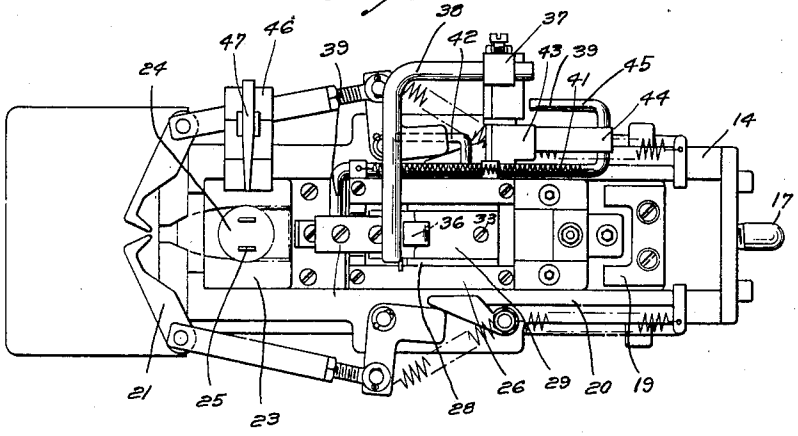
Nov. 16, 1943. W. P. HERMAN 2,334,626

ASSEMBLY MACHINE

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Fig. 1



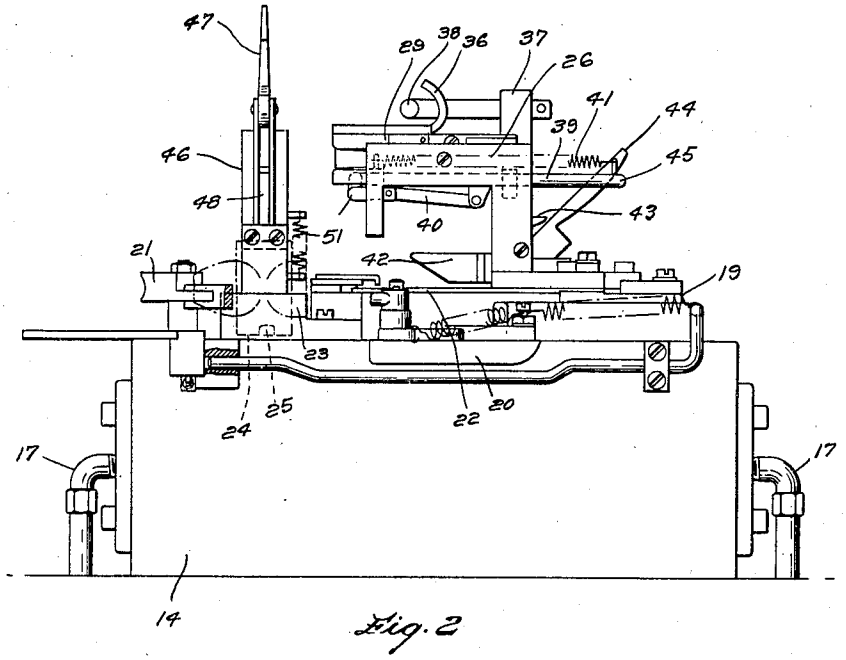


Fig. 2

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ASSEMBLY MACHINE

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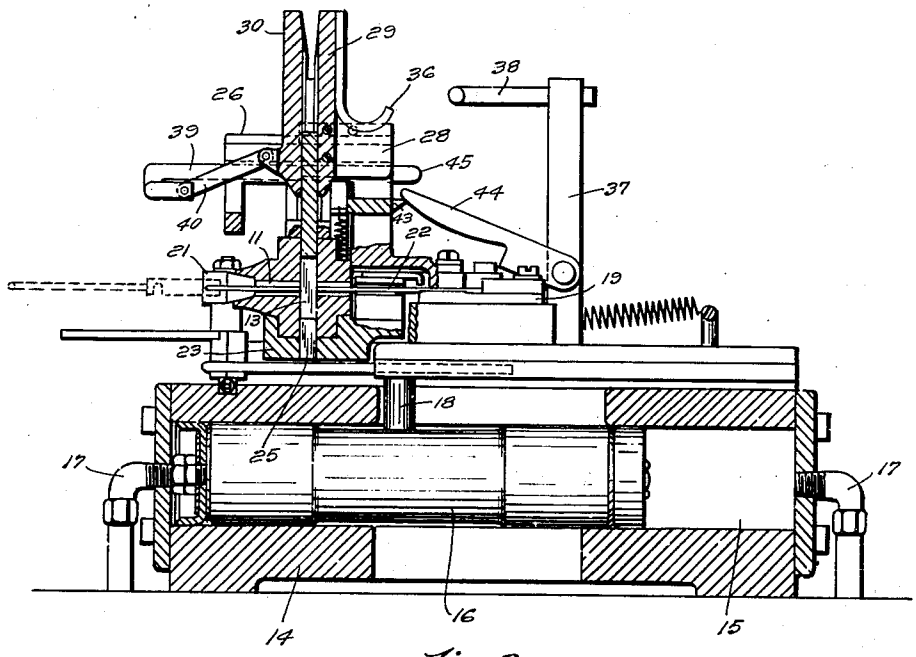


Fig. 3

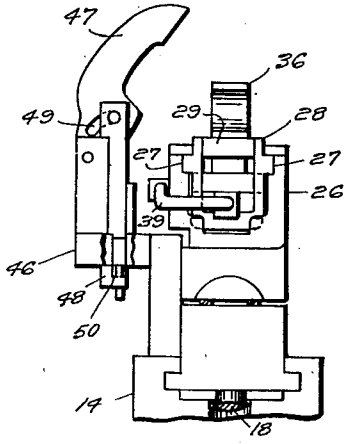


Fig. 5

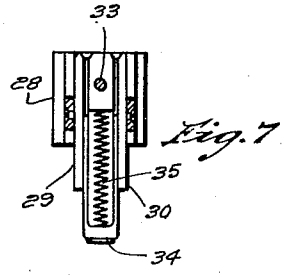


Fig. 7

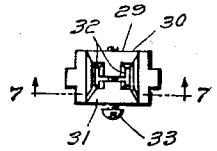


Fig. 6

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ASSEMBLY MACHINE

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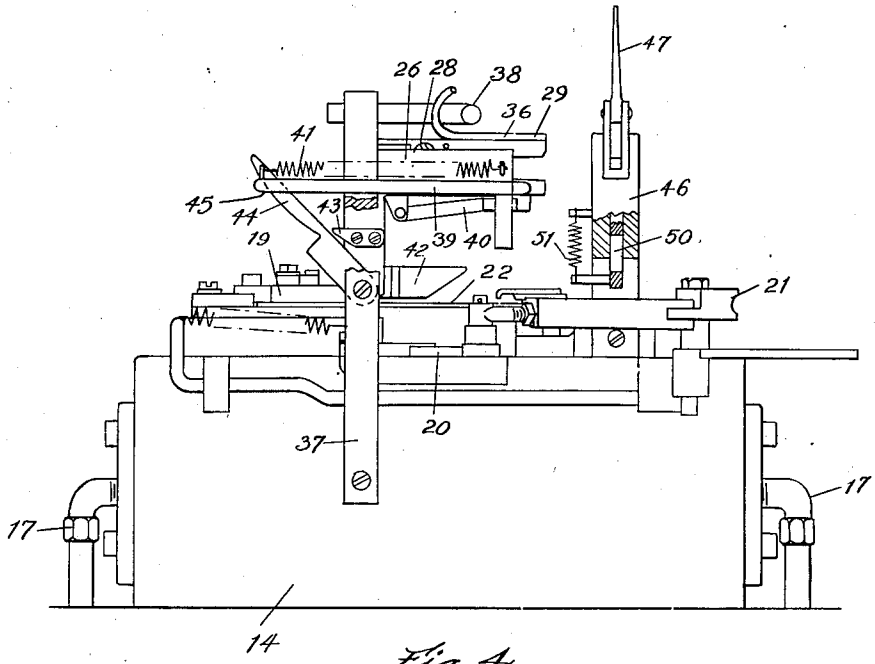


Fig. 4

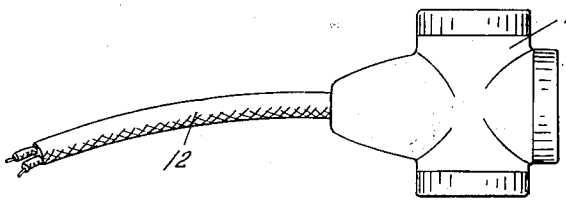


Fig. 8

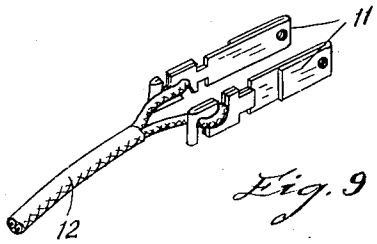


Fig. 9



Fig. 10

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Patented Nov. 16, 1943 2,334,626

UNITED STATES PATENT OFFICE

2,334,626

ASSEMBLY MACHINE

William P. Herman, Providence, R. I.

Application January 21, 1942, Serial No. 427,600

4 Claims. (Cl. 29—84)

My present invention relates to the manufacture of electrical service blocks and cube taps, and has particular reference to a novel apparatus for assembling contact blades within the service block husk.

The principal object of the present invention is to provide an apparatus for assembling service blocks or cube taps in a single operation.

A further object of my invention is to provide a simple unitary machine for pulling one set of blades into a service block and simultaneously pushing the complementary set of blades into interlocking engagement into the block.

Another object of the present invention is to provide a service block or cube tap assembly machine which is simple in construction and easy and economical to manufacture, assemble and operate.

With the above and other objects and advantageous features in view, my invention consists of a novel arrangement of parts more fully disclosed in the detailed description following, in conjunction with the accompanying drawings, and more specifically defined in the claims appended thereto.

In the drawings:

Fig. 1 is a plan view of my novel apparatus;

Fig. 2 is a side elevation thereof;

Fig. 3 is a view similar to Fig. 2 partly in section, of the apparatus at the other end of its stroke;

Fig. 4 is a view of the side opposite Fig. 2, showing the cam arrangements only;

Fig. 5 is an end view of the upper portion of the apparatus;

Fig. 6 is an end view of the blade holder and ram;

Fig. 7 is a section along line 7—7 on Fig. 6;

Fig. 8 is a side view of an assembled service block;

Fig. 9 is a perspective view of one set of blades therefor; and

Fig. 10 is a perspective view of one of the other set of blades therefor.

It has been found desirable to provide an apparatus for facilitating the assembly of multiple current tap plugs, such as service blocks and cube taps, having four contacts intersecting at right angles to each other. For example, referring to Figs. 8 to 10 inclusive, the service block 10 is provided with transverse blades 11 to which the cord lead wire 12 is attached, and vertical blades 13. The blades 11 are pulled into the husk in the manner disclosed in my copending application hereinafter referred to, and the present apparatus is designed to simultaneously push or ram the vertical blades 13 into the husk.

Referring to the drawings, my apparatus includes a lower casing 14 which houses the actuating mechanism, and on which the assembly parts are mounted. The casing 14 is provided with a central longitudinal bore 15 in which a piston 16 is slidable. Fluid or air inlet means 17 are positioned in each end to reciprocate the piston 16 in the manner disclosed in my copending application Ser. No. 276,625, issued March 31, 1942, Patent No. 2,278,176.

The piston 16 carries an upstanding pin 18 which engages the lower carriage 19 slidable on the casing. Movement of the carriage 19 causes the cams 20 to operate the spreaders 21 in the manner described in my copending application hereinabove referred to. In assembling a cube tap, to which there is no electrical cord connection, the cams 20 and spreaders 21 may be eliminated. A pair of pull arms 22 are fixed in the lower carriage 19 and are adapted to pass through the service block slots when the carriage moves to the left, Fig. 1, and to pull the blades 11 and cord 12 into the husk when the carriage moves to the right. A retaining nest 23 is mounted on the casing 14 and comprises an annular seat 24 adapted to hold the plug husk, and two spaced parallel vertical retaining prongs 25 which partially enter the vertical slots in the husk to hold the husk in place and to act as a stop when the vertical contacts 13 are pushed into the husk.

Mounted on the lower carriage 19 is a frame 26 having longitudinal grooves 27 in which an upper auxiliary carriage 28 is slidably mounted. A vertical contact blade holder 29 is pivotally mounted on the carriage 28, and comprises a generally rectangular U-shaped portion 30 into which a cover portion 31 extends, the portion 31 being narrower than the portion 30, leaving slots 32 on each side, Figs. 6 and 7. The cover portion 31 is adjustably retained in the portion 30, as by the screw 33. A U-shaped plunger 34 is slidably mounted in the holder 29 with the arms thereof adapted to enter into the slots 32, a spring 35 resiliently retaining the plunger in withdrawn position. The holder 29 is also provided on one side with a hook 36 for a purpose hereinafter to be described.

A vertical bar 37 is fixed to one side of the casing 14 and is provided adjacent its upper end with an L-shaped bar 38 having one arm extending into the path of movement of the hook 36 on the holder 29. An S-shaped bar 39 is journalled horizontally on the outside of the

frame 26 having its forward end linked, as at 40, to the under side of the holder 29 to limit forward movement of the auxiliary carriage 28. A spring 41 is fixed to the frame 26 and bar 39 to resiliently retain the bar 39, holder 29, and auxiliary carriage 28 in position to the left end of the grooved frame 26, Fig. 1. The frame 26 is also provided with a forwardly extending cam bar 42 and a rearwardly extending cam plate 43 which is adapted to engage a rocker arm 44 pivotally mounted on the bar 37. The rocker arm 44 is of sufficient length to engage the rear end 45 of the S-bar 39.

A frame 46 is mounted on the casing 14 adjacent the nest 23 on the same side as the bar 37. A cam 47 is pivotally mounted in the frame 46 and adapted to swing in a vertical line over the nest. An operating trigger 48 is mounted for vertical reciprocation in the frame 46, its upper end being pivotally journalled in a curved slot 49 in the cam 47, and its lower end having a rectangular opening 50 in the path of movement of the cam bar 42. A spring 51 is adapted to retain the trigger and cam in raised position.

In operation, the cord lead wire 12 is first attached to the horizontal blades 11, and a service block husk 10 is placed into the nest 23 with the prongs 25 entering the vertical slots, Fig. 3. Two vertical contacts 13 are now placed in the holder 29 in horizontal position, Fig. 1. The piston 16 is moved to the left and right in quick strokes. The spreaders 21 and pull arms 22 are utilized to pull the cord and blade assembly (11, 12) into the horizontal slots in the manner described in my copending application hereinabove referred to.

When the lower carriage 19 moves to the left, it carries the frame 26 and auxiliary carriage 28 with it. As the holder 29 passes beneath the bar 38, the hook 36 engages the bar and pivots the holder 29 to a vertical position, Fig. 3. Further movement brings the holder slots 32 in alignment with the vertical slots in the husk 10. At this point, the back end of the S-bar 39 abuts against the frame 46, and, its other end being linked to the holder 29, further movement of the holder 29 and auxiliary carriage 28 is prevented. As the lower carriage 19 and frame 26 moves further, the carriage 28 remains stationary and slides in its grooves, causing a "lost motion" effect, against the action of the spring 41. During the further movement, the cam bar 42 enters the opening 50 in the trigger 48 and pulls it downwardly. This causes the cam 47 to pivot downwardly and engage the plunger 34 in the holder 29, forcing the contacts 13 out of the holder slots 32 and into the husk slots until the stop prongs 25 are reached.

As the carriage is returned to the right, the cam bar 42 releases the trigger 48 and allows the spring 51 to raise the trigger and the cam 47. During this movement, the spring 41 pulls the S-bar 39 and auxiliary carriage 28 to the left of the frame 26 with a second "lost motion" action to permit withdrawal of the cam 47 without binding. Further movement causes the L-bar 33 to hit the holder 29 and return it to horizontal position. Simultaneously, the cam plate 43 engages the rocker arm 44 and swings it to the right. The end of the rocker arm 44 in turn engages the rear end 45 of the S-bar 39 and pulls the bar 39 and auxiliary carriage 28 to the right of the frame 26 against the action of the spring 41, so that the end of the holder 29 is exposed in position for loading. The machine is now ready for another operation.

The above described machine and method of assembly permits rapid and economical assembly of soft rubber integral multiple current taps with the same ease and speed as the standard contact plug is assembled on the machine described in my copending application hereinabove referred to.

While I have disclosed a specific constructional embodiment of my invention and a specific method of assembly, it is obvious that changes may readily be made, without departing from the spirit and the scope of the invention as defined in the appended claims.

I claim:

1. In an apparatus having a base, a nest on said base for retaining a husk of resilient material having transverse and vertical slots and means including a reciprocable carriage for pulling a pair of contact blades into the transverse slots, a frame mounted on said carriage, a slidable holder on said frame for holding a pair of vertical contact blades, a plunger mounted on said base for pushing said pair of contact blades into the vertical slots, a cam mounted on said carriage for actuating said plunger during the movement of said carriage, and means for retaining said holder in vertical position over the vertical slots during the movement of said carriage.

2. In an apparatus having a base, a nest on said base for retaining a husk of resilient material having transverse and vertical slots and means including a reciprocable carriage for pulling a pair of contact blades into the transverse slots, a frame mounted on said carriage, means carried on said frame for holding a pair of vertical contact blades, a plunger mounted on said base for pushing said pair of contact blades into the vertical slots, and a cam mounted on said carriage for actuating said plunger during the movement of said carriage.

3. In an apparatus having a base, a nest on said base for retaining a husk of resilient material having transverse and vertical slots and means including a reciprocable carriage for pulling a pair of contact blades into the transverse slots, a frame mounted on said carriage, means carried on said frame for holding a pair of vertical contact blades, a plunger mounted on said base for pushing said pair of contact blades into the vertical slots, and means for actuating said plunger during the movement of said carriage.

4. In an apparatus having a base, a nest on said base for retaining a husk of resilient material having transverse and vertical slots and means including a reciprocable carriage for pulling a pair of contact blades into the transverse slots, a frame mounted on said carriage, means carried on said frame for holding a pair of vertical contact blades, and means mounted on said base for pushing said pair of contact blades into the vertical slots during the movement of said carriage.

WILLIAM P. HERMAN.