

No. 776,267.

PATENTED NOV. 29, 1904.

C. SEYBOLD.
BOOK SMASHING MACHINE.
APPLICATION FILED DEC. 18, 1903.

NO MODEL.

3 SHEETS—SHEET 1.

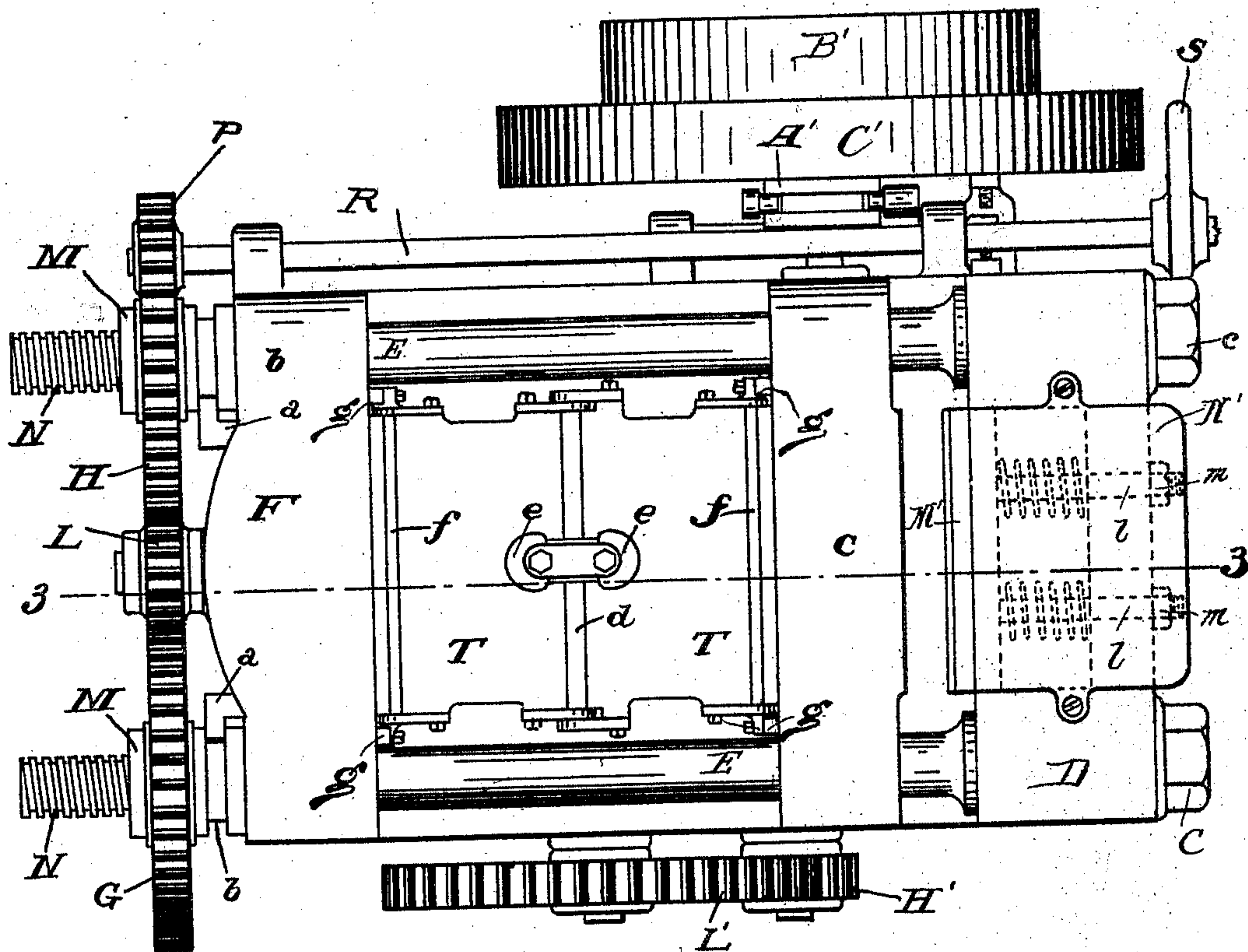


Fig. 1.

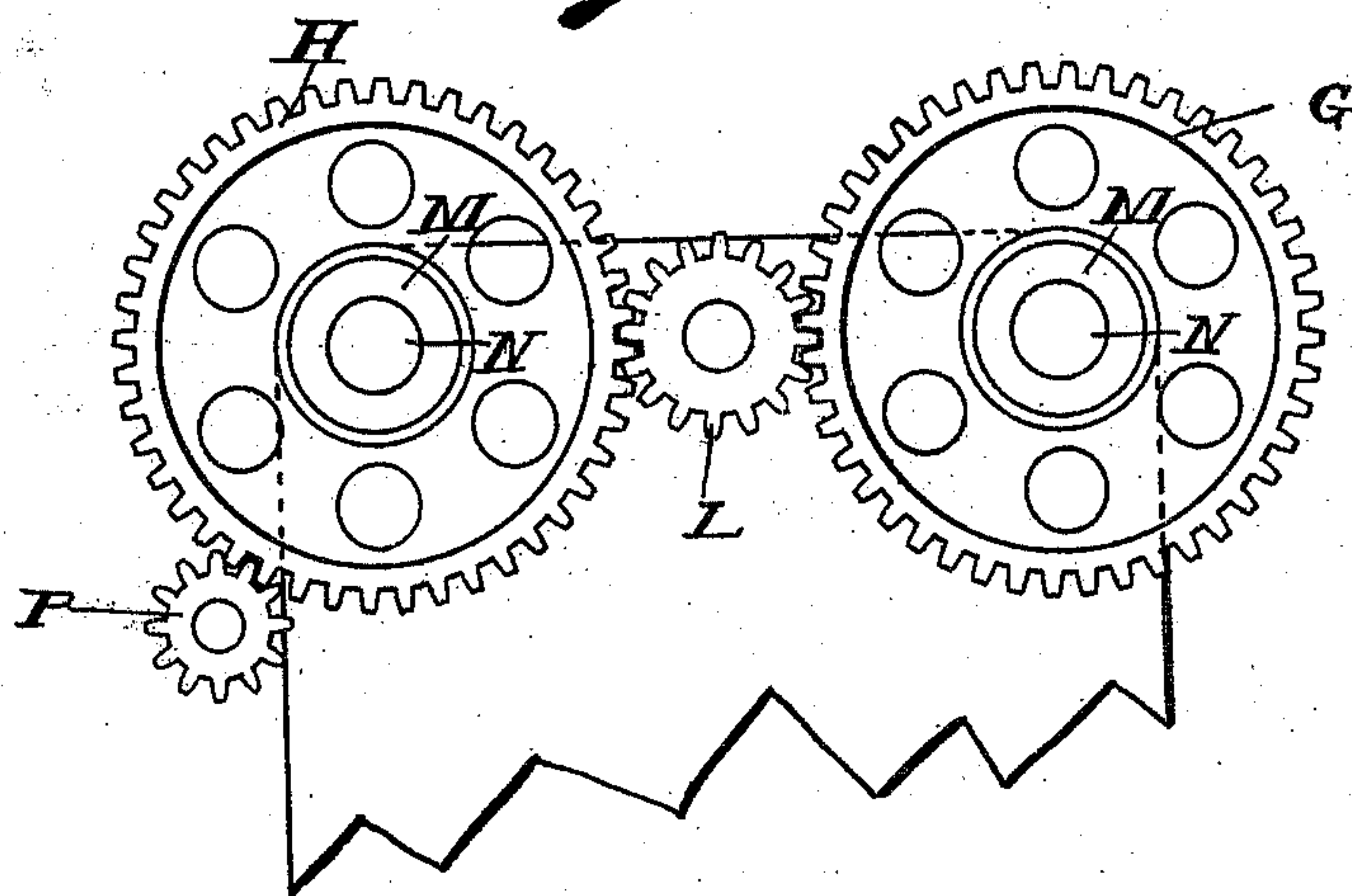


Fig. 2.

Witnesses
O. M. Rogers
W. S. Tyler

Inventor
Charles Seybold
by Alfred M Allen
Attorney

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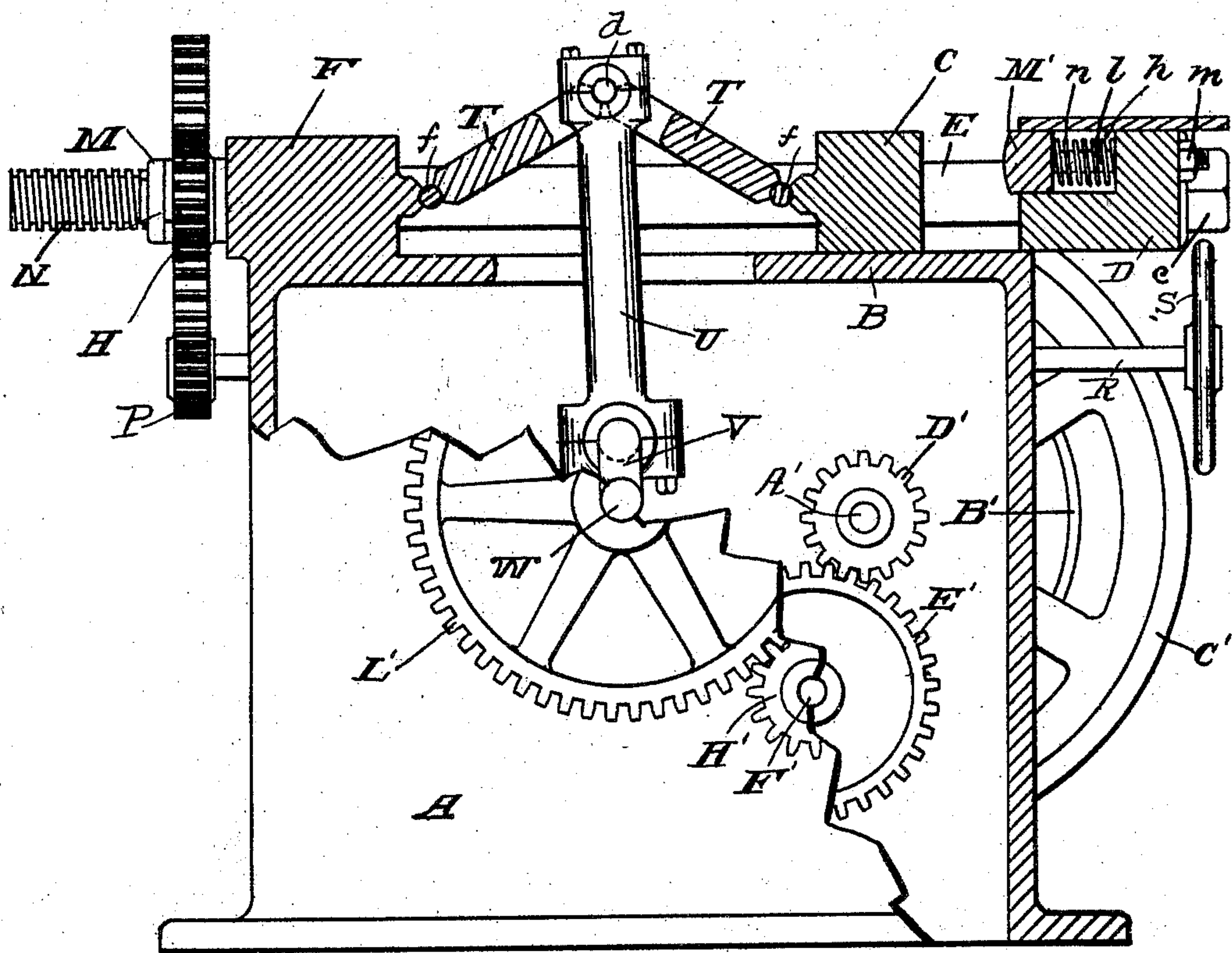


Fig. 3.

Witnesses
O. M. Rogers
W. S. Tyle

Inventor
Charles Seybold
by Alfred M. Allen
Attorney

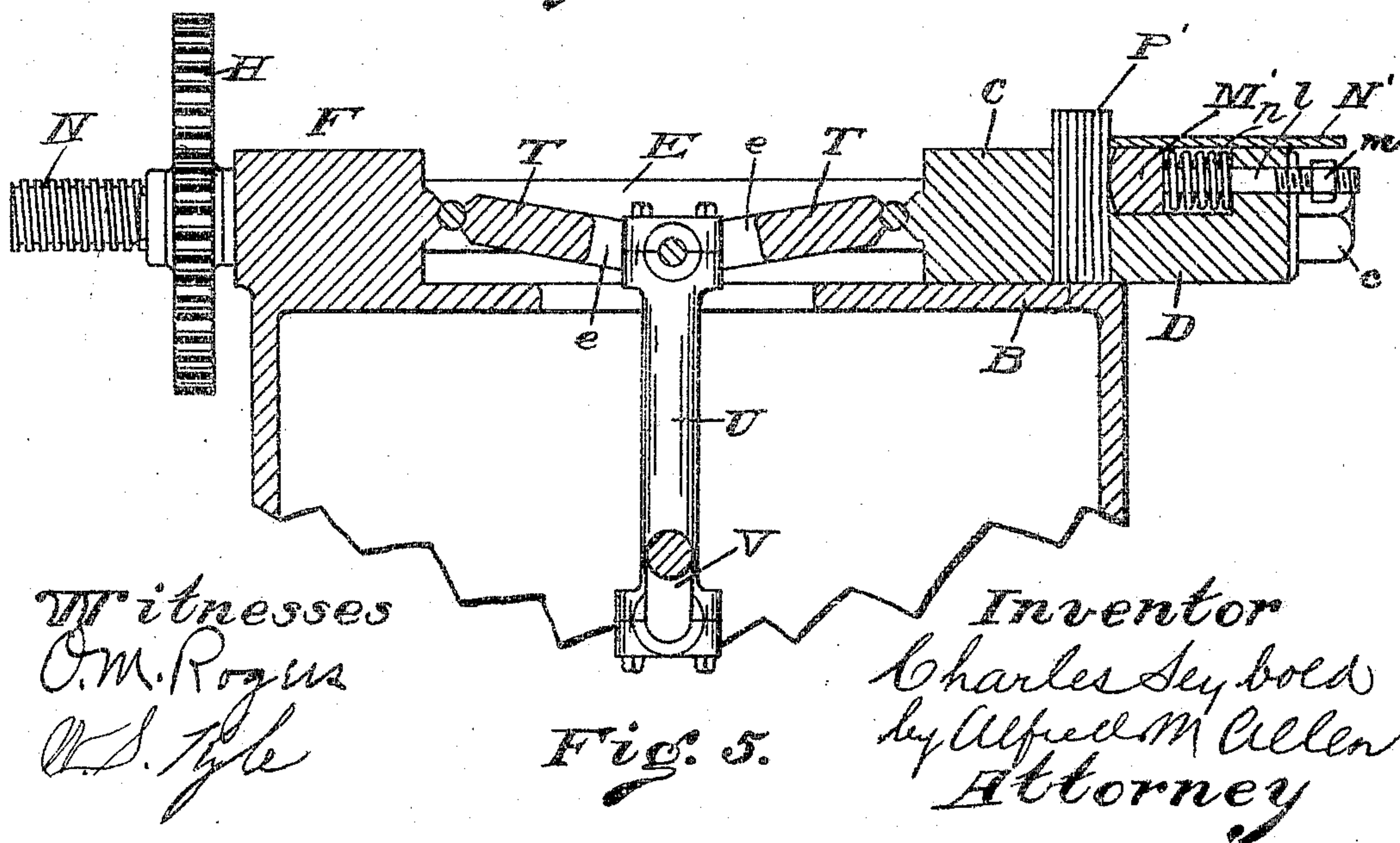
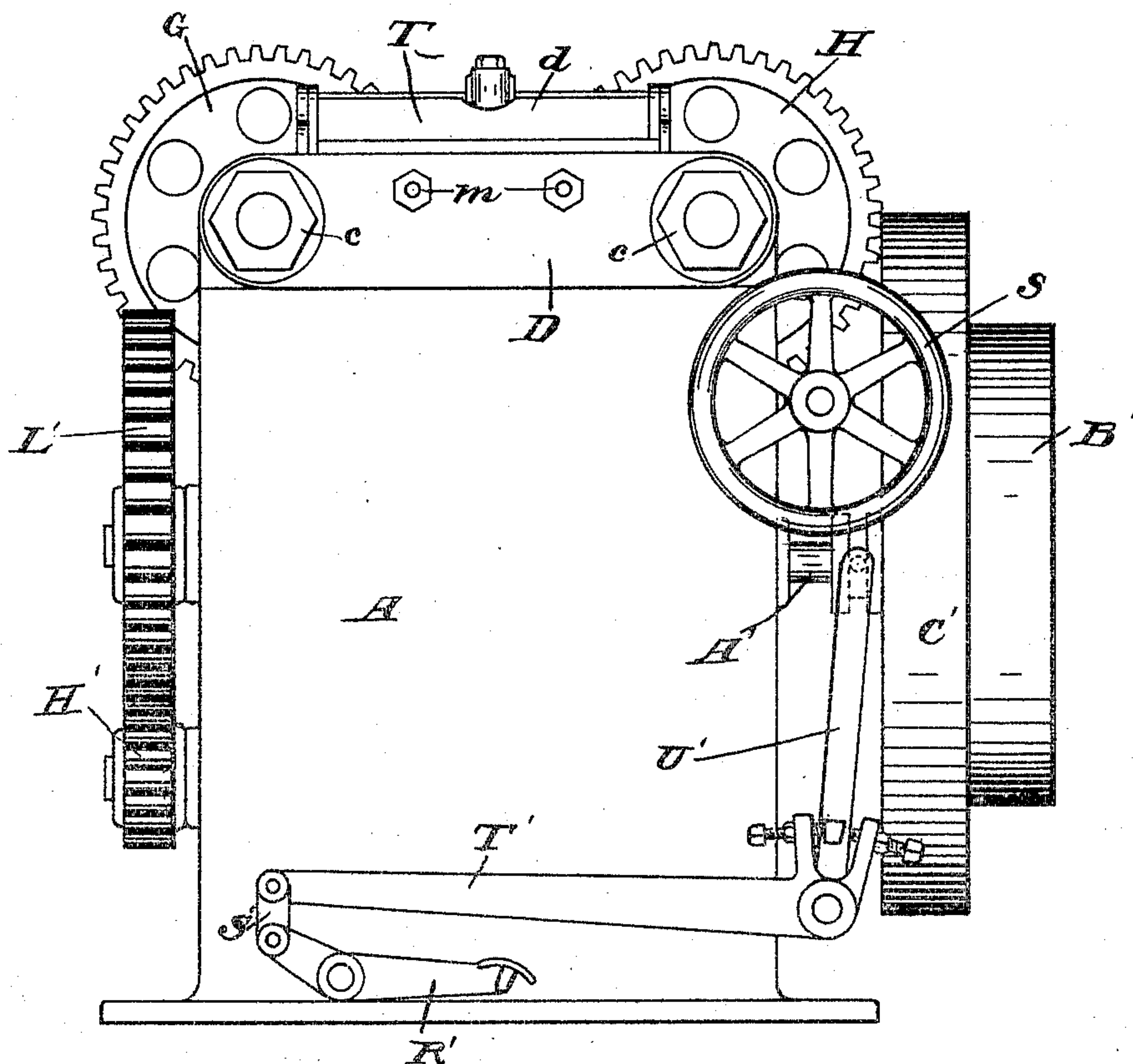
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3 SHEETS—SHEET 3.



Witnesses
O. M. Rogers
A. S. G. L.

✓ Inventor
Charles Seybold
by Alfred M Allen
Attorney

UNITED STATES PATENT OFFICE.

CHARLES SEYBOLD, OF DAYTON, OHIO.

BOOK-SMASHING MACHINE.

SPECIFICATION forming part of Letters Patent No. 776,267, dated November 29, 1904.

Application filed December 18, 1903. Serial No. 185,723. (No model.)

To all whom it may concern:

Be it known that I, CHARLES SEYBOLD, a citizen of the United States, residing in Dayton, county of Montgomery, and State of Ohio, have invented certain new and useful Improvements in Book-Smashing Machines, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification.

My improvements relate to machines for compressing or smashing the signatures of books to be bound in order that the back edge or thickest portion of the signature may be flattened, so that the signatures can be properly bound together and the back not be thicker than in the front.

Ordinarily book-signatures are smashed in a press in which jaws move vertically and the signatures are piled on the bottom plate. With piles of signatures which are of a spongy nature, there being ordinarily no provision for holding the signatures, they are very apt to slip and become displaced, so that for very spongy books it is frequently necessary to smash the back edge by hand.

It is the purpose of my invention to overcome these difficulties by that certain novel construction and arrangement of parts to be hereinafter particularly pointed out and claimed, whereby the book-signatures may be smashed by jaws moving horizontally, so that the bed-plate of the machine will form a rest for the back of the signatures and keep them in adjustment. In this same connection a heavy spring-bar is provided for one or both of the jaws, so arranged that as the compression commences the bar will hold the signatures tightly and then yield the necessary extent to permit the desired compression.

There are certain other novel features of construction and operation, which will be more particularly referred to in the course of the description.

In the drawings, Figure 1 is a top plan view of my improved machine. Fig. 2 is a rear elevation of the upper portion of the machine, showing the adjusting-gears. Fig. 3 is a central vertical section taken on the lines 3 3 of Fig. 1. Fig. 4 is a front elevation of the ma-

chine. Fig. 5 is a detail vertical sectional view showing the smashing-jaws in operation.

A represents a solid and massive framework for holding the operating mechanism upon the bed-plate B, on which are mounted the book-smashing jaws C D. One of these jaws, as D, is relatively fixed, while the other jaw, C, is reciprocated horizontally to effect the necessary compression. The jaw D is mounted on the massive bolts or rods E E, which pass through each end of this jaw and to which the jaw is secured by the nuts *c c*. These massive bolts or rods run parallel to each other and horizontally through the head F at the rear side and a part of the framework of the machine and carry on their outer ends the gears G H, connected by the intermeshing pinion L, mounted on a stub-shaft on the rear side of the head F. The hub portions M M of these gears G H are screw-threaded on the screw-threaded ends N N of the rods E, and the gears, with their hubs, are kept in position by the lugs *a a* on the frame of the machine which engage the grooves *b b* in the hubs M M.

P is a pinion mounted on the end of the shaft R, journaled in suitable bearings on the side of the framework and carrying the hand-wheel S at the front end, and this pinion P meshes with the gear H, so that by turning the hand-wheel the gears H G and their hubs M M will be rotated simultaneously to the same extent. As the hubs are prevented from advancement on the screw-threaded nuts of the rods E, the result of the rotation of the gears will be to cause the rods, and with them the jaw D, to be moved with relation to the frame of the machine. The other jaw, C, is mounted and guided on the rods E E to move horizontally.

T T are toggle leaves or plates pivoted together by the rod *d*, mounted on the connecting-rod U, which connects the knuckle-joint of the toggle-leaves to the crank V on the shaft W, journaled in suitable bearings in the middle portion of the side frames of the machine. In order to allow for the movement of this toggle connecting-rod, the toggle-leaves are cut away at *e e*. The outer sides of the toggle-leaves are pivoted the one to the

head F of the frame and the other to the sliding jaw C by the rods *f f*, which pass through suitable ears on the toggle-leaves and which rods are flattened at their outer ends and secured by the tap-screws *g g* to the head F and the sliding jaw C, respectively.

A' is the driving-shaft of the machine, provided with the driving-pulley B' and the fly-wheel C', which driving-shaft carries the gear D', intermeshing with the gear E' on the shaft F', journaled across the machine and carrying at the opposite end the pinion H', meshing with the gear L' on the shaft W, with which shaft the toggle-lever connecting-rod U is connected by the crank V, as above described. It will be evident from this construction that the rotation of the driving-shaft through the intermediate gearing and toggle-lever construction will reciprocate the sliding jaw C toward and away from the relatively fixed jaw D.

The jaw D is provided with a recess *h*, in which is mounted to slide horizontally the bar M'. This bar is provided with two rods *l l*, which pass through the rear portion of the jaw D and which are provided with nuts *m* on the outer end.

n n are coiled springs mounted on the rods *l l* and bearing between the recessed inner face of the jaw D and the bar M', so that the bar is normally held projecting a slight distance beyond the inner face of the jaw D, the amount of projection and tension of the springs being regulated by the nuts *m*.

N' is the table, secured to the upper face of the jaw D to cover up the bar and springs and to serve as a table-plate for the machine.

The operation of the machine will be clear from the foregoing description. The signatures P' to be smashed are placed between the jaws C D, with the backs of the signatures resting on the bed-plate B of the machine, the jaw D having been previously adjusted for the thickness of the books to be smashed. The operator then presses on the foot-treadle R', which by a series of levers S' T' is connected with the shifting rod U', in engagement with a friction-clutch or other device for coupling the driving-pulley to the driving-shaft, so as to start the machine. The rotation of the driving-shaft through the train of gearing above described draws down the connecting-rod U and straightens out the toggle-leaves T T, which brings smashing pressure to bear on the signatures between the jaws C D. Before these jaws are brought into play the spring-bar M' presses against the signatures and holds them firmly in place and then yields against the pressure of the coiled springs. The full stroke of the toggle-leaves is slightly beyond their horizontal plane, as shown in Fig. 5, so that as the toggles are returned to their normal position a second and a final pressure is given the signatures of the book.

It will be evident from this construction

that no matter how spongy the book may be there will be no liability of any shifting of the signatures under the action of the smashing-jaws. The back edges of the signatures will be kept in line as they rest on the bed-plate, and the spring-bar M' will hold them rigidly in place as the pressure is brought to bear. While I have shown this spring-bar as applied to the relatively fixed jaw D, of course this bar could be readily applied to the movable jaw C or instead of a single bar two bars could be employed, one in each jaw. Moreover, it is evident that instead of coiled or other springs to permit the bar to yield as the jaws come together rubber blocks or other means for obtaining a yielding spring-pressure construction may be employed.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a book-smashing machine, the combination with the bed-plate and a pair of jaws, with means for actuating one of them in contact with the bed-plate, of a spring pressure-bar mounted on one of the jaws to hold the signatures in place, and means to permit the withdrawal of the pressure-bar to enable the jaws to operate.

2. In a book-smashing machine, the combination with the bed-plate, and a relatively fixed jaw mounted thereon, of a movable jaw, and means for actuating the same horizontally to smash the backs of the book-signatures held vertically on the bed-plate, and a spring pressure-bar mounted on one of the jaws to hold the signatures in place, and means to permit the withdrawal of the pressure-bar to enable the jaws to operate.

3. In a book-smashing machine, the combination with the frame, of parallel rods mounted horizontally thereon, a jaw secured to said rods at one end, means for shifting said rods on the frame to adjust the position of the jaw, and a sliding jaw mounted on said rods with toggle-levers secured between the sliding jaw and the frame, and actuating mechanism for the toggle-levers to reciprocate the sliding jaw to smash the book-signatures.

4. In a book-smashing machine, the combination with the frame, of parallel rods mounted horizontally thereon, a jaw secured to said rods at one end, means for shifting said rods to adjust the position of the jaw, and a sliding jaw mounted on said rods with toggle-levers secured between said sliding jaw and the frame, actuating mechanism for the toggle-levers to reciprocate the sliding jaw to smash the book-signatures, and a spring pressure-bar mounted on one of said jaws to prevent the slipping of the signatures.

5. In a book-smashing machine, the combination with the frame, of parallel screw-threaded rods mounted horizontally thereon, a jaw secured to said rods at one end, gears secured to the frame, provided with screw-

threaded hubs mounted on said rods, whereby the rotation of the gears will shift the rods and jaw with relation to the frame, a sliding jaw mounted on said rods, with toggle-levers secured between said sliding jaw and the frame, and actuating mechanism for the toggle-levers to reciprocate the sliding jaw to smash the book-signatures.

6. In a book-smashing machine, the combination with the frame, of parallel screw-threaded rods mounted horizontally thereon, a jaw secured to said rods at one end, gears secured to the frame, provided with screw-threaded hubs mounted on said rods, whereby

the rotation of the gears will shift the rods 15 and jaw with relation to the frame, a sliding jaw mounted on said rods, with toggle-levers secured between said sliding jaw and the frame, and actuating mechanism for the toggle-levers to reciprocate the sliding jaw to smash 20 the book-signatures, and a spring pressure-bar mounted on one of the jaws to prevent slipping of the signatures.

CHARLES SEYBOLD.

Witnesses:

HARRY ROTT,

FRANK W. HERBST.