Nov. 25, 1947. R. HUTCHINSON 2,431,482

PUNCH PRESS MECHANISM

Filed Jan. 26, 1946 2 Sheets-Sheet 1

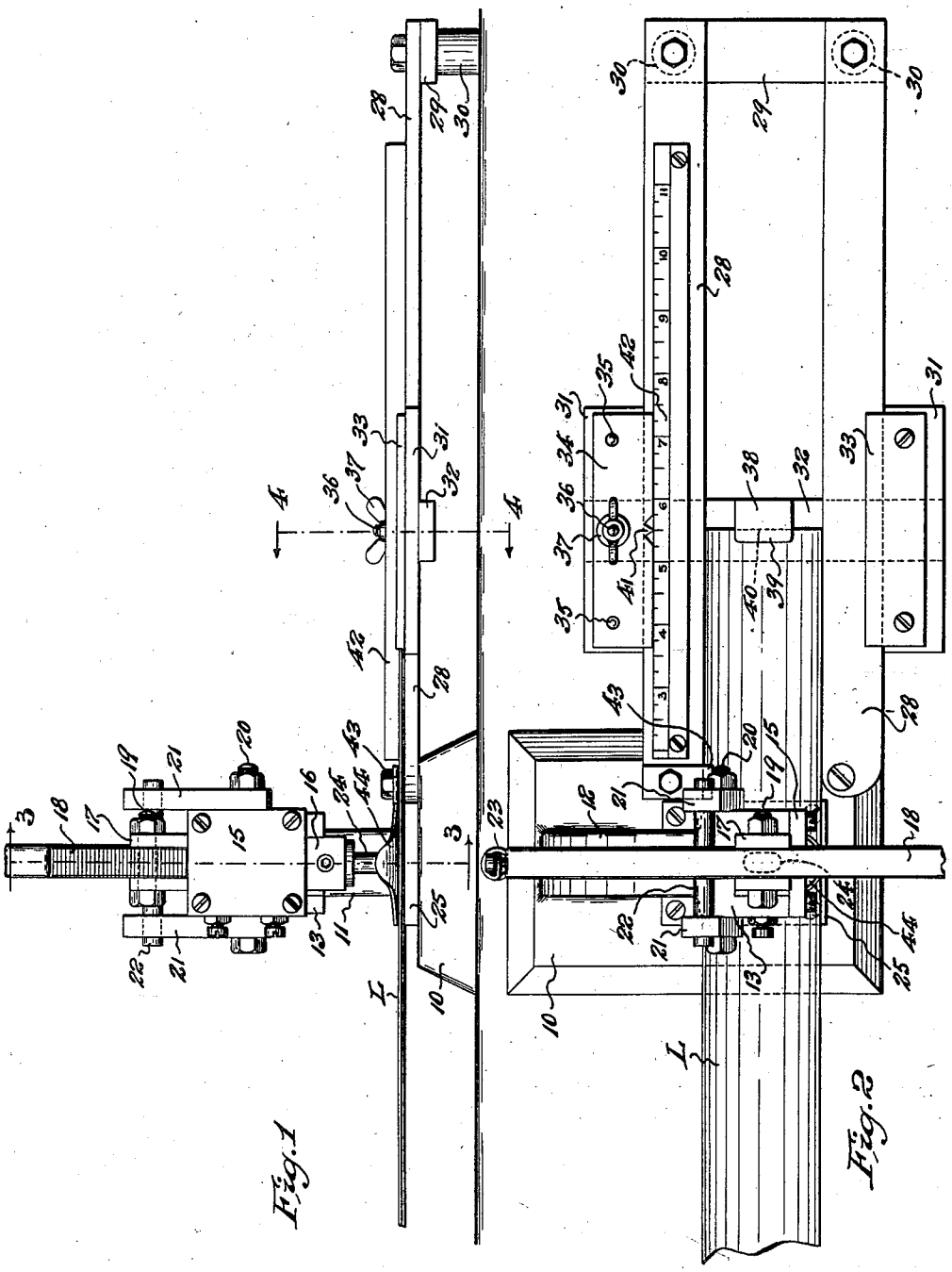


Fig. 1

Fig. 2

INVENTOR.
Richard Hutchinson,
BY George D. Richards
Attorney

Nov. 25, 1947. R. HUTCHINSON 2,431,482

PUNCH PRESS MECHANISM

Filed Jan. 26, 1946 2 Sheets-Sheet 2

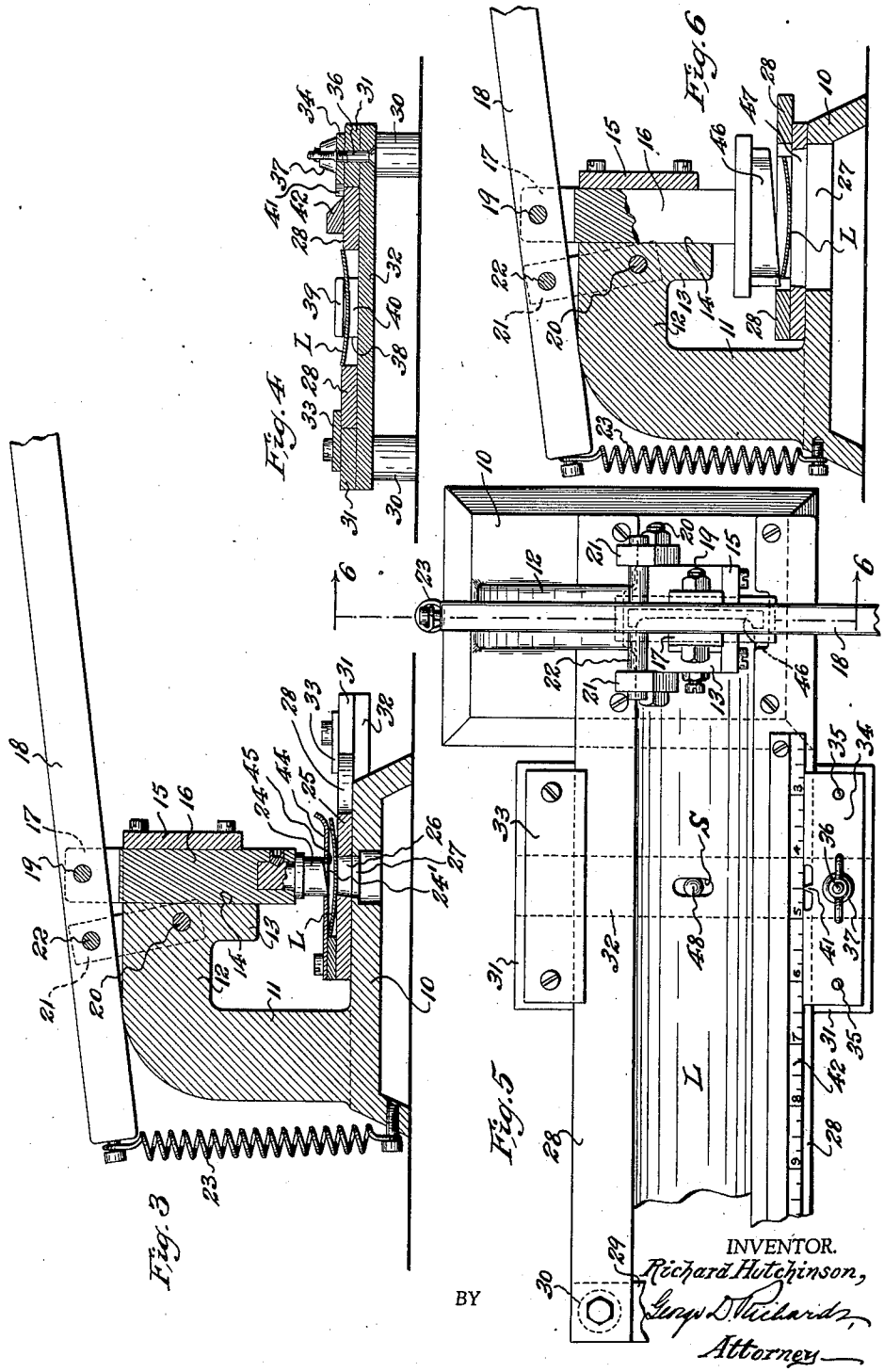


Fig. 3

Fig. 4

Fig. 6

Fig. 5

INVENTOR.
Richard Hutchinson,
BY George D. Richards,
Attorney

Patented Nov. 25, 1947

2,431,482

UNITED STATES PATENT OFFICE

2,431,482

PUNCH PRESS MECHANISM

Richard Hutchinson, Woodbridge, N. J.

Application January 26, 1946, Serial No. 643,640

4 Claims. (Cl. 164—59)

1

This invention relates to improvements in punch press mechanism, and the invention has reference, more particularly, to a novel punch press mechanism especially constructed and adapted for slotting and trimming the end portions of Venetian blind louvres.

In preparing Venetian blind louvres for use in an assembly thereof, and for cooperation with supporting and operating cables or cords, it is necessary to provide a slot adjacent to each end of each louvre, which is spaced a definite predetermined distance from said end, through which the supporting cords extend to a bottom member of the assembly to which the supporting cords are anchored. In addition to thus slotting end portions of the louvres, it is also necessary to trim the ends of the louvres in such manner as to both round off the sharp corners of such ends and to assure that the ends of all louvres are equidistant from the slots adjacently provided therein.

Having these requirements in view, the present invention has for an object to provide novel punch press mechanism for performing slotting and end trimming operations on the louvre members of Venetian blind assemblies; said punch press mechanism being provided with novel adjustable stop gauge means which is cooperative with the punching dies of the mechanism, and which assures proper positioning of the louvre members in the press subject to slotting and trimming operations, as the case may be.

Other objects of this invention, not at this time more particularly enumerated, will be understood from the following detailed description of the same.

Illustrative embodiments of this invention are shown in the accompanying drawings, in which—

Fig. 1 is a front elevational view of a punch press according to this invention as arranged to perform a slotting operation upon end portions of a Venetian blind louvre; Fig. 2 is a plan view of the same; Fig. 3 is a transverse vertical sectional view thereof, taken on line 3—3 in Fig. 1; and Fig. 4 is another transverse vertical sectional view, taken on line 4—4 in Fig. 1.

Fig. 5 is a plan view of a punch press according to this invention as arranged to perform a trimming operation upon end portions of a Venetian

2

blind louvre; and Fig. 6 is a transverse vertical sectional view thereof, taken on line 6—6 in Fig. 5.

Similar characters of reference are employed in the above described views, to indicate corresponding parts.

The novel punch press construction according to this invention comprises a base member 10. Upstanding from the rearward portion of said base member 10 is a standard or column 11 having at its upper end a forwardly extending arm 12 which terminates in a head 13. Said head 13 is spaced above and so as to overhang the forward end portion of said base member 10. Said head 13 is provided with a perpendicular slideway 14, preferably closed at its front side by a detachable cap-plate 15 which is suitably affixed to said head 13. Slidably movable in said slideway 14 is a reciprocable plunger member 16. Said plunger member 16 is provided with a bifurcate upper end portion 17 which projects exteriorly above the head 13. Engaged in said bifurcate upper end portion 17 of the plunger member 16 is a manipulatable operating lever 18, the same being pivotally coupled with the plunger member by a cross-pin 19. Pivotally connected with the head 13 by a cross-pin 20 are upwardly extending links 21 which straddle said operating lever 18 rearwardly of the plunger member 16. Said operating lever 18 is fulcrumed on a pivoting pin 22 which is supported by and between the upper ends of said links 21. Pull spring means 23 is connected between the rear end portion of said operating lever 18 and the base member 10, the same being operative to rock the operating lever in counterclockwise direction about the fulcruming support therefor which is provided by the links 21 and pivoting pin 22, such movement of the operating lever being limited by abutment of its rear portion against the arm 12 of the standard or column 11. By this arrangement the forward portion of the operating lever is normally but yieldably held in upswung position, whereby to normally dispose the plunger member 16 in uplifted position. When the press is arranged for use in performing a slotting operation upon a Venetian blind louvre, as shown in Figs. 1 to 4 inclusive, a slotting die 24 of suitable cross-sectional shape is detachably affixed to the lower end of the plunger member 16.

Affixed to the forward end portion of the base 10 is a female die plate 25 having a die aperture 26 which, when the press is arranged for use in a slotting operation, conforms to the slotting die 24; said aperture being disposed in vertical alignment with said slotting die. Said slotting die is shaped so that its end face 24' is oblique to the horizontal plane of said female die plate 25 and its die aperture 26, whereby in operation said slotting die 24 effects a shearing cut through the work rather than a direct punch, thus requiring the application of less force in performance of the slotting operation. The base 10 is provided with opening 27, through which cut away material resulting from the slotting operation may escape from the female die plate aperture 26.

Cooperative with the punch press mechanism, as thus far described, is an adjustable work positioning gauge means. In one form and arrangement thereof as related to the punch press mechanism as adapted to perform slotting operations upon end portions of Venetian blind louvres, and as shown in Figs. 1 to 4 inclusive, said gauge means comprises a gauge carriage supporting frame. Said frame is formed by a pair of laterally spaced apart guide rails 28 having their inner ends affixed to the base 10 in such relation thereto that said guide rails 28 extend outwardly from the right hand side of the base 10. The outer ends of said guide rails 28 are tied together by a transverse tie bar 29, including foot-pieces 30, whereby the frame is supported in horizontal plane. Said guide rails 28 are spaced apart for a distance approximating the width of a Venetian blind louvre member to be operated upon, so that the space intermediate said guide rails constitutes a slideway or receiving space in which an end portion of the louvre member may be received and disposed in such manner as to overlie the female die plate 25 and beneath the plunger member of the press mechanism and the male die carried thereby.

Slidably supported by said guide rails 28, so as to be movable therealong, toward and from the punch press mechanism, is a gauge carriage comprising side members 31 which respectively slidably abut the outer edges of the guide rails 28. Said side members 31 are joined together by a cross-bar 32 which extends transversely therebetween and beneath the guide rails 28. Affixed to the top of one of said side members 31 is a runner plate 33 which laps the upper outer marginal surface of the adjacent guide rail 28, and carried on the top of the other said side member 31 is a combined runner and clamp plate 34 which laps the upper outer marginal surface of the opposite guide rail 28. Said combined runner and clamp plate 34 is loosely supported by retaining pins 35 which project upwardly from the underlying side member 31, so that said combined runner and clamp plate 34 may be squeezed down into binding engagement with the adjacent guide rail 28, whereby to releaseably secure the gauge carriage to the supporting frame in a desired adjusted position. The means for so operating the combined runner and clamp plate comprises a screw-threaded stud 36 which projects upwardly therethrough from the underlying side member 31, on which stud is engaged a thumb nut 37 which may be tightened down to force said combined runner and clamp plate 34 into frictionally bound relation to the underlying guide rail 28, or loosened to release said combined runner and clamp plate from such clamping relation to said guide rail, whereby to free the gauge carriage for movement along the supporting frame.

Affixed to the cross-bar 32 of the gauge carrige, so as to up-stand therefrom within the receiving space between the frame guide rails 28, is a stop member 38, which is preferably provided at its upper end with a guard lip 39 adapted to overhang its stop face 40. Said combined runner and clamp plate 34 is provided, in the marginal portion thereof which overlaps the underlying guide rail 28, with an indicator member or pointer 41 which is aligned with the stop face 40 of said stop member 38. Affixed to the guide rail 28 with which said combined runner and clamp plate 34 cooperates is a suitably graduated scale member 42, the same (as shown) being graduated in inches and fractions thereof denoting distance from the male die of the punch press to said stop member 38.

When using the punch press mechanism as arranged to perform a slotting operation upon an end portion of a Venetian blind louvre L, the gauge carriage is moved along the frame guide rails 28 to dispose the stop member 38 at a predetermined distance from the male and female die members of the press, calculated to position the slot to be formed in the louvre at a desired distance from the adjacent extremity of said louvre. The gauge carriage and its stop member having been thus positioned, and thereupon secured against displacement by tightening down the combined runner and clamp plate 34, the punch press mechanism is ready for use in performing slotting operations upon the louvres. In use, an end portion of a louvre L is passed across the female die plate 25 and beneath the normally raised male die 24, so as to extend through the receiving space between the guide rails 28 until its extremity is stopped by abutment against the stop face 40 of the stop member 38, and beneath the guard lip 39 of the latter, whereby the same is held against upward displacement. If desired, another guard lip 43 may be provided to overhang the receiving space between the guide rails 28 at the entrance thereto adjacent the press base 10. When utilizing the punch press mechanism for slotting operations it is desirable to provide a stripper plate 44 to overhang the female die member 25 in such spaced relation thereto as to permit the louvre end to pass thereunder; said stripper plate is provided with an opening 45 to pass the male die member 24.

A louvre to be operated upon having been operatively related to the dies, and properly disposed relative thereto by the gauge carriage stop member 38, the operator may swing down the operating lever 18, thus inducing descent of the plunger member 16, whereby to engage the male die 24 with the louvre, so that descent of said male die will shear through the body of the louvre with slot forming effect.

In preparing louvres for assembly in a Venetian blind structure, especially when the louvres are made of sheet metal, it is desirable to at least turn away the sharp corners at the extremities of the slotted end portions of said louvres, so as to round off said corners, and thus avoid the presence of sharp projections likely to catch in and perhaps injure draperies disposed adjacent the Venetian blind when installed for use. To perform such trimming operations, the punch press mechanism of this invention may be modified to adapt the same therefor. The punch press mechanism as so modified is shown in Figs. 5 and 6 of the drawings. The general construction of the mechanism

as so modified is substantially the same as already above described, as will be evidenced by the application to common elements of construction of corresponding reference characters; substituted or different parts being indicated by other reference characters in said Figs. 5 and 6. For example, the male die 46 is substituted for the slotting die 24 and is suitably shaped to trim away the sharp corners of the louvre extremities, and the female die plate 47, which is substituted for the die plate 25, is provided with a die aperture shaped to conform to the male trimming die 46. Otherwise the construction of the punch press mechanism per se and relation of its parts is substantially the same as already above described. The gauge carriage and its supporting frame is likewise the same as above described with respect to the general form and relation of the parts thereof, except that said supporting frame is disposed to extend from the left hand instead of the right hand side of the press base 10, and with the further exception that the stop member of the gauge carriage is formed by an upstanding stop stud 48 adapted to be engaged by the slot of a louvre, the extremity of which louvre is desired to be subjected to the trimming operation.

In the use of the press as thus modified, the gauge carriage is adjusted along the supporting frame and then clamped thereto whereby to position the stop stud 48 the desired required distance from the dies 46—47, whereupon the slotted end portion of a louvre L is passed between the guide rails 28 until the slot S of the louvre is registered with and engaged over said stop stud 48 (see Fig. 5). In this manner, the extremity of the louvre L is brought between and into proper relation to said dies 46—47, whereupon, by operation of the press and its said dies, the extremity of the louvre may be trimmed so as to round off the sharp corners thereof.

While the punch press mechanism of this invention has been designed principally for slotting and trimming louvres for use in Venetian blind assemblies thereof, it will be obvious that the press structure may well be adapted for other specific uses.

I am aware that changes, other than those already mentioned, could be made in the punch press mechanism, and many apparently widely different embodiments of this invention could be made without departing from the scope thereof as defined in the following claims. It is therefore intended that all matter contained in the above description or shown in the accompanying drawings shall be interpreted as illustrative and not in a limiting sense.

I claim:

1. In a punch press having cooperating dies for slotting or trimming end portions of Venetian blind louvres, means for positioning a louvre subject to the action of the press dies comprising a pair of parallel guide rails extending laterally from the base of the press, said guide rails being of substantial thickness and spaced apart to form a louvre receiving channel therebetween which corresponds in width to that of a louvre to be operated upon, said channel being disposed so that its longitudinal axis traverses the press dies, a gauge carriage bridging said guide rails and slidably adjustable thereon toward and from said press dies, louvre positioning stop means carried by said gauge carriage, and one of said guide rails and the gauge carriage having cooperative means including a calibrated scale affixed to said guide rail for determining selected adjusted spacing of the stop means relative to the press dies.

2. In a punch press having cooperating dies for slotting or trimming end portions of Venetian blind louvres, means for positioning a louvre subject to the action of the press dies comprising a pair of parallel guide rails extending laterally from the base of the press, said guide rails being of substantial thickness and spaced apart to form a louvre receiving channel therebetween which corresponds in width to that of a louvre to be operated upon, said channel being disposed so that its longitudinal axis traverses the press dies, a gauge carriage bridging said guide rails and slidably adjustable thereon toward and from said press dies, louvre positioning stop means carried by said gauge carriage, one of said guide rails and the gauge carriage having cooperative means including a calibrated scale affixed to said guide rail for determining selected adjusted spacing of the stop means relative to the press dies, and means for releasably clamping said gauge carriage to said guide rails in selected adjusted position thereon.

3. In a punch press having cooperating dies for slotting or trimming end portions of Venetian blind louvres, means for positioning a louvre subject to the action of the press dies comprising a pair of parallel guide rails extending laterally from the base of the press, said guide rails being of substantial thickness and spaced apart to form a louvre receiving channel therebetween which corresponds in width to that of a louvre to be operated upon, said channel being disposed so that its longitudinal axis traverses the press dies, a gauge carriage adjustably movable on said guide rails toward and from the press dies comprising side members respectively slidably engaged with exterior edges of said guide rails, a cross-bar affixed to and extending between said side members beneath said guide rails, runner plates mounted on said side members to lap outer top marginal portions of adjacent guide rails, one said runner plate being fixed and the other movable toward the underlying guide rail for clamping engagement therewith, releaseable means operative to move the movable runner plate to clamping position, and a louvre positioning stop member supported by said cross-bar to upstand therefrom within said louvre receiving channel.

4. In a punch press having cooperating dies for slotting or trimming end portions of Venetian blind louvres, means for positioning a louvre subject to the action of the press dies comprising a pair of parallel guide rails extending laterally from the base of the press, said guide rails being of substantial thickness and spaced apart to form a louvre receiving channel therebetween which corresponds in width to that of a louvre to be operated upon, said channel being disposed so that its longitudinal axis traverses the press dies, a gauge carriage adjustably movable on said guide rails toward and from the press dies comprising side members respectively slidably engaged with exterior edges of said guide rails, a cross-bar affixed to and extending between said side members beneath said guide rails, runner plates mounted on said side members to lap outer top marginal portions of adjacent guide rails, one said runner plate being fixed and the other movable toward the underlying guide rail for clamping engagement therewith, releasable means operative to move the movable runner plate to clamping position, a louvre positioning stop member supported by said cross-bar to upstand

therefrom within said louvre receiving channel, and one of said guide rails and the runner plate engaged therewith having cooperative means including a calibrated scale affixed to said guide rail for determining selected adjusted spacing of the stop means relative to the press dies.

RICHARD HUTCHINSON.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
2,287,738	Johnson	June 23, 1942

Number	Name	Date
2,327,000	Lund	Aug. 17, 1943
458,531	Fish	Aug. 25, 1891
1,313,277	Elder	Aug. 19, 1919
1,815,699	Bonsor	July 21, 1931
2,068,445	Brightwell	Jan. 19, 1937
2,214,665	Elf	Sept. 10, 1940
814,167	Schulz	Mar. 6, 1906
1,168,600	Canfield	Jan. 18, 1916
1,360,905	Dubois	Nov. 30, 1920
1,382,674	Rich	June 28, 1921

FOREIGN PATENTS

Number	Country	Date
1,382,674	France	June 28, 1921