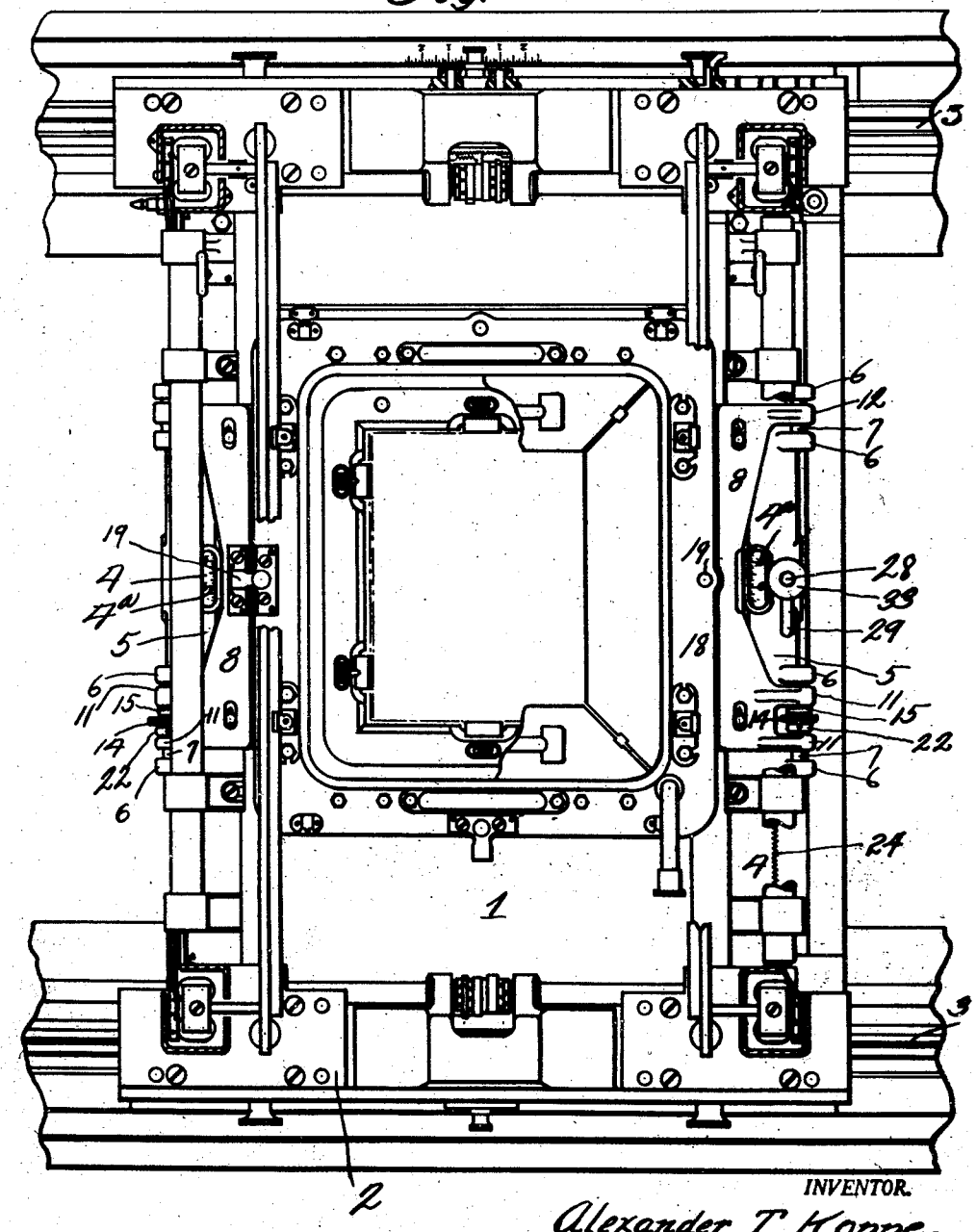
Aug. 23, 1927. 1,639,738

A. T. KOPPE

MACHINE FOR MAKING PRESS PLATES

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Fig. 1.



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MACHINE FOR MAKING PRESS PLATES

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Fig. 2.

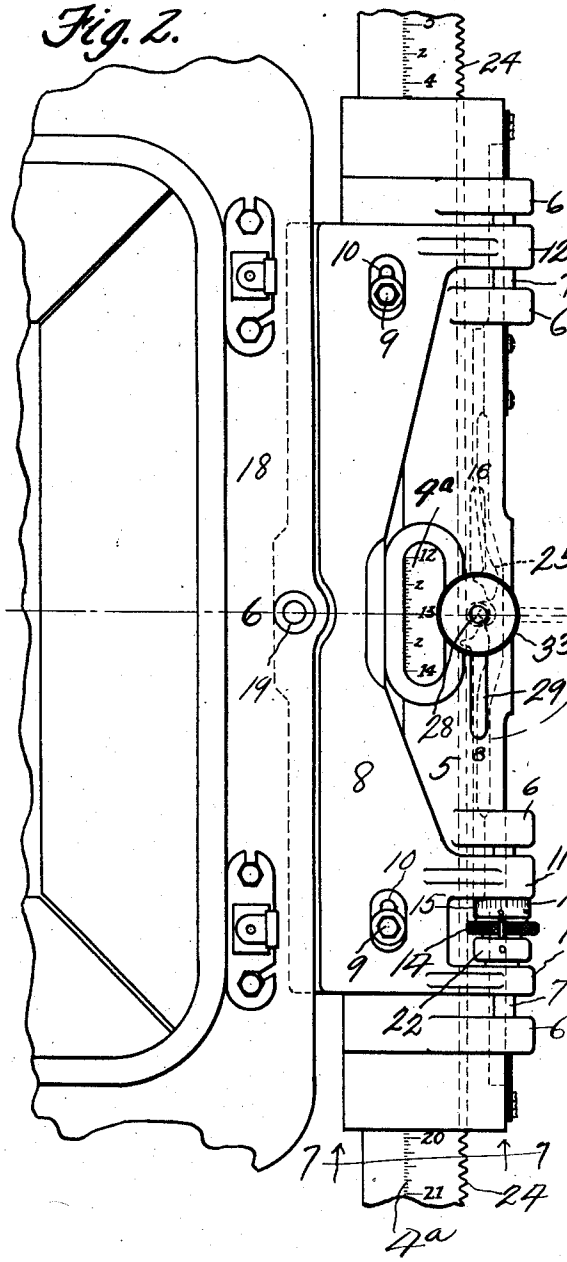


Fig. 5.

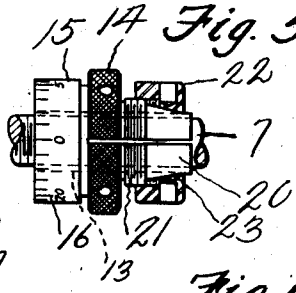


Fig. 6.

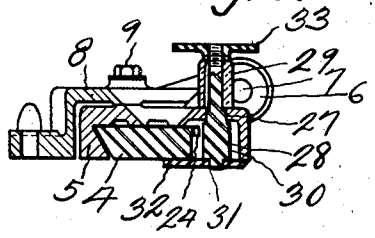


Fig. 7.

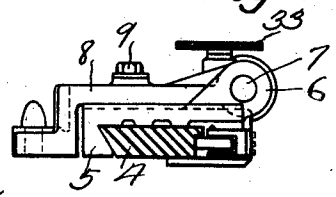
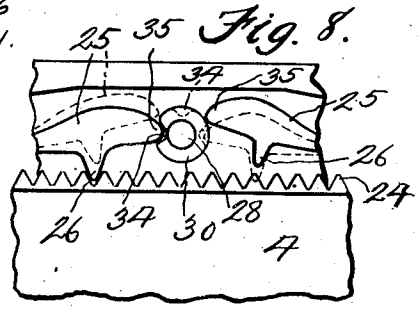


Fig. 8.



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MACHINE FOR MAKING PRESS PLATES

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Fig. 3.

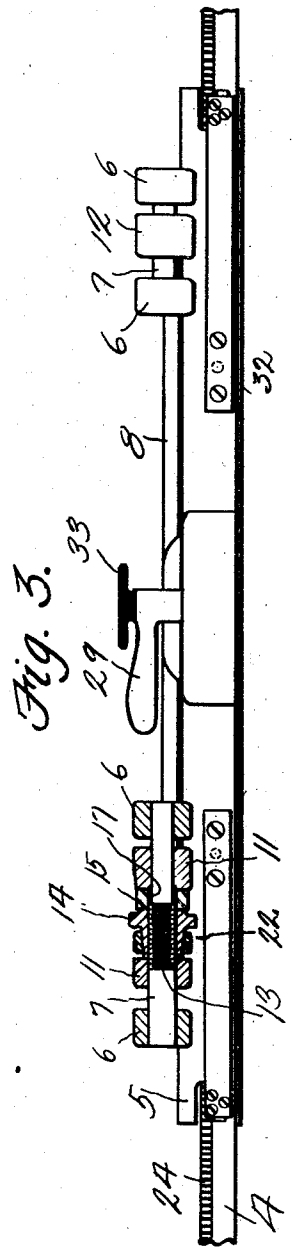
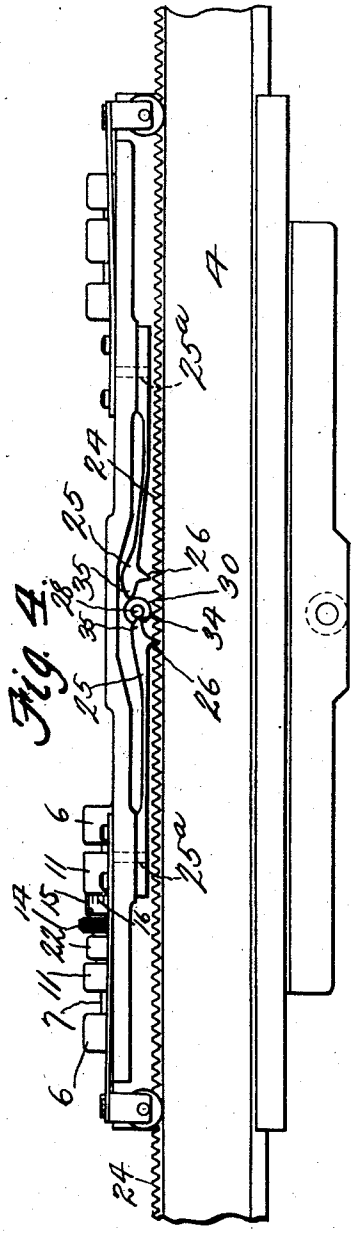


Fig. 4.



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UNITED STATES PATENT OFFICE.

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MACHINE FOR MAKING PRESS PLATES.

Application filed July 13, 1925. Serial No. 43,337.

The invention relates to machines for making offset press plates, and has for its object to provide means whereby the negative carrying frame may be accurately positioned and minutely adjusted over a sensitized plate of the type used in printing processes, and the vision on the plate carried by the negative frame reproduced on the sensitized press plate. The device is particularly adapted for use in connection with press plate machines of the type set forth in Patent No. 1,510,007, Sept. 30, 1924, and pressure frames of the type shown in Patent No. 1,396,962 issued Nov. 15, 1921; both of said patents issued to Alexander T. Koppe.

A further object is to provide transversely disposed toothed guide bars, on which register blocks are slidably mounted, and to which blocks negative frame supporting plates are hingedly and slidably connected, and detent means cooperating with the teeth of the toothed bars for holding the register blocks in various adjusted positions. Also to provide clamping means whereby said blocks may be clamped against movement after an adjustment thereof, thereby preventing accidental movement of the plates and negative frame supported thereby.

A further object is to provide spring detents having noses cooperating with the teeth of the toothed bars and positioned whereby when one nose is between the teeth, the other nose is above a tooth, thereby allowing a relatively fine adjustment of the register blocks in relation to the spacing of the teeth, and a rotatable member having a recess therein, which rotatable member receives in the recess thereof the nose of either detent for allowing the same to move to operative position or forcing the same out of operative position, or holding both detents out of operative position. Also to provide the rotatable member with a clamping plate and a thumb screw or nut whereby the register blocks may be positively clamped against movement.

A further object is to provide a micrometer adjustment between the register blocks and the negative frame supporting plates whereby an exceedingly fine adjustment of the negative frame may be obtained for properly registering the negative, and locking means for locking the micrometer adjustment thereby positively holding the negative frame against accidental movement.

A further object is to thread the micrometer adjusting members on the shafts, connecting the negative frame supporting plates and the register blocks, and to provide jam nuts threaded on split conical portions of the adjusting members, whereby upon tightening of the jam nuts, the micrometer members will be positively clamped on the shafts between spaced lugs of the negative frame supporting plates, said micrometer adjusting devices cooperating with the lugs for moving the frame plates in relation to the register blocks slidably mounted on the toothed bars. The micrometer adjustment is often desirable for very fine adjustments and obviates the difficulty in machining the teeth of the toothed bars relatively small, as it is difficult to make the teeth for adjustment of less than $\frac{1}{16}$ of an inch as the teeth would be relatively small, and it is often desirable to make adjustments of less than $\frac{1}{16}$ of an inch. For instance for the purpose of spacing out work where the paper has stretched while in process of printing.

With the above and other objects in view the invention resides in the combination and arrangement of parts as hereinafter set forth, shown in the drawings, described and claimed, it being understood that changes in the precise embodiment of the invention may be made within the scope of what is claimed without departing from the spirit of the invention.

In the drawing:—

Figure 1 is a top plan view of a portion of a machine for making offset press plates, showing the negative frame adjusting means carried thereby.

Figure 2 is an enlarged top plan view of a portion of the negative frame and adjusting means therefor.

Figure 3 is a side elevation of the frame adjusting device, showing the micrometer adjustment mechanism in section to better show the structure.

Figure 4 is a bottom plan view of the frame adjusting mechanism and one of the

toothed bars showing the clamping plate eliminated to better show the structure.

Figure 5 is an enlarged side elevation of the micrometer mechanism showing the locking nut in section.

Figure 6 is a detail sectional view taken on line 6—6 of Figure 2.

Figure 7 is a detail sectional view taken on line 7—7 of Figure 2.

Figure 8 is an enlarged bottom plan view of a portion of one of the toothed bars showing the pawl mechanism.

Referring to the drawings, the numeral 1 designates the bed plate of the machine, and 2 a carriage which is longitudinally movable on the guides 3. The carriage 2 is provided with transversely disposed toothed bars 4 in parallel relation to each other, and on which toothed bars are slidably mounted register blocks 5, which blocks are provided with upwardly extending integral lugs 6, in which are mounted the ends of the horizontally disposed shafts 7. Disposed on the blocks 5 and longitudinally movable thereon are negative frame supporting plates 8, which plates have a limited movement slidably in relation to the bar carried blocks 5, and are limited in their movement, as well as held in engagement therewith during their sliding engagement by means of bolts 9, which extend through elongated slots 10 in the plates 8 and into the bar carried blocks 5. The negative frame supporting plates 8, adjacent one of their ends are provided with spaced lugs 11, which are slidably and rotatably mounted on the shafts 7, and their other ends provided with lugs 12, which are slidably and rotatably mounted on the other shaft 7, therefore it will be seen that the plates 8 may have a sliding movement in relation to the blocks 5, and when the bolts 9 are removed may have a rotatable movement when desired. One of the shafts 7 at each side of the blocks is provided with threads 13, on which is threaded a split rotatable member 14, which engages a stationary member 15 carried by the shaft 7, and which member 15 is provided with a scale 16, which is a micrometer scale. The member 15 does not rotate on the shaft 7, but is slidably keyed at 17 thereon, and engages one of the lugs 11 carried by the frame supporting plate 8, as clearly shown in Figure 2, therefore it will be seen that when the rotatable threaded member 14 is rotated in one direction, the micrometer member 15 will be forced against the adjacent lug 11 of the frame supporting plate 8, and said frame supporting plate will be moved in one direction in relation to the toothed bar carried blocks 5. This adjustment takes place at both sides of the carriage, consequently is very fine, and an accurate adjustment may be obtained for securing proper registration of successive negatives carried by the negative frame 18, which is detachably supported at 19 by the plates 8. It has been found there is often danger of accidental movement of the micrometer adjusting members 14, and to obviate this difficulty the split portion of the adjusting members 14 are provided with tapered ends 20, and with threaded portions 21, which extend into lock nuts 22, therefore it will be seen that after an adjustment of the rotatable members 14, the lock nuts which are threaded on the threaded portions 21 may be tightened and the tapered portions 20 contracted by the tapered bore 23 of the lock nuts for positively clamping the rotatable members 14 into frictional and binding engagement with the shafts 7 for preventing accidental rotation of the rotatable members 14 and consequent movement of the negative frame 18. It will be noted that when the rotatable members 14 are rotated in the opposite direction they will engage the lugs 11 at the adjacent ends of the frame 8, and will move the negative frame 18 in the opposite direction, therefore it will be seen that not only a relatively fine and accurate adjustment in both directions may be obtained, but also the same mechanism may be used and the same locking means in connection therewith, and by providing the scale 16 in connection with the scale 4^a on the toothed bars 4, the blocks 5 and plates 8 and the negative carrying frame 18 may be easily replaced in any established position in relation to the bed plate 1 and a press plate thereon.

Toothed bars 4 are provided with a plurality of teeth 24, and more or less difficulty is met in accurately machining the toothed bars in respect to the teeth thereof, however they can be machined without difficulty to a size or spacing whereby any 1/8 of an inch movement may be obtained, but to machine the teeth so that a lesser movement of adjustment may be had greatly increases the difficulty of accurately machining the same, thus to permit the teeth to be spaced 1/8 inch and get a lesser adjustment of the bar carried blocks 5, which blocks carry the negative frame supporting plates, two spring detents 25 are provided which are formed from spring material, and are anchored at 25^a to the under sides of the blocks 5. The detent members 25 are provided with inwardly extending arms 26 which are spaced relative to the teeth 24, whereby when one arm 26 is disposed between adjacent teeth, the other arm 26 is in registration with a tooth, consequently it will be seen, if the teeth 24 are spaced one eighth of an inch apart, by manipulating the detents 25, a sixteenth of an inch movement may be obtained, however where a finer adjustment than a sixteenth of an inch is desired, this may be obtained through the adjustment of the micrometer adjusting members 14.

Rotatably mounted in bearings 27 of the bar carried blocks 5 are vertically disposed shafts 28 on which are slidably keyed handle members 29 adapted to be moved to the dotted line position shown in Figure 2 for rotating the enlarged lower ends 30 of the shaft 28. The lower ends of the shaft 28 are rotatably mounted at 31 in clamping plates 32, which clamping plates, when the thumb nuts 33 are tightened on the upper ends of the shaft 28 are forced into close binding engagement with the under sides of the toothed bars 4, thereby securely clamping the blocks 5 against movement after an adjusting operation.

The enlarged lower ends 30 of the shafts 28 are provided with recesses 34, one recess to each shaft, and which recesses receive one of the noses 35 of the detents 25 for moving either detent into engagement with the teeth 24 of the guide bars 4 or out of interengagement therewith as clearly shown in Figure 8. It will be noted that when one detent is in cooperative engagement with the teeth 24, the nose 35 of the other detent is in engagement with the periphery of the enlarged end 30 of the shaft and is held out of engagement, however when it is desired to operate the other detent, for instance for a sixteenth of an inch movement, the enlargement 30 may be rotated to a position where the desired detent nose 35 will be received in a recess 34 and the detent moved to a position where its arms 26 will be positioned between adjacent teeth. If desired the shafts 28 may be moved to positions where the recess 34 will be in the dotted line position shown in Figure 8, where both detents will be held out of cooperative engagement with the toothed bars 4, thereby allowing a rapid movement of the frame 18 to adjacent any desired position, and thence a final and more accurate adjustment and locking of the blocks 5 through the detent 25, and lock nuts 33, and after which a still finer adjustment is desired, it may be obtained through the micrometer members 14 and the locking of said members through the medium of the lock nuts 22.

From the above it will be seen that adjusting means is provided for negative carrying frames of press plate making machines, which adjusting mechanism allows minute and accurate positioning of the negative frame, and locking means is provided in connection with said adjusting means whereby after an adjustment is made, the device may be locked, whereby accidental movement thereof is positively prevented. It will also be seen by providing the micrometer adjustment, relatively fine adjustments may be obtained without machining the teeth 24 of the bars 4 to a relatively small size, whereby the machining of the teeth 24 of the guide bars 4 may be of a size where they can be accurately machined and at the same time lesser adjustment may be obtained than the distance between the teeth 24.

The invention having been set forth what is claimed new and useful is:—

1. The combination with a negative carrying frame, movable members for positioning said negative carrying frame, toothed guide bars on which said movable members are slidably mounted independent of the teeth of the bars, of adjusting means between the movable means and the guide bars, said adjusting means comprising spring detents, noses carried by the detents and cooperating with the teeth of the toothed bars, members carried by said detents, a rotatable shaft carried by the movable means and disposed between the detents and provided with a recess adapted to receive the members carried by the detents to cooperate with the teeth of the toothed bar, and means cooperating with the shaft for locking the same against rotation.

2. The combination with a negative carrying frame, movable means for positioning said negative carrying frame, toothed bars on which said movable means is slidably mounted independent of the teeth of the toothed bars, of means for adjusting and locking said movable means against movement, said means comprising spring arms extending towards each other, a rotatable shaft between the adjacent ends of the spring arms and provided with a recess adapted to receive either adjacent end of the spring arms, noses carried by said spring arms and adapted to interengage the bar teeth alternately upon the rotation of the shaft, and locking means for locking said shaft against rotation.

3. The combination with a negative carrying frame, movable means for positioning said negative carrying frame, toothed bars on which said movable means is slidably mounted independent of the teeth of the toothed bars, of means for adjusting and locking said movable means against movement, said means comprising spring arms cooperating with the bar teeth, a rotatable shaft having a recess therein and adapted to cooperate with the spring arms for allowing either arm as desired to cooperate with the teeth of the toothed bar for moving the movable means or hold said arms out of cooperative engagement with the bar teeth, and means for locking said shaft against rotation.

4. The combination with a negative carrying frame, movable means for positioning said negative carrying frame, a toothed bar on which said movable means is slidably mounted independent of the teeth thereof, of means for adjusting and locking said movable means against movement, said means comprising spaced movable detent members cooperating with the teeth, a rotatable shaft between adjacent portions of the detents and

provided with a recess adapted to receive the adjacent portions of the detents, whereby upon rotation of the shaft the detents may be controlled, means whereby said shaft may move axially, means for moving said shafts axially, and members carried by said shaft and cooperating with the toothed bar for locking the said movable means against movement and the shaft against rotation.

5. The combination with a negative carrying frame, movable means for positioning said negative carrying frame, a toothed bar on which said movable means is slidably mounted independent of the teeth thereof, of means for adjusting and locking said movable means against movement on the bar, said means comprising spaced spring detents extending towards each other and cooperating with the teeth, a rotatable and axially movable shaft carried by said movable means and cooperating with the detents, means carried by said shaft whereby it may be rotated and oscillated and means carried by the shaft, whereby upon an axial movement thereof said movable means will be locked to the toothed bar, said shaft carried means moving the shaft axially.

6. The combination with movable means for positioning a carrying frame comprising slidably connected sections, spaced lugs carried by one of said sections, a shaft carried by the other section and on which the spaced lugs are slidably and rotatably mounted, a micrometer disposed on said shaft between the lugs, said micrometer comprising a rotatable member threaded on the shaft and cooperating with both of said lugs, a split conical portion carried by said rotatable member, and a lock nut threaded on the rotatable member and cooperating with the split conical portion thereof for clamping the same on the shaft.

In testimony whereof I affix my signature.

ALEXANDER T. KOPPE.