

No. 897,074.

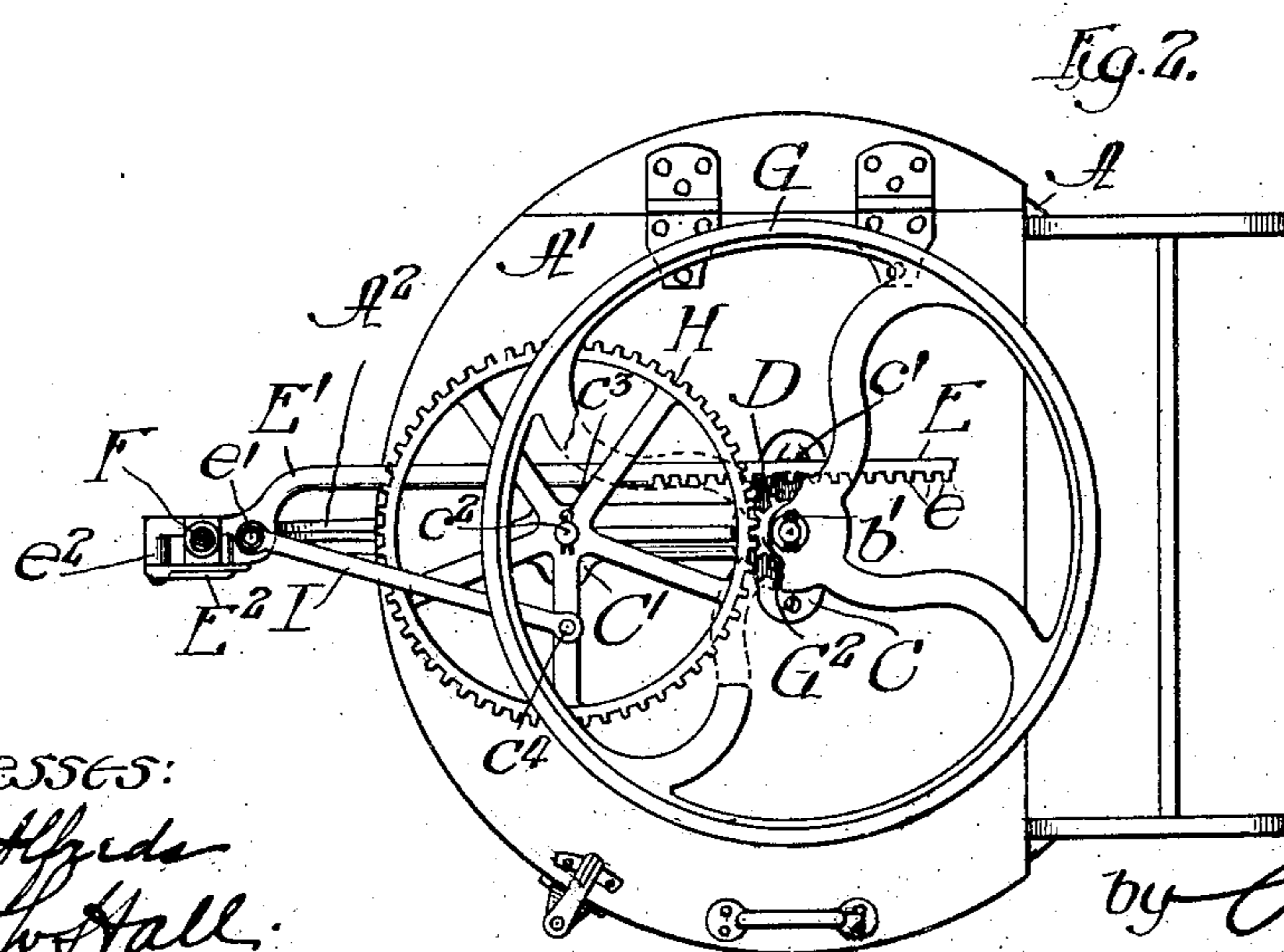
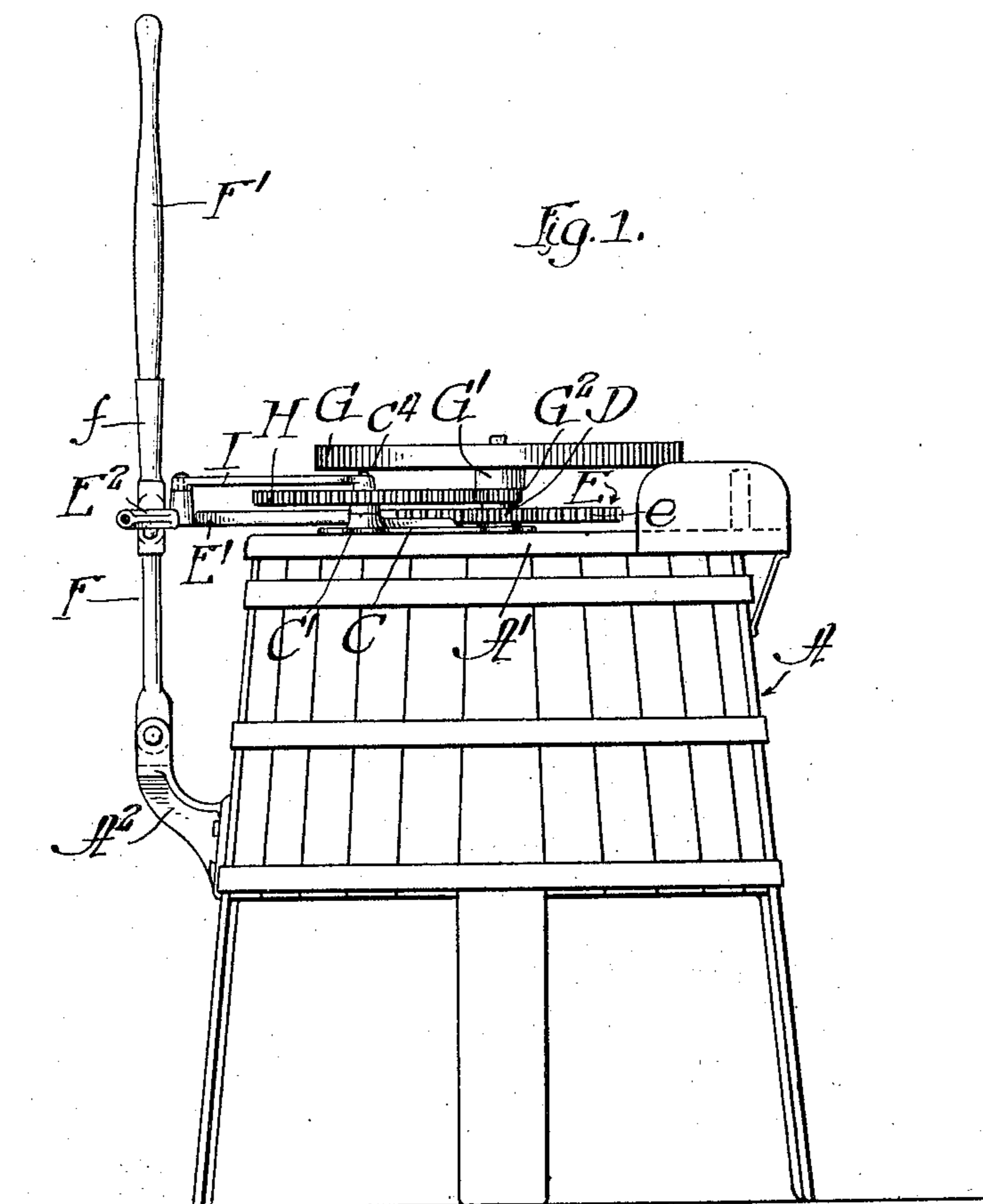
J. EDENS.

PATENTED AUG. 25, 1908.

ACTUATING MECHANISM FOR WASHING MACHINES.

APPLICATION FILED OCT. 16, 1906.

2 SHEETS—SHEET 1.



Witnesses:

J. H. Alford
W. W. Hall.

Inventor

John Edens

by Poole & Snow

his Attys.

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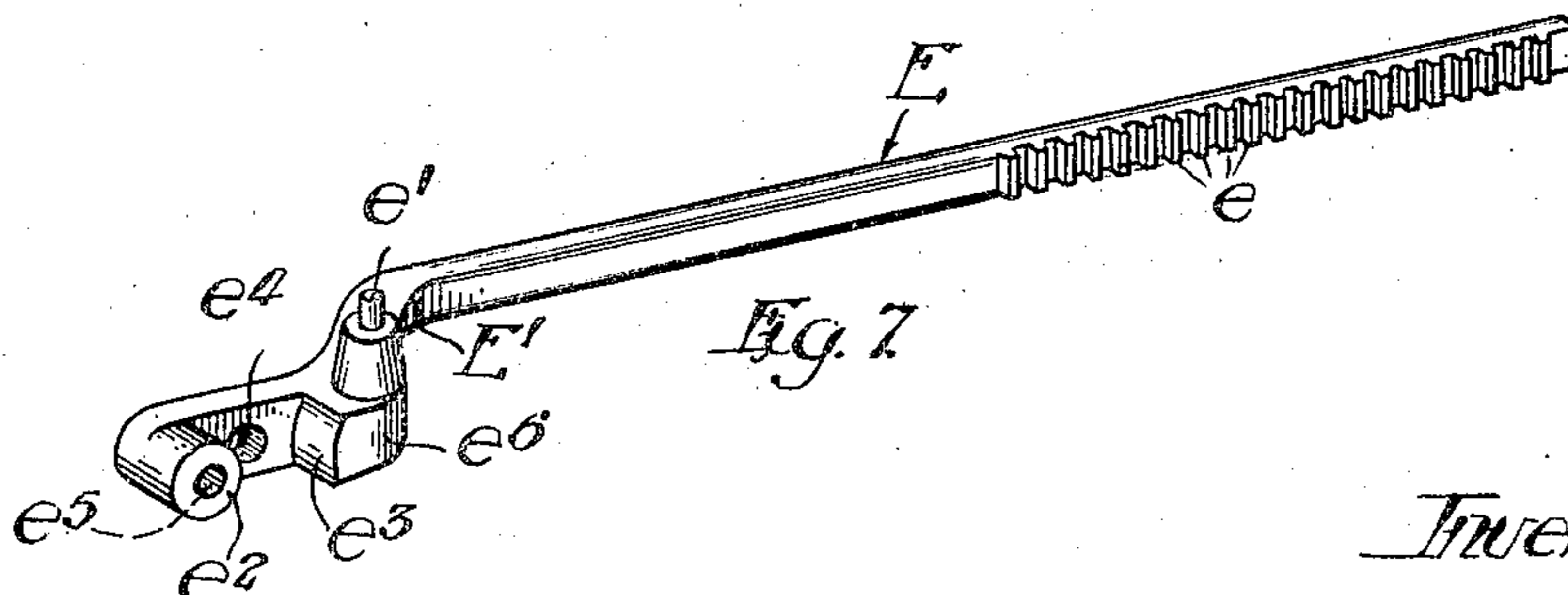
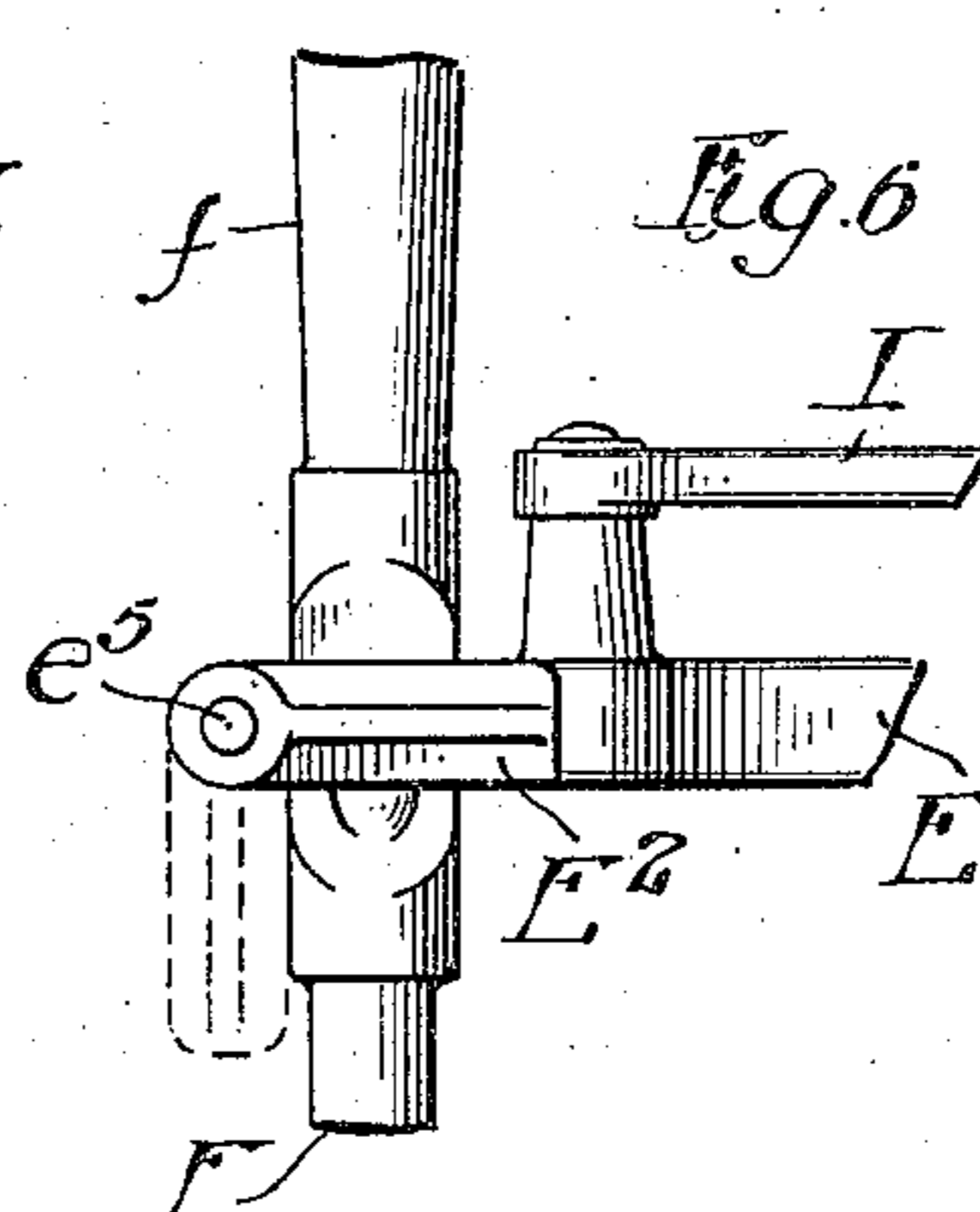
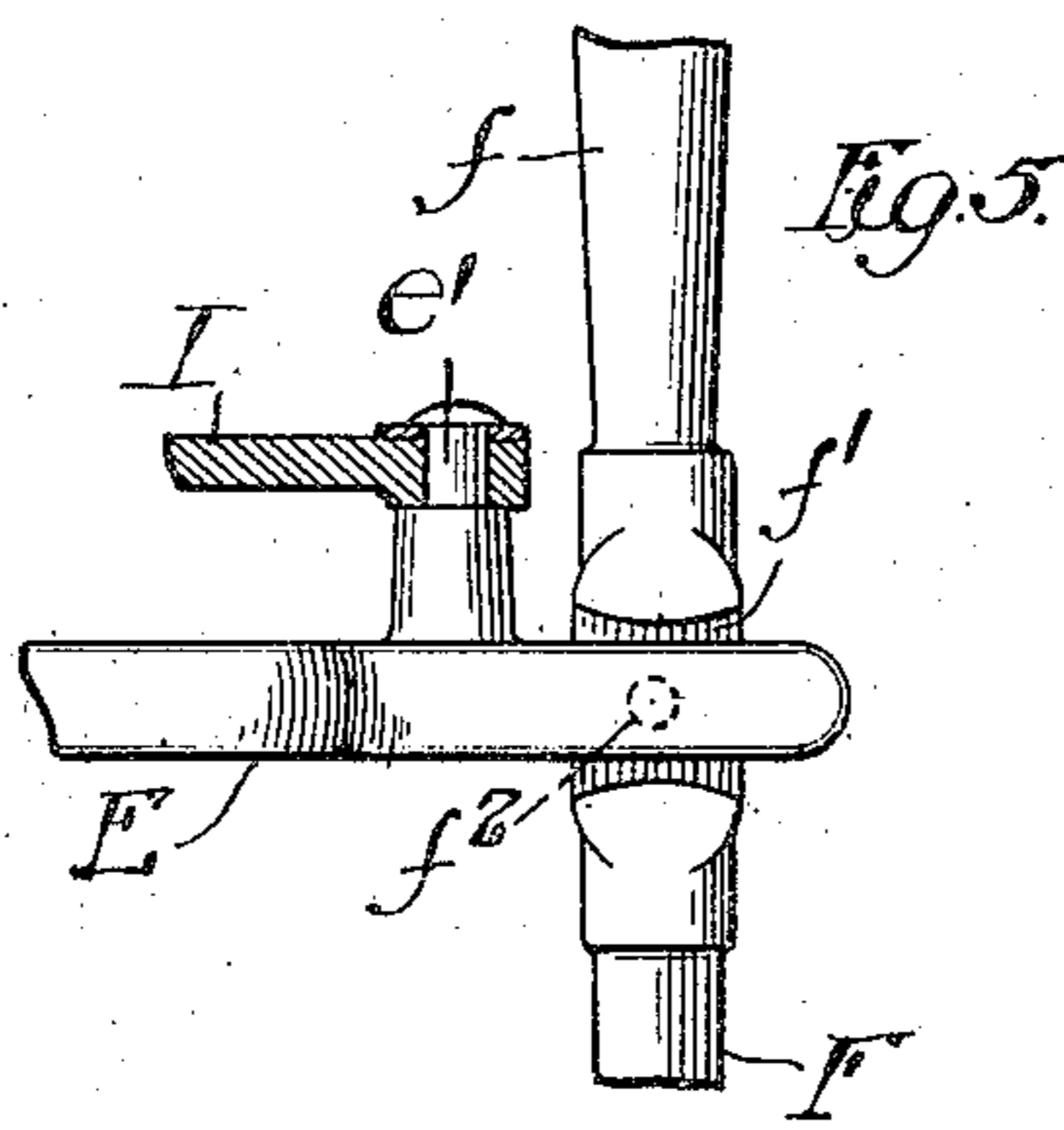
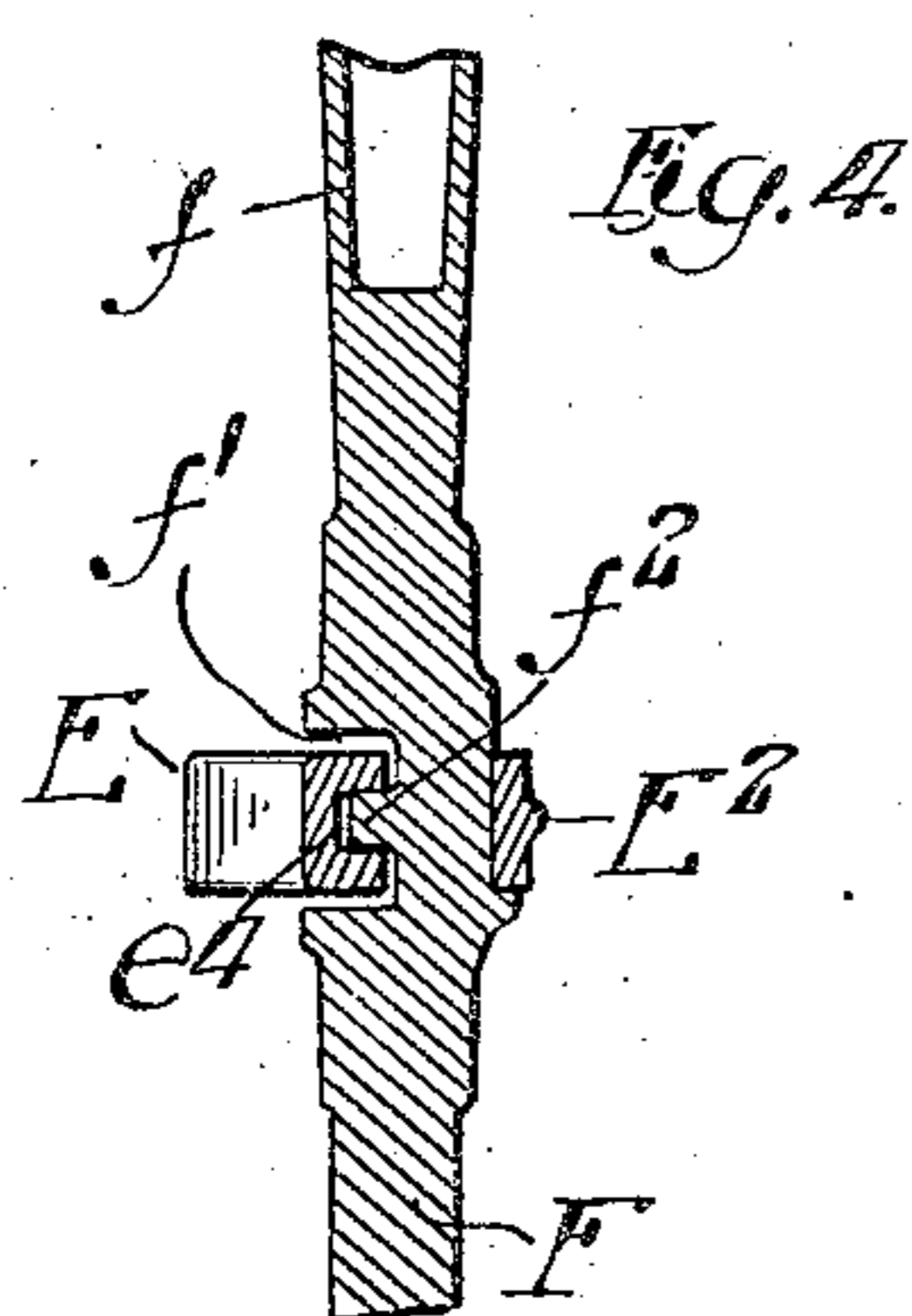
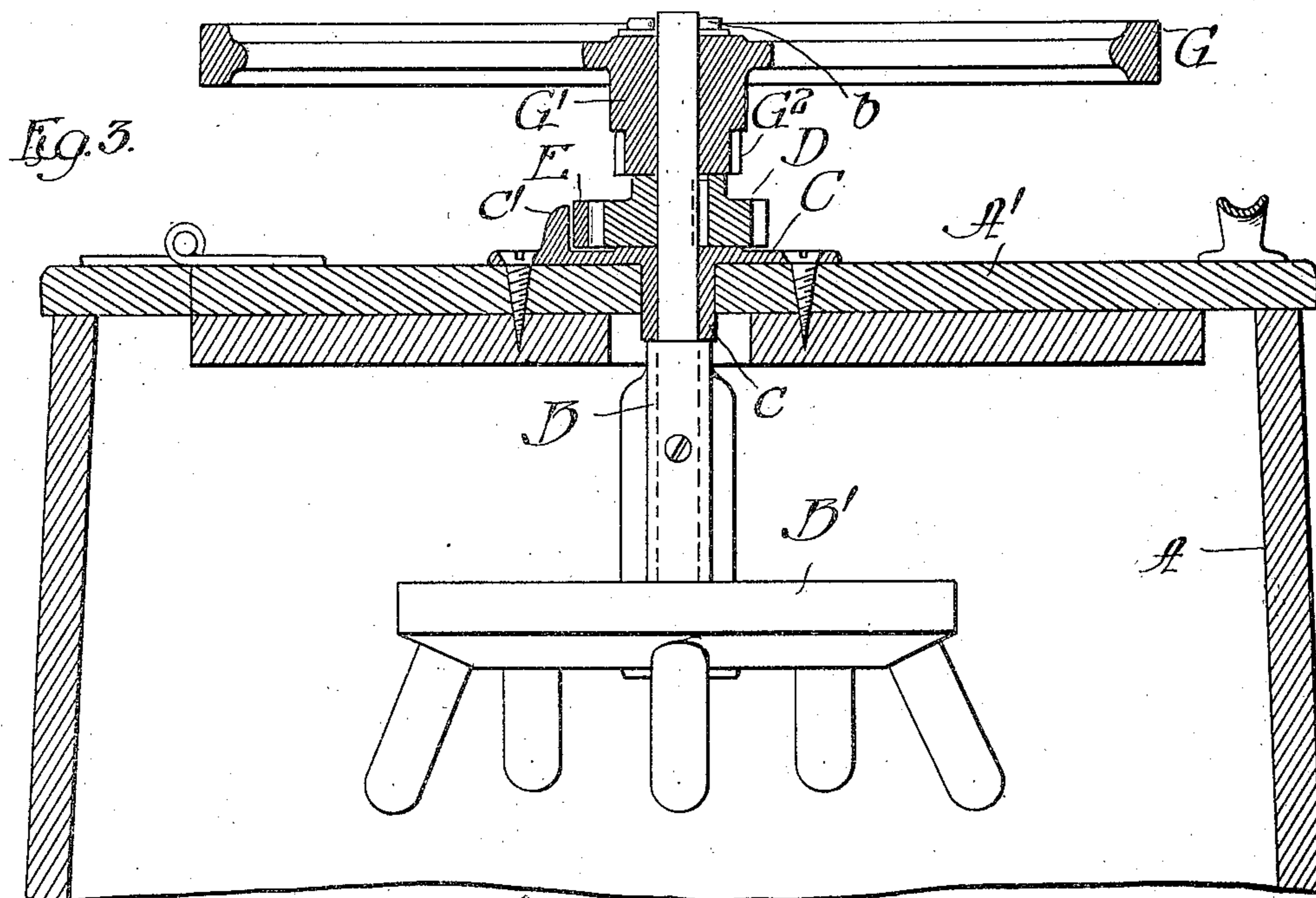
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ACTUATING MECHANISM FOR WASHING MACHINES.

APPLICATION FILED OCT. 16, 1906.

2 SHEETS—SHEET 2.



Witnesses:

J. H. Hilde
W. H. Hall

Inventor:

John Edens
by Paul Brown
his Atty.

UNITED STATES PATENT OFFICE.

JOHN EDENS, OF DAVENPORT, IOWA, ASSIGNOR TO H. F. BRAMMER MANUFACTURING CO.,
OF DAVENPORT, IOWA, A CORPORATION OF IOWA.

ACTUATING MECHANISM FOR WASHING-MACHINES.

No. 897,074.

Specification of Letters Patent.

Patented Aug. 25, 1908.

Application filed October 16, 1906. Serial No. 339,212.

To all whom it may concern:

Be it known that I, JOHN EDENS, a citizen of the United States, of Davenport, in the county of Scott and State of Iowa, have invented certain new and useful Improvements in Actuating Mechanism for Washing-Machines; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

This invention relates to improvements in gear operating mechanisms for washing machines of that type of washing machines wherein the dasher-shaft is given a rotary reciprocatory motion through the means of a rack-and-gear mechanism in which the rack is reciprocated through the mechanism of a swinging lever or equivalent device. Said invention relates more specifically to gear mechanism of this character which operate in connection with a balance-wheel that acts upon the rack-and-gear mechanism to reverse the same at the limits of reciprocation of the rack-bar without bringing shocks or jars on the mechanism and to generally facilitate the action of the mechanism.

Among the objects of my invention is to produce an improved gear of this type which is simple in its construction, which is economical to build, which may be readily applied to the machine, and which is compact and does not impair the symmetry of the machine as a whole.

In the drawings:—Figure 1 is a side elevation of a washing machine provided with my improved gear mechanism. Fig. 2 is a top plan view thereof. Fig. 3 is a vertical section of the upper part of the tub, showing in section the swinging cover and a portion of the operating gear mechanism. Figs. 4, 5 and 6 are details illustrating the detachable connection of the swinging handle with the rack-bar of the rack-and-gear mechanism. Fig. 7 is a perspective view of the rack-bar constituting part of the gear mechanism for operating the dasher-shaft.

In the drawings, A designates the tub of a washing machine, and A¹ its swinging cover.

B designates a rotary reciprocatory dasher-shaft carrying at its lower end a dasher-block B¹ of familiar form. Said shaft extends upwardly through an opening in the cover and

has bearing in a sleeve *c* extending downwardly through the opening in the cover from a plate C that is fixed to the upper face of the cover, as shown in Fig. 3. The rack-and-gear mechanism for imparting rotary reciprocatory movement to said shaft comprises a pinion D that is fixed to the shaft above said plate C and an endwise reciprocating, horizontally disposed, rack-bar E having teeth on one of its sides to engage the pinion D, said rack-bar operating in one direction of its movement to rotate the gear D and dasher-shaft in one direction and in the opposite direction of its movement to rotate said parts in the opposite direction. The said rack-bar extends beyond said cover for operative connection with a vertically swinging lever F which imparts to the rack-bar its rectilinear to-and-fro movement, said rack-bar engaging a guide *c*¹ rising from the plate C as herein shown, by which the rack-bar is held laterally engaged with its pinion D. As herein shown, the outwardly extending end E¹ of the rack-bar is off-set so as to bring the part thereof which is connected with the swinging lever in the vertical plane with the axis of the pinion D. The said swinging lever F is pivoted at its lower end to a laterally extending bracket A² attached to one side of the tub, as shown in Figs. 1 and 2. Conveniently, the lever is made in two parts, the upper part comprising a removable, usually a wooden, handle F¹, and the lower part, usually made of metal, is provided with a socket *f* to receive the upper removable handle. Associated with said rack-and-gear mechanism for operating the dasher-shaft is a horizontally disposed, balance-wheel G, which, as herein shown, is loosely mounted to rotate on the upper extended end of the dasher-shaft; the said shaft extending upwardly through the hub G¹ of said wheel. The hub of said balance-wheel rests on an upwardly facing bearing of the dasher-shaft pinion D. The said balance-wheel rotates independently of the dasher-shaft and is held from rising by means of a cotter-pin *b* extending through a transverse opening in the shaft. Inasmuch as the pinion D is supported on the cover and itself supports the balance-wheel, it will be seen that the dasher-shaft is suspended from the cover through said parts and the pin *b*. The said balance-wheel is rotated through suitable

connections with the operating lever F or rack-bar, in the nature of a multiplying gear, whereby said balance-wheel is given a rapid rotation and serves not only to facilitate the reversal of movement of the parts, but also to materially aid the to-and-fro rotation of the dasher-shaft.

One of the features of my invention consists in supporting the horizontally disposed balance-wheel and the operative connections thereof with the rack-bar on the lid or cover of the tub, whereby they may be compactly disposed on or above said cover within the circumferential limits thereof, thereby avoiding the marring of the symmetry of the machine as a whole. The operative connections between said balance-wheel and the swinging lever are made as follows:

The hub G^1 of the balance-wheel is formed at its lower end to provide an integral gear pinion G^2 which meshes with a large gear wheel H arranged horizontally beneath the balance-wheel. Said gear-wheel H is rotatively mounted on a stud c^2 that rises from a lateral extension C^1 of the plate C, the said wheel being held from rising from the stud by a cotter-pin c^3 extending through a transverse opening in the stud. I designates a horizontal pitman that is connected at one end by means of a stud e^4 to said gear-wheel and at its other end to the rack-bar by a stud e^1 , rising from the off-set end of the extension E^1 of the rack-bar. Through the medium of said pitman swinging motion of the lever transmits rotary motion to the gear-wheel H and thence to the balance-wheel with a multiplying effect. It will be observed that the axes of the gear-wheel H and dasher-shaft are disposed in the vertical plane of the connection of the pitman with the rack-bar and also in the vertical plane of oscillation or swing of the operating lever F, the outer end of the rack-bar being for this purpose offset towards the lever.

The connection between the swinging lever F and the rack-bar E is such as to permit the lever to be detached from the rack-bar so as to allow the cover of the tub and the gear mechanism supported thereon to be swung upwardly to open the tub. Said connection is made as follows: The offset end of the rack-bar is formed with two shoulders e^2 e^3 separated longitudinally of said bar, and between which is formed a recess to receive the swinging lever F. The lever F is likewise provided with a recess f^1 located opposite the recess in the rack-bar extension. Said lever is provided in the bottom of its recess with an integral stud f^2 that enters a socket e^4 in the bottom of the recess of the offset end of the rack-bar, as most clearly shown in Fig. 4. E^2 designates a vertically swinging latch that is hinged at one end to the outer end of the offset extension of the rack-bar by means of a hinged pin e^5 , and is adapted, when swung

into its closed position, as shown in Figs. 1, 2 and 6, to frictionally engage at its free end a lateral face e^6 (Fig. 7) of the lug e^3 , thereby holding the latch in place and locking the rack-bar to the lever. Obviously, however, said latch may be otherwise held in place. From the construction described it will be observed that the hinged connection of the operating lever with the rack-bar is constituted by the stud f^2 and its companion socket e^4 of the rack-bar, the latch serving to hold the parts properly together. When it is desired to release the swinging lever from the rack bar, the latch E^2 is swung upwardly and rearwardly about its hinge to the position indicated in dotted lines in Fig. 6, whereby the rack-bar may be laterally released from the lever.

One of the distinctive features of my invention resides in supporting the balanced gear operating mechanism upon the cover of the machine and so arranging the parts that the said mechanism is compactly assembled and does not extend an objectionable distance above the cover. This result is brought about by the horizontal arrangement of the balance-wheel, the multiplying gears and the rack-and-pinion mechanism. This arrangement has the further advantage that a simple lever device may be employed for operating the gear mechanism, said lever device being hinged to the tub by a simple connection and connected at one point with the parts of the balanced gear mechanism. A further distinctive feature of my improvement resides in the arrangement whereby the pitman connection for rotating the balance-wheel through the multiplying gears described is made with the rack-bar at or near its point of connection with the rack-bar. This construction reduces to a minimum the tendency of lost motion between the lever and the rack-bar and said link. A further advantage of the construction herein described is the arrangement of the parts whereby the axes of rotation of the dasher-shaft and gear-wheel H are disposed in the vertical plane of oscillation of the actuating lever F. This arrangement minimizes the torsional stress placed on the lever which arises from driving two parts from practically the same point of connection with the lever. The extension of the dasher-shaft above the pinion D to constitute a bearing for the balance wheel is preferred, inasmuch as this arrangement centralizes the said wheel. The bearing for said wheel may, however, be otherwise disposed. These and other features of advantage of my invention may be obtained by means of mechanism varying somewhat in detail from that herein shown, and I do not wish to be limited to the features of construction shown, except as hereinafter made the subject of specific claims.

I claim as my invention:—

1. As a means for imparting rotary recip-
rocatory motion to an upright dasher-shaft,
the combination with said shaft, of a pinion
5 fixed to the shaft, a horizontal endwise recip-
rocatory rack-bar intermeshing with said
pinion, a pivotally supported operating lever
having pivotal connection with said rack-
bar, a gear-wheel mounted on a vertical axis,
10 a pitman for operating said gear-wheel from
the rack-bar, a balance wheel rotating on a
vertical axis and a fixed pinion thereon
which meshes with said gear-wheel.

2. As a means for imparting rotary recip-
15 rocatory motion to an upright dasher-shaft,
the combination with said shaft, of a pinion
fixed to said shaft, a horizontal endwise re-
ciprocatory rack-bar intermeshing with said
pinion, a pivotally supported operating lever

having pivotal connection with said rack- 20
bar, a horizontally arranged balance wheel
mounted and turning freely on said dasher-
shaft above said pinion, a pinion fixed to said
balance wheel concentrically with and below
the level of the latter, a gear wheel mounted 25
on a vertical axis, and intermeshing with the
pinion on the balance wheel, and a pitman
for operating said gear wheel from the rack-
bar.

In testimony, that I claim the foregoing as 30
my invention I affix my signature in the
presence of two witnesses, this 12th day of
October A. D. 1906.

JOHN EDENS.

Witnesses:

H. G. BRAUNLICH,
A. I. FRASER.