

Oct. 7, 1930.

S. HORII

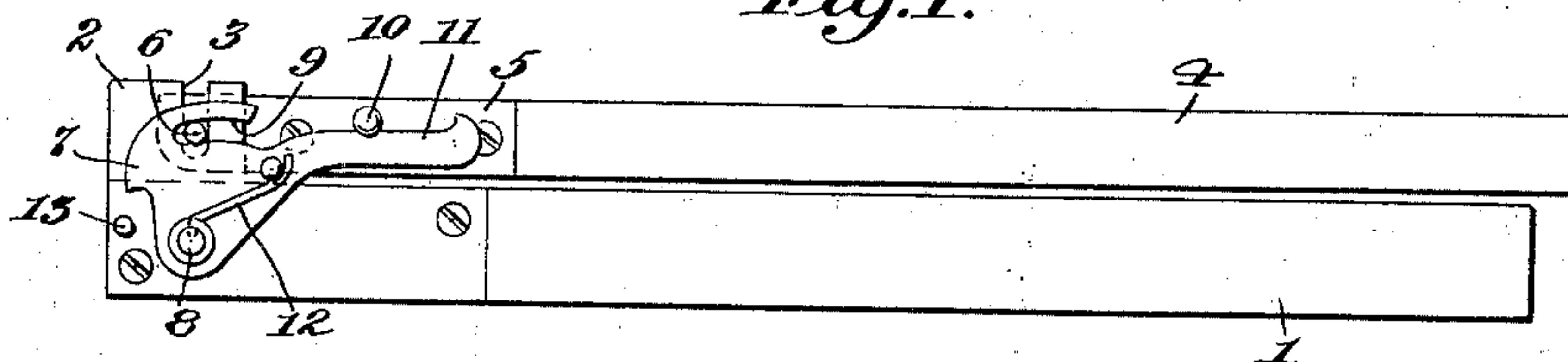
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DUPLICATOR

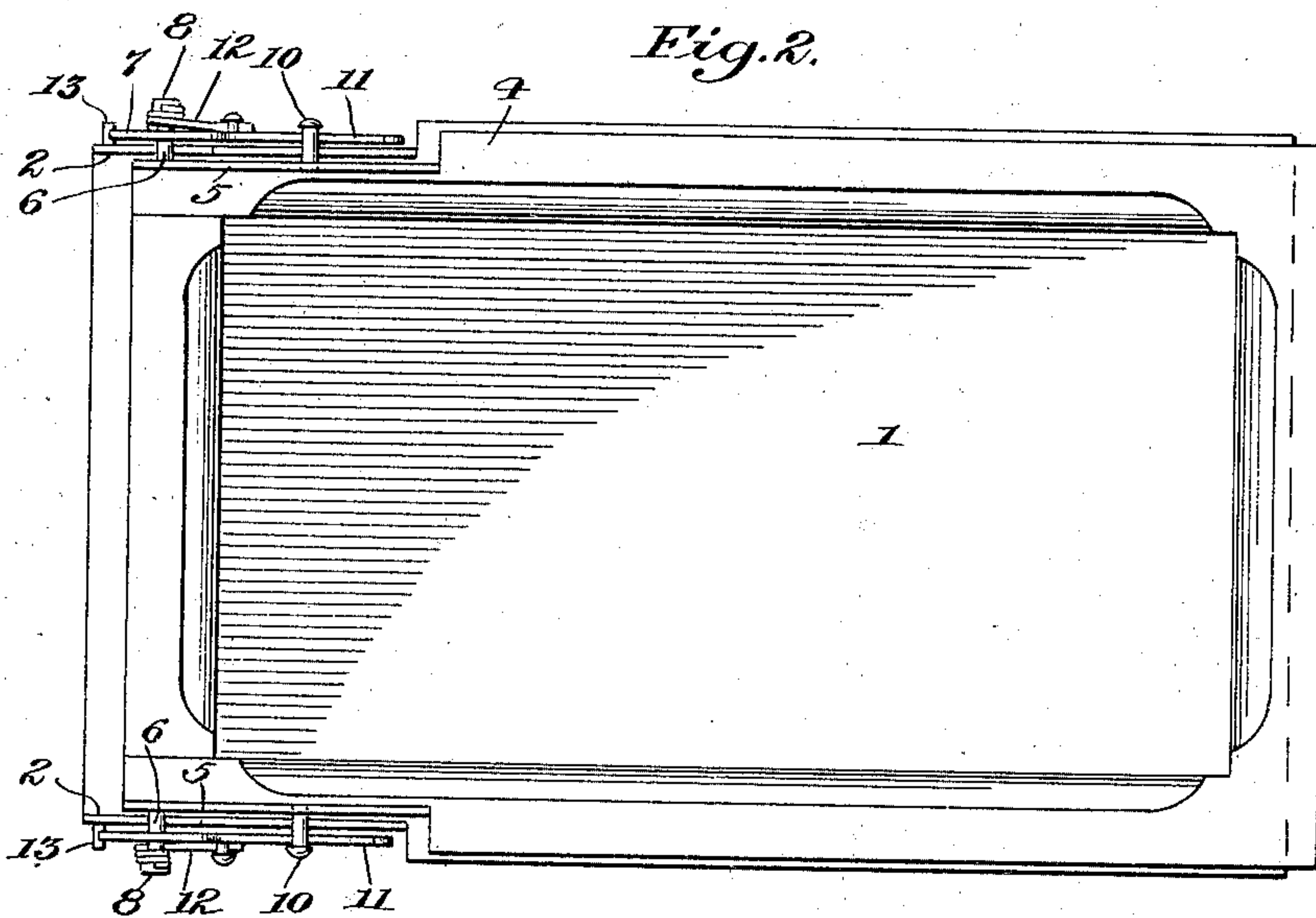
Filed June 26, 1929

2 Sheets-Sheet 1

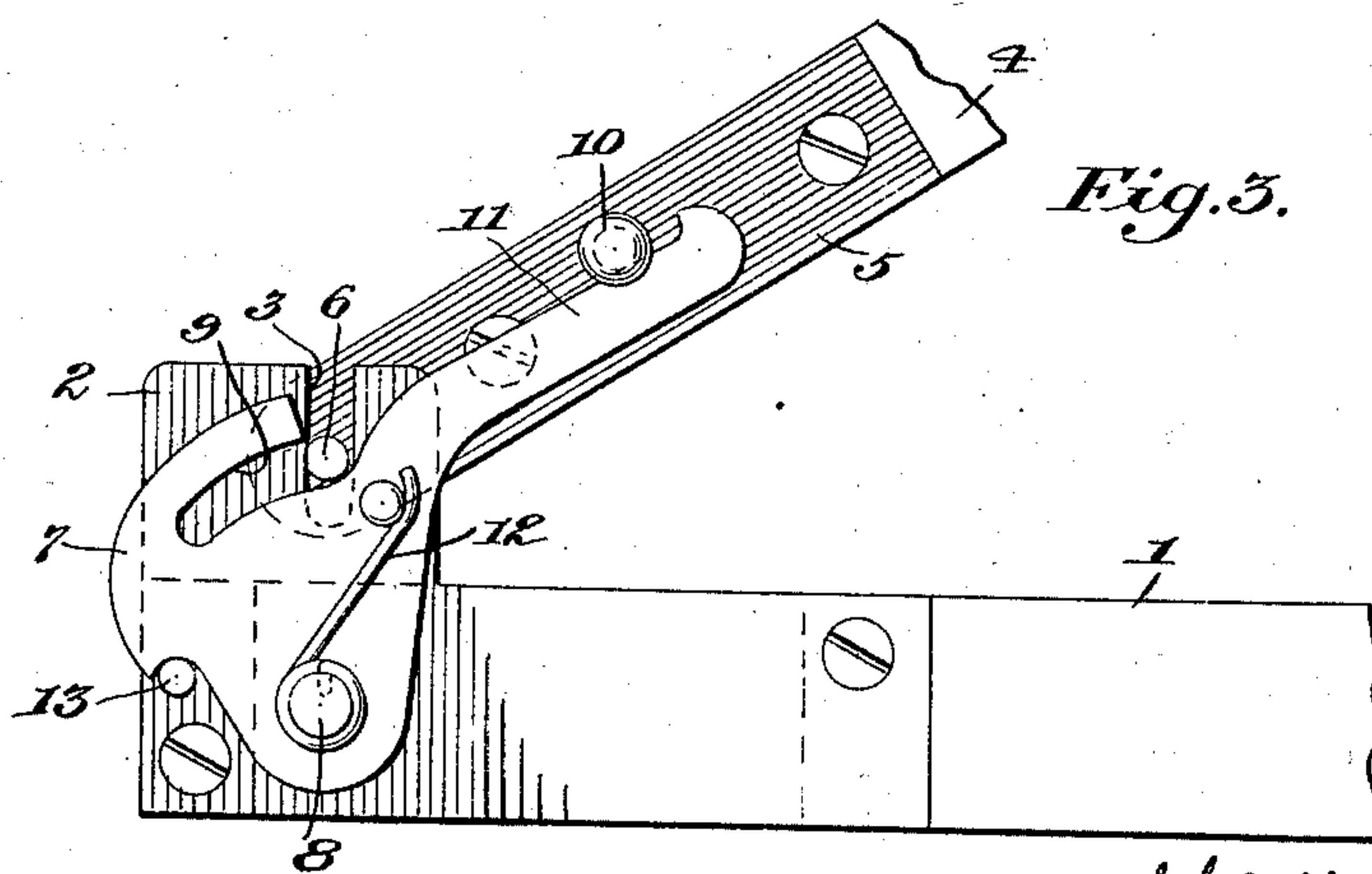
*Fig. 1.*



*Fig. 2.*



*Fig. 3.*



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*by*  
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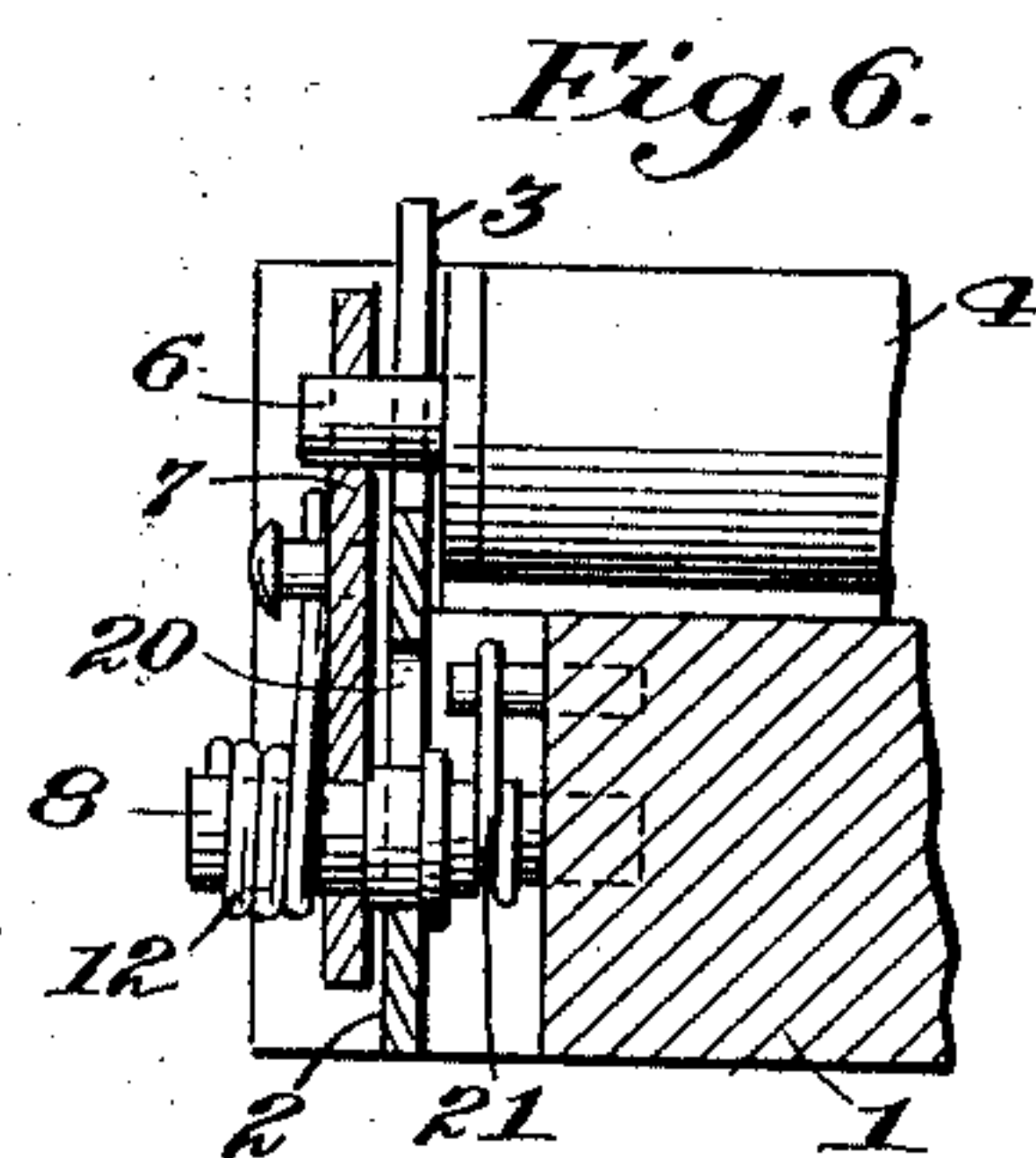
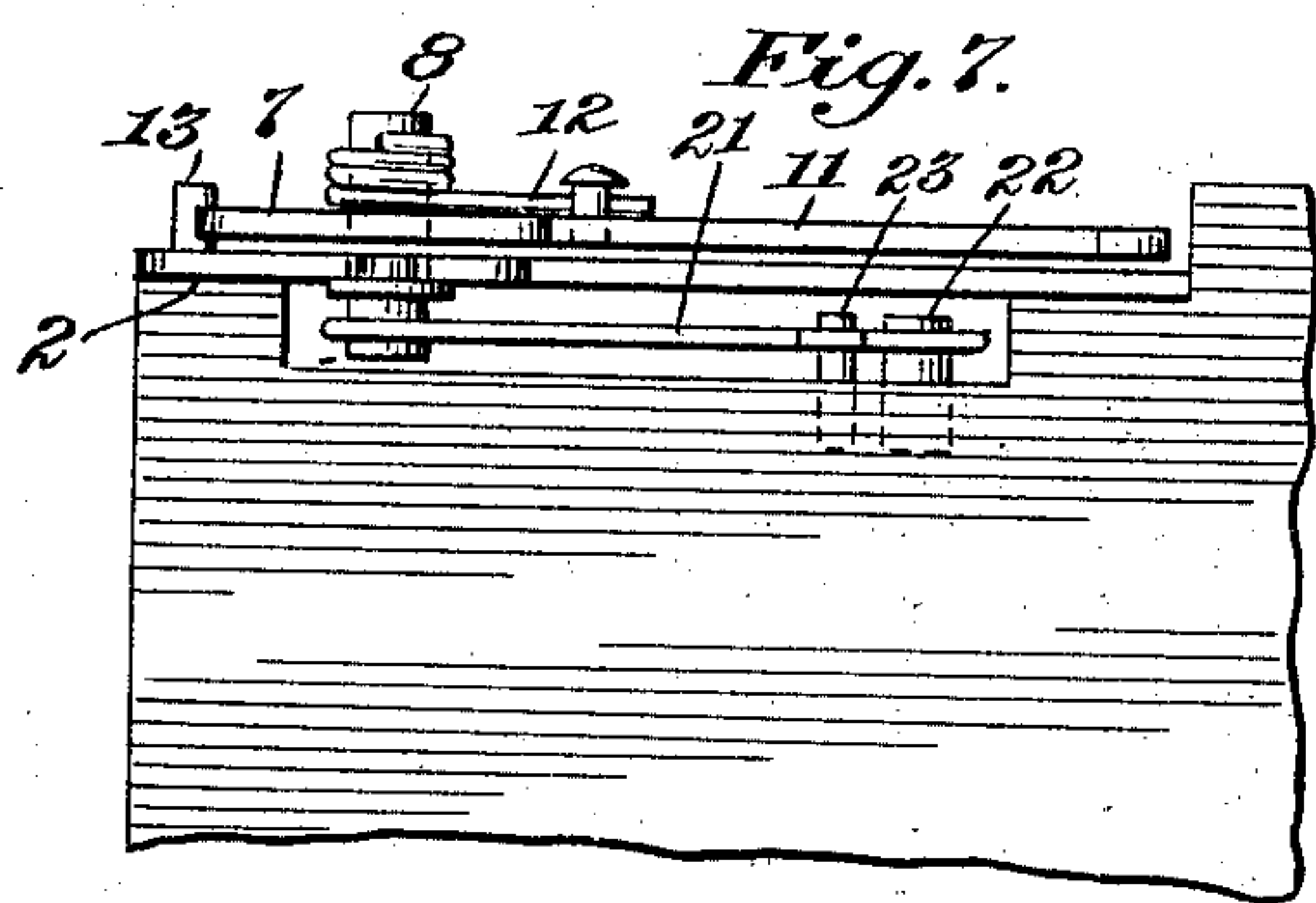
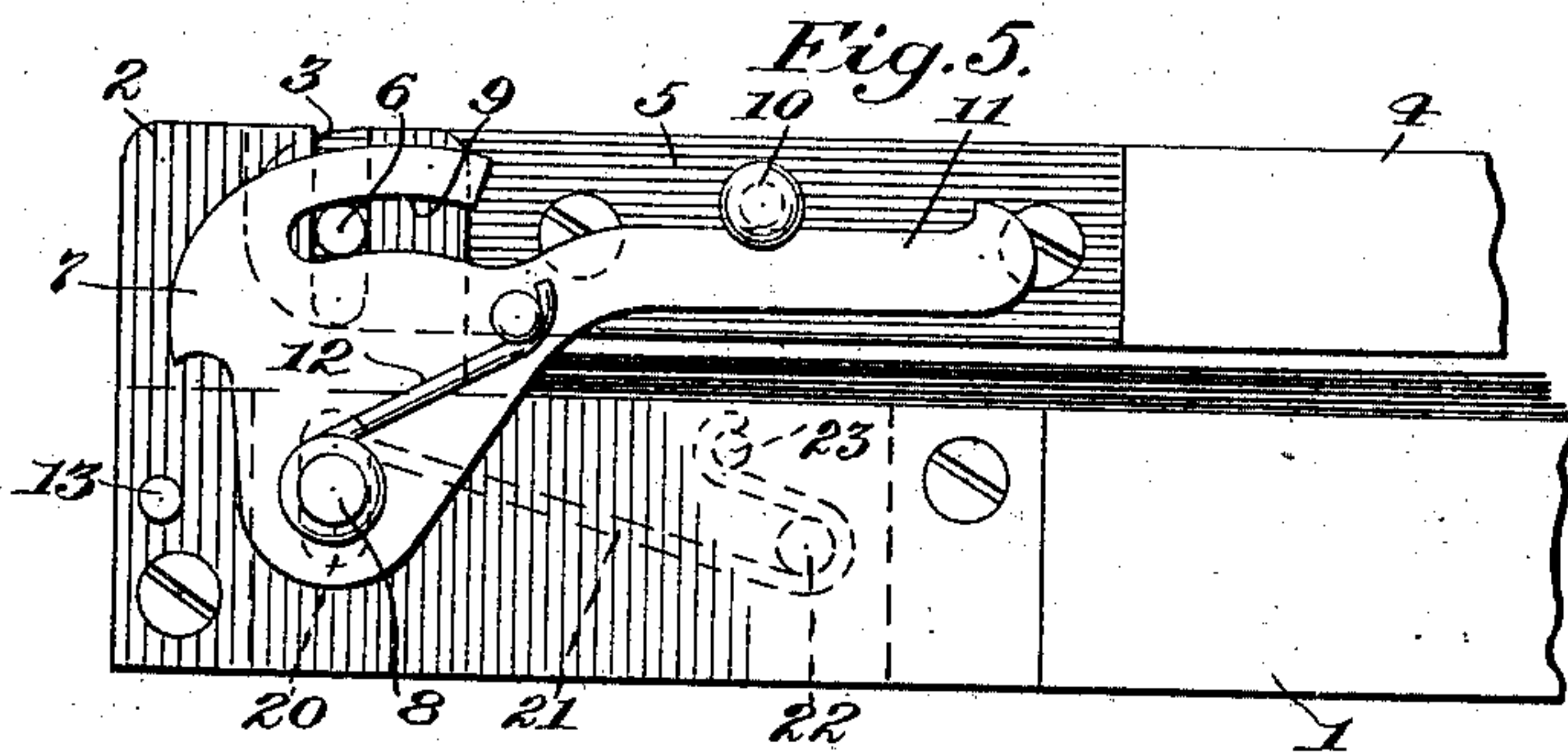
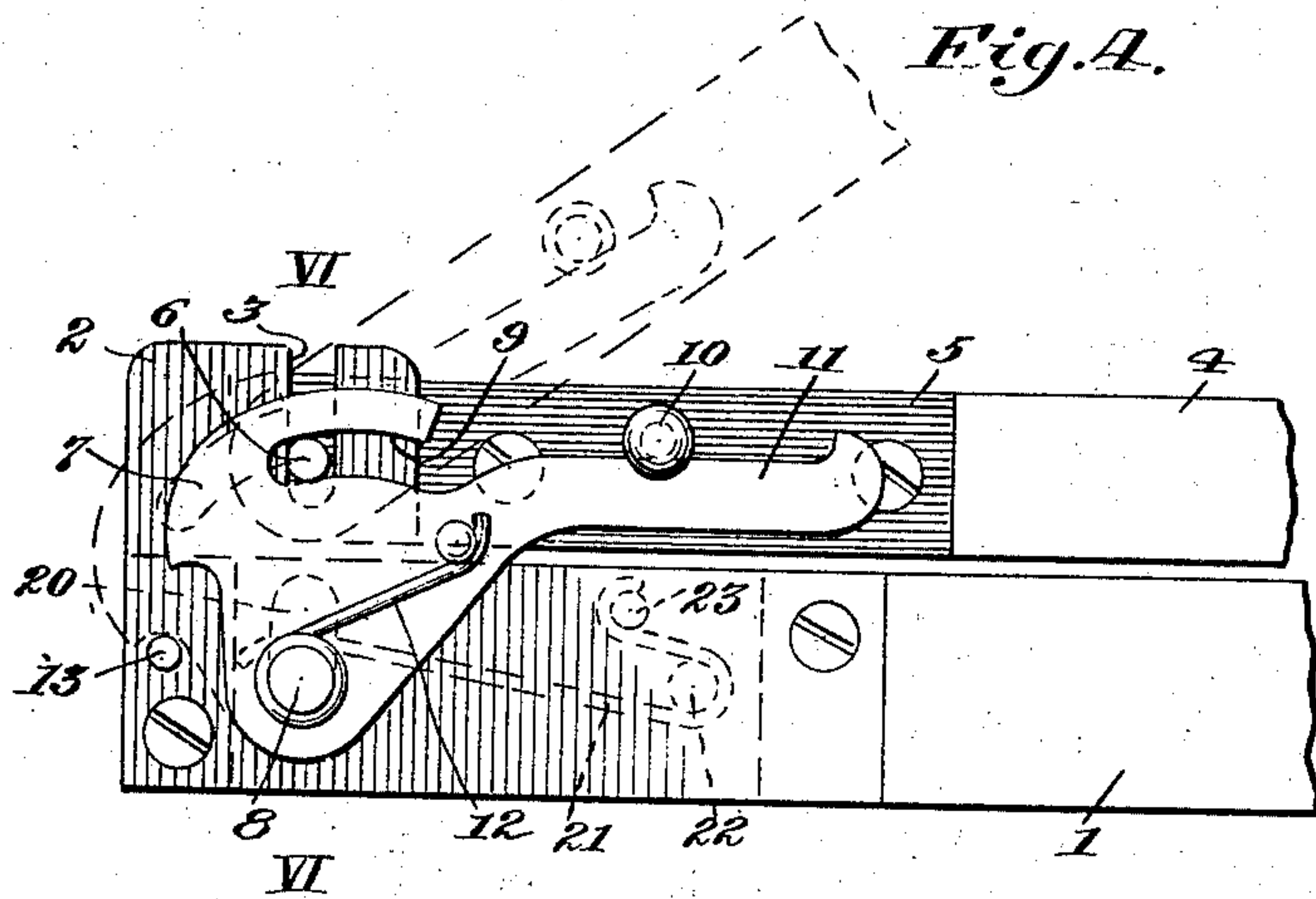
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DUPLICATOR

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2 Sheets-Sheet 2



Inventor:  
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## UNITED STATES PATENT OFFICE

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## DUPLICATOR

Application filed June 26, 1929, Serial No. 373,796, and in Japan July 3, 1928.

This invention relates to a duplicator, more particularly to a flat duplicator of the type in which a stencil stretching frame is swingably connected at one end to a bed of the duplicator.

One object of the invention is to provide a duplicator of this type in which the stencil stretching frame can be readily removed from the bed without handling any part for disconnecting the same.

Another object of the invention is to provide a duplicator in which the position of trunnions on the stencil stretching frame are automatically adjusted in accordance with the thickness of the layer of papers placed on the bed when the stencil stretching frame is lowered into a printing position.

In the accompanying drawings,

Fig. 1 is a side elevation of a duplicator according to this invention;

Fig. 2 is a plan thereof;

Fig. 3 is an enlarged view of the rear portion of the duplicator shown in Fig. 1, but in this case with the stencil stretching frame lifted;

Fig. 4 is a side elevation of the rear portion of a slightly modified construction according to this invention;

Fig. 5 is a view similar to Fig. 4, but showing the position of parts when considerable number of papers are placed on the bed of the duplicator;

Fig. 6 is a section taken on line VI—VI of Fig. 4;

Fig. 7 is a plan of Fig. 4, but with the stencil stretching frame removed.

Referring to the drawings, 1 is a bed of the duplicator and is provided with brackets 2 secured on both sides at the rear end thereof. Each of said brackets 2 has a vertical open slot 3. 4 is a stencil stretching frame and is provided with supporting plates 5 secured thereto on both sides. Said supporting plates 5 carry trunnions 6 which are slidably mounted in the said bearing slots 3 in the brackets 2, so that the stencil stretching frame 4 is swingably connected to the bed 1.

At each side of the bed 1, a locking plate 7 is rotatably mounted by means of a pivot 8.

In said locking plate 7 is formed a cam slot 9 open at one end in which the trunnion 6 on the stencil stretching frame 4 is positioned, whereby the trunnion 6 is locked against the upward movement when the frame 4 is in its lowered or printing position. Fixed on each of the supporting plates 5 is a pin or roller 10 which is adapted to cooperate with an arm 11 extending forwardly from the locking plate 7. A spring 12 is provided which tends normally to rotate the locking plate 7 rearwardly. A stop 13 is secured to the bracket 2 for limiting the rotation of the locking plate 7 caused by the action of the spring 12.

For the sake of simpleness the arrangement of the parts has been described with reference to only one side of the duplicator, but it is to be understood that the device on the opposite side is similarly constructed.

When the stencil stretching frame 4 is swung upwardly, allowing the locking plate 7 to be rotated rearwardly, as shown in Figure 3, the trunnion 6 on the frame 4 will be released from the cam slot 9 and it may be removed therefrom. Thus, it will be seen, the stencil stretching frame 4 can be readily disconnected without necessitating handling of any part for disconnection.

In the duplicator described above, as the trunnion 6 of the stencil stretching frame 4 is adapted to slide along the vertical slot 3 and as the cam slot 9 is adapted to embrace the trunnion 6 at different heights, it will be seen that when the stencil stretching frame 4 is pressed down to closed position it will always assume automatically adjusted positions according to the thickness of the layer of papers placed on the bed 1.

In the construction shown in Figures 1 to 3, number of printing papers which can be placed on the bed 1 without causing any hindrance is determined by the eccentricity of the cam slot 3. In the modification shown in Figures 4 to 7, means is provided for enabling it to place more increased number of printing papers on the bed 1 and for attaining more soft and reliable operation. The pivot 8 of the locking plate 7, instead of being securely fixed to the bracket 2, is in this



instance slidably mounted in a vertical slot 20 which is formed in the bracket 2, and said pivot 8 is normally pressed downwardly by the action of a spring 21 which is connected at one end to said pivot 8 and at the other end to pins 22 and 23 secured to the body of the bed 1. Other parts are almost identical to those shown in Figures 1 to 3.

In the construction shown in Figures 4 to 7, it will be noted that when the stencil stretching frame 4 is pressed down the locking plate 7 itself can vertically slide, so that the positions of the trunnion 6 will be automatically adjusted within a wider limit according to the thickness of the layer of papers placed on the bed 1. In this construction, in view of the provision of means for automatically raising and lowering the locking plate 7, it is obvious that the slot 9 is not always necessary to be eccentrically shaped, but also it may consist merely of an arc shaped slot concentric to the axis of the pivot 8.

In the constructions shown the spring 12 tends to normally rotate the locking plate 7 rearwardly, and thereby also to springly lift the stencil stretching frame 4. If necessary, in order to help said spring 12, an additional spring may be employed on one side of the duplicator or on both sides.

What I claim is:—

1. A flat duplicator comprising a bed, a stencil stretching frame having trunnions, brackets secured to said bed and each having a bearing slot open at the upper end being adapted to receive said trunnions on the stencil stretching frame, and locking plates rotatably mounted upon the said bracket and having means for embracing said trunnions in the bearing slots in an automatically adjusted position when the stencil stretching frame is in its closed or printing position and for releasing said trunnions when the stencil stretching frame is lifted.

2. A flat duplicator as set forth in claim 1, wherein each of the locking plates is provided with a cam slot open at one end, and adapted to engage with the trunnions on the stencil stretching frame, and also provided with a forwardly extending arm adapted to be pressed by a pin or roller on the stencil stretching frame when the latter is lowered.

3. A flat duplicator as set forth in claim 1, wherein the locking plates are vertically movably mounted upon the bed.

4. A flat duplicator as set forth in claim 1 wherein the locking plates are normally pressed downwardly by springs.

5. A flat duplicator as set forth in claim 1, wherein each of the locking plates is provided with an arc shaped slot concentric to the axis of rotation of the locking plate, the latter being vertically slidably mounted to the bed.

6. A flat duplicator comprising a bed, a

stencil stretching frame having trunnions, brackets secured to said bed and each having a bearing slot open at the upper end being adapted to receive said trunnions on the stencil stretching frame, and locking plates rotatably mounted upon the said bracket and having means for embracing said trunnions in the bearing slots in an automatically adjusted position when the stencil stretching frame is in its closed or printing position and for releasing said trunnions when the stencil stretching frame is lifted, each of the locking plates being provided with a cam slot open at one end, and adapted to engage with the trunnions on the stencil stretching frame, and also provided with a forwardly extending arm adapted to be pressed by a pin or roller on the stencil stretching frame when the latter is lowered, and wherein the locking plates are vertically movably mounted upon the bed.

7. A flat duplicator comprising a bed, a stencil stretching frame having trunnions, brackets secured to said bed and each having a bearing slot open at the upper end being adapted to receive said trunnions on the stencil stretching frame, and locking plates rotatably mounted upon the said bracket and having means for embracing said trunnions in the bearing slots in an automatically adjusted position when the stencil stretching frame is in its closed or printing position and for releasing said trunnions when the stencil stretching frame is lifted, each of the locking plates being provided with a cam slot open at one end, and adapted to engage with the trunnions on the stencil stretching frame, and also provided with a forwardly extending arm adapted to be pressed by a pin or roller on the stencil stretching frame when the latter is lowered, and wherein the locking plates are normally pressed downwardly by springs.

In testimony whereof I affix my signature.  
SHINJIRO HORII.