

No. 614,343.

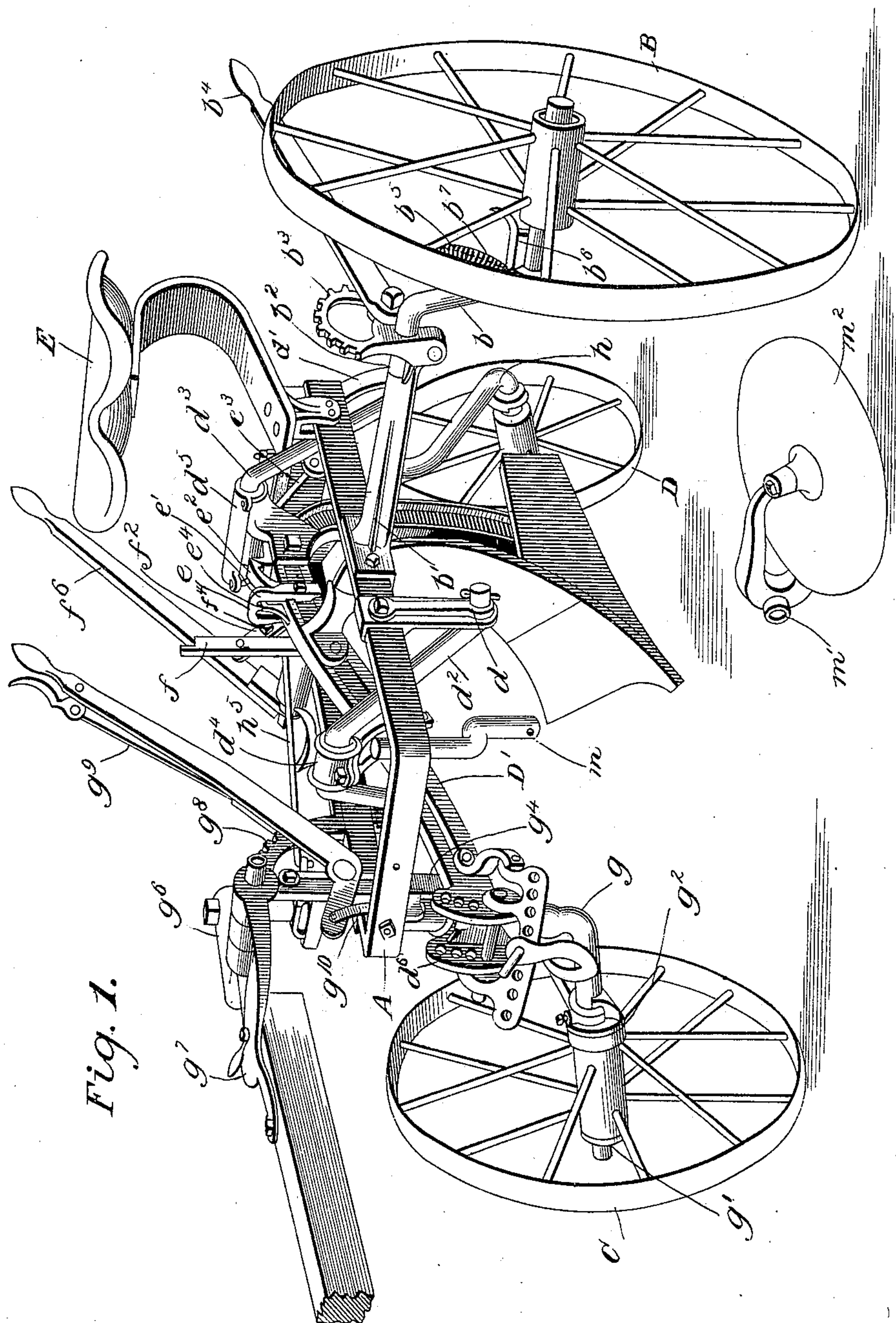
Patented Nov. 15, 1898.

S. D. POOLE.
WHEEL PLOW.

(Application filed Oct. 26, 1896.)

(No Model.)

4 Sheets—Sheet 1.



WITNESSES

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INVENTOR

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By Julian D. Howell
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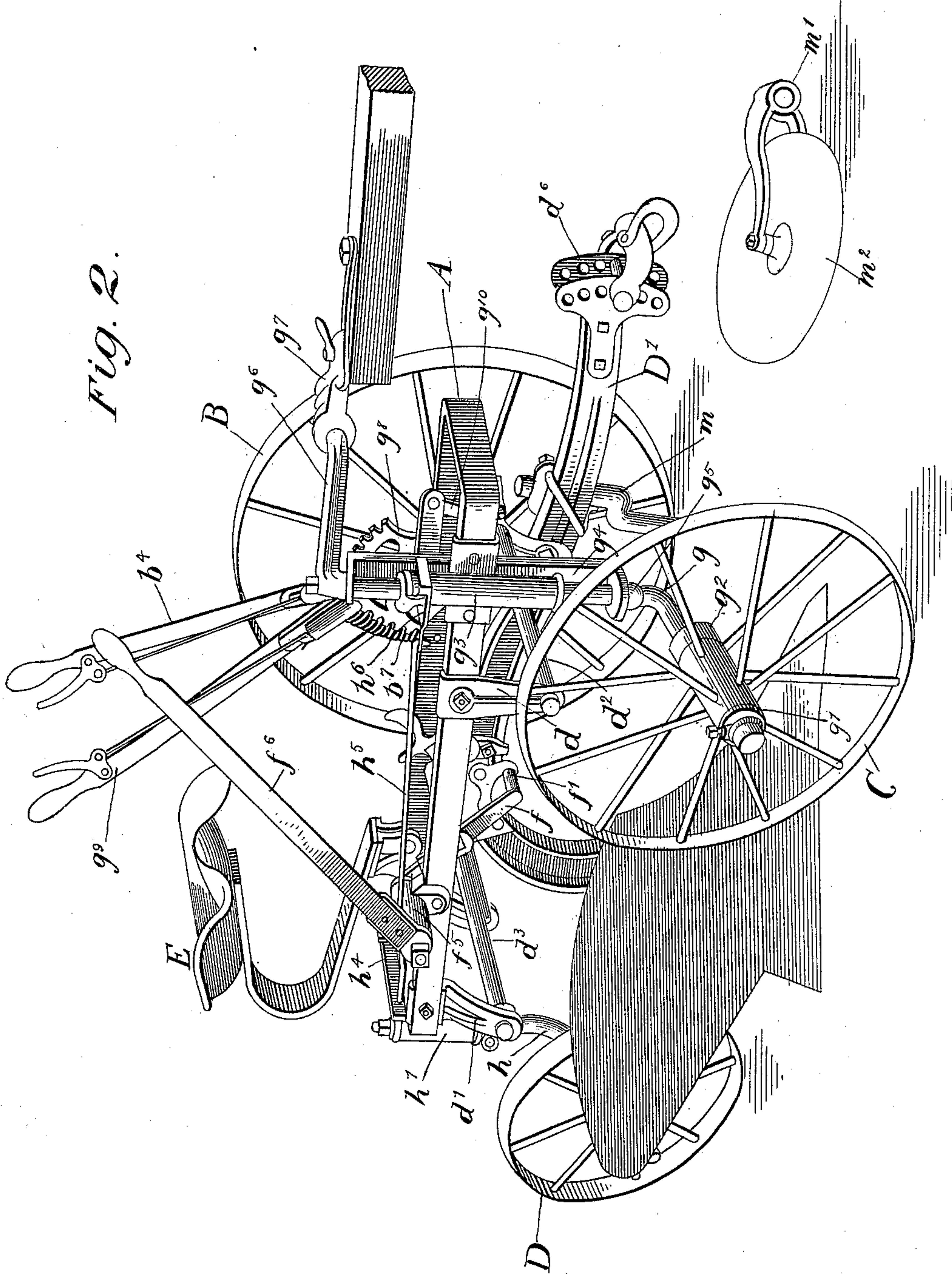
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4 Sheets—Sheet 2.



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4 Sheets—Sheet 3.

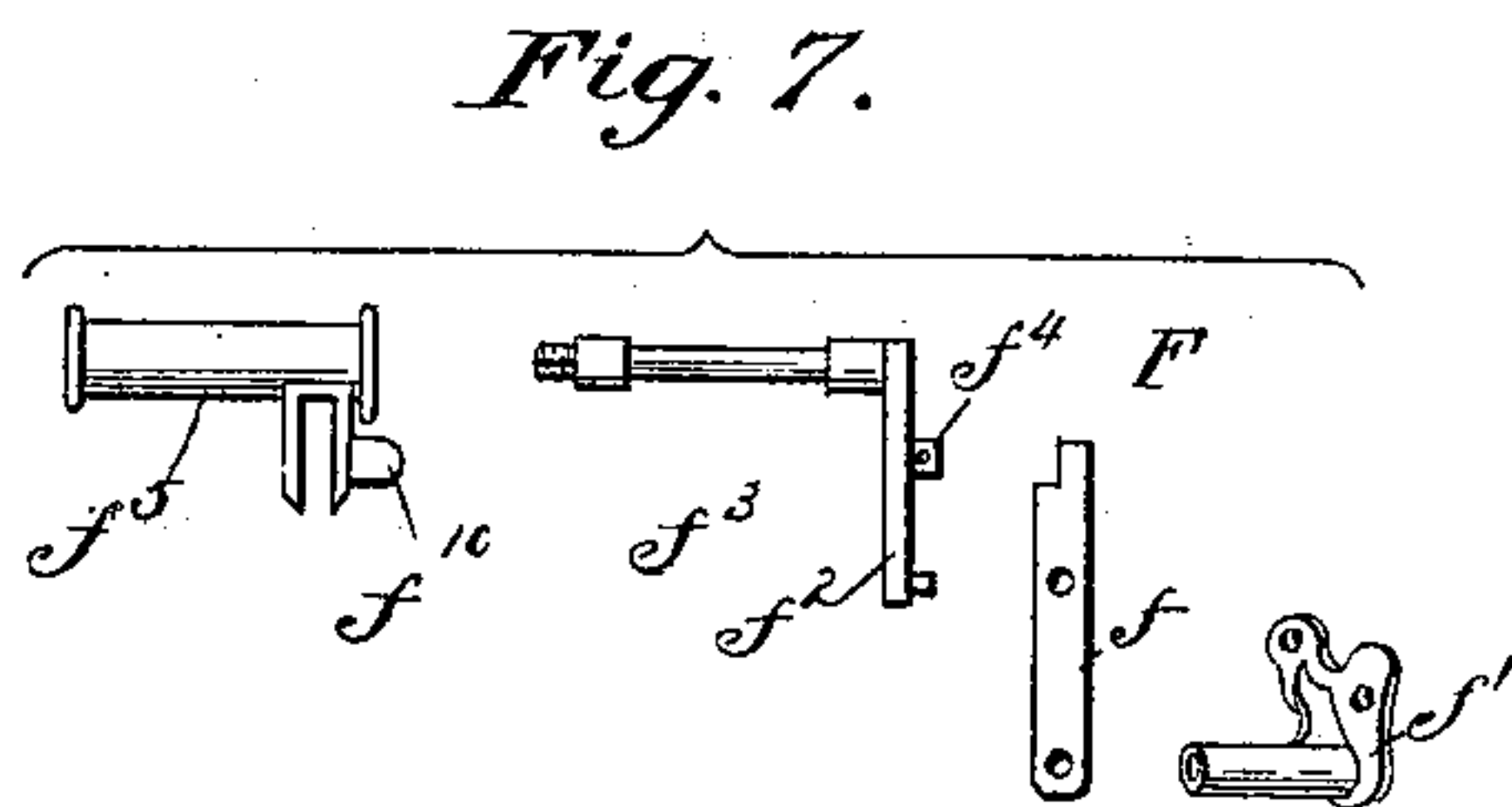
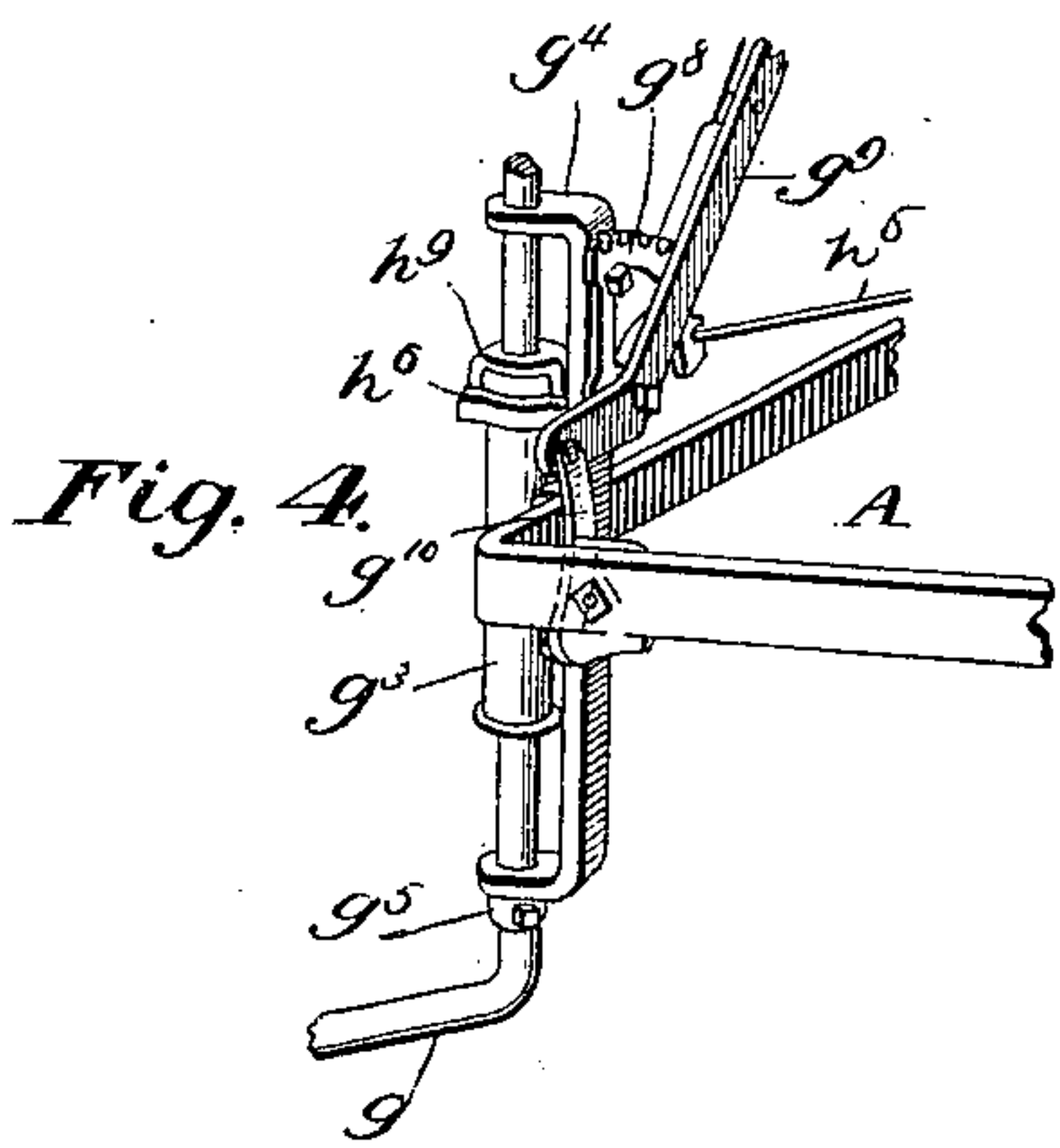
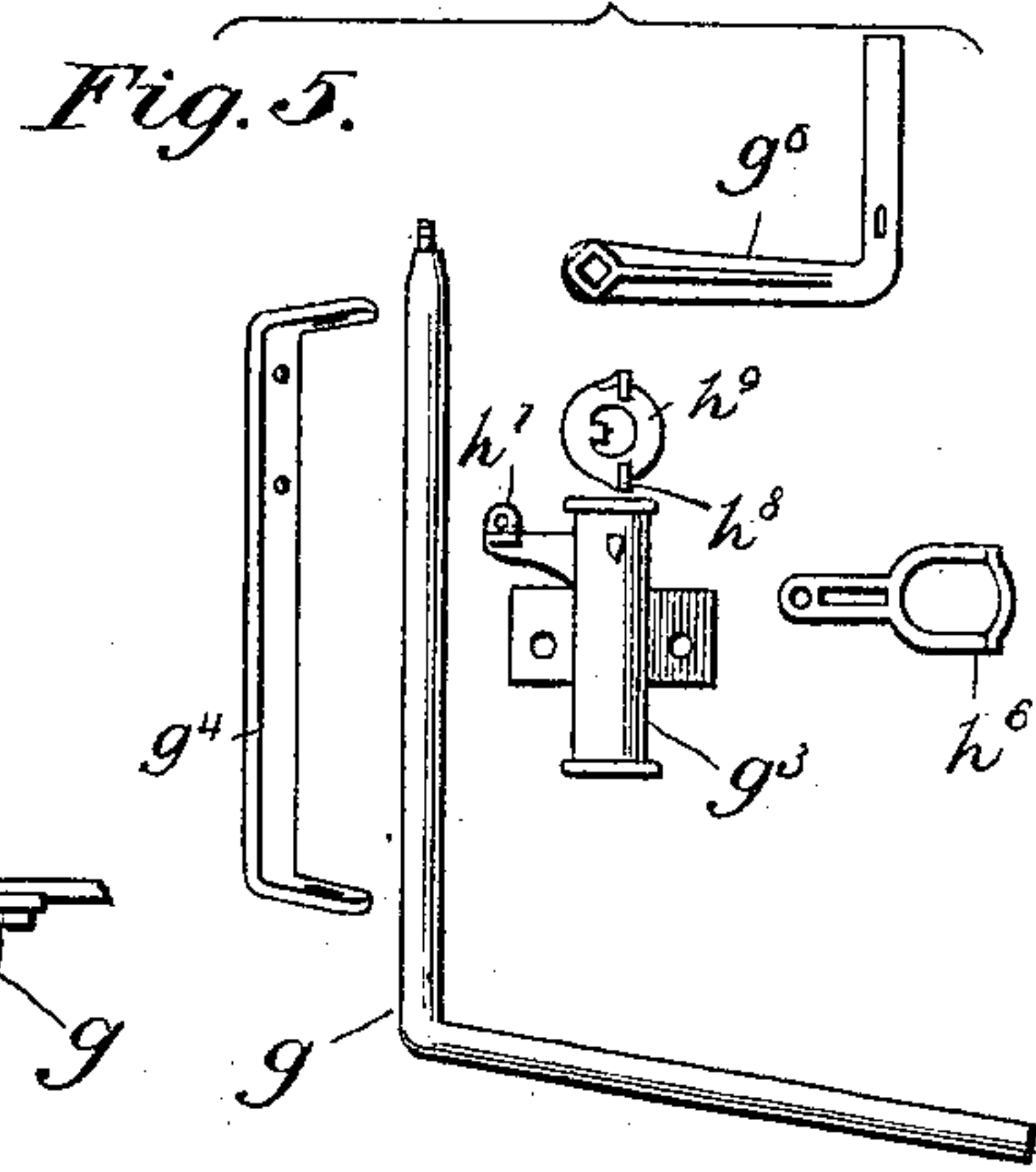
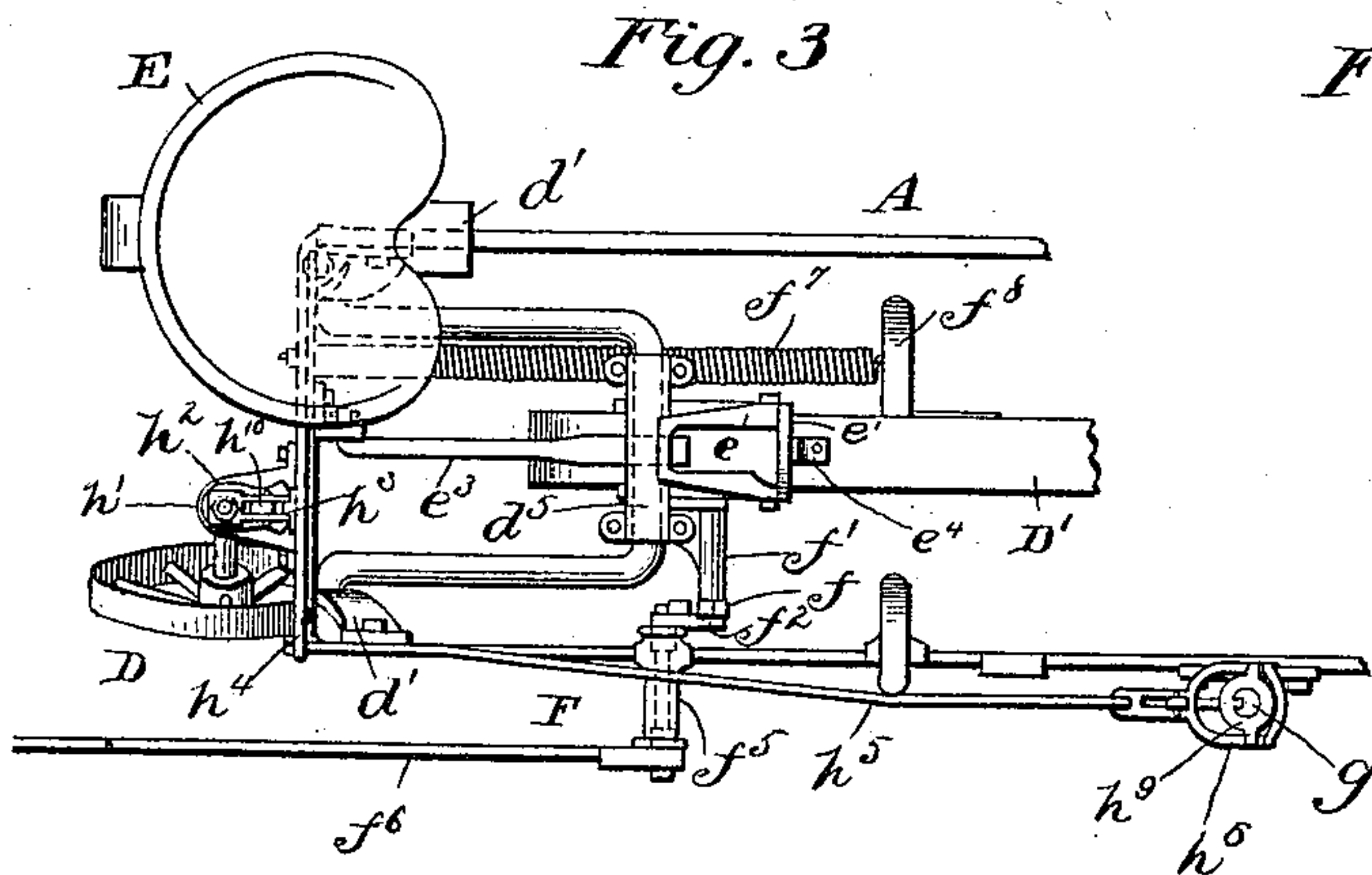


Fig. 9.

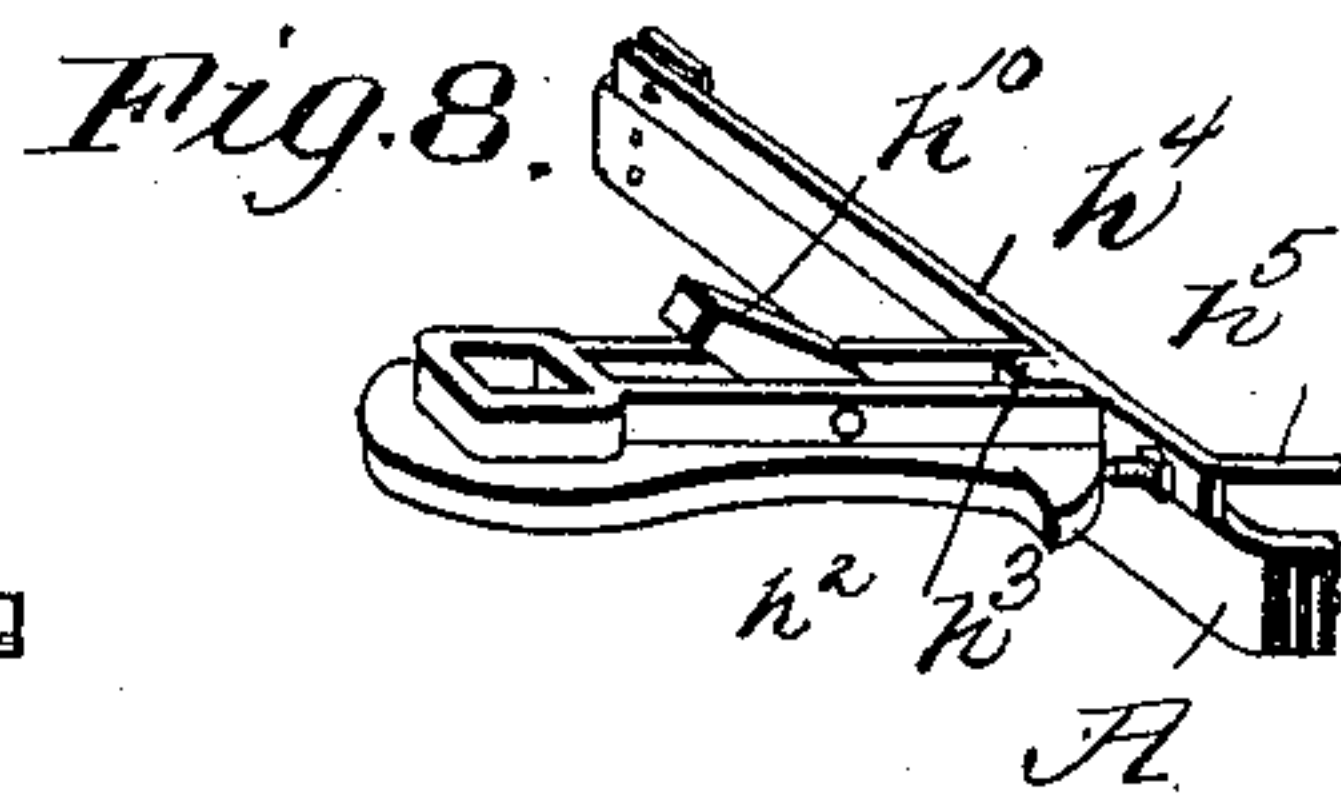


Fig. 11.

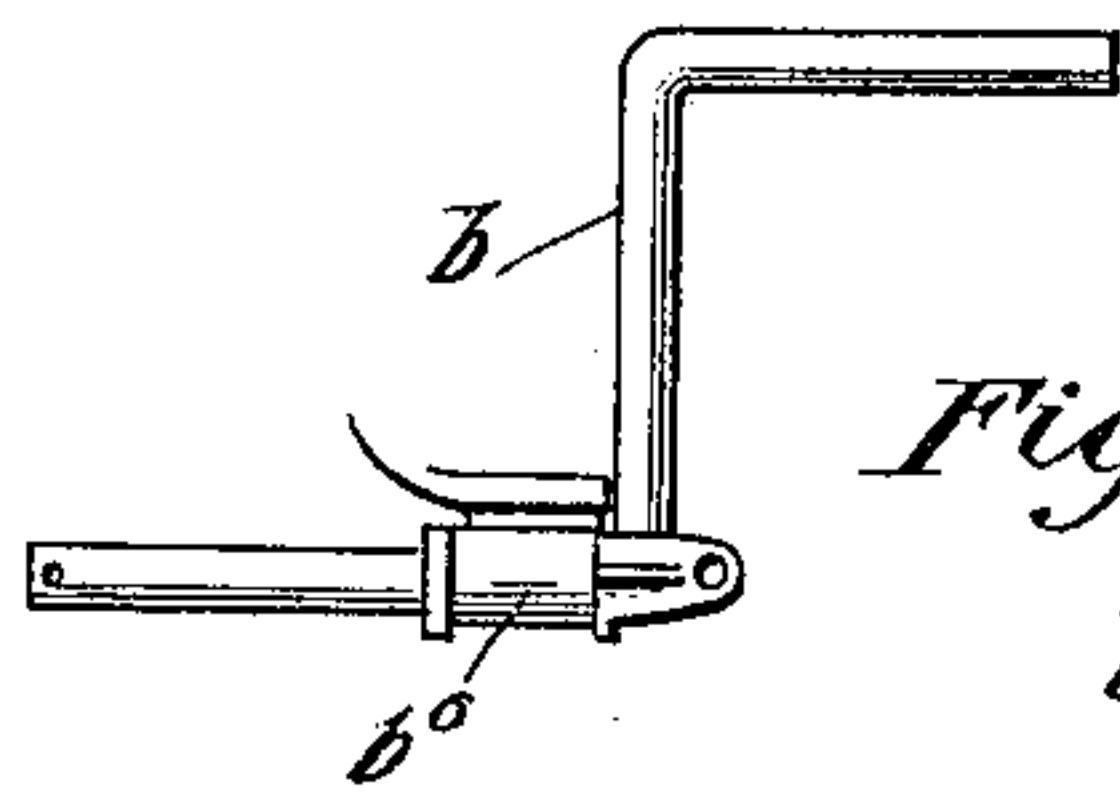
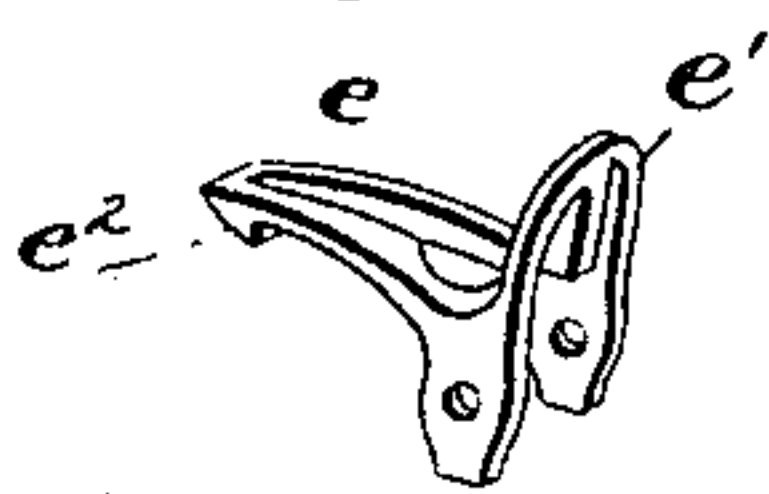


Fig. 6.

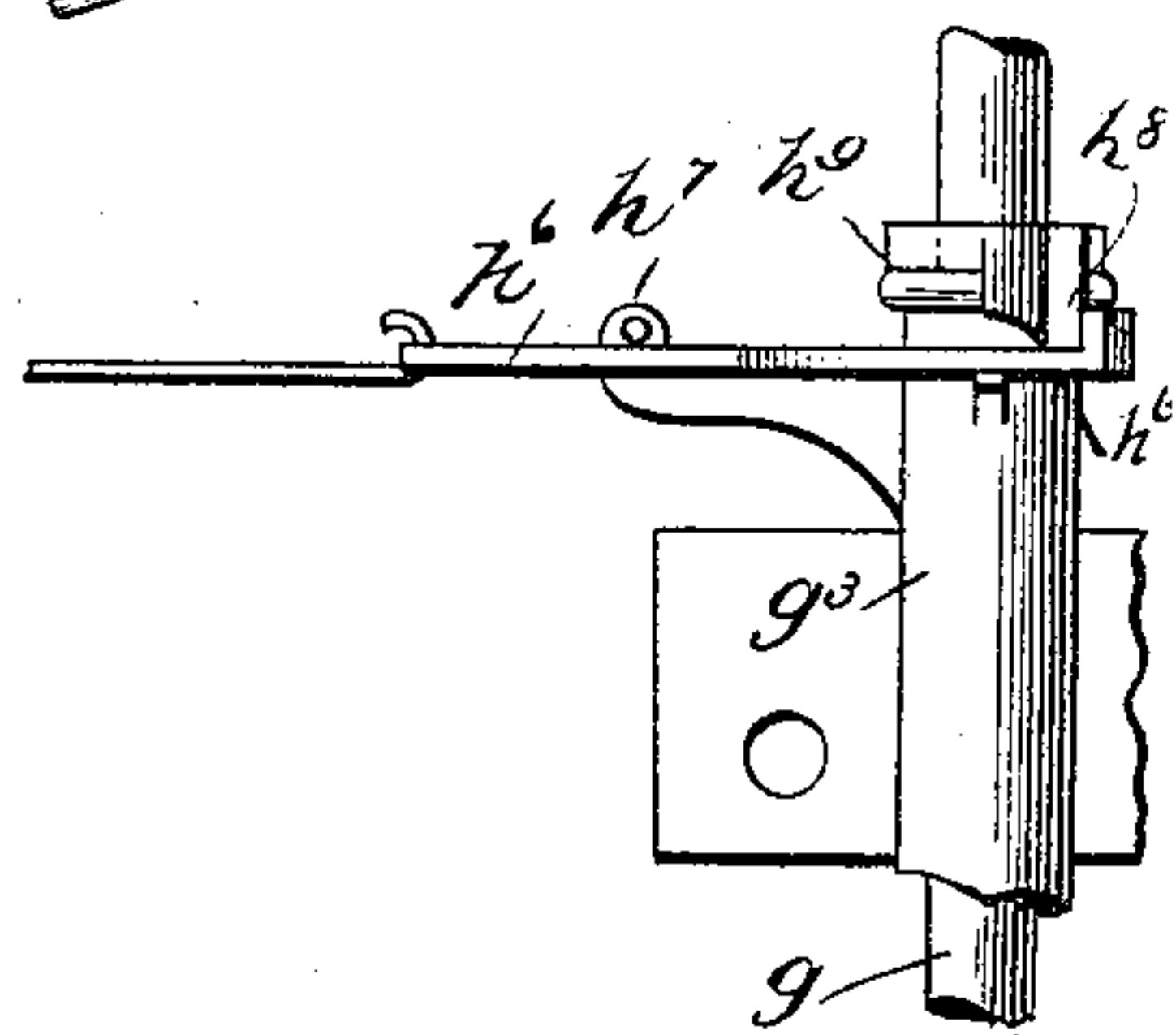


Fig. 13.

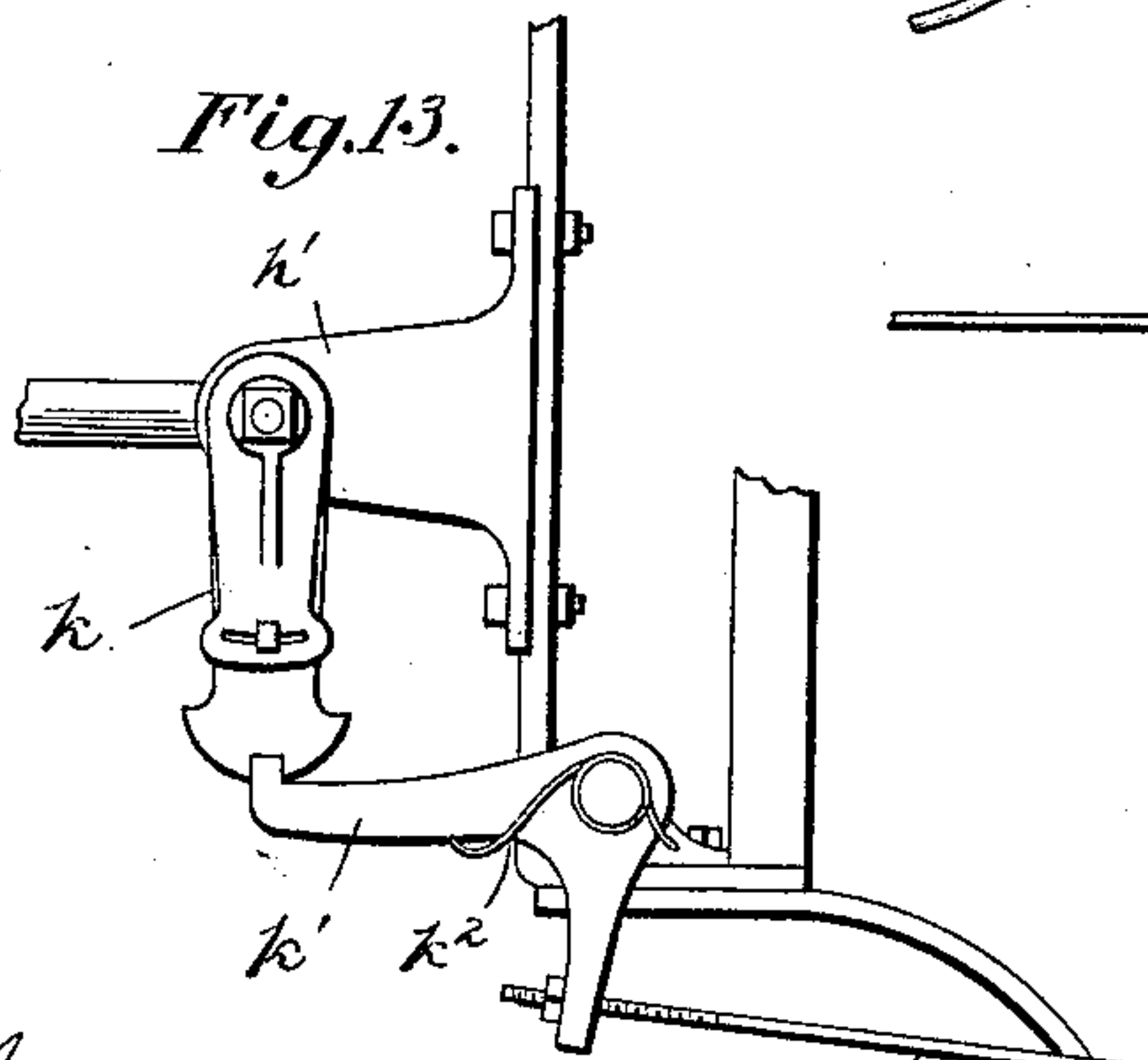
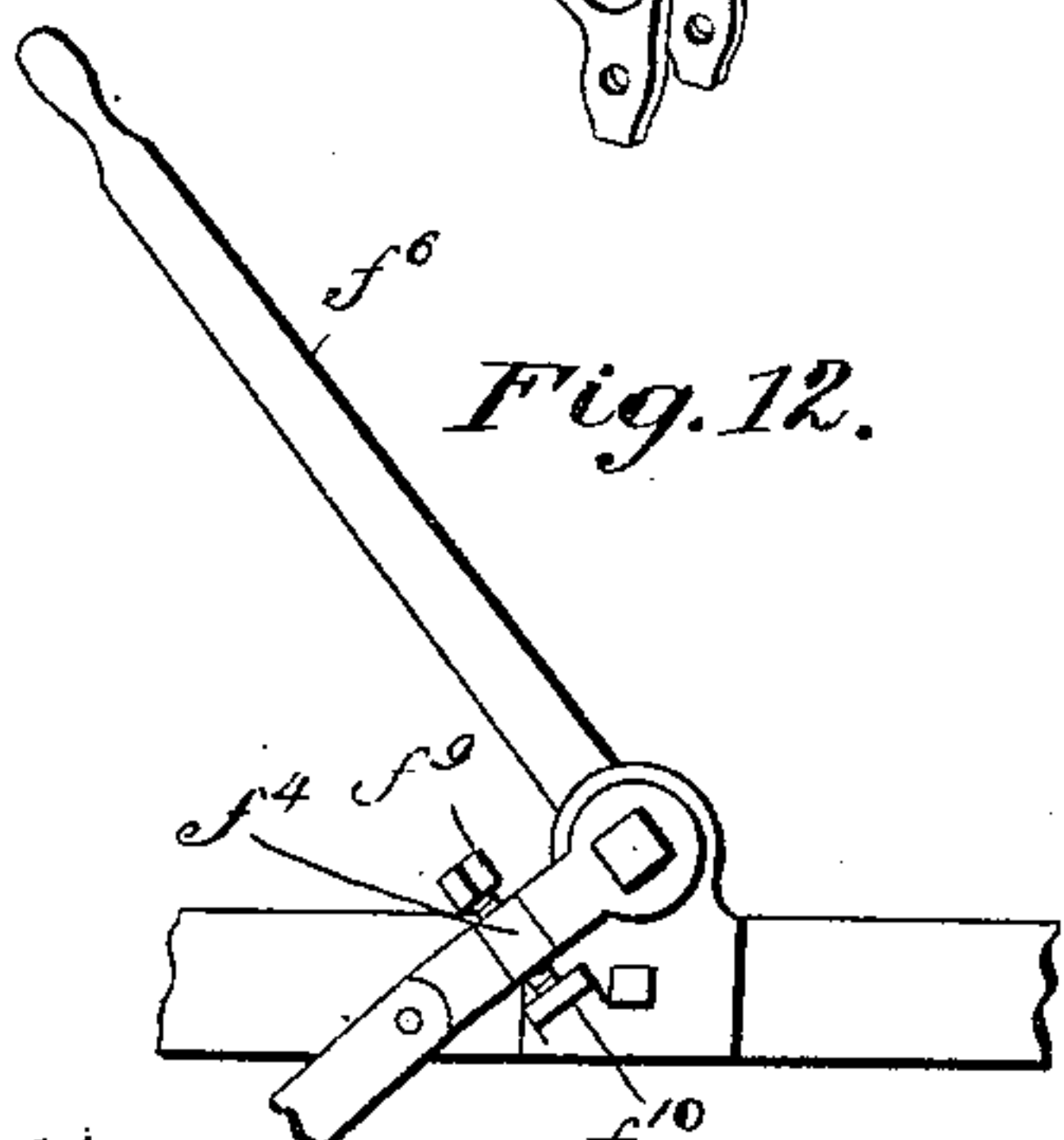


Fig. 12.



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Fig. 14.

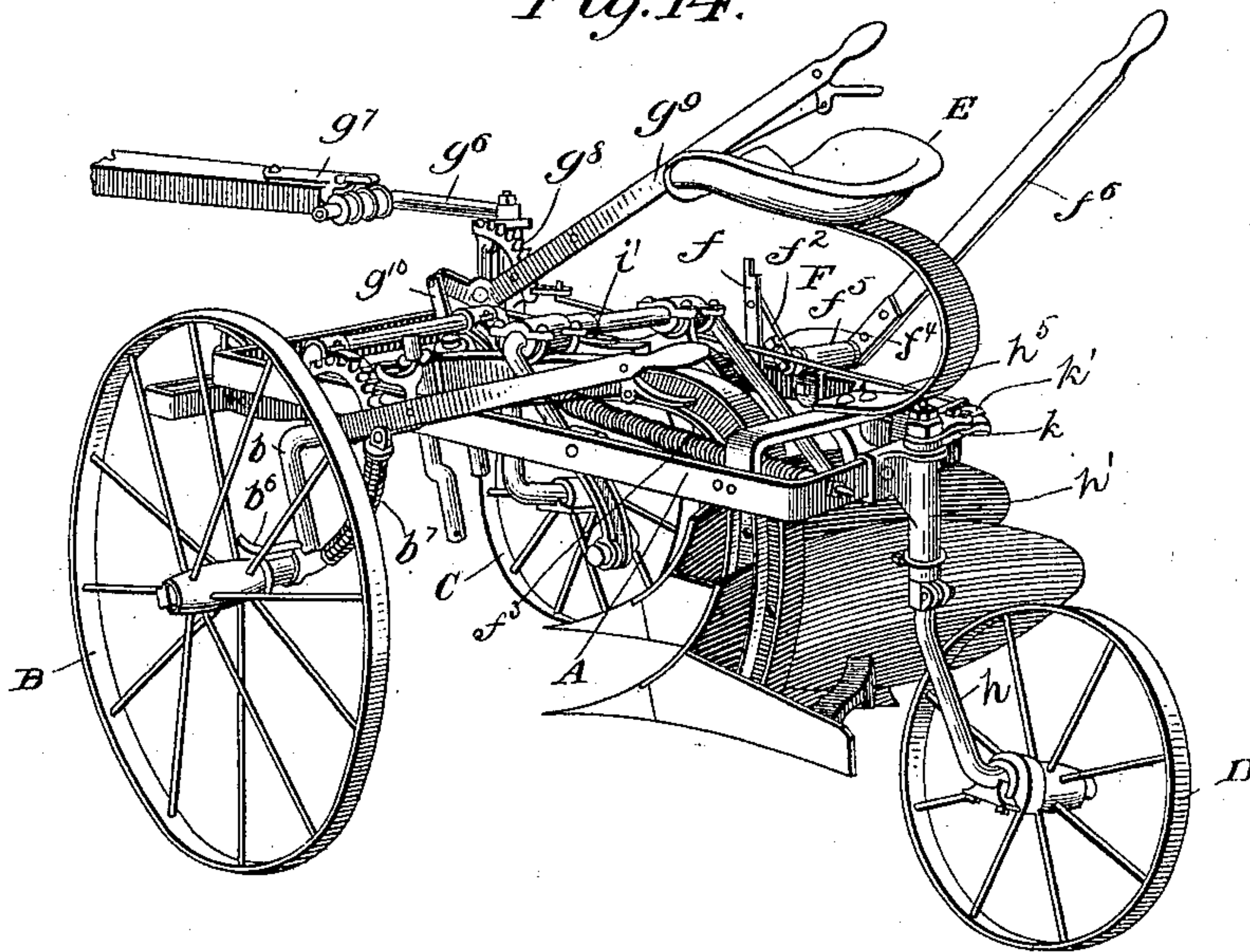
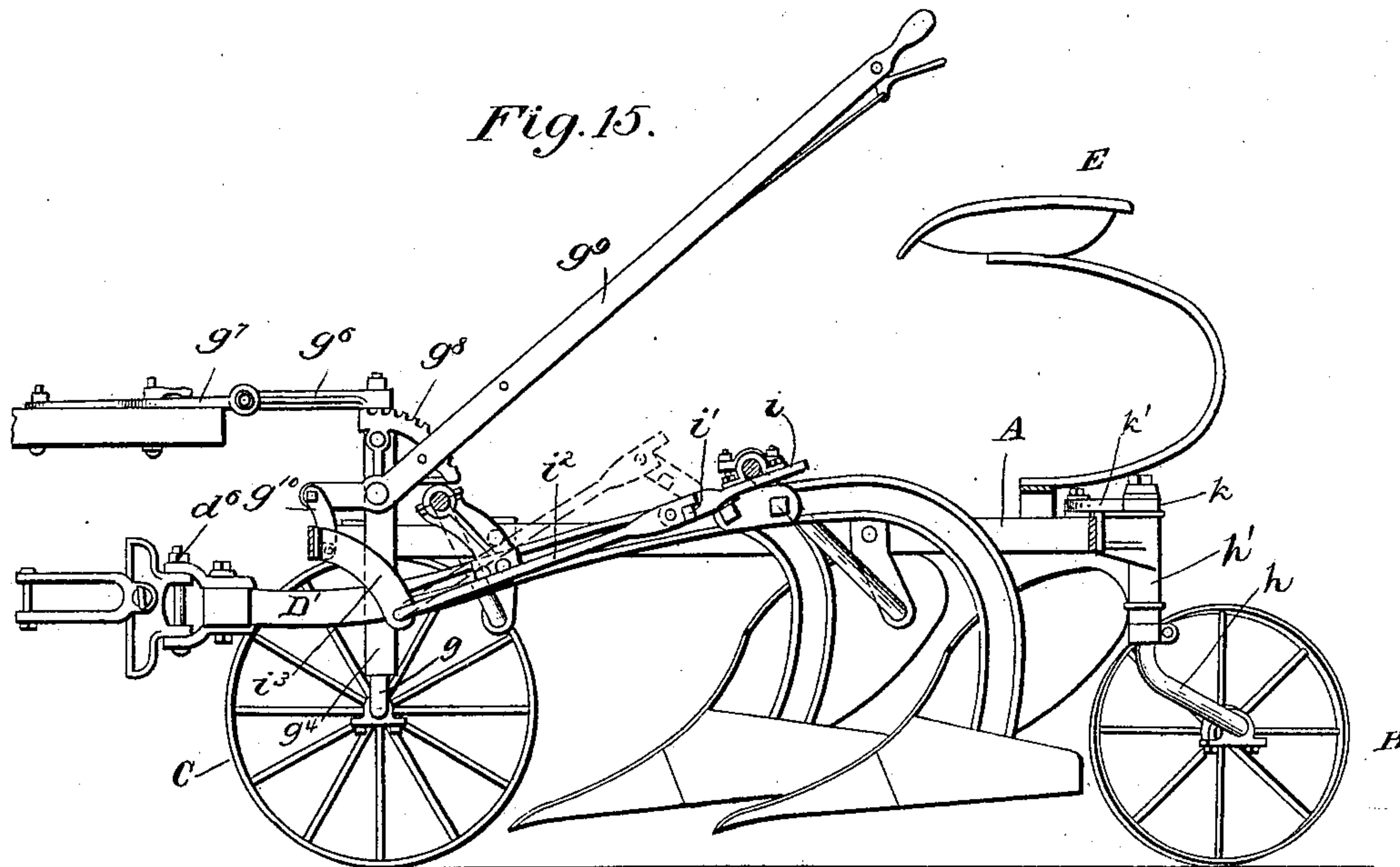


Fig. 15.



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UNITED STATES PATENT OFFICE.

STALEY D. POOLE, OF MOLINE, ILLINOIS, ASSIGNOR TO THE DEERE & COMPANY, OF SAME PLACE.

WHEEL-PLOW.

SPECIFICATION forming part of Letters Patent No. 614,343, dated November 15, 1898.

Application filed October 26, 1896. Serial No. 610,139. (No model.)

To all whom it may concern:

Be it known that I, STALEY D. POOLE, a citizen of the United States, residing at Moline, in the county of Rock Island and State of Illinois, have invented certain new and useful Improvements in Wheel-Plows; 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.

This invention relates to wheel-plows, but more particularly to riding, sulky, and gang plows, and aims to provide a simple and efficient mechanism for locking the plows in the ground, so as to securely hold them to their work, yet permitting, if desired, the adjustment of the locking mechanism so as to allow the plows to yield sufficiently to prevent injury while plowing stony ground, to combine with said locking means means by which the plows may be readily and easily raised to a sufficient height above the ground, to provide automatic means independently of said lifting means adapted to hold the plows in a raised position, and to provide simple and efficient automatically-actuated locking mechanism to prevent or allow the rear furrow-wheel to oscillate or move laterally.

With these and other objects in view the invention consists in the construction and combination of the several parts, substantially as hereinafter described and then pointed out in the claims at the end of the description.

Referring to the accompanying drawings, forming a part of this specification, Figure 1 is a perspective view of a sulky-plow embodying my invention, the plow-beam being in a raised position, this view and also Fig. 2 being on a larger scale than the remaining figures. Fig. 2 is a perspective view of the plow, looking from the side opposite that shown in Fig. 1, the plow-beam being lowered. Fig. 3 is a fragmentary plan view. Fig. 4 is a fragmentary perspective view illustrating means for raising the plow-frame on the front-furrow-wheel axle. Fig. 5 represents detail views of the tongue-arm and several of the elements shown in Fig. 4. Fig. 6 is a side elevation of a fragmentary portion of the front-furrow-

wheel axle and bracket and the unlocking mechanism for the rear furrow-wheel. Fig. 7 represents detail views of the bracket, lifting-lever crank, and crank connections of the lifting and locking mechanism for the plow-beams. Fig. 8 is a detail perspective view of the rear-furrow-wheel lock-plate, together with a spring-latch, which coacts with it, and a portion of the frame of the plow. Fig. 9 is a detail side elevation of the land-wheel axle and collar. Fig. 10 is a detail view of the plunger-rod for the land-wheel. Fig. 11 is a detail perspective view of the latch for holding the plow-beam elevated. Fig. 12 is a fragmentary side elevation of a slightly-modified form of locking and lifting mechanism for the plow beam or beams, illustrating one means for preventing said mechanism assuming a dead-center while plowing stony ground. Fig. 13 represents a plan view of a modified form of locking mechanism for the rear furrow-wheel. Fig. 14 is a perspective view of a gang-plow embodying my invention; and Fig. 15 is a longitudinal vertical section through the frame of the gang-plow, the lifting-lever and break-joint connection being removed.

In the drawings, A may designate the frame, which is preferably made by bending a metallic bar or band into rectangular form and may be supported above the ground by the land-wheel B, the front furrow-wheel C, and the rear furrow-wheel D, all of which may be of the usual or of any preferred construction. The land-wheel has its axle *b* provided with an offset forming two substantially parallel bearing end portions, on one of which the land-wheel is held to rotate and the other of which is arranged so as to oscillate in a bearing or bracket *b'*, which is secured to and projects outwardly from the side of the frame A, a collar *b²*, Fig. 1, being secured to the shaft and arranged in a recess formed intermediate the ends of said bracket, so as to prevent lateral movement of the axle and to retain the same within said bracket. This bracket has a segment *b³* secured to its outer end by a bolt or otherwise, to which is pivoted a lever *b⁴*, having a detent or catch of any preferred form for engaging the teeth of

the segment so as to retain the lever in various adjustments. A preferably curved rod b^5 , Figs. 10 and 14, has one end pivoted to the land-wheel lever intermediate the ends thereof and its other end passed through an aperture in a projection on the collar b^6 , so as to be guided therein when said lever is raised or lowered, said rod having a spring b^7 around the same and interposed between its upper end and the projection on the collar b^6 , so that the land-wheel may be yieldingly held to the ground to permit said wheel to pass over obstructions.

The frame A may have pendent brackets d and d' secured to the fore and rear portions and on opposite sides thereof, so as to be opposed to each other, in which the outer ends of the beam-bails d^2 and d^3 , respectively, are journaled, said brackets being provided with apertures for the ends of the bails and preferably with flanges at their upper ends adapted to embrace the upper and lower edges of the frame, so that by passing a bolt, as shown, through the brackets and the frame said brackets will be rigidly held in position. The bail d^2 may be substantially V-shaped and the bail d^3 substantially U-shaped, both of which have their central portions journaled in boxes d^4 and d^5 , which are secured to the fore and rear portions, respectively, of the plow-beam D' . These boxes may be of any desired form and construction, the box d^4 being preferably narrower than box d^5 and preferably comprises two members, one of which forms the upper bearing-surface for the bail d^2 and the other the lower bearing-surface therefor, said lower member having its lower portion bifurcated, so as to embrace the sides and be secured to the plow-beam, while the box d^5 preferably comprises three members, one of which forms the upper bearing-surface for the bail d^3 and the other members, which are secured on opposite sides of the beam, form the under bearing-surface for said latter bail. A clevis d^6 of any desired form may be secured to the plow-beam instead of to the frame in order that the strain may be removed therefrom, the beam and bails being preferably arranged so as to swing forward and downward while lowering the plows and rearward and upward while raising the same. By this means the pull of the horses will assist in lowering the plow or plows and the lifting be made more easy by reason of the plow being forced rearward and upward out of the hole made by the point thereof instead of being forced or lifted through the ground.

As an automatic means for holding the plow-beam elevated and for permitting said beam to lower without manipulation of hand-levers I preferably pivotally secure to the beam a latch e , Figs. 1, 3, and 11, provided with an upright or projecting portion e' and a hooked or toothed end e^2 , adapted to engage the hooked end of a catch-rod e^3 , the latter having one end pivoted to the frame or a bracket secured

thereto and its other end passed between the two lower members of the box d^5 , so as to rest on the upper edge of the beam and in the path of movement of the latch. The latch e is preferably normally pressed rearward by a suitable spring, as at e^4 , and has its hooked end arranged so as to automatically engage the hooked end of the catch-rod e^3 when the beam is raised a sufficient height above the ground, so that the operator while in the seat E may, by kicking or pressing upon the upright portion e' of the latch with his foot, unlock the plow-beam, which will permit the plow to plunge forward to the required depth, assisted by the pull of the horses, in which position it may be rigidly held by the locking mechanism F. This mechanism preferably consists of a strap f , Figs. 1, 7, and 14, which has one end pivoted to a bracket or connection f' , secured to the side of the plow-beam, and has its body portion pivoted to an arm f^2 of a crank f^3 and may have its outer end notched, so as to engage a projection or stop f^4 on said arm in order to form a knuckle or break-joint connection between the crank and said beam and to provide a lock by reason of the arm and strap being in substantially the same plane or on a dead-center when the plow or plows are lowered. The crank f^3 has its shaft journaled in a bracket or bearing f^5 , which is provided with a bifurcated lower portion adapted to embrace a portion of the frame and has its outer end secured to a lifting-lever f^6 , so that by forcing or drawing said lever rearward the joint will be broken and the plow and beam raised by means of the crank-arm and strap, a spring f^7 , Fig. 3, being secured to a portion of the beam (in this instance a hook and foot-rest f^8) and its other end to the frame, so as to assist in lifting the plow and beam by the power stored therein while the plow is being lowered. The strap f may be made without the notched upper end, Fig. 12, and the projection or stop f^4 preferably provided with a set-screw f^9 or other device adapted to be adjusted so as to abut against a projection f^{10} on the bracket f^5 to prevent the crank-arm and the strap assuming a dead-center or locked position while plowing stony ground in order to avoid breaking or injuring the mechanism, or the set-screw may be arranged in the projection f^{10} so as to abut against the under side of the crank-arm f^2 . It will thus be seen that simple and efficient means are provided for lowering the plow or plows without the manipulation of hand-levers and the plow or plows properly held to their work and readily raised and held in an elevated position at a considerable height above the ground.

The front furrow-wheel C is preferably of the staggered type and is adjustably held upon the lower or angular end of the axle g by means of the collars g' and g^2 , located on opposite sides of the hub portion thereof. The vertical portion of the axle is journaled in

the bracket g^3 , secured to a side bar of the frame by bolts passing through portions thereof or otherwise and has its body portion passed through apertures in the angular or bent ends of a support g^4 , said support having its body portion arranged on the side of the frame-bar opposite the bracket g^3 and its bent or angular ends located above and below said bracket. This support g^4 is prevented from vertical movement upon the axle g by means of the collar g^5 , secured to the axle, preferably adjustably, beneath the lower bent end of the support and the tongue-arm g^6 , which is secured to the upper end of the axle. The tongue-arm has the tongue-casting g^7 secured thereto, to which the tongue is secured, so that when the tongue is moved laterally the axle g will be rotated in its bearing. At the inner side and upper portion of the support is secured a segment or rack g^8 , to which is pivoted a lever g^9 , having the usual or any preferred form of ratchet mechanism for holding the lever in various adjustments. This lever has its end bent at an angle and connected by the lever-strap g^{10} to the frame, so that by moving the lever upon its pivot the frame and bracket g^3 may be raised or lowered upon the axle g . By means of the front furrow-wheel lever g^9 and the land-wheel lever b^4 the plow or plows are adjusted so as to run level and cut the furrow the proper depth.

For the purpose of holding the rear-furrow-wheel axle stationary or to permit the wheel to move laterally either freely or when the tongue is shifted to one side I provide the axle h with an offset and an angular portion, so as to incline the wheel D or cause it to be staggered and have its body or vertical portion journaled in a bracket or bearing h' , secured to the rear of the frame A, and its upper end provided with a lock-plate h^2 , having a recess or notch adapted to be engaged by a tooth h^3 , projecting outwardly from a spring-latch h^4 . This latch has one end secured to the frame or a separate bracket thereon or to a projecting portion of the pendent bracket d' on the left side of the frame and has its free end connected by a rod h^5 to a sliding plate h^6 , Figs. 2 to 6, inclusive, arranged to slide upon the upper portion of the bracket g^3 . The sliding plate is provided with an elongated slot or opening, so as to fit over the upper end of the bracket g^3 , and with a slot extending longitudinally of the plate and fitting over a projection h^7 on the bracket g^3 , so as to be guided thereon, and has an upwardly-projecting portion or end adapted to be engaged by projections or lugs h^8 , carried by the collar h^9 , said collar being slidably held on the axle g by a key and groove or otherwise, so as to engage the projecting end of the sliding plate h^6 and force the same forward when the axle is rotated in either direction by the lateral shifting of the tongue and tongue-arm in order to release the tooth of the spring-

latch h^4 from the recess in the lock-plate h^2 and permit the axle h to oscillate or rotate freely in the bearing h' . A block h^{10} , Figs. 3 and 8, may be pivoted in the recess or slot of the lock-plate h , said block when swung forward and down filling the front end of the recess and preventing the entrance of the tooth on the spring-latch thereinto, so as to permit the axle of the wheel D to oscillate freely at all times. Thus it will be seen that the rear furrow-wheel may be readily held in the same plane as the machine or permitted to shift laterally at all times or only when the tongue is moved so as to turn the machine to either side.

The construction and operation of the invention will be readily understood from the foregoing description when taken in connection with the accompanying drawings. Assuming the plow to be adjusted to cut at the required depth by means of the land-wheel lever b^4 and the front-furrow-wheel lever g^9 , which latter lowers or raises the frame and bracket g^3 upon the axle g , and the parts to be in the position shown in Fig. 1, it will be seen if the operator releases the catch e by pressure of the foot upon the projecting portion e' thereof or otherwise the plow will plunge downward and forward the required distance, assisted by the pull of the horses upon the beam. This lowering of the plow-beam will place the strap f and the crank-arm f^2 of the locking mechanism F in the same plane or on a dead-center, so as to rigidly hold the plow or plows to their work, or said crank-arm and strap may be held slightly off the dead-center or otherwise by adjusting the set-screw f^9 in order to permit the plows to raise or yield sufficiently to prevent breaking or injuring parts of the machine while plowing stony ground. The tooth of the spring-latch being in engagement with the recess in the lock-plate h^2 upon the tongue being shifted laterally in either direction while making a turn or for other purposes, the tongue-arm g^6 , which is connected to the tongue and the front-furrow-wheel axle g , will rotate the latter in its bearing in the same direction as the tongue is shifted. The rotation of the axle also rotates the collar h^9 , which causes one of its projections or lugs h^8 to engage the upwardly-projecting portion of the sliding plate h^6 and forces the same and the rod h^5 forward, releasing the tooth of the latch h^4 from the plate h^2 , thus permitting the axis of the rear furrow-wheel to oscillate or rotate freely in the bearing h' . When the tongue assumes a substantially parallel position relatively to the plane of the frame, the recoil of the latch will cause the tooth thereof to assume a position for engagement with the lock-plate to hold the axle h stationary until the tongue is again shifted laterally. Should the operator wish to raise the plow, the lever f^6 may be drawn rearward, which will break the knuckle or locked joint formed

by the crank-arm f^2 and strap f and by means of said strap and arm will raise the beam rearward out of the ground to the desired height, the recoil of the spring f^7 assisting in such raising. As the plow-beam reaches the proper height the hooked or toothed end of the spring-pressed catch e will automatically engage the hooked end of the catch-rod e^3 and rigidly hold the beam and plow in an elevated position.

I thus provide a simple, strong, and efficient wheel-plow which dispenses with the use of levers for lowering the plow or the handling of levers after the first furrow is opened and the plows adjusted to run level and at the desired depth, which may be readily raised to the desired height and automatically held in an elevated position, and which has its rear furrow-wheel automatically controlled from the forward portion of the machine.

In Figs. 14 and 15 the construction and the operation of the parts are substantially the same as in the sulky-plow. Here two plow-beams are shown connected to the bails, so as to be simultaneously raised or lowered, said bails being somewhat wider than the bails in Figs. 1 and 2. Each beam is preferably provided with separate bail-boxes connecting it to the front and rear bails, though of course the form of the bails and the manner of connecting them to the plow beam or beams may be changed to meet different requirements. At i is a latch-arm pivoted by a clip or otherwise to the rear beam-bail, so as to be raised or lowered thereon, and has a projecting portion i' , adapted to be engaged by the notched end of a catch-rod i^2 . This rod is preferably pivoted at one end to the lower portion of a bracket i^3 , which is secured to the frame, and has its upper end pivoted to the latch-arm i , so that when the plow-beams are raised, as shown, said arm and catch-rod will be in substantially the same plane, so as to form a dead-center with respect to the downward movement of the beams, and when the arm is tilted by the foot of the operator or otherwise to throw the forward end upward the joint will be broken and the plows permitted to lower.

I preferably employ the mechanism shown in Fig. 13 for holding the rear furrow-wheel of the gang-plow stationary or to permit the same to oscillate freely in its bearing, though in some instances this mechanism as well as the automatic mechanism for holding the plow-beams elevated may be employed on a sulky-plow. The lock-plate k is preferably arranged substantially parallel with the rear bar of the frame, and has its outer end provided with a notch adapted to be engaged by the tooth of a bell-crank lever or latch k' . This lever may be pivoted to the frame or a bracket secured thereto, and has one arm thereof connected to the rod h^5 in a manner similar to that shown in Fig. 3, and has its

toothed end normally pressed inward by a suitable spring, as at k^2 , so that when the rod h^5 is operated, as heretofore explained, the toothed end of said lever will be disengaged from the plate k to permit the axle to oscillate freely in its bearing and when released will again engage said plate through the action of the spring.

The plow beam or beams may each have a colter-shank m secured thereto in advance of the plow, to the lower end of which may be secured the yoke m' , having a rotary colter m^2 journaled therein.

It is obvious that in the use of the words "beam" or "beams" either is intended, according to whether the mechanism is employed on a sulky, gang, or other plow, that some of the parts may be used in other connections than with plows or that some of the parts may be changed—as, for instance, the crank-arm f^2 of the lifting and locking mechanism may be secured directly to or formed integrally with the lever f^6 —and that some of the parts may be dispensed with or others substituted therefor without departing from the spirit of my invention.

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

1. The combination of a wheeled supporting-frame, a plow-beam movably connected therewith to permit its being raised and lowered with relation thereto, means for lifting the plow-beam, and automatically-operating devices for sustaining the plow-beam in its elevated position independently of said lifting means and adapted to be independently released to permit the lowering of the plow-beam without manipulation of the lifting means.

2. In a wheel-plow, the combination with a frame, and supporting-wheels therefor, of one or more plow-beams held so as to be raised or lowered upon said frame, a bracket secured to the frame, a shaft journaled in the bracket having one end secured to the lifting-lever and its other end provided with a crank-arm, a strap connected to the plow beam or beams and pivoted intermediate its ends to said arm, and a stop arranged upon the crank-arm adapted to be engaged by the end of the strap when the plow beam or beams are lowered, whereby the beams may be raised or locked in a lowered position, substantially as described.

3. The combination of a wheeled supporting-frame, a plow-beam, a bail connecting the frame and beam whereby the latter may swing forward and downward, and a spiral spring connected at one end to the rear of the frame and at the other end to the beam whereby when the latter swings forward and downward power is stored in the spring to assist in retracting the beam.

4. The combination of a wheeled supporting-frame; a plow-beam; upwardly and for-

wardly extending bails by which said beam is suspended from the frame; a toggle, one member of which is pivoted to the frame and the other to the beam, abutments being provided to limit the movement of said toggle due to a downward and forward movement of the beam; and a lifting-lever affixed to the member of said toggle which is pivoted to the frame.

5. In a wheel-plow, the combination with a frame and supporting-wheels therefor, of one or more beams held so as to be raised or lowered upon said frame, means for raising the beams, together with automatically-actuated mechanism adapted to hold the beams in an elevated position, or to be released without the assistance of a hand-lever, so as to permit the operator to have his hands entirely free to control the horses, substantially as described.

6. In a wheel-plow, the combination with a frame and supporting-wheels therefor, of one or more beams held so as to be raised or lowered upon said frame, a latch pivoted to the beam, and a rod or catch pivoted to the frame adapted to be engaged by the latch when the beam is raised, whereby the plows may be rigidly held above the ground, substantially as described.

7. In a wheel-plow, the combination with a frame and supporting-wheels therefor, of bails pivoted to the frame so as to swing up and down thereon, bail-boxes fitting over a portion of the bails and secured to the plow-beam so that the latter will raise and lower with said bails, a spring-pressed latch pivoted to the beam adjacent to one of said bail-boxes, and a rod or catch pivoted at one end to the frame and having its other end passing through one of the boxes and adapted to engage the end of the latch when the beam is raised, whereby said beam may be automatically held in a raised position, substantially as described.

8. In a wheel-plow, the combination with a suitable frame, and a plow or plows mounted thereon, of a rear furrow-wheel and an axle therefor rotatably journaled upon the frame, a front furrow-wheel and axle therefor also journaled upon the frame, a latch adapted to prevent rotary movement of the axle of the rear furrow-wheel, a sliding plate, connections between the latter and said latch and a collar rotating with the front-furrow-wheel axle adapted to engage said sliding plate when the axle is rotated and move the plate longitudinally, whereby the rear-furrow-wheel axle may be automatically released so as to oscillate freely in its bearing when the front-furrow-wheel axle is rotated, substantially as described.

9. In a wheel-plow, the combination with a suitable frame, of a bracket secured to said frame, an axle having a vertically-extending portion journaled in the bracket, a wheel on said axle, a bar extending above and below

the bracket and having bent end portions loosely embracing the axle, a lever pivoted to said bar, and connections between said lever and the frame, substantially as and for the purpose described.

10. In a wheel-plow, the combination with a suitable frame, of a bracket secured to the same on one side thereof, an axle having a vertically-extending portion journaled in said bracket, a wheel on the axle, a bar extending on the side of the frame opposite that on which the bracket is secured and above and below the bracket and having end portions loosely embracing the axle, a lever pivoted to said bar, and connections between said lever and the frame, substantially as and for the purpose described.

11. In a wheel-plow, the combination with a suitable frame and a plow or plows mounted thereon, of a rear furrow-wheel and an axle therefor journaled upon the frame, a lock or plate secured to the axle, a latch adapted to engage the plate so as to prevent rotary movement of the axle, a front furrow-wheel and axle therefor also journaled upon the frame, a sliding plate, connections between the same and the latch and a collar held on the front-furrow-wheel axle so as to rotate therewith and having lugs adapted to engage and move said sliding plate when the axle is rotated, whereby the axle of the rear furrow-wheel may be automatically released so as to oscillate freely in its bearing when the front-furrow-wheel axle is rotated, substantially as described.

12. In a wheel-plow, the combination with a suitable frame and a plow or plows mounted thereon, of a bracket secured to the rear portion of the frame, an axle provided with a wheel journaled in the bracket, a lock or plate secured to the axle, a spring-latch adapted to engage the plate so as to prevent rotary movement of the axle, a pawl pivoted to said plate adapted to prevent engagement of the latch with the plate, a front furrow-wheel and an axle therefor journaled on the frame, together with mechanism operated by the front-furrow-wheel axle for disengaging said latch from the lock or plate when the pawl is not in use whereby the axle of the rear furrow-wheel may be automatically released so as to oscillate freely in its bearing when the front-furrow-wheel axle is rotated, substantially as described.

13. In a wheel-plow, the combination with a suitable frame and a plow or plows mounted thereon, of a bracket secured to the rear portion of the frame, an axle provided with a wheel journaled in the bracket, a lock or plate secured to the axle, a latch adapted to engage said lock or plate to prevent rotary motion of the axle, a bracket secured to the forward portion of the frame, a front furrow-wheel and an axle therefor also journaled in said bracket, a plate slidingly held upon the bracket, a rod connecting the sliding plate

to the latch of the rear furrow-wheel, a collar held on the front-furrow-wheel axle so as to rotate therewith and adapted to engage said sliding plate when the axle is rotated, a
5 tongue, and connections between the tongue and the front-furrow-wheel axle for rotating the latter when said tongue is shifted laterally, whereby the axle of the rear furrow-wheel may be automatically released so as to

oscillate freely in its bearing when the front-furrow-wheel axle is rotated, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

STALEY D. POOLE.

Witnesses:

FRED H. COOPER,

A. R. EBI.