

No. 824,671.

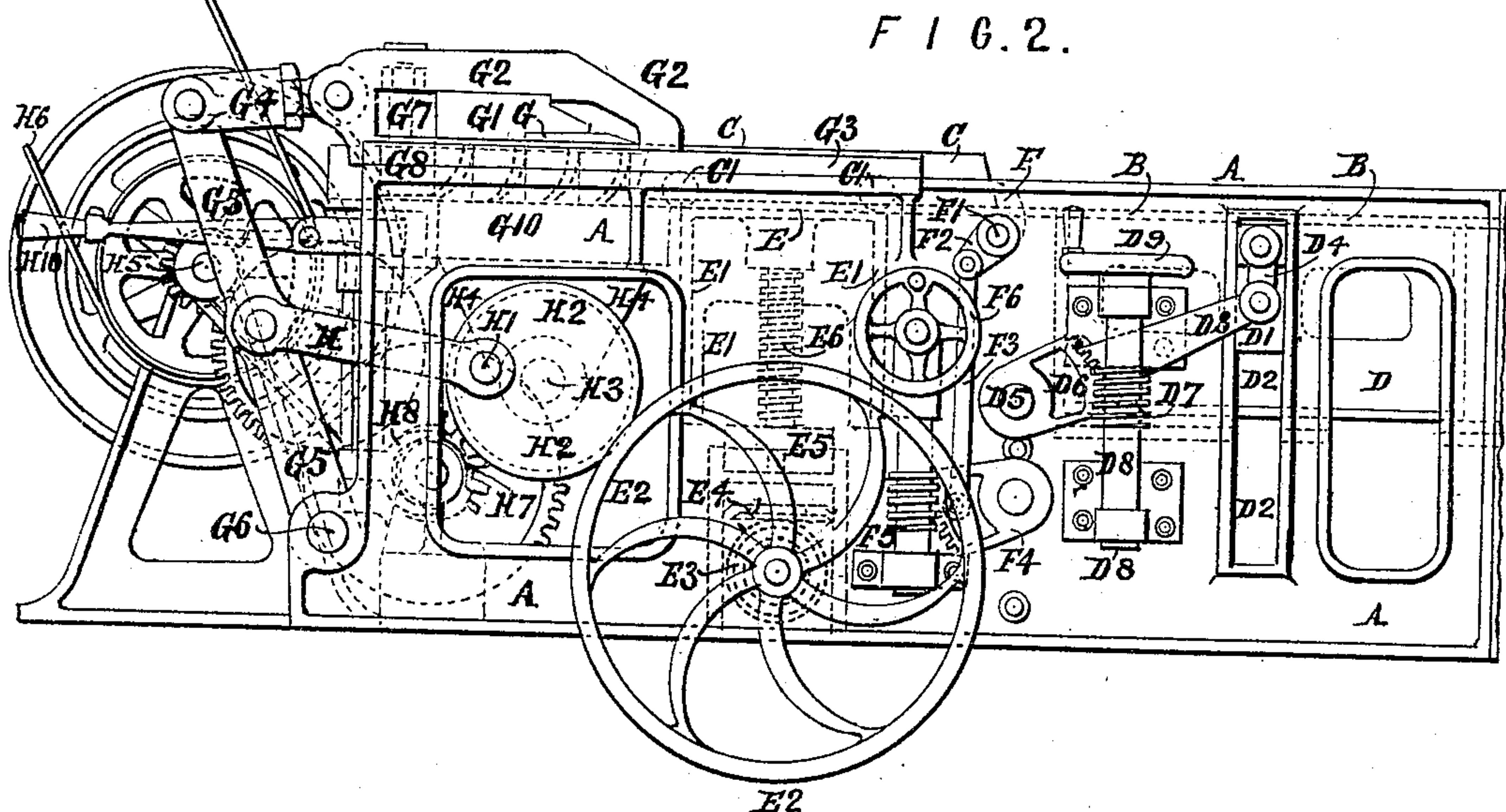
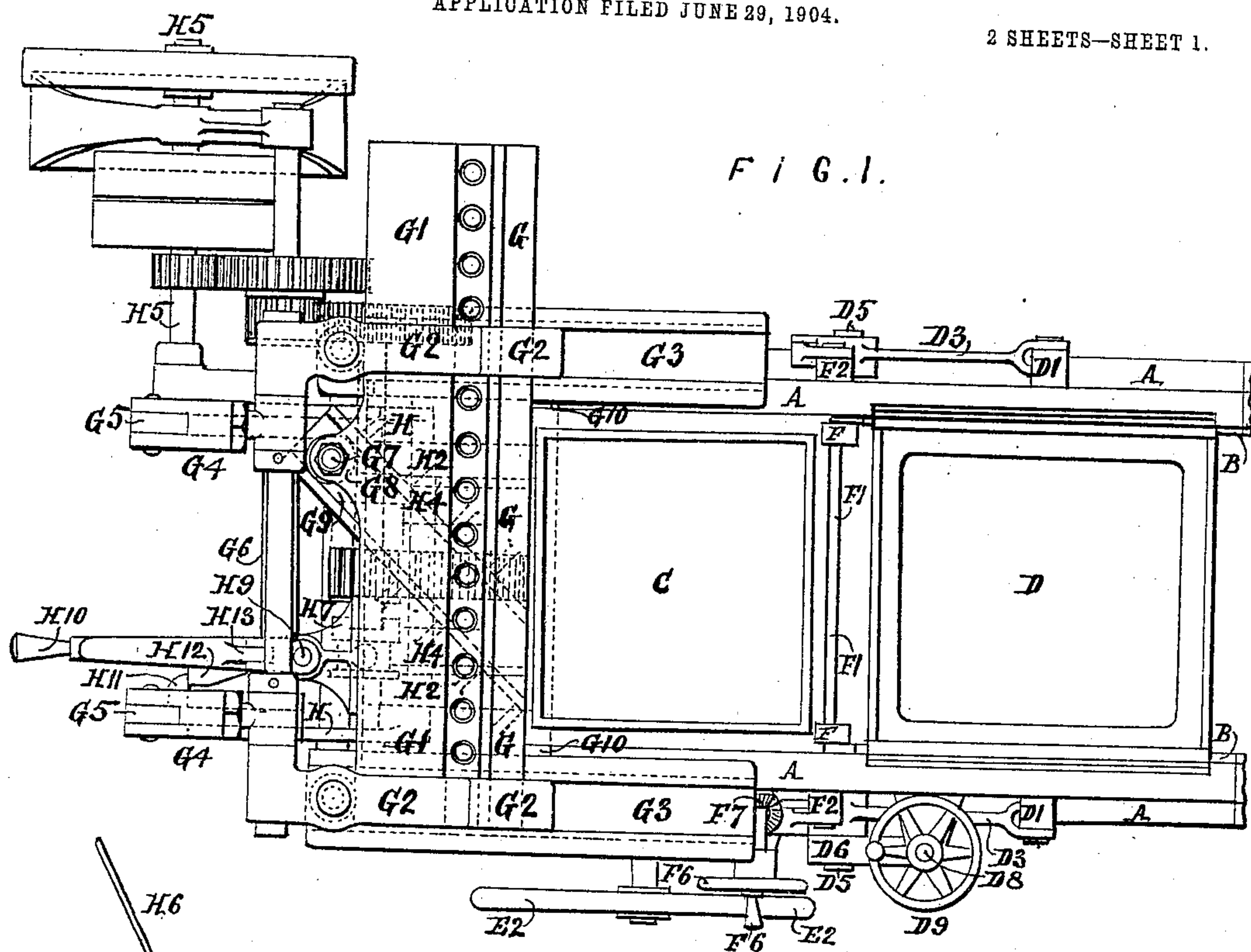
G. RITCHIE.

PATENTED JUNE 26, 1906.

MACHINE FOR HOLDING, CUTTING, AND ORNAMENTS THE EDGES
OF BOOKS, PAPERS, OR CARDS.

APPLICATION FILED JUNE 29, 1904.

2 SHEETS—SHEET 1.



Witnesses:

Horace A. Crossman.
Robert H. Hamner.

Inventor:

George Ritchie.
by Walter A. Knight
Atty

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2 SHEETS—SHEET 2.

FIG. 1^a

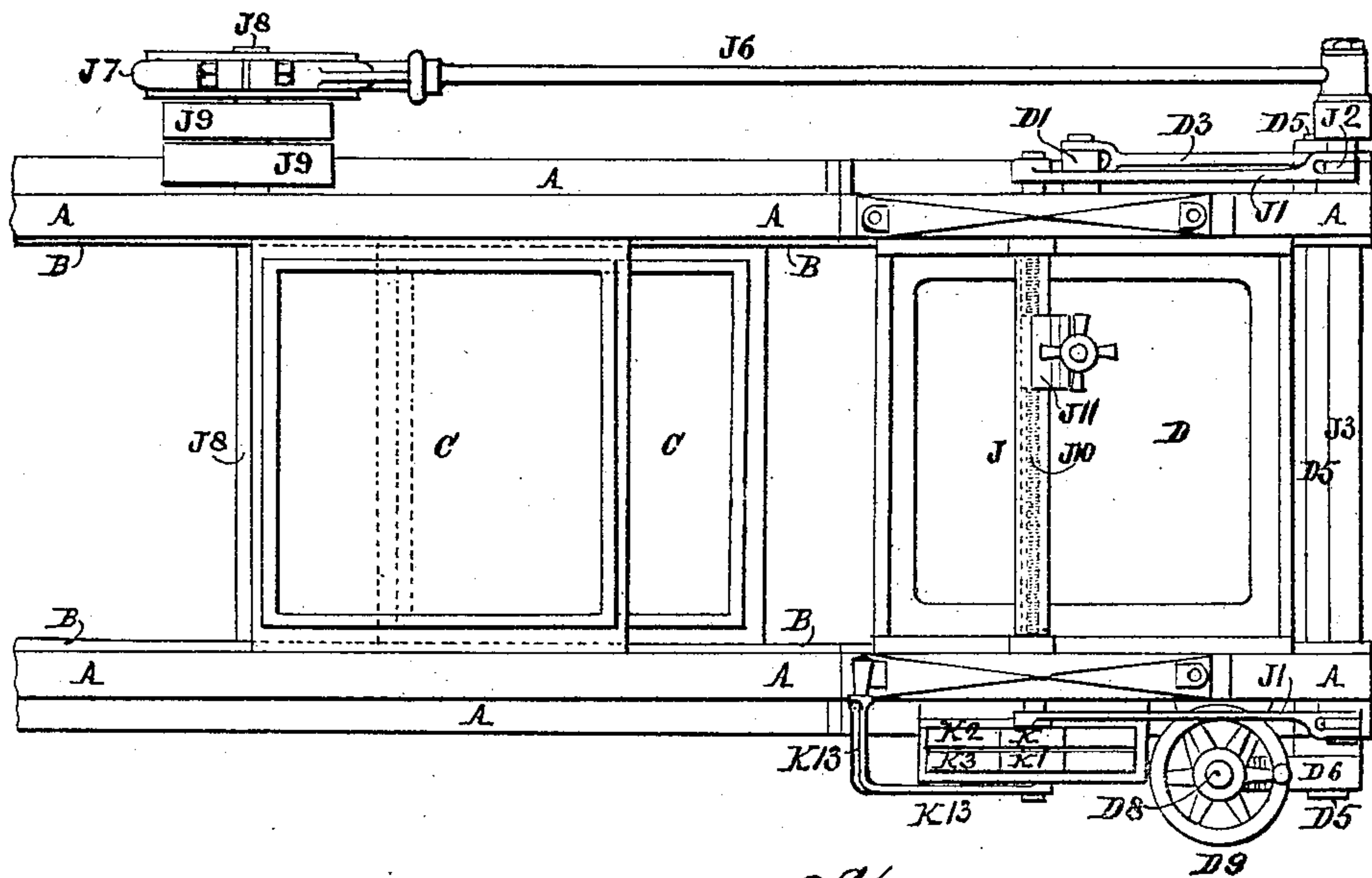
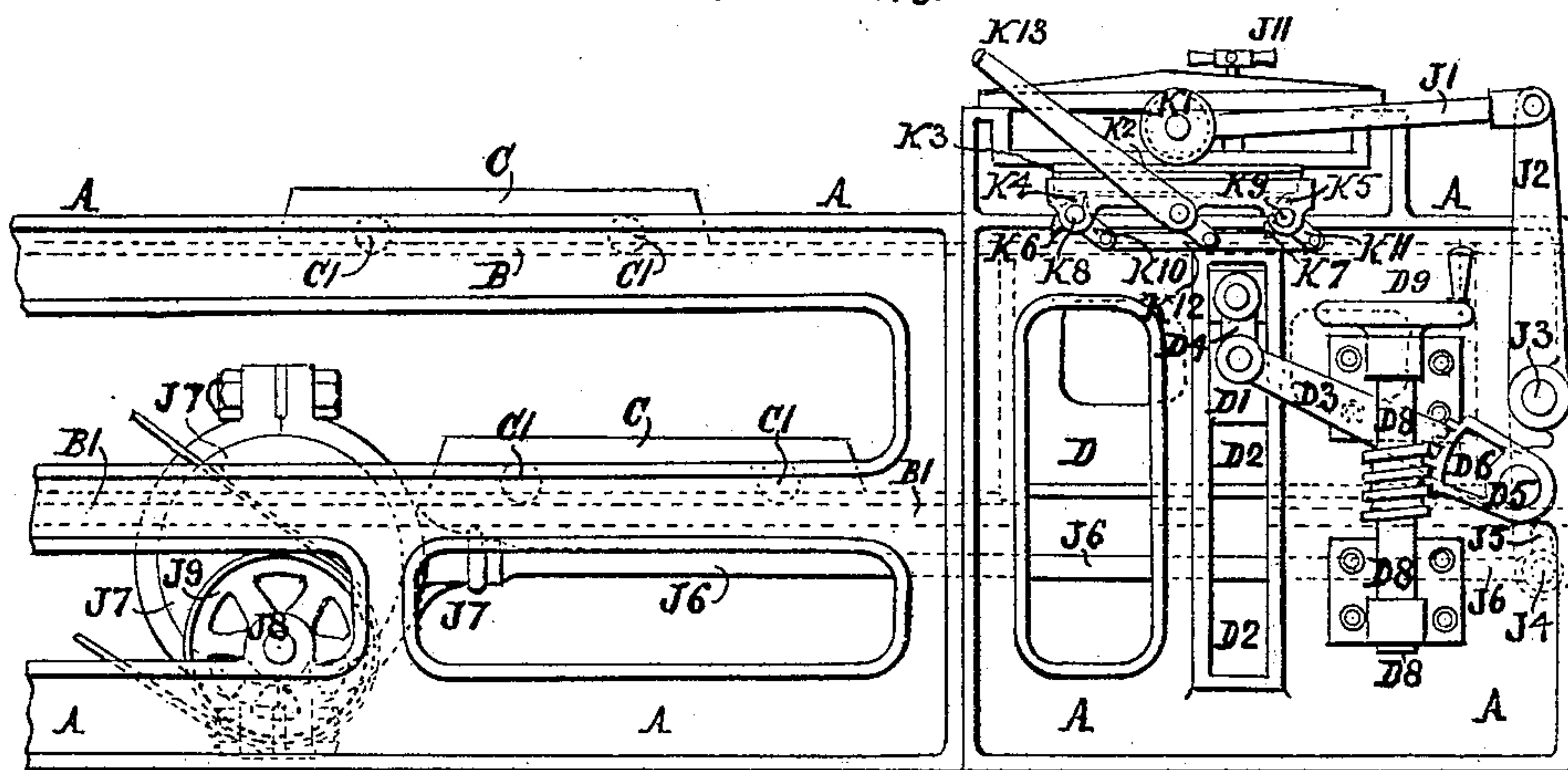


FIG. 2^a



Witnesses:

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UNITED STATES PATENT OFFICE.

GEORGE RITCHIE, OF NORTH MOUNT VERNON, SCOTLAND, ASSIGNOR TO
CRAWLEY BOOK MACHINERY COMPANY, OF NEWPORT, KENTUCKY, A
CORPORATION OF KENTUCKY.

MACHINE FOR HOLDING, CUTTING, AND ORNAMENTING THE EDGES OF BOOKS, PAPERS, OR CARDS.

No. 824,671.

Specification of Letters Patent.

Patented June 26, 1906.

Application filed June 29, 1904. Serial No. 214,643.

To all whom it may concern:

Be it known that I, GEORGE RITCHIE, a subject of the King of Great Britain and Ireland, and a resident of North Mount Vernon, in the county of Lanark, Scotland, (whose postal address is Hailey, North Mount Vernon, Lanarkshire, Scotland,) have invented certain new and useful Improvements in Machines for Holding, for Cutting, and for Ornamenting the Edges of Books, Papers, or Cards, (for which I have applied for a British patent, No. 10,212, dated May 4, 1904,) of which the following is a specification.

My invention has for its object to provide an improved machine for holding, for cutting, and for ornamenting the cut edges of books, paper, or cards which will produce superior results and minimize the labor required while the books or other articles are undergoing these operations.

In the embodiment of my invention here shown a series of open rectangular frames are provided with clamping arrangements for holding the books or other articles and are adapted to run upon guide-rails on a pair of long parallel frame-standards, so that the frames and the books or other articles which they contain may be successively moved to those parts of the machine where the various operations are performed.

In order that my invention and the operation thereof may be properly understood, I hereunto append two sheets of explanatory drawings, throughout which like reference letters indicate like parts, and in which—

Figure 1 is a plan, and Fig. 2 a side elevation, of the left-hand end of an example of my improved machine, these figures being continued as regards the right-hand end of the machine in corresponding views, Figs. 1^a and 2^a on Sheet 2.

The main framing of the machine consists of two long standards A, the central parts of which may be of any convenient length and are removed in the drawings to save space. These standards are placed parallel to one another and may be made in any convenient number of parts arranged for bolting down to a floor or foundation, the frames being stiffened at suitable intervals in their lengths by transverse members connecting them. Upon these standards are formed two sets of guide-rails—an upper set B at the top and a lower set B' at a level of about half the height of the standards. Rectangular frames C for holding the books or other articles and fitted

with any convenient clamping arrangements (not shown) to that end run upon antifriction-rollers C' upon the rails B B'. In order to move these frames C from the upper, B, to the lower, B', set of rails, there are provided two lifting and lowering devices—one at the extreme right-hand end of the machine and the other near the left-hand end. These lifting and lowering devices consist each of an open rectangular frame D, formed with continuations of the rails upon its upper surface and guided by blocks D', formed on it, sliding in vertical guides D², formed in the standards A. The frames D are lifted and lowered by levers D³ at each side connected to the frames by links D⁴ and keyed upon transverse shafts D⁵, carried in the standards A. The shafts D⁵ have also keyed to them segmental worm-wheels D⁶, with which gear worms D⁷, carried on shafts D⁸, carried in bearings in the standards and provided with hand-wheels D⁹, the frames D being thus raised or lowered by rotation of the hand-wheels D⁹ in either direction.

In operation one of the frames C is moved by hand along the upper rails B of the machine until it is over an adjusting-table toward the left-hand end of the machine. This adjusting-table consists of a platen E, which may be raised or lowered, so as to adjust the amount of the books or other articles extending above the frames C and to be cut off. The platen E works in guides E' in the standards A and is raised and lowered by a hand-wheel E², operating through bevel-wheels E³ E⁴, a nut E⁵ gearing with a screw E⁶, fixed to the under side of the platen. When the frame C is in position over the platen E, the books or other articles are inserted on edge in the frame. The height of the platen E is then adjusted so as to leave that amount of the books or other articles which it is desired should be cut off projecting above the edge of the frame. The books or other articles are then clamped within the frame, the books being then ready to undergo the cutting operation. Rotating stops are then operated, so that they hold the frame against the pressure of the cutting-knife. These stops consist of lugs F, keyed upon a shaft F', carried in the standards A. The shaft F' has on it a crank F², connected by a link F³ with a segmental worm-wheel F⁴, with which gears a worm F⁵, carried on a shaft in the standard A and operated by a handle F⁶ through bevel-gear F⁷ to move the lugs F either to the posi-

tion shown (when the frame C is held by them against the pressure of the knife) or clear of the end of the frame C and so that the latter may be pushed backward along the rails.

The cutting mechanism consists of a knife G, bolted to a massive knife-bar G', sliding transversely in guides in a casting G², which in its turn slides in heavy guides G³, fixed to the tops of the standards A at the left-hand side of the machine. The casting G² is reciprocated to make the cut by adjustable links G⁴, connecting it at either side to two levers G⁵, carried upon a transverse shaft G⁶ in the standards A. The levers G⁵, reciprocating the cutting mechanism, are operated by links H from pins H' on crank-disks H², carried on the ends of a transverse shaft H³, carried in brackets H⁴, formed on the under side of the casting G¹⁰. The shaft H³ is driven by a train of gearing from a first-motion shaft H⁵, which is preferably driven continuously by a belt H⁶. In order to give a shearing cut, the knife-bar G' at the same time as it is reciprocated by the casting G² is given a transverse motion therein by means of a pin G⁷ in it carrying an antifriction-roller G⁸, which engages a diagonal slot G⁹ in a casting G¹⁰, bolted to the ends of the standards A and forming a distance-piece between them. It will be seen that by these means when the knife G is operated to cut it moves over the books operated on in the frame C diagonally, and therefore with a shearing action.

In order to start and stop the cutting motion when desired, a clutch H⁷ of ordinary jaw form is interposed in the train of gearing. This clutch is operated by a stirrup-lever H⁸, carried on the lower end of a vertical shaft H⁹, which is provided with an operating-hand-lever H¹⁰ at its upper end.

In order that the knife shall not perform more than one cutting stroke after the clutch H⁷ has been thrown into gear, a tappet H¹¹ is provided upon one of the levers G⁵, and which encounters a cam-surface H¹², formed upon the side of the hand-lever H¹⁰, and throws the clutch out of gear by its moving the hand-lever. The tappet H¹¹ passes at the end of the outward stroke of the lever G⁵ beyond the cam-surface and engaging the lip formed on that end is prevented from returning, so holding the cutting mechanism at the end of its stroke against any tendency of the inertia of the parts to cause it to commence a new stroke. A horizontal hinge H¹³ is provided in the hand-lever H¹⁰ in order that the lip of the cam-surface H¹² may be freed from the tappet H¹¹ by raising the lever H¹⁰ when it is desired to throw the clutch into gear and perform a cutting stroke. As soon as the levers G⁵ have commenced to move the hand-lever H¹⁰ is released again and the clutch automatically thrown out of gear upon the return

movement of the levers G⁵, as hereinbefore described.

After the books in any frame C have had their upwardly-projecting edges cut that frame is moved along the rails B upon the top of the standards A toward the right. A series of the frames C lie here, (in the drawings a considerable length of standards A is omitted at the point where they are shown as broken,) and the upper edges of the books in them are now gilt or colored by hand. The frames C are afterward passed under the burnisher at the right-hand end of the machine, there being always a sufficient number of frames along the top rails B to admit of the gilding or coloring drying before they reach the burnisher. The burnisher consists of a slide-bar J, which is reciprocated by links J' from levers J², carried in a rocking shaft J³ in the standards A. One of these levers is connected by a pin J⁴ (adjustable in a slot J⁵, so that the amount of oscillation of the levers J² may be varied) to the rod J⁶ of an eccentric J⁷ on a transverse shaft J⁸, carried in bearings in the standards A and provided with fast and loose pulleys J⁹ for a belt. The slide-bar J has within it a screw-shaft J¹⁰, engaging a nut in a saddle J¹¹, which carries a spring-controlled burnishing-tool, of iron, stone, or other suitable material. The burnishing-tool is reciprocated by the connections described from the eccentric J⁷ and is at the same time traversed transversely across the books operated on by the screw-shaft J¹⁰, the screw-shaft J¹⁰ being slowly rotated by internally-toothed ratchet-wheels K K' engaging pawls of opposite hands carried by the shaft J¹⁰. The cylindrical outer surfaces of these ratchet-wheels K K' rest upon frictional surfaces K² K³, carried in boxes fixed to the standards of the machine, and one or other of which may be brought into gear with the corresponding ratchet-wheel, so that the ratchet-wheels are oscillated by the reciprocations of the slide-bar J. Either of the frictional surfaces K² K³ may be raised into contact with the surface of the wheels K K' as it is desired to feed the burnishing-tool transversely in one direction or the other, the means for doing this consisting of tappets K⁴ K⁵ K⁶ K⁷, carried on short shafts K⁸ K⁹, one pair of tappets K⁴ K⁵ being in the plane of one surface K², while the other, K⁶ K⁷, is in the plane of the other surface K³. The tappet-shafts have on them arms K¹⁰ K¹¹, connected by a link K¹² with a hand-lever K¹³, centered on the framing, and when the hand-lever is in the position shown the one surface K² is raised and the corresponding ratchet-wheel K operated, while the other wheel K' remains idle, the burnishing-tool being then traversed in the one direction, or when the hand-lever K¹³ is moved to a corresponding position upon the other side of its center the other surface K³ is raised, the ratchet-wheel K' operated, and the burnish-

ing-tool traversed in the opposite direction. After the books are burnished upon the edge which has been cut the frame C containing them is lowered by means of the hereinbefore-described lowering-frame D beneath the burnisher to the lower set B' of rails. It is then moved along these rails to the left-hand lowering-frame D, where it is raised again to the level of the upper rails B and moved along until it is over the adjusting-table, where the books within it are taken out, readjusted with one of their uncut edges uppermost, again clamped, and have that edge cut. The frame C containing them is then moved along the upper rails B toward the burnisher and the sequence of operations continued until all the edges of the books have been cut, the books being then removed from the machine.

What I claim as my invention is—

1. In a machine of the type and for the purposes described; the combination of book-carrying frames, height-adjusting devices and cutting devices for operating upon books or other articles carried in the frames, substantially at one end of the machine; a bur-

nishing device for operating on the said articles substantially at the other end; an upper and a lower set of frame-carrying rails forming communication between the cutting and burnishing devices; and means for transferring the frames from one set of rails to the other, as described.

2. In a machine of the type and for the purposes described, the combination of book-carrying frames, height-adjusting devices and cutting devices for operating upon books or other articles carried in the frames, a burnishing device for operating on said articles, an upper and lower set of frame-carrying rails forming communication between the cutting and burnishing devices, and means for transmitting the frames from one set of rails to the other.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

GEORGE RITCHIE.

Witnesses:

DONALD SINCLAIR.

TATLOCK SILLARS.