

(No Model.)

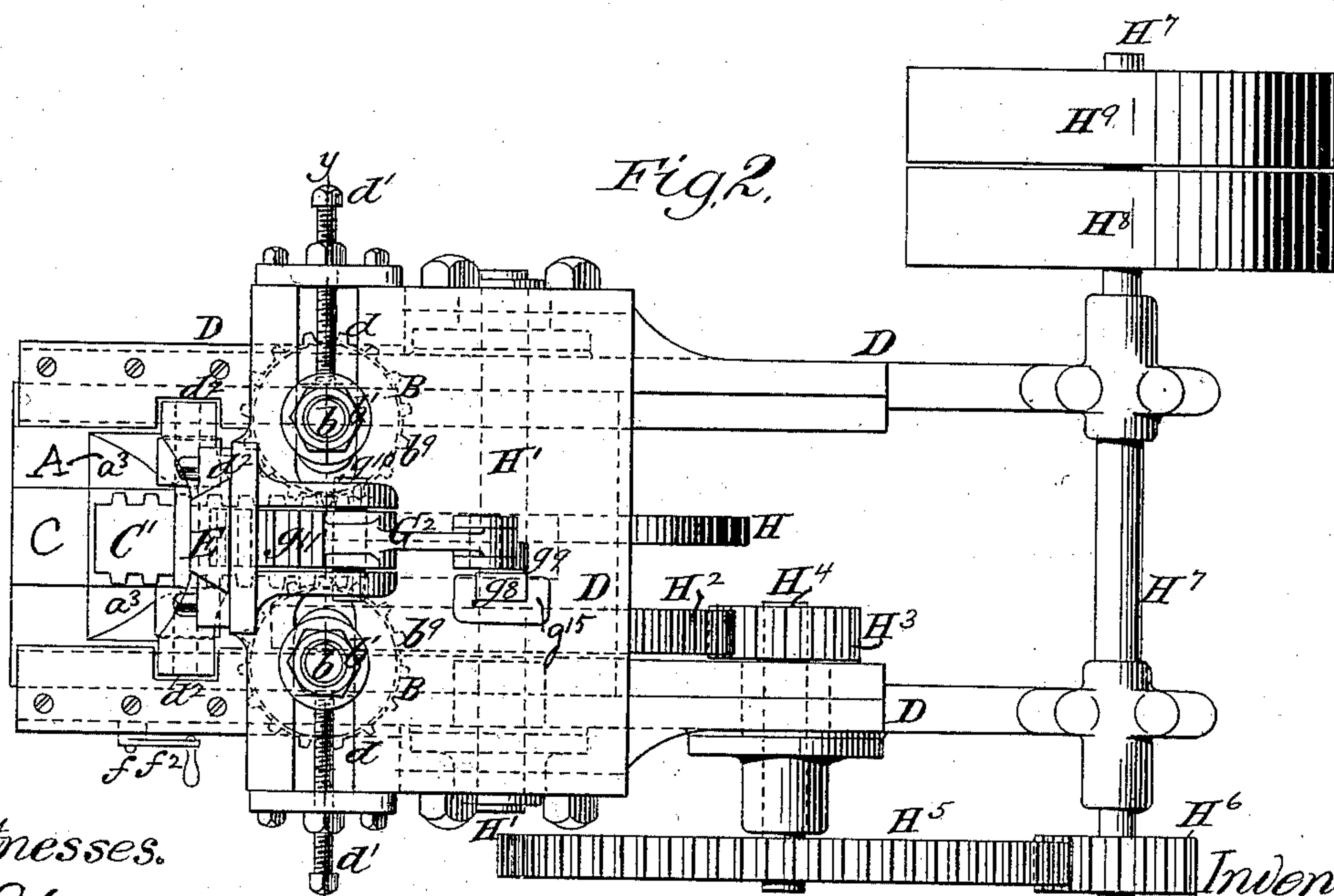
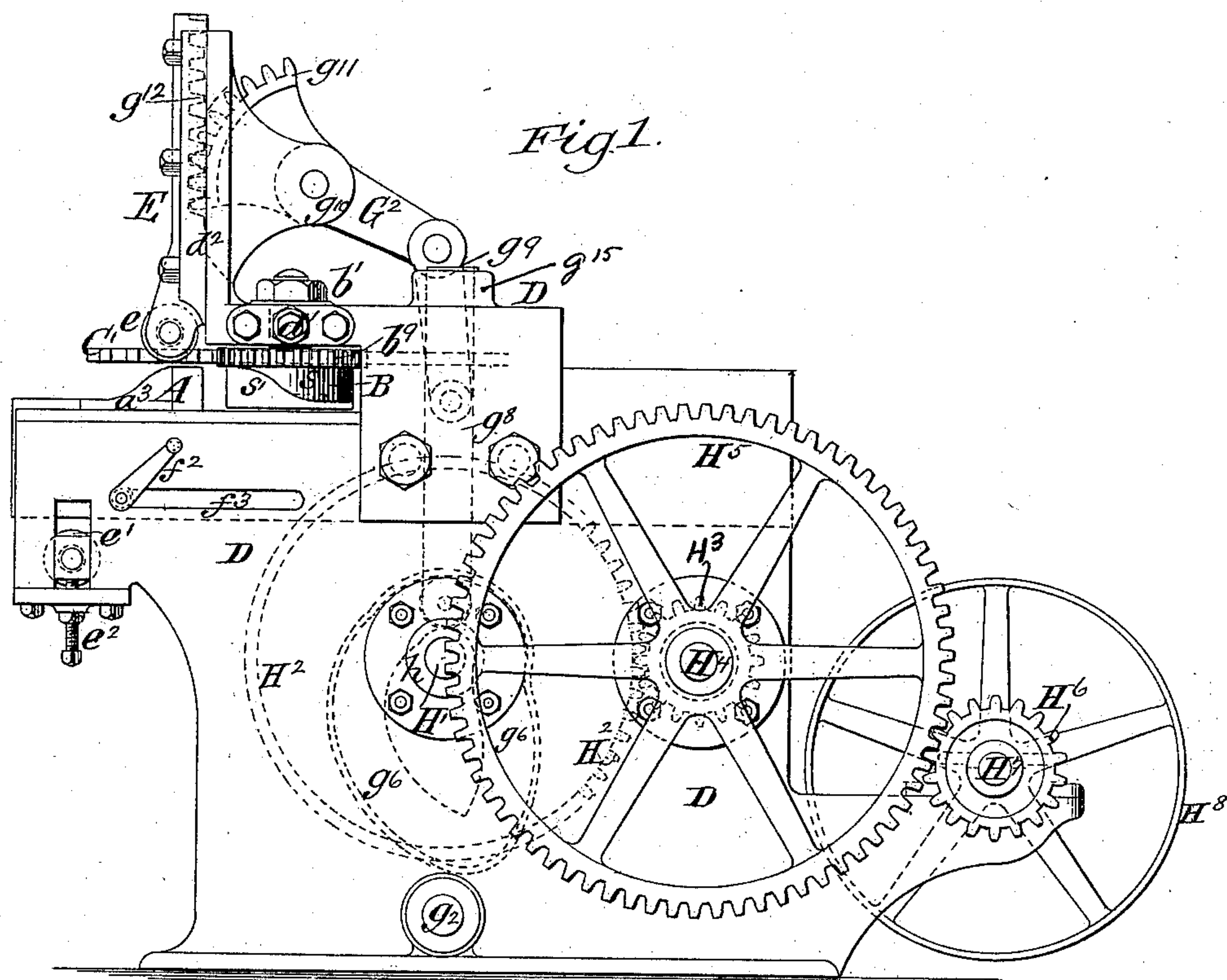
3 Sheets—Sheet 1.

C. H. WILLIAMS.

MACHINE FOR MAKING TIMBER HANGERS.

No. 383,265.

Patented May 22, 1888.



Witnesses.

Ol Sundgren.
Fred H. H. H.

Inventor:

Carmi H. Williams,
by his Atty
Brown & Co.

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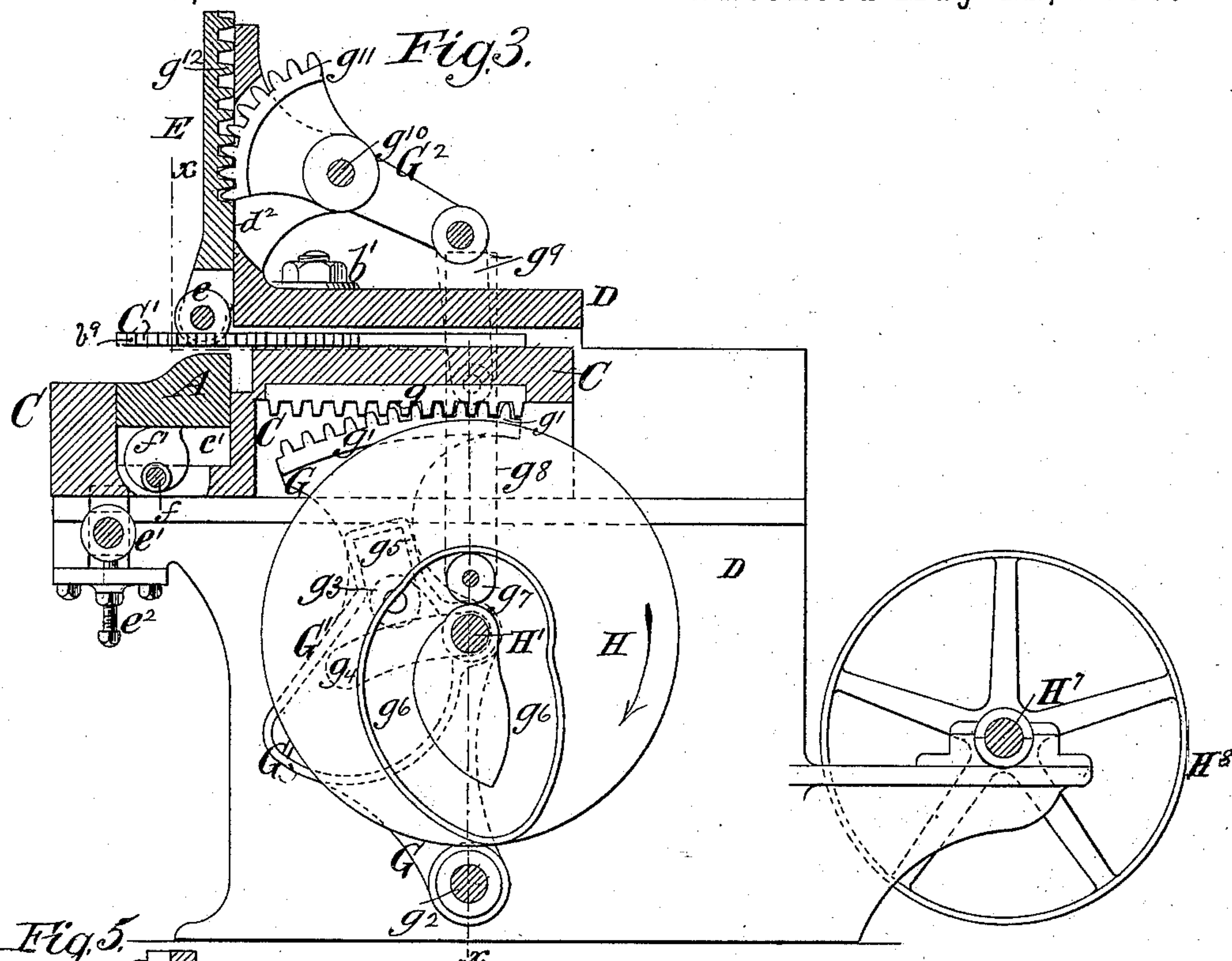
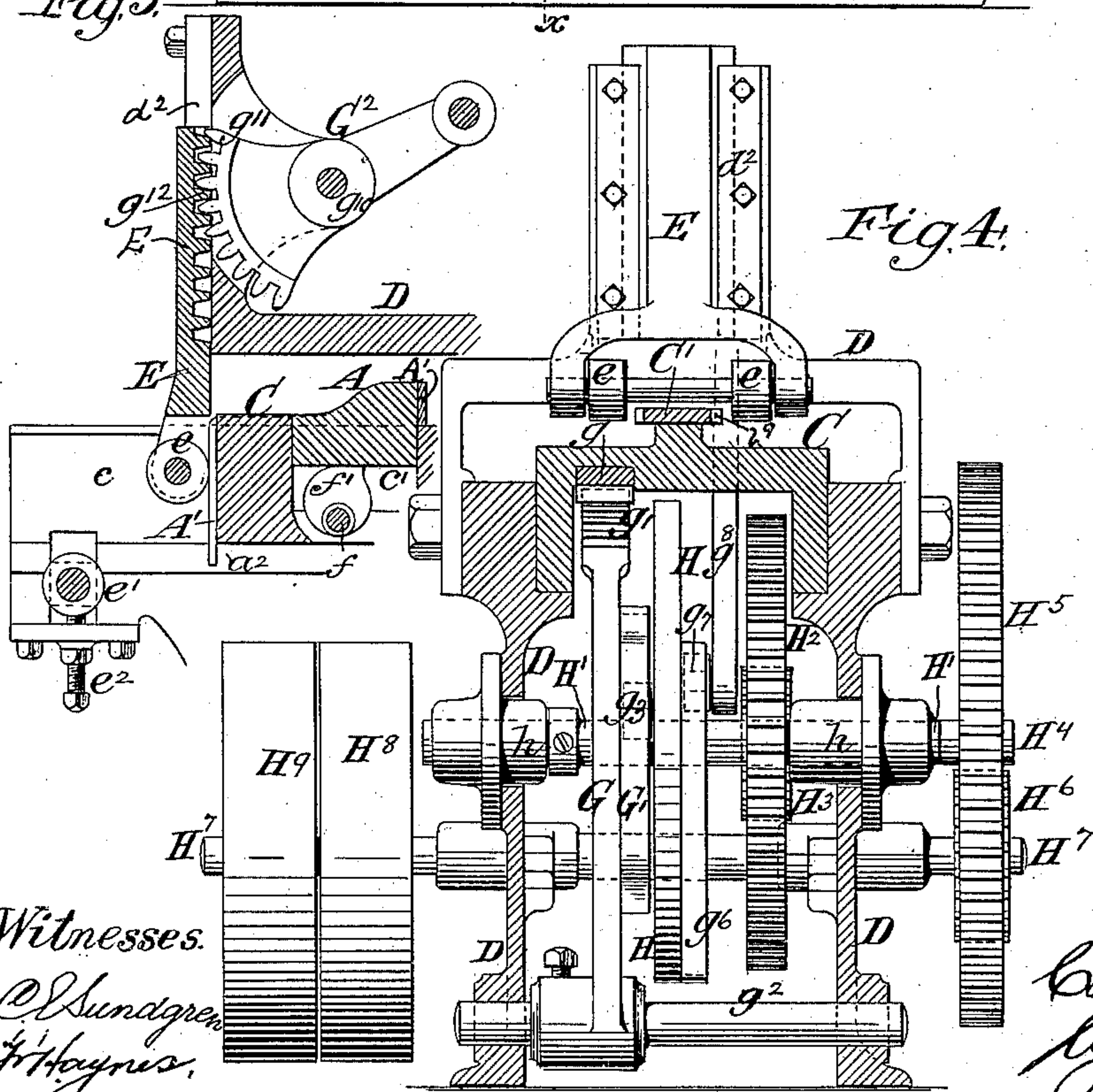


Fig. 5.



Witnesses.

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J. Haynes.

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(No Model.)

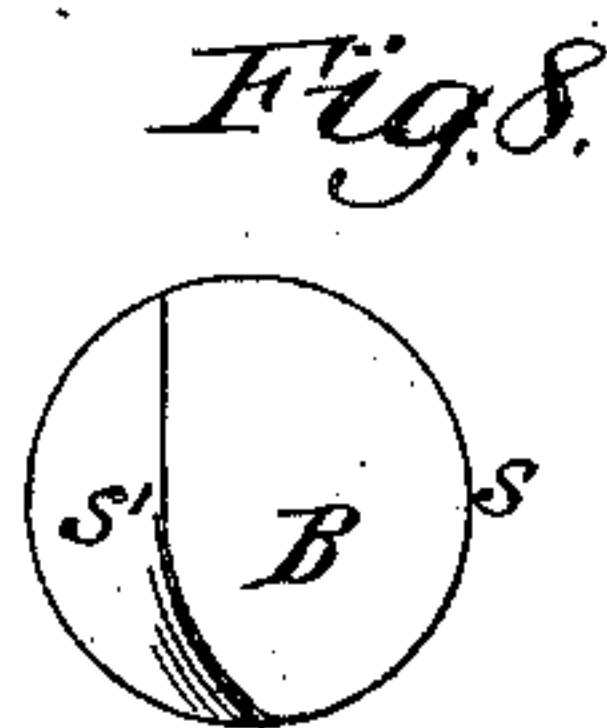
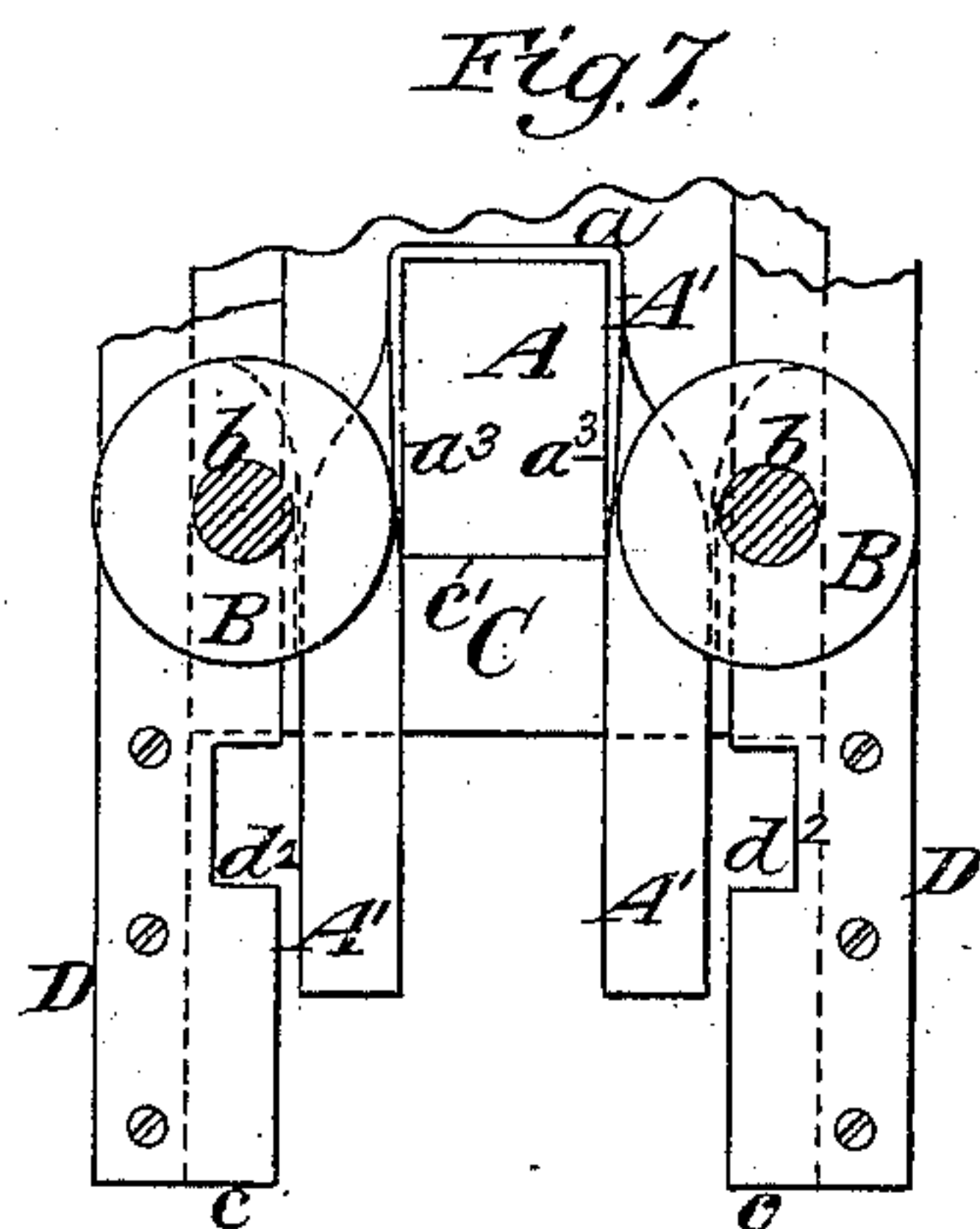
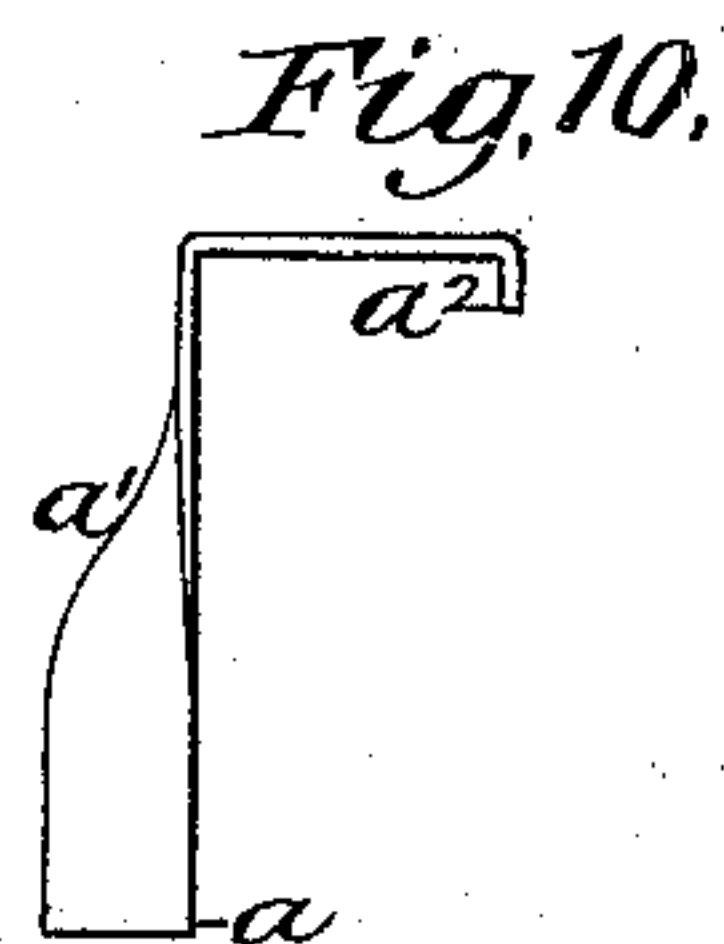
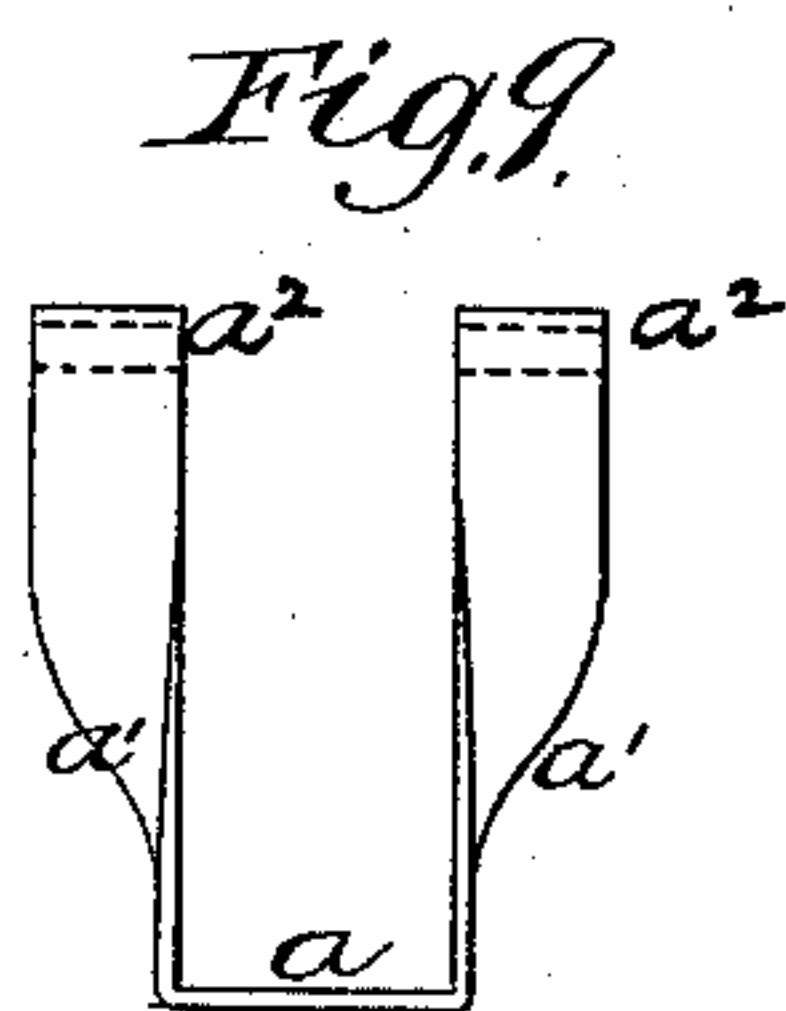
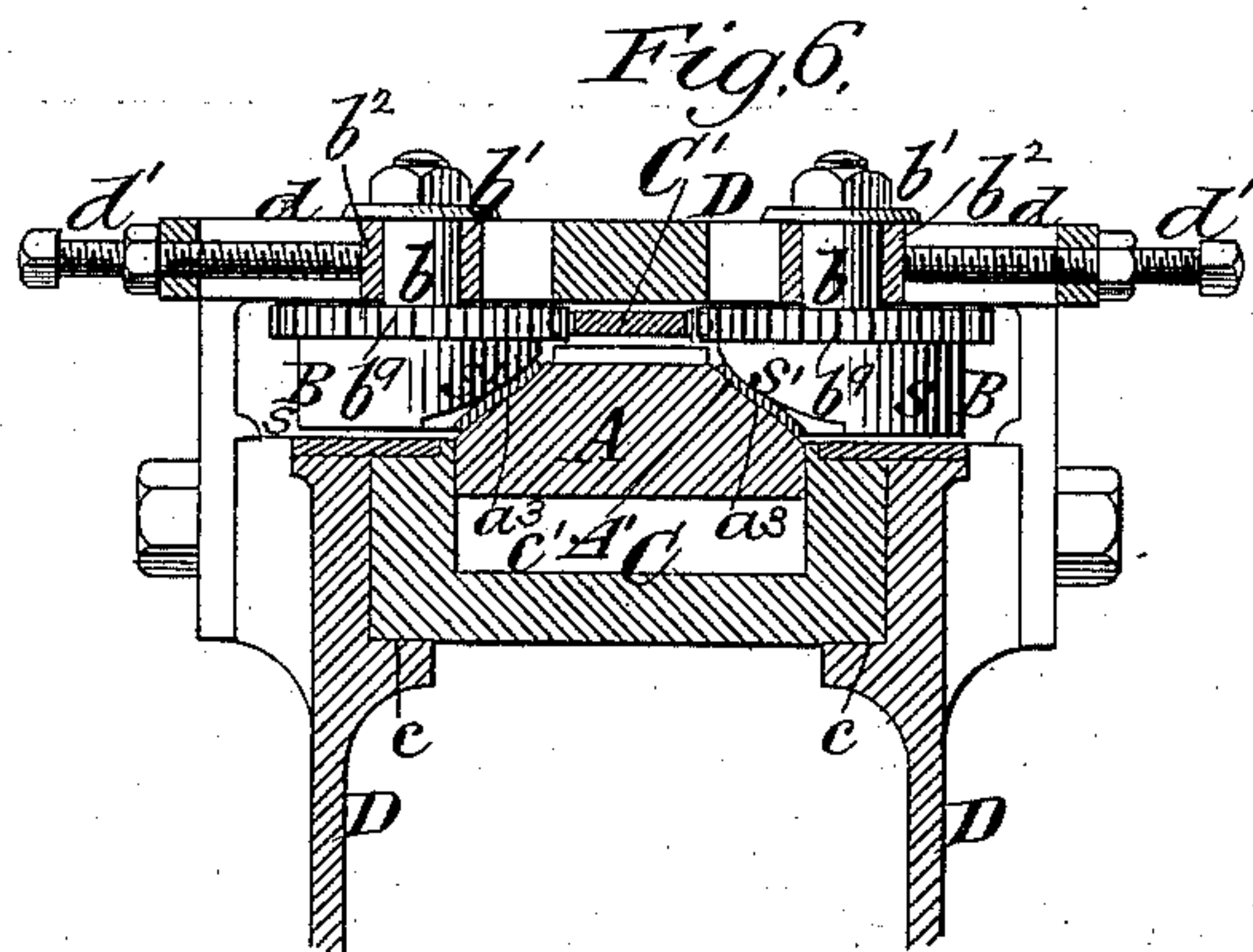
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O. Sundgren,
Fred Hayes

Inventor:

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UNITED STATES PATENT OFFICE.

CARMH H. WILLIAMS, OF NEW YORK, N. Y.

MACHINE FOR MAKING TIMBER-HANGERS.

SPECIFICATION forming part of Letters Patent No. 383,265, dated May 22, 1888.

Application filed July 29, 1887. Serial No. 245,596. (No model.)

To all whom it may concern:

Be it known that I, CARMH H. WILLIAMS, of the city and county of New York, in the State of New York, have invented a new and useful
5 Improvement in Machines for Making Timber-Hangers, of which the following is a specification.

In the construction of buildings the timbers, according to modern practice, are very frequently supported where they intersect each other by means of stirrups or hangers in the place where they have formerly more commonly been connected by tenons and mortises. These timber hangers or stirrups or bridle-
15 irons consist each of a piece of bar-iron bent so as to form a right-angled loop having its arms extending upward and twisted just above their lower corners, so as to lie in the same plane with the width of the loop, and having the upper ends of the arms bent laterally, and then
20 slightly downward to form hooks for engaging the top of the beam.

My invention relates to machines for making such hangers or bridle-irons which comprise
25 two bending members or dies, one consisting of a former, on the end of which the bar is to be bent, and which has its end wall and its side walls adjacent to the end vertical, and beyond the vertical walls is flared outward at the sides
30 to give twist to the bar, and the other member consisting of rollers having their peripheries in part straight and in part oblique or angular to correspond to the flaring sides of the former, a slide carrying one of said bending members,
35 and suitable mechanism or gearing for reciprocating such slide.

The machine so far as described is adapted only for making the rectangular bend or loop in the iron in which rests the beam to be supported; and my invention consists in a novel
40 combination of parts, hereinafter described, whereby, in addition to forming the rectangular bend or loop in which the beam is to be hung, and forming the twist in the two arms, the ends of said arms are bent laterally downward or hooked, so that they may properly engage with the top of the beam to which the
45 hanger is to be applied.

In the accompanying drawings, Figure 1 is a side view of a machine embodying my invention. Fig. 2 is a plan thereof. Fig. 3 is a

sectional elevation in a plane parallel to the plane of Fig. 1. Fig. 4 is a sectional elevation in a plane at right angles to the plane of Fig. 1, and as indicated approximately by the
55 dotted line *xx*, Fig. 3. Fig. 5 is a sectional elevation of a portion of the machine in the same plane as Fig. 3, but showing the slide in its inward position, and illustrating the operation of the vertically-moving plunger or slide
60 which carries the bending-rollers for forming the hooked ends of the hanger. Fig. 6 is a transverse section of the slide, the former, the bending-rollers, and a portion of the frame, on about the plane indicated by the dotted line
65 *yy*, Fig. 2. Fig. 7 is a plan of the former and rollers, showing also a portion of the frame. Fig. 8 is an inverted plan of one of the rollers having the peripheries in part oblique and in part straight or parallel with their axes, and
70 Figs. 9 and 10 are elevations at right angles to each other of one of the completed hangers.

Similar letters of reference designate corresponding parts in all the figures.

By reference to Figs. 9 and 10 it will be understood that the hanger is formed of a piece
75 of straight bar-iron of considerable width and comparatively little thickness, which is bent in the direction of its thickness to form a rectangular or right-angled loop, *a*, and the upwardly-extending arms of which have formed
80 in them a quarter-twist at the points *a'*, so as to bring their upper portions into the same plane as the width of the loop, and the upper ends of these arms are bent laterally and then
85 downward, as shown best in Fig. 10, to form the hooks *a''*, by which the hanger is suspended upon the top of a beam to support a second beam extending at right angles to the first in the square or right-angled loop *a*.
90

It is very desirable that the twist *a'* should be formed from the back of the hanger—that is to say, that, looking at the hanger in the view represented in Fig. 9, what are the back edges
95 of the bar should be bent gradually outward to form the twist, and no machine has ever been before made that will perform such work.

I will first describe what are the essential elements of my machine, and will then describe the mechanism for operating the several parts, and such other parts of the machine
100 as may be varied in construction without de-

parting from the essential principles of my invention.

The parts which form the right-angled loop a at the bottom of the hanger consist of a former, A, and two rotary twisting or bending rollers, B, and the former A may be considered as one bending member and the rollers B as another bending member, whereby the right-angled loop is produced. One of the two bending members (in this example the former A) is mounted in a slide, C, which is fitted to a slideway, c , formed in the main side frames, D, of the machine, and this slide C, with the former A arranged in the cavity c' within it, is reciprocated from the right to the left hand of Figs. 1 and 3, Fig. 3 showing it in a position toward the extreme left, and Fig. 5 showing the slide and former in their position toward the extreme right.

In Figs. 5, 6, and 7 I have illustrated the bar of iron, A', which forms the hanger, and it will be seen that the right-angled bend a is made around the inner end of the former, while the hooks a^2 are made over the outer end of the slide as a former, as is shown in Fig. 5. It will be observed that the inner end of the former presents a substantially vertical wall, and the sides are also vertical immediately adjacent to the corners; but just beyond the vertical side walls the sides flare outward at the lower edge, as shown at a^3 , so as to gradually change the surface of the former, on which the bar bears, from a vertical to a horizontal plane. The roller-dies B are of peculiar form, as best shown in Fig. 8. They are mounted upon studs b , which are secured by nuts b' in a portion of the main frame D, and are free to turn as the slide C is reciprocated. Attached to the slide is a bar, C', having its opposite edges formed as racks, and which engage with pinions or gear-teeth, b^2 , formed integral with or secured to the rollers B. The boxes b^2 , wherein the studs b are journaled, are fitted in slots d , formed in the frame, and in these slots such boxes are adjustable by means of set screws d' . The former A may be of any desirable width to form the hanger, and may be interchangeably fitted to the machine, and when a former of greater width is introduced for forming a wide hanger the rollers B should be adjusted away from each other, which may be done by introducing a wider rack-bar, C', in place of the one here shown, the screws d' being relaxed sufficiently, after which said screws are set up to bring the gear-teeth b^2 home to bear on the rack. The upper surfaces of the rollers B present true circles, and the principal part of their peripheries—namely, that designated by the letter s in Fig. 8—is straight or parallel with their axes, while the remaining part—namely, that designated by the letter s' in Fig. 8—is oblique or angular, so as to conform to the flaring formation of the former A, whereby the quarter-twists a' are given to the bar. It will therefore be understood that when the bar is heated and placed across the inner end of the former A in proper

mid-position the slide C is moved inward or toward the right hand in Fig. 3, and the bar A' being presented to the bending-rollers B, and the rollers being rotated positively at the same time by the engagement of the rack-bar C' with their gear-teeth, the bar A' will be bent so as to form the right-angled loop a and the two arms projecting therefrom in the same direction on opposite sides of the former A. By the continued movement of such former and the bar the oblique or angular portions s' of the rollers B will come opposite the flaring portions a^3 of the former, and the plane of the bar will be changed gradually from vertical to horizontal, thereby bringing the flat surface of the bar down upon the top of the slide C and in the same plane.

The main side portions of the frame D have formed in them channels or guideways d^2 , which receive a vertically-moving cross-head or plunger, E, having at its lower end bending-rollers e , which come opposite the outwardly-extending arms of the bar, (shown in Fig. 7,) and when the slide C has moved inward beyond the vertical slideway d^2 the plunger or cross-head E descends and by its rollers e bends the end portions of the bar A' down upon the front of the slide C, as is shown in Fig. 5, after which the plunger or cross-head E ascends, leaving the bent ends of the bar in the position shown in Fig. 5.

Forward of the vertical slideway d^2 , I have shown a roller, e' , fitted to bearings which are adjustable by means of set-screws e^2 , and this roller may be adjusted upward so that the bottom of the slide as it moves forward will just clear it by the thickness of the bar from which the hanger is made. Consequently it will be seen that after the plunger or cross-head E has been raised the outward movement of the slide C will bring the downwardly-projecting ends of the bar upon the roller e' , and will bend or hook such ends backward on the under side of the slide C.

As before stated, the former A is fitted to a cavity, c' , in the slide C, and in such cavity are devices whereby the former may be raised or lowered—that is to say, whereby it may be depressed out of the hanger after the hanger has been formed thereon. As here represented, there is a cross shaft, f , upon which are cams f' , and which may be turned by a handle or crank, f^2 , at the side of the machine, and to permit the reciprocation of the slide C without any interference with the handle f^2 the cam-shaft f passes through a slot, f^3 , in the side of the machine, as shown in Fig. 1, and which is of sufficient length to accommodate the reciprocating movement of such slide and the former. If the hanger has been formed in the manner described, and the slide C has returned to its outermost position, as shown in Fig. 3, the former A is depressed below the level of the slide, and the completed hanger may then be slipped directly forward out of the machine.

Referring now to the mechanism here rep-

resented for operating the several parts of my machine in proper turn, it will be seen that upon the slide C is a rack, g , and g' is a sector upon the upper end of a lever, G, fulcrumed at g^2 near the bottom of the machine. The lever G is constructed with a cam, G' , of peculiar formation, (best shown in Fig. 3,) into which enters a truck-roller, g^3 , upon one side of a cam or disk, H, mounted upon the main shaft H' , and in the lever G' is a segmental slot, g^4 , which receives the shaft H' through it and permits a swinging movement of the lever G transverse to the axes of the shaft. The cam-disk H rotates in the direction indicated by the arrow shown in Fig. 3, and the truck-roller g^3 constitutes in effect a crank, which enters the upward extension, g^5 , of the cam, and thereby gives the lever G and the slide C a comparatively long and rapid movement toward the right of Fig. 3. Afterward the truck-roller passes down out of the projection g^5 of the cam G' , and the disk H makes nearly a half-revolution, while the cam-lever G and the slide C remain in their inward positions or that corresponding to the position of the slide in Fig. 5. Upon the side of the cam-disk H, opposite to the truck-roller g^3 , is a cam-groove, g^6 , or channel, which receives a truck-roller, g^7 , upon the lower end of a vertically-sliding bar, g^8 , which bar slides in guides g^{15} , and with this sliding bar a sector-lever, G^2 , is connected by a link, g^9 . The sector-lever G^2 is fulcrumed at g^{10} , and its sector g^{11} engages a rack, g^{12} , on the vertical plunger or cross-head E. During the dwell when the cam-lever G and slides C are in their extreme positions toward the right of Fig. 3, the cam-groove g^6 acts upon the truck-roller g^7 to raise the bar g^8 and depress the plunger or cross-head E, after which the lever G is returned to the position shown in Fig. 3. The slide C is returned to the position also shown in said figure, thereby completing the hooks a^2 of the hanger.

I have here shown the shaft H' as fitted to

removable boxes h in the main side frames, D, of the machine, and as having upon it a gear-wheel, H^2 , with which engages a pinion, H^3 , upon a short shaft, H^4 , also carrying a gear-wheel, H^5 , and with the gear-wheel H^5 engages a pinion, H^6 , upon a counter-shaft, H^7 , which carries the fast and loose pulleys H^8 H^9 for the reception of a driving-belt.

It will be seen that inasmuch as the twist a' in the side bars or arms of the hanger is formed by the simple passage of the bar and former between the rollers or bending member B each one of the hangers will be formed accurately to the pattern, and the exact desired shape may be given the twist.

What I claim as my invention, and desire to secure by Letters Patent, is—

The combination, with two rollers mounted upon stationary but adjustable pivots and having their peripheries in part straight and parallel with their axes and in part oblique or angular, of a slide movable between said rollers and geared by a rack and pinion with them, a former having its end wall and portions of its sides adjacent thereto vertical, and having its sides beyond said vertical portions made flaring or oblique to form the twist in the iron, the said former being fitted to a cavity in the slide and vertically movable in such cavity, so as to depress the former below the top of the slide when desired, the end of said slide serving as a former over which to bend the hooked ends of the bar, a roller past which said end of the slide moves in opposite directions, and a vertically-movable plunger carrying a bending roll or rolls, and which is movable downward past the end of the slide when the latter is in its inward position, substantially as herein described.

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Witnesses:

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