

No. 763,840.

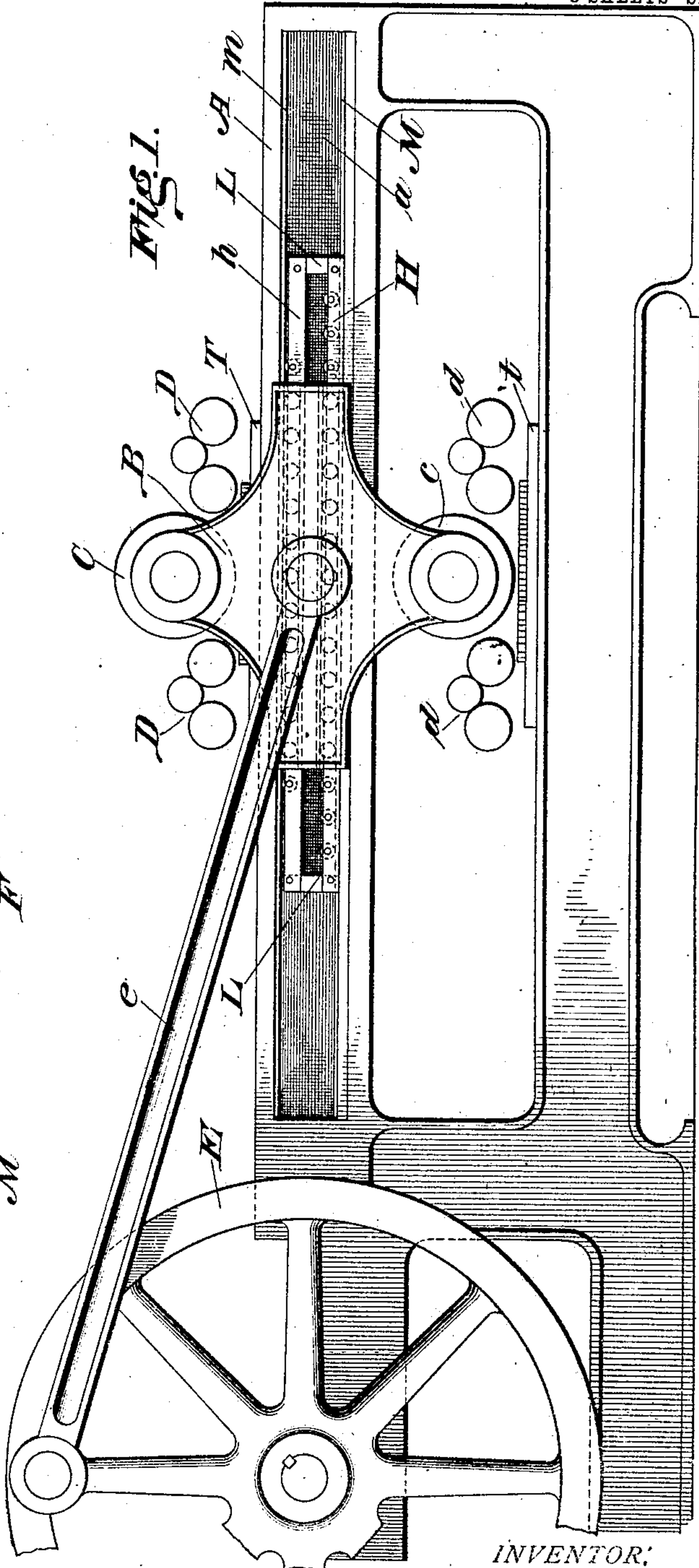
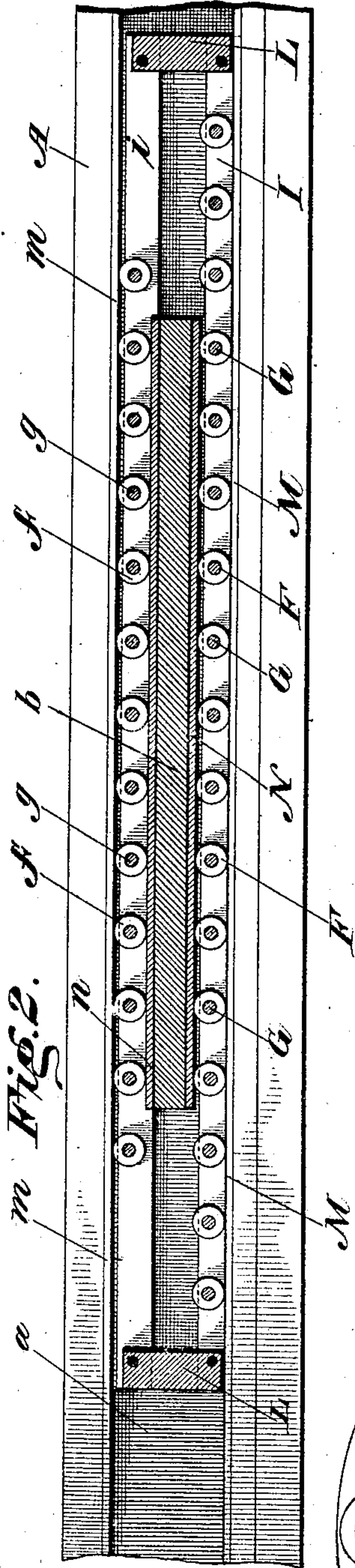
PATENTED JUNE 28, 1904.

H. F. BECHMAN.
PRINTING PRESS.

APPLICATION FILED MAR. 6, 1901.

NO MODEL.

3 SHEETS—SHEET 1.



WITNESSES

M. C. Fowler
James R. Mansfield

INVENTOR:

Henry F. Bechman
By *Alexander T. Towell*
Attorney

No. 763,840.

PATENTED JUNE 28, 1904.

H. F. BECHMAN.
PRINTING PRESS.

APPLICATION FILED MAR. 6, 1901.

NO MODEL.

3 SHEETS—SHEET 2.

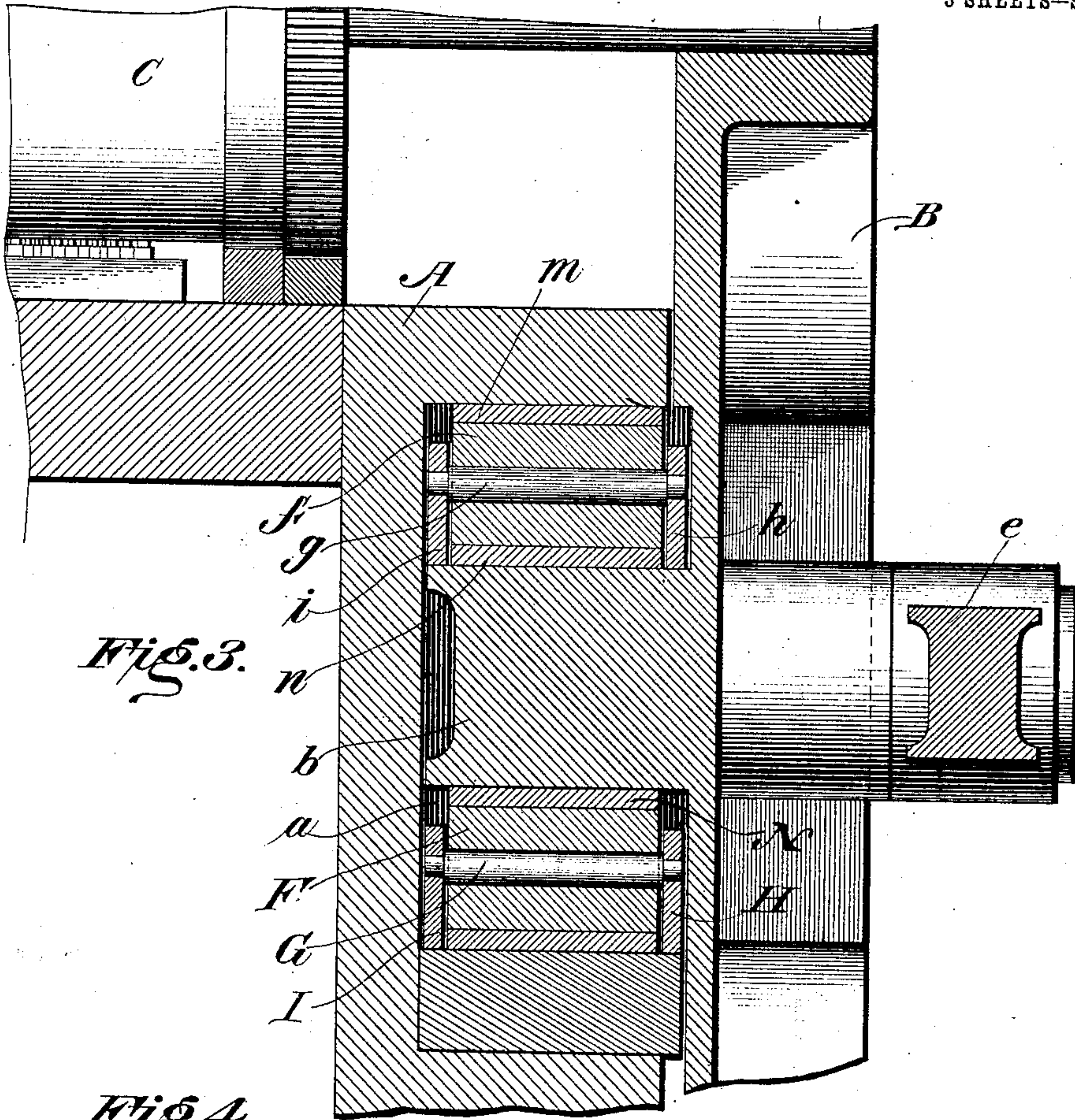


Fig. 3.

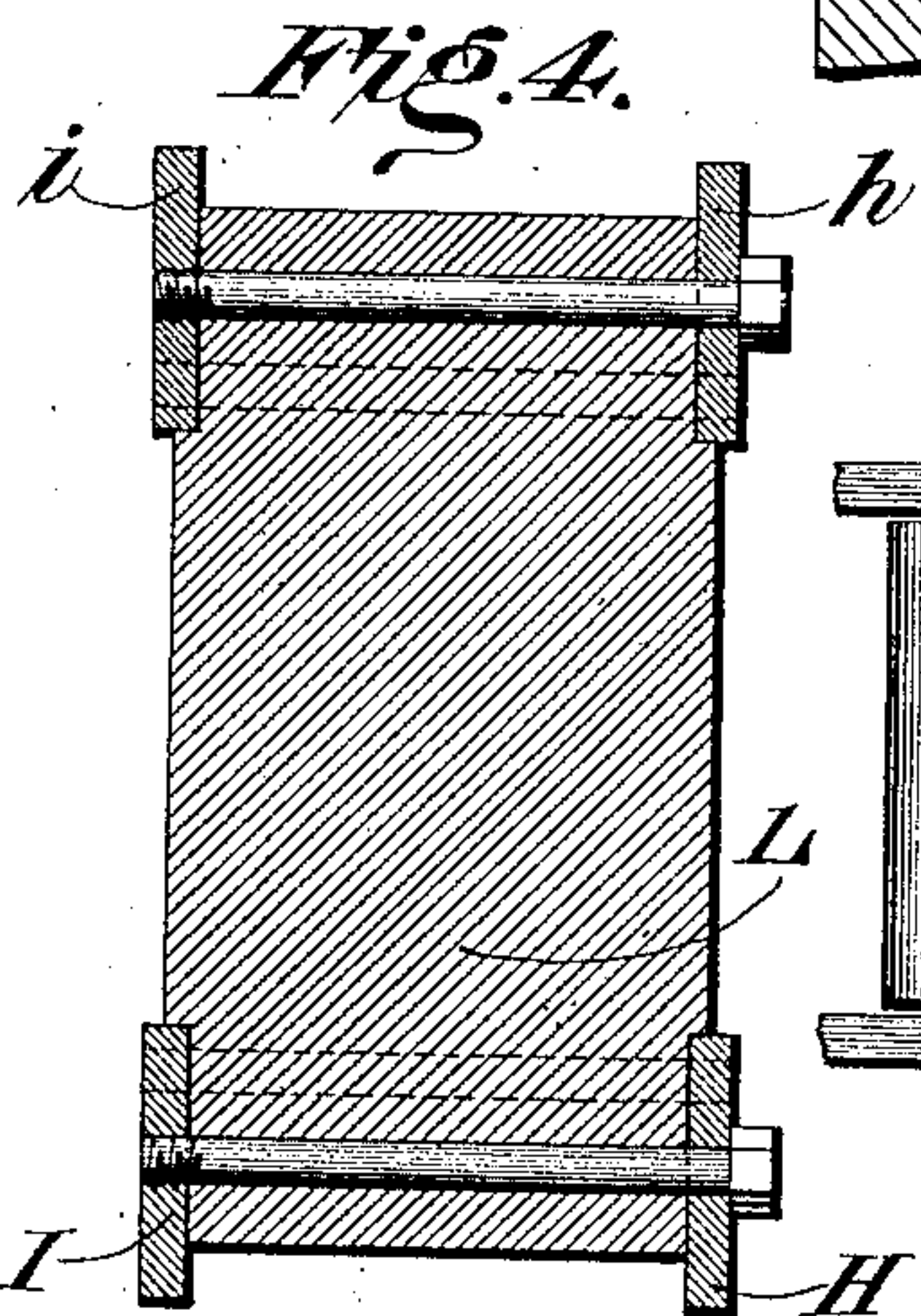


Fig. 4.

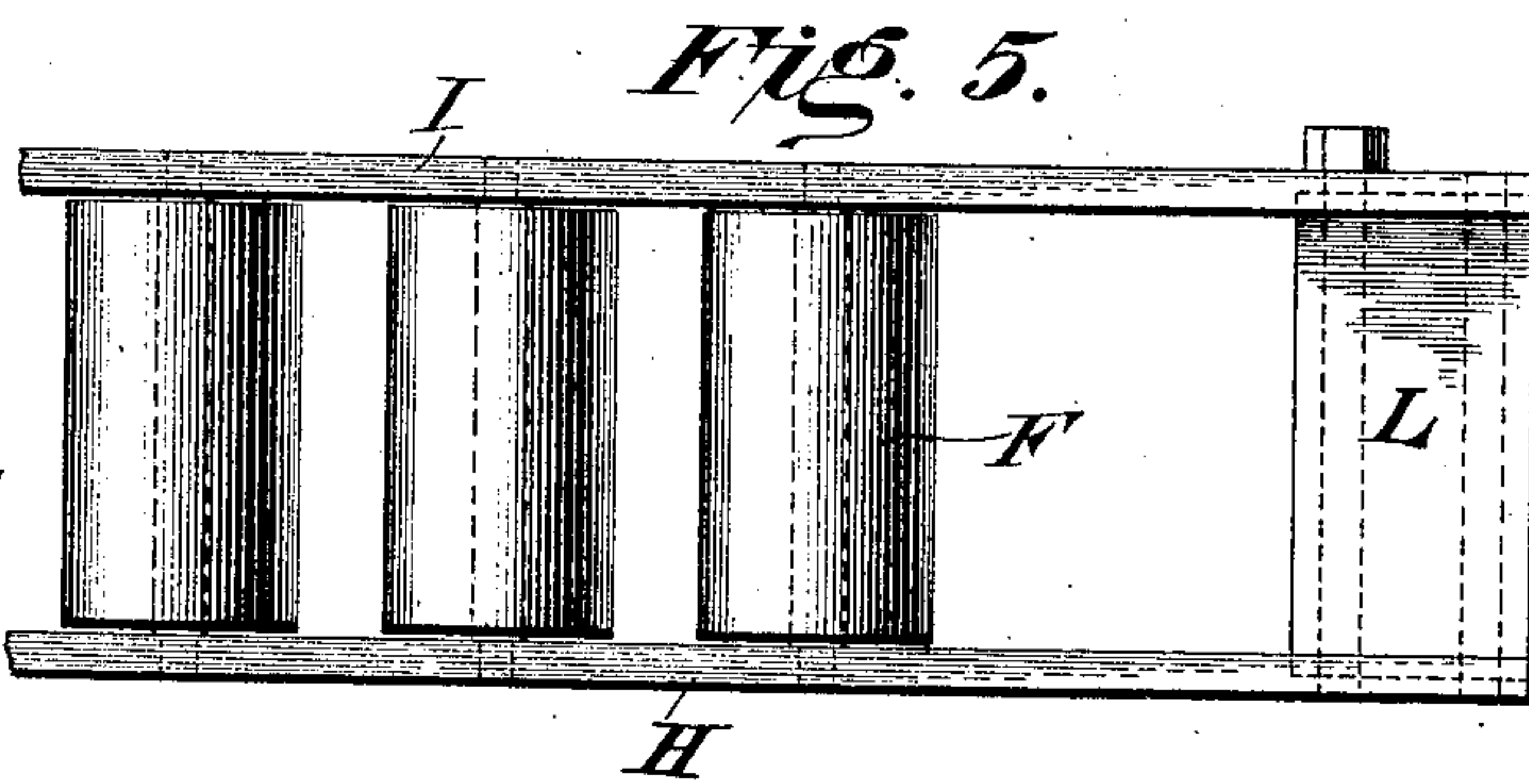


Fig. 5.

WITNESSES
McFowler
James R. Mansfield

INVENTOR:
Henry F. Bechman
By *Alexander & Sowell*
Attorneys.

No. 763,840.

PATENTED JUNE 28, 1904.

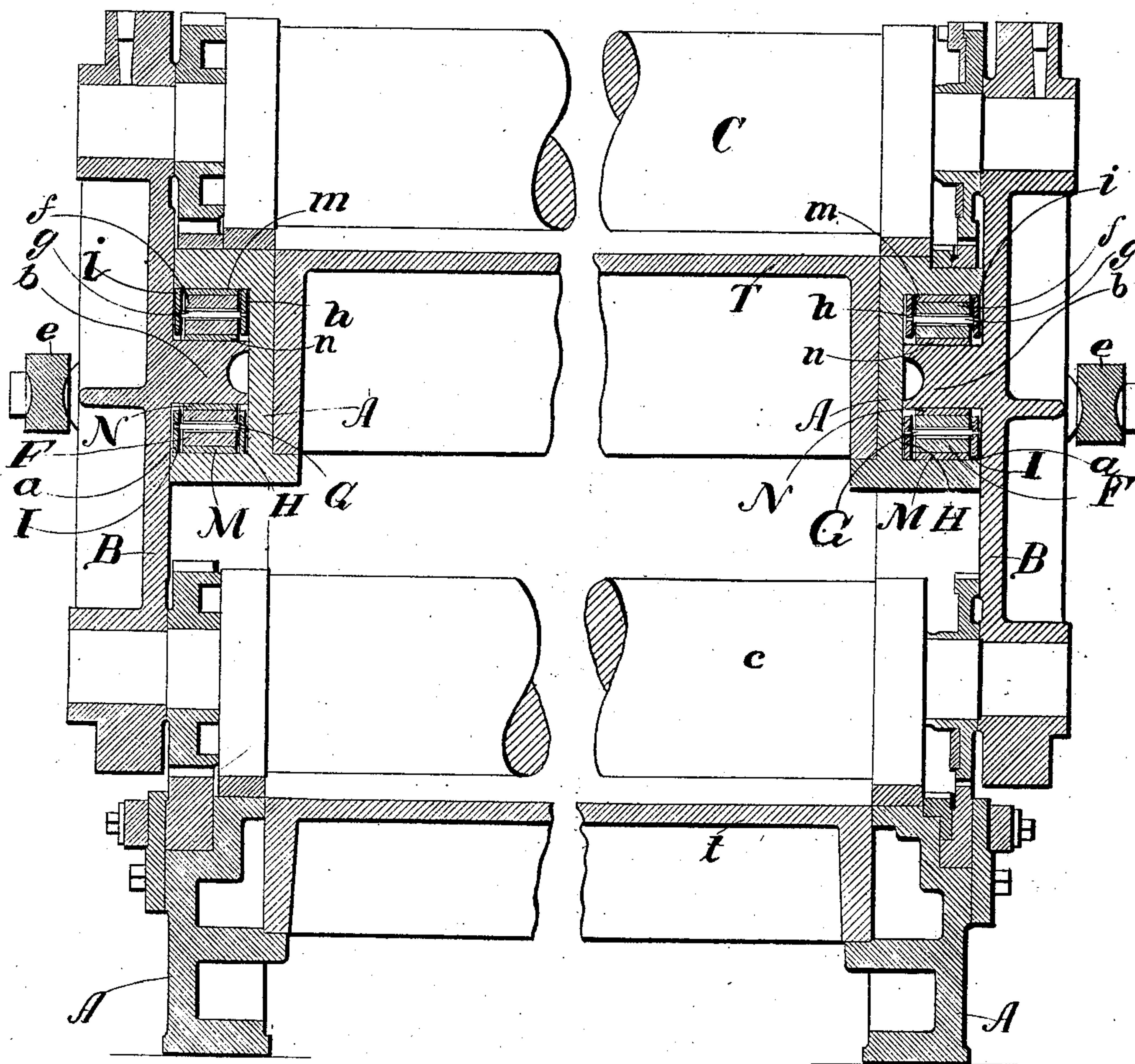
H. F. BECHMAN.
PRINTING PRESS.

APPLICATION FILED MAR. 6, 1901.

NO MODEL.

3 SHEETS—SHEET 3.

Fig. 6



WITNESSES

E. Edw. Huffer.
James R. Mansfield.

INVENTOR

Henry F. Bechman.
By: *Alexander D. Dowell*
Attorneys.

UNITED STATES PATENT OFFICE.

HENRY F. BECHMAN, OF BATTLECREEK, MICHIGAN, ASSIGNOR, BY MESNE ASSIGNMENTS, TO DETROIT TRUST COMPANY, TRUSTEE, OF DETROIT, MICHIGAN, A CORPORATION OF MICHIGAN.

PRINTING-PRESS.

SPECIFICATION forming part of Letters Patent No. 763,840, dated June 28, 1904.

Application filed March 6, 1901. Serial No. 50,100. (No model.)

To all whom it may concern:

Be it known that I, HENRY F. BECHMAN, of Battlecreek, in the county of Calhoun and State of Michigan, have invented certain new and useful Improvements in Printing-Presses; and I hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, which form part of this specification.

This invention is an improvement in flat-bed movable-cylinder printing-presses, particularly upon presses of the well-known Cox "duplex" type, wherein the cylinders are mounted on reciprocating cross-heads which have projecting tongues sliding in corresponding grooves in the side frames of the press. These tongues support the weight of the cross-heads and cylinders and inking mechanisms carried thereby and rests upon the lower sides of the grooves when the cylinders are not in impression; but during the taking of an impression the tongues hold the cylinders down hard on the forms by their pressing against the upper sides of the grooves. Owing to the weight of the parts in the first instance and the impression-pressure in the second instance, there is a great deal of friction between the tongue and grooves, which of course requires expenditure of power to overcome. My object is to reduce this frictional resistance, and thereby facilitate the reciprocation of the cross-heads and lessen the power required to operate the press, and I accomplish this object by providing roller bearings or contacts between the tongue and slide, and the accompanying drawings illustrate a practical embodiment of the invention as applied to a Cox duplex press.

In said drawings, Figure 1 is a side elevation of such a press, showing the general arrangement of parts. Fig. 2 is an enlarged sectional elevation showing the manner of arranging the roller-bearings above and below the tongues within the grooves. Fig. 3 is an enlarged detail transverse section; Fig. 4, a detail section, and Fig. 5 is a detail plan of one set of rollers. Fig. 6 is a detail transverse section through a Cox duplex press, illustrating the invention applied thereto.

A designates the main frame of a Cox duplex press, having a longitudinal groove *a* in each side frame for the reception and guidance of a tongue *b*, projecting from the inner side of a cross-head B, the opposite cross-heads having the upper and lower impression-cylinders *C c* journaled in them and also carrying the inking systems *D d* on opposite sides of the cylinders, as indicated in the drawings. The cross-heads are reciprocated back and forth along grooves *a*, so as to reciprocate the cylinders over the type-beds *T t*, by pitman *e*, connected to crank-wheels *E*. All these parts being well known are merely conventionally shown, and the parts *A B E e* are duplicated on the opposite side of the press.

Ordinarily the tongues *b* are of such cross-section as to fit snugly in the grooves *a* to properly guide the cross-heads and cylinders and maintain them in proper positions during their reciprocations; but in the present instance the groove is made wider than the tongue to permit the introduction of systems of antifriction-rollers *F* and *f* below and above the tongue *b*, as shown. The rollers *F* are journaled on pins *G*; connected to opposite bars *H* and *I*, which are connected at their ends and altogether form a roller system that lies within groove *a* below tongue *b*. The rollers *f* are likewise journaled on pins *g*, connected to opposite bars *h i*, which are also connected at their ends, and altogether form a roller system *f*, that lies within groove *a*, but above tongue *b*. As shown, there are more rollers *F* than *f*, because the rollers *F* come into active operation during almost the entire stroke of the cross-heads, while rollers *f* come into active operation only during the periods of impression.

To keep all the rollers in proper relative position, the upper and lower bars *H I* and *h i* may all be connected at their adjoining ends to end blocks *L L*, so that both roller systems may be handled as a unit, and all the rollers must keep proper track and time in the operation of the device. The roller systems, however, are shorter than groove *a* to permit them to move longitudinally therein, and thus practically eliminate appreciable

friction between the cross-head and frame during the reciprocations of the former. Hard-steel shim-plates *M m* may be placed within the groove at bottom and top thereof and shims or shoes *N-n* below and above the tongue, so that the proper close fit between the peripheries of the rollers and upper and lower sides of groove and tongue may be maintained.

10 It will be obvious that when the cylinders are not in impression the weight of the cross-heads and connected parts will be carried on the rollers *F*, interposed between the under side of tongue *b* and the lower side of groove 15 *a*, and when the cylinders are on impression the strain will be transmitted to the frame through rollers *f*, which will then be pressed between the upper sides of the groove and top side of tongue. The rollers are, in brief, so 20 arranged as to carry both the weight of the cross-heads and parts mounted thereon while the cylinders are off impression and to also take the uplifting strain or pressure on the cross-heads when the cylinders are operating 25 over the type, thus eliminating sliding friction between the tongue and groove at all times.

I consider the introduction of rollers on the upper side of the cross-head tongues the most 30 important feature of the invention, as it relieves the friction caused by the impression. The weight of the cylinders and cross-heads is largely borne by the cylinder and bed bearers when off impression; but it is most 35 important to relieve the friction resulting from the impression squeeze, and the introduction of the upper rollers for the purpose specified is therefore particularly novel and useful.

40 Having thus described my invention, what I therefore claim as new; and desire to secure by Letters Patent thereon, is-

1. In a printing-press, the combination of

the main frame, and a cross-head carrying an impression-cylinder; with friction-rollers substantially as described interposed between the cross-head and frame in position to prevent friction between the cross-head and frame when the cylinder is out of impression, and friction-rollers interposed between the cross-head and frame in position to prevent friction between the cross-head and frame when the cylinder is on the type, substantially as described.

2. In a printing-press, the combination of 55 a main frame, the upper and lower type-beds, upper and lower cylinders and cross-heads carrying the cylinders having tongues to be reciprocated in grooves in the main frame; with antifriction-rollers interposed between 60 the top sides of the tongues and upper sides of grooves and between the under sides of the tongues and lower sides of the grooves; substantially as described.

3. In a printing-press, the combination of 65 the main frame, the type-beds, the cross-heads having tongues engaging grooves in the frame intermediate the beds, impression-cylinders carried by said cross-heads and means for reciprocating said cross-heads; with a system of 70 antifriction-rollers interposed between the top sides of the tongues and the upper sides of the grooves, a system of antifriction-rollers interposed between the under sides of the tongues and the lower sides of grooves, and 75 connections between the upper and lower systems of rollers for the purpose and substantially as described.

In testimony that I claim the foregoing as my own I affix my signature in presence of two 80 witnesses.

HENRY F. BECHMAN.

In presence of—

CHARLES H. WHEELLOCK,
FRANK W. DUNNING.