

Feb. 14, 1933.

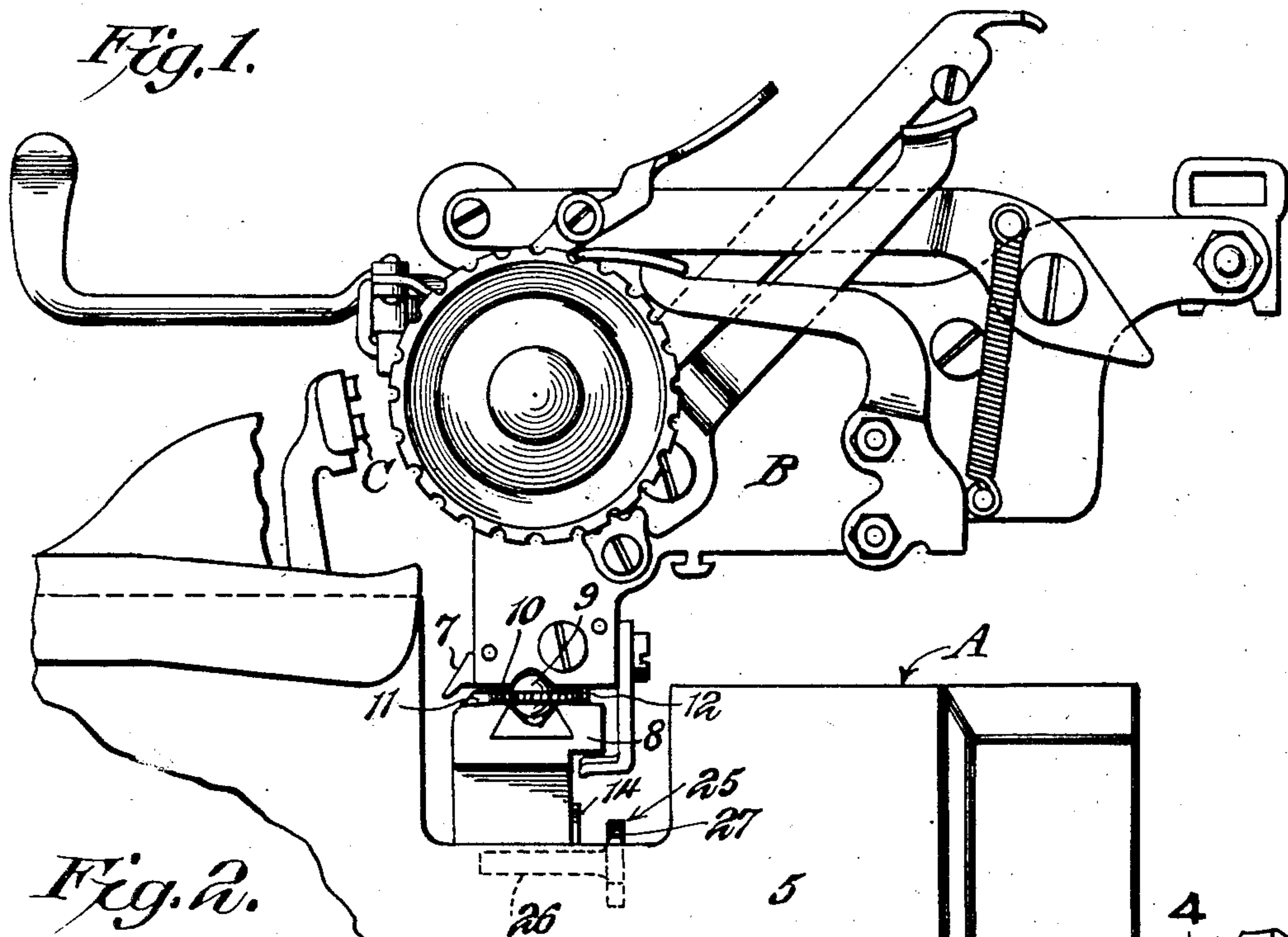
H. J. HART

1,897,699

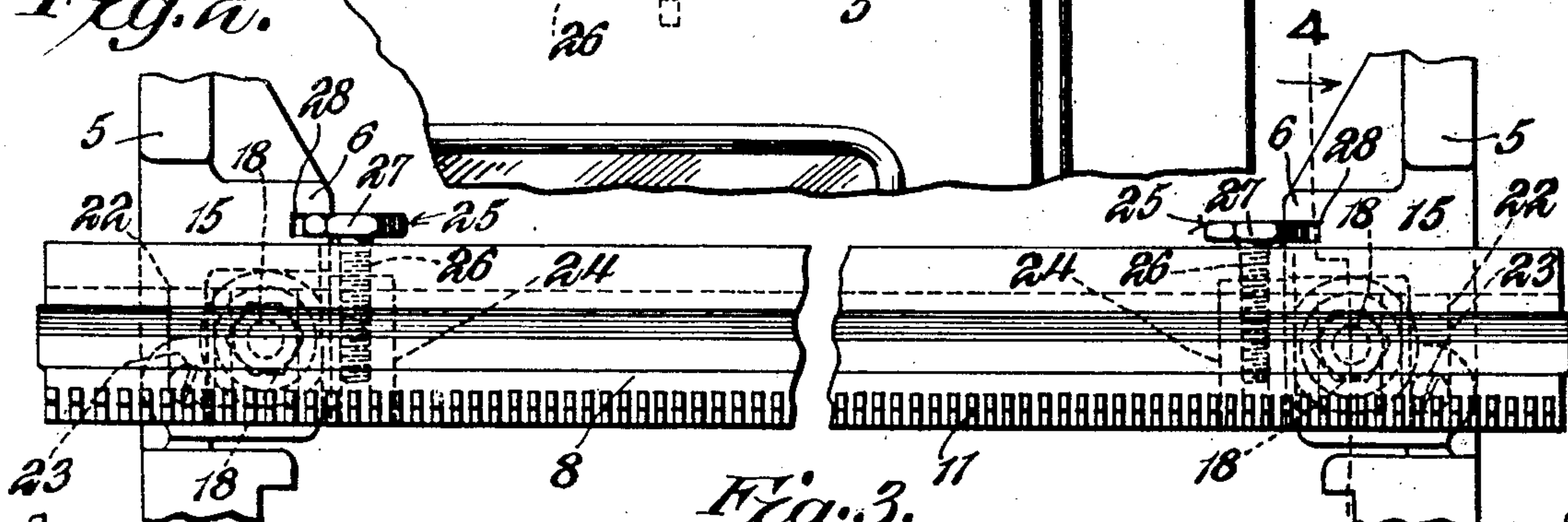
TYPEWRITING MACHINE

Filed April 13, 1931

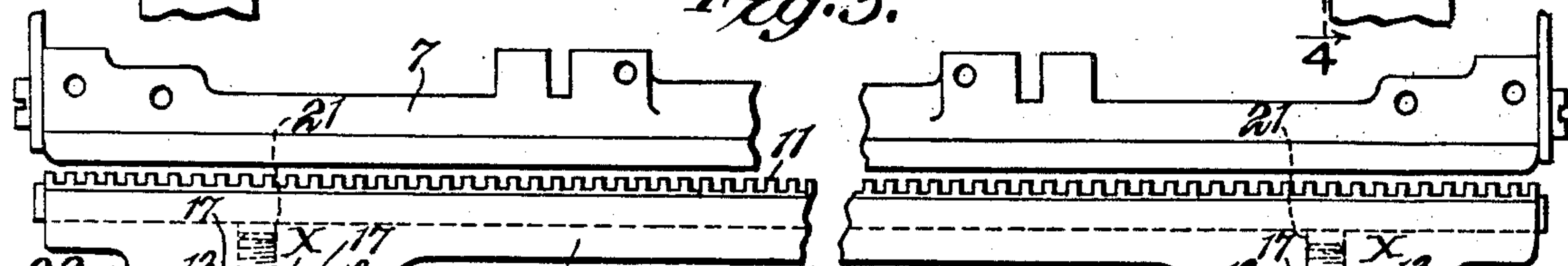
*Fig. 1.*



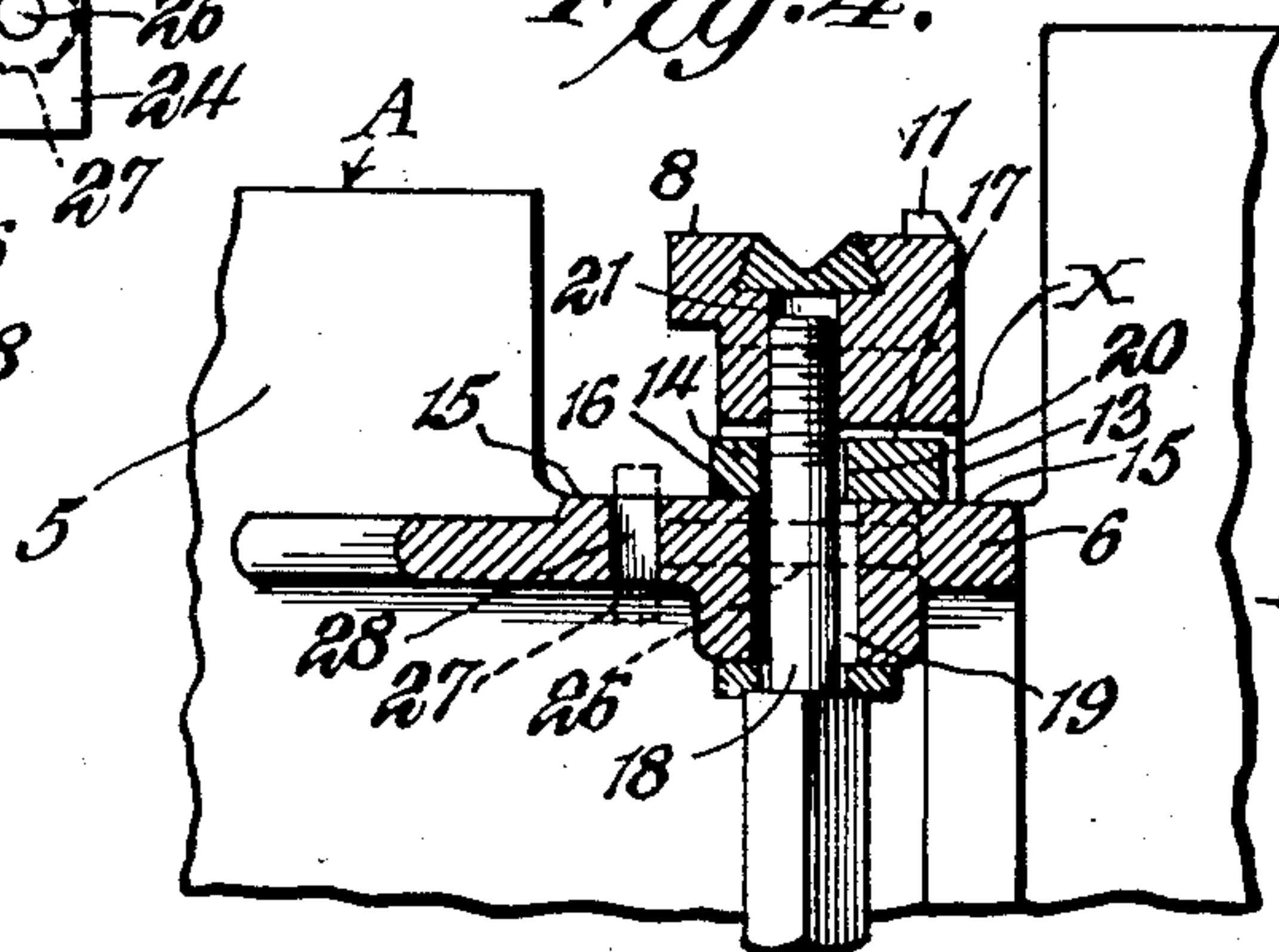
*Fig. 2.*



*Fig. 3.*



*Fig. 4.*



Inventor,  
*Henry J. Hart,*  
*Baldwin & Wright*  
Attorneys.



# UNITED STATES PATENT OFFICE

HENRY J. HART, OF WEST HARTFORD, CONNECTICUT, ASSIGNOR TO ROYAL TYPEWRITER COMPANY, INC., OF NEW YORK, N. Y., A CORPORATION OF NEW YORK

## TYPEWRITING MACHINE

Application filed April 13, 1931. Serial No. 529,839.

This invention relates to new and useful improvements in typewriters generally, although more particularly to the means for attaching the lower carriage rail to the main frame of the machine.

Heretofore, carriages have been supported on the main frame for letter space movements through the medium of two rails, the lower one being fixed to the frame and the upper one being fixed to the carriage, and conjointly formed between the rails is a ball race for receiving anti-friction balls respectively disposed within pinions which constantly mesh with longitudinal racks respectively fixed to the rails. The lower rail has heretofore been rigidly attached at its ends by clamping bolts to bearing lugs which extend inwardly from the side plates of the main frame. These plates are separately manufactured, and the upper or bearing surfaces of the lugs are separately machined. Practice has demonstrated that it is almost impossible to assemble the main frame in a manner which will insure absolute alinement of the bearing surfaces of the lugs, and consequently when the lower rail is clamped to such lugs, the rail will become bowed between its ends, thereby greatly reducing the freedom of carriage movement.

Among the several objects of my invention are to provide floating bearings for the ends of the lower rail whereby said rail will aline itself with respect to the bearings and thereby avoid any distortion in the rail when clamped to the main frame; to provide means for independently adjusting the ends of the lower rail in a fore and aft direction, and to provide means for retaining the side plates of the main frame against either inward or outward movement.

With these and other objects in view which will more fully appear, the nature of the invention will be more clearly understood by following the description, the appended claims, and the several views illustrated in the accompanying drawing, in which:

Figure 1 is a detail elevation of a part of the main frame of a typewriter, and the platen, and embodying my invention;

Figure 2 is a top plan view of the lower

carriage rail, showing the manner of supporting the same on the side plates of the main frame;

Figure 3 is a vertical section showing the side plates of the main frame, and the upper and lower carriage rails, and

Figure 4 is a vertical cross section taken on the line 4—4 of Figure 2.

Like reference numerals designate corresponding parts throughout the several figures of the drawing.

Referring to the accompanying drawing, I have shown my invention embodied in a front strike typewriting machine which includes a main frame A, and carriage B and type C.

The main frame A includes side plates 5, 5 which are preferably manufactured separately, and integral with these plates are inwardly extending bearing lugs 6, 6 which support the upper and lower carriage rails 7 and 8, the upper rail being fixed to the carriage in the usual manner. A plurality of anti-friction balls 9 are disposed in a race conjointly formed in the rails, and surrounding each ball is a pinion 10 which is in constant mesh with racks 11 and 12 extending along the rails.

Formed on the underside of the lower rail 8 at each end thereof is a transversely extending bearing seat  $\alpha$  including upwardly and inwardly converging flat side walls 13, 13 for receiving a floating bearing block 14 which is freely seated upon the upper flat surface 15 of the adjacent bearing lug 6. The block 14 is formed with a flat lower bearing surface 16 and with a transversely rounded upper surface 17 which fits within the bearing seat  $\alpha$  and has line contacts with the inclined walls 13, 13 thereof. The threaded shank of a clamping bolt 18 extends upwardly through a vertical opening 19 formed in the lug 6, and thence through alined openings 20 and 21 formed in the block 14 and lower rail 8 respectively, the opening 21 in the rail being threaded and the openings 19 and 20 in the lug 6 and block 14 each having a diameter greater than the diameter of the bolt shank. When attaching the lower rail 8 to the side plates of the main frame, the bearing blocks 14, 14 are positioned upon the lugs 6, 6, and



the lower rail is then positioned whereby the blocks 14 will enter the bearing recesses  $\alpha$ . The clamping bolts are then projected through the openings 19 of the lugs 6 and the openings 20 of the blocks 14, and are then threadedly engaged in the openings 21 of the lower rail 8. During this assembling operation, the floating bearing blocks 14 will center themselves in the bearing recesses  $\alpha$ , and the side walls 13, 13 of each recess will have a two point line contact with the associated bearing block 14, thus assuring self alining of the ends of the lower rail and thereby avoiding any bending or flexing of the rail when the clamping bolts 18 are tightened.

At the outer side of each bearing  $\alpha$  the lower rail is formed with an upwardly extending transverse slot 22 which receives the head of a screw 23 threaded into the adjacent side plate of the main frame. The width of the groove corresponds to the diameter of the screw head and therefore the side plates are retained against either inward or outward movement, yet permitting the lower rail to be adjusted in a fore and aft direction.

For the purpose of independently adjusting the ends of the lower rail 8 in a fore and aft direction for ring and cylinder adjustment, the rail is provided with vertical lugs 24, 24 which depend from the rail and are located between the lugs 6, 6. Associated with each lug 24 is an adjusting screw 25, having a shank 26 which is threaded into the lugs 24, 24 and having a head 27 which projects into a slot 28 formed in the adjacent bearing lug 6. By turning the head 27 the screw will be rotated but will not be moved fore and aft, and consequently the adjacent end of the lower rail may be readily adjusted in a fore and aft direction after first loosening the clamping bolt 18.

From the foregoing it will be apparent that I have provided self alining bearing for the lower rail, means for independently adjusting the ends of the lower rail in a fore and aft direction relative to the main frame, and means for retaining the side plates of the main frame against lateral movements relative to the lower rail in any position of adjustment of the latter.

I claim:

1. In a typewriter, the combination with a main frame, of means for supporting a carriage on said frame for letter space movements including upper and lower rails, means including self-alining bearings for supporting the lower rail on the frame, and clamping bolts extending through the bearings and connecting the end portions of the lower rail and the frame.

2. In a typewriter, the combination with a main frame, of means for supporting a carriage on said frame for letter space movements including upper and lower rails, and means including floating bearing blocks dis-

posed between and directly engaging the ends of the lower rail and the frame.

3. In a typewriter, the combination with a main frame including side plates having inwardly extending lugs, of means for supporting a carriage on said frame including upper and lower rails, the lower rail being provided with transverse bearing recesses adjacent its ends, and floating bearing blocks slidably supported directly on the lugs and directly engageable with the bearing surfaces of the recesses of the lower rail.

4. In a typewriter, the combination with a main frame including side plates having inwardly extending lugs, of means for supporting a carriage on said frame including upper and lower rails, the lower rail being provided with transverse bearing recesses adjacent its ends, floating bearing blocks slidably supported directly on the lugs and directly engageable with the bearing surfaces of the recesses of the lower rail, and clamping bolts connecting the end portions of the lower rail and the frame.

5. In a typewriter, the combination with a main frame including side plates having inwardly extending lugs, of means for supporting a carriage on said frame including upper and lower rails, the lower rail being provided with transverse bearing recesses adjacent its ends, each recess including upwardly converging flat walls, and floating bearing blocks slidably supported directly on the lugs and including transversely rounded upper surfaces directly engageable with the converging flat walls of the blocks.

6. In a typewriter, the combination with a main frame including side plates having inwardly extending lugs, of means for supporting a carriage on said frame including upper and lower rails, the lower rail being provided with transverse bearing recesses adjacent its ends, each recess including upwardly converging side walls, floating bearing blocks slidably supported on the lugs and including transversely rounded upper surfaces engageable with the converging side walls of the blocks, said lugs and blocks being provided with alined openings, and a clamping bolt extending through the alined openings of the lugs and blocks and engageable with the lower rail, the diameter of each opening in each lug being greater than the diameter of the associated bolt shank.

7. In a typewriter, the combination with a main frame, of means for supporting a carriage on said frame for letter space movements including upper and lower rails, means including self-alining bearings for supporting the lower rail on the frame, clamping bolts extending through the bearings and connecting the end portions of the lower rail and the frame, and means for independently and positively adjusting the



ends of the lower rail in a fore and aft direction relative to the main frame.

8. In a typewriter, the combination with a main frame including side plates having inwardly extending lugs, of means for supporting a carriage on said frame including upper and lower rails, the lower rail being provided with transverse bearing recesses adjacent its ends, floating bearing blocks slidably supported directly on the lugs and engageable in the bearing recesses of the lower rail, and means for independently and positively adjusting the ends of the lower rail in a fore and aft direction relative to the main frame.

9. In a typewriter, the combination with a main frame including side plates having inwardly extending lugs, of means for supporting a carriage on said frame including upper and lower rails, the lower rail being provided with transverse bearing recesses adjacent its ends, floating bearing blocks slidably supported on the lugs and engageable in the bearing recesses of the lower rail, and means for independently adjusting the ends of the lower rail in a fore and aft direction relative to the main frame, comprising a slot formed in each lug, and a screw threadably engaged with the associated end of the lower rail and having its head seated in said slot.

10. In a typewriter, the combination with a main frame, of means for supporting a carriage on said frame for letter space movements including upper and lower rails, means including self-alining bearings for supporting the lower rail on the frame, means for independently adjusting the ends of the lower rail in a fore and aft direction relative to the main frame, and means connecting the lower rail and the side plates of the frame for retaining said plates against lateral movement relative to the rail in any position of adjustment of the latter.

11. In a typewriter, the combination with a main frame, of means for supporting a carriage on said frame for letter space movements including upper and lower rails, means including self-alining bearings for supporting the lower rail on the frame, means for independently adjusting the ends of the lower rail in a fore and aft direction relative to the main frame, and means connecting the lower rail and the side plates of the frame for retaining said plates against lateral movement relative to the rail in any position of adjustment of the latter, said connecting means comprising transverse grooves located in the end portions of the lower rail, and means secured to the side plates and projecting upwardly into said grooves.

12. In a typewriter, the combination with a main frame including side plates having inwardly extending lugs, of means for sup-

porting a carriage on said frame including upper and lower rails, the lower rail being provided with transverse bearing recesses adjacent its ends, floating bearing blocks slidably supported on the lugs and engageable in the bearing recesses of the lower rail, means for independently adjusting the ends of the lower rail in a fore and aft direction relative to the main frame, and means connecting the lower rail and the side plates of the frame for retaining said plates against lateral movement relative to the rail in any position of adjustment of the latter, said connecting means comprising transverse grooves located in the end portions of the lower rail, and means secured to the side plates and projecting upwardly into said grooves.

In testimony whereof, I have hereunto subscribed my name.

HENRY J. HART.