

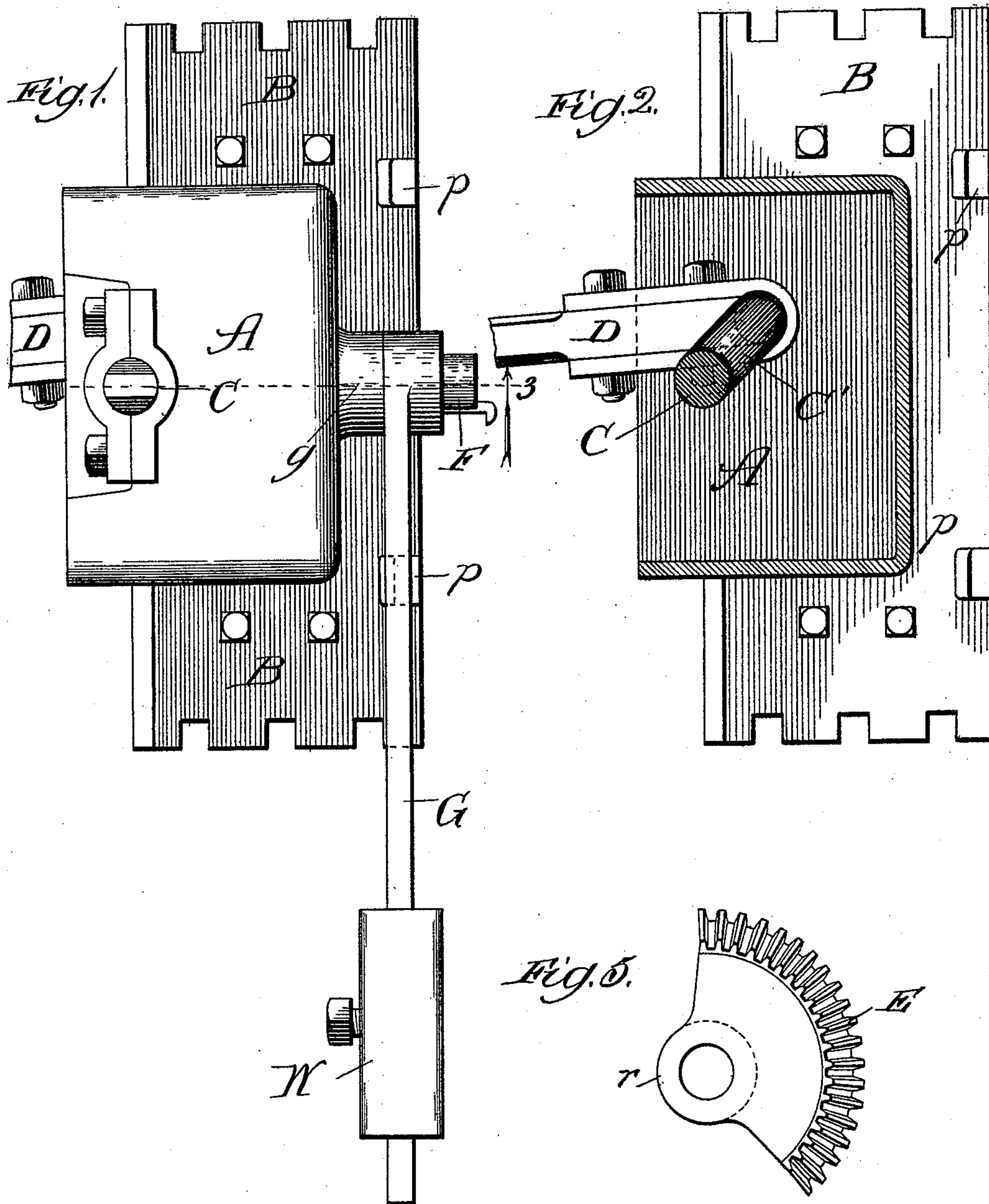
(No Model.)

2 Sheets—Sheet 1.

A. A. STROM.
SWITCH STAND.

No. 498,196.

Patented May 23, 1893.



Witnesses:
Edw. C. Gaylord,
Clifford White.

Inventor:
Axel A. Strom,
By Dyrenforth and Dyrenforth
Attorneys

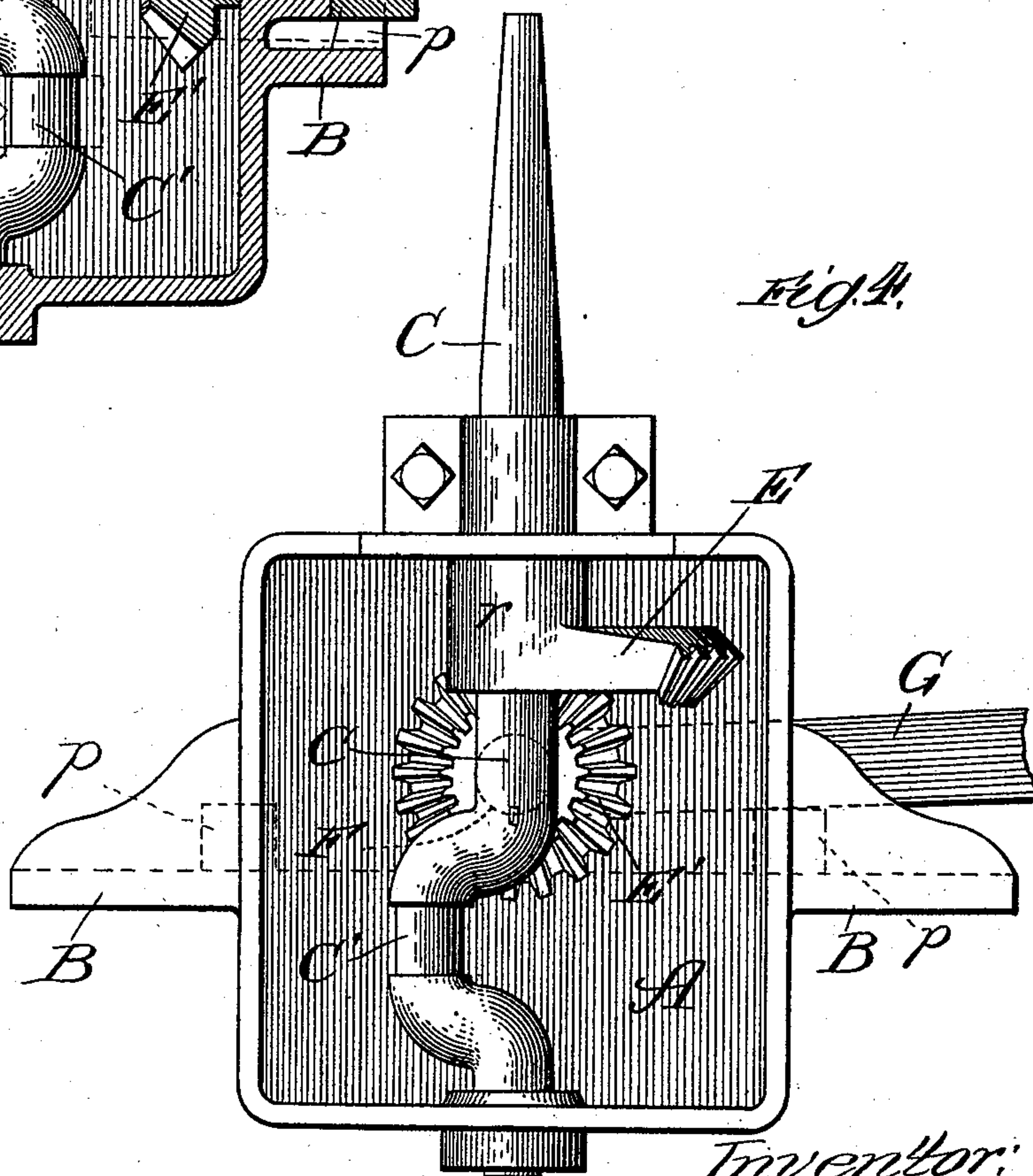
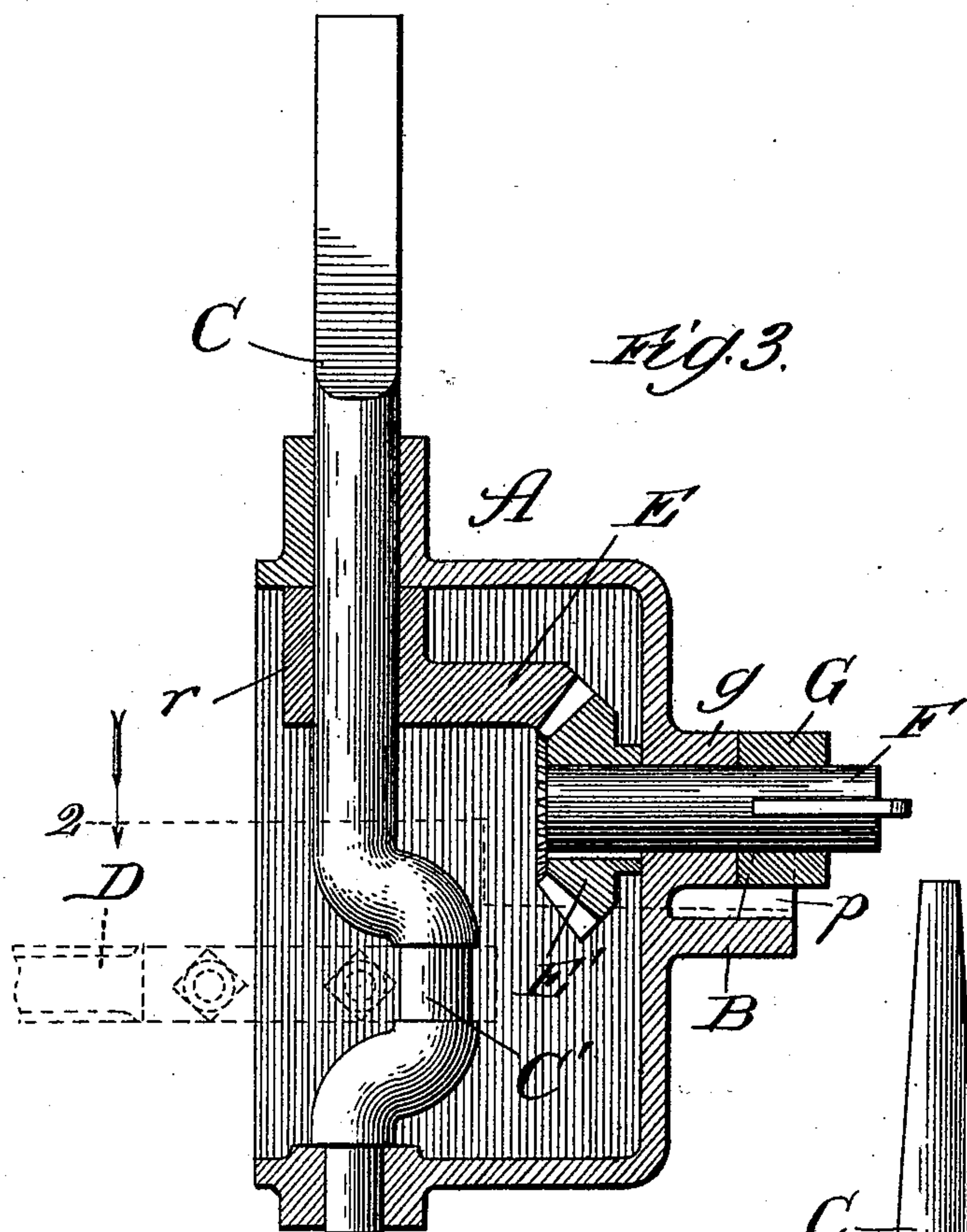
(No Model.)

2 Sheets—Sheet 2.

A. A. STROM.
SWITCH STAND.

No. 498,196.

Patented May 23, 1893.



Witnesses:
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Clifford White.

Inventor:
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UNITED STATES PATENT OFFICE.

AXEL A. STROM, OF AUSTIN, ASSIGNOR TO THE STROM MANUFACTURING COMPANY, OF CHICAGO, ILLINOIS.

SWITCH-STAND.

SPECIFICATION forming part of Letters Patent No. 498,196, dated May 23, 1893.

Application filed March 20, 1893. Serial No. 466,837. (No model.)

To all whom it may concern:

Be it known that I, AXEL A. STROM, a citizen of the United States, residing at Austin, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Switch-Stands, of which the following is a specification.

My invention relates to an improvement in the class of switch-stands in which there is employed a vertical target-shaft having a crank-connection with the rod connecting the switch-stand with the switch and a gear-connection between the target-shaft and a horizontal rotary shaft carrying a weighted arm, the starting of which by a wheel-thrust against a switch-rail, causes it to be thrown in a vertical plane through a half circle, thereby completing the throw of the switch, while it effects only a quarter turn of the crank.

As switch-stands of the particular variety referred to have hitherto been constructed, the full force of any excessive wheel-thrust against the switch is transmitted through the connecting rod not only to the crank on the target-shaft but also to the gear connection thereof with the weighted arm. Thus two disadvantages ensue: First fracture of the crank under the force of such excessive thrusts renders useless the gearing of the stand, of which the crank forms an integral part; and, moreover and particularly, the full strain of such excessive wheel-thrust is exerted both against the crank and the gear, whereby teeth of the latter are broken or at least so worn as to impair the operation of the gearing by causing them to work with lost motion.

My object is to provide a construction of switch-stand in the aforesaid class whereby both of the objections referred to shall be obviated; and this I do by providing the crank as a section in the vertical target-shaft, and providing thereon, for co-operation with a beveled gear on the rotary horizontal shaft carrying the weighted arm, a gear or gear-segment, secured on the target-shaft so far above the crank-section therein as to allow for a degree of springiness in the shaft below the gear thereon which will tend to take up

any excessive wheel-thrust transmitted to the crank from the switch through the connecting rod, and thus shield the gear from the effect thereof.

In the accompanying drawings—Figure 1 is a plan view of a switch-stand of my improved construction, showing only a broken section of the switch-rod. Fig. 2 is a section taken at the line 2 on Fig. 3 and viewed in the direction of the arrow. Fig. 3 is a section taken at the line 3 on Fig. 1 and viewed in the direction of the arrow. Fig. 4 presents to view the open side of the switch-stand, or that which faces the switch, but with the switch-rod and the horizontal weighted-arm carrying gear-shaft removed. Fig. 5 is a plan view of the segmental gear detached.

A is the switch-stand case or housing for the internal mechanism hereinafter described. It is supported on a suitable base B and should be open at the side presented to the switch. In the upper and lower sides, near the open front of the casing, are journal-bearings for a vertical rotary target-shaft C formed with a crank-section C' near its lower end, and to which is fastened one end of the switch-rod or connecting-bar D. A beveled-gear E, preferably in the form of a segment, extends from a collar *r* at which it surrounds and is secured upon the target-shaft near the top of the casing A, where it is removed as far as possible above the crank-section C' in the shaft C, and affords a sufficient length in the latter to render it adequately springy for my purpose.

In the back of the casing A is a bearing *g* for a horizontal rotary shaft F carrying inside the casing, in mesh with the gear E, a beveled gear E'; and on the outer end of the shaft F is keyed, to swing with it, an arm G extending at a right-angle with the shaft and carrying a weight W. On the base B, at opposite sides of the shaft F and in the plane of movement of the weighted arm are stops *p* serving to limit the extent of throw of the arm G to a horizontal position at each end thereof, whereby there can be no excess in the throw of the weighted arm to force the

crank beyond its required quarter turn, (which the half-turn of the weighted arm is caused to produce by the arrangement of gearing) and by which it might be brought on a dead-center.

5 The operation is as follows: When the switch is struck by the flange of a wheel on a passing locomotive or car, the thrust is exerted, through the medium of the connecting-rod D, against the crank-section C' of the spindle C, thereby starting the turning of the latter and, through the gear-connection therewith, that of the shaft F, which throws the arm G up far enough to cause it to fall, by 15 the gravity of its weight, over to the side of the shaft F opposite that from which it was started; and the throw of the weighted arm completes that of the switch, as usual. In case the force of the thrust of the wheel 20 against the switch is excessive, instead of its being exerted fully against the teeth of the gears E and E' with the danger of breaking them or so wearing them as to impair their operation, the excess will be taken up by the 25 spring in the crank-section C' and portion of the target-shaft between it and the gear E, thereby saving the gears. And though the thrust may be sufficiently excessive in its force to break the crank-section, it will not 30 injure the gears, and will only require repairing of the target-shaft, which is a comparatively easy and inexpensive matter.

35 The foregoing description sets forth the crank-shaft as a vertical target-shaft; it may, however, without departure from my invention, be a horizontal rotary crank-shaft and, moreover, the gear E may be at either side of the crank.

What I claim as new, and desire to secure by Letters Patent, is—

1. In a switch-stand, the combination with the casing of a rotary-shaft having a crank-section at which to connect the switch-bar, a gear E fastened to said shaft at a point beyond its crank-section where the springy 45 quality of said shaft between the gear and crank may play, and a shaft F carrying a gear E', meshing with the gear E, and a weighted arm G, substantially as and for the purpose set forth. 50

2. In a switch-stand, the combination with the casing of a vertical rotary target-shaft having a crank-section at which to connect the switch-bar, a gear E fastened to said shaft at a point above its crank-section where the springy quality of said shaft below the gear 55 may play, and a shaft F carrying a gear E', meshing with the gear E, and a weighted arm G, substantially as and for the purpose set forth. 60

3. In a switch-stand, the combination with the casing of a base B, a vertical rotary target-shaft having a crank-section at which to connect the switch-bar, a gear E fastened to said shaft at a point above its crank-section 65 where the springy quality of said shaft below the gear may play, a shaft F carrying a gear E', meshing with the gear E, and a weighted arm G, and stops *m* on the base in the path of the weighted arm at opposite sides of the shaft F, substantially as and for the purpose 70 set forth.

AXEL A. STROM.

In presence of—
M. J. FROST,
W. N. WILLIAMS.