

(No Model.)

A. BECK.

SHUTTLE DRIVER FOR QUILTING MACHINES.

No. 376,280.

Patented Jan. 10, 1888.

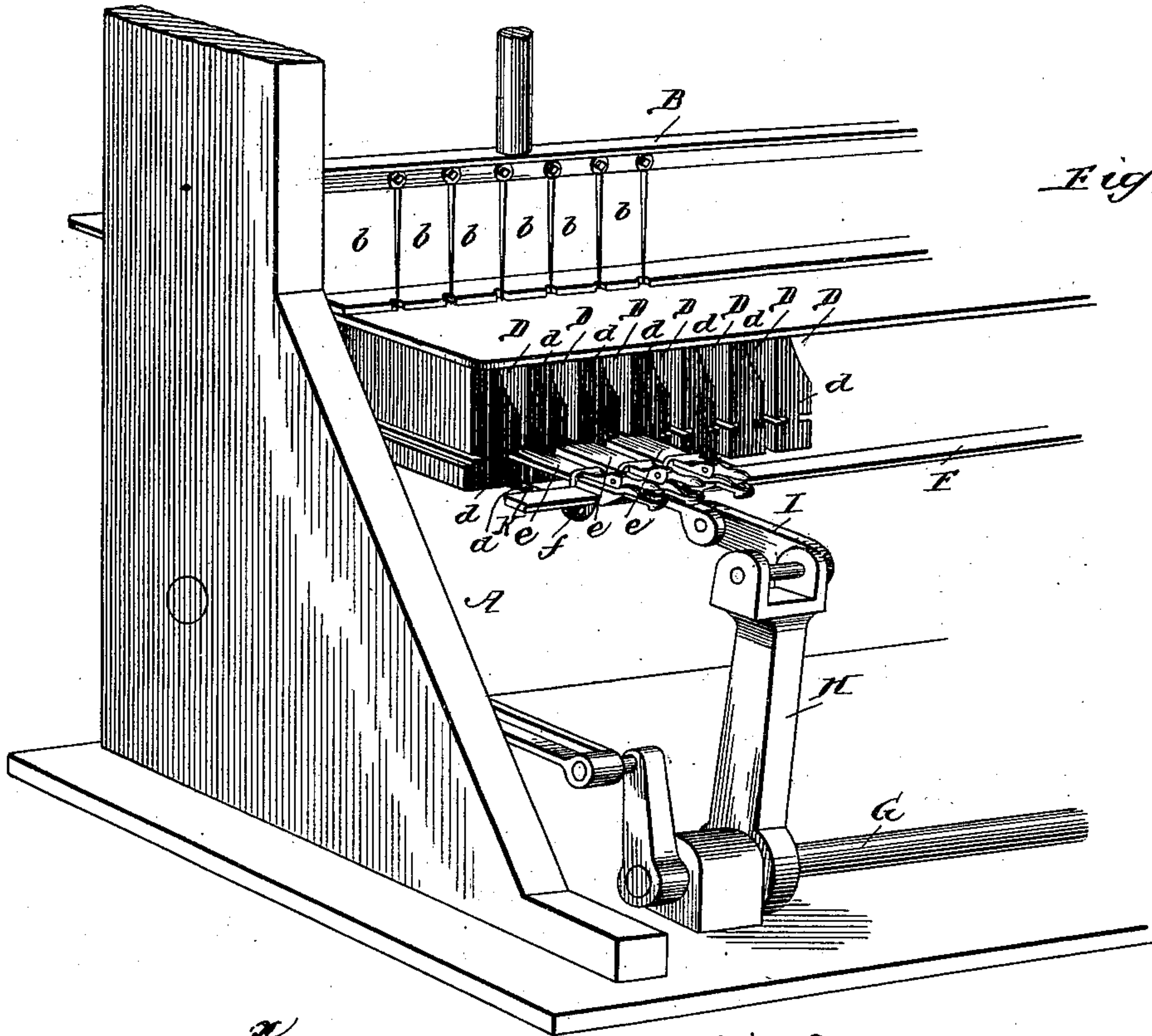


Fig. 1.

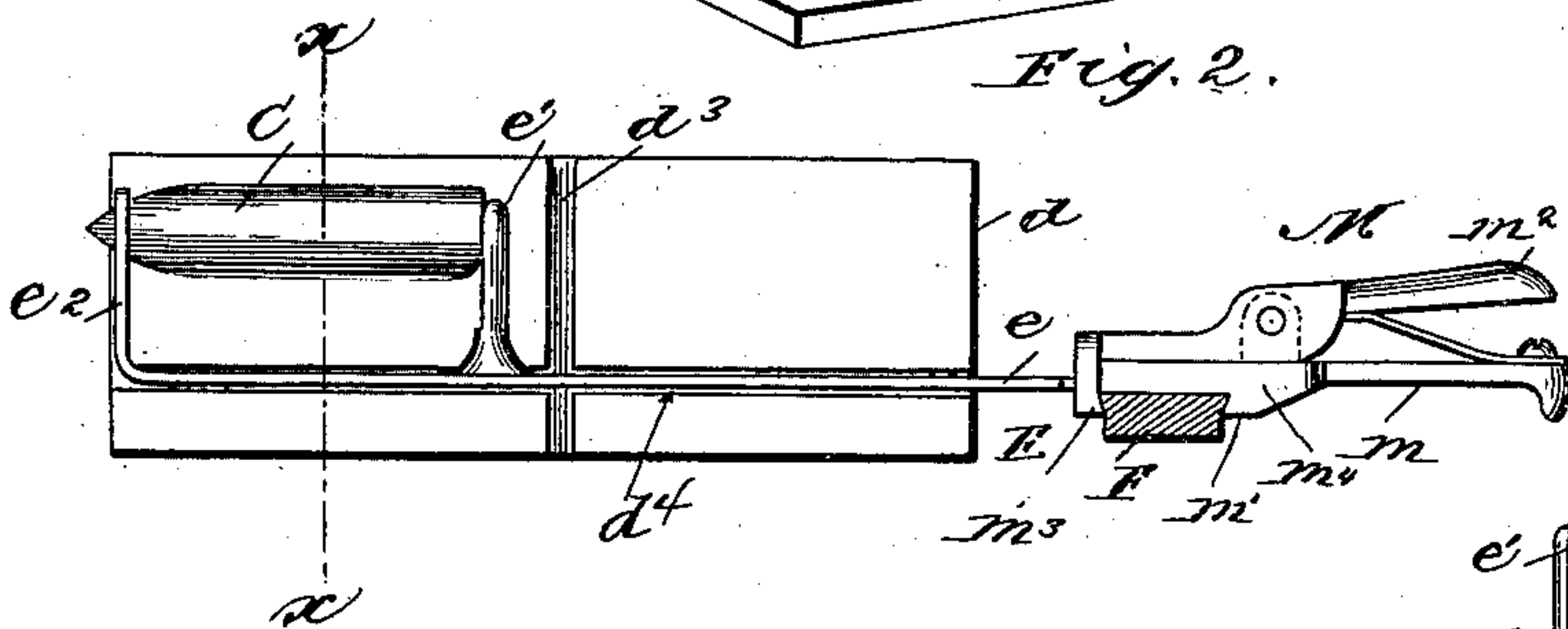


Fig. 2.

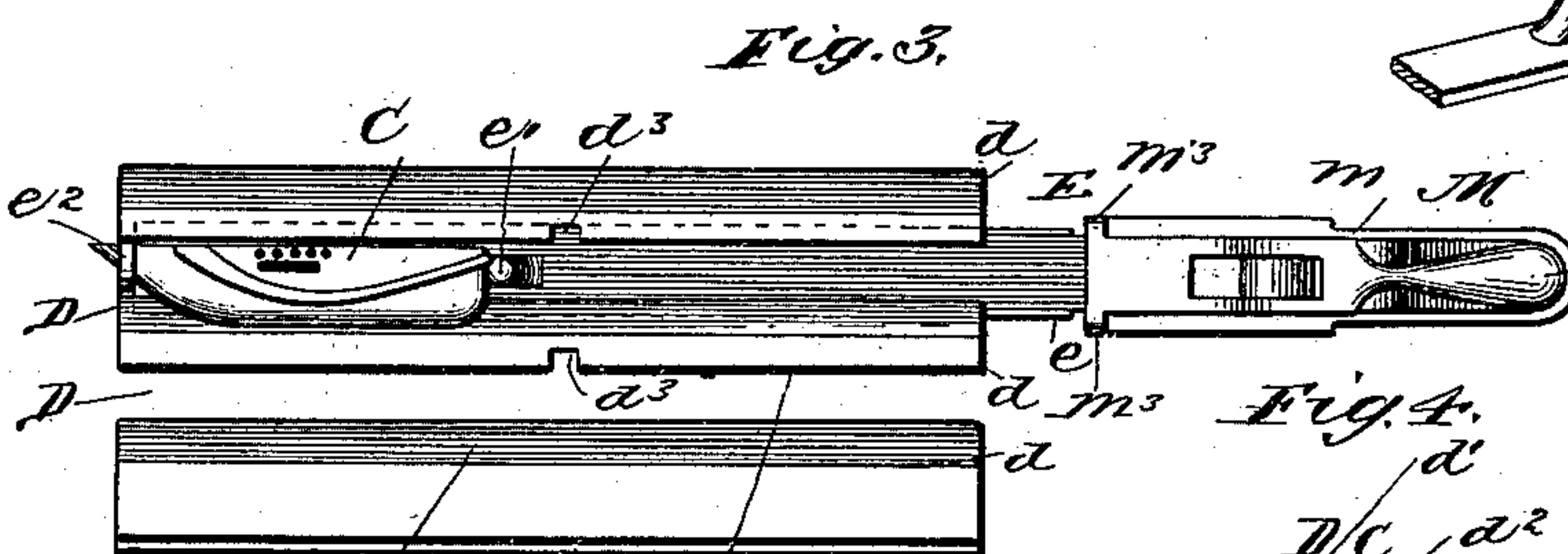


Fig. 3.

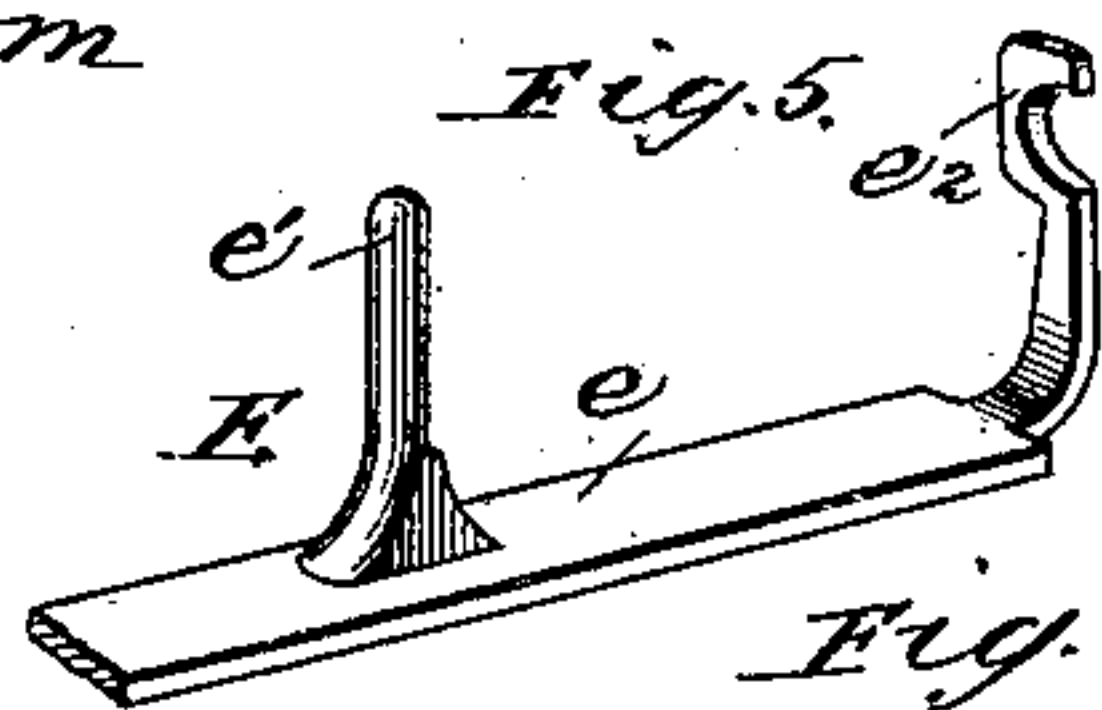


Fig. 5.

Fig. 6.

Witnesses.
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SHUTTLE-DRIVER FOR QUILTING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 376,280, dated January 10, 1888.

Application filed June 6, 1887. Serial No. 240,461. (No model.)

To all whom it may concern:

Be it known that I, AUGUST BECK, a citizen of the United States of America, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Shuttle-Drivers for Quilting-Machines, of which the following is a specification, reference being had therein to the accompanying drawings.

10 This invention relates to an improvement in quilting-machines wherein a horizontally-arranged and vertically-reciprocating needle-bar, provided with a suitable number of depending needles, is disposed for operation over
15 a series of horizontal shuttle-races that are arranged parallel with one another, and the shuttle-drivers for reciprocating the shuttles within the several horizontal shuttle-races extended out from such races and attached to
20 a laterally-reciprocatory horizontal shuttle-driver bar, which is operated for the purpose of reciprocating the several shuttle-drivers.

The objects of my invention are to render the working of the shuttle-drivers free, steady,
25 and true under all circumstances; to provide for the shuttle drivers, bearings formed at both sides of their respectively-allotted shuttle-races, and in a plane below the lowest point reached by the needles upon a downstroke of
30 the needle-bar, thereby avoiding the necessity of narrowing the base portions of the shuttle-drivers to make room for the descending needles, and hence overcoming the objectionable feature of imposing a limitation upon the
35 width of bearings for the shuttle-drivers; to provide for the more ready attachment of the shuttle-drivers to the shuttle-driver bar, and the more ready and convenient detachment of the shuttle-drivers from said bar; to provide
40 for the attachment of the shuttle-drivers to the shuttle-driver bar in a manner whereby, irrespective of any end shift or longitudinal displacement of the shuttle-driver bar, the shuttle-drivers may be attached to said bar at
45 points directly in alignment with their allotted races, and to further provide certain improved and useful details, all tending to the general efficiency of quilting-machines.

50 To the attainment of the foregoing and other useful ends, my invention consists in matters hereinafter described, and particularly pointed out in the claims.

In the drawings, Figure 1 represents in perspective a portion of a quilting-machine embodying my invention, said view including 55 portions of the reciprocatory needle-bar and the reciprocatory shuttle-driver bar, with several of the series of shuttle-races and several of the shuttle-drivers in working condition within the shuttle races and attached to the shuttle-driver bar. Fig. 2 represents one of 60 the sides or side walls of any one of the shuttle-races, and further represents in elevation one of the shuttle-drivers and a shuttle as the same will appear when introduced into 65 the race, of which latter the figure may be said to represent one-half on a vertical plane taken longitudinally through the race. The shuttle-driver bar F is in this figure shown in cross-section. Fig. 3 mainly represents a 70 top plan view of two of the shuttle-races with the shuttle-driver and shuttle introduced into one of said races. This view includes three of the plates or blocks *d*, which may be arranged in series to provide certain interven- 75 ing spaces adapted to serve as shuttle-races, it being understood that these blocks are in practice held together in any suitable way. Fig. 4 represents a transverse section through one of the shuttle-races on a plane indicated 80 by line *x x*, Fig. 2. Fig. 5 is a detail representing in perspective the shuttle-holding end of one of the shuttle-drivers. Fig. 6 is an elevation of the notched end of the movable jaw.

In said drawings, A indicates a portion of 85 the main frame of a quilting-machine wherein the vertically-reciprocating needle-bar B, carrying a series of depending needles, *b*, is arranged above a series of shuttle-races, D.

The several shuttle-races D are parallel with 90 one another, and are adapted to provide a series of horizontal guideways for the shuttles C and their drivers E, one shuttle with its driver being allotted to each shuttle-race.

The shuttle-races may be formed by spaces 95 intervening between the several plates or blocks *d*, which, when employed as herein shown, are to be arranged in series and adapted along their opposing vertical sides to modify the shape of the intermediate spaces in 100 conformity with the required form of shuttle-race. The lower portions of the two sides of each shuttle-race may stand in parallel vertical planes; but to provide a suitable guideway

for the shuttle one of said sides may be grooved or concaved along its upper portion, as at d' , in order to enlarge the upper portion of the space or passage in correspondence with the size and shape of shuttle employed. The side d^2 of each shuttle-race can, however, be formed entirely on a vertical plane, and will be provided with a vertical groove or needle-passage, d^3 , which serves to permit the needle to be brought into co-operative relationship with the shuttle, for the usual purpose.

The shuttle-driver comprises a straight flat bar or narrow plate, e , affording a base whereon the two shuttle-retaining fingers e' and e'' are arranged. The base-plates e of the shuttle-drivers constitute slides, which can be applied to reciprocate in guideways formed along the lower portions of the blocks d . The guideways for the base-plates e of the shuttle-drivers are located to such extent below the guideways for the shuttles as will place them below the possible reach of the needles, whereby upon a downstroke of the needle-bar the needles will not descend to the level of the base-plates of the shuttle-drivers. This arrangement permits the base-plate or base portion e of the shuttle-driver to be made comparatively wide and to have a bearing extending to both sides of the shuttle-race. As a means for thus affording broad bearings for the shuttle-drivers, the space below the shuttle guideway or race proper is of sufficient depth to admit of the horizontal guide-grooves d' being formed in the blocks d on opposite sides of the passage or space and at a point where the base-plate e of the shuttle-driver, when received in such grooves, will lie below the lowest point attainable by the needle.

The fingers e' and e'' , which rise from the base portion e of each shuttle-driver, are of course of a height proportional to the distance to which the said base portion will lie below the guideway for a shuttle, in order that when the shuttle-driver with its allotted shuttle is applied to a race the shuttle may be held within its guideway and between the two fingers, one of which is usually hook-shaped at its upper end to partially embrace the forward end portion of the shuttle, which at its rear or butt end may simply abut against the straight finger e' .

The foregoing-described provision of broad bearings for the shuttle-drivers and the arrangement whereby such bearings may extend along opposite sides of the shuttle-races causes the shuttle-drivers to work steadily and accurately under all circumstances, notwithstanding any irregularity of movement or slight shift of position which might happen to the shuttle-driver bar F , employed for reciprocating the shuttle-drivers.

The shuttle-driver bar F is arranged opposite the line of entrances to the shuttle-recess and is guided so that when operated it may reciprocate laterally to its length. Any suitable means may be employed for guiding the bar F and any suitable mechanism used for

actuating the same—as, for example, as herein shown, the shuttle-driver bar F is reciprocated from a rock-shaft, G , carrying an upright arm, H , that is connected by a link, I , with the shuttle-driver bar—it being understood that the arm and connection between the same and the shuttle-driver bar will in practice be duplicated at the opposite end of the rock-shaft. The shuttle-driver bar can also be guided by suitable guide-pins, one of which, as at K , is shown passing through the eye of a lug, f , on the shuttle-driver bar and secured to the shuttle race bed or frame that is mainly composed of the blocks or pieces d .

As a means for readily attaching the shuttle-drivers to the shuttle-driver bar F , each shuttle-driver is provided with a spring clutch or catch, M , provided with jaws suitable for engaging the shuttle-driver bar. The spring-catch M herein shown comprises a base-plate, m , provided with a fixed jaw, m' , and a spring-controlled lever, m^2 , which is pivoted upon the base-plate m and provided with the movable jaw m^3 . The base-plate m may be formed with the plate e of the shuttle-carrier, but is more desirably made separate from and rigidly secured to such portion of the shuttle-driver, in which case the plate m may be provided with side flanges, m^4 , for embracing the longitudinal side edges of the plate e of the shuttle-driver. With such construction the flanges m^4 can each be provided with a tooth or shoulder, which two teeth or shoulders may be said to conjointly afford the fixed jaw m' . The lever m^2 is pivoted upon the plate m , and at one end is bent down and notched to form the movable jaw, which receives the plate e in its squared notch m^5 , and provides below the plate E a couple of lugs or teeth, serving to afford the movable jaw m^3 . The plate e of the shuttle-driver is beveled along its longitudinal edges, and the jaws are correspondingly beveled, whereby the catch may have a reliable grip upon said plate of the shuttle-driver.

The provision of a catch substantially of the nature of catch M at one end of each shuttle-driver not only permits the ready attachment of the shuttle-drivers to the shuttle-driver bar, but permits their ready removal, it being understood that if screws or the like were used as a means for attaching the shuttle-drivers to the shuttle-driver bar the removal of such screws would be extremely inconvenient, since in the complete quilting-machine certain cloth-rollers will stand in front of the shuttle-races, and hence render the use of a screw-driver a matter of some difficulty. Aside, however, from the feature of applicability and removability, it will be seen that the points at which the catches M engage the shuttle-driver bar F are determined by the shuttle-races, and not by any determinate fixture on the shuttle-driver bar. Thus the catch M may, so far as the bar F is concerned, engage said bar at any point along its length. In this way, should the bar F become shifted longitudinally to any extent whatsoever, such change of position will in

no wise affect the shuttle-drivers, since they can be first introduced into their allowed ways or races and then brought into engagement with the bar F at points directly opposite their
5 respective entrances. This feature insures the free and steady working of the shuttle-drivers and avoids such lateral pull on a shuttle-driver as might cause it to bind in its guideway or race, it being obvious that if it were necessary
10 for a shuttle-race to engage bar F at but one fixed point on the latter any end shift on the part of said bar would tend to destroy the free working of the shuttle-driver, since the plate *e* of the latter would be caused to bind against
15 one or the other of the sides of its allotted guideway to an extent proportional to the end shift of the bar F.

As herein shown, the shuttle-races are desirably covered by a plate, over which the cloth
20 may pass.

Further details of a quilting-machine are omitted, as being well known to those skilled in the art and in nowise necessary to the understanding of my improvement.

25 What I claim as my invention is—

1. In a quilting-machine, the combination, with the shuttle-race having a way for the passage of the shuttle near its top and a way for the shuttle-driver base-plate near its bottom, said ways being connected by a passage for the
30 supports of the shuttle, of the said shuttle, base-plate of the driver, and vertical supports for the shuttle, substantially as and for the purpose described.

2. In a quilting-machine, the combination, 35 with a shuttle-race, D, having ways d^1 for the base-plate of the driver near the base of the race and a way for the shuttle near the top, of the shuttle-driver formed with a base-plate, *e*, having vertical supports e^1 and e^2 for the shut- 40 tle fitted to work on a guideway, substantially as described, the catch at one end of the shuttle-driver, and the shuttle-driver bar F, substantially as set forth.

In testimony whereof I affix my signature in 45 presence of two witnesses.

AUGUST BECK.

Witnesses:

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