

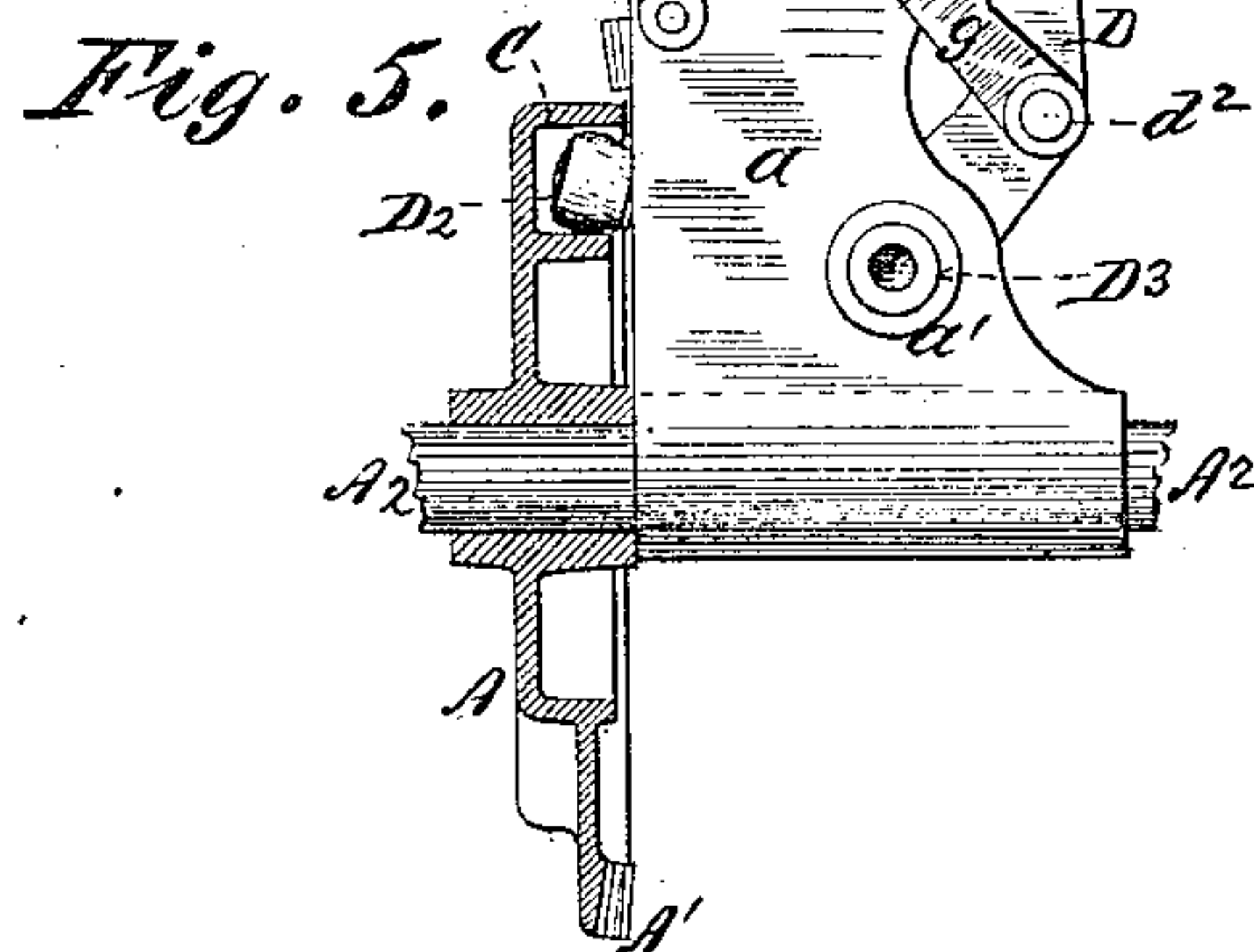
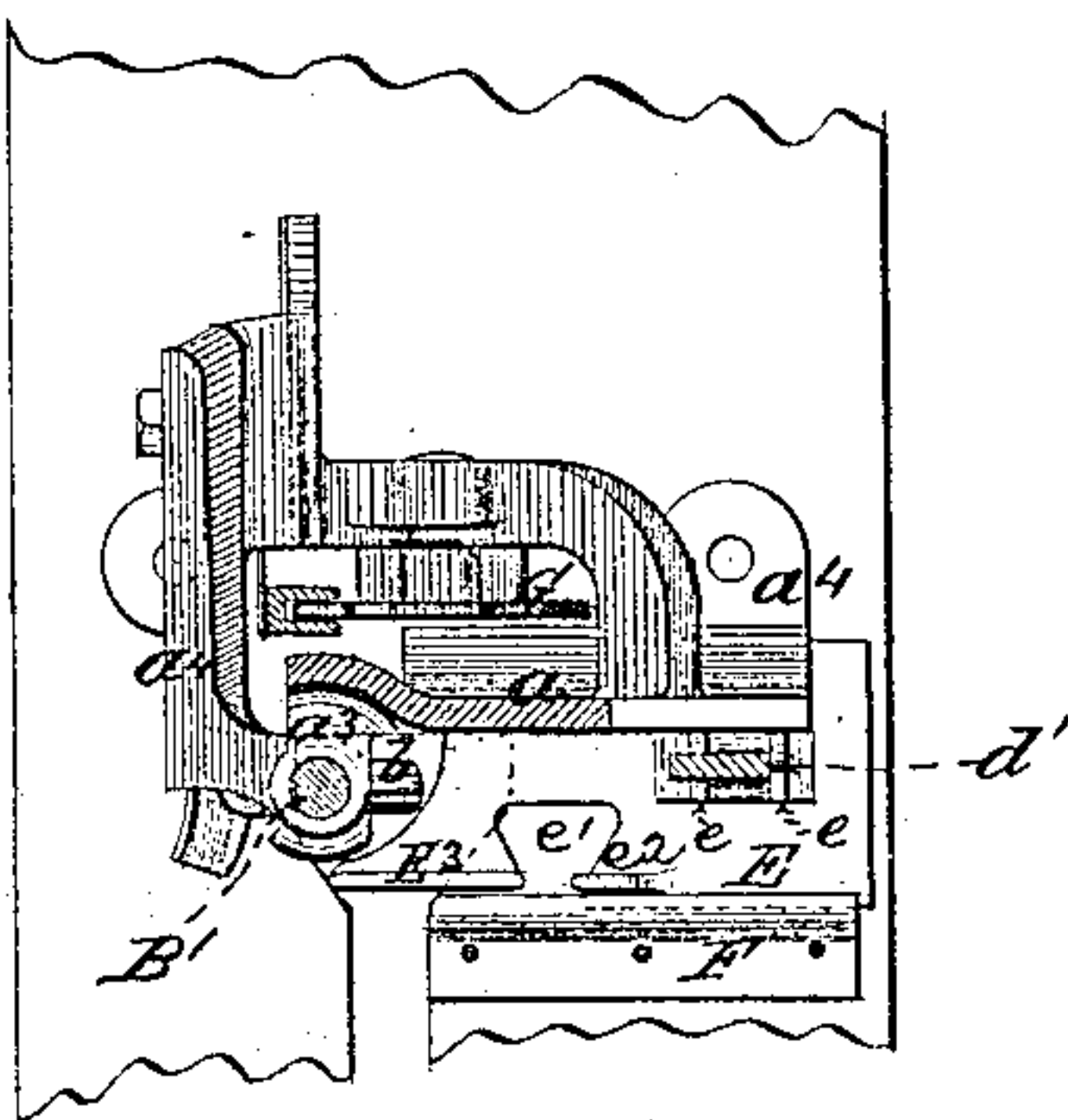
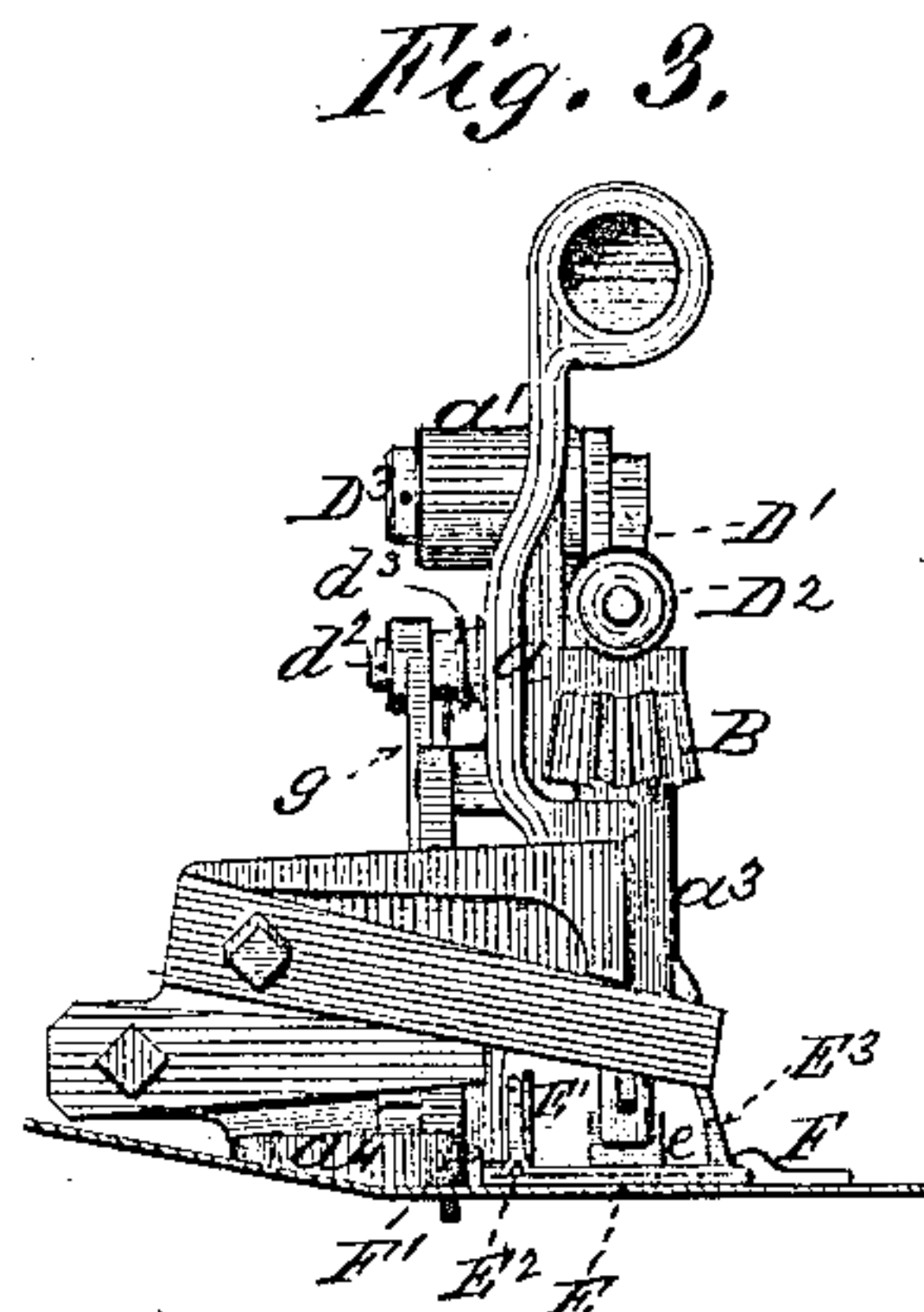
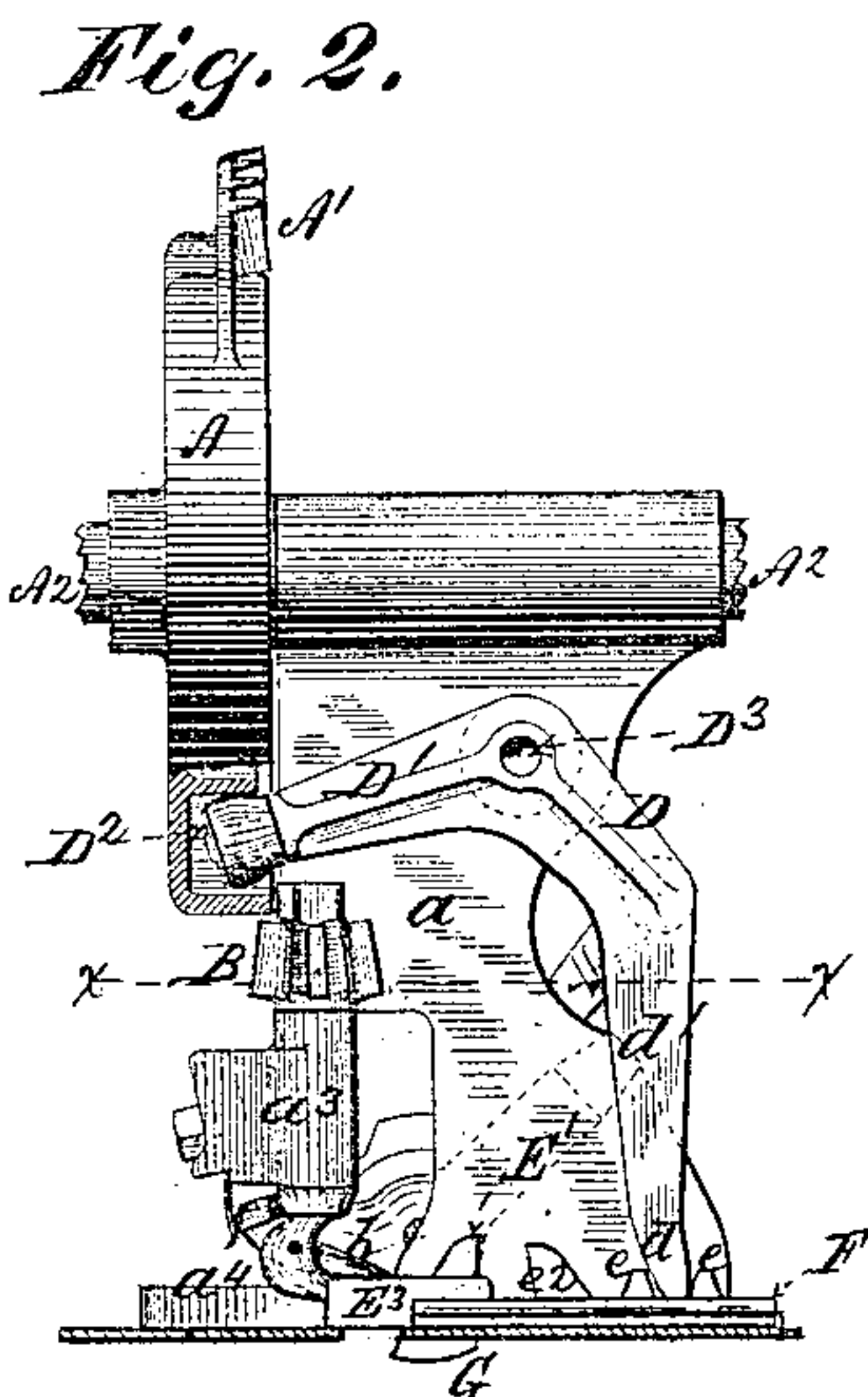
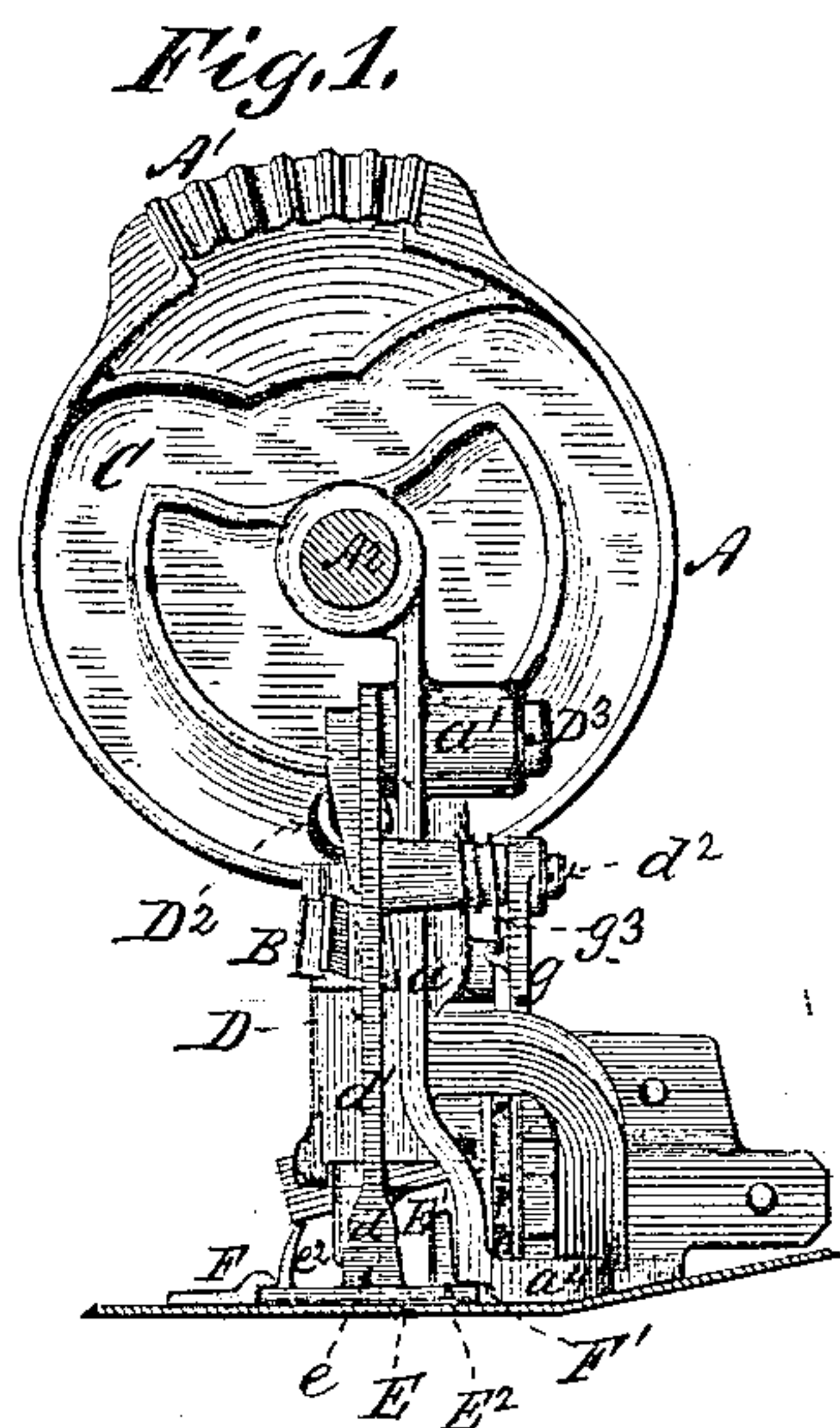
(No Model.)

J. F. APPEBY.

KNOTTING MECHANISM FOR GRAIN BINDERS.

No. 362,811.

Patented May 10, 1887.



Witnesses:

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R. C. Howes.

Inventor:

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UNITED STATES PATENT OFFICE.

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MINNEAPOLIS HARVESTER WORKS, OF SAME PLACE.

KNOTTING MECHANISM FOR GRAIN-BINDERS.

SPECIFICATION forming part of Letters Patent No. 362,811, dated May 10, 1887.

Application filed June 17, 1885. Serial No. 168,925. (No model.)

To all whom it may concern:

Be it known that I, JOHN F. APPLEBY, of Minneapolis, Minnesota, have invented certain Improvements in Knotting Mechanisms for Grain-Binders, of which the following is a specification.

My improvements relate to the type of knotting apparatus in which the knoter-operating wheel has on the side with the operating-gear a single cam-groove, which is the source of motion for the various devices which, in conjunction with the rotating knotting-bill, form the knot, sever the binding-cord between the knotting-bill and the gripping device, and strip the knot from the knotting-bill.

My present invention consists, essentially, in the combination, with the knoter-operating wheel having gear-segment and cam on the same face or side of the wheel, of a knoter-shaft and a single rocking lever, through which motion is transmitted from the cam for the operation of the devices, respectively, for gripping the binding-cord, for severing the binding-cord between the knotting-bill and the gripping-disk, and for stripping the knot from the knotting-bill. By reason of this construction and combination the knotting, clamping, severing, and stripping devices are located and operated on one side of the plane of the knoter-operating wheel, and a compact arrangement of parts is obtained, especially desirable in low binders.

It is an incidental feature of my invention that the motion for operating a tucker for tucking the binding-cord under the knotting-bill is also transmitted from the cam on the knoter-operating wheel by the said rocking lever.

The accompanying drawings of knotting apparatus containing my improvements are as follows:

Figure 1 is an elevation, affording a view of the cam-groove in the face of the knoter-operating wheel, and, for present convenience, may be assumed to be a front elevation of the apparatus. Calling Fig. 1 a front elevation, Fig. 2 is a left-hand side elevation, partly in section; Fig. 3, a rear elevation with the knoter-operating wheel and its shaft removed; Fig. 4, a horizontal section through

the line $x x$ on Fig. 2; and Fig. 5, a right-hand side elevation, partly in section, but showing the apparatus upside down for convenience of showing certain of the parts represented in Figs. 2, 4, and 5 in the same vertical alignment.

Referring to the drawings, it will be seen that the knoter-operating wheel A is provided upon its periphery with a projecting flange, upon the face of which are formed the teeth of a segment or bevel gear, A' , which at the proper time during the rotation of the cam-wheel engages and rotates the bevel-pinion B , affixed to the upper end of the knoter-shaft B' .

The face of the knoter-operating wheel upon which the segment-gear A' is formed is provided with the cam-groove C , for operating the rocking lever D , provided at the end of its laterally-projecting arm D' with the anti-friction roller D^2 , for engaging the cam groove C . The shaft A^2 of the knoter-operating wheel has its bearing in the upper end of the principal standard a of the frame.

The rocking lever D is cast in one piece with or otherwise affixed to the horizontal rock-shaft D^3 , which is provided with a bearing in the tubular boss a' , cast on the standard a . The lower end, d , of the downwardly-projecting arm d' of the rocking lever enters the space between the teeth $e e$, projecting upwardly from the horizontal sliding plate E . Thus when the lever D is rocked it imparts reciprocating sliding motion to the plate E . The plate E is provided with suitable guides, $F F'$, by which its path of motion is defined. The knife E' is mounted upon a standard, E^2 , erected upon one side of the plate E , and during the reciprocating motion of the plate passes between the knotting-bill b and the gripping-disk G .

Upon the side opposite the knife the plate E is provided with a vertical flange, E^3 , the top of which serves as a cord-guide for supporting the binding-cord after the binder-arm has retired and during the process of forming the bundle. The flange E^3 terminates on one side of the relatively narrow mouth of the notch e' in the plate E . There is erected at the other side of the mouth of the notch e' the tucking-finger e^2 , the edge of which, as will be

seen, inclines forward slightly over the mouth of the notch e' , and is thereby adapted to guide the binding-cord into the notch e' , so that during the forward movement of the plate E the binding-cord, extending from the knotting-bill to the bundle, is tucked nearly under the knotting-bill.

As will be seen, when the knot is formed, the binding-cord extends from the knotting-bill through the notch e' to the bundle, and hence by the backward movement of the plate E is stripped from the knotting-bill. As the cord-arm retires, the binding-cord, the end of which has been gripped in one of the notches of the gripping-disk G, is deposited upon the top of the flange E^3 , as before.

The arm d' of the rocking lever D is provided with the laterally-projecting stud d^2 , upon which is hung the driving-pawl g , which engages the teeth of the ratchet-reel g' , affixed to the shaft g^2 of the gripping-disk G. The point of the driving-pawl g is held against the ratchet-wheel g' by means of the spring d^3 , affixed to the stud d^2 . During the movement of the plate E toward the axial line of the knotting-bill the pawl g turns the gripping-disk G one step.

The knotter-shaft B' is provided with a vertical bearing in the arm a^3 , cast in one piece with the standard a and the base a^4 of the frame.

The knotting-bill and the gripping-disk are of well-known forms of construction and do not need especial description herein, as the present invention relates to the employment of a single rocking lever for taking motion from a single cam-groove in the knotter-operating wheel, and by means of the driving-pawl g operating the gripping device, and by means

of the downwardly-projecting arm d' reciprocating the plate E, and thereby operating the knife for severing the binding-cord and the stripping device for stripping the knot from the knotting-bill.

I claim as my invention—

1. In a knotting apparatus for grain-binders, the combination, substantially as herein set forth, of a knotter-operating wheel provided with segmental gear and a cam-groove on the same face or side of the wheel, a knotter-shaft carrying a knotter-bill, a single rocking lever, a gripping device, a pawl pivoted to said lever for operating said device, a reciprocating plate operated by said rocking lever and carrying a knife for severing the binding-cord between the knotting-bill and the gripping-disk, and a stripping device for stripping the knot from the knotting-bill, substantially as described.

2. The combination, as herein described, of the knotter-operating wheel A, provided with segment-gear A' and cam-groove C on the same side of the wheel, the knotter-shaft B', the rocking lever D, the reciprocating sliding plate E, provided with cord-guide E^3 and with notch e' , and the tucking-finger e^2 , as and for the purpose set forth.

3. The vibrating carrier, in combination with the cord-guide and stripper, the cord-cutter, and the actuating-pawl of the cord-holder, all connected with and operated by the said carrier, substantially as and for the purposes set forth.

JOHN F. APPLEBY.

Witnesses:

M. L. ADAMS,
R. C. HOWES.