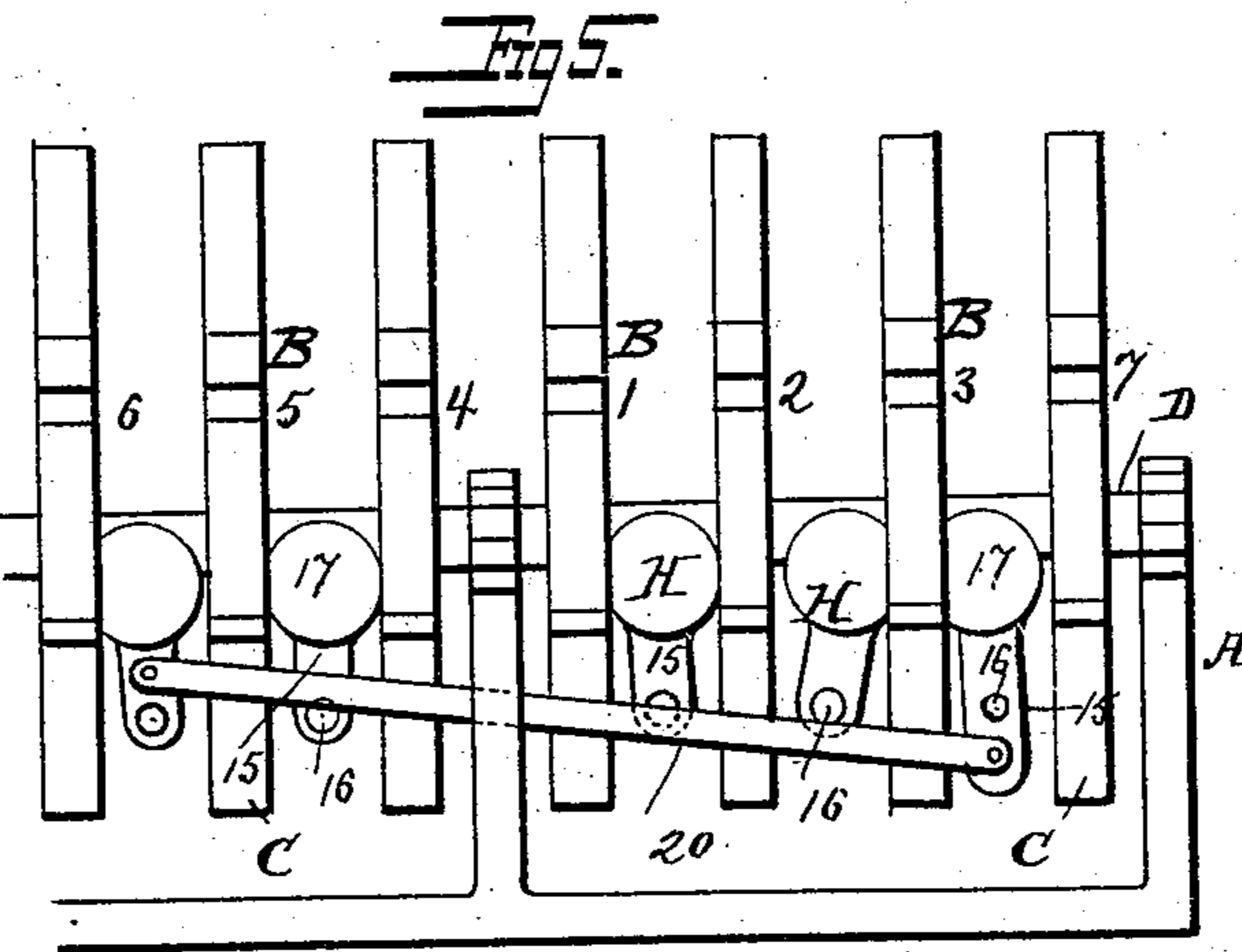
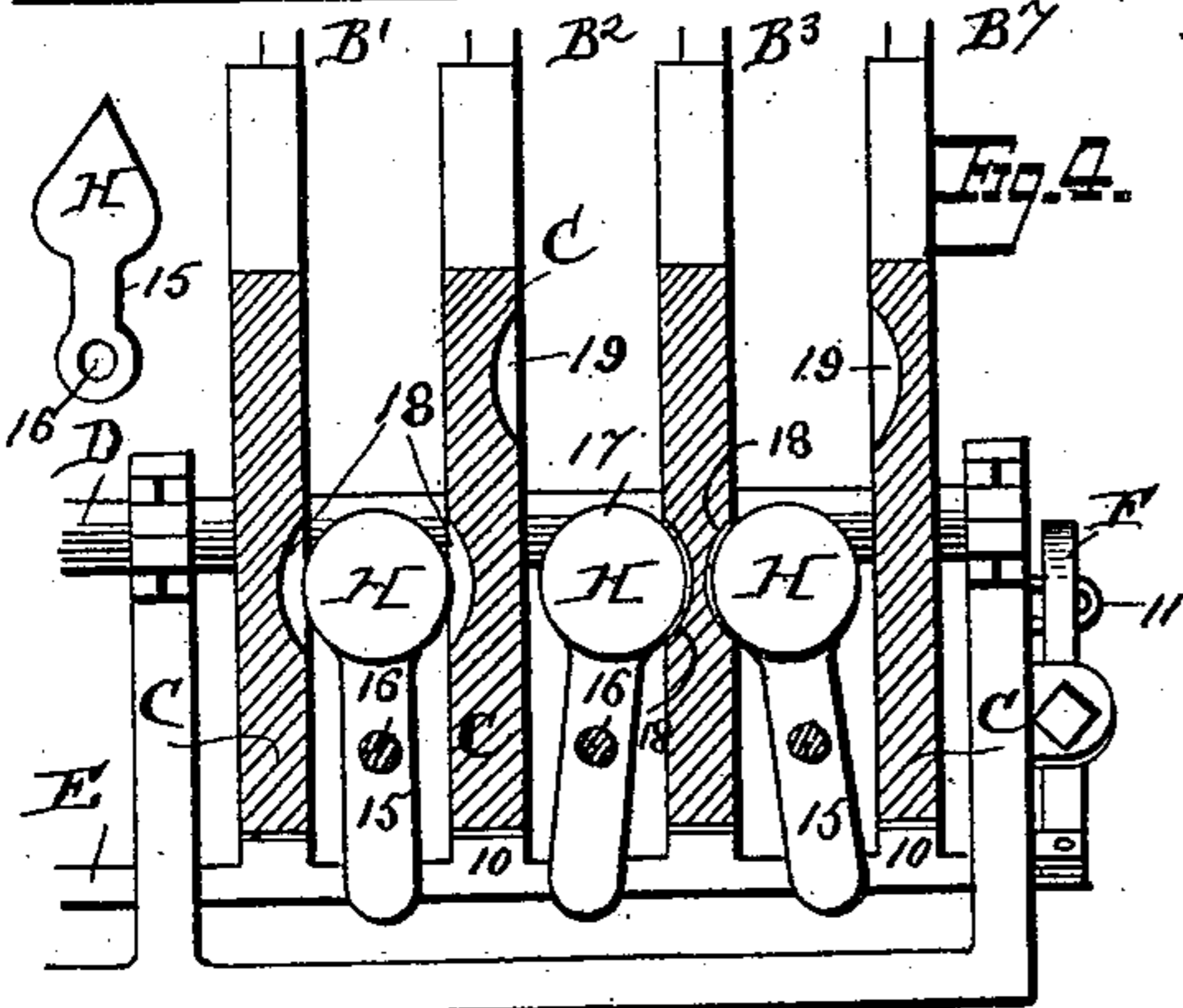
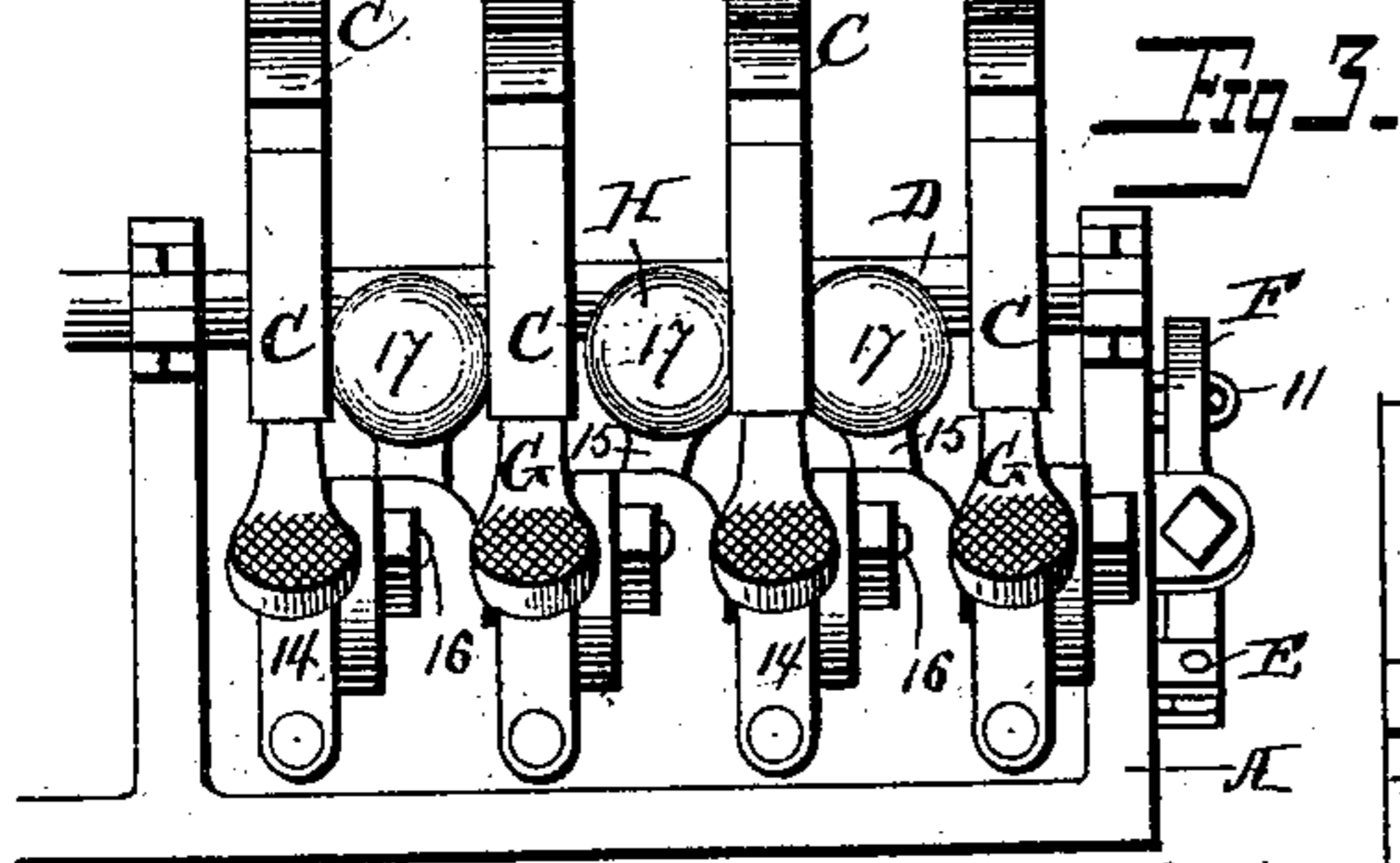
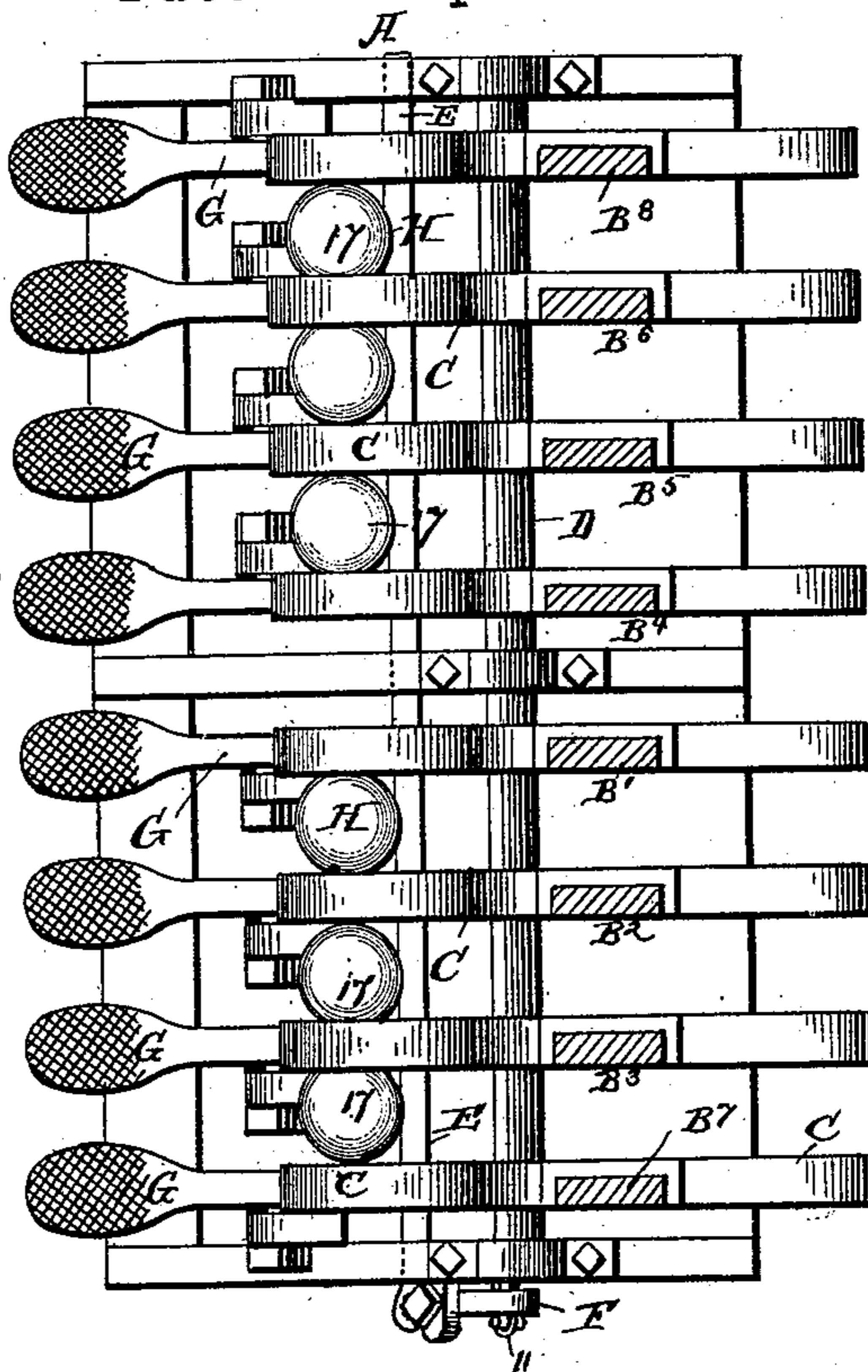
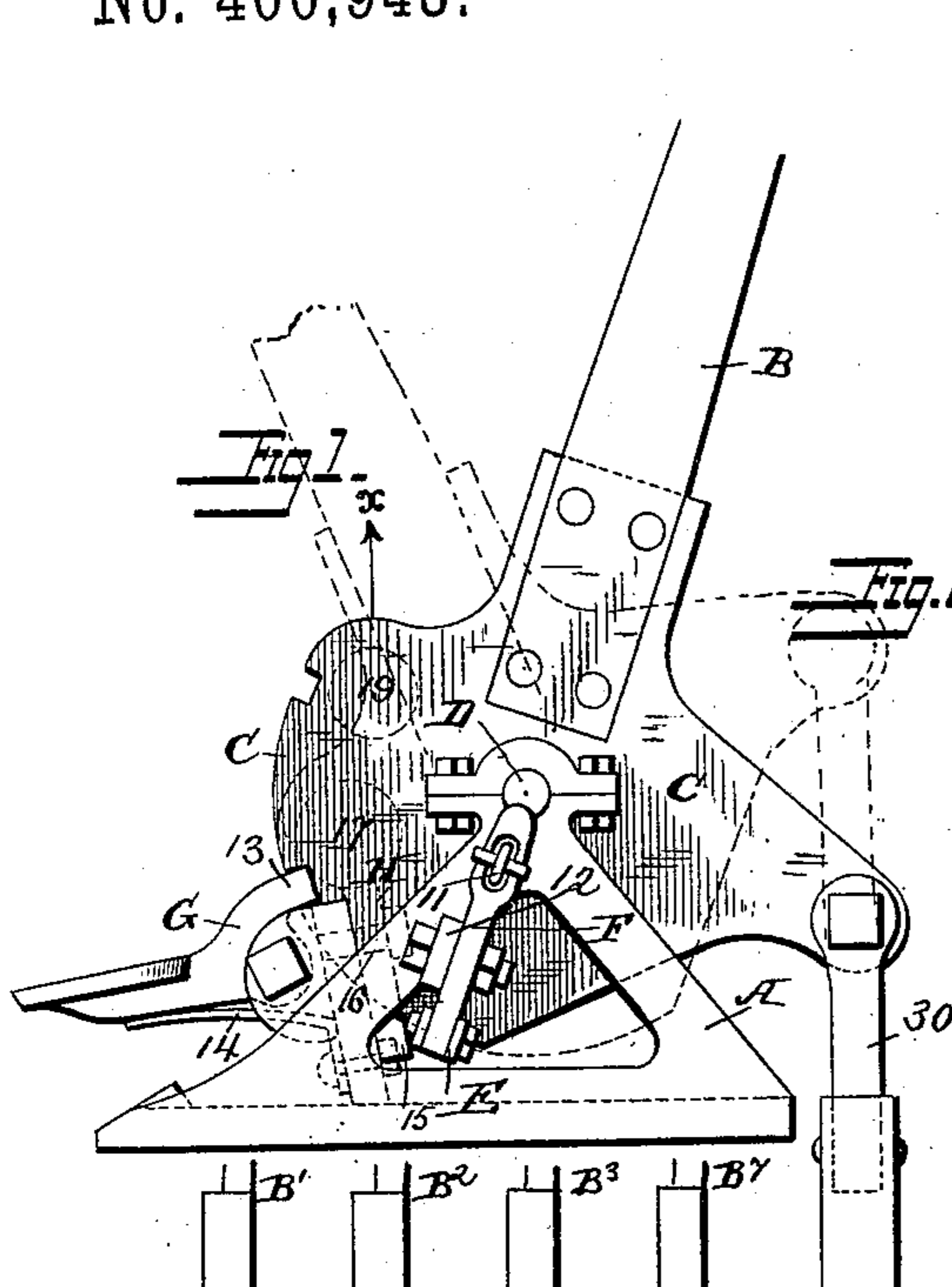


(No Model.)

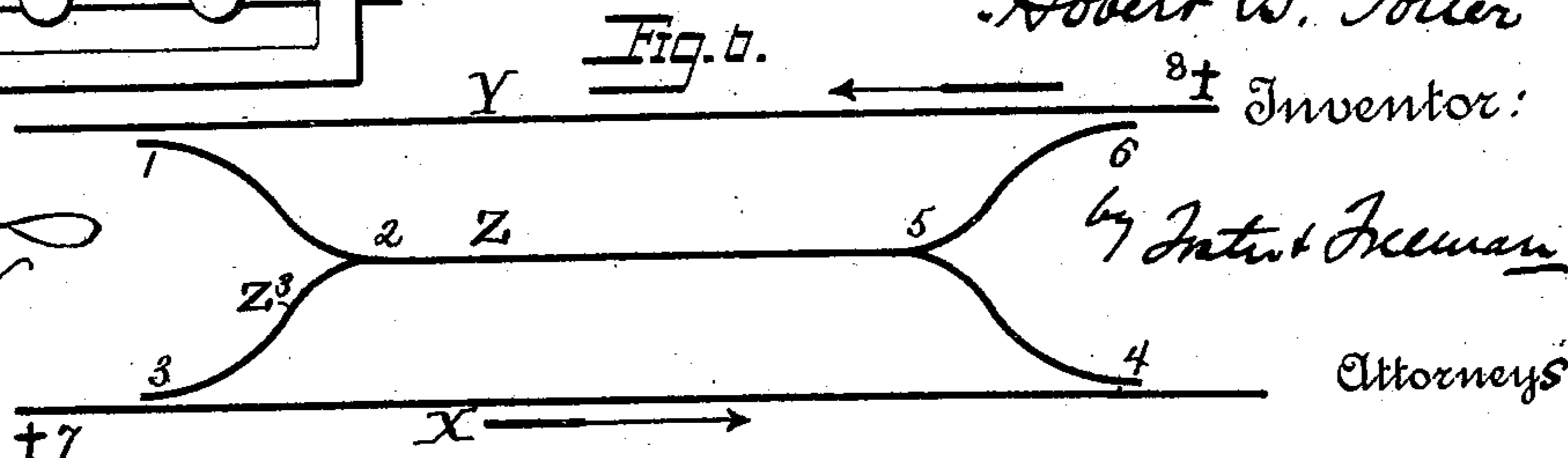
H. B. POTTER.
INTERLOCKING DEVICE FOR RAILROAD SWITCHES.

No. 400,943.

Patented Apr. 9, 1889.



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UNITED STATES PATENT OFFICE.

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INTERLOCKING DEVICE FOR RAILROAD-SWITCHES.

SPECIFICATION forming part of Letters Patent No. 400,943, dated April 9, 1889.

Application filed September 30, 1887. Serial No. 251,111. (No model.)

To all whom it may concern:

Be it known that I, HOBERT B. POTTER, a citizen of the United States, and a resident of Hillburn, Rockland county, New York, have invented certain new and useful Improvements in Interlocking Devices for Railroad Switches and Signals, of which the following is a specification.

This invention relates, generally, to that class of railway-switch and signal-operating devices known as "interlocking" devices—that is to say, to that class of devices wherein the setting of one switch or signal is made the means of unlocking and permitting the setting of another switch.

The object of the present invention is to improve this class of switch and signal operating devices, whereby the construction is simplified, the interlocking is rendered more efficient, and the operating-levers moved with greater ease.

To this end the invention consists in the novel structure and in the combination of devices, now to be fully described in connection with the accompanying drawings, in which—

Figure 1 is an end elevation of a switch-stand and levers provided with the improvement. Fig. 2 is a plan view of the same, illustrating eight levers in the stand. Fig. 3 is a side view, looking from the left of Figs. 1 and 2, showing one-half of the stand and four levers. Fig. 4 is a similar view, partly in section, taken on the line *x x*, Fig. 1. Fig. 5 is a side elevation similar to Fig. 3, illustrating a mode of interlocking levers remote from the levers being operated. Fig. 6 is a diagram of two main tracks and a branch track, switches, and signals, illustrating the effect of the use of interlocking levers.

Referring to said drawings, it will be understood that A represents the frame of the switch-stand; B, the switch and signal levers, pivoted upon a transverse shaft, D, mounted in bearings provided in brackets extending from the frame A, and connected by pipe or angular connecting rods 30 to their respective switches and signals. Means are provided by which each of the levers may be locked simultaneously, and by which each lever is independently locked or held in either of its positions. The former is effected by providing a bar, E, that is adapted to engage with

notches or projections formed on an enlargement, C, of the levers. This bar is provided with tongues 10, for engagement with the notches in the levers, which tongues are separated by recesses, which, when the bar is moved longitudinally to withdraw the tongues out of the notches, the levers will be released and allowed to be rocked or oscillated. At one end the bar E is guided in a simple bracket, and at the opposite end is pivoted to the end of a lever, F, pivoted to the bracket 12, supporting the transverse shaft D, the other end of the lever being adapted to engage with a staple or eye, 11, projecting from said bracket 12, and be there secured by a padlock or other locking device, so as to secure the bar E against displacement, and thus prevent any one changing the position of the levers B without first being able to release the bar E.

The independent locking means consists of a dog, G, pivoted to lugs projecting from the frame A of the stand, and provided with a toe, 13, for engagement with a notch, recess, or projection formed on each lever, which toe is kept in position in the notch or recess by a spring, 14. The opposite end of the lever is widened, so as to permit the foot of the operator to press upon it and release a lever B before it can be moved.

In order to prevent the premature movement of the lever which sets the switch—such, for instance, as the lever B³ operating switch 3 (see diagram, Fig. 6) before the signal denoting the setting of the switch has been adjusted by, for instance, lever B⁷, operating signal 7, (see said diagram,) or before lever B² has been moved to operate switch 2, leading onto the branch—there is provided movable contact locking-pieces H, adapted to engage with one or more levers in such manner that it necessitates the movement of one or more other levers before the locking piece or pieces H will permit the movement of the first-mentioned lever or levers. These locking-pieces H each consist of a spherical head, 17, having a small arm or lever, 15, pivoted at 16 to suitable projections on the stand-frame A'. To receive this spherical-headed locking-piece, the sides of the levers A are provided with similar-shaped recesses 18, in which the said contacting sides of the spheres may lie. One

form, and the one simplest and best adapted for the purpose of locking and unlocking the locking piece or pieces H with and from the levers B, is in arranging the levers operating in connection with one another adjacent to each other on the transverse shaft. This arrangement permits the employment of the lever adjacent to that which it is desired should be only moved last and separated at such a distance therefrom that its enlargement C, lacking a recess into which the locking-piece may project, will prevent the locking-piece from moving and keep it in locking contact with the lever. In the arrangement shown, the enlargement C of the lever B³ (see Fig. 4) is provided with a recess, 18, upon opposite faces, with each of which a locking-piece H, mounted on each side of the said lever, engages. The levers B⁷ and B², mounted upon the shaft D, on opposite sides of the lever B³, and in the position they occupy in Fig. 1—their normal position—the surface of each of their enlargements being in proximity with the locking-piece lying between the levers, will counteract any tendency of the locking-pieces to move out of the recesses in the lever B³ and free it. In order therefore to allow said lever to be freed or unlocked when the proper signal or switch has been set, the levers B² and B⁷ are provided with recesses 19, which come into position to permit the movement of the locking-pieces out of the recesses 18 on the lever B³ when both of said levers B² and B⁷ are rocked from their normal position to the position shown in dotted lines, Fig. 1. Thus if, as before explained, the levers B² B³ are connected to operate the switches 2 3, respectively, and the lever B⁷ the signal 7, and it is desired to switch a train traveling on the main line X in the direction of the arrow onto the branch track Z, the signal on the main line X must be set by operating lever B⁷ first to indicate to the engineer or other railroad employé that the switch adjacent thereto is set for the branch track Z. The lever B² must also be moved to set the switch 2 in position to direct the train upon said branch track from the intermediate connecting-track, Z³, which movements of the levers and the consequent setting of the proper signal and switch will permit the locking-pieces to move out of the recesses in the lever B³, and thus release the same, so that it may be moved to properly operate the switch 3 to guide the train from said main line onto said intermediate connecting-track, Z³, and thence to the branch track. As shown, in this operation of the levers the lever B² will force the locking-piece H, lying in a recess 18 upon its left side (see Fig. 4) out of engagement therewith and into engagement with a similar recess in the lever B⁷, and be held therein until the reverse movement of said lever B² takes place, and thus the lever B⁷, controlling the movement of switch 1 on the main line Y, is locked in place and cannot be moved, so that any danger of its being pre-

maturely set, so as to direct another train upon the same branch track, is obviated.

The construction of the levers, their recesses, and the locking-pieces just described, furthermore, provides for the effectual locking of the levers B² B⁷ in their adjusted position so long as the lever B³ has been moved to operate the switch 3, as described. Upon the movement of said lever B³ to the position indicated by dotted lines, Fig. 1, the locking-pieces H coacting therewith, are forced out of engagement with said lever into engagement with the recesses 19 of the levers B² B⁷, and hold the latter levers locked until the lever B³ is moved back to its normal position to bring its recesses 18 in position to permit the locking-pieces to be received thereby, when the levers B² and B⁷ are also moved back again, locking the lever B³ and simultaneously unlocking lever B⁷. A similar arrangement of the locking-pieces H, in connection with levers B⁴, B⁵, B⁶, and B⁸, will control the switches 4 5 6 and signal 8, respectively, and need not be particularly described.

If it is desired to interlock the switches 4 and 6, for instance, when the switches 3 and 2 or 1, or either of them, is operated to switch a train onto the branch track, the movement, for instance, of the lever B³, setting switch 3, may be transmitted, through one of its locking-pieces H, to the locking-piece controlling the movement of the lever B⁶, operating switch 6. This may be accomplished by connecting said locking-pieces together by, for instance, a rod, 20, (see Fig. 5,) and thus when the lever B³ is rocked, thus vibrating its locking-piece connected to one end of the rod 20, it will have moved said rod to bear upon one of the locking-pieces locking lever B⁶, so as to prevent it moving to release said lever so long as the lever B³ holds the switch 3 in position to guide a train from the main track onto the branch track. Other levers may obviously be similarly locked, so as to prevent the premature movement of a switch before another is properly adjusted.

As before remarked, the form of the locking-piece may be changed from that shown without departing from the essential features of this invention. For instance, instead of employing a spherical-shaped head, 17, it may be of arrow-head shape, as shown in the detached view at the side of Fig. 4.

The form of lever described provides the necessary arm of the lever for connection with the connecting-rod 30 integral with the enlargement in which the recesses for the locking-pieces are formed, considerably simplifying its construction, as well as rendering its operation effective. The interlocking devices are also simplified and rendered more compact by the construction of the levers, providing the recesses upon the side of their fulcrum opposite to that of their operating or long arm. The locking-pieces, moreover, except in the instance stated, are independent of each other, so that the movement of a le-

ver only affects the locking-piece contacting therewith.

What I claim is—

1. In interlocking switch and signal devices, the combination, with two switch or signal operating levers, each having a recess located in different positions with respect to each other, of a pivoted locking-piece adapted to said recesses and to be locked and unlocked therefrom by the movement of one of the levers, substantially as described.

2. In interlocking switch and signal devices, the combination, with three adjacent levers, of a pivoted locking-piece mounted between each of the levers and engaging one of the levers and adapted to be locked thereto and unlocked by the movement of each of the other levers, substantially as described.

3. In interlocking switch and signal devices, the combination, with three adjacent levers, of a pivoted locking-piece mounted between each of the levers, one locking-piece engaging with one lever and the other locking-piece engaging with either of the other two levers, whereby the movement of one lever will lock the locking-piece to one lever and unlock the other locking-piece from the other lever, substantially as described.

4. In interlocking switch and signal devices, the combination, with two or more levers, each having one or more recesses therein, and their respective pivoted locking-pieces adapted to said recesses, of a rod, 20, connecting two locking-pieces together, whereby the movement of one locking-piece to free one lever will prevent the other locking-piece from moving to free the other lever, substantially as described.

5. The combination of the levers B^3 and B^7 , each provided, respectively, with a recess, as 18 19, and a locking-piece adapted to engage with one recess in one lever in one position of the levers and with the other recess in the other lever when the position of the levers is changed, substantially as described.

6. The combination of the levers B^3 and B^7 ,

each provided, respectively, with a spherical recess, as 18 19, and a locking-piece provided with a spherical-shaped head adapted to engage with the recesses in said levers, substantially as described.

7. The combination of the levers B^3 and B^7 , each provided, respectively, with a spherical recess, as 18 19, and a pivoted locking-piece provided with a spherical-shaped head adapted to be vibrated to engage with the recesses in said levers, substantially as described.

8. The combination, with two or more switch or signal operating levers having enlargements C, formed therewith, of a pivoted locking-piece contacting with the enlargement of one lever and adapted to be locked thereto and unlocked therefrom by the movement of another lever, substantially as described.

9. The combination, with switch or signal operating levers, as B' B^2 , having enlargements formed therewith upon the side of their fulcrum opposite the operating or long arm of the levers, each of said enlargements having recesses therein, of a pivoted locking-piece adapted to said recesses and to be locked therein and unlocked therefrom by the movement of one of the levers, substantially as described.

10. The combination, with a plurality of interlocking switch or signal levers each having a notch and their respective locking-pieces adapted to recesses in the levers, of a movable bar provided with tongues for engagement with the notches of levers, whereby all the levers may be either simultaneously locked or unlocked independent of the locking-pieces, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

HOBERT B. POTTER.

Witnesses:

PETER D. JOHNSON,

H. SEYMOUR JOHNSON.