S. B. JACKSON.

FASTENER ATTACHING MACHINE.

APPLICATION FILED JUNE 3, 1916.

1,268,355. Patented June 4, 1918.

Fig. 1.

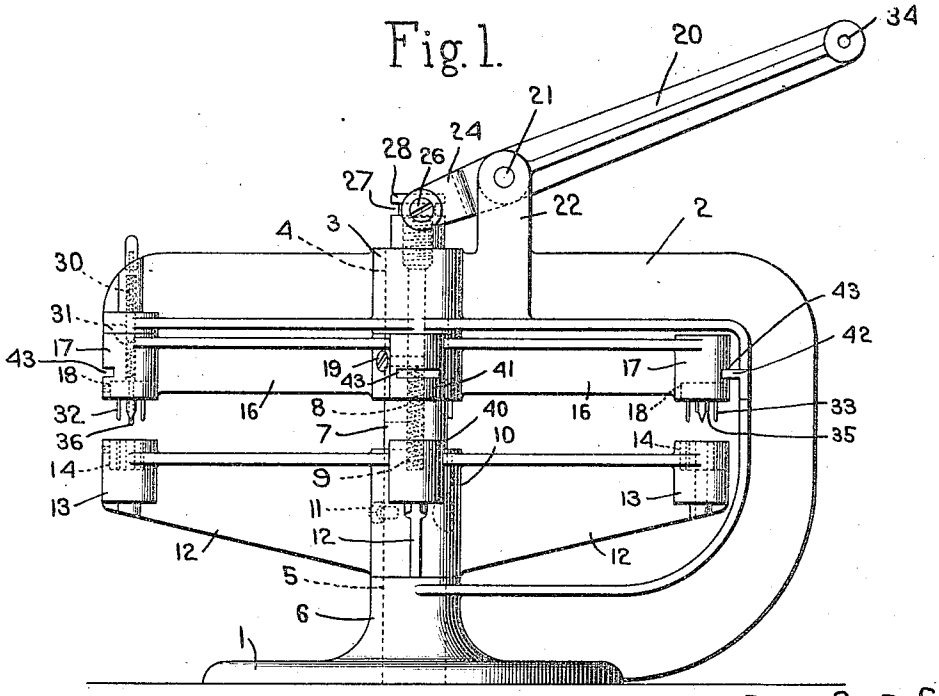


Fig. 3.

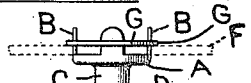


Fig. 4.

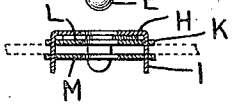


Fig. 2.

Fig. 5.

Inventor.
Samuel B. Jackson
by Heard Smith & Tennant.
Attys.

UNITED STATES PATENT OFFICE.

SAMUEL B. JACKSON, OF ATLANTIC, MASSACHUSETTS, ASSIGNOR TO BOSTON FASTENER COMPANY, OF BOSTON, MASSACHUSETTS, A CORPORATION OF MAINE.

FASTENER-ATTACHING MACHINE.

1,268,355. Specification of Letters Patent. Patented June 4, 1918.

Application filed June 3, 1916. Serial No. 101,606.

To all whom it may concern:

Be it known that I, SAMUEL B. JACKSON, a citizen of the United States, and resident of Atlantic, county of Norfolk, State of Massachusetts, have invented an Improvement in Fastener-Attaching Machines, of which the following description, in connection with the accompanying drawing, is a specification, like characters on the drawing representing like parts.

This invention relates to improvements in fastener setting machines and the object of the invention is to provide a simple and efficient machine adapted to support a plurality of cutting or setting dies or both with means for causing coöperation of complementary dies.

A further object of the invention is to provide a construction in which the complementary dies are maintained in proper relation to each other with means for causing the dies to approach and recede from each other to effect coöperation of the dies.

Other objects of the invention will more fully appear from the following description and the accompanying drawings and will be pointed out in the annexed claims.

A preferred embodiment of the invention is illustrated in the accompanying drawing in which;

Figure 1 is a side elevation of a fastener setting machine adapted to be operated by a lever through which either hand or foot power may be applied.

Fig. 2 is a plan view of said machine,

Fig. 3 is a side elevation of a fastener stud adapted to be set by the machine, and,

Fig. 4 is a vertical axial sectional view of the clasp member of the fastener which is adapted to coöperate with the fastener stud illustrated in Fig. 3,

Fig. 5 is a detail sectional view showing one of the cutting members with a pilot to assist in locating the material to be punched.

The fastener illustrated in Figs. 3 and 4 is similar in character to that disclosed in Patent No. 968,036 granted Aug. 23, 1910 to Edward Erickson and is one which is especially adapted for use in securing curtains of automobiles in place or for detachably securing two fabrics together, but of course is adapted to be applied to many other uses.

This fastener as illustrated in Figs. 3 and 4 comprises a stud portion shown in Fig. 3 consisting of a preferably circular base A with prongs B extending therefrom at right angles, the central portion of the base A being drawn to form a boss C in which is mounted a post D having a head E of the same external diameter as the boss C. The post D is so fitted in the boss E as to have a limited axial movement therein.

In securing this portion of the fastener to the fabric F or other material, a washer G provided with suitable slots to receive the prongs B is slipped over the prongs against the reverse face of the fabric and the prongs B bent down upon said washer by the cooperating dies in a machine which will hereinafter be described. The clasp portion of the fastener comprises a circular member H having fastening prongs I extending therefrom at right angles to the plane of said member and a member K suitably slotted to receive the prongs I, forming with the member H a casing in which is inclosed a pair of resilient clasps L adapted to embrace the post D between the head E when the same is in use. In securing this fastener to the fabric the prongs I are inserted through the fabric and a washer M having suitable slots placed upon the prongs I and the prongs thereupon bent down upon the washer by suitable dies in the machine aforesaid.

In order properly to secure the post member and the clasp to the fabric suitable means must be provided for first punching the holes to receive the respective prongs, the clasp member requiring the punching of a central hole for the stud of the other member. In view of the fact that the configuration of the stud and clasp members differ a separate pair of clenching dies is required to clench the prongs B and I respectively.

In the machine illustrated in the accompanying drawings four pairs of dies are provided, one pair of complementary dies for cutting the slits in the fabric to receive the prongs B and a pair of clenching dies to turn the prongs B down upon the washer G, the complementary die being adapted to receive the stud E while the clenching operation is being effected. Another set of dies is provided to punch slits in the fabric to receive the prongs I of the clasp member and a fourth pair of dies is provided to receive the clasp member and to clench the prongs I in the apertures which have been cut in the fabric.

Of course a larger or smaller number of pairs of dies may be provided as may be desired or the dies may be constructed in such

a manner as to be removable so that a smaller number of die sockets may be utilized.

The machine illustrated in the drawings comprises a base 1 having a U-shaped overhanging arm 2 provided with an enlargement or boss 3 having a central bearing 4 in alinement with a bearing 5 in the central portion or post 6 of the base 1. A shaft 7 is rotatably mounted in the bearings 4 and 5, said shaft being provided with a longitudinally extending slot 8 preferably extending throughout the central portion only of the shaft to receive a helical spring 9. In order to introduce the spring 9 into the shaft 7 as illustrated in Fig. 1 a hole is bored from the upper end of the shaft downwardly to a suitable distance below the lower die supporting member. The slot 8 extends through the wall of the shaft into communication with this vertical bore. The spring 9 may then be introduced through the upper end of the hole and thrust downwardly until it is seated at the end of the bore, and thus positioned to support the upper die supporting member for the purpose hereinafter to be described.

A female die supporting member 10 is rigidly secured to the shaft by a set screw 11 so that its lower portion will rest normally upon the end of the post 6. The die supporting member 10 preferably comprises a central substantially cylindrical hub with a series of radial arms 12 which terminate in substantially cylindrical bosses 13 having sockets 14 to receive suitable dies preferably either cutting or setting female dies. A male die supporting member is loosely mounted upon the shaft 7 and is preferably supported yieldably in respect to the first mentioned supporting member.

This male die supporting member like the first comprises a preferably cylindrical hub with radial arms 16 terminating in circular bosses 17 provided with sockets 18 to receive the male members of the complementary dies. The radial arms of the second die supporting member are retained in coöperative alinement with the radial arms 12 of the first mentioned die supporting member by a set screw 19 passing through the hub of said member into the slot 8 in the shaft 7 so that the end of said set screw extends across and rests upon the upper end of the helical spring 9.

By reason of this construction the male die supporting member is yieldably supported against the under face of the extension of the upper portion of the U-shaped frame.

Any suitable means may be provided for forcing the die supporting members toward each other to cause coöperation of the dies. In the preferred embodiment of the invention illustrated herein this is accomplished by moving the shaft 7 axially so that the die supporting member 12 which is affixed to the shaft will be moved toward the die supporting member 16 against the thrust of the spring 9. A convenient mechanism for raising the shaft consists of a lever 20 pivoted upon a shaft 21 mounted in bearings in ears 22 extending upwardly from the upper member of the U-shaped frame 2, said lever having a bifurcated end, the arms 23 and 24 of which are provided with studs 25, 26 extending into an annular way 27 adjacent the end of the shaft. This way may conveniently be provided by a shouldered screw 28 axially threaded into the end of the shaft. Other actuating means may be provided, such for example as a lever having a cam shaped end mounted in a slot in the end of the shaft 7 and resting upon the top of the frame or an extension therefrom.

Any desirable means may be provided for locking the dies against rotation, this is accomplished in the present invention by means of a spring actuated pin 30 slidably mounted in the end of the U-shaped frame and engaging a suitable socket 31 in the boss 17 of the die supporting member 16.

Any suitable form of dies may be placed in the die sockets 14 and 18, as illustrated herein diametrically opposite arms are provided with cutters 32 and 33, the cutter 32 comprising four knives circularly disposed while the cutter 33 is provided with similar knives and also with a central punch 35 adapted to punch an aperture in the material to receive the stud E of the fastener. The die which carries the cutters 32 preferably is provided with a pilot to aid in properly positioning material beneath the cutters. As illustrated herein this pilot consists of a pin 36 passing through a central opening in the die and extending to a short distance below the top of the cutter. The pin 36 is provided at its upper end with a head 37 adapted to contact with the die to limit downward movement of the pin and a spring 38 interposed between the head of the pin 36 and a plug 39 serves normally to retain the pin in depressed position.

The bosses 13 of the supporting member 10 are provided with complementary means such as sockets 14 to coöperate with the cutters 32, and 33 preferably in the form of dies but any supporting means which will properly present the material to be cut to the cutters and sustain it during the cutting operation may be utilized.

The bosses 40 and 41 of the other supporting arms of the device are provided with complementary members adapted respectively to receive the parts of the fastener and upon the movement of the dies toward each other to clench the shanks I and B down upon the washers M and G respectively in the usual manner.

In the operation of the machine the fabric may be operated upon at any convenient position of the dies, preferably however, the punching and setting operations are both accomplished between the dies while they are positioned at the extreme end of the U-shaped frame. In order to prevent binding of the supporting member 16 upon the shaft 7 when the power is thus applied through the arm at the extreme end of the frame, means are provided to prevent any tilting movement of the member 16. As illustrated in the drawings this is accomplished by a flange 42 projecting inwardly from the vertical portion of the frame and adapted to enter slots 43 in the bosses 17. It will be obvious that inasmuch as the end of the arm 16 is prevented from movement and the central portion of the arm is supported against the frame there can be no such gripping movement as would interfere with the vertical movement of the shaft.

The machine illustrated in the drawing is adapted to be operated by hand through the lever 20, or by other power a journal 34 being provided at the end of the arm for the attachment of power actuating mechanism. While four pairs of dies are shown in the accompanying drawing it will be understood that a greater or less number of dies may be provided and that dies of different character to correspond to different kinds of fasteners may be provided and that various changes in construction and arrangement of parts may be made within the spirit and scope of the following claims, the present disclosure being merely illustrative of a preferred embodiment of my invention and not in any way restrictive.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent is;

1. A device of the class described comprising a frame having a base and a U-shaped overhanging arm, a shaft rotatably mounted in said base and arm, a female die and fastener supporting member secured to said shaft and having a plurality of dies adapted selectively to be positioned beneath the free end of said overhanging arm, a male die and fastener supporting member slidably mounted upon said shaft and having dies complementary to those of the female member, yieldable means for normally separating said die supporting members and holding the male die supporting member against said overhanging arm and means for raising the female die supporting member toward the male die supporting member to cause coöperation of said dies.

2. A device of the class described comprising a frame having a base and a U-shaped overhanging arm, a shaft rotatably mounted in said frame and having a longitudinal slot, a spring in said slot, a female die and fastener supporting member having a plurality of radial arms rigidly secured to said shaft, dies carried by said arms adapted to be positioned beneath the free end of said overhanging arm, a male die and fastener supporting member slidably mounted in said shaft and being unengaged by said spring whereby the die supporting members are normally separated and the male die supporting member held in engagement with said overhanging arm and means mounted on said overhanging arm engaging said shaft and operable to raise the female die supporting member to effect coöperation of said dies.

3. A device of the class described comprising a frame having a base and a U-shaped overhanging arm, a shaft rotatably mounted in said frame and having a longitudinal slot, a spring in said slot, a die and fastener supporting member having a plurality of radial arms rigidly secured to said shaft, dies carried by said arms adapted to be positioned beneath the free end of said overhanging arm, a male die and fastener supporting member slidably mounted in said shaft and being unengaged by said spring whereby the die supporting members are normally separated and the male die supporting member held in engagement with said overhanging arm, means mounted on said overhanging arm engaging said shaft and operable to raise the female die supporting member to effect coöperation of said dies, means for locking said members from rotation consisting of a spring actuated pin carried by the free end of said overhanging arm and adapted to engage a socket in said male die supporting member.

4. device of the class described comprising a frame, having a base and a U-shaped overhanging arm, a shaft rotatably mounted in said frame, a die supporting member having a hub secured to said shaft, a plurality of radial arms extending from said hub and terminating in bosses, dies in said bosses, a corresponding complementary die supporting member slidably mounted upon said shaft, a spring supporting the hub of the last mentioned die supporting member against the frame, means for producing a relative approaching movement of said die supporting members to cause coöperation of said dies and means carried by the frame engaging the boss of the slidable member diametrically opposite to the coöperating die to prevent binding upon the shaft during the coöperating movement of the dies.

In testimony whereof I have signed my name to this specification.

SAMUEL B. JACKSON.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."