H. C. LEWIS.

HAND OPERATED PRESSING TOOL.

APPLICATION FILED FEB. 20, 1922.

1,433,389.

Patented Oct. 24, 1922.

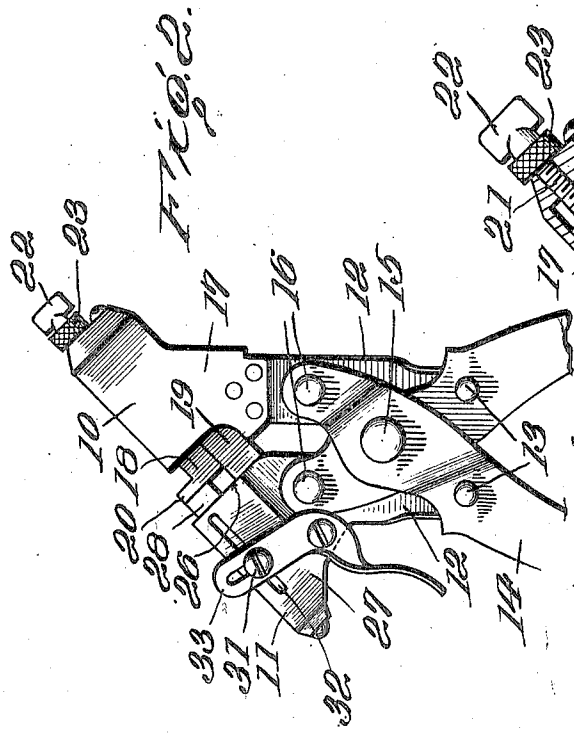


FIG. 2.

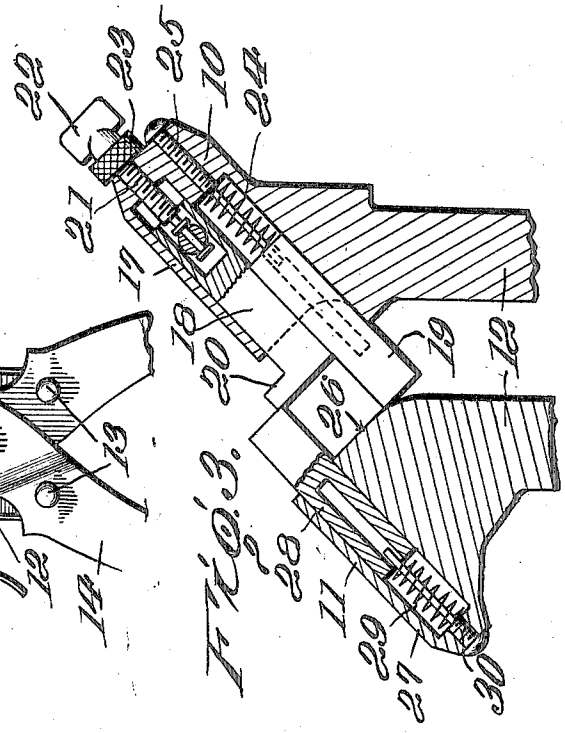


FIG. 3.

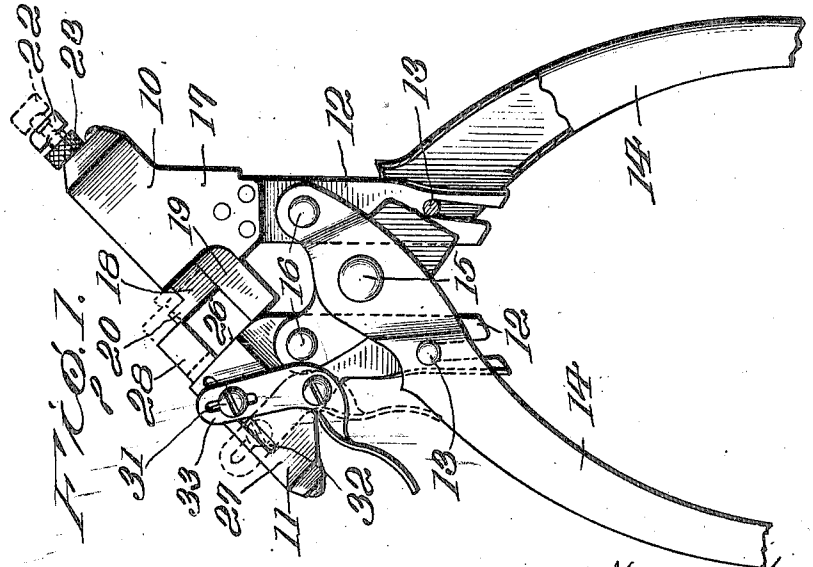


FIG. 1.

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# UNITED STATES PATENT OFFICE.

HENRY C. LEWIS, OF CHARLESTON, WEST VIRGINIA, ASSIGNOR TO CHARLESTON ELECTRICAL SUPPLY COMPANY, A CORPORATION OF WEST VIRGINIA.

## HAND-OPERATED PRESSING TOOL.

Application filed February 20, 1922. Serial No. 538,140.

*To all whom it may concern:*

Be it known that I, HENRY C. LEWIS, a citizen of the United States, residing at Charleston, in the county of Kanawha and State of West Virginia, have invented a new and useful Hand-Operated Pressing Tool, of which the following is a specification.

This invention is a device for simultaneously applying pressure in a plurality of directions.

One of the objects of the invention is to provide a hand operated device, having means whereby pressure may be applied to an article by simultaneously actuated, relatively movable members, arranged in quadrilateral relation. A further object is to provide pressure members so mounted that they are caused to open or close, by simultaneous, coextensive, relative movement, effected by suitable means, said members being arranged in quadrilateral relation, to insure the production of an opening of similar contour of increased or diminished size, determined by the direction of relative movement. A further object is to provide means by which the parts may be so adjusted, as to provide an opening of true square cross section, or of oblong section, as may be desired. A further object is to provide pressure members normally movable in unison, and means whereby one member may be temporarily displaced, to permit of the insertion or removal of an article, to be engaged by said members.

The invention will be hereinafter fully set forth and particularly pointed out in the claims.

In the acompanying drawing:—

Figure 1 is a side elevation, illustrating a tool constructed in accordance with the invention, with the parts adjusted to provide an opening of maximum diameter. Figure 2 is a similar view illustrating the relative positions of the parts necessary to produce an opening of smaller diameter. Figure 3 is a detail sectional view of the carriers, member illustrating the manner of mounting the pressure members.

Referring to the drawing, 10 designates an upper carrier, and 11 a lower carrier, each being provided with a slotted arm 12, which engages a guide pin 13, carried by a hand bar 14. The two handle bars are pivotally connected to each other at 15, and also pivotally connected to the respective arms 12, as indicated at 16. The arrangement is such that as the handle bars 14 are moved toward or away from each other, a corresponding relative movement is imparted to the upper and lower carriers 10 and 11, respectively.

The upper carrier is provided with a casing 17, which may be formed in any suitable manner, for instance by means of walls which embrace the carrier member, and are secured thereto in suitable manner. Said casing is provided with a chamber, in which is mounted a normally fixed adjustable member 18, and a normally slidable member 19, said members having abutting longitudinal faces. The member 18 is preferably L-shaped, i. e., is provided with a lateral extension 20, to provide a pressure surface of maximum area. The upper end of the member 18 is engaged by an adjusting screw 21, which also engages a complemental threaded opening in the top of the casing 17, the projecting end being provided with a suitable enlargement 22, by means of which the screw may be operated. A lock nut 23 serves to hold the screw in any adjusted position. The member 19 is normally pressed downwardly by means of a spring 24, the tension of which is regulated by a screw 25, working in the top of the casing 17.

The upper end of the lower carrier 11 is provided with a pressure member formed by the face 26, parallel with the under pressure face of the member 19, and its lateral extension, and disposed at right angles to the longitudinal median line of the slidable member 19, the lower end of said slidable member abutting against said pressure face, whereby movement of said member 19 in one direction is limited. Said lower carrier member 11 is also provided with a casing 27, which may be formed in the same manner as casing 17, and mounted therein is a spring pressed pressure member 28, disposed at right angles to the face 26, and abutting against the working face of the lateral extension 20. Said member 28 is normally held in yieldable engagement with said lateral extension, by means of a spring 29, the tension of which is regulated by screw 30.

In practice, the springs 24 and 29, in addition to their other functions, react against the carriers 10 and 11, through the members 19 and 28, to normally effect a yieldable separation of said carriers, and a corresponding separation of the ends of the handle bars 14.

In order to provide an independent movement of one of the pressure members, the spring pressed member 28 is provided with a projection 31, extending through a slot 32 in the casing 27, which projection is engaged by one end of a bell crank lever 33. The other end of the lever 33 is positioned sufficiently close to one of the handle bars to be reached by the forefinger of the operator. By pulling back upon the free end of the bell crank lever 33, the member 28 is withdrawn against the tension of its spring, leaving an opening in one side of the space normally formed by the pressure members. When the lever 33 is released, the spring 29 returns the member 28 to its normal position.

In operation, the spring 24 normally forces the member 19 outwardly, with its end in contact with the pressure face 26, of the lower carrier. Likewise the spring 29 normally forces the member 28 outwardly into contact with the under side of the lateral extension 20, of the fixed member 18. Thus, as shown, the lower end of the member 18, the pressure face 26, and the contiguous side faces of the slidable members 19 and 28, provide a quadrilateral space formed by four pressure members. As illustrated in Figure 1, the space is shown of the maximum dimensions possible with the particular tool. As the ends of the handle bars are brought toward each other, the pressure member 26 moves toward the member 18, and at the same time the members 19 and 28 are forced into their respective casings. Simultaneously with their inward movement the ends of members 19 and 28 will travel along the pressure face 26, and the under side of the member 18, respectively, thereby changing the dimensions of the space, but always retaining the same quadrilateral contour at all positions of adjustment. To all intents and purposes the member 18 is normally fixed, and the adjustment of the other pressure members is effected with respect to a fixed position P, on said fixed member, namely, the lowermost corner thereof adjacent the member 19. By actuating the bell crank lever 33, the member 28 is withdrawn, and the article to be pressed or shaped may be inserted into or removed from the space formed by the members 18, 19 and face 28. The lever 33 is then released and the member 28 will spring to its normally closed position, and cover the open side of said space. By moving the ends of the handle bars toward each other, the various pressure members are caused to simultaneously adjust themselves, until they engage the article and squeeze it on all four sides simultaneously, bringing said article to a quadrilateral cross section.

As shown in full lines in the drawing, the quadrilateral space is an approximately true square. If it is desired to change the contour of the space to oblong shape, the desired adjustment may be effected through the medium of the adjusting screw 21 as shown in dotted lines, Figure 2. By means of this arrangement, the normally fixed member 18 is adjusted to a greater distance from the face 26, than shown in full lines, thereby producing an oblong space, the dimensions of which will vary in conformity with the relative movement of the carriers 10 and 11, the adjustment of all of the parts being simultaneous and coextensive.

The advantages of the invention will be readily understood by those skilled in the art to which it belongs. It will be particularly noted that by means thereof, a hand tool of simple construction is provided, the same having means whereby pressure may be applied to an article by simultaneously actuated, relatively movable pressure members, arranged in quadrilateral relation. Another advantage resides in the fact that the parts are so mounted in the carriers and the handle bars, that the pressure members are caused to open or close, by simultaneous coextensive relative movement, effected through the medium of said handle bars. An important advantage is that the normal contour of the space formed by the pressure members may be changed, and that although all of the members are normally so engaged as to be simultaneously adjustable, one of them is provided with means by which it may be independently actuated, to temporarily displace it for the insertion and removal of the article to be operated upon.

Having thus explained the nature of the invention and described an operative manner of constructing and using the same, although without attempting to set forth all of the forms in which it may be made, or all of the forms of its use, what is claimed is:—

1. A pressing device of the character described comprising two relatively movable carriers, and a plurality of members supported by said carriers and so disposed as to form a quadrilateral opening when they are separated, said members being adjustable to vary the dimensions of said opening by relative movement of said carriers.

2. A pressing device of the character described comprising two relatively movable carriers, and members supported by the carriers, one member being normally fixed with respect to its carrier, the other members being adjustable relative to the fixed member by relative movement of the carriers.

3. A pressing device of the character described comprising two relatively movable carriers, members mounted in the respective carriers, one member being normally fixed with respect to its carrier, the other mem-

bers being adjustable relative to the fixed member by relative movement of the carriers, and means for imparting simultaneous movement to both carriers.

4. A pressing device of the character described comprising two pivotally connected carriers, and members mounted in the carriers, one member being normally fixed with respect to its carrier, the other members being adjustable relative to the fixed member by relative movement of the carriers.

5. A pressing device of the character described comprising two relatively movable carriers, and members mounted in the carriers and relatively disposed to form an enclosed quadrilateral space, one member being normally fixed with respect to its carrier, the other members being adjustable relative to the fixed member by relative movement of the carriers, and means acting upon said members to change the normal shape of said quadrilateral space.

6. A pressing device of the character described comprising two pivotally connected carriers, members mounted in the respective carriers and so disposed as to provide a quadrilateral space, one member being normally fixed with respect to its carrier, the other members being adjustable relative to the fixed member by relative movement of the carriers, and means for adjusting one of said members to change the normal shape of said opening.

7. A pressing device of the character described comprising two pivotally connected carriers, members mounted in the respective carriers and so disposed as to provide a quadrilateral space, one member being normally fixed with respect to its carrier, the other members being adjustable relative to the fixed member by relative movement of the carriers, and means for adjusting the normally fixed member to change the normal shape of said opening.

8. A pressing device of the character described comprising two relatively movable carriers, a plurality of members supported by the respective carriers in position to produce a quadrilateral opening, one of said members being normally fixed with respect to its carrier, the other members having faces movable with respect to one edge of the fixed member by relative movement of the carriers.

9. A pressing device of the character described comprising two pivotally connected carriers, a plurality of members mounted in the respective carriers and positioned to provide a quadrilateral opening, one of said members being normally fixed with respect to its carrier, the other members having faces adjustable with respect to one edge of the fixed member by relative movement of the carriers.

10. A pressing device of the character described comprising two carriers, sets of members supported by the respective carriers, each set consisting of a pair of relatively movable members, one member of each set bearing against a member of the other set, all of the members of one set and one member of the other set being movable with respect to a fixed position on the remaining member of the last mentioned set, whereby a quadrilateral opening is provided when the members are separated.

11. A pressing device of the character described comprising two carriers, two sets of pressure members, one for each carrier, each set consisting of a movable and a relatively stationary member, the movable member of each set bearing against the stationary member of the other set, said members being relatively adjusted by relative movement of the carriers.

12. A pressing device of the character described comprising two carriers, a normally fixed member supported by one carrier, and a slidable member also supported by said carrier, means supported by the other carrier and co-operating with said members to provide a quadrilateral space when the members are separated, and means whereby the carriers may be made to move relative to each other.

13. A pressing device of the character described comprising two carriers, a normally fixed member supported by one carrier, and a slidable member also supported by said carrier, means supported by the other carrier and co-operating with said members to provide a quadrilateral space when the members are separated, and pivotally connected members for imparting relative movement to said carriers.

14. A pressing device of the character described comprising two carriers, a normally fixed pressure member supported by one carrier, a spring pressed slidable member also supported by said carrier, means supported by the other carrier co-operating with said members to provide a quadrilateral opening when the members are separated, movement of the spring pressed member being limited by the last mentioned carrier member, and means whereby relative movement may be imparted to said carriers.

15. A pressing device of the character described comprising two carriers, a normally fixed pressure member supported by one carrier, a spring pressed slidable member also supported by said carrier, means supported by the other carrier co-operating with said members to provide a quadrilateral opening when the members are separated, movement of the spring pressed member being limited by the last mentioned carrier member, and pivotally connected handle bars engaging said carriers.

16. A pressing device of the character de-

scribed comprising two carriers, a normally fixed member mounted in one carrier, a slidable member also mounted in said carrier and limited in its movement by the other carrier, a movable member mounted in the last mentioned carrier, said members cooperating with a portion of the last mentioned carrier to provide a quadrilateral space, and means for imparting relative movement to said carriers.

17. A pressing device of the character described comprising two carriers, a normally fixed member mounted in one carrier, a slidable member also mounted in said carrier and limited in its movement by the other carrier, a movable member mounted in the last mentioned carrier, said members cooperating with a portion of the last mentioned carrier to provide a quadrilateral space, and pivotally connected members for imparting relative movement to said carriers.

18. A pressing device of the character described comprising two carriers, a normally fixed member mounted in one carrier, a slidable member also mounted in said carrier and limited in its movement by the other carrier, a movable member mounted in the last mentioned carrier said members co-operating with a portion of the last mentioned carrier to provide a quadrilateral space, and means for imparting relative movement to said carriers, movement of the movable member mounted in the last mentioned carrier being limited by the normally fixed member mounted in the other carrier.

19. A pressing device of the character described comprising two carrier members, pivotally connected handle bars engaging the respective carrier members, said handle bars and carrier members having complemental guiding means, presser members mounted in the carriers in such manner as to provide a quadrilateral space, one of said members being normally fixed with respect to its carrier, the other members being simultaneously adjustable relative to the fixed member by relative movement of the carriers.

20. A pressing device of the character described comprising two carriers each having slotted arms, handle bars pivoted to each other and also to the respective carriers, each handle bar having a guide pin engaging the slotted portion of a carrier, and pressure members supported by the respective carriers and so disposed as to provide a quadrilateral space, one of said members being normally fixed with respect to its carrier, the other members being simultaneously adjustable relative to the fixed member by relative movement of the carriers.

21. A pressing device of the character described comprising two relatively movable carriers, members supported by the carriers, one member being normally fixed with respect to its carrier, the other members being adjustable relative to the fixed member by relative movement of the carriers, and means whereby one of said members may be moved independently of the other members.

22. A pressing device of the character described comprising two relatively movable carriers, members supported by the carriers, one member being normally fixed with respect to its carrier, the other members being adjustable relative to the fixed member by relative movement of the carriers, and a bell crank lever supported by one of the carriers and engaging one of said members.

23. A pressing device of the character described comprising two carriers, sets of members supported by the respective carriers, each set consisting of a pair of relatively movable members, one member of each set bearing against a member of the other set, all of the members of one set and one member of the other set being movable with respect to a fixed position on the remaining member of the last mentioned set, whereby a quadrilateral opening is provided when the members are separated, and means for changing the normal shape of said opening.

24. A pressing device of the character described comprising two carriers, sets of members supported by the respective carriers, each set consisting of a pair of relatively movable members, one member of each set bearing against a member of the other set, all of the members of one set and one member of the other set being movable with respect to a fixed position on the remaining member of the last mentioned set, whereby a quadrilateral opening is provided when the members are separated, and means for adjusting said fixed position member to change the normal shape of said opening.

25. A pressing device of the character described comprising two carriers, sets of members supported by the respective carriers, each set consisting of a pair of relatively movable members, one member of each set bearing against a member of the other set, all of the members of one set and one member of the other set being movable with respect to a fixed position on the remaining member of the last mentioned set, whereby a quadrilateral opening is provided when the members are separated, an adjusting screw engaging said fixed position member, and locking means co-operating with said screw.

In testimony whereof I have hereunto set my hand.

HENRY C. LEWIS.