

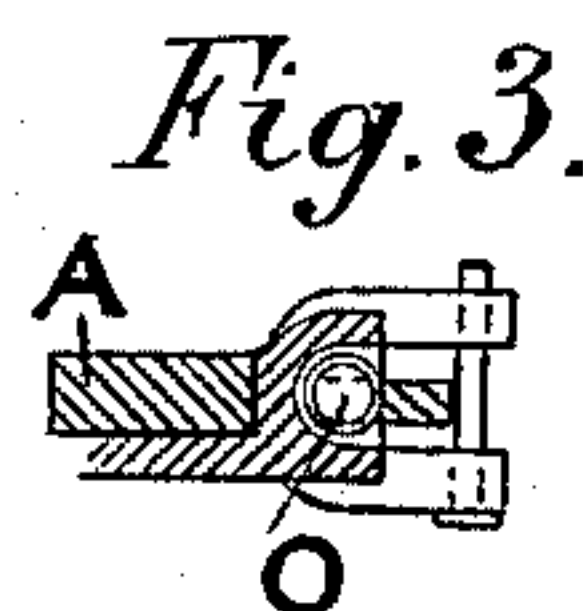
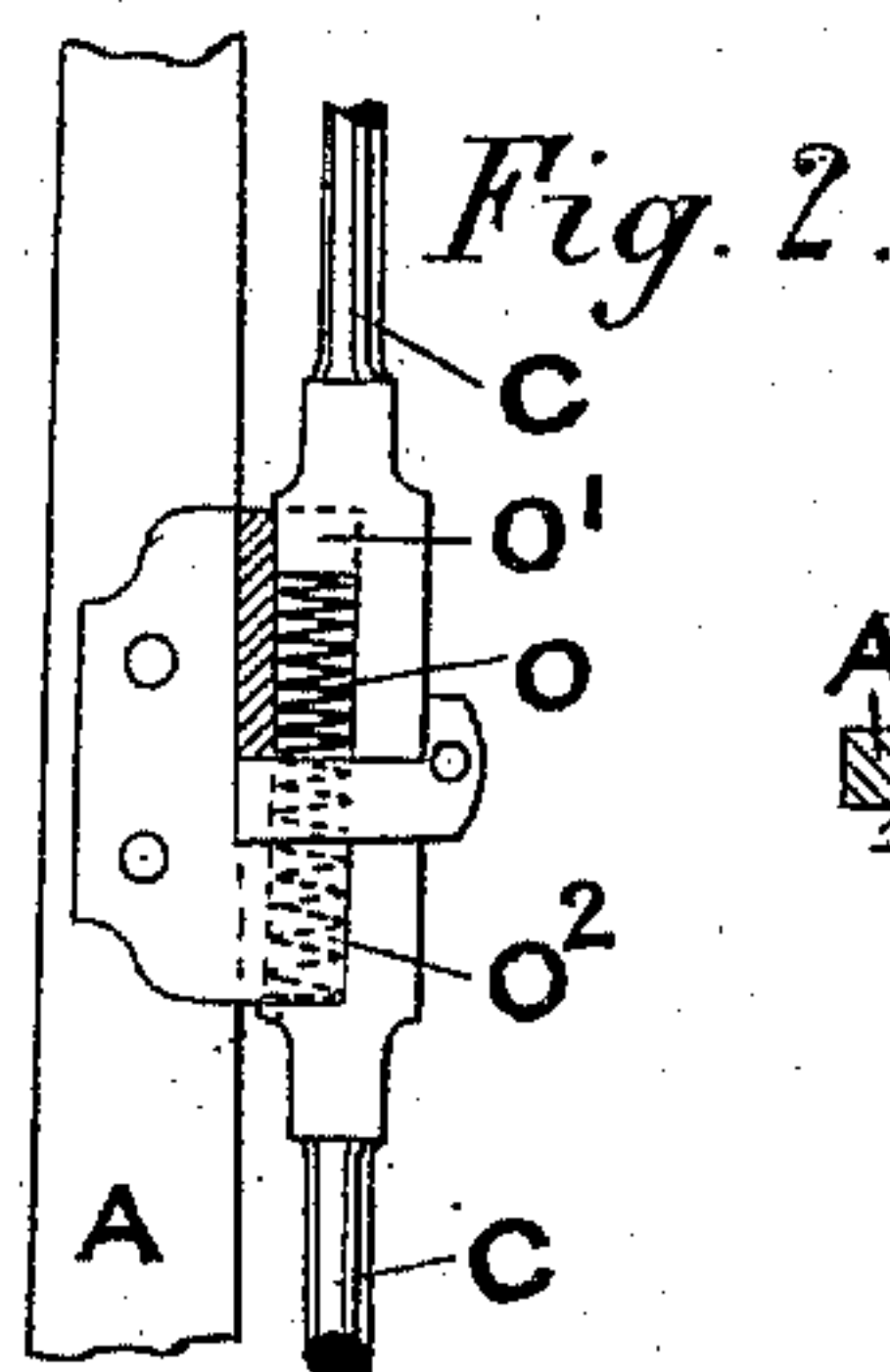
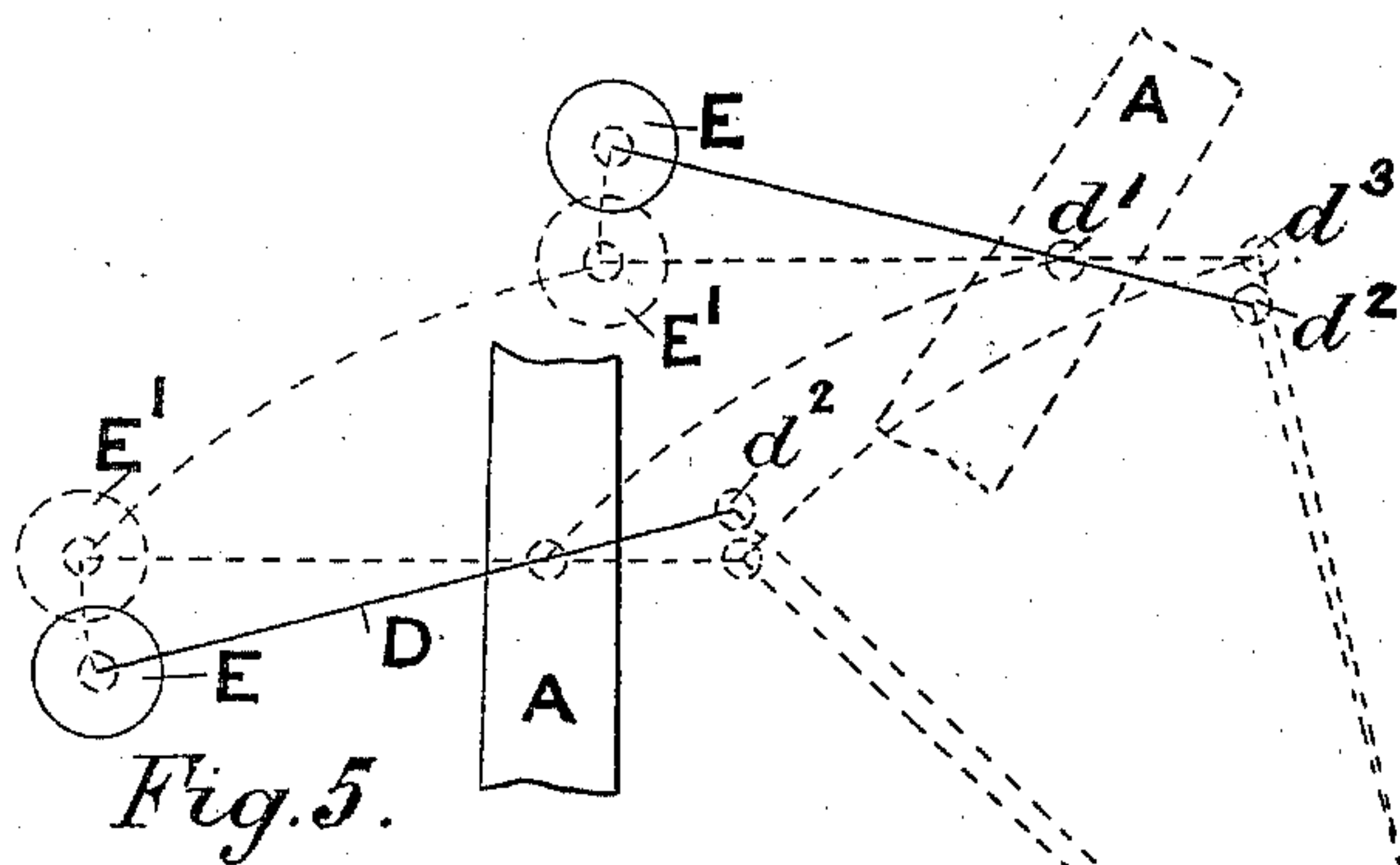
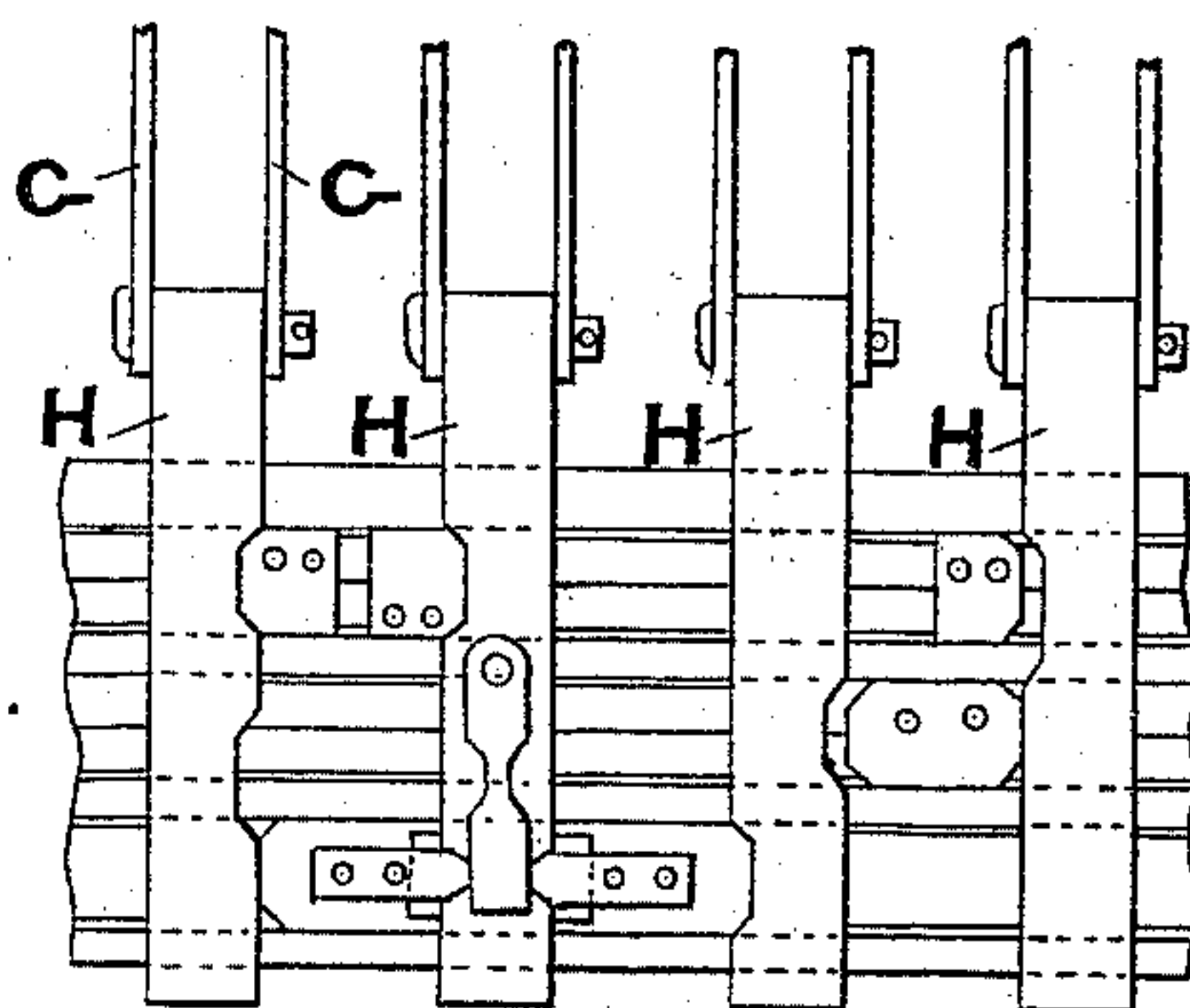
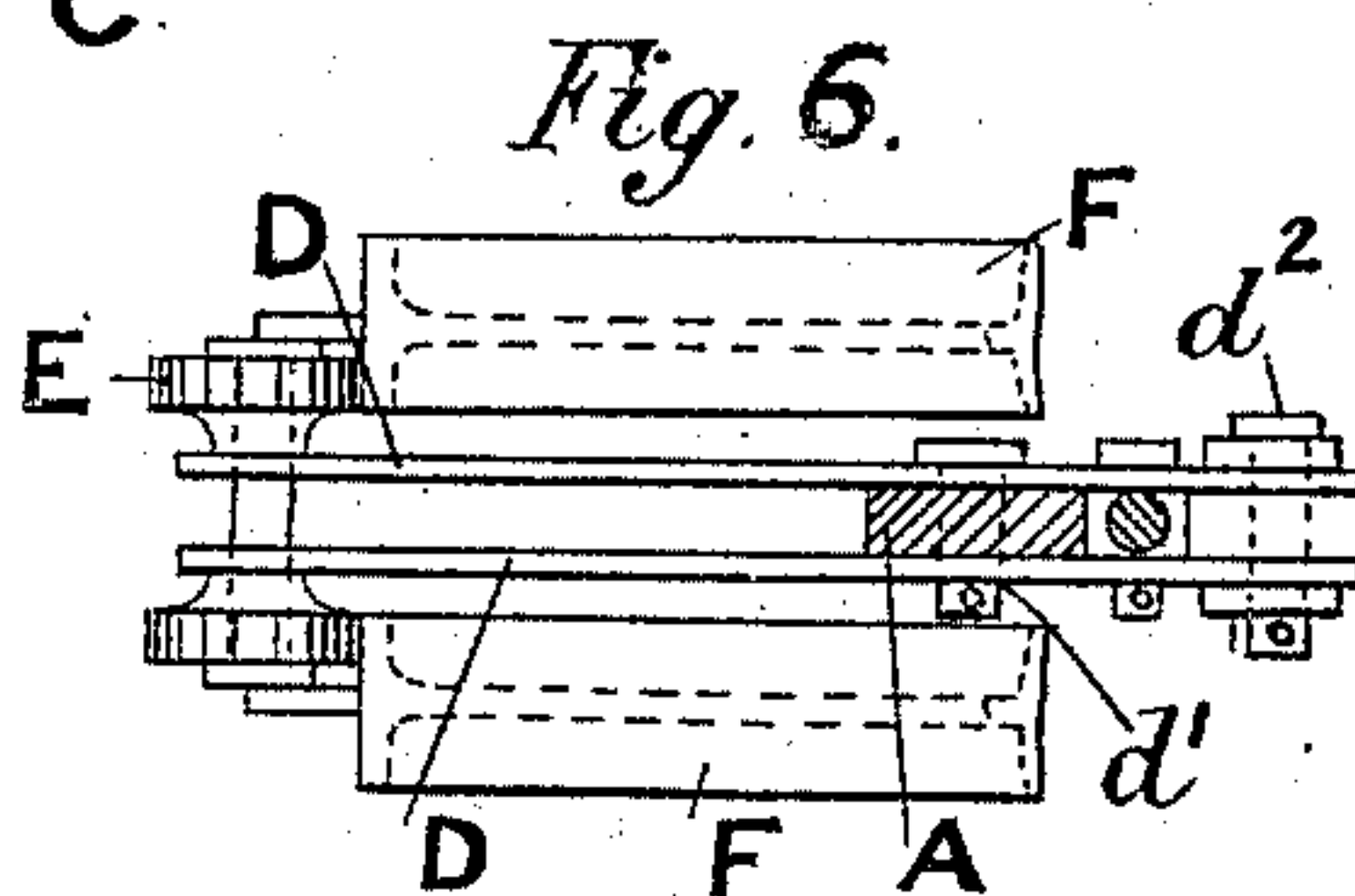
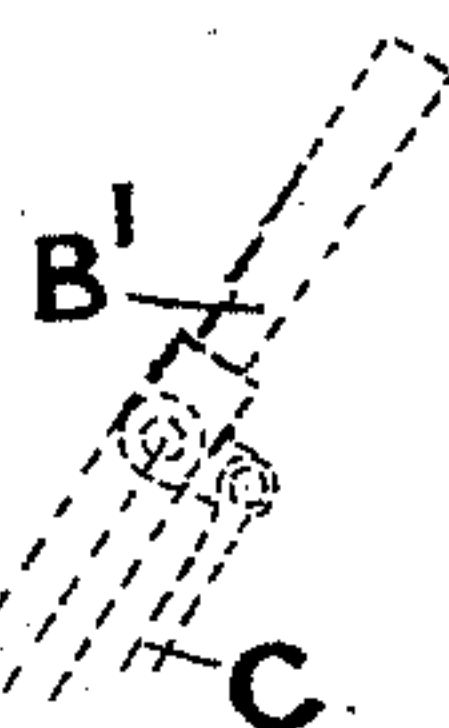
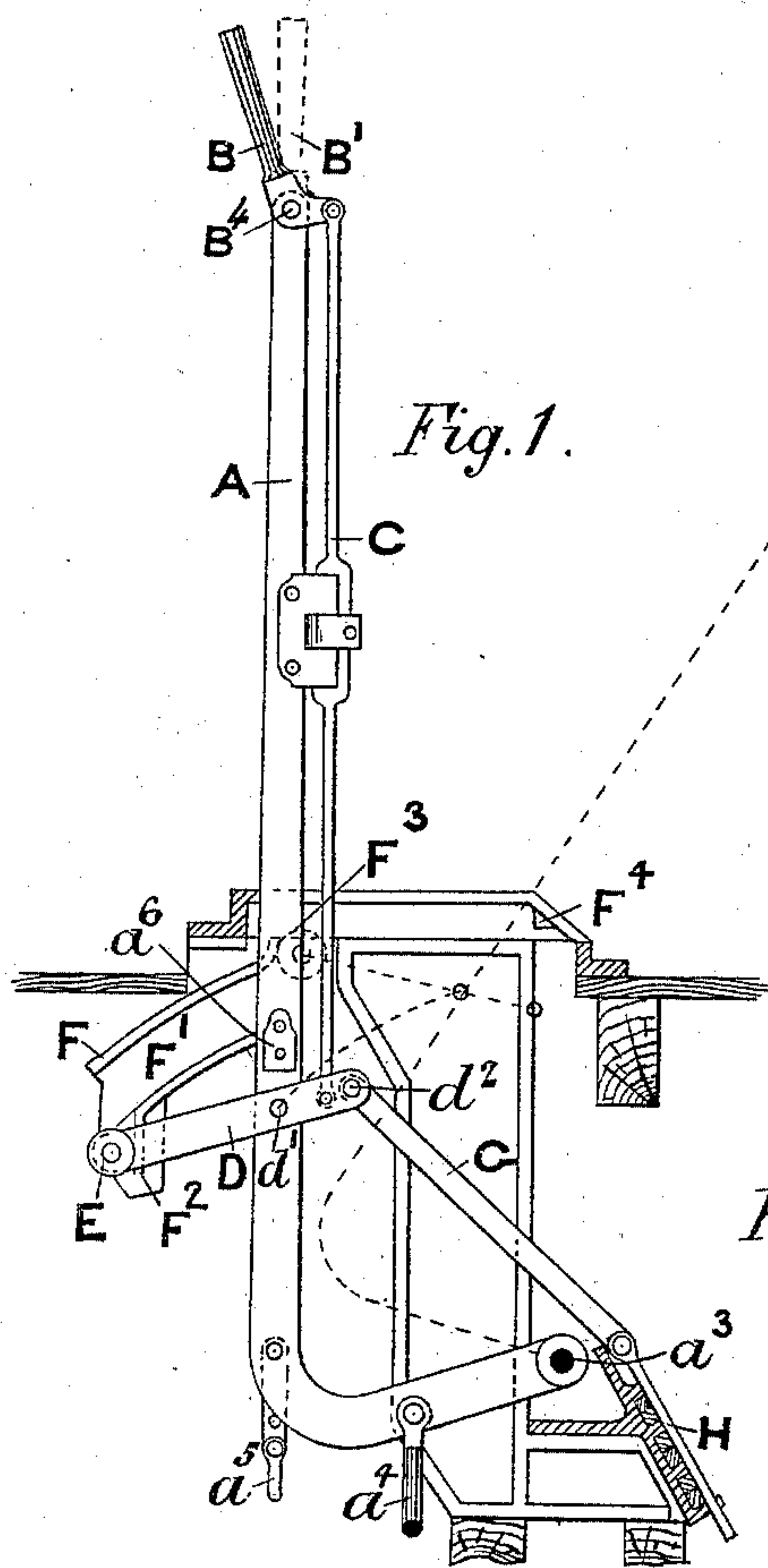
(No Model.)

S. T. DUTTON.

INTERLOCKING APPARATUS FOR RAILWAY SIGNALING.

No. 489,940.

Patented Jan. 17, 1893.



Witnesses.
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UNITED STATES PATENT OFFICE.

SAMUEL TELFORD DUTTON, OF WORCESTER, ENGLAND.

INTERLOCKING APPARATUS FOR RAILWAY SIGNALING.

SPECIFICATION forming part of Letters Patent No. 489,940, dated January 17, 1893.

Application filed September 28, 1891. Renewed October 6, 1892. Serial No. 448,083. (No model.) Patented in England July 23, 1889, No. 11,741; in New South Wales October 31, 1890, No. 2,576, and in Victoria November 3, 1890, No. 8,218.

To all whom it may concern:

Be it known that I, SAMUEL TELFORD DUTTON, a subject of the Queen of Great Britain and Ireland, residing at Marl Bank, in the city and county of Worcester, in England, have invented certain new and useful Improvements in Interlocking Apparatus for Railway Signaling; 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 has reference to improvements in actuating the interlocking mechanism of railway point and signal lever apparatus, and consists, in the novel construction and combination of the parts hereinafter fully described and claimed.

Letters Patent for this invention have been obtained in the following countries: England, No. 11,741, July 23, 1889; New South Wales, No. 2,576, October 31, 1890; and Victoria, No. 8,218, November 3, 1890.

In ordinary tappet interlocking now in use the tappet moves with the lever and performs a stroke according to the distance it is fixed from the fulcrum of the said lever. It will be readily seen that the tappet has so great a distance to travel through the lock-plate that if more than one notch is required on the same side of the tappet the said notches will require to be so far apart (to prevent one notch freeing another or conflicting lock) as to necessitate a very wide and expensive lock-plate or series of channels. I obviate this unnecessary width of lock-plate by arranging that the interlocking tappet does not move while the actuating lever is performing its travel.

My improved handle has two motions in the same direction for the forward movement of the lever and in like manner has two motions for the return movement of the lever in which former case my handle is moved from the back position to a middle position by which motion the tappet is moved approximately half of its stroke sufficient to effect all

the locking, and when the lever has completed its forward movement the handle is again moved from the middle position to a forward position by which action the tappet performs the second part of its action thereby completing the necessary releasing, the motion of the handle and releasing tappet is therefore continuous no back motion being made. The handle is jointed to the top of the lever and has a short arm coupled to a rod, which latter is carried down the front side of the lever. In cases where it is desirable to place the spring on the opposite side of the lever the handle has two arms and two rods.

For the purpose of explanation I will only describe my improved handle with one arm connected to one downright rod in front of the lever, this rod works in connection with a spiral spring arranged in the clip or box attached to the lever, the spring acting upon projections upon the said rod tends in the normal position of the lever to keep the handle in a back position. The said downright rod is coupled below the foot plate to one end of the cross bar pivoted to the lever, the other end of the cross bar carries a friction roller working in guides or in a groove plate fixed to the frame, this groove plate may be straight or curved but its length corresponds to the stroke of the lever and so long as the roller is in the groove the handle is kept in an approximately vertical position. The ends of the groove form shoulders or strips to hold the lever in its normal or worked position. Instead of the roller a stud or die may be used, and in addition a quadrant plate with notches for the down rod may be used if desired.

In order that my invention may be better understood and more readily carried into effect, I will describe the drawings hereunto annexed.

The same letters refer to the same parts in the several figures of the drawings.

Figure 1 is a side view of the lever showing my improved handle and the means by which

the tappet is actuated. In this figure, A is the lever for actuating the points, signals, or other apparatus, B is my improved handle centered at B^4 on the lever A, C is the downright rod connecting the small arm of the handle B to the cross bar D, D is the cross bar pivoted to the lever at d^1 having at one end the roller E; the connecting links G connecting the other end of the cross-bar D at d^2 to the tappet H, F is the fixed groove plate, the groove F' being arranged for the travel of the roller E. It will be observed that the projection F^2 is the downward projection of the groove plate F, F^3 is a slight upward projection on the groove plate F, the former acting as a stop for the roller in the normal position of the lever; the latter acting as a stop for the roller E in the worked position of the lever. In my apparatus it will be seen that I have abolished the usual drop weight or spring catch by which the lever is held in its worked or normal positions. The roller E acting on the rib F^2 of the groove-plate F forms the means by which the lever is held in the normal position and the roller E acting on the rib F^3 of the groove plate F is the means by which the lever is held in its worked position. a^3 is the fulcrum of the lever, $a^4 a^5$ are the rod and wire connections for the purposes of working the apparatus outside the cabin. The small block a^6 riveted to the lever comes against the stop F^4 so as to prevent damage to the downright rod C in pulling over the lever.

Fig. 2 is an enlarged view of the box containing the spring for forcing the handle back to its normal position on the lever being replaced. O is the spring held by the clip O^2 and pressing against the square lug O^1 on rod C.

Fig. 3 is a horizontal section of Fig. 2.

Fig. 4 is a view illustrating the lock-plate and the tappets H passing across the plate, with notches for actuating the locks. The tappets, locks, and lock-plate may be of the usual kind and are worked in the manner well known in the art. This figure shows the method of coupling the connecting links G to the tappets H. I do not however confine myself to the use of tappet locking as it is obvious other types of interlocking may be actuated by my lever handle.

Fig. 5 is an enlarged diagrammatic view of part of the lever A, cross bar D and roller E. The end d^2 is connected to the downright rod C and upon this downright rod being worked by the handle B Fig. 1, the cross bar and roller assume the dotted position shown at the left, when the lever is now worked the whole will assume the position shown at the right, the cross bar and roller meanwhile remain in the dotted position, when the lever handle is

pulled farther over the cross bar and roller assume the full line position; in the figure the circle G' represents the position of the tappet pin in the normal position, G^2 represents the said pin when the lever handle has been moved and G^3 represents the said pin when the lever has been worked and the lever handle pulled farther forward, the latter movement completing all the necessary releasing.

Fig. 6 is a horizontal view partly in section showing the cross bar D, rollers E and the manner in which they work in their grooves on the groove-plate F.

The action of my apparatus is as follows:— Upon the signalman working his handle into the dotted position Fig. 1, the downright rod C is pressed downward, this action moving the connecting links G and tappet H thus effecting all the necessary locking, meanwhile the roller E is moved into the groove F' of the groove plate F, upon the signalman now working his lever the roller E works in the groove F' of the groove plate F, no motion however being communicated to the tappet, and the handle B is thus (while the roller E is in the groove F') practically locked. Upon the completion of the movement of the lever, the signalman moves his handle B farther forward from the dotted position B' , this action further depressing the downright rod C the connecting links G and the tappet H this movement completing the necessary releasing. The roller E on the cross bar D is also moved into the dotted position against the rib F^3 of the groove plate F thus forming the means by which the lever is held in the worked position. The reverse action of the lever consists in the signalman pushing the handle back to the central position B' thus moving upward the downright rod C, links G and tappet H, the roller E is then moved into the groove F' , the lever is now moved over, no motion being communicated during this action to the tappet H, but when the lever is quite over and the lever handle is pressed farther backward, the downright rod C, connecting links G and tappet H are moved farther upward into their normal position, the rollers E meanwhile assuming the normal position against the rib F^2 of the groove plate F.

I do not bind myself to the precise arrangements of locks and connecting slides as shown, as it is obvious other descriptions of locking gear may be actuated by the connecting links G.

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

1. The combination, with the stationary grooved guide plate, of the pivoted operating lever, a bar pivoted to the lever and provided with a roller adapted to engage with the

groove in the said guide plate, and a rod piv-
oted to the said bar and adapted to move the
roller into the said groove to permit the lever
to be worked, substantially as and for the
5 purpose set forth.

2. The combination, with the stationary
grooved guide plate, of the pivoted operating
lever, a bar pivoted to the lever and provided
with a roller adapted to engage with the
10 groove in the said guide plate, a locking de-
vice connected to the said bar, a handle piv-
oted to the top of the said lever, and a rod
connecting the said handle and bar whereby

the roller may be moved into the said groove,
substantially as and for the purpose set forth. 15

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

SAMUEL TELFORD DUTTON.

Witnesses:

GEORGE W. BULL,
Railway Signal Works, Worcester, Account-
ant.

A. E. CROFT,
Railway Signal Works, Worcester, Clerk to
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