

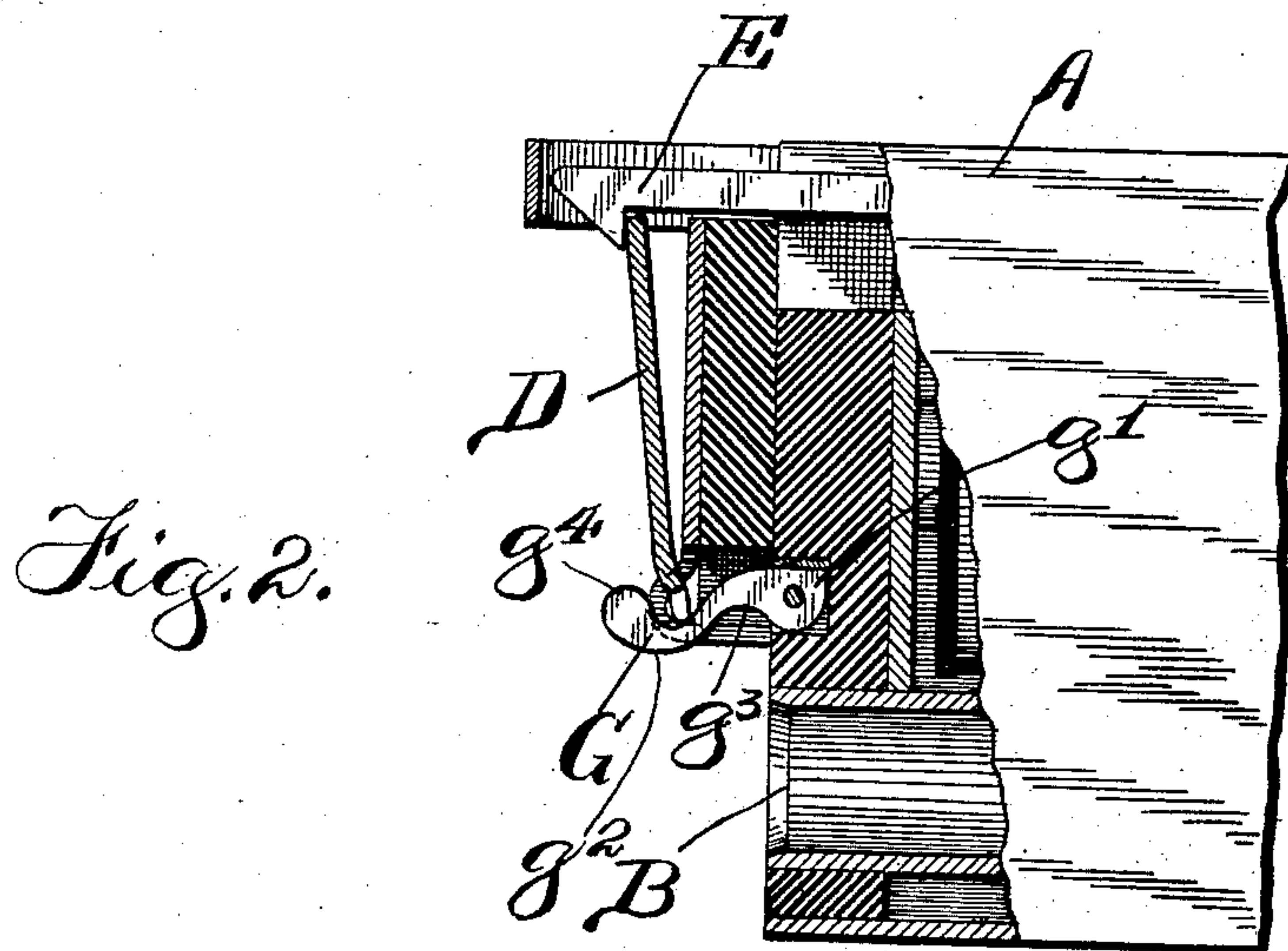
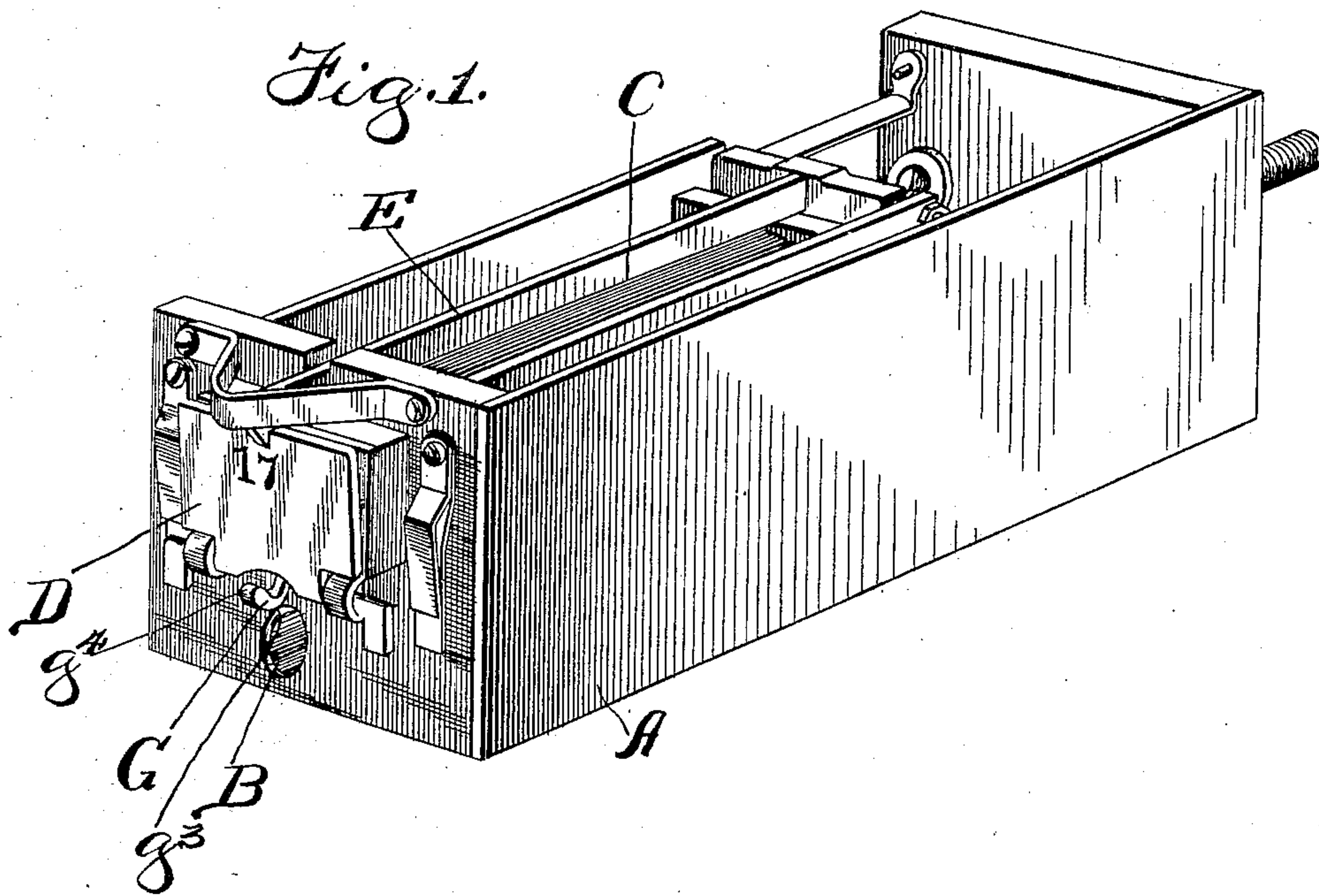
No. 863,629.

PATENTED AUG. 20, 1907.

J. M. OVERSHINER.  
COMBINED DROP AND JACK.

APPLICATION FILED MAY 31, 1904. RENEWED JULY 11, 1907.

3 SHEETS—SHEET 1.



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*Robert H. Weir*

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Fig. 3.

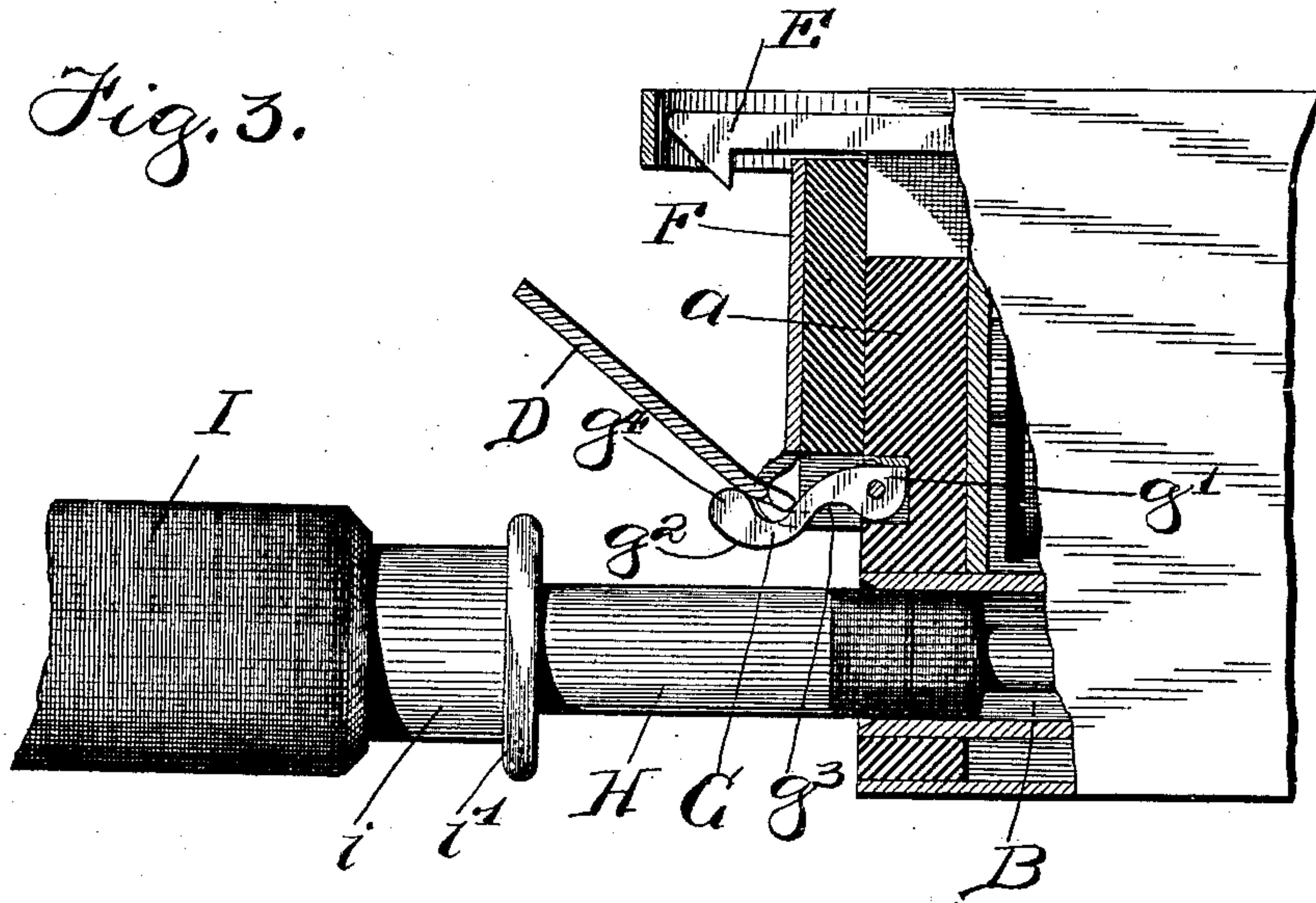
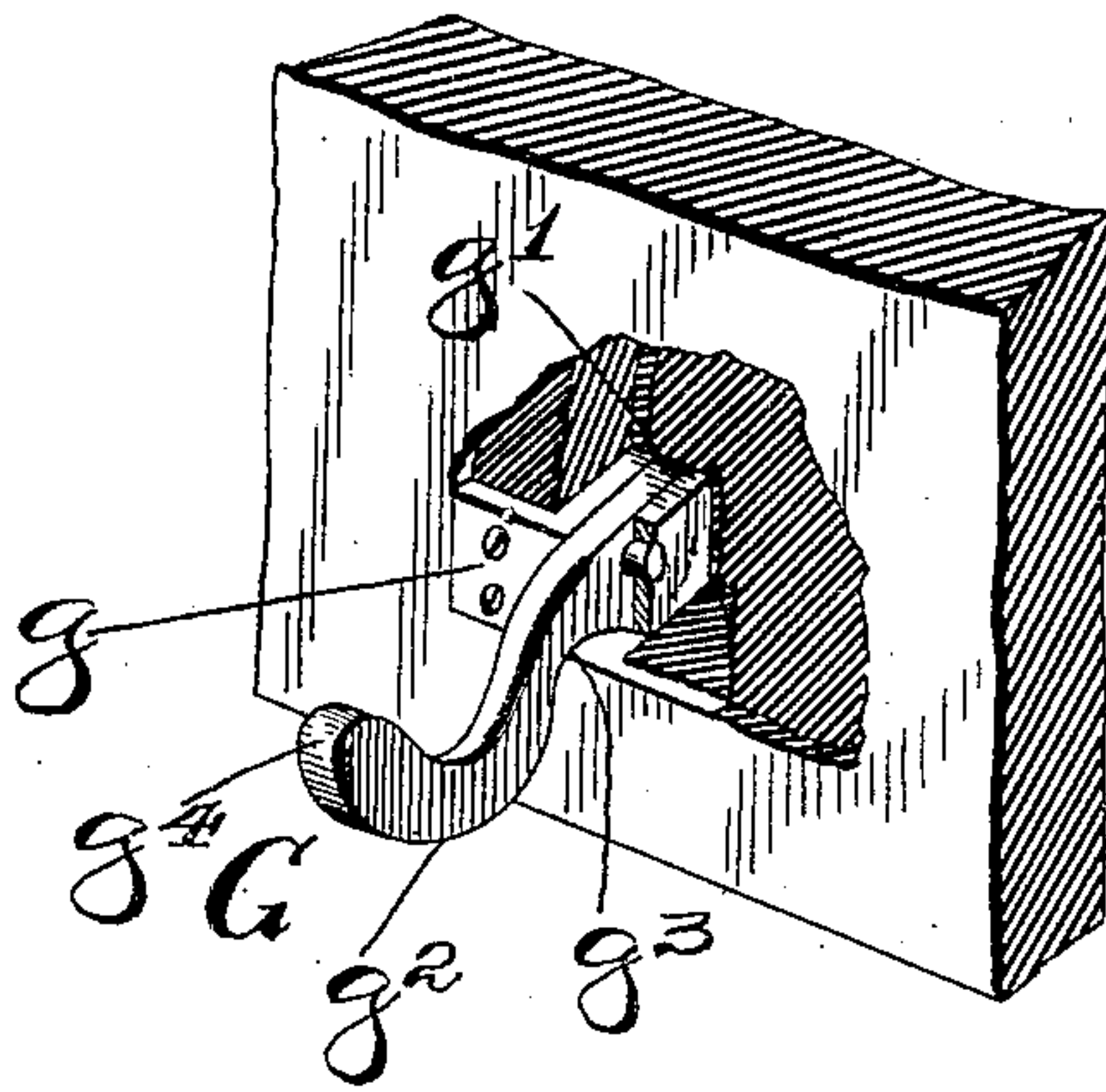


Fig. 4.



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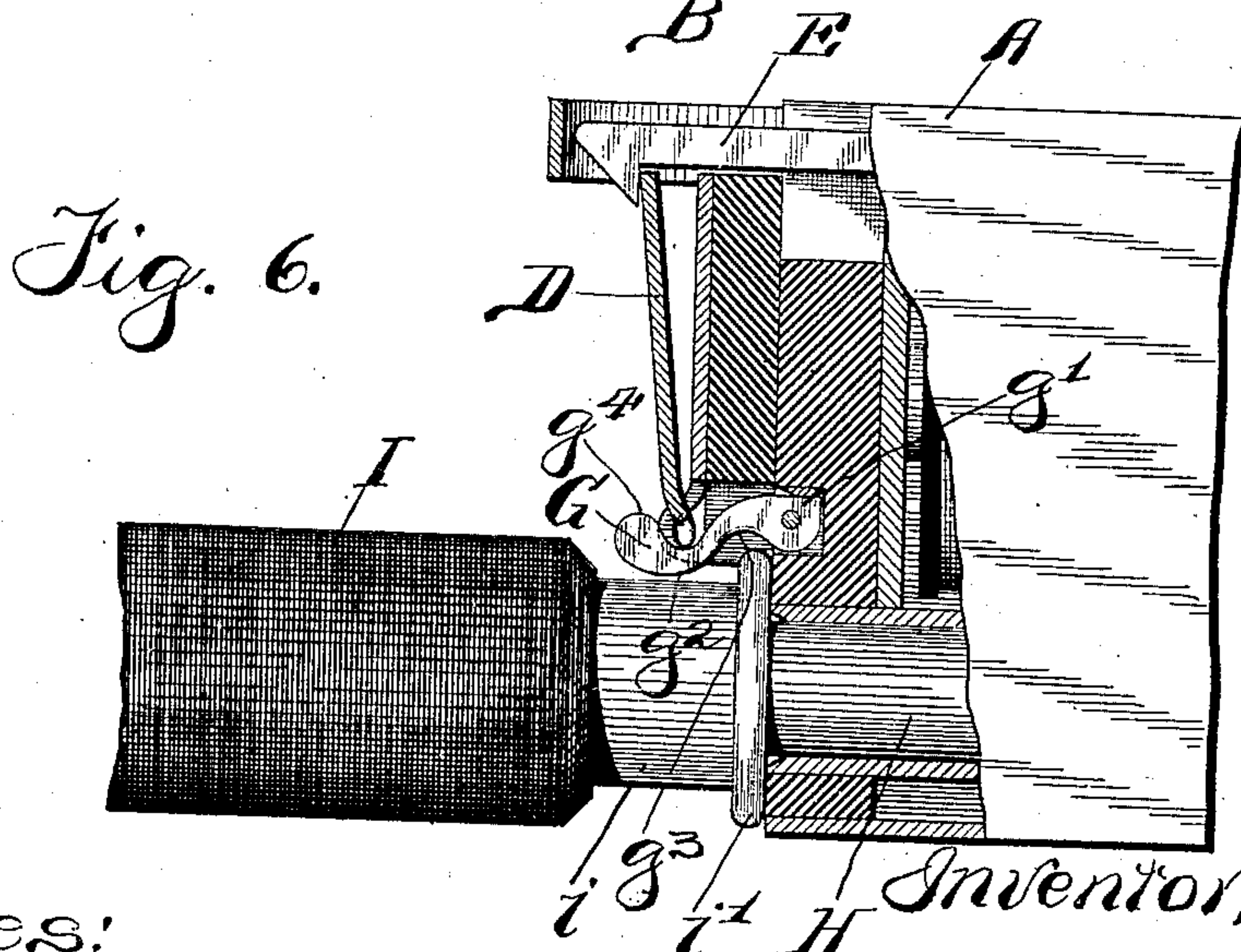
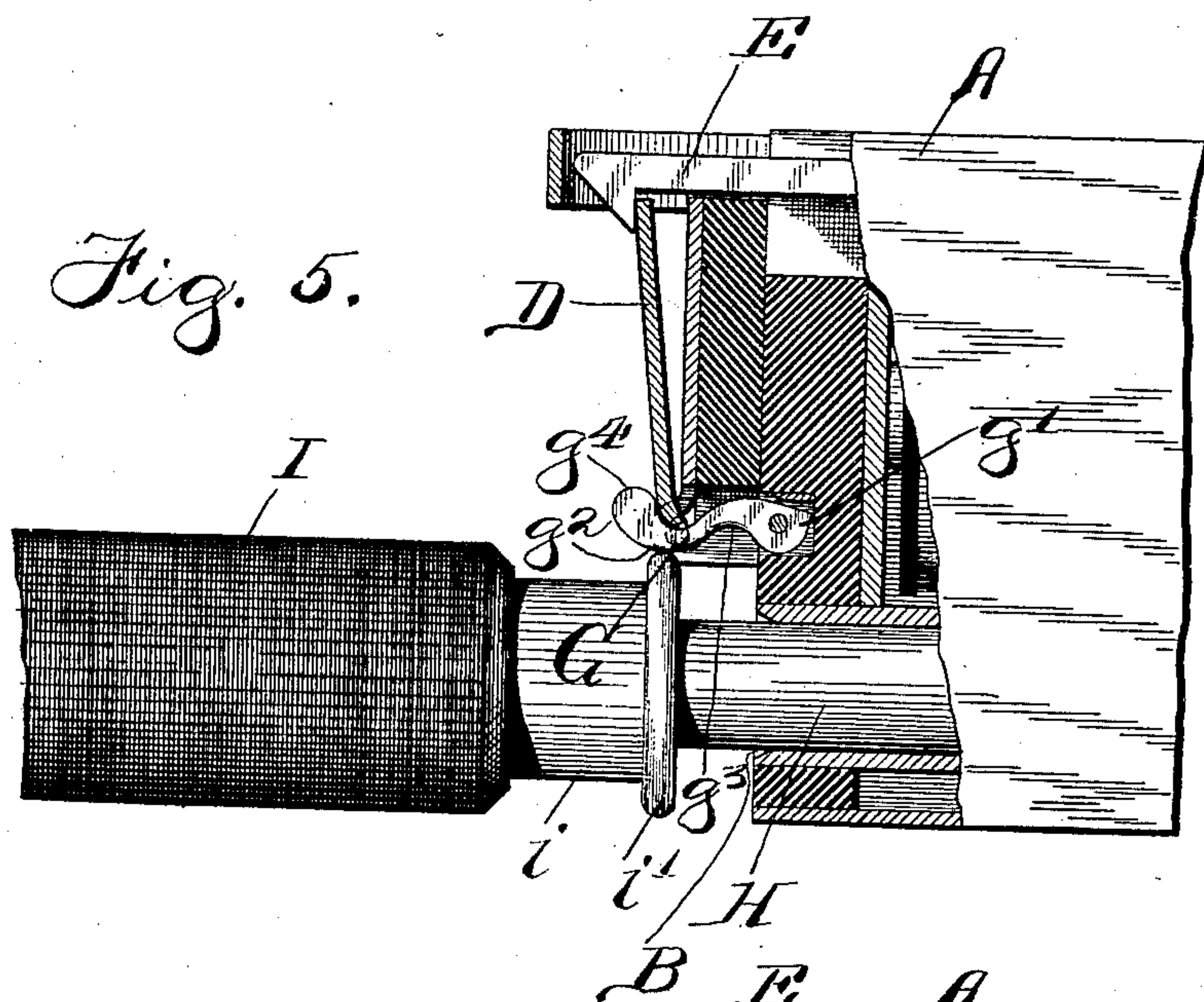
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# UNITED STATES PATENT OFFICE.

JAMES M. OVERSHINER, OF CHICAGO, ILLINOIS.

## COMBINED DROP AND JACK.

No. 863,629.

Specification of Letters Patent.

Patented Aug. 20, 1907.

Application filed May 31, 1904, Serial No. 210,421. Renewed July 11, 1907. Serial No. 383,321.

*To all whom it may concern:*

Be it known that I, JAMES M. OVERSHINER, a citizen of the United States of America, and a resident of Chicago, Cook county, Illinois, have invented a certain new and useful Improvement in a Combined Drop and Jack, of which the following is a specification.

My invention relates to what is commonly known as a combined-drop-and-jack—that is to say, a spring jack and an annunciator organized into a unitary and self-contained device for use in telephone switchboards—and more especially to that particular form of drop-and-jack in which the restoration of the shutter or visual signal to its normal position is accomplished automatically by the insertion of the operator's cord plug into the jack, or, in case the device or instrument is to be employed as a means by which the subscriber can signal for both a connection and a disconnection, by the withdrawal of the plug from the jack.

Generally stated, the object of my invention is the provision of an improved construction and arrangement whereby, in a device or instrument of the above general character, the automatic restoration of the shutter by the insertion of the plug in the jack, or by the withdrawal of the plug from the jack, or by both methods, as may be desired, can be accomplished in an efficient and improved manner, preferably by the provision of an improved cam device, employed as an intermediate element between the plug handle and the shutter, whereby the automatic restoration, in either way, or in both ways, is accomplished without the necessity of bringing either the plug proper or the plug handle into direct contact with the swinging shutter, nor even into direct contact with a portion or intermediate mechanical element which is rigid with such shutter. The nature of my invention will, however, hereinafter more fully appear.

In the accompanying drawings: Figure 1 is a perspective of the combined-drop-and-jack embodying the principles of my invention. Fig. 2 is an enlarged longitudinal sectional view of the forward end of the device or instrument shown in Fig. 1. Fig. 3 is a view similar to Fig. 2, but showing the shutter down instead of in its normal position, and showing also an operator's connecting plug partially inserted within the jack. Fig. 4 is a perspective of the pivoted cam for restoring the shutter, together with adjacent parts, shown partially in section. Fig. 5 is a view similar to Fig. 3, but showing the plug inserted to the point necessary for accomplishing the automatic restoration, as the plug goes in. Fig. 6 is a view similar to Fig. 5, but showing the plug fully inserted, and thus in position, when pulled out or withdrawn from the jack, to engage the pivoted cam, so as to again effect an automatic

restoration of the shutter, should the latter be released and allowed to fall to signaling position while the plug is in the jack.

As thus illustrated, my invention comprises a rectangular or box-like casing A of suitable form or construction, and adapted to contain the spring jack B and the electro-magnet C of the drop. These elements may, it will be readily understood, be of any suitable known or approved construction consistent with the arrangement of the shutter D at the front of the structure and the provision of a latch or trigger E for normally holding the shutter in its vertical or raised position. It will also be understood that the armature of the electro-magnet can be suitably connected with and adapted to operate the said catch or trigger. As shown, the said shutter D is hinged at its lower edge or bottom to the face or forward end of the structure, thereby adapting it to stand normally in a vertical position. When released, however, the said shutter then falls to a horizontal, or practically horizontal, position; or it may simply fall to a more or less oblique position, as shown in Fig. 3. But whatever the extent of its movement, when released the shutter is preferably adapted to expose the surface F which it normally conceals. Immediately below the bottom or lower edge of the said shutter D a small cam G is mounted and arranged, preferably as shown in the drawings. For example, the said cam may have its inner end pivotally mounted in a bracket-plate *g* set into the front plate *a* of the structure, as shown more clearly in Fig. 4. With this arrangement, it will be seen that the inner end of the cam may be provided with a shoulder or heel *g*<sup>1</sup> adapted to bear normally against the crown of the cavity in which it is mounted, thereby preventing it from ever falling or swinging downwardly below a certain position. Also, with respect to its function of restoring the shutter, both upon the insertion and the withdrawal of the plug to and from the spring jack B, the said cam has its lower edge formed with a convex portion *g*<sup>2</sup>, and also, at a point intermediate of its ends, with a concave portion *g*<sup>3</sup>. The slightly upturned and rounded outer end *g*<sup>4</sup> of the cam is adapted to engage the face of the shutter in the manner illustrated.

It will be readily understood that the cord-plug H may be of any suitable known or approved form or construction. With respect to its function of effecting automatic restoration of the shutter, the plug-handle I is preferably formed or provided with a collar portion *i* having its end formed with a shoulder or enlargement *i*<sup>1</sup>. But otherwise, as stated, both the plug H and the plug handle I may be of any suitable form or construction.

Normally, the shutter D is in the position shown in Figs. 1 and 2. Suppose, however, that the subscriber



whose line is connected with the jack B, and with the drop or annunciator associated therewith, on the switch-board at which the subscriber's line terminates, were to call in or signal for a connection. In such case, and in a manner well understood, the current transmitted over the line will cause the drop or annunciator to release its shutter D, thereby attracting the attention of the operator. Observing the visual signal thus effected, the operator then inserts the plug H into the jack thus associated with the annunciator. Fig. 3 shows the plug partially inserted in the jack for the purpose of establishing connection between the subscriber's telephone and the operator's telephone, in a manner well understood. Fig. 5, however, shows the plug inserted to an extent sufficient to bring the shoulder  $i$  into engagement with the rounded bottom portion  $g^2$  of the cam, and thereby force the latter upwardly and against the face of the shutter in such manner as to restore the latter to its normal or latched position. With the particular arrangement shown and described, the plug is then moved on until the shoulder  $i^1$  engages the outer end of the jack, as shown in Fig. 6; and in this position, the said shoulder is beneath the concave portion  $g^1$  of the cam, thereby allowing the latter to fall to its normal position, but leaving the shutter in its vertical or normal position. Now suppose, while the plug remains thus fully inserted in the jack for the purpose of connecting the two subscribers, that the subscriber, to whose line the annunciator shown and described is connected, wishes to signal for a disconnection, after having finished the conversation. In such case, the signaling current sent over the line again energizes the electro-magnet of the annunciator, causing the latch or trigger E to again release the shutter. The operator, observing the fall of the shutter while the plug is in the jack, at once understands that the subscriber desires a disconnection.

It is obvious that the possibility of using the plug handle, or a shoulder projecting laterally from the plug as a whole, as a means for restoring the shutter is due to the fact that the latter falls from a vertical to a horizontal or substantially horizontal position and to the further fact that the shutter is not in any sense in front of the jack. It is also obvious that the possibility of thus effectively and efficiently employing an intermediate element between the shutter and the plug as a whole, which intermediate element is, in this particular case, pivotally mounted and adapted to move or swing relatively to the shutter, is likewise due to the fact that the shutter is never at any time, nor in any sense of the word, in front of the jack. Furthermore, it is obvious that the capability of the device for use as a clearing-out signal, and the automatic restoration upon the withdrawal of the plug, accomplished, in this particular case, through the medium of the pivoted cam, are due to the fact that the shutter is not in front of the jack. And, in addition, the intermediate mechanical element or cam, which, in this case, is pivoted or mounted independently of the shutter, makes satisfactory automatic restoration possible without bringing either the plug or the plug handle into direct contact with the shutter. It will be seen that restoration is produced by a portion of the plug which is not inserted in the jack—that is to say, by an outside or non-entering portion of the plug—owing to the fact that the entire means for

effecting the restoration of the shutter or drop are located outside of the bore of the jack, and, as illustrated, at a point preferably in front of and just above the mouth of the jack.

What I claim as my invention is:

1. A combined-drop-and-jack provided with a shutter mounted to stand normally in a vertical position, means for releasing the shutter and allowing the same to fall forward from its normal position, a plug-handle having a shoulder, and a pivoted cam mounted immediately below the shutter and adapted to be engaged by said shoulder when the plug is inserted in the jack, whereby the outer end of the cam is lifted to automatically restore the shutter, the means thus provided for restoring the shutter being wholly outside of the bore of the jack, whereby the restoration is effected by an outside or non-entering portion of the plug, and through the medium of an intermediate part, namely the said cam, adapted to engage and move relatively to both the shutter and the plug, substantially as described.
2. A combined-drop-and-jack comprising a shutter hinged at its lower edge and adapted to extend normally in an upright position, means whereby the shutter may be released and retained in a more or less horizontal position, a cam having its inner end pivoted in the face plate of the combined-drop-and-jack structure, the outer end of the cam being adapted to be brought into engagement with the face of the shutter, and a plug-handle having a shoulder adapted to engage the outer end portion of the cam when the plug is inserted in the jack, whereby the cam is raised to automatically restore the shutter, the means thus provided for restoring the shutter being wholly outside of the bore of the jack, whereby the restoration is effected by an outside or non-entering portion of the plug, and through the medium of an intermediate part, namely the said cam, adapted to engage and move relatively to both the shutter and the plug, substantially as described.
3. A combined-drop-and-jack comprising a shutter hinged at its bottom, a cam pivoted in the face of the combined-drop-and-jack structure, the outer end of the cam being adapted to be brought into engagement with the face of the shutter, and a plug-handle provided with a shoulder adapted to engage the cam when the plug is withdrawn from the jack, whereby the cam is raised to automatically restore the shutter, the means thus provided for restoring the shutter being wholly outside of the bore of the jack, whereby the restoration is effected by an outside or non-entering portion of the plug, and through the medium of an intermediate part, namely the said cam, adapted to engage and move relatively to both the shutter and the plug, substantially as described.
4. A combined-drop-and-jack comprising a shutter hinged at its lower edge, a device pivoted in the face of the combined-drop-and-jack structure, the outer end of said device being adapted to be brought into engagement with the face of the shutter, and a plug-device having a lateral projection adapted to engage said pivoted device, both upon the insertion and withdrawal of the plug, whereby the outer end of the said pivoted device is raised to automatically restore the shutter, the means thus provided for restoring the shutter being wholly outside of the bore of the jack, whereby the restoration is effected by an outside or non-entering portion of the plug, and through the medium of an intermediate part, namely the said pivoted device, adapted to engage and move relatively to both the shutter and the plug, substantially as described.
5. A combined-drop-and-jack comprising a shutter adapted when released to move from a substantially vertical position to a more or less horizontal position, a pivotally mounted cam having its outer end adapted to engage the said shutter, and a plug-device having a lateral projection adapted to engage said cam, both upon the insertion and the withdrawal of the plug, whereby the outer end of the cam is raised to automatically restore the shutter, the means thus provided for restoring the shutter being wholly outside of the bore of the jack, whereby the restoration is effected by an outside or non-entering portion of the plug, and through the medium of an intermediate part, namely the said cam, adapted to engage and move rela-



tively to both the shutter and the plug, substantially as described.

5 6. A combined-drop-and-jack comprising a movable shutter, a pivoted cam adapted to be brought into engagement with the face of the shutter, and a plug-device having a lateral projection adapted to engage the cam when the plug is moved relatively to the jack, whereby the outer end of the cam is raised to automatically restore the shutter, the means thus provided for restoring the shutter being wholly outside of the bore of the jack, whereby the restoration is effected by an outside or non-entering portion of the plug, and through the medium of an intermediate part, namely the said cam, adapted to engage and move relatively to both the shutter and the plug, substantially as described.

10 7. In a combined-drop-and-jack, a movable shutter, a movable part having an end adapted to be brought into engagement with the face of the shutter, and a plug-device adapted to engage the movable part when the plug is adjusted relatively to the jack, whereby the movable part is raised to automatically restore the shutter, the means thus provided for restoring the shutter being wholly outside of the bore of the jack, whereby the restoration is effected by an outside or non-entering portion of the plug, and through the medium of an intermediate device, namely the said movable part, adapted to engage and move relatively to both the shutter and the plug, substantially as described.

25 8. In a combined-drop-and-jack, a movable shutter, a

cam pivoted in the face of the combined-drop-and-jack structure, and a plug-device adapted to engage and cause the said cam to automatically restore the shutter when the plug is adjusted relatively to the jack, the means thus provided for restoring the shutter being wholly outside of the bore of the jack, whereby the restoration is effected by an outside or non-entering portion of the plug, and through the medium of an intermediate part, namely the said cam, adapted to engage and move relatively to both the shutter and the plug, substantially as described.

9. A combined drop and jack comprising a shutter, and a movable device adapted to be engaged by a non-entering portion of a switch-plug, when the plug is within the jack, and adapted also to engage and move relatively to the said shutter, whereby the said shutter is automatically restored by the end-wise movement of the plug in the jack.

10. A combined annunciator and jack comprising a drop or shutter, a distinct and separate movable part adapted to be engaged by a non-entering portion of a switch-plug, when the plug is moved endwise in the jack, and adapted when thus engaged to automatically restore the drop or shutter to its normal position.

Signed by me at Chicago, Cook county, Illinois, this 27th day of May, 1904.

JAMES M. OVERSHINER.

Witnesses:

CLARENCE M. THORNE,  
WM. A. HARDERS.