

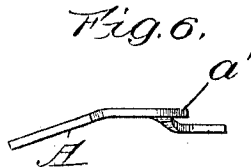
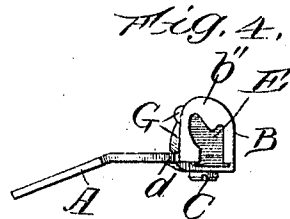
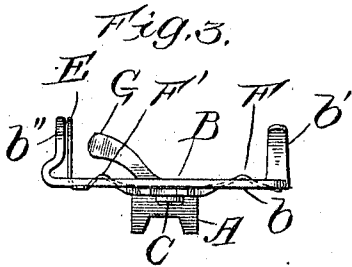
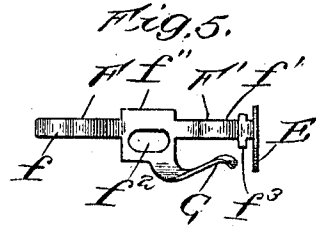
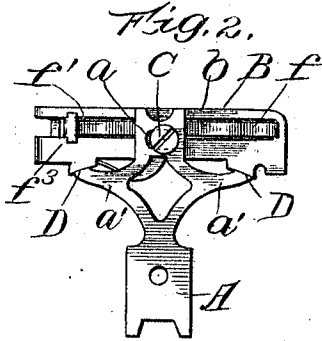
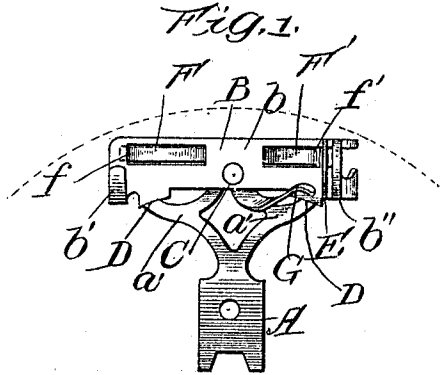
J. B. ANGOVE.

SHUTTLE CARRIER FOR SEWING MACHINES.

APPLICATION FILED MAY 11, 1905. RENEWED AUG. 30, 1909.

945,207.

Patented Jan. 4, 1910.



Witnesses:
Chas. Vermick
Jessie E. Lacey

Inventor:
Joseph B. Angove
 By *W. H. H. H. H.* Att'y.

UNITED STATES PATENT OFFICE.

JOSEPH B. ANGOVE, OF ROCKFORD, ILLINOIS, ASSIGNOR TO ILLINOIS SEWING MACHINE COMPANY, OF CHICAGO, ILLINOIS, A CORPORATION OF ILLINOIS.

SHUTTLE-CARRIER FOR SEWING-MACHINES.

945,207.

Specification of Letters Patent.

Patented Jan. 4, 1910.

Application filed May 11, 1905, Serial No. 259,966. Renewed August 30, 1909. Serial No. 515,339.

To all whom it may concern:

Be it known that I, JOSEPH B. ANGOVE, a citizen of the United States, residing at Rockford, in the county of Winnebago and State of Illinois, have invented certain new and useful Improvements in Shuttle-Carriers for Sewing-Machines, of which the following is a specification.

The present invention relates in part to means for adjusting the shuttle carrier laterally with respect to its carrying arm for the purpose of bringing the point of the shuttle to the proper position with relation to the needle at the time the loop is formed.

The proper operation of a sewing machine demands nicety in the construction and relation of its parts, and although, in order to accomplish this, the greatest of care is exercised, and the parts are made from templates, and many times made or finished by machines having delicate adjustments, still, in some instances when the parts are assembled one of them may not bear the proper relation to another. The error may be only a very small fraction of an inch, but nevertheless sufficient to prevent proper operation. To provide means for correcting such errors in the relations of the shuttle and the needle is one of the objects of the present invention.

The invention relates in part also to means for cushioning the shuttle in the carrier and for reducing to a minimum the friction or drag upon the loop as the shuttle passes through it.

To these ends the invention consists in the features of novelty that are hereinafter described with reference to the accompanying drawing which is made a part of this specification, and in which:

Figure 1 is a plan view of a shuttle carrier embodying the invention, Fig. 2 is an underside view thereof, Figs. 3 and 4 are, respectively, a side elevation and an end elevation thereof, Fig. 5 is a plan view of a part comprising the cushions and one of the horns, Fig. 6 is a side elevation of the carrier arm.

A represents the carrier arm which is pivotally mounted to move about the center from which the dotted arc in Fig. 1 is struck, said arc representing the position of the shuttle race with relation to the carrier when the parts are assembled.

B represents the shuttle carrier which is

adjustably attached to the arm by means of a single screw, C, passing through a slot, *a*, formed through the offset end of the arm, A. Preferably this slot is of just sufficient width to take the screw, the object being to prevent any movement of the carrier longitudinally with respect to the arm. It is elongated laterally with respect to the arm in order to permit a corresponding adjustment of the carrier, and it follows an arc struck from the center of movement of the arm, for a reason that will appear hereinafter.

The offset end of the arm projects beneath the bottom plate, *b*, of the carrier and the carrier and arm are provided with engaging surfaces that follow arcs struck from the center of motion of the arm. These arcuate engaging surfaces are shown at D. Those of the arm, A, are formed on lateral extensions, *a'*, and those of the carrier are formed on the rear edge of the bottom plate, *b*,—or extensions thereof. Thus, it will be seen, the shuttle race, the slot *a* and the contacting surfaces of the carrier and arm are concentric with the center of movement of the arm so that while the carrier may be adjusted laterally relatively to its carrying arm, its relation to the curvature of the shuttle race remains constant. I am aware that means have been provided for adjusting the position of the shuttle carrier for the purpose of bringing the point of the shuttle to proper position relatively to the needle, but I believe myself to be the first to make the carrier proper adjustable relatively to its carrying arm, when, in the process of accomplishing the adjustment, the carrier moves in the arc of a circle concentric with the center of movement of the carrier arm, or in other words, parallel with the shuttle race.

Rising from the front end of the bottom plate, *b*, is a horn, *b'*, which is of customary construction, excepting that it joins the bottom plate farther from the point of the shuttle than is customary and it occupies a plane which is substantially parallel with the carrier arm. The object of this is to permit the use of a "flipper" for flipping the shuttle out of the race.

Rising from the rear end of the plate, *b*, is a tail piece, *b''*, which positively limits the rearward movement of the shuttle relatively to the carrier. Ordinarily the shuttle impinges directly against this tail piece,

but I prefer to arrange between the tail piece and shuttle a cushion, E, which receives the initial impact as the carrier moves forward and materially lessens the noise. It has an additional function that will appear hereinafter.

The carrier has also an elastic cushion upon the top of which the shuttle is adapted to rest and be held by gravity alone, whereby the shuttle will be lifted out of contact with the cushion and the cushion left in its normal position as the thread passes between them, and whereby as the shuttle falls back to its normal position its impact will be dissipated by the elasticity of the cushion and all jar and noise practically prevented.

The normal position of the shuttle herein referred to is its position when resting upon the cushion and exerting only such pressure thereon as is due to its weight alone. Although the cushion is of great elasticity and has but little power of resistance, still the shuttle is so light that its weight alone will not appreciably affect the cushion, so that the position of the latter when under the influence of only the weight of the shuttle may be regarded as its normal position. The cushion is incapable of rising above its normal position as thus defined, and this leaves the shuttle free to be lifted out of contact with it, but, at the same time, the cushion is depressible below its normal position, and this permits the shuttle when under the influence of both its weight and its momentum to depress the cushion when the impact occurs. It is the yielding of the cushion under this impact that prevents or deadens the jar and noise.

The cushion preferably consists of two vertically yielding points, F and F', upon which the shuttle rests, so that at all other points the shuttle is out of contact with the carrier.

The supporting points are disposed upon opposite sides of the mid-length of the carrier, and each, in its turn, acts as a fulcrum upon which the shuttle rocks when it is lifted by the thread in passing the other, so that equal masses upon opposite sides of the fulcrum counterbalance each other. I do not, however, claim to be the first to support the shuttle at two points so that it will fulcrum first upon one and then upon the other in the manner just described.

Preferably the supporting points, F, and F', are bends of inverted V-shape or U-shape, formed in thin, tempered, sheet steel, tongues, f and f' , which occupy longitudinal slots in the bottom, b , of the carrier. These tongues are preferably integral and the intervening portion, f'' , of the piece of which they are formed lies against the under side of the bottom, b , and has an elongated slot, f^2 , through which the retaining screw, C, passes.

In order to limit the upward movement of the supporting points under the influence of the elastic tongues in which they are formed the tongue, f , is extended beyond the end of the slot which it occupies and bears at its end against the under side of the bottom, b , and the tongue, f' , is provided with a lateral projection, f^3 , which engages the underside of said bottom.

The downward movement of the cushion, relatively to the bottom of the carrier, is limited by said bottom so that while the initial impact of the shuttle is taken up by the cushion, the bottom of the carrier is not wholly relieved of the duty of supporting the shuttle under all conditions; in other words, the bottom of the carrier forms a stop for limiting the flexure of the spring forming the cushion and prevents it from being strained as it would be if it alone were relied upon for doing the entire work of supporting the shuttle and receiving its impact.

The end cushion, E, is integral with the tongue, f' , and an elastic horn, G, proceeds from the portion, f'' .

What I claim as new and desire to secure by Letters Patent is:

1. The combination with a shuttle carrier and its pivoted arm, the carrier being adjustable laterally relatively to the arm, the carrier and arm having means for confining the movement of the carrier, in the process of adjusting it, to an arc struck from the center of movement of the arm, of means for holding the carrier in its adjusted position, substantially as described.

2. The combination with a shuttle carrier and its pivoted carrying arm, the carrier being adjustable laterally relatively to the arm, the carrier and arm being provided with contacting surfaces that are concentric with the center of movement of the arm, of means for holding the carrier in its adjusted position, substantially as described.

3. The combination with a shuttle carrier and its pivoted carrying arm, the carrier being adjustable laterally relatively to the arm, and the carrier and arm having contacting surfaces that are concentric with the center of movement of the arm, of a screw for securing together the carrier and the arm, one of the parts being provided with a slot for permitting their relative adjustment, substantially as described.

4. The combination of a shuttle carrier, its pivoted carrying arm having a portion projecting beneath the bottom of the carrier and provided with a transverse slot, and a screw passing through said slot and having threaded engagement with the bottom of the carrier, the carrier and its arm being relatively adjustable and having contacting surfaces that are concentric with the center of movement of the arm, substantially as described.

5. The combination of a shuttle carrier, a pivoted arm by which it is carried, said carrier being adjustable laterally relatively to the arm, means for confining the movement of the carrier, in the process of adjustment, to an arc concentric with the shuttle race, and means for holding the carrier in its adjusted position, substantially as described.

6. The combination of a shuttle carrier, a pivoted arm for carrying it, the carrier being adjustable laterally relatively to the arm, the arm having a portion projecting beneath the bottom of the carrier and having a transverse slot, and a screw passing through said slot and having threaded engagement with the bottom of the carrier, the arm having also lateral extensions provided with surfaces concentric with its center of movement, said surfaces having engagement with complementary surfaces on the carrier, substantially as described.

7. The combination with a rigid shuttle carrier having a bottom plate provided with a longitudinal slot and a cushion made of spring metal and having tongues occupying said slot, said tongues having points projecting above said bottom and depressible rela-

tively thereto, the bottom of the carrier forming a stop for limiting the depression of the cushion, substantially as described. 30

8. The combination with a rigid shuttle carrier of a cushion, made of spring metal and having a portion adapted to receive the impact of the rear end of the shuttle and an elastic horn for engaging the side of the shuttle, substantially as described. 35

9. The combination with a rigid shuttle carrier having a bottom provided with longitudinal slots and having a tail piece, of a cushion made of elastic sheet metal and comprising a pair of tongues occupying said slots and provided with points extending above said bottom, said points being depressible relatively to the bottom, an intermediate portion perforated for the passage of a retaining screw, and a portion extending above the bottom and lying adjacent to the tail piece and forming a cushion for receiving the impact of the rear end of the shuttle, substantially as described. 40 45

JOSEPH B. ANGOVE.

Witnesses:

A. H. SMITHERS,
H. W. BOYD.