Aug. 9, 1949. W. PETTY 2,478,314

REGISTERING DEVICE

Filed July 22, 1946

2 Sheets-Sheet 1

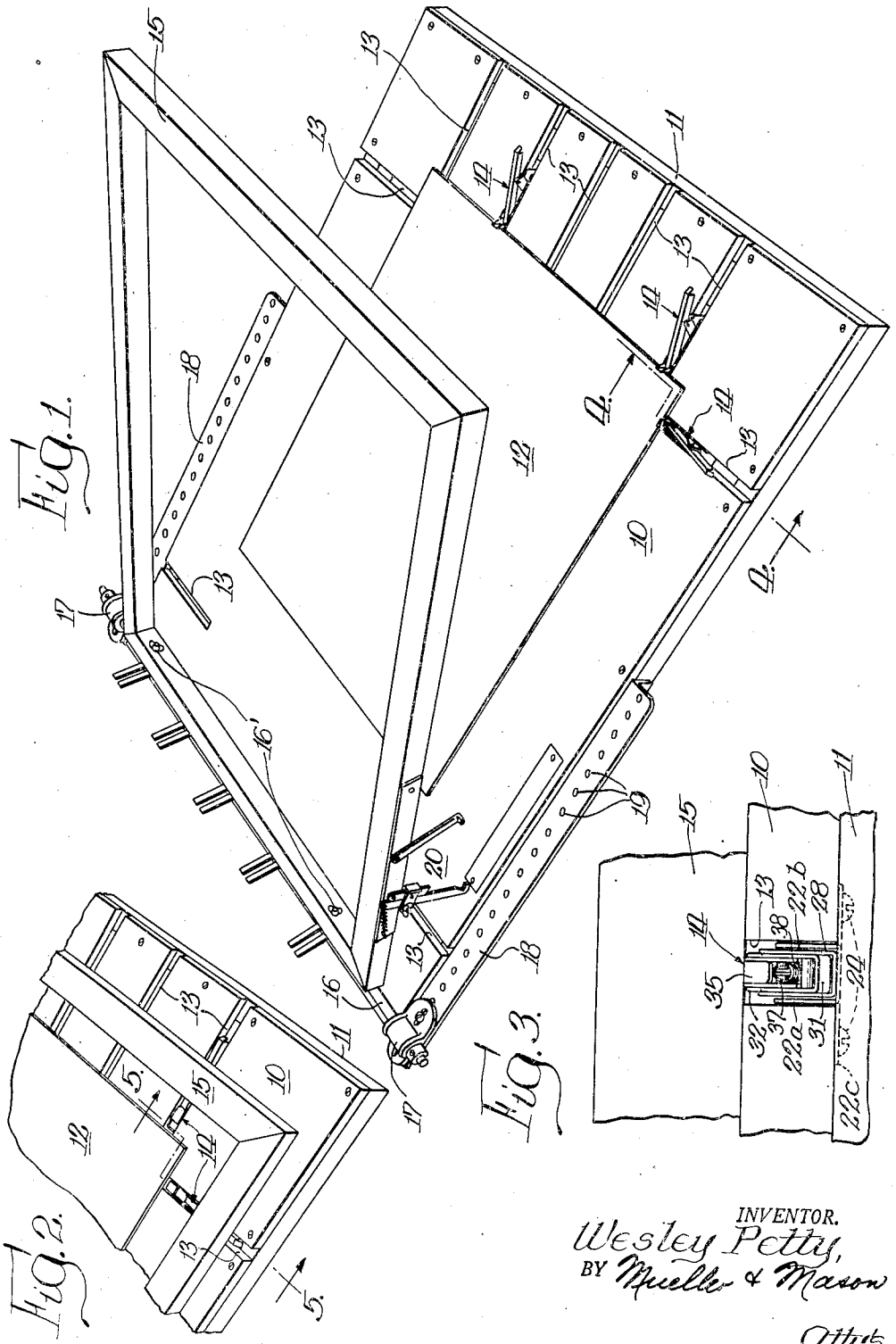


FIG. 1.

FIG. 2.

FIG. 3.

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2 Sheets-Sheet 2

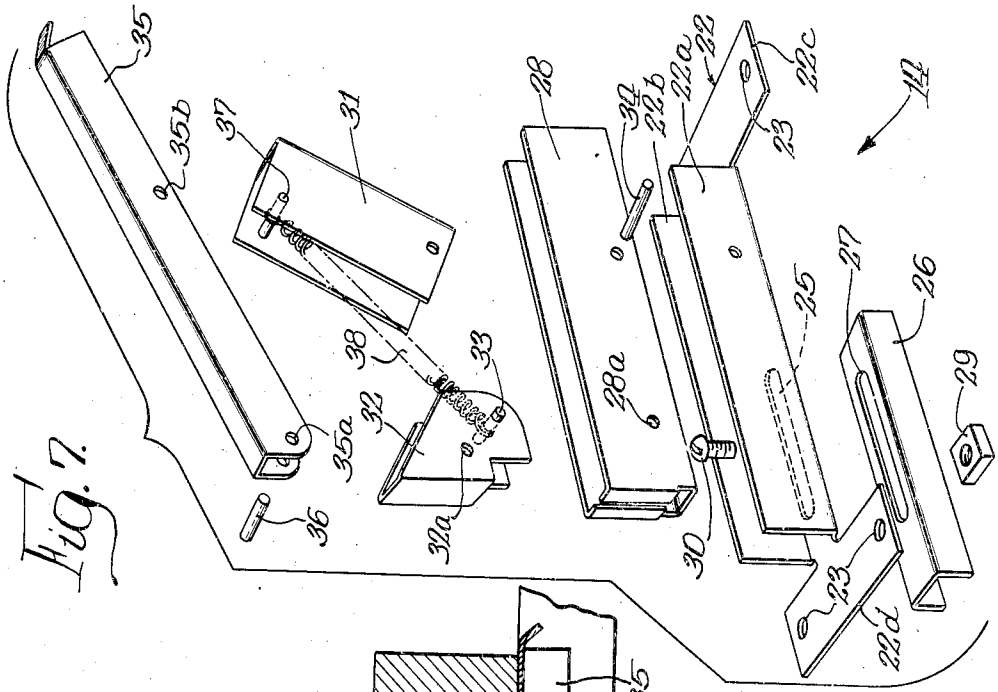


FIG. 7.

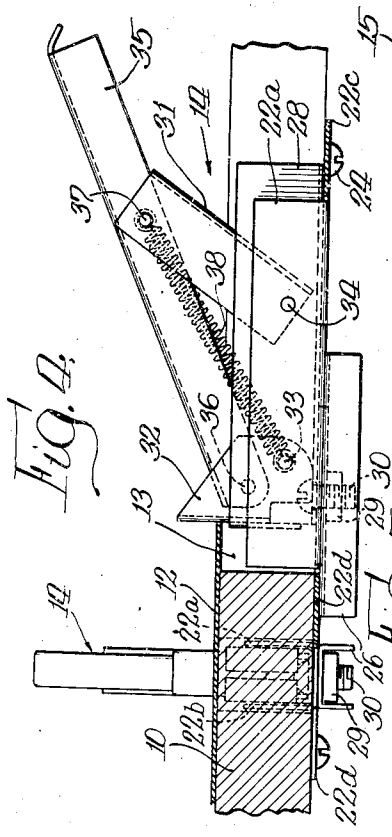


FIG. 4.

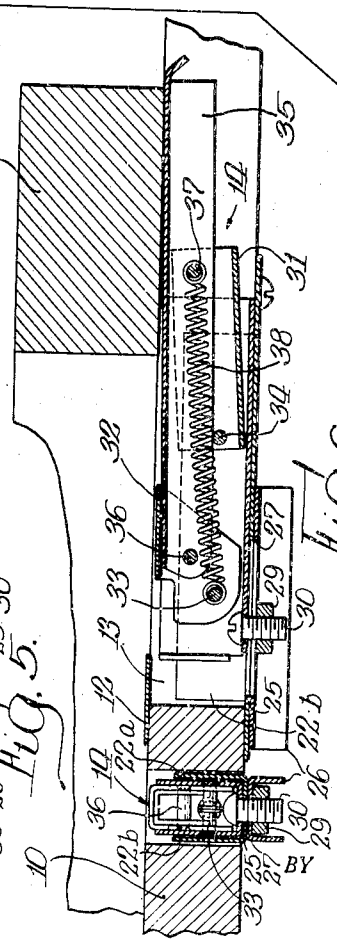


FIG. 5.

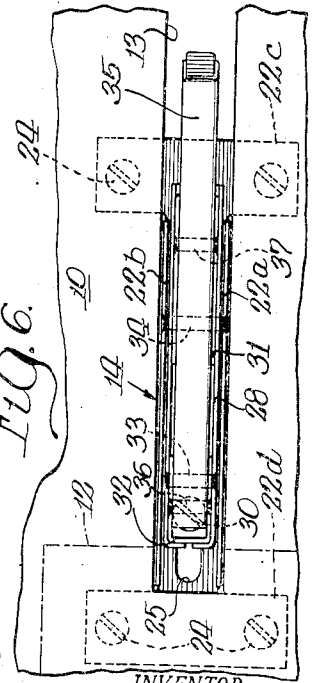


FIG. 6.

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REGISTERING DEVICE

Wesley Petty, Effingham, Ill.

Application July 22, 1946, Serial No. 685,560

9 Claims. (Cl. 101—414)

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The present invention relates to a registering device and more particularly to a registering device having a disappearing stop or guide element.

In connection with photography, stencilling, printing and various other similar fields of endeavor, it is desirable to be able to orientate a member relative to another member. In photography, for example, it is necessary to position properly the sensitive paper with reference to the negative, and in various printing and stencilling operations it is similarly necessary to properly position one element relative to another. For performing this positioning or orientation function, it is customary to provide apparatus embodying suitable positioning guide elements or stop members. It is furthermore desirable that at certain times during the use of such apparatus that the guide members or stop members are effectively retracted so as in effect to provide a disappearing guide element or stop member. Heretofore very complicated arrangements were required to provide these disappearing guide elements or fingers.

It is an object of the present invention to provide a new and improved registering device for the purpose set forth above.

It is another object of the present invention to provide a registering device including a guide finger or stop member forming a part of a collapsible linkage mechanism whereby the guide finger can be effectively retracted at the appropriate time.

Still another object of the present invention is to provide a disappearing guide finger or registering device comprising a collapsible linkage mechanism formed from a plurality of interfitting members.

It is a further object of the present invention to provide a simple, compact, sturdy, disappearing registering device which is simple to manufacture and which may readily be used in connection with any operation where disappearing guide fingers or stops are required.

Further objects and advantages of the present invention will become apparent as the following description proceeds and the features of novelty which characterize this invention will be pointed out with particularity in the claims annexed to and forming a part of this specification.

For a better understanding of the present invention, reference may be had to the accompanying drawings in which:

Fig. 1 is a perspective view of a printing frame embodying registering devices of the present invention with the printing frame shown in one predetermined position;

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Fig. 2 is a portion of the device of Fig. 1 showing the printing frame in a different predetermined position;

Fig. 3 is an enlarged view of a portion of the printing frame of Fig. 2 showing an end view of the registering device of the present invention in its effectively retracted position;

Fig. 4 is an enlarged sectional view taken on line 4—4 of Fig. 1;

Fig. 5 is an enlarged sectional view taken on line 5—5 of Fig. 2;

Fig. 6 is a top view of one of the registering devices of Fig. 4; and

Fig. 7 is an exploded perspective view of the registering device shown in the preceding figures.

It should be understood that the present invention is applicable to many different devices for many different purposes and in fact, may be used wherever a disappearing stop or guide member for orientating a work member such as a sheet of paper or the like is required. In order to illustrate the present invention, however, there is shown in Fig. 1 of the drawings a printing frame with which registering devices of the present invention are employed and since the registering device of the present invention is peculiarly related in an operative manner to certain features of such a printing frame or apparatus, the present invention is also concerned with the combination of the registering device and the printing frame or like apparatus.

Referring now to the drawings, there is illustrated in Figs. 1 and 2 a base 10 which may be in the form of a sheet of wood, plastic, metal or any other suitable material. If desired, this material may be supported from a suitable frame generally indicated at 11. It should be understood, however, that the base 10 may be complete in itself and comprise only a sheet of material such as wood or the like. The base 10 forms a support for a work member such as 12 which may comprise a sheet of sensitive paper if the printing frame is used in connection with photography or a sheet of material upon which printing, stencilling, or the like is to be performed if the frame is used in connection with some other process. In order that the work member 12 may be properly orientated on the base 10, there is provided, more or less adjacent the periphery of the base 10, a plurality of elongated slots 13. Some of these slots extend in from one edge of the rectangular base member while other of these elongated slots extend in from other edges of the base

member 10. Adapted to be positioned in one or more of these elongated slots 13, are the registering devices of the present invention generally indicated at 14. Actually, three identical such registering devices 14 are shown in Fig. 1 of the drawings, two of which are positioned in the elongated slots 13 extending in from one edge of the base 10 while the other registering device 14 is positioned in the elongated slot 13 extending in from another edge of the base 10. It is apparent from an examination of Fig. 1 of the drawings that these three registering devices 14 are sufficient to properly orientate the work member 12 in a predetermined position. This position may be varied by changing the position in the slots 13 of the registering devices 14 or by supplying registering devices 14 in different slots 13. In any event, the base 10 is so designed that the work piece may be positioned in a large variety of positions merely by moving the registering devices 14 in the particular slots in which they are positioned or by physically moving the registering devices 14 from the slots in which they are positioned to entirely different slots.

In connection with photography, certain printing and stencilling processes and the like, it is customary to employ a movable frame member such as 15 which in Fig. 1 of the drawings is illustrated as being hinged or pivotally supported to the base member 10. As illustrated, a suitable rod 16 is attached to the frame member 15 by any suitable means such, for example, as the fastening means indicated at 16'. The rod 16 has its ends journalled in suitable bearing members 17 which are fastened to a pair of angle iron supports 18, one of these supports being fastened to either side of the base member 10. These angle iron supports 18 are provided with a plurality of openings such as 19 whereby the bearing members 17 may be moved to various positions thereby effectively changing the position of the movable or pivotally mounted frame member 15 relative to the base 10.

In connection with such a printing device as is illustrated in Fig. 1 of the drawings, it is customary to provide a holding device for holding the frame 15 in a predetermined position relative to the base 10. Such a holding device is generally indicated at 20 in Fig. 1 of the drawings and forms no part of the present invention. As illustrated, this holding device is identical with the holding device disclosed and claimed in my copending application, Serial No. 605,889, filed July 19, 1945 now matured into Patent No. 2,461,440 dated February 8, 1949. This holding device is constructed to hold the printing frame in the position shown in Fig. 1 of the drawings in the event that the frame is moved to that position. At the same time the holding device is arranged to permit the frame 15 to move to the position indicated in Fig. 2 of the drawings merely by applying a slight force in a downward direction to the frame 15. Since the holding device 20 forms no part of the present invention, no further discussion thereof is included herein.

The registering device 14 per se may be formed entirely of metal stampings as will become apparent as the following description proceeds and as a consequence thereof, is relatively inexpensive to manufacture. Referring now to Figs. 4 to 7 of the drawings, the registering device 14 comprises a primary supporting or base member 22 which initially comprises a rectangular sheet of suitable material such as sheet metal or the like which has intermediate portions 22*a* and 22*b* bent at right angles with respect to the main portion thereof so as to provide a channel portion intermediate the two ends of the primary supporting member 22. The ends 22*c* and 22*d* are provided with suitable openings 23 for fastening the primary supporting or base member 22 to a suitable device such as the base 10 of the printing frame. The central channel-shaped portion of the primary supporting member is adapted to extend into the elongated slot 13 and the end portions 22*c* and 22*d* are sufficiently wide to extend across the elongated slot so that the primary supporting member may readily be fastened to the base 10 as by suitable screws 24 clearly shown in Fig. 6 of the drawings. The primary supporting member 22 is further provided with an elongated slot 25 in the channel portion thereof, the purpose of which will become apparent from the following description. In order to strengthen the primary supporting or base member 22, it may be desirable to provide a channel member such as 26 which may be suitably fastened as by welding or the like to the member 22. The channel member 26 is also provided with an elongated slot 27 which should register with the slot 25 when the member 26 is fastened as by welding or the like to the member 22.

For the purpose of supporting the disappearing stop or guide finger, there is provided a secondary supporting member 28 also in the form of a channel and having a dimension so as to fit within the channel defined intermediate the ends of the member 22. This secondary supporting member 28 is adapted to be slidably movable with respect to the member 22 and is provided with a suitable opening in the base of the channel member for accommodating a stove bolt such as is indicated at 30. The nut 29 associated with the stove bolt 30 permits the secondary support or sliding member 28 to be fastened to the member 22 and to be held in a position relative thereto determined by the elongated slots 25 and 27, thus permitting adjustment of the disappearing registering device relative to the elongated slots 13 in the base 10 of the printing device when the primary supporting member 22 is fastened to the base 10.

Within the secondary support 28 there is pivotally mounted a disappearing positioning guide element or stop element 32. A suitable pin 33 associated with the element 32 has its ends extending into suitable openings 28*a* in the member 28 whereby the element 32 is pivotally supported within the channel-shaped member 28. The disappearing positioning guide element 32 also has a U-shaped or channel-shaped configuration. A channel-shaped lever 31 is provided which has one end thereof pivotally connected as by means of a pin 34 with the secondary supporting member 28. This lever 31 is dimensioned so as to fit into the channel-shaped secondary support 28.

In order to operate the guide element or finger 32 there is provided an actuator or actuating lever 35 dimensioned so as to fit within the space defined by the channel-shaped lever 31 and the channel-shaped positioning guide element 32. One end of the actuator 35 is pivotally connected by means of a pin 36 with the guide element 32, the pin 36 extending through cooperating openings 32*a* and 35*a* in the element 32 and the lever 35 respectively. An intermediate portion of the actuator 35 is positioned within the channel-shaped lever 31 and pivotally connected thereto by means of a pin 37 cooperating with openings

35*b* in the actuator **35**. Suitable means not shown are provided to keep the pins **33**, **34**, **36** and **37** in position. A suitably coiled tension spring **38** interconnects the pivot member **33** and the pivot pin **37**. The pivot pin **33** is so positioned relative to the pivot pin **36** that the tension spring **38** normally biases the actuator **35**, the lever **31** and the guide element **32** to the position shown in Fig. 4 of the drawings. In this position, the stop or guide element **32** extends upwardly through the elongated slot **13** in the base **10** so as to provide a surface against which the work member **12** may engage as is clearly shown in Fig. 4 of the drawings. The actuator **35** also extends at an angle upwardly through this slot and is positioned so as to be engaged by the printing frame **15**.

As the printing frame **15** is moved from the position shown in Fig. 1 of the drawings to the position shown in Fig. 2 of the drawings, it engages the actuating members **35** of the registering devices **14** so that the collapsible linkage mechanism comprising the elements **32** and the members **33** and **35** collapse to the position shown in Fig. 5 of the drawings where these members interfit by virtue of the channel-shaped elements so as to be nested together in a manner to be wholly enclosed within the secondary supporting member **28**. It is apparent that the guide or stop members **32** are effectively retracted within the elongated slots **13** so as to not interfere with the printing operation. In general a suitable member will extend across the printing frame **15** and if the registering devices such as the guide elements **32** were not effectively retracted within the slots **13** of the base **10** they would interfere with the member supported by the frame **15** not shown in the drawings.

In view of the detailed description included above, the operation of the registering device of the present invention will be apparent and no further discussion will be included herewith. It will be apparent that a registering device in the form of a simple collapsible linkage is provided, all parts of which may be made from metal stampings whereby the manufacturing cost is very low. In addition, a very sturdy construction is provided which is foolproof in operation and should provide long years of service. By virtue of the actuators **35** being engaged by the printing frame **15**, the associated guide fingers **32** are automatically moved out of their interfering positions so as to be effectively retracted within the elongated slots **13** in the base **10**. By employing the channel-shaped members which are nested together when the positioning device assumes the position shown in Fig. 5 of the drawings, a very compact structure is obtained which takes up a minimum of space.

It will be understood that the registering device although it is peculiarly adapted for use with printing frames such as is disclosed in the drawings, may be equally applicable to many other structures where such positioning devices are desired.

While there has been shown and described a particular embodiment of the present invention, it is to be understood that the arrangement disclosed is merely illustrative of the invention. It will, of course, be apparent to those skilled in the art that changes and modifications may be made without departing from the present invention, and it is aimed in the appended claims to cover all such changes and modifications as

fall within the true spirit and scope of the present invention.

What is claimed as new and desired to be secured by Letters Patent of the United States is:

1. In combination with a base provided with one or more slots therein, a registering device supported from said base so as to be positioned in one of said slots comprising a secondary support longitudinally adjustable in said slot, a collapsible linkage mechanism mounted in said secondary support including a positioning guide finger projecting through said one slot for orientating a work member on said base, an actuating member connected to said finger and biased to extend out of said one slot, and a movable member for engaging said actuating member to cause effective retraction of said finger into said one slot.

2. In combination with a base provided with one or more slots therein, a registering device supported from said base so as to be positioned in one of said slots comprising a channel-shaped secondary support longitudinally adjustable in said slot, a collapsible linkage mechanism mounted in said secondary support including a positioning guide finger projecting through said one slot for orientating a work member on said base, an actuating member connected to said finger and biased to extend out of said one slot and a movable member pivotally supported from said base and arranged to engage said actuating member to cause effective retraction of said finger into said one slot when said movable member is moved into engagement with said base.

3. In combination with a disappearing positioning guide element adapted to assume a projecting or a collapsed position, a primary supporting member, a secondary supporting member, means for holding said members in a plurality of relative positions, means for pivotally supporting said element to said secondary supporting member, a lever having one end pivoted to said secondary member, an actuator having one end pivotally connected to said element and an intermediate point thereon pivotally connected to the other end of said lever, and spring means for tending to cause said element to assume a projecting position.

4. A registering device comprising a channel-shaped disappearing positioning guide element adapted to assume a projecting or a collapsed position, a primary supporting member, a channel-shaped secondary supporting member, means for holding said members in a plurality of relative positions, means for pivotally supporting said element within said channel-shaped secondary supporting member, a channel-shaped lever having one end positioned within and pivoted to said secondary member, an actuator having one end positioned within and pivotally connected to said element and an intermediate point thereon positioned within and pivotally connected to the other end of said lever, and spring means for biasing said element to said projecting position, said registering device being so constructed and arranged that when said element is moved to its collapsed position said element, lever and actuator are all nested within said channel-shaped secondary supporting member.

5. A registering device comprising a channel-shaped disappearing positioning guide element adapted to assume a projecting or a collapsed position, a primary supporting member including a channel-shaped portion, a channel-shaped secondary supporting member adapted to be nested

within said primary supporting member, a releasable fastening device holding said members in a plurality of different relative positions, means for pivotally supporting said element within said channel-shaped secondary supporting member, a channel-shaped lever having one end positioned within and pivoted to said secondary member, an actuator having one end positioned within and pivotally connected to said element and an intermediate point thereon positioned within and pivotally connected to the other end of said lever, and spring means interconnecting said first-mentioned means and the pivotal connection between said actuator and said lever for biasing said element to said projecting position, said registering device being so constructed and arranged that when said element is moved to its collapsed position said secondary supporting member, element, lever and actuator are all nested within said channel-shaped portion of said primary supporting member.

6. In combination with a disappearing positioning guide element adapted to assume a projecting or a collapsed position, a primary supporting member, a secondary supporting member, means including a bolt and an elongated slot in one of said members for holding said members in a plurality of relative positions, means for pivotally supporting said element to said secondary supporting member, a lever having one end pivoted to said secondary member, an actuator having one end pivotally connected to said element and an intermediate point thereon pivotally connected to the other end of said lever, and spring means for tending to cause said element to assume a projecting position.

7. The combination of a base for supporting a work member, means for holding said work member in a predetermined position on said base comprising a guide finger projecting upwardly out of the plane of the base and pivotally supported so as to be movable into the plane of said base, and a compound actuating lever for said guide finger fulcrumed on said base and projecting at least in part upwardly therefrom, said lever being pivotally connected to said guide finger for moving said finger into the plane of the base when the projecting portion of said lever is pushed toward said base.

8. In combination with a printing frame including a base and a member hinged to said base and movable into contact therewith, a registering device supported by said base including a pivotally mounted guide finger, spring means for causing said guide finger to assume an upwardly extending position for orientating a work member on said base, and a compound actuating lever for said guide finger fulcrumed on said base and projecting at least in part upwardly therefrom into the path of said movable member, said lever being pivotally connected to said guide finger for moving said finger into the plane of the base when engaged by said movable member.

9. The combination of a base for supporting a work member, means for holding the work member in a predetermined position on said base comprising a positioning guide finger pivotally supported so as to be movable into and out of the plane of said base, spring means for biasing said finger to project out of the plane of said base to engage said work member, and a compound actuating lever for said guide finger fulcrumed on said base and also biased by said spring means to extend out of the plane of said base, said lever being pivotally connected to said guide finger for moving said finger into the plane of said base when said lever is pushed toward the plane of said base and being also adapted to nest with said guide finger in the plane of said base.

WESLEY PETTY.

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