

(No Model.)

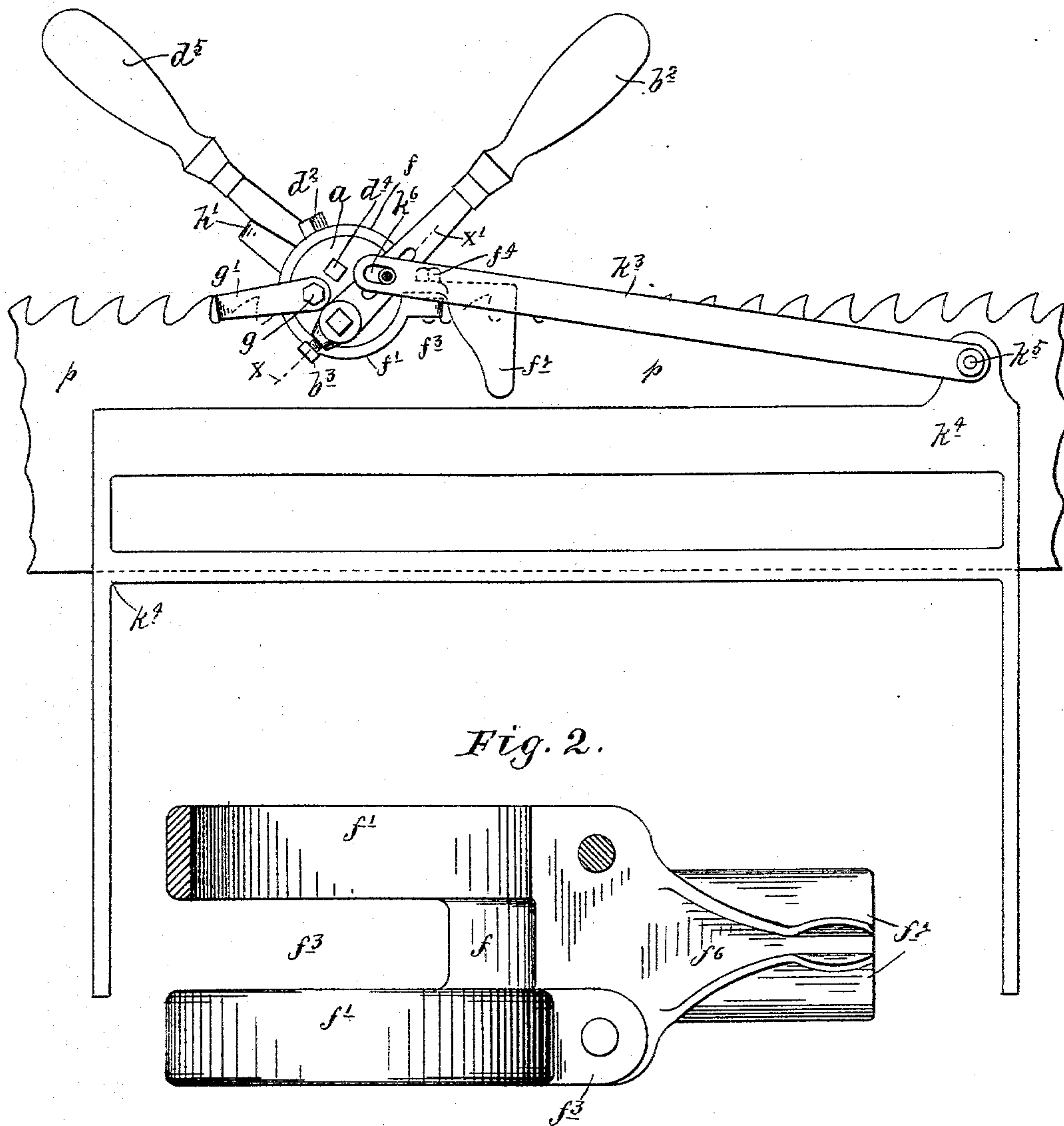
3 Sheets—Sheet 1.

S. U. LOCKWOOD.
SAW SWAGE.

No. 533,477.

Patented Feb. 5, 1895.

Fig. 1.



Witnesses.
A. H. Opsahl.

Frank D. Moreland.

Inventor.
Samuel H. Lockwood
By his Attorney.
Geo. F. Williamson

(No Model.)

3 Sheets—Sheet 2.

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Fig. 3.

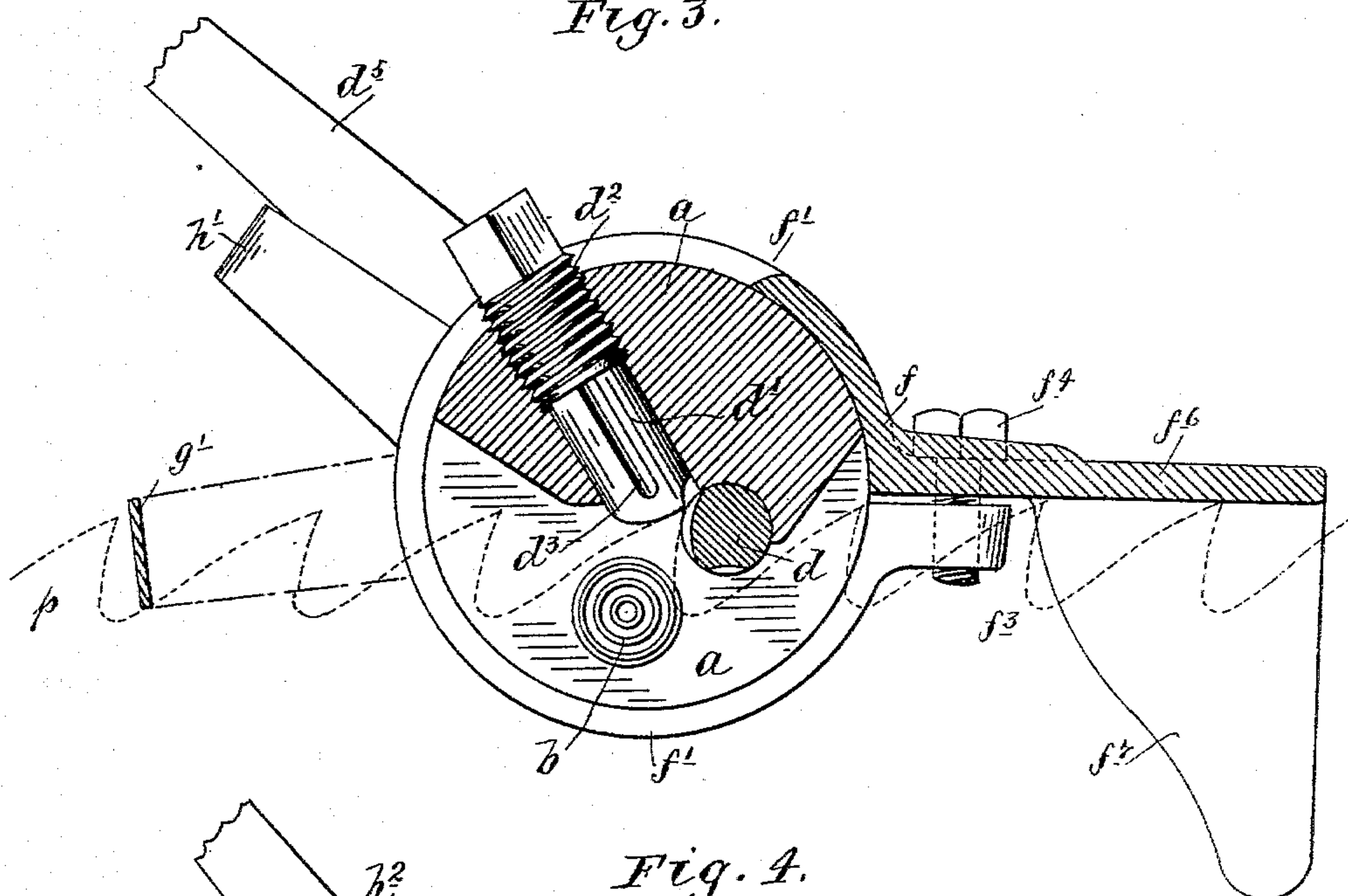
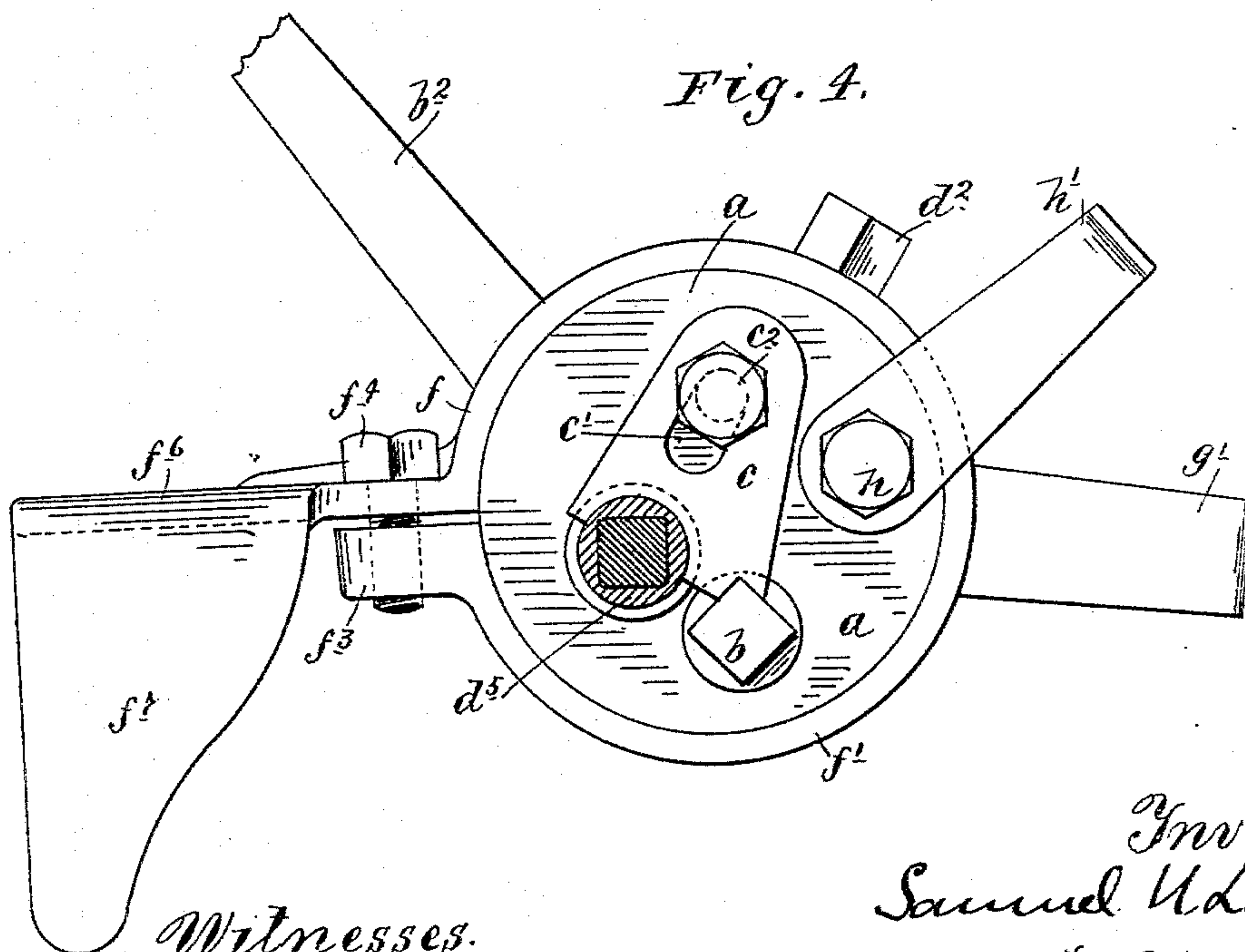


Fig. 4.



Witnesses.
A. V. Opsahl.
Frank D. Moreland.

Inventor.
Samuel U. Lockwood
By his Attorney.
Jas. F. Williamson

(No Model.)

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Fig. 6.

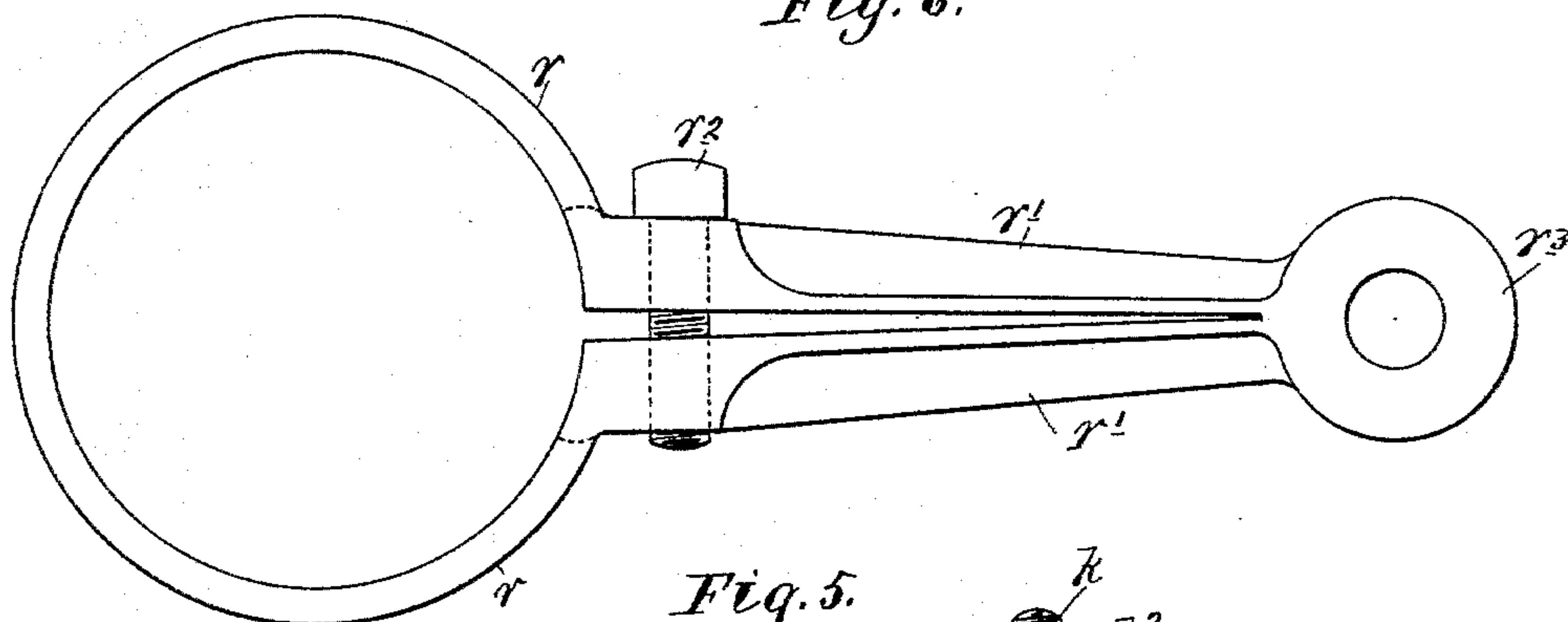
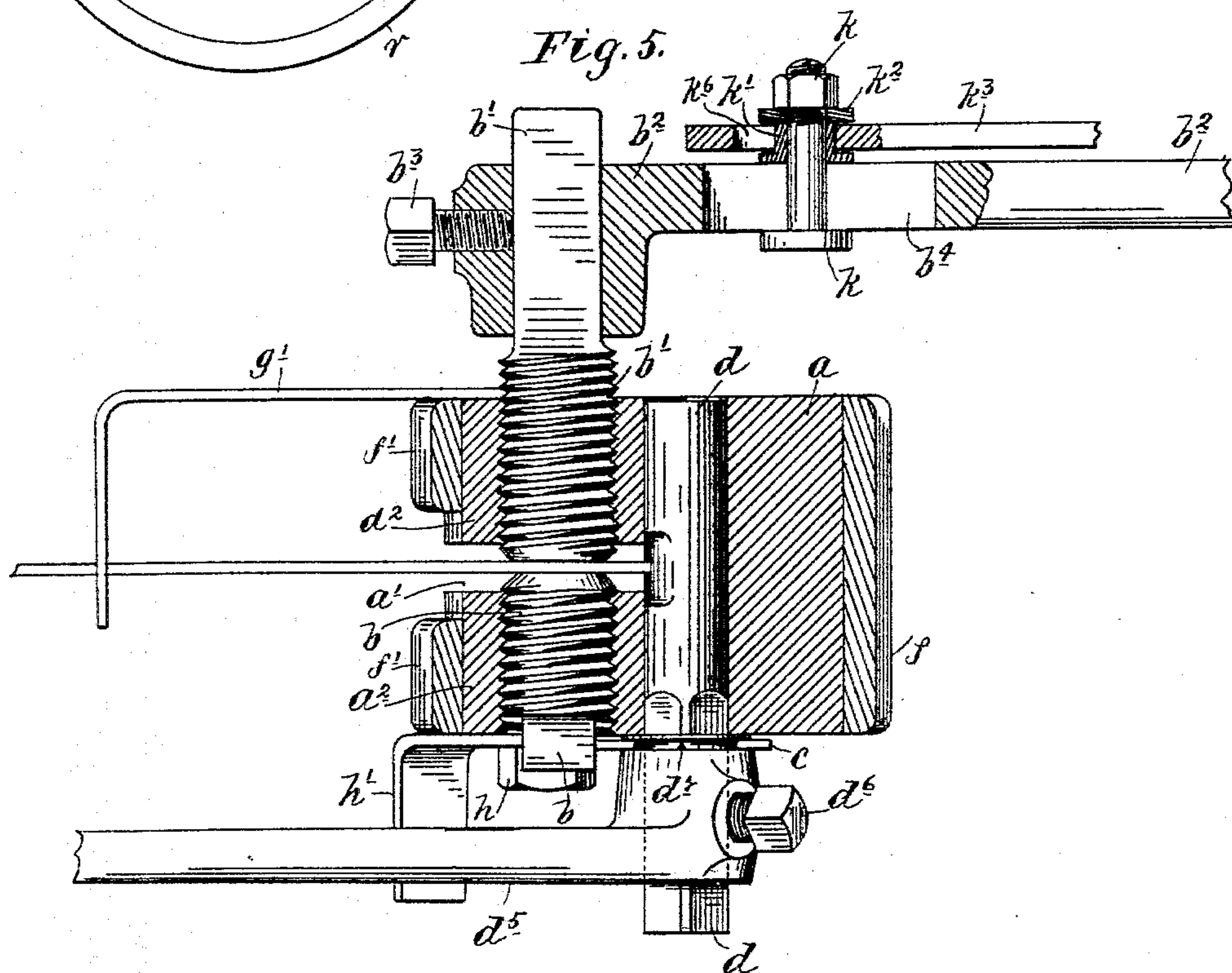


Fig. 5.



Witnesses.

A. H. Opsahl.

Frank D. Merchant.

Inventor.

Samuel H. Lockwood

By his Attorney

Geo. F. Williamson

UNITED STATES PATENT OFFICE.

SAMUEL U. LOCKWOOD, OF MINNEAPOLIS, MINNESOTA, ASSIGNOR OF ONE-HALF TO FREEMAN S. FARR, OF SAME PLACE.

SAW-SWAGE.

SPECIFICATION forming part of Letters Patent No. 533,477, dated February 5, 1895.

Application filed March 5, 1894. Serial No. 502,307. (No model.)

To all whom it may concern:

Be it known that I, SAMUEL U. LOCKWOOD, a citizen of the United States, residing at Minneapolis, in the county of Hennepin and State of Minnesota, have invented certain new and useful Improvements in Saw-Swages; 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.

My invention relates to saw-swages; and has for its object to provide certain additional improvements to the form of saw-swage shown and described in my former United States Patent No. 493,435, issued to me of date March 14, 1893.

To these ends, my invention consists of the novel features hereinafter fully described and defined in the claims.

A saw-swage embodying my improvements, is shown in the accompanying drawings. Therein like letters refer to like parts throughout the several views.

Figure 1 is a front elevation, showing my swage, as applied to a band or gang-saw blade. Fig. 2 is an underneath plan view, with some parts in section, showing the swage-head holder detached. Fig. 3 is a view in vertical section, showing my swage, as applied on a saw, with some parts broken away. Fig. 4 is an elevation, showing the reverse side from that shown in Figs. 1 and 2, of the swage, detached, some parts being broken away, and others shown in section. Fig. 5 is a section, on the line X X' of Fig. 1, looking from below; and Fig. 6 is a front elevation of the swage-head holder, as modified for use on a circular saw.

The swage-head or vise *a* is of cylindrical form, is slotted to form the vise-mouth *a'*, and is provided with suitable seats for the dies, vise-screws, &c. The slot or mouth *a'* divides the front part of the swage-head into the jaw-portions *a''*. One of these jaws is fitted with a vise-screw *b*, having screw-threaded engagement with its seat, which having been once set and adjusted remains stationary, in the use of the swage. The projecting head of the vise-screw *b*, is of angular form, and is held from turning by a locking plate *c*, secured to the swage-head. The other vise-

screw *b'* is provided with an operating handle *b''*, rigidly secured to the said screw by a jam-screw *b'''*, seated in the handle and engageable with the shank of the vise-screw *b'*. In the body of the swage-head are located the rotary die *d*, and the anvil die *d'*, for co-operation therewith. The anvil-die is loose in its radial seat and is held from upward movement by a screw-threaded square-headed plug *d''*, having screw-threaded engagement with its seat in the swage-head. The anvil die *d'* is provided with a longitudinal groove *d'''* engaged by a set-screw *d''''*, seated in the swage-head, and is thereby prevented from turning. In respect to their active surfaces, these dies *d* and *d'* are substantially identical with the dies shown in my prior patent, as are also the vise-screws *b* and *b'*.

Any further description of the special construction of the dies or the vise-screws, is not deemed necessary for the purposes of this case, except as hereinafter noted.

The improvement in respect to the dies consists in holding the rotary die *d*, in such a manner that it is free for longitudinal adjustment. To this end, the said rotary die *d* is made of angular form in that portion of the same which projects beyond the swage-head, and is engaged by a corresponding angular eye of the die-handle or operating lever *d''*. The handle *d''* is provided with a set-screw *d'''*, for securing the die *d* to the handle in any desired longitudinal adjustment, in respect to its seat, and the hub of the handle is provided with an annular groove *d''''* which is engaged by the lock-plate *c*, for holding the die in its proper working position, in respect to its seat. This locking plate *c* is provided with a slot *c'*, through which works a set-screw *c''* into a screw-threaded seat of the swage-head, for holding said plate in whatever position it may be set. This slot and screw connection of the said plate *c* to the swage-head *a* permits the said plate to be adjusted, as required for locking or releasing the die-handle *d''* and the vise-screw *d*. The said plate *c* should be made sufficiently strong and stiff not to yield outward. This longitudinal adjustment for the rotary die *d*, permits the said die to be accurately positioned, so as to bring its active surface to exactly the right point, for co-opera-

tion with the active surface of the anvil die d' , which is very important wherever a crowning or rounding active surface is employed on the rotary die. In case a straight line active surface on the rotary die is employed, this longitudinal adjustment permits the die to be adjusted from time to time, as may be required for bringing a new or unused portion of the same into operation. The die will therefore last much longer.

Turning now to other features, the swage-head a is mounted in a holder ff' , constructed in the form of a clamp, for permitting the swage-head to be adjusted in the holder, so as to bring the dies into any desired position, in respect to the other parts and to the saw-tooth. This clamping holder has a body portion f and band-portions f' separated or divided from each other at their front, as shown at f^3 , to expose the vise-mouth a' and permit the entrance of the saw. The band-portions f' embrace the vise-jaws a^2 , and are provided with projecting ends f^3 , securable to the body portion f , by clamping-screws f^4 . The body portion f of the holder, is outwardly extended, as shown at f^6 to form a support for the swage. When the swage is intended for use on a gang-saw or a band-saw, the supporting part f^6 of the holder is provided with downwardly extended lips or jaws f^7 , so as to make of said support a straddling rest, which fits over and embraces the saw, thereby limiting both the downward and lateral movement of the swage.

To the swage-head a , is adjustably attached, by a set-screw g , a front end-rest g' of angular or hook-like form, the hook-portion of which is adapted to engage between two teeth of the saw and co-operate with the rear end rest $f^6 f^7$, to limit the downward movement and level the saw-swage on the saw. This front end-rest g' is especially serviceable in preventing the swage from tilting upward, under the feeding action of the vise screw-lever or handle b^2 , or under the forward throw of the rotary die lever or handle d^5 . To the swage-head a , is adjustably secured by set-screw h , a stop-arm h' for limiting the forward or opening movement of the die-lever d^5 , for controlling the bite on the saw-tooth.

The vise-screw lever b^2 is provided with a slot b^4 , extending lengthwise of the handle or lever, in which is adjustably mounted a headed and nutted crank-pin k , which is fitted with a spacing thimble or sleeve k' , and a washer k^2 . In virtue of this construction, the said crank-pin can be set in any desired position in the said slot b^4 . A feed-lever k^3 is pivoted to a fixed support k^4 , as shown at k^5 , at one end; and, at its other end, the said feed-lever is provided with a short slot k^6 , extending lengthwise of said feed-bar or lever k^3 , and engaged by the thimble k' on the crank-pin k . This construction permits a feed-movement to be imparted to the saw, for moving the same forward with respect to the swage, which occupies a constant position with respect to the fixed support k^4 . The

swage is placed on the saw p , as shown in Fig. 1. The rotary die d will then engage under the hook-portion of a saw-tooth. When the vise-screw handle or clamping-lever b^2 is thrown forward, to release the saw, it will move for a limited distance, or to the end of the slot k^6 , without lifting the swage; and this limited movement of the said lever b^2 will be sufficient to release the saw from the vise-screws. On then continuing the movement of the lever b^2 toward the left, the swage will be lifted on the bar k^3 and the crank-pin k as a fulcrum, so as to throw the rotary die d into the next adjacent tooth. On then drawing the lever b^2 backward into its clamping position, the saw will be fed forward one tooth and at the same time be clamped between the vise screws. The swaging lever or rotary die-handle d^5 will then be operated, in the usual way, to swage the tooth. By thus holding the swage in a constant position, in respect to the support k^4 , the operator is able to work to the greatest advantage.

When the swage is to be applied for use on a circular saw, the holder shown in Fig. 6 is substituted for the form of holder shown in the other views. The difference is that the holder $r r' r^2 r^3$ has its divided parts r' extended outward and united into the pivot-lug r^3 , which adapts the same to be pivotally secured to a suitable support, so as to be capable of operation in substantially the same way as the form of swage shown in my former patent. The body portion r of this holder, which embraces the swage-head would be continuous at the back of the swage and divided at the front, for exposing the vise-mouth, in the same way as the form of holder shown in the other views. As already noted, these clamping holders permit the swage-head to be adjusted in the holder, so as to bring the dies $d d'$ into the desired position for the best action on the saw-tooth. In order to avoid breaking or cracking the tooth, under the swaging action, the said dies $d d'$ should act on the tooth from directly opposite or substantially opposite points. This relation can always be secured, in virtue of these clamping holders, regardless of the size or the curvature of the saw-tooth. This adjustment is especially valuable in the use of the swage on circular saws; inasmuch as it makes it possible to secure the said relation of direct opposition of the dies $d d'$, while keeping the swage-head sufficiently near the line of resistance through the eye of the saw and the point of pivotal attachment for the lug r^3 of the holder, to prevent the head from slipping off the tooth in the swaging action.

What I claim, and desire to secure by Letters Patent of the United States, is as follows:

1. In a saw-swage, the combination with the swage-head and the die handle or lever, held against lateral movement, of the rotary die seated in said head and handle, with freedom for longitudinal adjustment and securable to the handle in any set position, and a locking

device secured to the swage head and engageable with the hub of said handle to hold the said parts in their proper working positions, substantially as described.

5 2. In a saw swage, the combination with the swage-head, of the rotary die seated therein and having an angular projecting shank, the handle with angular eye fitting said shank provided with a set-screw, for securing the die
10 thereto in any desired adjustment, and having an annular groove on its hub, and the locking plate secured to the swage-head and engaging said groove, substantially as described.

15 3. In a saw swage, the combination with the swage-head, the rotary die d and the handle d^5 having the annular groove d^7 , of the locking plate c engaging said groove and adjustably secured to said head, substantially as described.
20

4. In a saw-swage, the combination with the swage-head or vise of the vise-screw handle, carried by the head, and a feed bar or rod secured to a fixed support and having a pivotal
25 and limited sliding connection with said handle,

dle, whereby the operation of said handle may be made to feed the saw, substantially as described.

5. In a saw swage, the combination with a swage-head having a rotary die engageable
30 with the saw teeth, of the vise screw and its handle carried by said head, and the feed bar pivoted to a fixed support and having a pivotal and limited sliding connection with said handle, substantially as described. 35

6. In a saw-swage, the combination with the swage-head a , of the rotary die d , vise screw handle b^2 , the feed bar k^3 pivoted to a fixed support at one end, and provided with a slot
40 k^6 , at its other, and the adjustable crank-pin k working in said slot and connecting said feed-bar to said handle, substantially as described.

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

SAMUEL U. LOCKWOOD.

Witnesses:

JAS. F. WILLIAMSON,
EMMA F. ELMORE.