

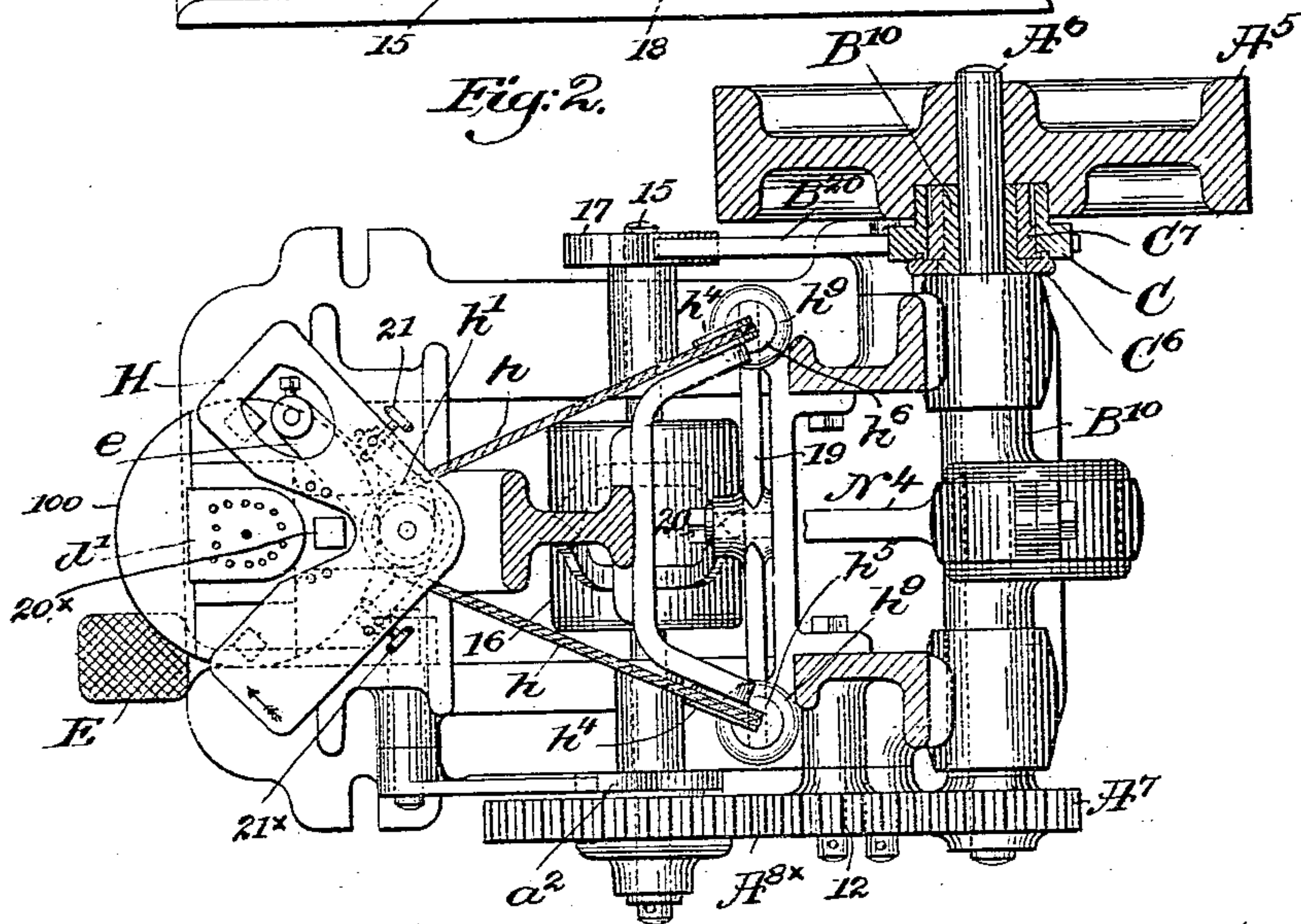
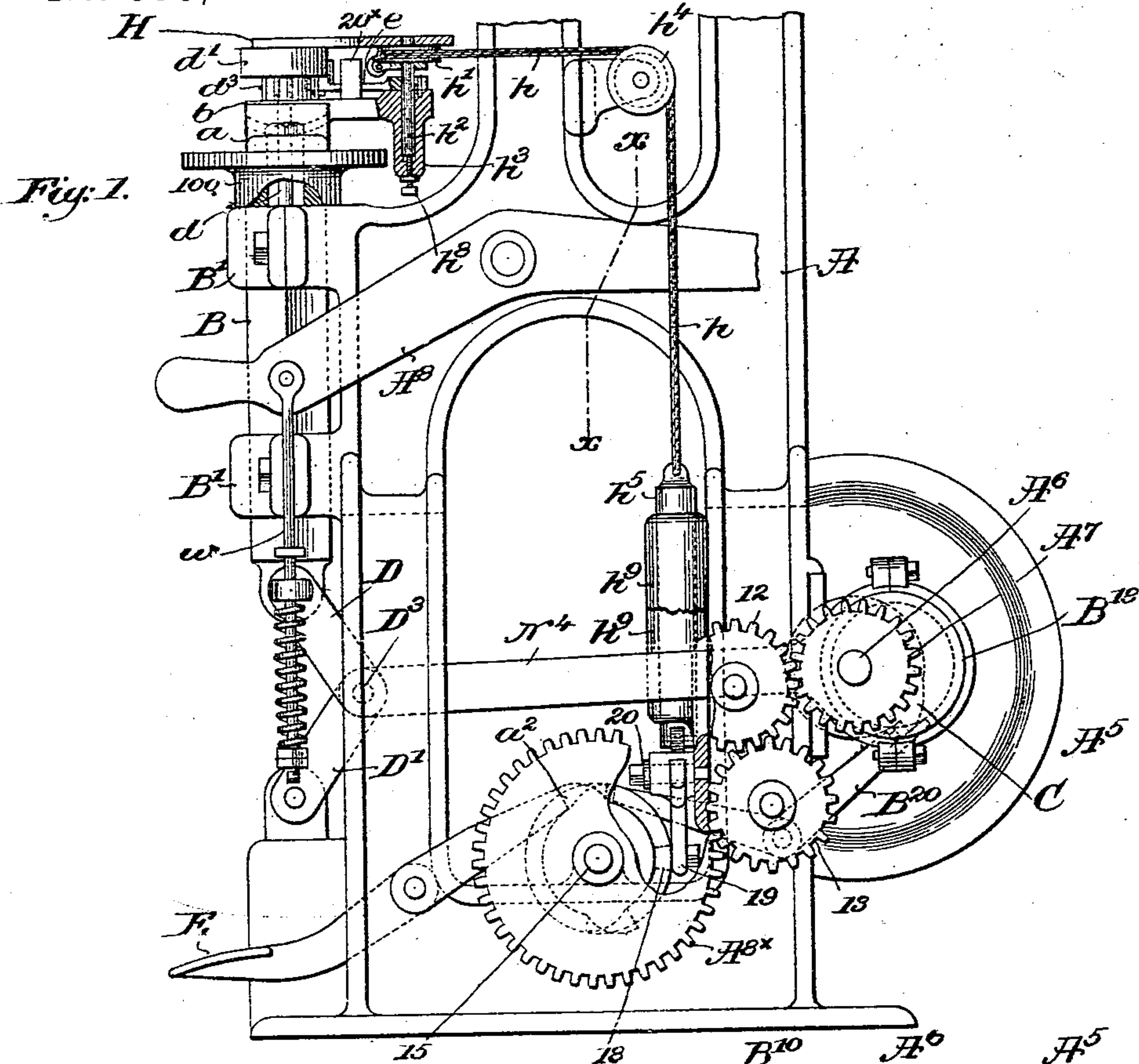
(No Model.)

3 Sheets—Sheet 1.

C. W. GLIDDEN & A. D. ELLIOTT.
HEEL NAILING MACHINE.

No. 555,241.

Patented Feb. 25, 1896.



Witnesses.
Edward F. Allen.

Thomas Drummond.

Inventors.
Charles W. Glidden.
Alvin D. Elliott.

By Lewis Gregory, attys.

(No Model.)

3 Sheets—Sheet 2.

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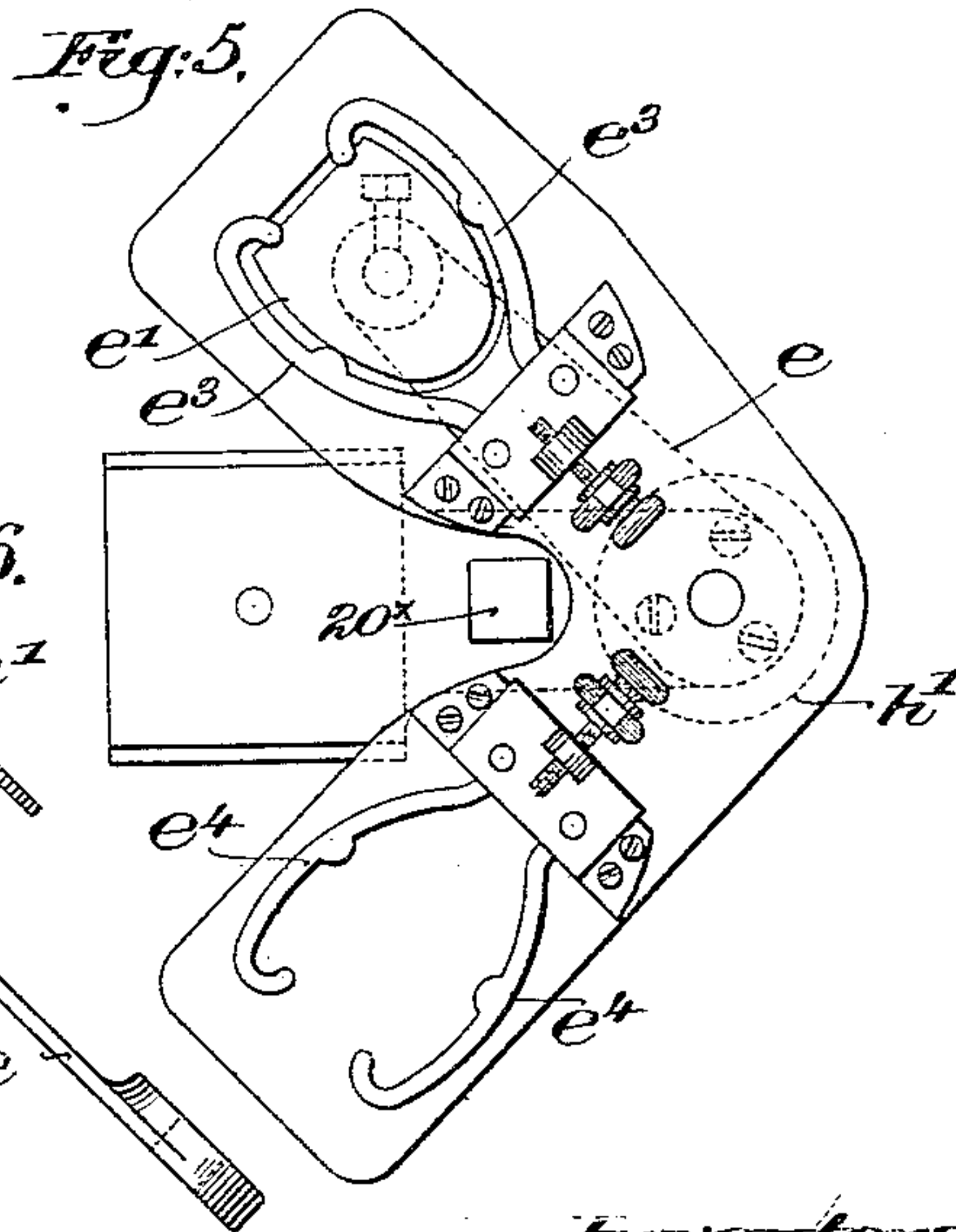
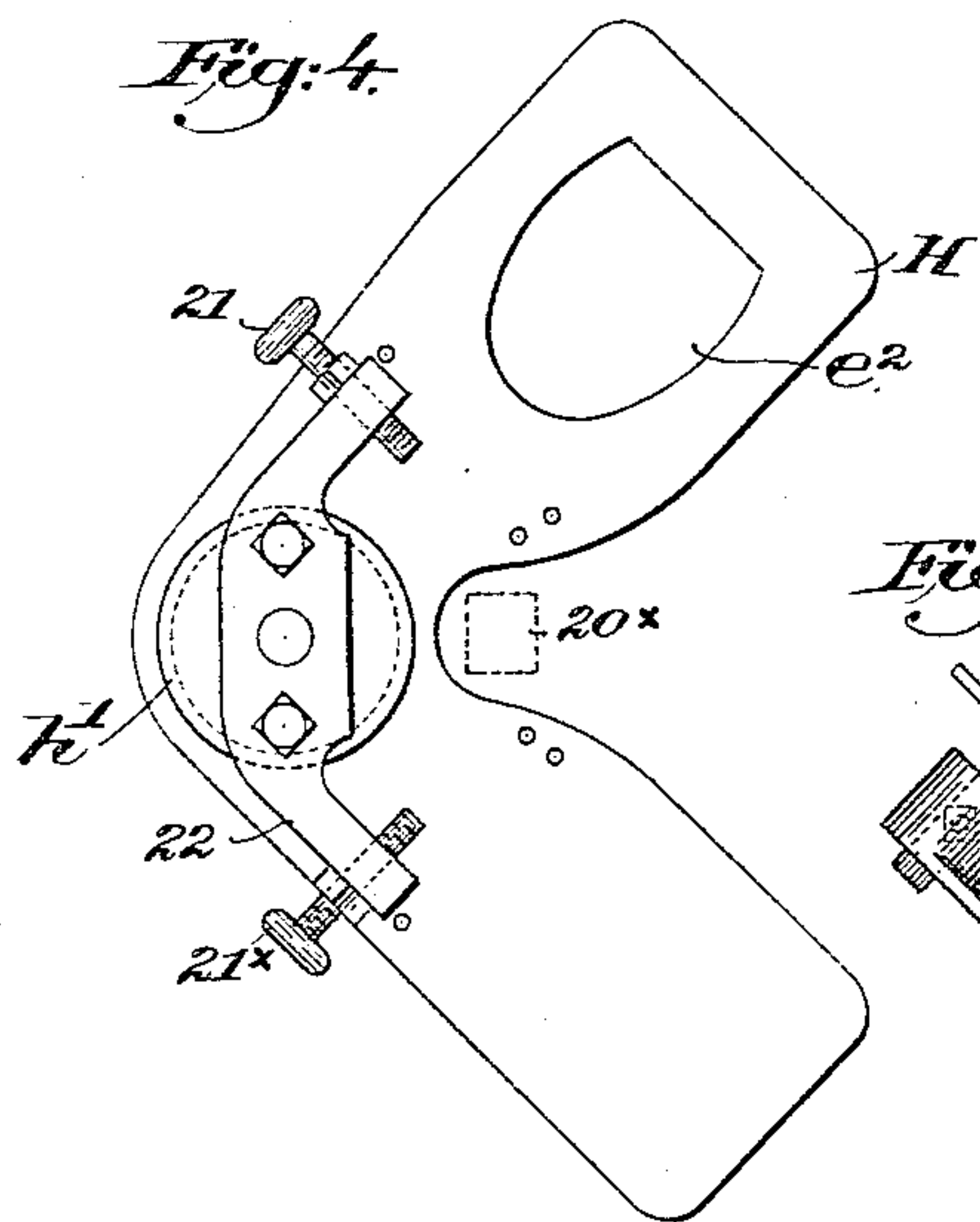
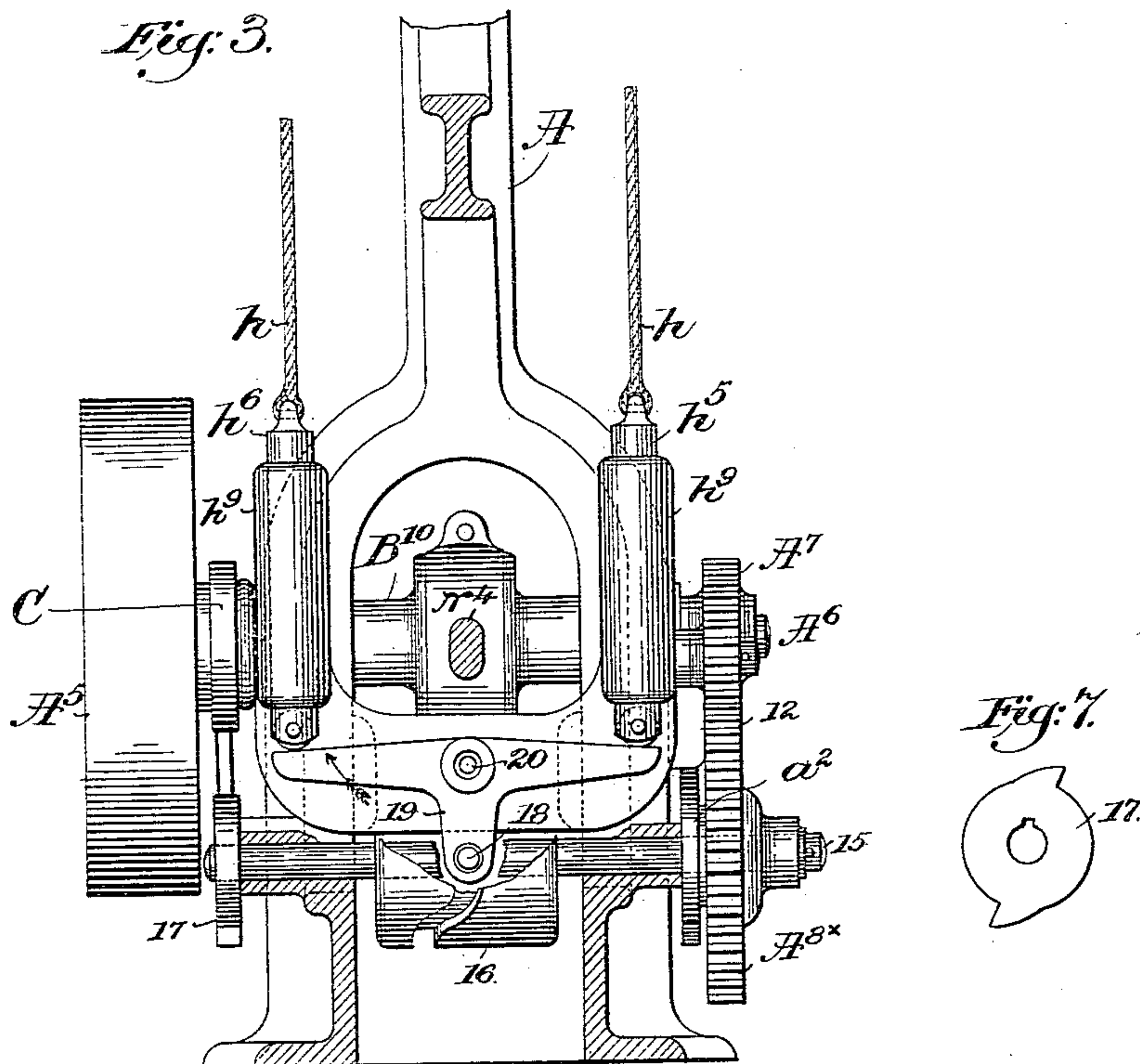
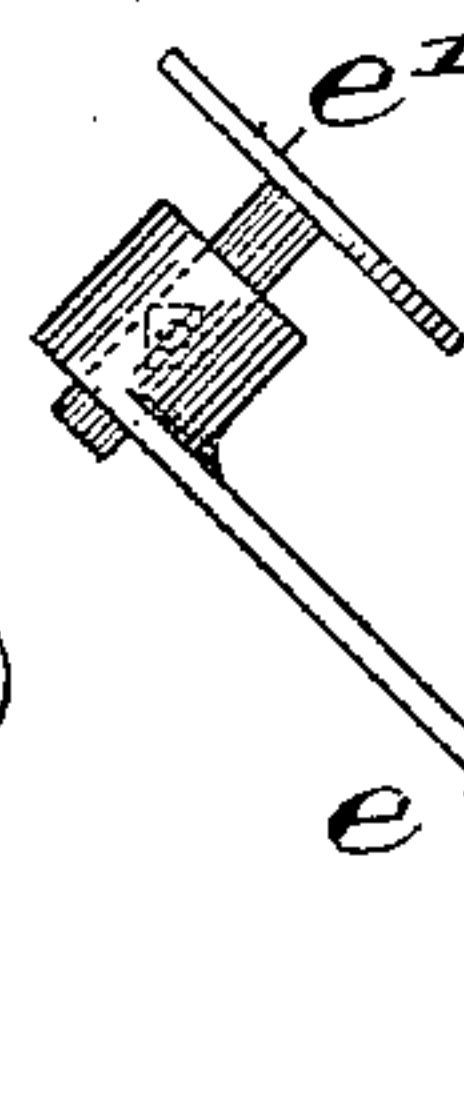


Fig. 6.



Witnesses.
Edward F. Allen.

Thomas F. Drummond

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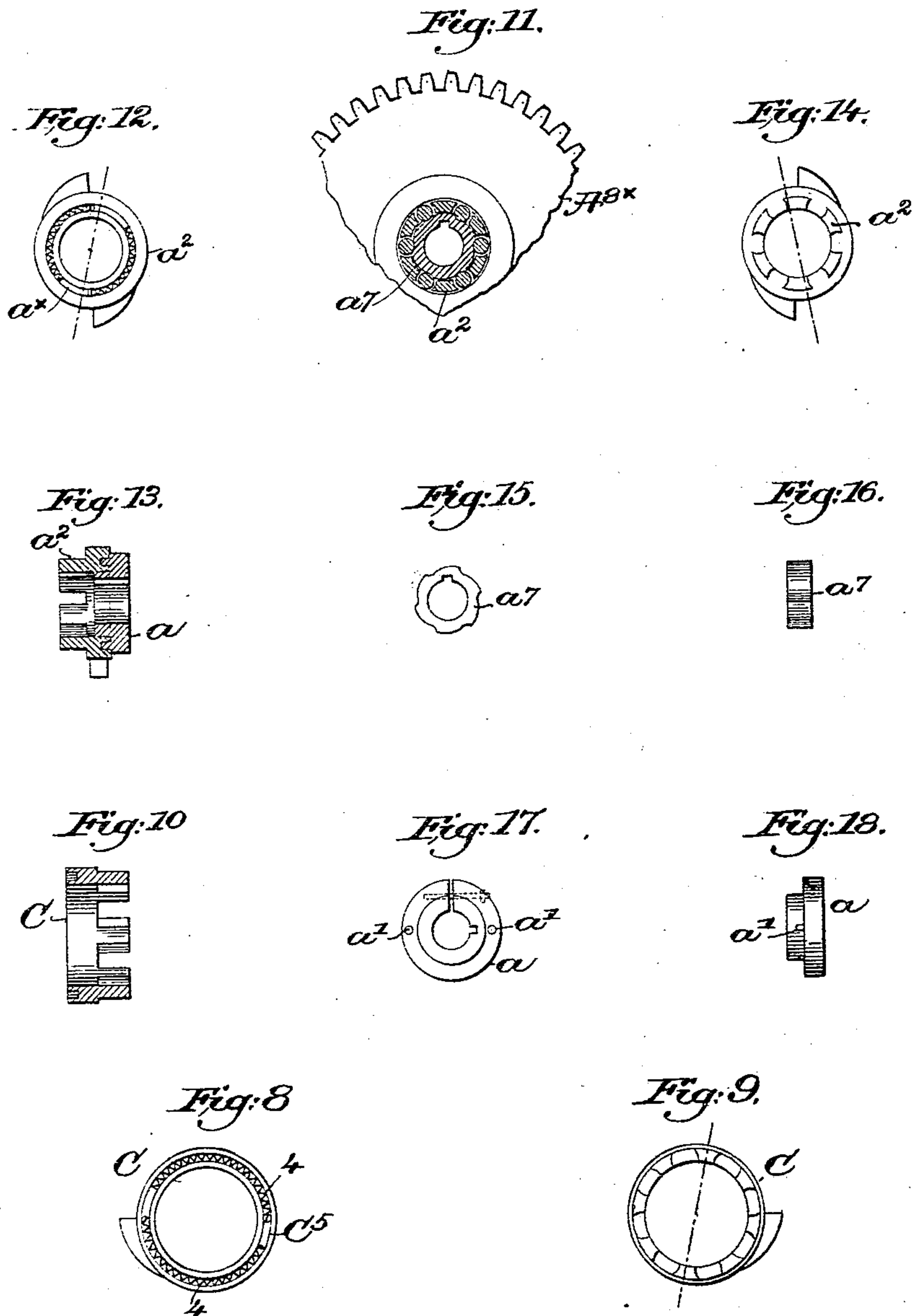
Alvin D. Elliott.

by Crosby & Gregory, attys.

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UNITED STATES PATENT OFFICE.

CHARLES W. GLIDDEN, OF LYNN, AND ALVIN D. ELLIOTT, OF LAWRENCE,
ASSIGNORS TO JAMES W. BROOKS, TRUSTEE, OF PETERSHAM, MASSACHUSETTS.

HEEL-NAILING MACHINE.

SPECIFICATION forming part of Letters Patent No. 555,241, dated February 25, 1896.

Application filed July 27, 1894. Serial No. 518,731. (No model.)

To all whom it may concern:

Be it known that we, CHARLES W. GLIDDEN, of Lynn, and ALVIN D. ELLIOTT, of Lawrence, county of Essex, State of Massachusetts, have invented an Improvement in Heel-Nailing Machines, of which the following description, in connection with the accompanying drawings, is a specification, like letters and figures on the drawings representing like parts.

This invention has for its object to improve and simplify the devices co-operating with the nail-driving mechanism to bring into position in proper time and order the heel to be attached to the shoe and then the top lift.

In our invention we have mounted alongside the nail-box a carrier or plate, one arm of which has an opening for the reception of the heel to be applied to a shoe mounted upon a last carried preferably at one end of a last-holding spindle, a second arm of said lever-plate receiving upon it the top lift and acting as a spanker to spank said top lift onto the nails exposed at the tread end of the heel, both said arms, as shown, having suitable holders, one for the heel and the other for the top lift.

We have chosen to illustrate our invention in connection with a machine of the kind illustrated in United States Patent No. 415,670, dated November 19, 1889.

Figure 1 represents, in side elevation, a sufficient portion of a machine of the class referred to with our improvements added to enable our invention to be understood, some of the parts—such as the gear 12 and one of the guides h^9 and its weight—being broken out to better illustrate the construction of the parts.

Fig. 2 is a top or plan view of the parts shown in Fig. 1 with the loose pulley and the roller-carrying clutch-collar with its hub in section, the holders for the heel and top lift being omitted. Fig. 3 is a section to the right of the dotted line x , Fig. 1, the cam-hub being broken out to fully show the lever actuated by it. Fig. 4 is an under side view enlarged of the carrier or plate for carrying the heel and top lift; Fig. 5, a top view of said carrier or plate

with the holders for the heel and top lift in place, the figure also showing the shank of the arm on which it is pivoted. Fig. 6 is a detail showing the arm e and the rest for the lower end of the heel as it is applied to the space in the plate. Fig. 7 shows the cam-plate 17 detached. Figs. 8, 9, and 10 show the clutch-collar C in detail. Fig. 11 shows part of the clutch-gear A^{8x} with the parts in its hub in section. Figs. 12 to 14 show the clutch-box a^2 with its two toes; Figs. 15 and 16, the cam-faced collar splined on the end of shaft 15. Figs. 17 and 18 show the collar a , having pins a' to enter the grooves a^x in the clutch-collar a^2 of Fig. 12.

The framework A has suitable bearings for a hollow sleeve B^{10} , provided with an eccentric B^{18} embraced by the eccentric-strap of a link N^4 connected to the pin D^3 , which joins together the two links $D D'$ of a toggle-joint attached at one end to the die-bed spindle B, which is to slide in the guides B' of the framework.

One end of the sleeve B^{10} , (see Fig. 2,) where the same is broken out, has fixed to it a hub C^7 , provided at its periphery with a hardened steel ring, the face of which is provided with cams or inclines, against which may rest certain rolls (not shown) held between the projecting fingers of a clutch-collar C, having at its periphery a shoulder or projection (shown by dotted lines in Fig. 1) which is engaged at times by a controlling-lever B^{20} , the engagement being while the sleeve and the die-bed spindle are at rest, and having at one side a groove C^5 for the reception of springs 4 4, which act at one end against pins of a collar C^6 .

The shaft A^6 , extended through and having its bearings in the sleeve B^{10} , has fast on it a pulley A^5 , the hub of which is chambered to fit over the clutch-collar C, so that the rolls carried thereby but not shown (said rolls being such as shown in Fig. 11) may be made to grasp the interior of said hub and cause the pulley A^5 , in constant rotation, to carry the sleeve C with it whenever the clutch-controller B^{20} is moved to release the clutch-collar.

The shaft A^6 , which is rotated continuously,

has fast on its opposite end a gear A^7 , but the sleeve B^{10} is rotated intermittingly one rotation at a time.

The die-bed spindle has suitably connected with it a link w , attached to a lever A^8 .

The parts so far described are common to said Patent No. 415,670, and are designated herein by like letter, and need not, therefore, be further described other than to say that in practice the upper end of the spindle will have a head 100, and that the upper end of the frame A may have mounted in it a walking-beam or lever, to which will be attached a last-carrying spindle upon which will be placed the shoe to be heeled, all as provided for in United States Patent No. 446,383, dated February 10, 1891; but as said spindle and last and their operative parts form no part of this invention they have not been herein shown.

The gear A^7 , through intermediate gears 12 and 13, effects the rotation of a clutch-gear A^{8x} loose on shaft 15, said clutch-gear having its hub suitably chambered to receive a clutch-collar a^2 , the said collar surrounding a cam-faced hub a^7 fast on the shaft 15, said clutch-collar having co-operating with it a controlling-lever E to be operated by the foot of the operator.

The clutch-gear A^{8x} is in practice applied to the shaft 15, just as the gear designated by like letter in said Patent No. 415,670 is applied to the shaft therein marked A^9 , and in practice the gear A^{8x} will be rotated continuously, as provided for in said patent.

The shaft 15 has fast on it at its left-hand end, as shown in the drawings, a two-toed cam-plate 17, (see also Fig. 7,) which acts upon the clutch-controller B^{20} to cause it to free or stop the clutch-collar C^7 , as desired, as when the die-bed spindle is to be moved or is to be left at rest, as shown in Fig. 1 of the drawings.

The shaft 15 has fast upon it a cam-grooved hub 16, the shape of which is best shown by full and dotted lines in Fig. 2, it being a two-throw cam, one throw working through half a rotation of the shaft 15 and the other throw through the other half. Into the grooved cam-hub 16 is entered a roller or other stud 18 carried by a lever 19 pivoted at 20 on a part of the framework, said lever in this present instance of our invention serving to move the carrier or plate H to be described, it in this instance of our invention being swung in one and then in the opposite direction by or through a cord h wound about a pulley h' fixed to said plate in suitable manner—as, for instance, by screws—as shown in Fig. 5, said pulley being also fixed to a spindle h^2 having a lateral bearing in an arm h^3 , and stepped in an adjustable manner upon a step h^8 , shown as a screw. (See Fig. 1.) The cord h is led over sheaves h^4 and attached at its ends to weights h^5 h^6 , extended through suitable guides h^9 and provided at their lower ends with suitable antifriction pulleys or

rolls, which rest on or roll over the lever 19 as the latter is moved by the cam 16, said lever serving to lift one weight and then the other, the weight which is permitted to descend actuating the carrier or plate.

The peculiar devices for actuating the carrier or plate work admirably and are very simple and durable; yet this invention is not limited to the exact devices shown for moving said lever-plate, and instead we may use any other suitable devices for such purpose, or any known mechanical equivalent for the devices shown.

The arm h^3 is extended from a convex support b mounted in a concaved seat a bolted to the head 100 of the die-bed spindle, the said head being slotted to receive the rod d , on which is secured in usual manner the nail-box d' , adapted to receive the nails which are to be driven therefrom during the ascent of the die-bed spindle after the nail-box has been arrested by the series of drivers d^3 resting on the top of the arm of the convex support.

Mounting the support b for the nail-box as described enables it to tip longitudinally of the heel about a center substantially coincident with the horizontal plane occupied by the tread end of the heel.

The drivers and nail-box are and may be all as in Patent No. 409,637.

The arm h^3 has a stop 20^x , against which may strike one or the other of two adjusting stop-screws 21 21^x , carried by the arm 22, shown as attached to the pulley h' , (see Fig. 4,) the said screws enabling the carrier or plate to be stopped in exactly the right position with relation to the nail-box in each direction of its movement.

The spindle h^2 is surrounded loosely by the hub of an arm e fixed to the arm h^3 , said arm e having a heel-seat e' , which is located immediately below the open space e^2 in one arm of the carrier or plate H , said space being made for the reception of the heel into which the nails are to be driven, the small end of the heel meeting the upper side of the seat e' , which latter occupies a position slightly below the under side of the plate H .

The plate H is provided at its upper side with a heel-holder composed of two like fingers e^3 adapted to be opened and closed in usual manner to thereby engage and release at suitable times a heel-blank, another arm of said plate having a pair of top-lift-holding fingers e^4 , both of usual or suitable construction; but it will be seen that that end of the plate is left as a plane surface to constitute a spanker and act upon one side of the top lift to spank the same upon the protruding heads of nails left at the tread end of the heel.

The heel and top-lift holders may be of any usual or suitable shape commonly used in heeling-machines.

The carrier or plate H , having been provided with a heel and with a top lift, will be swung intermittingly horizontally just above

and close to the top of the nail-box, and the plate and the nail-box may be tipped in unison about the concaved seat a , as provided for in United States Patent No. 409,637.

5 In practice let it be supposed that the die-bed spindle is in its lowest position, and that the carrier or plate H is in its normal position, and that a heel-blank has been put into the opening e^2 between the heel-holders e^3 ,
 10 and that a top lift has been put between the arms of the top-lift holder e^4 , and that the shoe to be heeled has been applied to a last on a movable last-spindle, all as provided for in said United States Patent No. 446,383.
 15 The operator will now depress the treadle E, which constitutes a clutch-controller, and thus release the clutch-collar a^2 , so that the clutch-gear A^{8x} will be coupled with and so as to rotate the shaft 15. This will cause the
 20 cam 16 to move the lever 19 quickly in the direction of the arrow on it, (see Fig. 3,) thus causing the carrier or plate H to be moved to place the heel carried by it correctly over the nail-box, the stop 21 meeting the stop 20^x ,
 25 this being done with but a slight rotation of the cam-hub 16, and thereafter as said cam-hub continues to rotate the roller-stud 18 stands for a little time in the annular part of the cam-slot, and during such time the carrier or plate remains at rest, it remaining at
 30 rest while the nails are being driven. Immediately after the operator moved the controlling device E to enable the shaft 15 to be started in rotation, the cam-plate 17 fast to
 35 said shaft acted to move the cam-controller B^{20} , so that it released the clutch-collar C, thus enabling the constantly-driven pulley A^5 to be engaged with and rotate the sleeve B^{10} to start the die-bed spindle upwardly. In the
 40 upward movement of said spindle the heel held by the heel-holder immediately above the nail-box is borne against the heel of the sole, the nail-box being in contact with the small end of the heel, and as the heel meets
 45 the sole the nail-box is stopped; but the die-bed spindle continues to rise, and in its ascent forces the drivers d^3 into the nail-box and drives the nails therefrom into the heel, thus attaching the latter to the heel of the
 50 sole, after which the die-bed spindle in the further rotation of the sleeve B^{10} descends, and at the end of one rotation of the sleeve the clutch-controller B^{20} , it being in proper position for that purpose, is struck by the
 55 clutch-collar C, which immediately releases the sleeve B^{10} from the pulley A^5 and stops the machine, and immediately thereafter the shaft 15 completes its half-rotation and carries the second toe of the clutch-collar a^2 , said
 60 clutch-collar in this instance of our invention having two toes rather than one toe, as provided for in the patent referred to, and the second toe is engaged by the clutch-controller E, so that said clutch-collar a^2 is
 65 stopped and the clutch-gear A^{8x} runs loose on the shaft 15, the die-bed spindle, as stated, being down. Now to attach the top lift the oper-

ator will again put his foot on the clutch-controller E and will again release the clutch-collar a^2 , and at this starting of the shaft 15 the
 70 carrier or plate will be moved quickly in the direction of the arrow upon it in Fig. 2, to thus bring correctly over the nail-box and properly below the heel then attached to the shoe the
 75 top lift, and the die-bed spindle will be again raised, the nail-box at this time acting against the under side of the carrier or plate below
 80 the top lift, and the top lift will be pushed upon the ends of the nails left exposed or not fully driven at the previous ascent of the die-bed spindle, and the top lift having been
 applied the die-bed spindle will be lowered and the machine again stopped, as before described.

By adjusting the step h^8 the spindle containing the carrier or plate which carries the heel and the top lift may be adjusted vertically with relation to the top of the nail-box, supported in any yielding manner.

It will be noticed that when the die-bed
 90 spindle is down in its normal position and the sleeve B^{10} is at rest the carrier or plate occupies a position with that arm thereof which carries the heel-blank at one side the longitudinal center of the nail-box and the arm
 95 thereof which carries the top lift at the other side of the longitudinal center of the nail-box, so that the operator has within his control both the heel-blank and the top lift, and may put one on or take one off, as he pleases,
 100 and may supply first one and then the other with a heel or with a top lift without any danger of having his fingers or hands injured.

Having described our invention, what we claim as new, and desire to secure by Letters
 105 Patent, is—

1. A heel-nailing machine containing the following instrumentalities, viz: a nail-box, a separate heel-rest, a carrier or plate pivoted
 110 at one side of the longitudinal center of the nail-box and having at one end an opening to receive the tread end of a heel-blank, as the latter is placed on said rest, and having its other end shaped to constitute a spanker to
 115 act upon the top lift, combined with a heel-blank holder, and with a top-lift holder, both mounted on said carrier, and devices to impart movement to said pivoted carrier and cause it to present in succession to the nail-box a heel-blank and then the top-lift spanker
 120 provided with a top lift, and devices to effect the stopping of said carrier when both of its holders are removed from above the nail-box to thus leave the top of the latter and both the said holders accessible, substantially as
 125 described.

2. In a heeling-machine, a nail-box, its support, an arm extended therefrom and provided with a spindle, a movable two-armed plate
 130 connected therewith and provided at one of its ends with a heel-blank holder, and at its other end with a top-lift holder; combined with suitable stops to determine the extent of movement of said plate when coming into

position with relation to the nail-box to put a heel-blank or a top lift in place, substantially as described.

3. In a heel-nailing machine, a nail-box, 5
a support therefor which is adapted to tip in an arc having its center substantially in the plane of the tread end of the heel, combined with a pivoted carrier mounted on said tipping support, and provided with a heel-blank 10
holder and also with a top-lift holder, to operate, substantially as described.

4. In a heel-nailing machine, a nail-box, and its support, combined with a swinging arm having mounted on it a carrier or plate 15
provided with a heel-blank holder and with a top-lift holder, and a cord and weights, connected with and to swing said arm and devices to effect the movement of said weights, substantially as described.

5. In a heel-nailing machine, a nail-box, and its support, and a movable plate having devices to hold a heel-blank and a top lift, 20
combined with a spindle to which said plate is attached, and its bearing, and means to adjust said spindle vertically, substantially 25
as described.

6. In a heel-nailing machine, a nail-box, a support therefor, and a carrier or plate having a heel-blank holder and a top-lift holder, 30
a heel-rest adjacent the path of movement of said heel-blank holder and adapted to receive upon it and to position vertically the end of a heel as the latter is being put in place in said holder, and means to move said carrier 35
or plate and take with it the heel-blank away from said rest and put it into position at the end of the nail-box, substantially as described.

7. In a heel-nailing machine, the following instrumentalities, viz: a plate or arm having an opening for the reception of a heel-blank 40
and a connected spanker-plate; a heel-holder, and a top-lift holder carried by said plate or arm; and a nail-box; combined with a rest for the heel-blank located in line with said opening when the said plate or arm is in its 45
normal inoperative position, the said rest positioning the said heel-blank properly within said holder, substantially as described.

8. In a heel-nailing machine, the following instrumentalities, viz: a nail-box; a plate 50
constituting a heel-holder, and having a connected top-lift spanker; combined with devices to normally retain the said heel-holder and top-lift spanker in position at opposite 55
sides the said nail-box, and means on the starting of the machine to put the heel-holder with its heel in line with the nail-box and after attaching the heel to automatically remove the heel-holder from the nail-box, leaving the heel at the nail-box, and to put the 60
top-lift spanker in line with the heel then on the nail-box to spank on the heel a top lift, and then to move said plate into its normal position with its heel-holder and top-lift spanker at opposite sides the said nail-box, 65
substantially as described.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

CHARLES W. GLIDDEN.
ALVIN D. ELLIOTT.

Witnesses:

ARETAS R. SANBORN,
WILBUR E. ROWELL.