

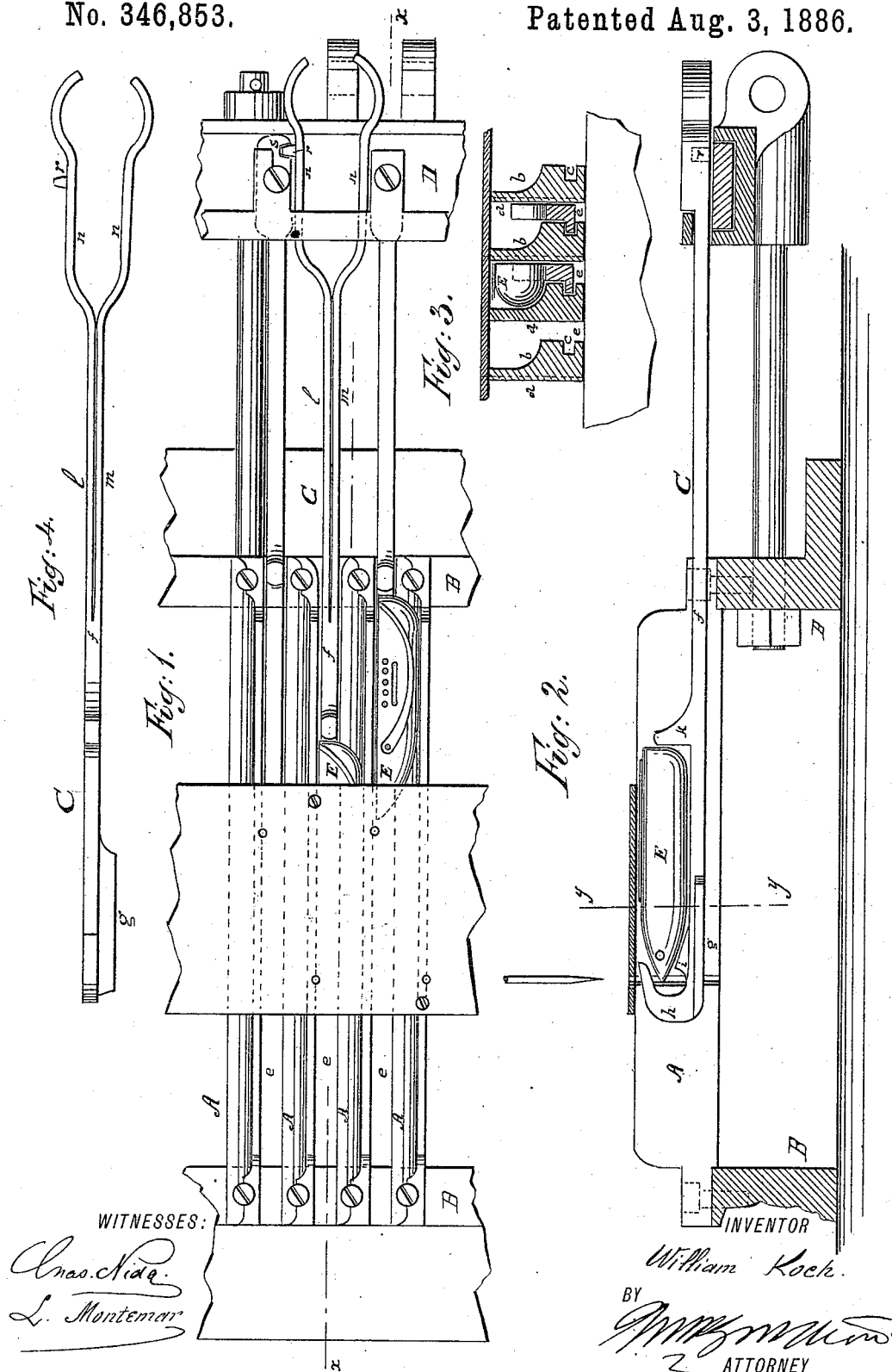
(No Model.)

W. KOCH.

SHUTTLE CARRIER AND RACE MECHANISM.

No. 346,853.

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UNITED STATES PATENT OFFICE.

WILLIAM KOCH, OF NEW YORK, N. Y.

SHUTTLE CARRIER AND RACE MECHANISM.

SPECIFICATION forming part of Letters Patent No. 346,853, dated August 3, 1886.

Application filed September 7, 1885. Serial No. 176,373. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM KOCH, a citizen of the United States, residing at the city of New York, in the county and State of New York, have invented a new and useful Improvement in Shuttle Carriers and Races, of which the following is a specification.

My invention relates to improvements in the shuttle mechanism of sewing and quilting machines. In my original application, Serial No. 119,177, filed January 30, 1884, and in my Patent No. 323,584, dated August 4, 1885, and filed May 20, 1885, during the pendency of my parent application first named, I have shown, but not claimed, certain features which I now desire to patent, and which form the subject-matter of invention herein.

The object of my invention is, first, to make the shuttle-race so that a certain and positive reciprocating motion may be imparted to the shuttles; second, to construct the shuttle-carrier in a manner that will permit the removal of the shuttle without disturbing the cloth-plate, or the removal of one of a series of shuttles without disturbing the other shuttles of a series; third, enabling the operator to examine at once all the shuttles and shuttle mechanism for the purpose of adjustment, threading, or otherwise; fourth, to facilitate the prompt removal of the shuttle-carrier from the race, or the shuttle from the carrier, all in the manner and for the purpose hereinafter with particularity set forth and claimed.

In the accompanying sheet of drawings, Figure 1 is a plan view of shuttle, race, carrier, &c. Fig. 2 is a section of same in the line *x x*, Fig. 1. Fig. 3 is a cross-section of same in line *y y*, Fig. 2, showing the shuttle in end elevation. Fig. 4 is a plan view of spring shuttle-carrier detached.

Similar letters of reference indicate like parts in the several figures.

The purpose of this invention, primarily, is to obviate the well-known difficulties found to exist in shuttle-operating mechanism as it at present exists, particularly when a series of shuttles are employed with a series of needles arranged in two or more rows, as in a quilting-machine; and to this end I first construct each section A of the race of any convenient length, width, and breadth, with one

of its sides, *a*, plane or flat, and its other side, *b*, curved to about the same radius as is the curvature of the back of the shuttle. In the base of each of the sections A, and extending throughout its length, is formed a rabbet or groove, *c*. Each section is provided on its flat side *a* with a channel for the thread. (See dotted lines, Fig. 3.)

The sections, constructed substantially as described, are secured to suitable brackets, B, with a space, *e*, between adjacent sections, so that each section will be parallel with the other, and so that the curved side *b* of each section will face the flat side *a* of its neighboring section. It being understood that the brackets B are fixed to that part of the sewing or quilting machine that will make the shuttles and their mechanism effective, I will proceed to describe the shuttle-carrier C, which consists of a stem, *f*, in form of any suitable cross section, but preferably square, and proportioned to fit into the space or way *e* between the sections A of the race. The length of each carrier should exceed somewhat the length of the sections A. On one side of the stem of the carrier, and near its inner end, is formed a feather or spline, *g*, constructed to fit snugly into the rabbet *c* in the base of the section A. The inner end of the stem of the carrier terminates in a hook, *h*, with an incline, *i*, at its base; also, to the stem of the carrier, and to its upper surface, is fixed a projection, *k*, the distance between projection *k* and hook *h* being about equal to the length of a shuttle. The outer half of the stem *f* of the carrier C is divided into two parts, *l* and *m*, or the stem has these two parts secured to it in any desirable manner, and these parts not only form parts of the stem of the carrier itself, but they also constitute springs which terminate in jaws *n* at the outer end of the stem, (I have designated the hooked end, the inner end, and the end with the jaws, the outer for convenience of reference.) A stud, *r*, may be fixed at one side of the jaw, by means of which the carrier can be locked to the reciprocating block D. When a series of shuttle-carriers are employed, as with a quilting-machine or any gang-needle sewing-machine, instead of providing the stem of the carriers with springs and jaws, as heretofore described, the outer end, or end oppo-

site the hook *h*, may be screwed fast to the block D. In that case, however, the screws must be removed before the carrier can be wholly withdrawn from the race, should that
 5 become necessary. It is best, however, even with that construction, to have some of the carriers made with springs and jaws, as a convenient means for drawing out the entire series of carriers. (See Fig. 1.)
 10 Now, when my shuttle-races and shuttle-carriers are constructed, combined, and arranged substantially as I have in the foregoing described them, the operation is as follows: The shuttle E is placed on the carrier C, with
 15 its base adjacent to the projection *k*, and its pointed end beneath the hook *h* and resting against the incline or bolster *i*, the flat or open side of the shuttle fits against the flat side *a* of the section A, and the curved back of the shuttle is received in the curved surface *b* of the
 20 next adjacent section. A carrier being placed between each two sections, and each carrier containing, in the manner described, a shuttle, the thread from the shuttle is conveyed,
 25 through the usual channel. Now, as is obvious from the foregoing description, when the block D, or a similar or equivalent device, is caused to reciprocate by any well-known
 30 mechanical means—such as cams, cranks, or connecting-rods operated by the driving-shaft of the machine to which the shuttles are attached—a corresponding reciprocating motion
 35 is imparted to the carrier C, which in turn carries the shuttle through the race, the hook *h* and projection *k* being sufficient to confine the shuttle to the carrier, while the plane
 40 or flat surface *a* of one section, A, and the curved surface *b* of the next adjacent section act as guides for the flat or open side of the shuttle and its curved back, respectively.
 45 The spline *g* within the groove *c* prevents any tendency on the part of the carrier to jump up or down, and therefore produces a steady and positive reciprocating movement,
 50 which is so essential to the perfect regular stitching, particularly in quilting or other sewing, where a given design is to be stitched. When it becomes necessary to examine or
 55 remove a shuttle belonging to a needle in a remote row of needles for the purpose of threading it or otherwise, the jaws *n* are pressed together by the thumb and finger of the operator, disengaging the stud *r* on the jaw *n* from
 60 a corresponding notch, *s*, when the carrier C may, with its shuttle, at once be freely withdrawn from the sections A or shuttle-race, and the shuttle instantly removed and as quickly replaced, the entire carrier and shuttle being exposed for examination without removing the cloth-plate of the machine, or without going under the machine or removing any of

its parts, or causing the shuttle to drop from its carrier, as is common with some other shuttle mechanism employed in machines having
 65 two or more rows of needles.

As before stated, if desired, the springs *l* and jaws *n* may be dispensed with, the ends of the carriers in such case being directly secured to the reciprocating block D. In some cases
 70 where a number of carriers are employed—as for a large gang-needle machine—this form of construction will be found convenient. The result obtained is the same as with the spring-carriers, excepting that no single carrier can be
 75 withdrawn entirely from the race without removing the attaching-screws and to some extent disturbing the other carriers.

Having now described my invention, what I claim as new, and desire to secure by Letters Patent, is—
 80

1. In shuttle mechanism for gang-needle sewing or quilting machines, the shuttle-races thereof, consisting of a series of connected sections, A, each constructed with a flat or plane
 85 surface, *a*, on one side and a curved surface, *b*, on the other side, and provided with a groove or rabbet, *c*, in its base, the plane surface of one section forming the flat or vertical wall of the shuttle-race formed by it and the curved
 90 side of the next adjacent section, substantially as and for the purpose described.

2. The series of sections A, each constructed with a flat side, *a*, a curved side, *b*, and the groove or rabbet *c*, with spaces *e* intervening
 95 between said sections, the opposite sides of adjacent sections forming ways for the shuttles, combined with shuttle-carriers C, which are each provided with a hook, *h*, and projection
 100 *k*, to engage and hold a shuttle, and also a spline, *g*, adapted to work in the groove or rabbet of said sections, the said carriers constructed to work in the spaces between adjacent sections, substantially as described.

3. The series of sections A, each constructed with a flat side, *a*, a curved side, *b*, and the
 105 groove or rabbet *c*, with spaces *e* intervening between said sections, the opposite sides of adjacent sections forming ways for the shuttles, combined with shuttle-carriers C, which are
 110 each provided with a hook, *h*, and projection *k*, to engage and hold a shuttle, and also a spline, *g*, adapted to work in the groove or rabbet of said sections, the said carriers constructed to work in the spaces between adjacent sections,
 115 and with a reciprocating block, to which the outer ends or stems of the shuttle-carriers are detachably connected, substantially as described.

WILLIAM KOCH.

Witnesses:

G. M. PLYMPTON,
 L. MONTEMAR.