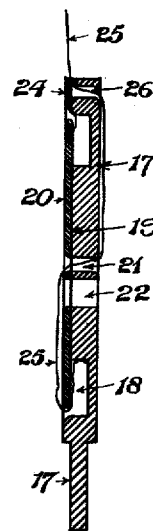
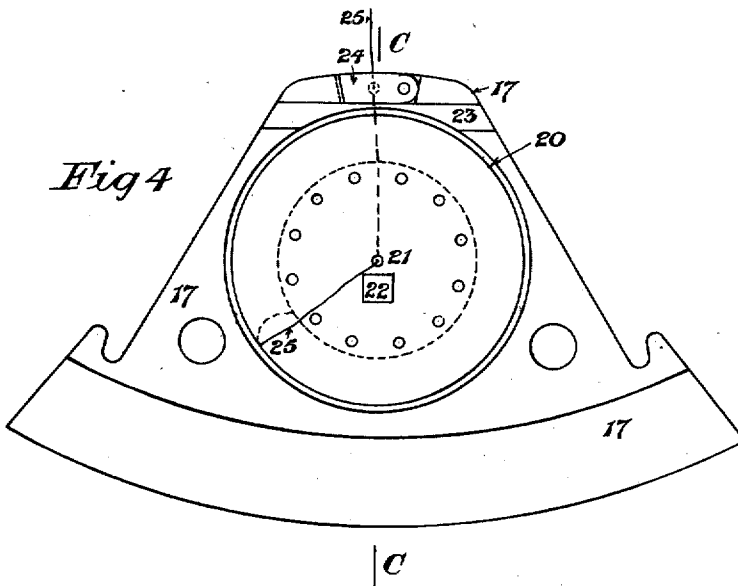
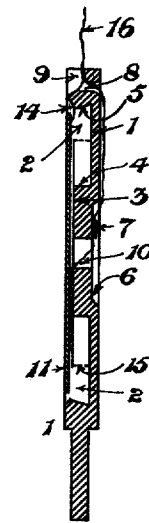
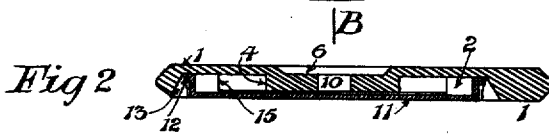
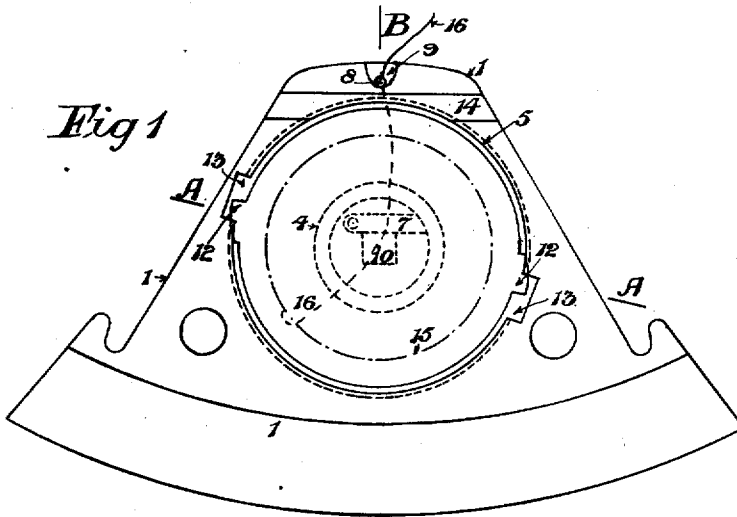


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LACE MACHINE CARRIAGE.
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FRANK CREASSEY, OF NOTTINGHAM, ENGLAND.

LACE-MACHINE CARRIAGE.

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Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, FRANK CREASSEY, a subject of the King of Great Britain, and a resident of the city of Nottingham, in the
5 county of the said city, England, have invented new and useful Improvements in Lace-Machine Carriages, of which the following is a specification.

This invention relates to improved means
10 for carrying bobbin threads in Levers, go through, curtain, and plain net twist lace machines. In these machines there are two sets of threads, one set of which is known as warp, beam, or spool threads, or may
15 be a combination of such threads according to the type of the machine and the character of the work being made. The other set of threads are known as bobbin threads and are moved to and fro between the warp,
20 beam, or spool threads to make the lace. The bobbins are built up of two thin brass disks which are riveted together and are shaped to form a space for the threads, and are mounted to revolve in steel plates which
25 are known as carriages, the shape and size of which are varied according to the type of machine and the bobbins are then rewound, bobbins become empty, the carriages with the empty bobbins are removed from the
30 machine and the bobbins are then rewound, pressed and placed in the carriages which are then returned to the lace machine.

The present invention has for its object the production of a combined carriage and
35 bobbin, or, a carriage provided with a bobbin equivalent which forms part of the carriage, and into which carriage the thread can be wound directly without the use of a spool, bobbin, or other thread carrier, and
40 from which it can be freely taken for use when the carriage is in place in the machine whereby each carriage is enabled to carry a greater length of yarn than is possible with the present form of bobbin and carriage.

45 In the accompanying drawings:—Figure 1. is the front elevation of the improved carriage provided with a loose cover plate to the bobbin equivalent. Fig. 2. is a section on the line A. A. Fig. 1. Fig. 3. is a section on
50 the line B. B. Fig. 1. Fig. 4. is a front elevation of the improved carriage provided with a fixed cover plate to the bobbin equivalent, and Fig. 5. is a section on the line C. C. Fig. 4.

55 The thickness of the ordinary bobbins and carriages, and of the improved carriages

vary from about one thirtieth of an inch to one eighth of an inch and the thicknesses shown in Figs. 2, 3 and 5 are exaggerated in order to show the construction. The car-
60 riages shown in the drawings are of the shape used in Lever's, go-through and curtain lace machines but the invention is equally applicable to carriages used in plain net machines.

65 According to this invention the carriage plate 1 has an annular groove 2 formed in one of its faces and there is a central projection, the face 3 of which is below the face of the carriage. The inner edge 4 of
70 the groove 2 is square while the outer edge 5 is undercut as shown, and there is a square, round, or other shaped hole 10 through the center of the carriage to facilitate the winding of the same and through which the
75 thread can be drawn off again as represented in Figs. 1 and 2 of the drawings. At the back of the carriage there is a recess 6 which is provided with a thread tensioning
80 spring 7, and near the top of the carriage there is the usual thread hole 8 and there is, or may be a groove 9 to enable the thread to be drawn from the center of the thickness of the carriage. The cover plate 11 is made
85 with two or more projecting arms 12 which are bent to rest upon the bottom of the groove 2 as shown in Fig. 2 and thus prevent the cover plate pressing on the face 3 of the central projection. The carriage is
90 cut away at 13 to permit of the arms 12 being passed to the bottom of the groove 2 and the outer edges of the arms 12 are eccentric relatively to the edge 5 of the groove 2 so that by a partial rotation of the plate
95 11 it is locked in position on the carriage. Near the top of the carriage there is or may be a groove 14 which is provided to facilitate the threading of the carriage during the process of winding the same.

100 When the thread is to be wound into a carriage of the kind shown in Figs. 1, 2 and 3 the cover plate 11 is removed, the carriage is placed on a spindle and a rigid winding plate is held in close contact with the face 3.
105 The face of this winding plate may be perfectly flat or the outer edge of the plate may be beveled to facilitate the insertion of the thread and when so beveled the groove 14 in the carriage may be dispensed with. The end of the thread is introduced by hand
110 through the groove 14 or beveled edge of the winding plate and after winding, the wind-

ing plate is removed and the thread is dealt with by pressing or otherwise as may be deemed necessary. The thread 16 from the outer rings, represented by the circle 15, is passed to the back of the carriage through the hole 10, under the spring 7 and through the thread hole 8. The cover 11 can then be fixed in position and the carriage is ready for being placed in the machine, but in the coarser gages, in which the depth of the annular groove is greater in comparison with the thickness of the carriage than in the finer gages, the improved carriage with its bobbin equivalent may be used without a cover plate.

In the carriage shown in Figs. 4 and 5 the plate 17 is provided with an annular groove 18 both edges of which may be square and the face 19 of the central projection is below the face of the plate 17 so that the outer face of the cover plate 20, when riveted to the central projection, is level with the face of the plate 17. There is a circular thread hole 21 in the center of the carriage which may be large enough to receive the winding spindle or there may be a separate winding hole 22. This carriage is provided with a groove 23 to facilitate the insertion of the thread and with a thread tensioning spring 24 near the top of the carriage. After the carriage has been wound, the thread 25 is drawn over the edge of the cover plate and passed through the hole 21 to the back of the carriage and then through another hole 26 and under the spring 24.

In the carriages herein described the edges and parts with which the thread may come into contact are suitably rounded or beveled, and the edges and other parts of the carriages are finished in the same way as the corresponding parts of an ordinary carriage.

It will be seen by reference to the drawings that in both forms of the invention there is a carriage with a recess open on one face, in the center of which recess is located a projection, or stud, and the opening to which recess is annular, whereby the thread can be wound directly into the carriage, by its rotation, it being provided with a recess or aperture by means of which it may be supported upon a rotating spindle.

In the form of the invention represented in Figs. 1 to 3, the annular opening to the thread recess is of the full superficial size of the recess itself. This opening is temporarily closed after the carriage has been filled and is placed in the lace machine by the removable cover plate 11, it being un-

necessary to preserve the full annular opening to the recess when the thread is drawn from the center in the manner indicated in the drawings.

In the form of the invention illustrated in Figs. 4 and 5 where the cover plate is permanently secured in place, the complete annular opening to the recess is maintained as indicated in Fig. 4 so that the thread may be freely wound directly into the carriage and as freely taken off when the carriage is in the machine.

I claim:—

1. A lace machine carriage formed with an open face recess at the center of which is a projection and the opening to which is of complete annular shape, the carriage being formed with an opening in proximity to the center of the said recess by which the carriage may be supported upon a rotating spindle, substantially as described.

2. A lace machine carriage formed with an open face recess at the center of which is a projecting stud and the opening to which recess is of complete annular shape, whereby yarn may be directly wound in the said recess, and a removable cover plate for closing the open face of the recess after the yarn has been wound in the carriage, said cover plate being flanged at its edges and arranged to rest upon the bottom of the recess whereby it sets away from the face of the said central projection, substantially as described.

3. A lace machine carriage formed on one face with an open recess, at the center of which is a projecting stud and the opening to which is of complete annular shape, the carriage being formed with a central opening through the said projection, and a removable cover plate for closing the open face of the recess after the yarn has been wound therein, and a thread tension spring carried by the carriage, substantially as described.

4. A lace machine carriage formed with an open front recess at the center of which is a projection and the opening to which is of complete annular shape, the carriage being formed with an opening extending transversely through it in proximity to the center of the said recess and with a back recess located in proximity to the end of the said central opening through the carriage, and a thread tension spring seated in the said back recess, substantially as described.

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Witnesses:

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