No. 877,108. PATENTED JAN. 21, 1908.

H. MURPHY.

LOOM SHUTTLE.

APPLICATION FILED NOV. 28, 1906.

Fig. 1.

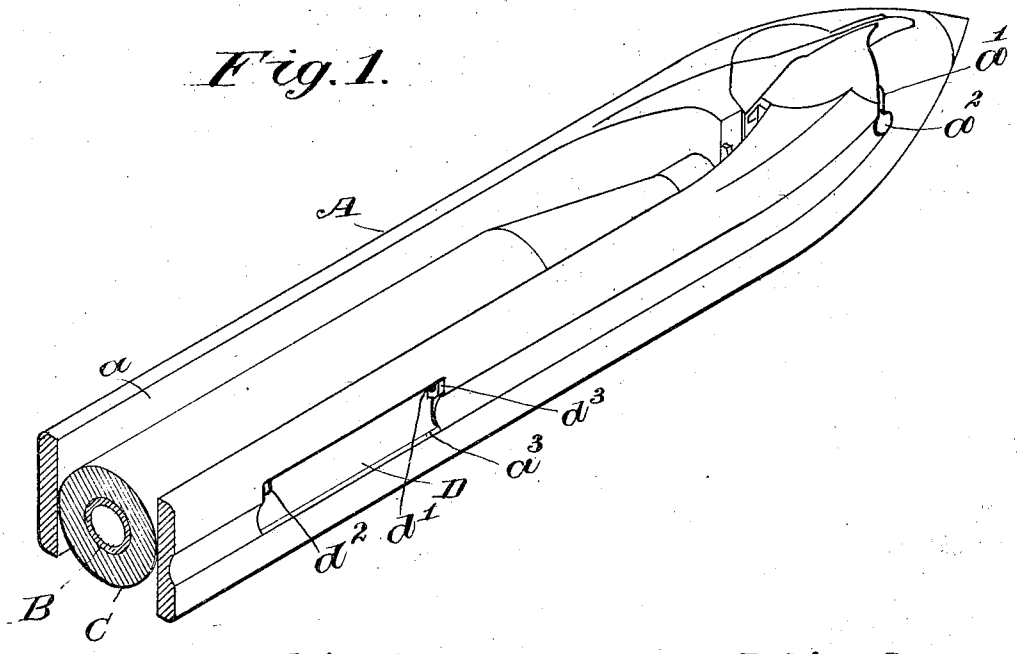


Fig. 2.

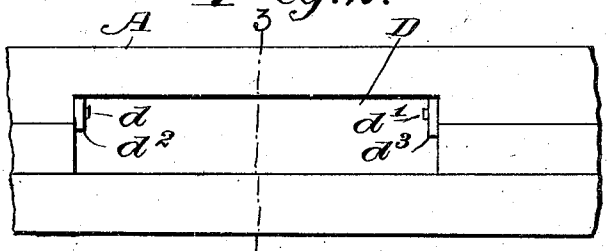


Fig. 3.

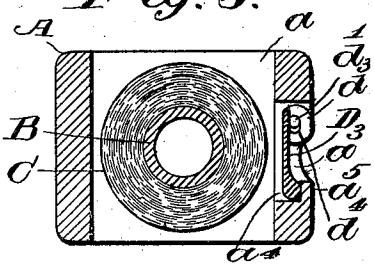


Fig. 4.

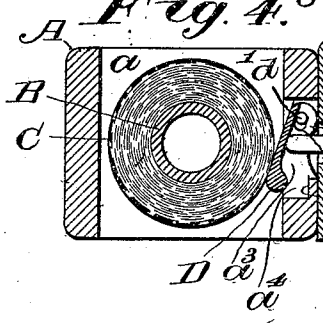


Fig. 5.

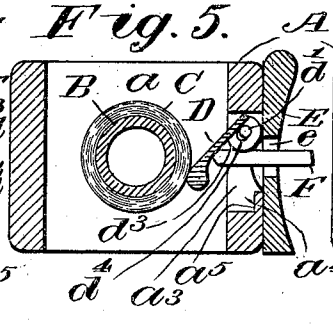
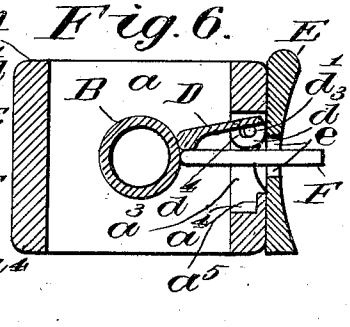


Fig. 6.



WITNESSES

Kickley Hyde.

Grace Crowley.

INVENTOR

Henry Murphy

BY His ATTORNEY,

Albert M. Moore.

BEST AVAILABLE COPY

UNITED STATES PATENT OFFICE.

HENRY MURPHY, OF LOWELL, MASSACHUSETTS, ASSIGNOR, BY DIRECT AND MESNE ASSIGNMENTS, TO DRAPER COMPANY, OF HOPEDALE, MASSACHUSETTS, A CORPORATION OF MAINE.

LOOM-SHUTTLE.

No. 877,108. Specification of Letters Patent. Patented Jan. 21, 1908.

Application filed November 28, 1906. Serial No. 345,510.

To all whom it may concern:

Be it known that I, HENRY MURPHY, a subject of the United Kingdom of Great Britain and Ireland, residing at Lowell, in the county of Middlesex and Commonwealth of Massachusetts, have invented a certain new and useful Improvement in Loom-Shuttles, of which the following is a specification.

This invention relates to loom-shuttles of the kind used in many weft-replenishing looms, in which a feeler at every other beat of the lay reaches through an opening in the front of the shuttle-box and through an opening in the shuttle and is pressed by the filling to throw the feeler away from operative position, until the filling has been exhausted to a predetermined amount and the feeler is no longer sufficiently moved to prevent its engaging with other mechanism which introduces a new supply of filling. Such a feeler and weft-supplying mechanism controlled thereby is shown in United States Letters Patent to Northrop, No. 626,187, and forms no part of this invention.

It has been found that when the speed of looms of the class referred to is increased, the lay swings a little farther forward and the feeler must reach a little further into the shuttle before the filling-change takes place, requiring a greater exhaustion of the filling in the shuttle before the feeler can swing into operative position. On the other hand, where there is a decrease of speed either intentionally or by an increase in the weight of the warp, the lay does not come so far forward, the filling-change takes place sooner and the waste-filling left on the old bobbin or spindle will be greater in amount. The amount of waste thus made is a matter of considerable importance and to lessen its amount it is customary to wind a narrow ring or bunch of filling on the bobbin or spindle at the commencement of the bobbin-winding or spindle-winding operation.

The object of this invention is to make the action of the feeler more positive and exact, regardless of the speed and of the inevitable wearing of the bearings of the lay and its connections so that the filling-change will actually occur as intended when the filling is exhausted to a predetermined amount and to make it certain that this amount shall not be varied by the weaver who frequently varies the adjustment of the feeler to hasten the filling-change, in order to avoid breaks which are more likely to occur when the filling is nearly exhausted.

By the use of my invention the feeler may be lightened to a considerable extent and narrowed at its contacting end and the openings in the shuttle-box and shuttle, through which the feeler reaches, may be made smaller, thereby weakening the shuttle to a less extent. Said invention will save the greater part of the waste filling left on the bobbin or cop when the filling-change takes place, because this invention will enable said change to be made on the diameter of a single thread, if the swinging-plate or feeler-shield be carefully made and properly set, in which case said shield is positively sure to operate properly. The amount of such waste is so great that feelers have gone out of use in mills where it is considered more important to make little waste than to turn out a high quality of cloth.

In the accompanying drawing, Figure 1, is an isometric perspective view, partly in vertical cross-section, of a left-handed shuttle containing a full bobbin provided with my improvement; Fig. 2, a front elevation of that part of a shuttle which contains my invention; Fig. 3, a vertical cross-section on the line 3 3 in Fig. 2; Fig. 4, similar to Fig. 3, but showing also in section in the same plane the front wall or plate of the shuttle-box and a feeler pressing against the feeler-shield; Fig. 5, like Fig. 4, except that the filling is partly exhausted; Fig. 6, like Fig. 5, except that the bobbin is empty.

A indicates the body of a shuttle such as is now commonly used in the so-called Northrop loom; a, the chamber or longitudinal mortise which receives the filling-carrier or bobbin B and filling C; a^1, the threading slit; a^2, the delivery eye; a^3, the slot or opening through which the feeler F enters the shuttle after passing through the aperture e in the front wall E of the shuttle-box. All the above indicated parts are of any usual construction and operation, except as hereinafter stated and may be substantially as shown and described in said Northrop patent and other patents to said Northrop.

The slot a^3 in the shuttle is represented as deepened on the inside at the bottom at a^4 leaving a ledge a^5. Within the slot a^3 is pivoted the feeler-shield D, the same being a plate preferably of metal, having ears d^2 d^3 through which project pivot-pins d d^1, se-

cured in the end-walls of said slot a^3. The shield D turns freely on its pivots d d^1 when pushed by the feeler and swings against the filling or cop C but does not allow the feeler to come in direct contact with the filling and as the filling is exhausted, allows the feeler gradually to enter the shuttle farther until when the filling is entirely exhausted or exhausted to any predetermined extent, said shield is pushed up entirely out of the way of said feeler which then operates the filling-changing mechanism in the usual manner. It is customary to wind a bunch of yarn on the bobbin at the beginning of the spinning operation for the purpose of having "a well defined projection for the feeler to work against", and I prefer to use a similar bunch for the shield D to swing against, but the bunch may be smaller than heretofore or may be dispensed with entirely.

One of the ears d^3, the one nearest the middle of the shuttle, is provided with a pivot-hole d^4, which is oblong instead of circular and parallel with the rear wall of the shield D. When the shuttle is in the box, the ear d^3 is prevented from rising on its pivot by the shuttle-box plate or front wall of the shuttle E, but when the shuttle is out of the box, the shield may move away from the cop until the pivot-pin is in the lower end of the slot or opening d^4, the object of this construction being to allow the shield to free itself from the cop after leaving the shuttle-box and to fall into place against the ledge a^5 as shown in Fig. 3. Otherwise the shield might be held by the elasticity of the cop in the position given to said shield by the feeler when the cop is nearly exhausted and the shield occupied a nearly radial position to the cop.

The shield or plate D is provided at the lower edge of its outer face with a bead d^5. This bead allows the feeler to come suddenly in contact with the nearly exhausted cop at the proper time. As the filling becomes exhausted the feeler strikes against the outer face of the bead which is so curved as to be nearly perpendicular to the feeler at the point of contact therewith, so that the plate offers a greater resistance to the penetration of the feeler into the shuttle, until the necessary reduction of the diameter of the cop has taken place and then the contact of the feeler suddenly raises the shield D above the horizontal plane of the axis of the cop-holder and allows the feeler to come in contact with the cop. The effect of the bead is therefore to render the operation more exact and positive.

I claim as my invention:—

1. The combination of a shuttle-body provided with an opening to admit a feeler and a shield normally closing said opening and adapted to yield when pressed by said feeler against a cop carried by said shuttle, and normally to prevent the actual contact of said feeler with said cop, but permitting such contact when said cop has been exhausted to a predetermined amount.

2. The combination of a shuttle-body provided with a slot or opening to admit a feeler, a shield or plate pivoted near its upper edge and normally closing said slot by its own gravity, normally to prevent the actual contact of said feeler with a cop carried by said shuttle but permitting such contact when said cop has been exhausted to a predetermined amount.

3. The combination of the shuttle-body having an opening to admit a feeler and a filling shield or plate provided with ears, pivots passing through holes in said ears into the shuttle-body, the hole in one of said ears being oblong to allow said shield to yield in the plane of said shield to become disengaged from a cop carried by said shuttle.

4. The combination of the shuttle-body having an opening to admit a feeler and a filling shield or plate pivoted near its upper edge and normally closing said slot by gravity and adapted to yield when pressed by said feeler against a cop carried by said shuttle, and to prevent the actual contact of said feeler with said cop until said cop has been exhausted to a predetermined extent, said shield having on its outer face near its lower edge a bead curved to be perpendicular with said feeler at the point of contact of said shield and feeler.

In testimony whereof, I have affixed my signature, in presence of two witnesses.

HENRY MURPHY.

Witnesses:
ALBERT M. MOORE,
ALEXANDER T. COLE.