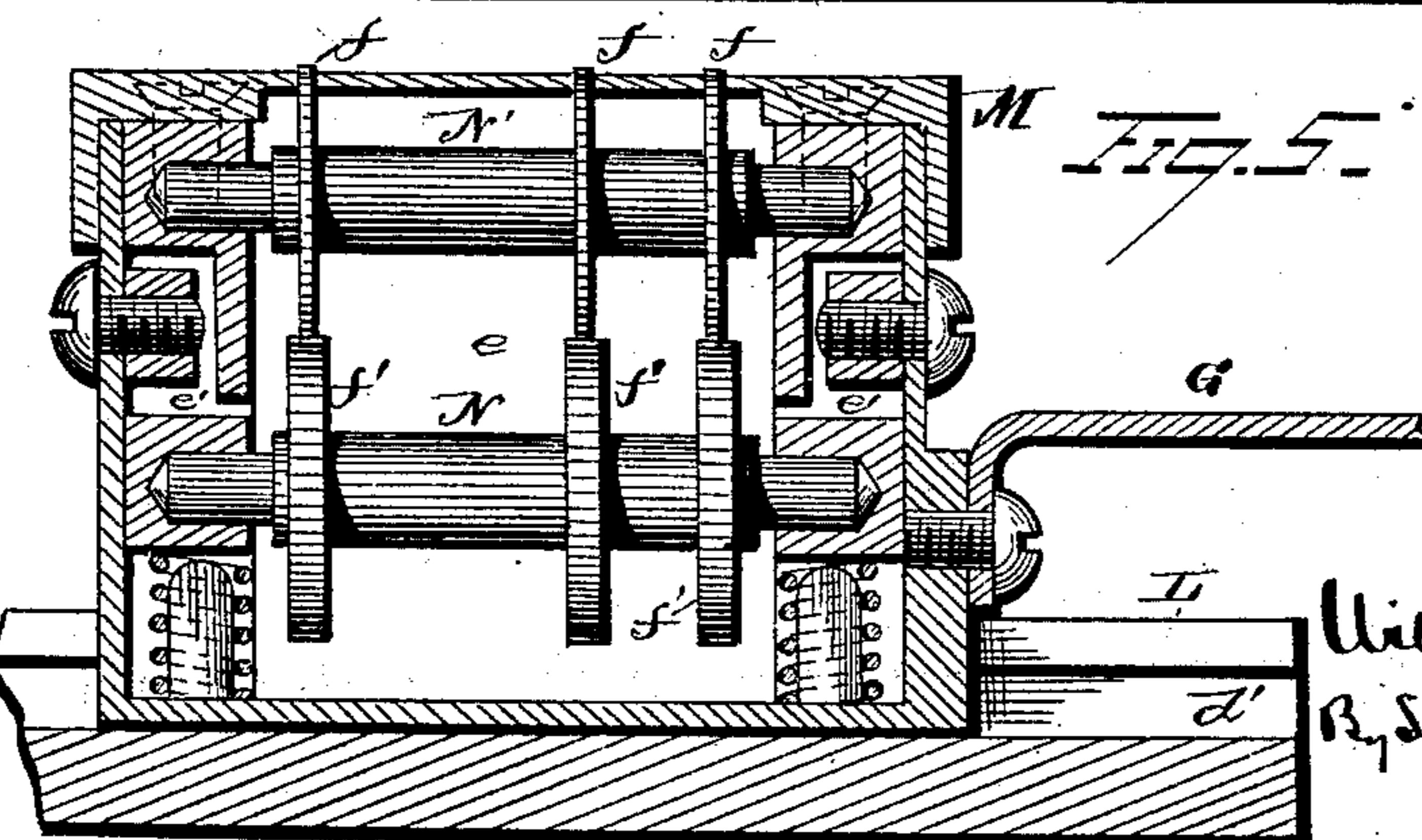
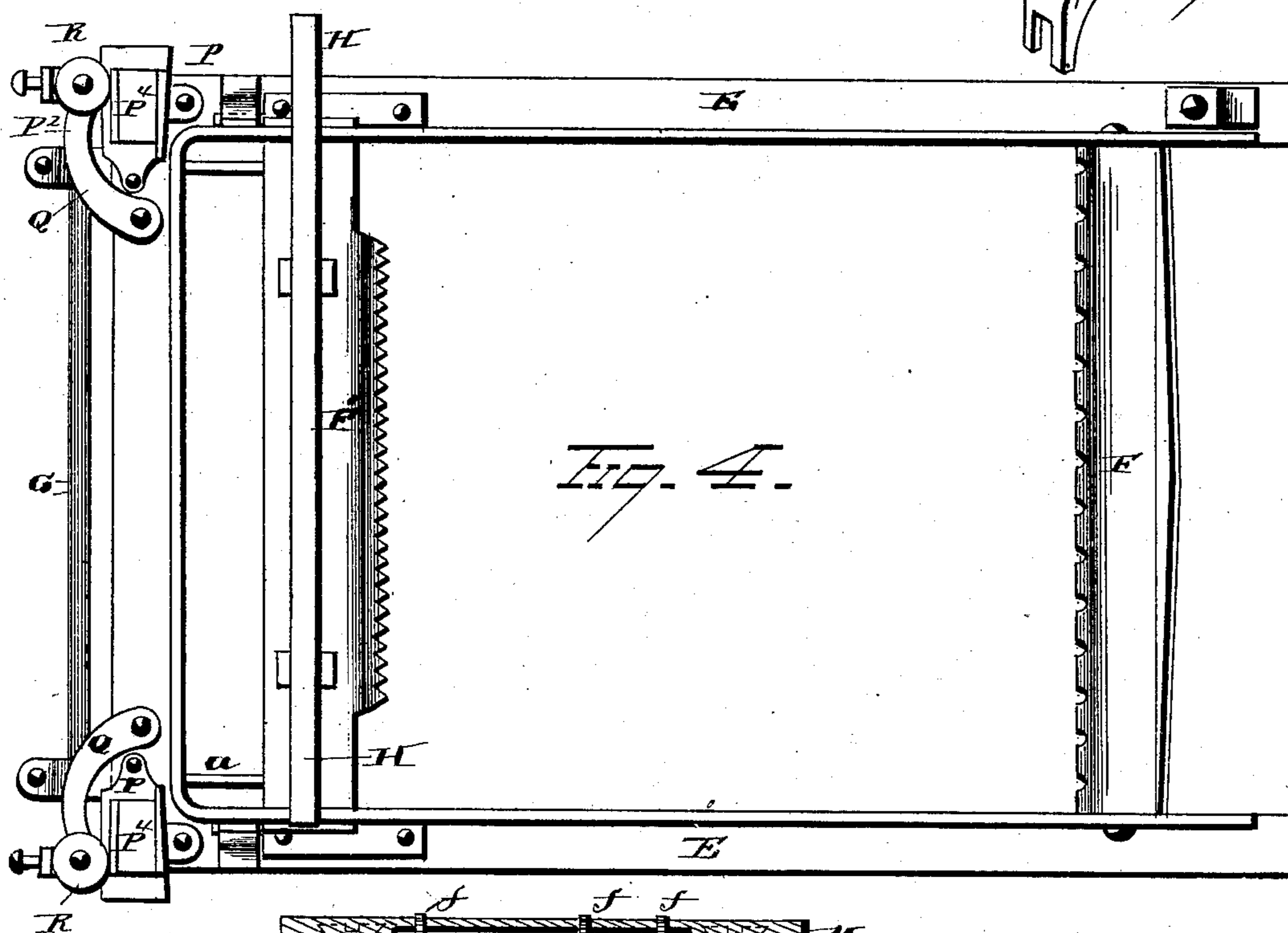
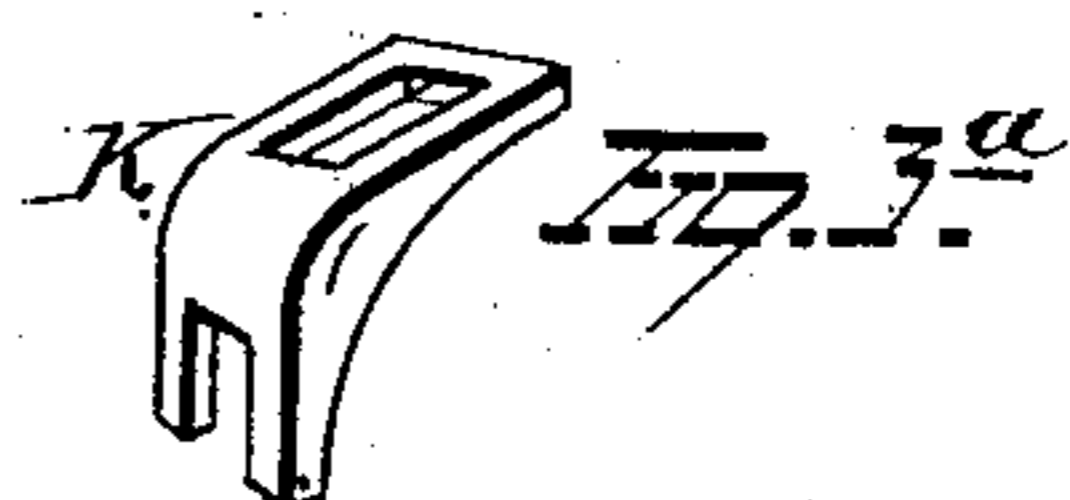
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5 Sheets—Sheet 3.

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WITNESSES

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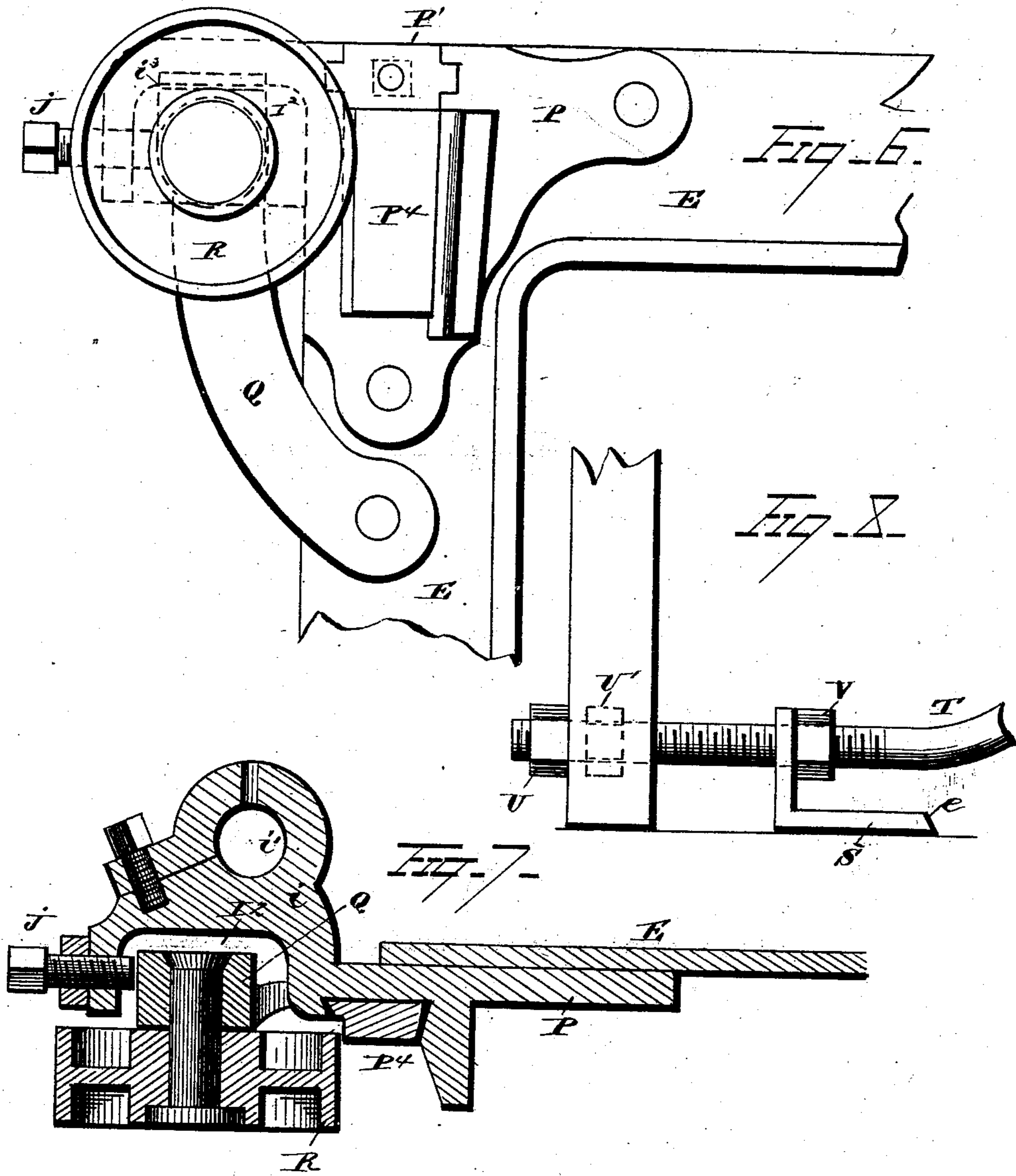
(No Model.)

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W. J. PERKINS.
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WITNESSES
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(No Model.)

5 Sheets—Sheet 5.

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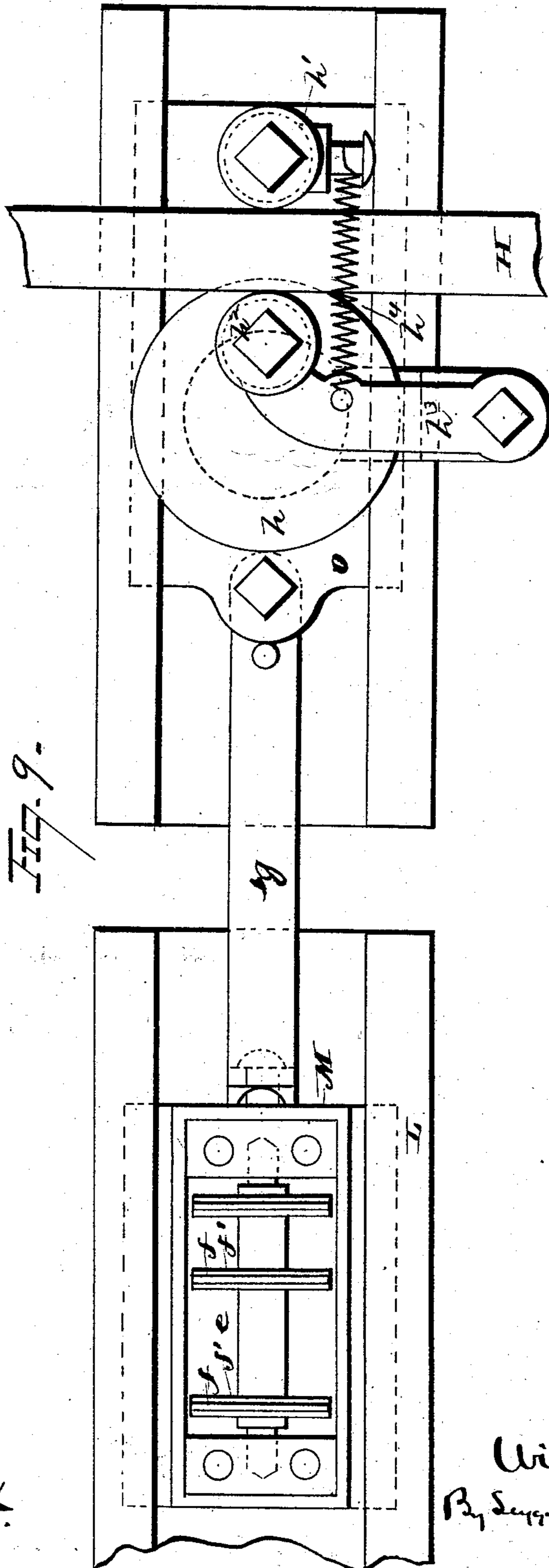


Fig. 9.

WITNESSES
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UNITED STATES PATENT OFFICE.

WILLIS J. PERKINS, OF GRAND RAPIDS, MICHIGAN.

SHINGLE-SAWING MACHINE.

SPECIFICATION forming part of Letters Patent No. 272,316, dated February 13, 1883.

Application filed October 27, 1881. (No model.)

To all whom it may concern:

Be it known that I, WILLIS J. PERKINS, of Grand Rapids, in the county of Kent and State of Michigan, have invented certain new and useful Improvements in Shingle-Sawing Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification.

My invention relates to an improvement in shingle-machines, the object of the same being to provide an arrangement of parts whereby a coursing line or lines are automatically marked or printed on the shingles while the carriage is in motion.

A further object of my invention is to provide an arrangement of parts whereby the coursing line or lines so marked or printed on the shingles being sawed shall be the same distance from the butt thereof, irrespective of the length of the bolt.

A further object of my invention is to provide a cheap, simple, and light-running and durable slide-bearing for the carriage, that can be easily replaced at a slight cost when worn, and one that requires less oiling than the ordinary metallic bearing so commonly used on shingle-machine carriages.

A further object of my invention is to provide an arrangement of parts whereby, instead of the carriage being raised vertically by passing over lumps of sawdust compressed on the track, which causes imperfections in the shingles, it is moved horizontally in its same plane.

A further object of my invention is to provide simple and inexpensive means for tightening the driving-belt without disconnecting the parts or stopping the machine.

With these ends in view my invention consists in certain details in construction and combinations of parts, as will be more fully explained, and pointed out in the claims.

In the accompanying drawings, Figure 1 is a plan view of a shingle-machine patented to me January 11, 1881, numbered 236,620, (the mechanism for reciprocating the carriage being removed,) embodying my present im-

provements. Fig. 2 is a longitudinal sectional view of the same. Fig. 3 is a transverse section through the lines *xx* of Fig. 1. Fig. 3^a is a detached view of one of the brackets K. Fig. 4 is a plan view of the under side of the carriage. Fig. 5 is an enlarged sectional view of the inking-rollers and pots. Fig. 6 is an enlarged plan view of the slide-bearing. Fig. 7 is a transverse section of the same. Fig. 8 is an enlarged view showing the manner of tightening the drive-belt, and Fig. 9 is an enlarged view showing the means for automatically regulating one ink-pot.

A represents the frame of the machine, having the vertical saw-arbor B journaled thereto, which latter is provided on top with the circular saw C, adapted to be driven by any suitable belting.

D represents the tiltways, and E the carriage, which, together with the parts above referred to, are in general structure (excepting some details in the carriage) like those shown, described, and claimed in the patent before referred to, and require no special mention here, except to give a correct understanding of the case, together with the combined operation of the marking device and shingle-machine.

The head-block F can be rigidly secured to the sides of the carriage, as shown in the drawings; or can be adapted to move horizontally simultaneously with the dog F', as shown in Patent No. 236,620. The dog F' is connected with the rock-shaft G by the links *a* and knuckles *a'*, and is provided on its under side with the bar H, adapted, in conjunction with parts to be hereinafter explained, to automatically regulate the position of one pot containing the marking material and rollers, so that the coursing-mark will be at a predetermined and regular distance from the butt of the shingle, irrespective of irregularities in shape of the shingle-bolt.

On the front side of the cross-girt I, to which the vertically-adjustable standard J, which supports tilt-table D, is secured, are two or more vertically-adjustable brackets, K, provided on top with the oblong slots, in which the frame L, secured on the top thereof, is horizontally adjusted. This frame L is provided with up-turned sides having grooved inner faces, in

which the pots containing the marking material and rollers are placed. When the head-block F is rigidly secured to the carriage, as shown in the drawings, the pot on that side of the machine can be rigidly adjusted in the frame at a predetermined distance from the head-block by the set-screw *e*; but when the dog F' suitable arrangement can be made to move the pot in the same direction an equal distance. These pots *m* and *m'* are provided with flanges *d*, adapted to enter the longitudinal grooves *d'* in the sides of the frame to be guided in the proper transverse direction thereby, and are internally divided into three compartments, the middle and largest compartment, *e*, communicating with the two end compartments, *e'*, by vertical openings, through which the ends of the inking and marking shafts N N' pass. Each end compartment is provided with a vertical stud rising from the bottom of the pot, around which a spiral spring is placed and held in position thereby for supporting the bearing of the inking shaft. This inking-shaft N is provided with as many inking-rollers as the marking-shaft N' has marking-rollers, and the marking-rollers are adapted to rest on the inking-rollers, which are composed of any suitable material, and adapted to be continuously fed with the marking material as the rollers are revolved, which is caused by the contact of the shingle-bolt on the marking-rollers. The peripheries of the marking wheels or rollers *f* rest on the peripheries of the inking-wheels *f'*, as before stated, and the upper edges of the said marking-wheels project through slits in the cover of the pot. The two pots are secured to the cross-girt I, (or any other suitable support,) just ahead of the tiltways D and under the saw C, the rollers *f* being on a line a trifle above the top of the tiltway. Now, if the shingle-bolt is shoved off the end of the tiltways against the saw, it is evident that the under side of the same must come in contact with the rollers *f*, and depress them even with the line or top of the tiltway, and by the frictional contact between the bolt and rollers cause the latter to revolve in the direction of travel of the bolt, and consequently leave a line or lines on the under side of the bolt. The pots are filled with ink or any other suitable marking material nearly on a level with the top of the rollers *f'*, and it follows that when the roller *f* is caused to revolve by frictional contact the rollers *f'* are also caused to revolve in the ink, and the rollers *f* take up a sufficient quantity of ink from the roller *f'* and deposit it on the shingle-bolt while the latter is being moved toward the saw.

Instead of having an inking and marking shaft, as shown in the drawings, a single marking-shaft may be used instead; but the construction shown allows a larger supply of ink to be placed in the pot within reach of the rollers, which obviates the delays incident to refilling; and instead of using marking-rollers

at all, scoring-knives can be secured in the same or in any other desired manner, and be operated in the same way to cut or score marks on the under side of the bolt; but I prefer to mark them with some sort of coloring material, as cutting or scoring the shingles leaves an aperture for the entrance of air and water, and the scored portion is consequently caused to decay before the remaining portion of the shingle.

In shingle-machines the dog and head-block are always parallel; but the shingle-bolts are not always so, but do not vary over one-half an inch. The pressure of the saw in cutting always tends to bring the end of the bolt that comes next to the head-block parallel with it. Consequently the ink-pot on that end of the bolt can be stationary and always make the marks parallel to that end of the shingle. With the dog end of the bolt it is different, as that end of the bolt is not always parallel with the dog. Therefore it is evident that in order to make the marks parallel to the butt of the shingle the ink-pot on that side of the machine must follow the end of the bolt. To accomplish this I connect the pot M by the rod *g* to the slide O, which latter is supported on a table similar to that which supports the ink-pots. This slide O, with the movable ink-pot M, is partially controlled by the dog through the rollers *h*, *h'*, and *h²*, the large roller *h* being journaled on the slide and adapted to engage with the end of the shingle-bolt on its side of the machine. The roller *h'* is also journaled at a point above the roller *h* to a stud secured to the sliding frame or table O, and is adapted to bear on one side of the rod or bar H under the dog F', while the roller *h²*, journaled on the spring-actuated arm *h³*, bears on the opposite or inner side of the said rod. By means of this spring-actuated arm *h³* and roller *h'* the roller *h* is constantly forced outward beyond the dog for half an inch or more, and when the shingle-bolt is dogged the said roller *h*, being in advance of the dog, is forced inward even with the dog, carrying with it the slide O and pot M. Now, the roller *h'* has also receded from the rod, and the spring *h⁴* is brought into greater tension, which presses the large roller against the end of the bolt, and thereby causing its connected ink-pot to keep parallel with the bolt. If the shingle-bolt should be put into the carriage with its shortest end toward the saw, the large roller *h* at the starting will extend out from under the dog, but gradually roll up the incline as the bolt is moved forward, thereby causing the marks to be parallel with the butt of the shingles.

By the above improvement I perform the two operations of cutting and marking the shingles at the same time, and as it practically requires no extra labor or attention to revolve the roller N and N', I have increased the market value of the shingles without decreasing the capacity of the machine or adding to their cost, except for ink and the first cost of the marking device.

The head-block F (shown in Figs. 1, 3, and 4,) is forged from a single piece of steel, and is of such shape as to form an inclined plane, (shown in Fig. 3,) which assists in placing the shingle-bolt on the tilt-table, and by its peculiar shape directs a portion of the flying saw-dust away from the sawyer's face, and also prevents it from lodging on the machine.

The second part of my invention consists in providing a substitute for the ordinary metallic slide-bearing so extensively used, and which requires constant attention to keep well oiled. Experience has taught us that there are decided objections to the use of metallic slide-bearing on shingle-machine carriages, owing to the fine dust and grit constantly flying about, that soaks up the oil, making the carriage run hard. It is the present practice to oil the slide about once every fifteen minutes; but by my improvement I have reduced this to about once an hour, and saved nearly twenty-five per cent. of the friction by substituting lignum-vitæ slides P⁴ for the metal slides.

The method of attaching the wood P⁴ to the carriage is as follows:

P represents a metallic corner-piece, secured to the under side of the carriage, and provided with the uprights i, having horizontal journal-boxes i' for the rock-shaft G. I have cored out a rectangular space in the corner pieces or bearings, with three of the sides converging at a predetermined angle. The wood P⁴ is then fitted and slid into this inverted-V shaped space and fastened therein by the bevel-piece P', adapted to close the end and form the fourth side to the rectangular space. With this construction of parts any other suitable material can be used, and when worn out can be very readily replaced without destroying or in any manner effecting portions adapted to hold the same in place.

The under side of the upright i is hollowed out, as shown at i², and is provided internally with a projecting lip, i³, on which the split end of the arm Q, carrying the roller R, rests, while the opposite end of this arm Q is pivoted to the under side of the carriage. As the hollowed-out portion of the upright is larger than the free end of the arm Q, resting therein, it follows that the free end will have a lateral movement; but this movement is controlled by the screw j, which passes through the side of the upright and bears against the arm, and moves it inward until the horizontal roller bears firmly against the trackway, where it is held firmly, and prevents the carriage from "wabbling" and producing irregular coursing-lines.

In all shingle-machines two-thirds of the entire friction is due to the resistance of the wood to the saw, and the remaining friction is due to the weight of the carriage and bolt. To understand this, imagine a thirty-eight inch saw making a continuous cut of eighteen inches at the rate of one-half an inch to the revolution, and you will have a fair idea of the power required to overcome the resistance of the tim-

ber to being fed forward and of the side draft from motion of the saw. Heretofore, ordinarily, all the friction from the sawing is taken up by the flat gibs on the right-hand side of the machine; but my improved roller on the side of the slide-bearing before described reduces this friction to a minimum.

Some of the machines heretofore used are provided with a V-shaped track having a wheel with an inverted-V-shaped periphery running thereon. This construction takes the net weight of the carriage and bolt advantageously, but meets the side thrust of the saw at a disadvantage, because the tendency is to force the wheel to climb the side of the track, which produces friction. Another and serious defect to the use of the inverted-V-shaped wheel is that, while sawing, the air is filled with a dust composed of pitch, grit, and woody fiber. This gets on the track, and the inverted-V-shaped roller runs over it and compresses it into a lump, which is increased every time the roller runs over it, which consequently raises the carriage higher and higher, and makes a ridge in the shingle, which seriously impairs its market value. Again, in order to provide bearings for the inverted-V shaped rollers the carriage has to be constructed very heavy and deep, which increases its cost, and also increases the labor of starting and stopping. If saw-dust should become impacted between my horizontal rollers and the trackway, it would draw the carriage sidewise in the same horizontal plane, and cannot thereby make any imperfection in the shingle.

The remaining portion of my invention relates to an improvement for firmly holding the machine on the floor or foundation, while at the same time it can be used to tighten the belt when the latter becomes loose. To accomplish this I secure the two L-shaped pieces S to the foundation by the horizontal arms e, while the vertical arms are provided with openings for the passage of the main braces T, which connect the legs or ends of the machine and hold them firmly in position. The main braces T are bent, as shown in the drawings, and are provided on their horizontal portion with screw-threads, on which the nuts U and U' are placed for holding the front standard firm, and on which the nut b is also placed, the latter being adapted to bear against the piece S, and when turned up draws the machine backward, thereby tightening the belt. The rear legs or standards are provided with the projecting tongues m, adapted to fit under the oblong slides m' and be held in position thereby.

My improved marker is applicable to any ordinary style of shingle-machine for scoring or marking the coursing line or lines on each individual shingle at the time of manufacture, so that no time is lost in chalk-lining the courses, while at the same time it materially increases the market value of the single without increasing the cost of the machine or decreasing its capacity. It also avoids the necessity of using separate devices for accom-

pishing the same result, and consequently dispenses with the extra labor necessary to work the separate machines.

5 My improved machine is susceptible of many changes for accomplishing the same result, so I would have it understood that I do not limit myself to any particular form or construction of parts shown, but consider myself at liberty to make such changes as come within the
10 spirit and scope of my invention.

I do not claim in this application the construction and arrangement of inking devices shown and described, but reserve to myself the right to file a separate application for Letters Patent therefor.
15

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

1. The combination, in a shingle-machine, 20 of the marking-rollers and means for operating the same, substantially as described, whereby a coursing line or lines are marked on the shingle while the shingle-bolt is moving

2. The combination, in a shingle-machine, 25 of a marking roller or device and means for adjustably holding the said marking device in position, as described, whereby a coursing line or lines are marked on the shingle parallel with the butt thereof while the shingle-bolt is moving.
30

3. In a shingle-machine, the combination, with the movable carriage having a rigid head-block and a sliding dog, of a marking device rigidly secured at a predetermined distance 35 from the said head-block, and a marking device situated on the dog side of the machine, and devices whereby the latter is moved laterally to make a coursing line or lines at a predetermined and parallel distance from the
40 butt of the shingle.

4. The combination, with the movable carriage having a rigid head-block and a sliding dog, of a horizontally-adjustable frame secured to vertically-adjustable brackets, a marking 45 device rigidly secured on the frame under the carriage on the head-block side of the machine, a marking device secured on the frame on the dog side of the carriage, and devices whereby the latter is moved laterally to make
50 the coursing line or lines at a predetermined and parallel distance from the butt of the shingle.

5. In a shingle-machine, the combination, with the frame of the machine, having a cross- 55 girt secured thereto between the saw and the tilt-table, and provided with vertically-adjustable brackets adapted to form bearings for frames or tables on which the marking-pots and mechanism for moving one pot respectively rest, of two marking-pots, one of which
60

is rigidly secured to said frame and the other connected by a rod to a sliding frame, having a large wheel adapted to engage the bolt, and a wheel secured to a rigid bearing on the sliding frame, and a spring-actuated wheel adapted 65 to engage with the rod secured to the under side of the dog and constantly keep the large wheel in contact with the bolt, substantially as set forth.

6. In a shingle-machine, a carriage having 70 corner-irons or bearings secured thereto, and provided with a cored rectangular space having beveled or converging sides, one of which is removable, and a hard-wood bearing adapted to be secured within said space, substantially 75 as set forth.

7. In a shingle-machine, the combination, with the rails and carriage, of an upright the lower portion of which is hollowed out and provided with an internal lip, an arm carrying 80 a horizontal roller and pivoted at one end to the frame of the carriage, and adapted to enter the hollowed portion of the upright and rest on the lip, and a screw for regulating the arm, substantially as set forth. 85

8. In a shingle-machine, the combination, with the front and rear supporting-legs, connected by inclined longitudinal braces, the horizontal portions of the said braces being screw-threaded, of vertical plates secured to 90 the foundation of the machine, and provided with openings through which the braces pass, and a nut by which the machine is moved backward or allowed to be drawn forward, which respectively tightens or loosens the 95 drive-belt, as desired.

9. The combination, with the front and rear supporting-legs, connected together by inclined longitudinal braces, screw-threaded, as described, the said front legs being provided 100 with projecting tongues adapted to fit under loops secured to the foundation, of vertical plates secured to the foundation, and provided with openings through which the inclined braces pass, and a nut adapted to bear against the 105 said vertical plate and move the machine backward, thereby tightening the drive-belt, substantially as set forth.

10. In a shingle-machine, the combination, with the carriage-frame, of the adjustable arms 110 Q, having horizontally-revolving rollers secured thereto, substantially as and for the purpose set forth.

In testimony that I claim the foregoing I have hereunto set my hand this 10th day of 115 October, 1881.

WILLIS J. PERKINS.

Witnesses:

ROBERT J. WALKER,
DANIEL SULLIVAN.