

Jan. 6, 1925.

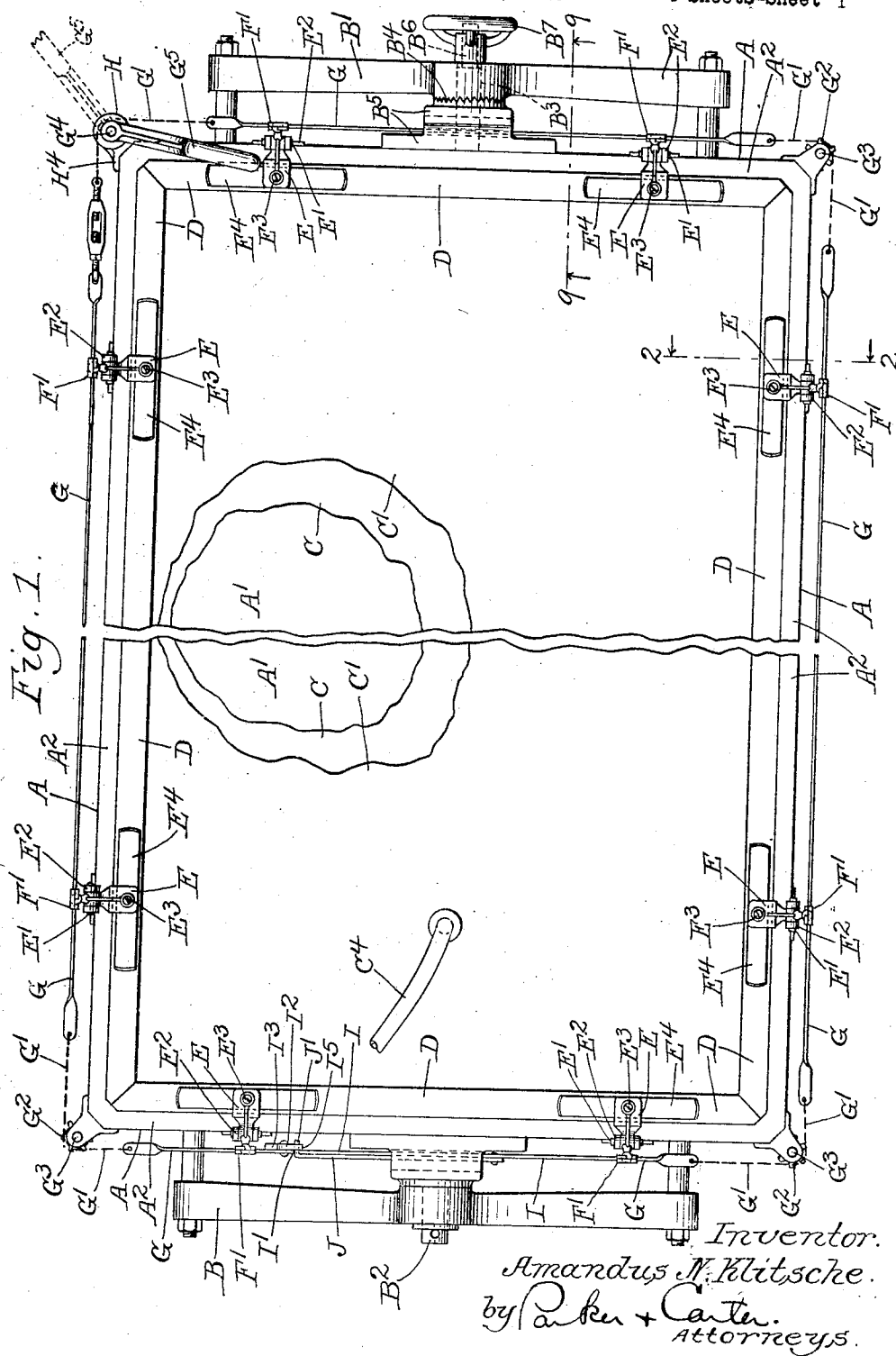
A. N. KLITSCHKE

1,521,632

PRINTING FRAME

Filed Feb. 5, 1923

4 Sheets-Sheet 1



Jan. 6, 1925.

A. N. KLITSCHKE

PRINTING FRAME

Filed Feb. 5, 1923

1,521,632

4 Sheets-Sheet 2

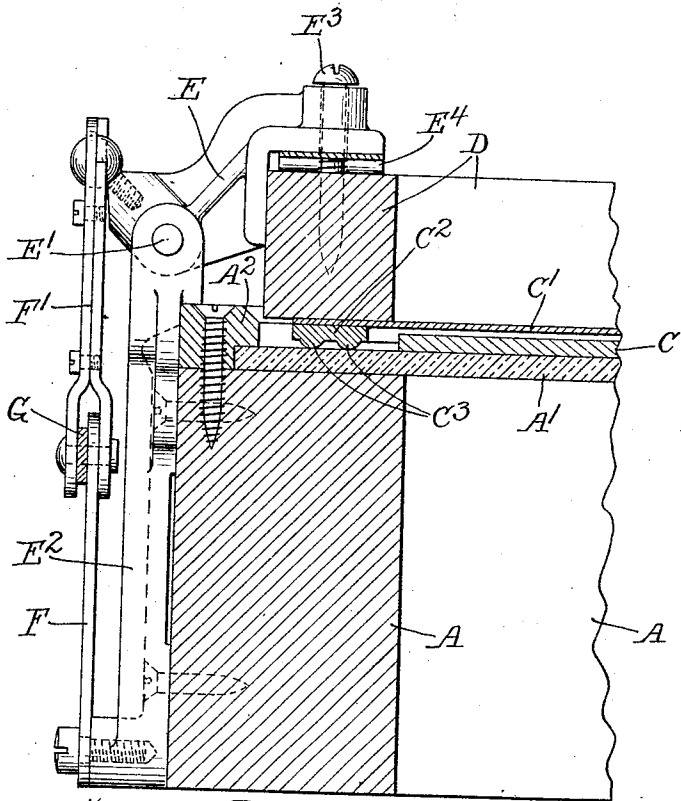


Fig. 2.

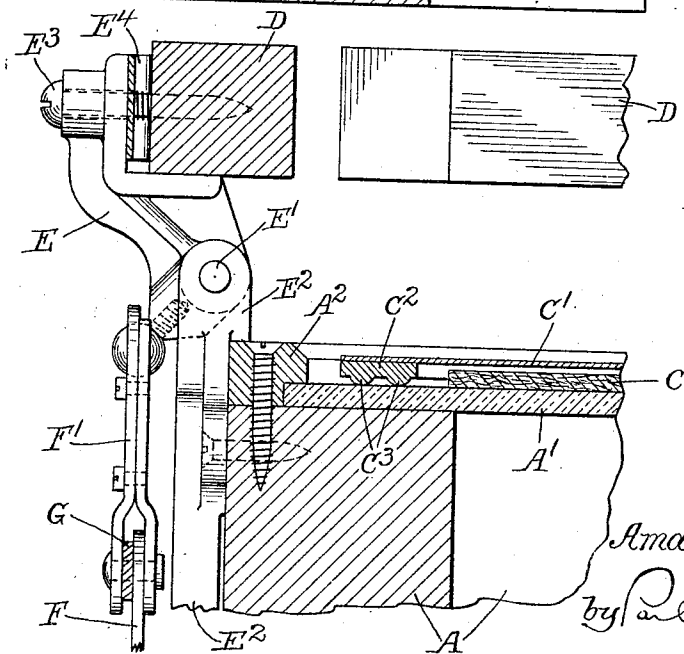


Fig. 3.

Inventor.
Amandus N. Klitsche
by Parker & Carter.
Attorneys

Jan. 6, 1925.

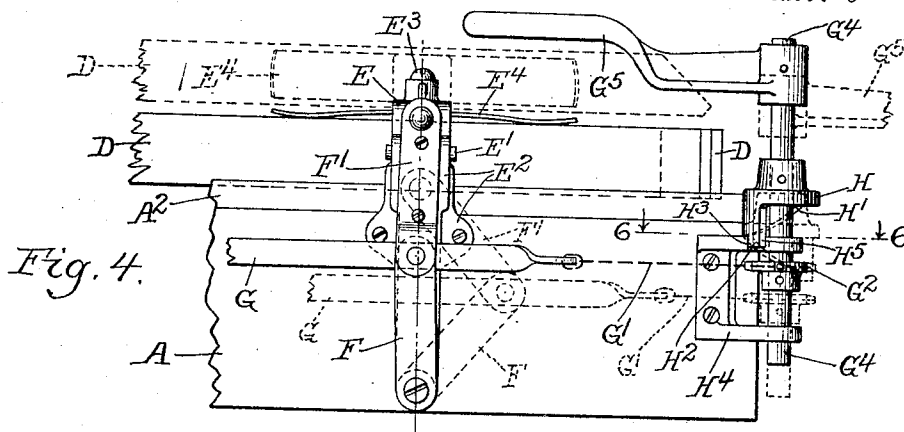
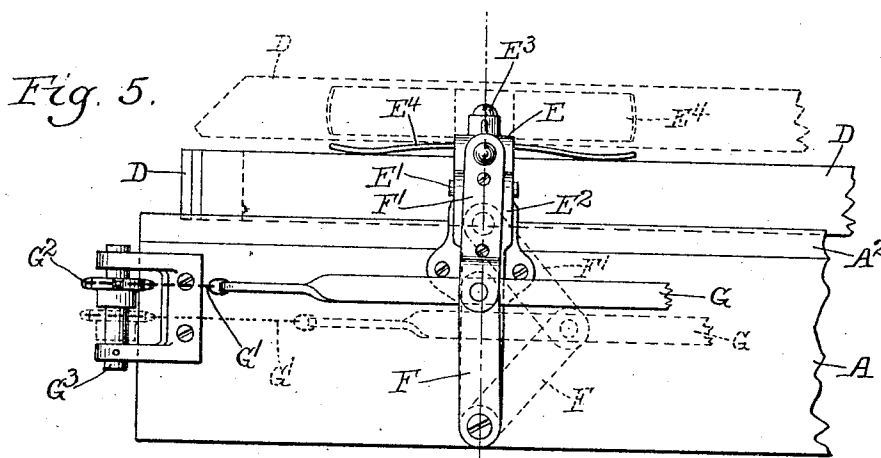
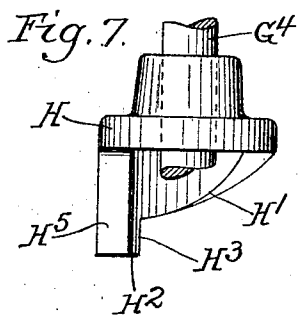
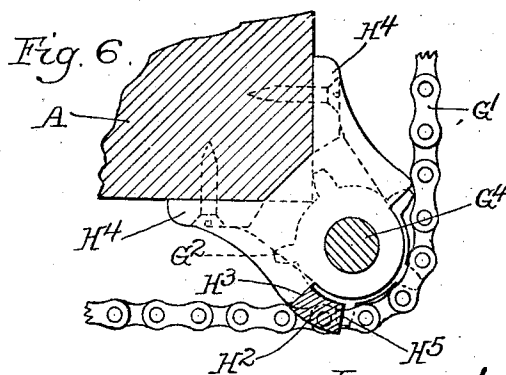
A. N. KLITSCHKE

1,521,632

PRINTING FRAME

Filed Feb. 5, 1923

4 Sheets-Sheet 3



Inventor.
Amandus N. Klitsche.
by Parker & Carter.
Attorneys.

Jan. 6, 1925.

A. N. KLITSČE

1,521,632

PRINTING FRAME

Filed Feb. 5, 1923

4 Sheets-Sheet 4

Fig. 8.

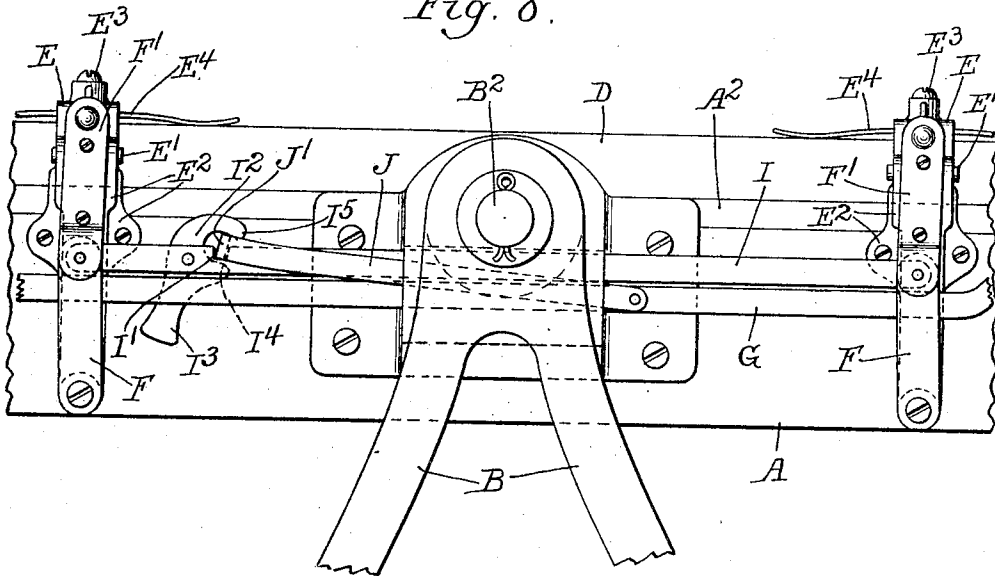
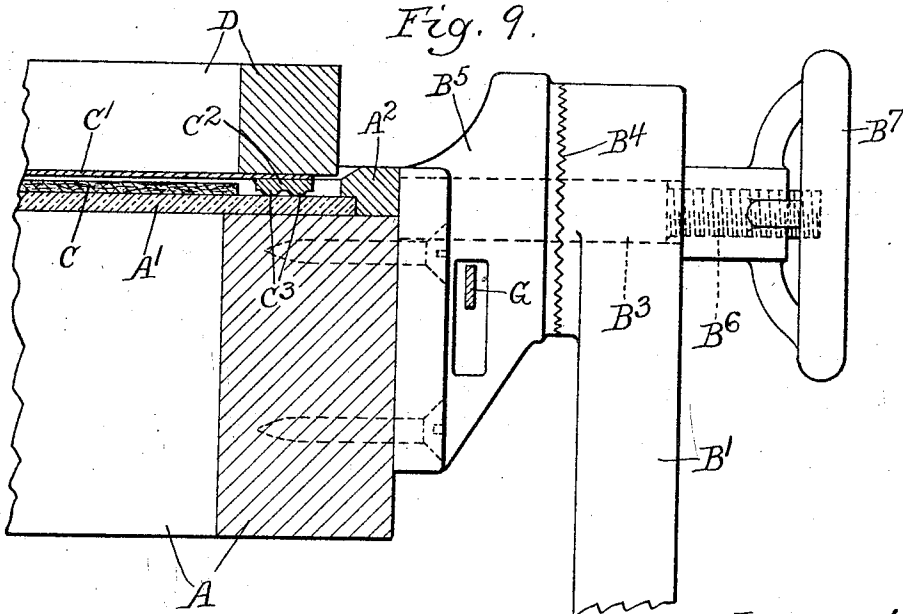


Fig. 9.



Inventor
Amandus N. Klitsche.
by Parker & Carter.
Attorneys.

UNITED STATES PATENT OFFICE.

AMANDUS N. KLITSCHKE, OF CHICAGO, ILLINOIS, ASSIGNOR TO THE FREDERICK POST COMPANY, OF CHICAGO, ILLINOIS, A CORPORATION OF ILLINOIS.

PRINTING FRAME.

Application filed February 5, 1923. Serial No. 917,997.

To all whom it may concern:

Be it known that I, AMANDUS N. KLITSCHKE, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a certain new and useful Improvement in Printing Frames, of which the following is a specification.

This invention relates to printing frames, and particularly frames of the type adapted for use in blue printing. It has for one object to provide a frame which may be made in large sizes and which will be easy of manipulation. Another object is to provide in such frame means for ready opening and closing. Other objects will appear from time to time throughout the specification and claims.

My invention is illustrated more or less diagrammatically in the accompanying drawings, wherein:

Figure 1 is a plan view with parts broken away.

Figure 2 is a vertical cross section on line 2—2 of Figure 1 on an enlarged scale;

Figure 3 is a view similar to Figure 2 showing the frame open and with parts omitted;

Figure 4 is a partial end elevation on an enlarged scale showing the frame operating handle;

Figure 5 is a partial end elevation showing one corner of the frame;

Figure 6 is a fragmentary vertical cross section taken on line 6—6 of Figure 4;

Figure 7 is a detailed elevation on an enlarged scale of the cam shaped locking member shown in Figure 4;

Figure 8 is a partial end elevation of the end of the frame opposite the operating handle;

Figure 9 is a vertical cross section taken on line 9—9 of Figure 1 showing the frame positioning mechanism.

Like parts are indicated by like characters throughout.

A is an open rectangular frame. Mounted across its top is a sheet of glass A¹ which is held upon the frame A by means of the holding strips A² which are removably held in position. The frame A is mounted for rotation as a whole.

At either end yokes B B¹ support the frame. These yokes carry respectively stub shafts B² B³ which shafts serve as trunnions

which support the frame for rotation. A locking means is provided which prevents accidental rotation as follows. The inner face of the yoke B¹ is roughened in any suitable manner as shown at B⁴. The engaging member B⁵ which is mounted on the frame A is correspondingly formed. The outer end of the stub shaft B³ is reduced in diameter and threaded as at B⁶. See Fig. 9. Upon this threaded portion a controlling handle B⁷ is mounted. When it is desired to hold the frame in position to prevent its rotation, the controlling handle B⁷ is screwed tight and the faces of the members B⁷ and B⁵ are drawn together, and the parts are held in any desired angle of position. When it is desired to rotate the frame, the handle is unscrewed and the frame may be rotated. The frame is preferably arranged so that its center of gravity practically corresponds with the axis of the stub shafts, and thus even when free to rotate the frame does not have a pronounced tendency to turn or move of its own weight.

C is a removable felt pad (see Fig. 2) adapted to be placed over the matter to be printed which matter is placed directly upon the glass. Above the felt pad C is a rubber C¹ which has about its edge a thickened contact portion C² provided with two beads C³ C³. C⁴ is a connecting hose through the rubber pad C¹. This connection leads to any suitable air exhausting means not here shown as its details form no part of the present invention. As the frame is closed the air is exhausted from within the enclosed portion bounded by the glass plate and the rubber sheet and a vacuum is created therein. This condition of course tends to hold the parts together to prevent their accidental displacement or slipping.

Above the rubber pad and pivotally mounted on the sides of the frame A are four side frame members D. These members when moved to the closed position as shown in Figures 1 and 2 constitute in effect a rectangular frame and hold the matter to be printed on the belt and rubber sheets in position. They are, however, not joined together at their corners, and thus when raised into the position shown in Figure 3 they are separated.

Each of the frame members D is supported from the frame A by means of two or

more pivoted arms E. These arms are pivoted at E¹ in a bracket member E² which is secured to the side of the frame A. The frame members D are preferably spring held in the members E. For this purpose the holding screws E³ fit loosely in the member E to permit relative movement, but are fixed in the frame members D. Between the frame members D and the members E are mounted leaf springs E⁴. These springs yield under pressure when the frame is closed and thus permit a tight fit, but cushion the entire mechanism from shock and avoid the possibility of breaking the glass or other wise injuring any of the material during operation.

Pivotally mounted on the member E² at its bottom is a lever F, see Fig. 8. This lever is pivotally connected at its upper end to a second lever F¹ which is connected to the member E at its upper end by a ball joint and is forked at its lower end for connection with the lever F. The levers F and F¹ form together a knuckle joint arrangement which when the frame is closed lie together in the position shown in full lines in Figures 2, 4 and 5, and when the frame is opened are pulled laterally into the position shown in dotted lines in Figures 4 and 5. It will be noted particularly from Figures 4 and 5 that when the frame is closed the levers F and F¹ are moved so that their pivotal connection lies slightly to one side of a line drawn between their outer ends. Thus by reason of their position they are locked against accidental movement.

Extending laterally about the frame is an operating connection formed of a plurality of bars G and chains G¹. The bars lie along the sides of the frame and the chains extend about the corners and connect the bars. At each of the corners the chain is carried by a sprocket wheel G². This wheel is mounted at three of the corners on a shaft G³ and is adapted to rise and fall along the shaft as the frame is opened or closed. During this operation it moves from the position shown in full lines in Figures 4 and 5 to that shown in dotted lines. At one of the corners, namely, at that at which the operating handle is located, the sprocket wheel G² is fixed on a shaft G⁴ and this shaft rises and falls and the wheels move with it. The shaft has at its upper end an operating handle G⁵ and has mounted on it a guiding and controlling cam H. This cam is provided with the curved face H¹ and the stop member H² which serves to prevent excessive rotation of the controlling handle and the shaft. When the frame is fully closed, the cam is in the position shown in Figure 4, and in that position the short face H³ of the cam H contacts one side of the bearing frame H⁴ which carries the shaft G⁴. When the frame is completely opened the long face

H⁵ of the cam H contacts the other side of the bearing frame H⁴ and thus excessive movement of the controlling handle and shaft in either direction is prevented.

In the use of the frame it is frequently desirable to open only a portion of the frame to inspect the work or for any other reason, and it is therefore desirable to hold the work within the frame against slipping. For this purpose I provide means whereby one end of the frame can be held closed when the rest of it is open. This means is illustrated in Figures 1 and 8. As there shown the frame member D is similar to the other frame members and its operation is generally similar to that of the other frame members, but the bars G do not directly operate the opening and closing mechanism. The bar passes below the knuckle joint of the levers F and F¹ and there is mounted above it an auxiliary connecting bar I. This bar is joined to the levers F and F¹ at their point of connection and when moved laterally operates to move them and to raise and lower the frame closing means in the manner above described.

The bar I may be connected to the bar G in the following manner. The bar I has in its upper face a notch I¹ and it has pivotally mounted upon it an engaging latch I². This latch has a controlling handle I³, a lower cam face I⁴ and an upper engaging hook I⁵. Pivotally mounted on the bar G is a connecting member J which has a laterally bent portion J¹ which is adapted to fit into the slot I¹ in the bar I. When the parts are in the position shown in full lines in Figure 8 the laterally bent portion of the member J lies within the slot I¹ of the bar I and is held thereon by means of the latch I². When the parts are in this position movement of the bar G will of course be transmitted to the bar I and thus the end frame member D will be opened and closed with the rest of the frame members. When, however, it is desired to leave this member closed, the connecting member J is moved out of engagement with the bar I, and thus movement of the bar G is not transmitted to the bar I and the end frame member remains closed.

Although I have shown an operative device, still it will be obvious that many changes in size, shape and arrangement of parts might be made without departing materially from the spirit of my invention, and I wish therefore that my showing be taken as in a sense diagrammatic.

The use and operation of my invention are as follows:

This frame, while normally manufactured in large sizes and intended therefore for use with large materials, is adaptable to almost any size. For loading it is rotated into the position shown particularly in Figure 1, in which the glass side is down. The

controlling handle is then operated and all of the side members are simultaneously raised. Air is allowed to enter and the rubber sheet is then moved away and also the felt pad. The material to be printed is placed in position against the glass. The felt is replaced and the rubber sheet is replaced and the side frame members are replaced, and closed holding the assembly of the printing material in position. Air is then exhausted from the space confined between the rubber sheet and the glass and printing may commence. The frame is then rotated to any suitable angle and is moved so that the light either artificial or of the sun strikes in the proper manner upon the glass face and so the printing may take place.

The removal of the material is exactly the same as that above described for filling, except that the order of the operation is reversed.

When it is desired merely to look into the frame and not to remove the material from it, one of the end frame members is disconnected and then the operation of the controlling handle does not affect it, and it remains closed while the other side members are opened.

I claim:

1. In a printing frame, a main frame portion in combination with a movable upper frame, said upper frame formed of a plurality of unattached co-operating members, and means for simultaneously moving said upper frame members, said means including a continuous operating connection formed in part of rigid members and in part of flexible members, and means for engaging said connection to move it.

2. In a printing frame, a main frame portion in combination with a movable upper frame, said upper frame formed of a plurality of unattached co-operating members, and means for simultaneously moving said upper frame members, said means including a continuous operating connection formed in part of rigid members and in part of flexible members, and means for engaging said connection at one of the flexible sections to move it.

3. In a printing frame, a main frame portion in combination with a movable upper frame, said upper frame formed of a plurality of unattached co-operating members, and means for simultaneously moving said upper frame members, and additional means for causing one of said upper frame members to remain stationary while the other frame members are moved.

4. In a printing frame, a main frame portion in combination with a movable upper frame, said upper frame formed of a plurality of unattached co-operating members, and means for simultaneously moving all but one of said upper frame members,

5. In a printing frame, a main frame portion in combination with a movable upper frame, said upper frame formed of a plurality of unattached co-operating members, and means for simultaneously moving said upper frame members, and means for positively preventing excessive movement of said members.

6. In a printing frame, a main frame portion in combination with a movable upper frame, said upper frame formed of a plurality of unattached co-operating members, and means for simultaneously moving said upper frame members, said means including a continuous operating connection formed in part of rigid members and in part of flexible members, and means for engaging said connection to move it, and means for limiting the movement of said connecting members to prevent excessive movement in either direction.

7. In a printing frame, a main frame portion in combination with a movable upper frame, said upper frame formed of a plurality of unattached co-operating members, said upper frame members being separately supported from said main frame, the supports of said members including a crank arm pivoted from said main frame and flexibly attached at its outer end to said upper frame member.

8. In a printing frame, a main frame portion in combination with a movable upper frame, said upper frame formed of a plurality of unattached co-operating members, said upper frame members being separately supported from said main frame, the supports of said members including a crank arm pivoted from said main frame and flexibly attached at its outer end to said upper frame member, said flexible attachment including a spring bearing upon said crank arm and upon said frame member.

9. In a printing frame, a main frame portion in combination with a movable upper frame, said upper frame formed of a plurality of unattached co-operating members, said upper frame members being separately supported from said main frame, the support of each of said members including a lever arm pivoted from said main frame and a two part jointed lever pivoted at one end to said main frame and at the other end to said lever arm, and means for moving said lever arm and through it to move said upper frame section.

10. In a printing frame, a main frame portion in combination with a movable upper frame, said upper frame formed of a plurality of unattached co-operating members, said upper frame members being separately supported from said main frame, the support of each of said members including a lever arm pivoted from said main frame and a two part jointed lever pivoted at one end

to said main frame and at the other end to said lever arm, and means for moving said lever arm and through it to move said upper frame section, in combination with an operative connection extending about said frame, said connection attached to each of said jointed levers and adapted when it is moved simultaneously to move each of said levers and through each of them to move each of said upper frame members.

11. In a printing frame, a main frame portion in combination with a movable upper frame, said upper frame formed of a plurality of unattached co-operating members, said upper frame members being separately supported from said main frame, the support of each of said members including a lever arm pivoted from said main frame and a two part jointed lever pivoted at one end to said main frame and at the other end to said lever arm, and means for moving said lever arm and through it to move said upper frame section, said jointed levers adapted when substantially straight to move said upper frame members to the closed position, and when bent from the straight position to open them.

12. In a printing frame, a main frame portion in combination with a movable upper frame, said upper frame formed of a plurality of unattached co-operating members, said upper frame members being separately supported from said main frame, the support of each of said members including a lever arm pivoted from said main frame and a two part jointed lever pivoted at one end to said main frame and at the other end to said lever arm, and means for moving said lever arm and through it to move said upper frame section, in combination with an operative connection extending about said frame, said connection attached to each of said jointed levers and adapted when it is moved simultaneously to move each of said levers and through each of them to move each of said upper frame section, said jointed levers adapted when substantially straight to move said upper frame members to the closed position and when bent from the straight position to open them.

13. In a printing frame, a main frame portion in combination with a movable upper frame, said upper frame formed of a plurality of unattached co-operating members, said upper frame members being separately supported from said main frame, the support of each of said members including a lever arm pivoted from said main frame and a two part jointed lever pivoted at one end to said main frame and at the other end to said lever arm, and means for moving said lever arm and through it to move said upper frame section, said jointed levers adapted when substantially straight to move said upper frame members to the closed position, and when bent from the straight position to open them, and adapted to be swung slightly beyond the closing position whereby they are held locked against accidental opening.

14. In a printing frame, a main frame portion in combination with a movable upper frame, said upper frame formed of a plurality of unattached co-operating members, said upper frame members being separately supported from said main frame, the support of each of said members including a lever arm pivoted from said main frame and a two part jointed lever pivoted at one end to said main frame and at the other end to said lever arm, and means for moving said lever arm and through it to move said upper frame section, in combination with an operative connection extending about said frame, said connection attached to each of said jointed levers and adapted when it is moved simultaneously to move each of said levers and through each of them to move each of said upper frame sections, said jointed levers adapted when substantially straight to move said upper frame members to the closed position and when bent from the straight position to open them, and adapted to be swung slightly beyond the closing position whereby they are locked against accidental opening.

15. In a printing frame, a main frame portion in combination with a movable upper frame, said upper frame formed of a plurality of unattached co-operating members, and means for simultaneously moving said upper frame members, said means including a continuous operating connection formed in part or rigid members and in part of chains, and means for engaging said connection to move it.

16. In a printing frame, a main frame portion in combination with a movable upper frame, said upper frame formed of a plurality of unattached co-operating members, and means for simultaneously moving said upper frame members, said means including a continuous operating connection formed in part of rods and in part of chains, and means for engaging said connection to move it.

17. In a printing frame, a main frame portion in combination with a movable upper frame, said upper frame formed of a plurality of unattached co-operating members, and means formed in part of rigid members and in part of flexible members for simultaneously moving said upper frame members, and additional means for causing one of said upper frame members to remain stationary while the other frame members are moved.

18. In a printing frame, a main frame portion in combination with a movable upper frame, said upper frame formed of a plurality of unattached co-operating members, and means for simultaneously moving said upper frame members, and additional means for causing one of said upper frame members to remain stationary while the other frame members are moved.

19. In a printing frame, a main frame portion in combination with a movable upper frame, said upper frame formed of a plurality of unattached co-operating members, and means for simultaneously moving said upper frame members, and additional means for causing one of said upper frame members to remain stationary while the other frame members are moved.

upper frame, said upper frame formed of a plurality of unattached co-operating members, and means formed in part of rods and in part of chains for simultaneously moving said upper frame members, and additional means for causing one of said upper frame members to remain stationary while the other frame members are moved.

10 19. In a printing frame, a main frame portion in combination with a movable upper frame, said upper frame formed of a plurality of unattached co-operating members, and means for simultaneously moving
15 said upper frame members, said means including a continuous operating connection formed in part of rods and in part of chains, and means for engaging said connection to move it, and means for limiting
20 the movement of said connecting members

to prevent excessive movement in either direction.

20. In a printing frame, a main frame portion in combination with a movable upper frame, said upper frame formed of a plurality of unattached co-operating members, said upper frame members being separately supported from said main frame, the supports of said members including a crank arm pivoted from said main frame and flexibly attached at its outer end to said upper frame member, and means for moving the unattached parts of said upper frame simultaneously said means formed in part of rigid members and in part of flexible members.

Signed at Chicago county of Cook and State of Illinois, this 2nd day of February 1923.

AMANDUS N. KLITSCHKE.