

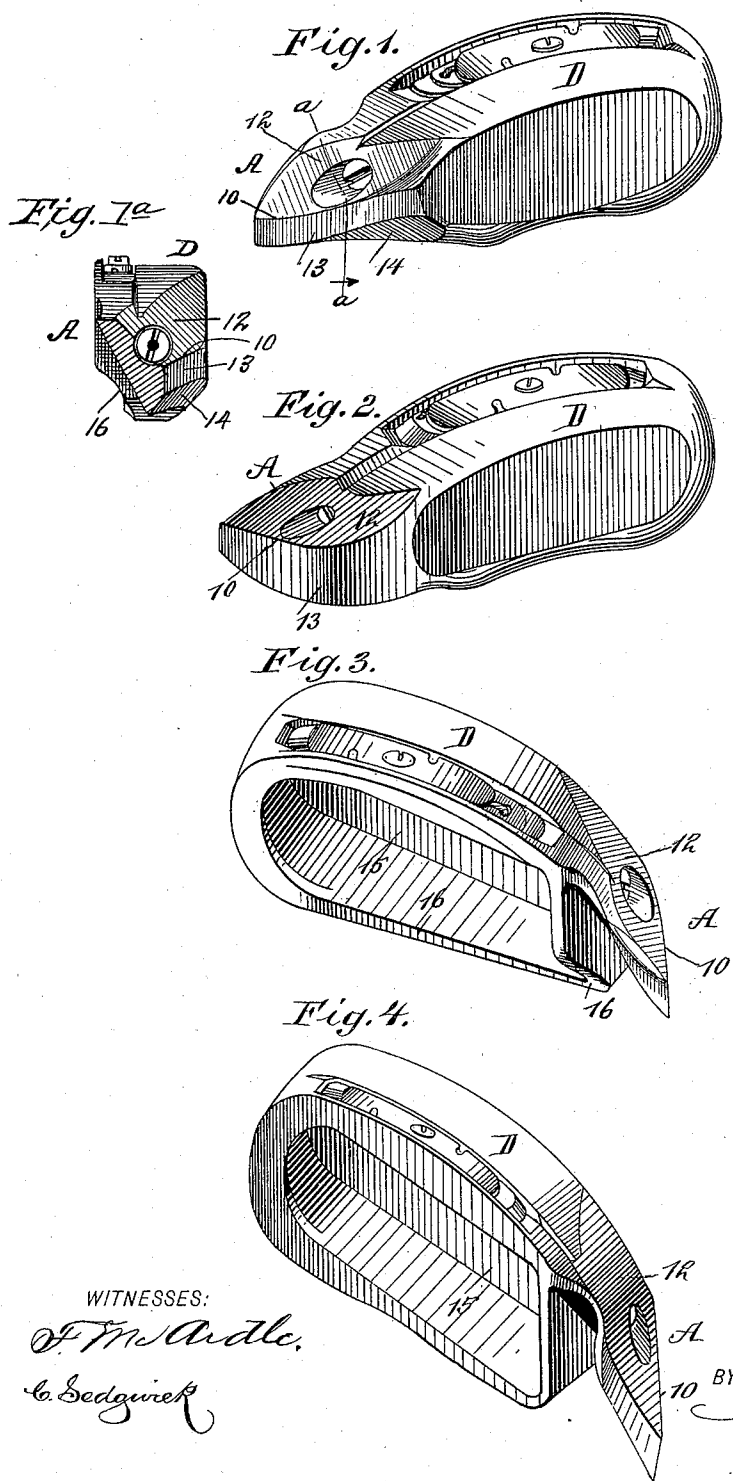
(Model.)

5 Sheets—Sheet 1.

W. G. TILLOU.
SHUTTLE FOR SEWING MACHINES.

No. 533,328.

Patented Jan. 29, 1895.



WITNESSES:
F. M. Arde.
C. Sedgwick

INVENTOR
W. G. Tillou
BY *Munn & Co.*
ATTORNEYS.

(Model.)

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Fig. 5.

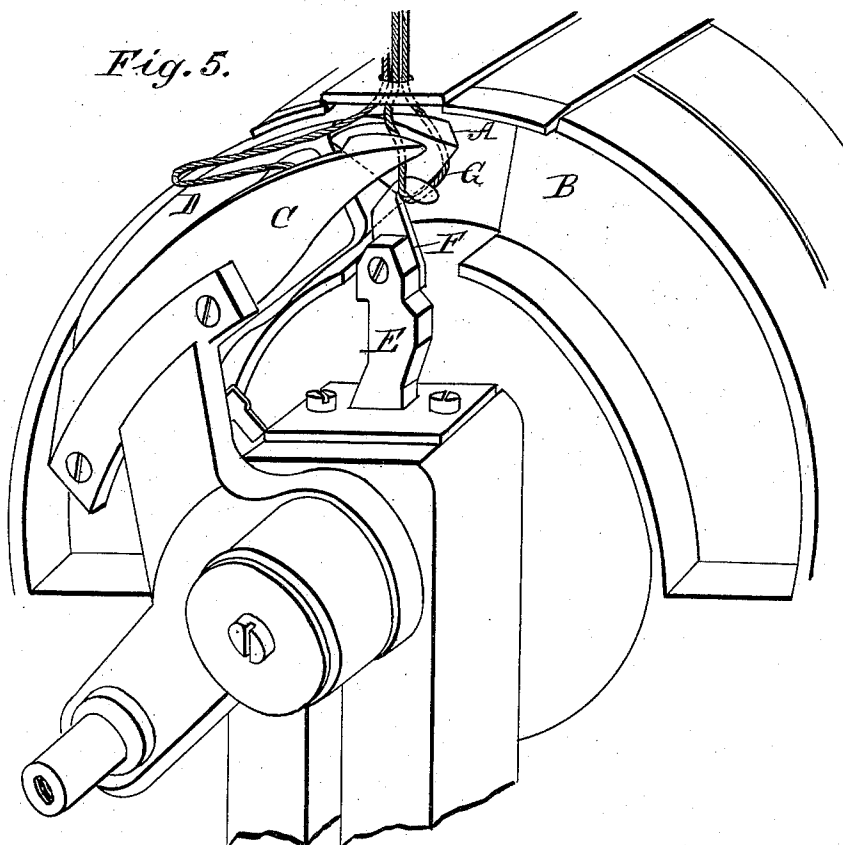
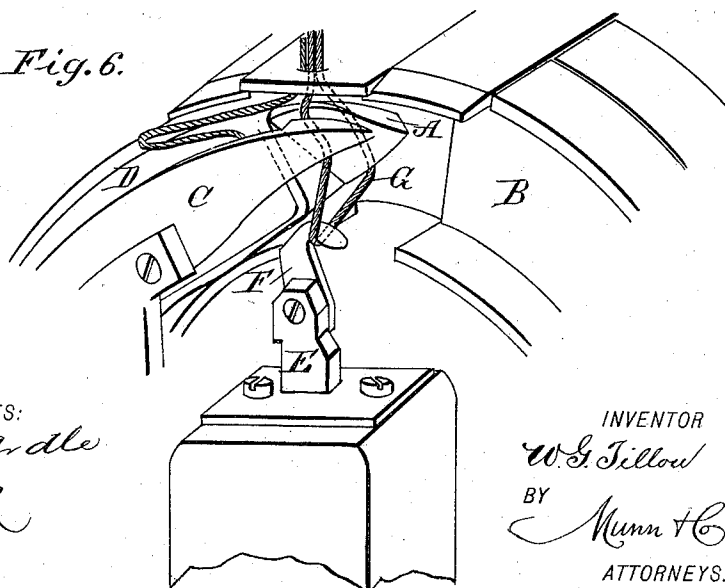


Fig. 6.



WITNESSES:

F. M. Ardle
G. Sedgwick

INVENTOR

W. G. Tillou
BY *Munn & Co.*
ATTORNEYS.

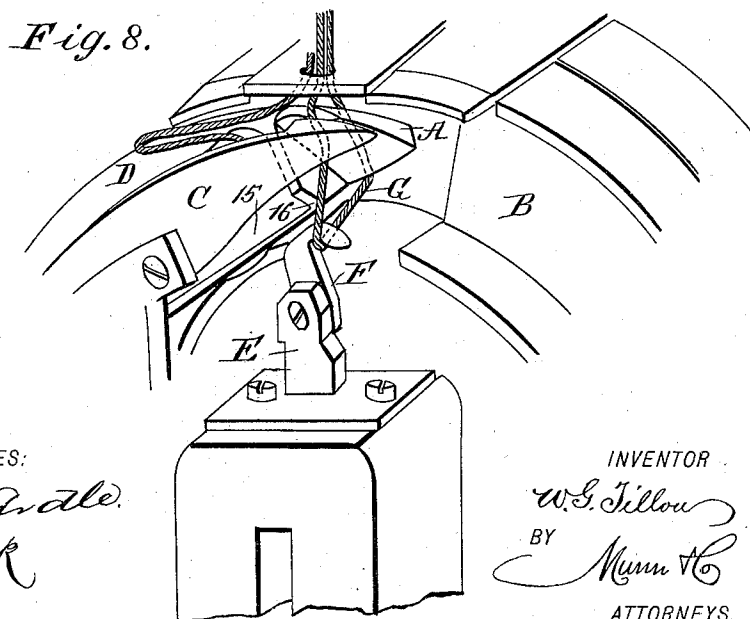
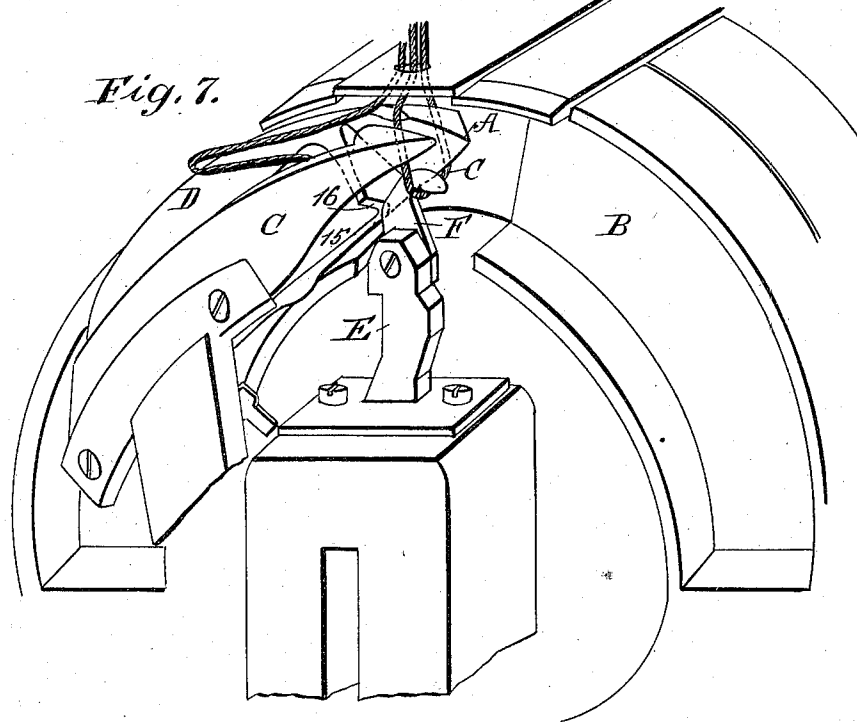
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Patented Jan. 29, 1895.



WITNESSES:

H. McAuley
Co. Sedgwick

INVENTOR

W. G. Tillou

BY

Munn & Co.

ATTORNEYS.

(Model.)

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Fig. 9.

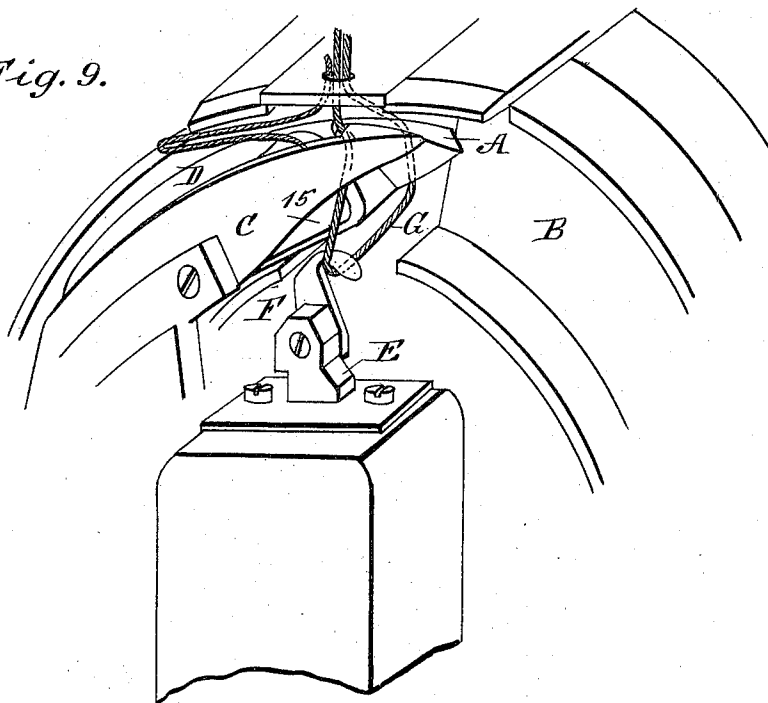
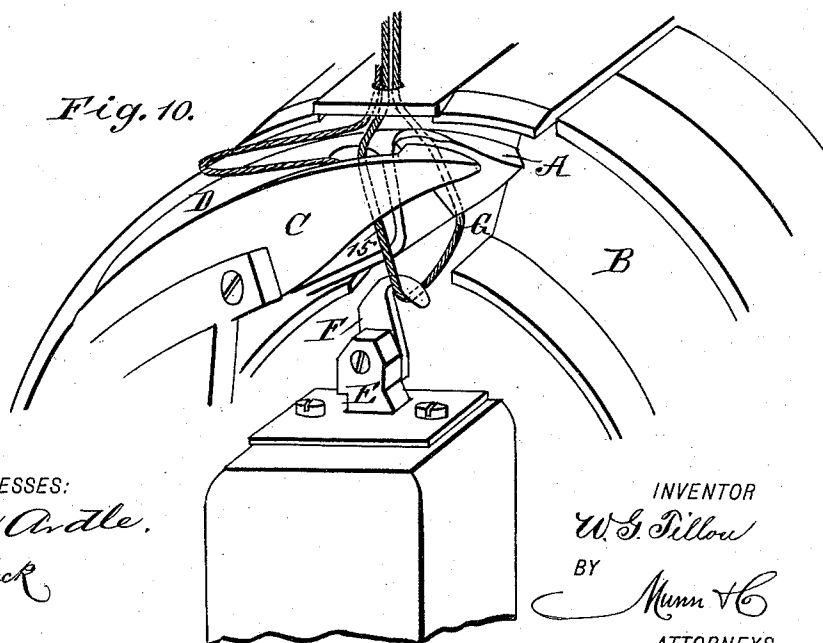


Fig. 10.



WITNESSES:

F. M. Apple.
C. Sedgwick

INVENTOR

W. G. Tillou

BY

Munn & Co.
ATTORNEYS.

(Model.)

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Fig. 11.

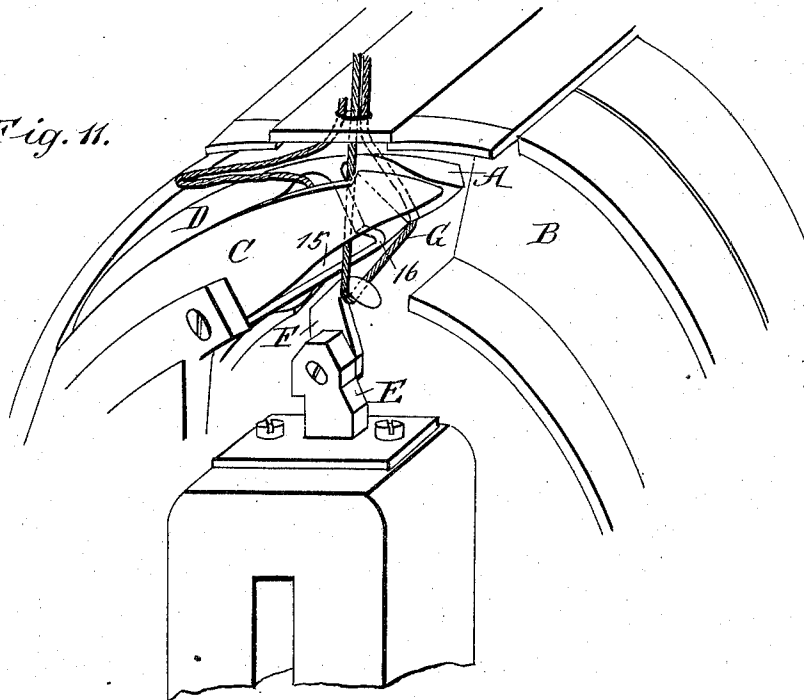
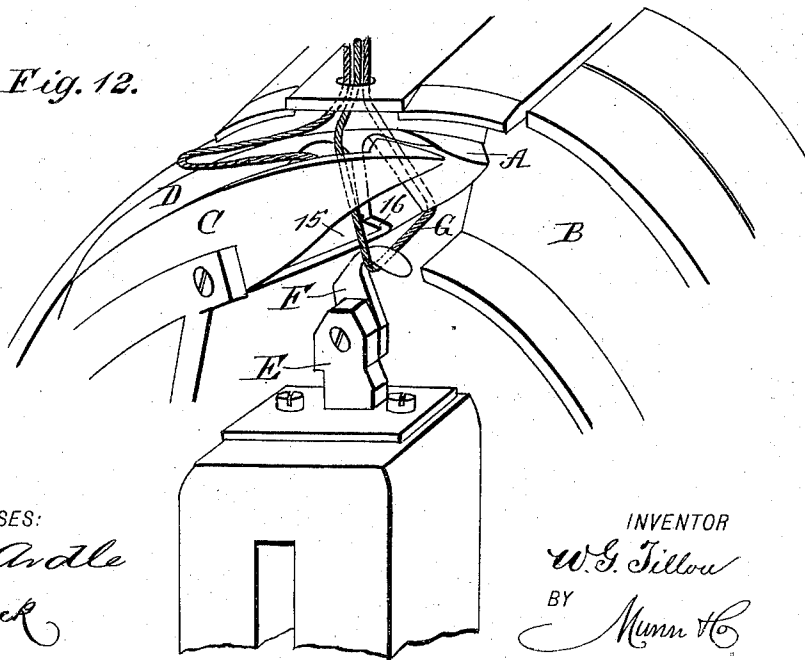


Fig. 12.



WITNESSES:

J. M. Andle
L. Sedgwick

INVENTOR

W. G. Tillou

BY

Munn & Co.

ATTORNEYS.

UNITED STATES PATENT OFFICE.

WALTER GRAHAM TILLOU, OF NEW HAVEN, ASSIGNOR TO THE BOSWORTH MACHINE COMPANY, OF MILFORD, CONNECTICUT.

SHUTTLE FOR SEWING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 533,328, dated January 29, 1895.

Application filed October 28, 1893. Serial No. 489,405. (Model.)

To all whom it may concern:

Be it known that I, WALTER GRAHAM TILLOU, of New Haven, in the county of New Haven and State of Connecticut, have invented a new and useful Improvement in Shuttles for Sewing-Machines, of which the following is a full, clear, and exact description.

My invention relates to an improvement in sewing machines, and especially to an improvement in the shuttles of leather sewing machines.

The object of the invention is to so construct the beak of the shuttle that it will draw down less thread than the old form of shuttle and will require a loop of less size through which to pass, thereby rendering it much more economic.

Another object of the invention is to so shape the forward bottom portion of the bobbin chamber of the shuttle, near which the loop-drawing hook of the machine has play, that the hook may travel very close to the shuttle without touching the same, and in such manner as not to draw down too much thread, and whereby, further, in the event any accident should happen to the hook, no damage to the shuttle results.

The invention consists in the novel construction and combination of certain parts, as will be hereinafter fully set forth and pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar figures and letters of reference indicate corresponding parts in all the views.

Figure 1 is a perspective view of the improved shuttle viewed from its closed side. Fig. 1^a is a cross section on line *aa* of Fig. 1. Fig. 2 is a similar view of the old form of shuttle. Fig. 3 is a perspective view of the new shuttle that is to say the bobbin chamber viewed from its face or chambered side, and Fig. 4 is a similar view of the old form of shuttle. Fig. 5 is a perspective view of a shuttle race and an old form of shuttle located in the race, illustrating the first move of the shuttle in entering and passing through a loop. Fig. 6 is a perspective view of the old form of shuttle, a portion of the race and loop hook, illustrating what may be termed a

second or more advanced move of the shuttle in passing through the loop. Figs. 7 and 8, are perspective views, corresponding to Figs. 5 and 6, illustrating the improved shuttle in its race and the first and second moves of the new shuttle through a loop. Figs. 9 and 10, are perspective views of the old form of shuttle, its race and the loop hook, the shuttle being shown in Fig. 9 as having further enlarged the loop, and in Fig. 10 as having enlarged the loop to its maximum extent; and Figs. 11 and 12 are views corresponding to Figs. 9 and 10, illustrating however the improved form of shuttle and likewise illustrating the difference in the amount of thread employed for the formation of the loop.

In order to perform proper work, sufficient thread must be furnished to make the required stitch and yet maintain a proper tension. An insufficiency of thread will cause the stitch to sink deeply into the material, and if a surplus of thread is furnished it cannot be disposed of by the take up mechanism, and a loose ragged stitch is the result. In the old form of shuttle if the thread was retarded at all in passing over the shuttle, an action which quite frequently takes place, the shuttle would draw down too much thread, and if the thread was dry and the shuttle went through the loop of thread easily the stitch would be exceedingly uneven. These defects are sought to be remedied in the improved form of shuttle, which will draw down only the proper amount of thread to be perfectly taken up by the tension mechanism, and thereby form an even stitch, and by decreasing the cross sectional area of the beak of the shuttle to reduce the dimensions of the loops, thus saving in thread, and also to so shape the beak that the possibility of cutting or chafing the thread will be rendered very remote. In the old style of shuttle the thread is often pulled out of engagement with the loop-forming hook by means of the thread catching upon the shuttle, especially at the front lower corner of the bobbin receptacle. This defect has been sought to be remedied by making the groove or thread-receiving recess in the hook quite deep, but such improvement was abandoned, since the release of the thread from the hook for the take up mechanism could not be reliably accomplished. The

defect, however, is remedied in the improved shuttle by the peculiar cross sectional shape of the shuttle beak.

In the old form of shuttle when the hook shaft became worn, admitting of side play, or when the finger or carrier for the shuttle became worn and the machine happened to be turned in the wrong direction, the hook was liable to be detached from its shaft, or be drawn out of proper alignment with the shuttle, and would therefore come in injurious contact with the shuttle. This defect is remedied by chamfering the lower rear corner of the shuttle in addition to beveling the forward lower corner of the beak.

In the old form of shuttle, see Figs. 2 and 4, the laterally- and downwardly-curved beak was beveled on the upper side 12, of a ridge, 10, which extended from the body of the shuttle to the point of the beak. Below such ridge, 10, was a narrow surface, 13, which also extended to the point of the beak, and may be said to have constituted its back.

The body of my improved shuttle is similar to the old form, in so far as relates to a bobbin chamber in its face side and the form of its back, upper, and under side, (or base,) and its rear end. The novel features are the construction of the front, or beak, and the base and end walls of the bobbin chamber. I provide the upper side of the front, or beak, with a flat, beveled surface, which inclines downward to the vertical portion, 13, and, on the under side of such front, I provide another beveled surface, 14, the same beginning back of the point of the beak and extending rearward to or beyond its base, *i. e.*, as far as the upper bevel, 12. Thus the two bevels, 12 and 14, are at an angle to each other on opposite sides of a central portion, 13, whose form is not essential although here shown flat. The main point is that there are two bevels opposed to each other, as shown, and in this manner, the cross sectional area of the beak at what was formerly its widest portion is materially decreased, and a smooth beveled surface is presented to the action of the thread, and the loop which is formed by the improved shuttle will be much narrower than that which has been formed by the old style of shuttle.

Another feature of the invention consists in the formation of the marginal wall surrounding the bobbin chamber or compartment 15 of the shuttle. This feature is illustrated in Figs. 3 and 4. Heretofore, as shown in Fig. 4, the depth of compartment, 15, has been the same at top and bottom, but in the improved shuttle (Fig. 3) the lower edge, 16, of the chamber, 15, is cut away laterally, and inclined inward from the rear end of the shuttle toward the base of the beak, so that the bottom of the shuttle, that is to say, of the bobbin chamber, is cut away, or narrowest at the point where the hook, which assists in the formation of the loop, approaches the bobbin most closely.

In Figs. 5, 6, 9 and 10, the old shuttle and the manner in which it passes through a loop and the extent of loop required are illustrated, while in Figs. 7, 8, 11 and 12 a like representation is made of the new form of shuttle and the extent of loop it requires to effect a passage. The shuttle race in these figures is designated as B, the shuttle carrier or finger C, and the shuttle body D, its beak being designated as A, as heretofore stated. The hook shank is designated as E, while the hook and loop are respectively designated as F and G. By following these views and comparing the loop required by the old shuttle with that required by the new, it will be observed that the extent of loop necessary to permit a passage of the new shuttle is decidedly less than that demanded for the passage of the old shuttle; and it will likewise be observed that the hook F may approach the bobbin or bobbin chamber in the face of the shuttle much closer than in the old form of shuttle, and furthermore that by having the beveled surfaces on the beak of the improved shuttle the thread is enabled to slip over the shuttle with the least possible friction, as it is not drawn over such extended surfaces as in the old form of beak.

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

1. A shuttle of the character described, having a bobbin chamber, and a beak at one end which is inclined downward as shown, and has a vertical back portion extending from the point of the beak backward to the body, a flat, beveled upper surface inclined downwardly toward such vertical back, and a flat beveled under surface inclined upward toward such back, as shown and described, for the purpose specified.

2. A shuttle for the purpose specified, provided with a bobbin chamber, and a beak at one end of the same, the bottom or lower wall of said chamber being cut away laterally and inclined inward toward the base of the beak where the chamber is narrowest, to permit the near approach of the loop hook of the machine, as shown and described.

3. As an improved article of manufacture, a shuttle provided with a beak formed with two oppositely inclined surfaces at angles to one another, reducing thereby the ordinary width of the beak, the body of the shuttle being provided with a bobbin chamber having the margin of its lower wall chamfered upon an incline in direction of the beak, whereby the beak end of the said wall is narrower than the opposite end of the shuttle, as and for the purpose specified.

WALTER GRAHAM TILLOU.

Witnesses:

WILLIAM GALT MITCHELL,
J. M. HENDRICKS.