

No. 797,964.

PATENTED AUG. 22, 1905.

M. KELLOW.

MEANS FOR OPERATING PLANING MACHINES.

APPLICATION FILED OCT. 19, 1903.

2 SHEETS—SHEET 1.

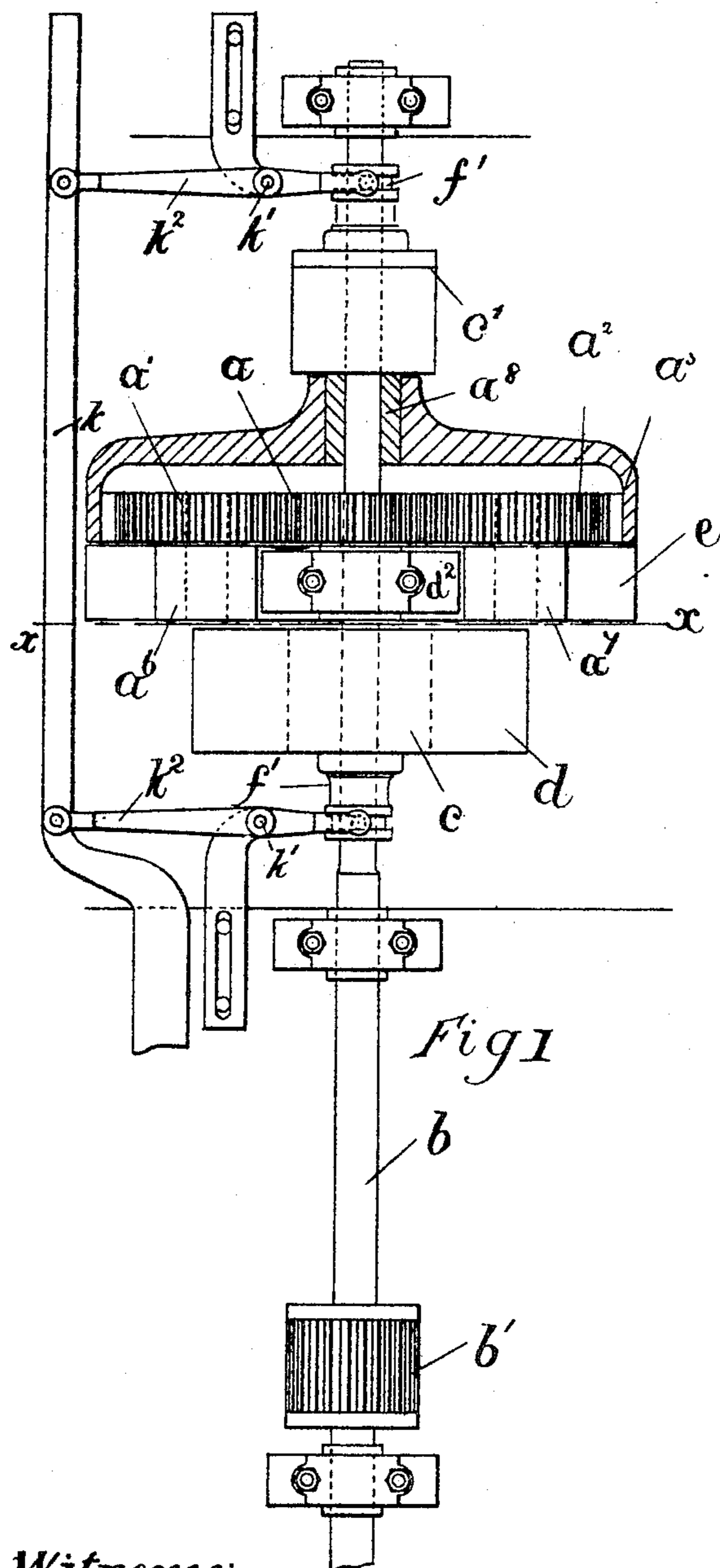


Fig 1

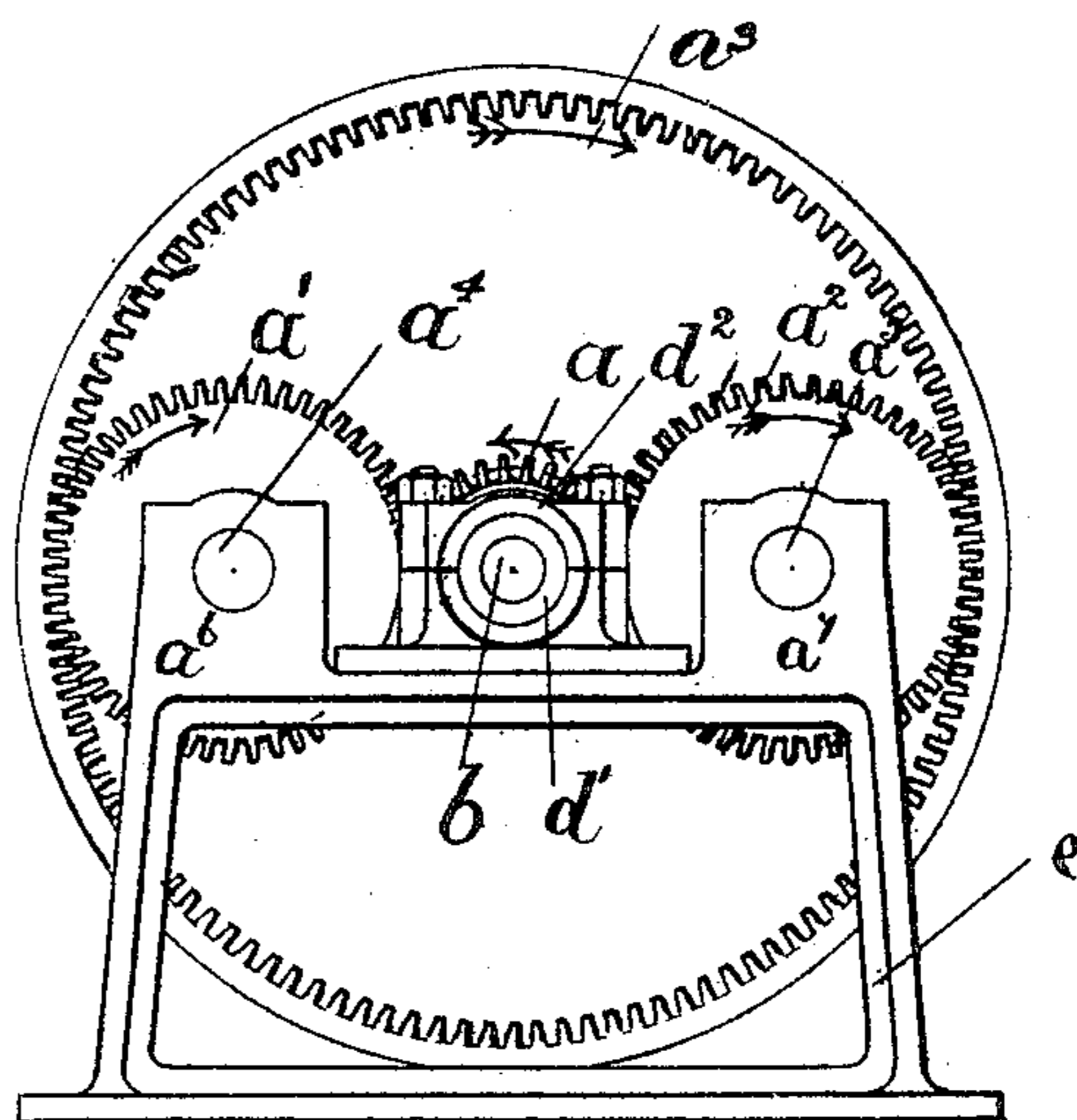
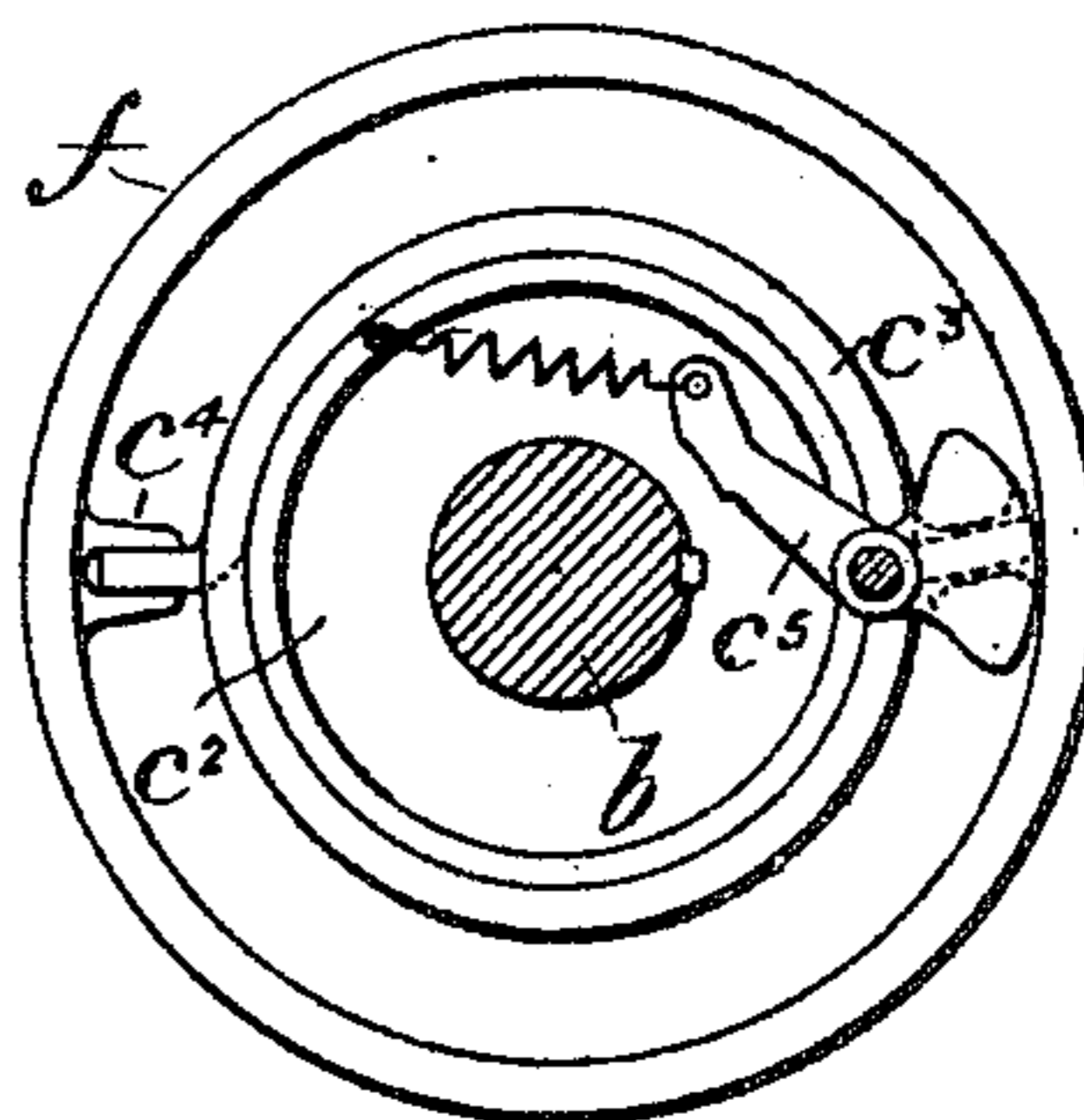



Fig 2



Witnesses:

H. Coker.
L. J. Ashdown.

Inventor:



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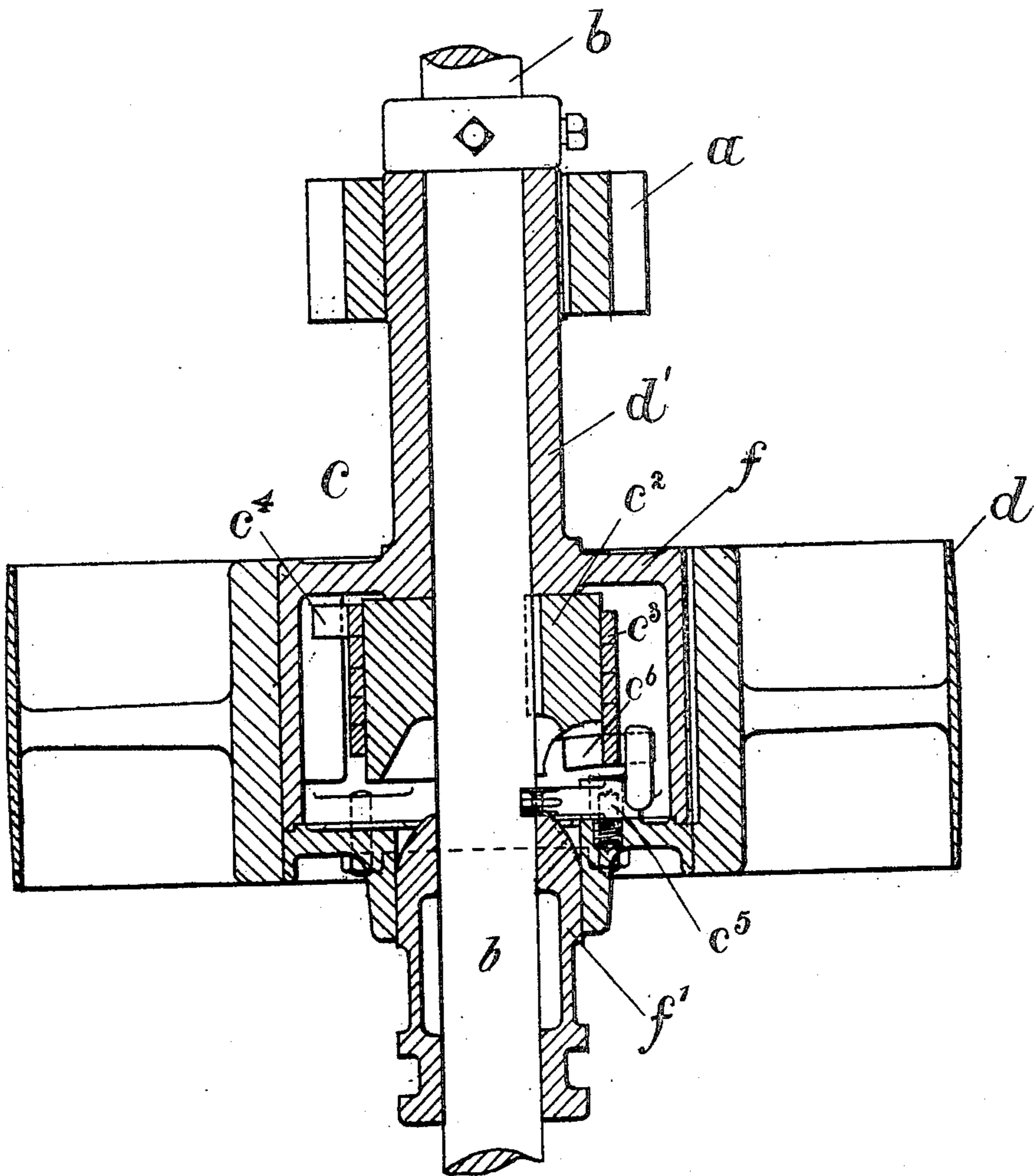


Fig. 3

Witnesses
H. Coker.
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Inventor

[Signature]

UNITED STATES PATENT OFFICE.

MOSES KELLOW, OF PENRHYNDENDRAETH, ENGLAND.

MEANS FOR OPERATING PLANING-MACHINES.

No. 797,964.

Specification of Letters Patent.

Patented Aug. 22, 1905.

Application filed October 19, 1903. Serial No. 177,680.

To all whom it may concern:

Be it known that I, MOSES KELLOW, a subject of the King of Great Britain and Ireland, residing at the Park and Croesor Quarries, Penrhyndendraeth, England, have invented certain new and useful Improved Means Applicable for Use in Operating Planing-Machines, of which the following is a specification.

This invention relates to planing-machines particularly, but not exclusively, applicable for use in cutting or planing slate, the object being to provide for the planing and return motion of the table being effected without reversing the direction of rotation of the principal revolving parts of the mechanism, especially those running at a high speed, the operations of driving and reversing being effected automatically or by hand.

In the accompanying drawings, which illustrate a machine embodying my improvements, Figures 1 and 2 are detail views of the rack-pinion shaft with its accompanying gear train and clutches, Fig. 2 being a section on the line $x-x$ in Fig. 1. Figs. 3 and 4 are respectively a horizontal section and a face view of the internal mechanism of a clutch.

Mechanism adapted for effecting the object of my invention and applied, by way of example, to a slate-planing machine, comprises a train of gear-wheels $a\ a'\ a''\ a^3$ whereof the operation does not involve the employment of any belt-shifting device and which does not involve the reversal of any part of the gear other than the shaft b , which carries the rack-pinion b' . In connection with the gear-train $a\ a'\ a''\ a^3$ I mount a pair of friction-clutches $c\ c'$, which may be of the type known as "coil-clutches." Upon the outer part of the clutch c is keyed a belt-pulley d and upon a sleeve d' , formed integral with the said outer part and within which the rack-pinion shaft b revolves freely, is keyed the central pinion a , the latter meshing with a pair of toothed wheels $a'\ a''$, which in turn mesh with an internally-toothed wheel a^3 . This internally-toothed wheel is secured to a sleeve a^4 on the outer part of the other clutch c' , with which it revolves freely on the rack-pinion shaft b . The toothed wheels $a'\ a''$ are carried on studs a^5 , which are supported in bearings $a^6\ a^7$ on the bracket e , while the sleeve d' is carried in bearings d^2 , arranged between the said bearings $a^6\ a^7$. Each clutch $c\ c'$ is provided with a drum c^2 , (see Fig. 3,) keyed to a rack-pinion shaft b ,

and about each drum is a coiled band c^3 , preferably steel. One end of this band is secured to the outer part f of the clutch at c^4 , while the other end is connected with a small lever c^5 . The latter is operated by the inner part f' of the clutch, which is provided with a suitably-formed conical end for the purpose and which when moved along the rack-pinion shaft b has the effect of tightening the coil c^3 about the drum c^2 and of imparting motion to the rack-pinion shaft b . The projection c^6 may be provided on the coiled band c^3 for preventing the extremity thereof entering the material of the drum c^2 .

The gear-train $a\ a'\ a''\ a^3$ imparts the requisite increase of power with decrease of speed for the planing stroke and also serves to reverse the direction of rotation of the rack-pinion shaft b . These movements are effected by simply engaging one of the clutches $c\ c'$ and disengaging the other, the gear-train always revolving in the same direction. Thus by putting the clutch c pertaining to the central pinion a into engagement the rack-pinion shaft b will revolve in unison with the belt-pulley d , the gear-train also revolving with the internally-toothed wheel a^3 . Upon disengaging the clutch c and engaging the clutch c' motion in the reverse direction is imparted to the rack-pinion shaft b , through the belt-pulley d , central pinion a , toothed wheels $a'\ a''$, internally-toothed wheel a^3 , sleeve a^4 , and clutch c' , an increase of power with a decrease of speed resulting. The inner parts of the clutch preferably work in an oil-bath.

For engaging and disengaging the clutches $c\ c'$ a rod k may be provided, adapted to turn on their pivots k' levers k^2 , which are furnished with forked ends for engaging in grooves formed in the sliding portions f' of the clutches.

Although I have in the foregoing description referred to the machine in its application to planing slate, it will be understood that with certain modifications the improved mechanism may be applied with equally advantageous results to machines for planing metals and other materials.

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

1. In a machine for planing slate, metal and other materials, a shaft, a pinion carried thereby, two clutches on said shaft, a driving-pulley mounted on the one clutch and a toothed wheel mounted on the other clutch, a train of gearing driven by the said pulley and driving

the said toothed wheel, and means for alternately throwing the clutches into engagement for reversing the motion of the pinion.

2. In a machine for planing slate, metal and other materials, the combination of a shaft, a pinion secured thereto, a clutch on the shaft having a free portion and a portion adapted to connect the said free portion with the shaft, a pulley for driving said free portion, a sleeve mounted in a bracket and connected with the free portion of the clutch, a spur-wheel at the extremity of the sleeve, a pair of spur-wheels also mounted in the said bracket and meshing with the first-mentioned spur-wheel, an inter-

nally-toothed wheel meshing with the pair of spur-wheels, a second clutch having a free portion connected with the internally-toothed wheel, and a portion adapted to connect the free portion with the shaft, and pivoted clutch-levers for operating the clutches.

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

M. KELLOW.

Witnesses:

C. J. ASHDOWN,
H. COKER.