

June 30, 1936.

J. B. JACKSON

2,046,292

LOOM SHUTTLE BOX

Filed Dec. 2, 1935

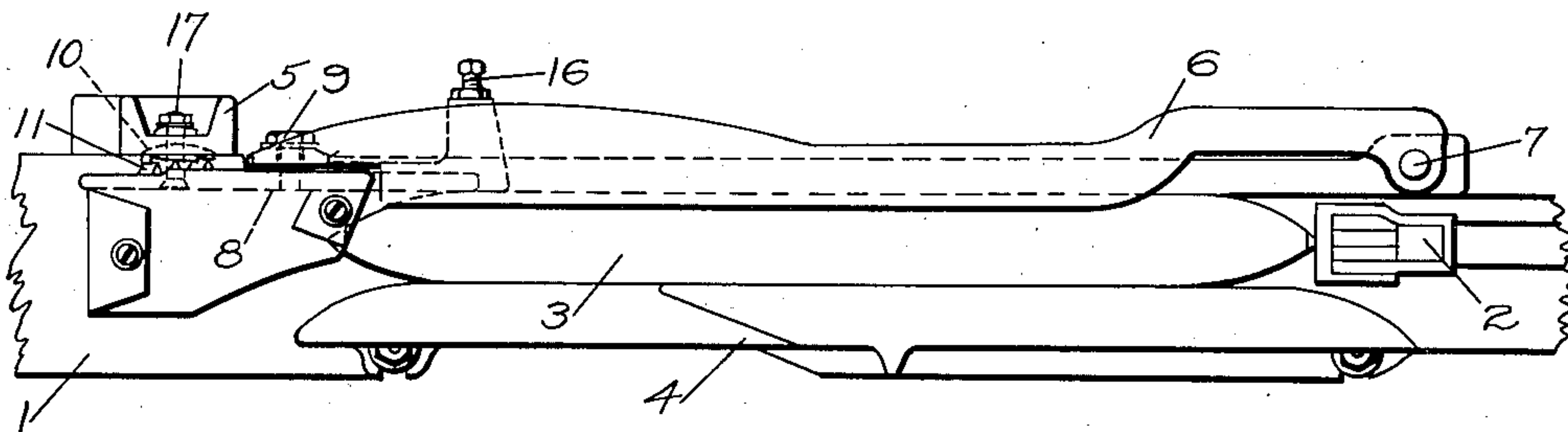


Fig. 1.

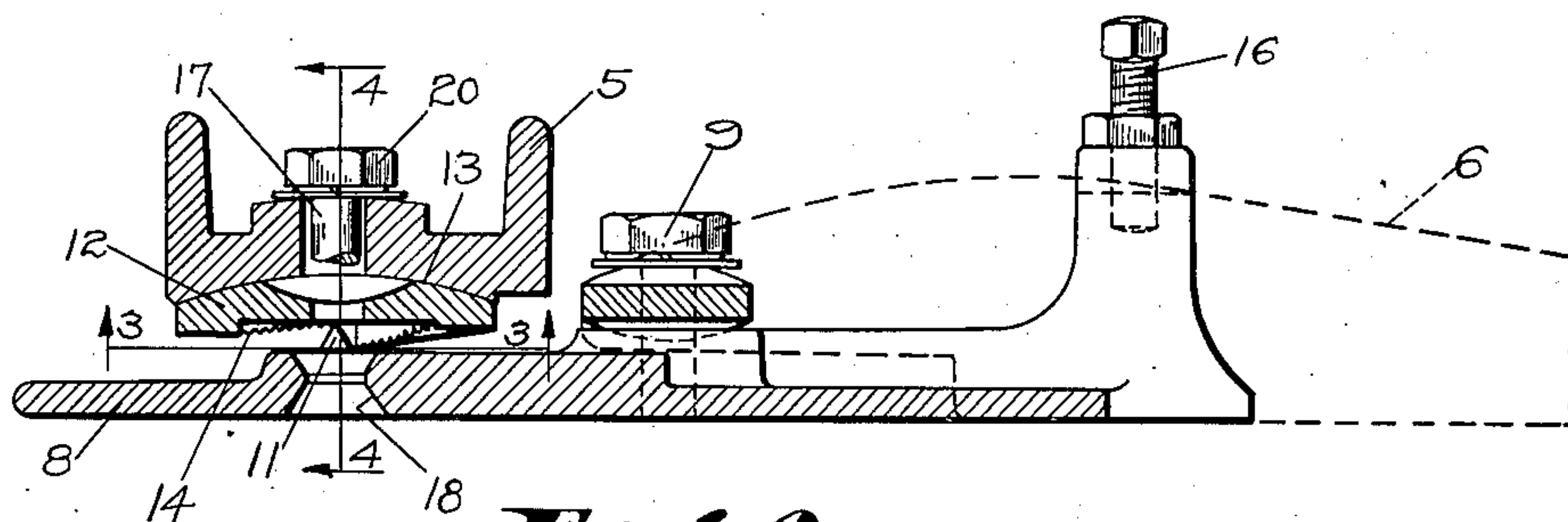


Fig. 2.

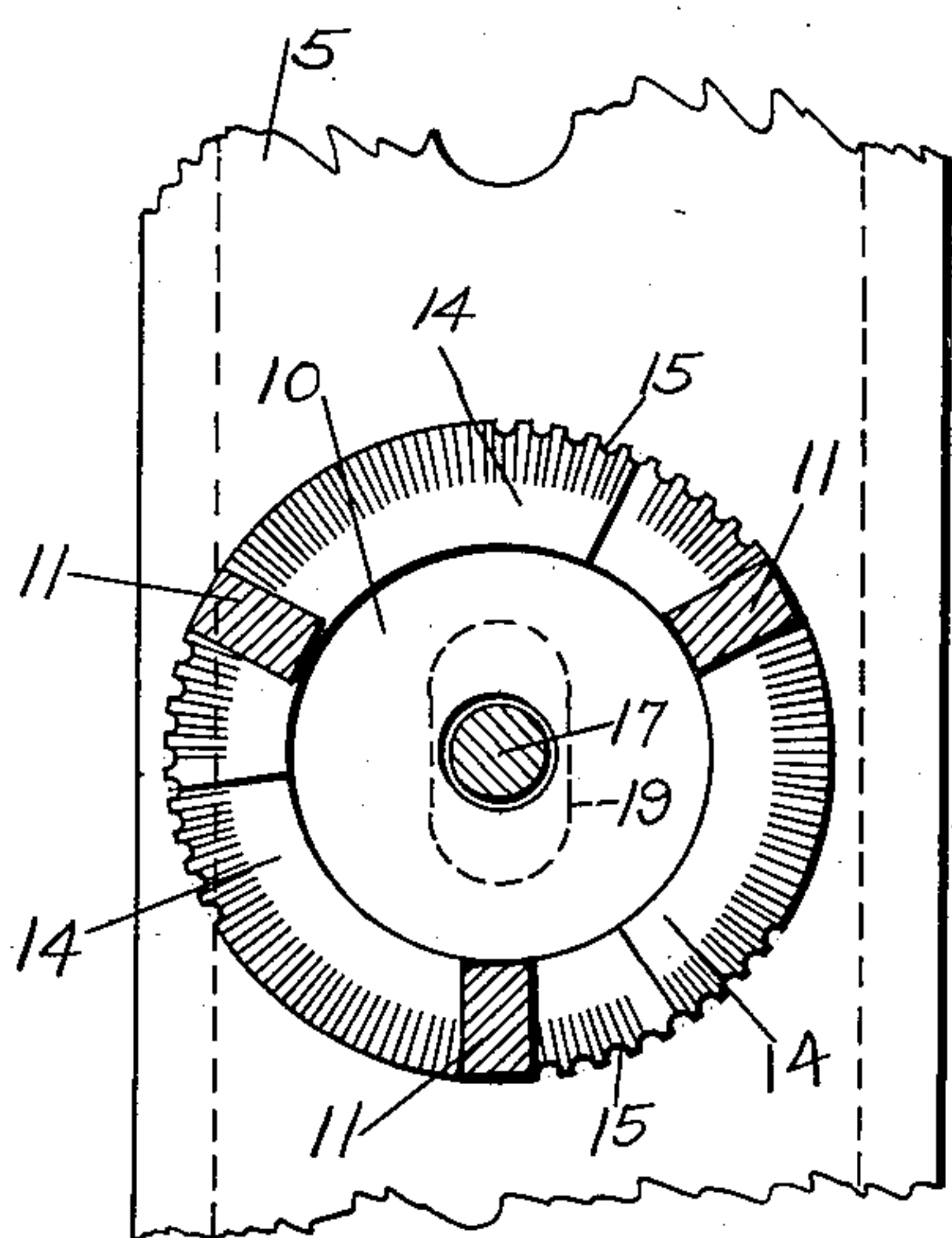


Fig. 3.

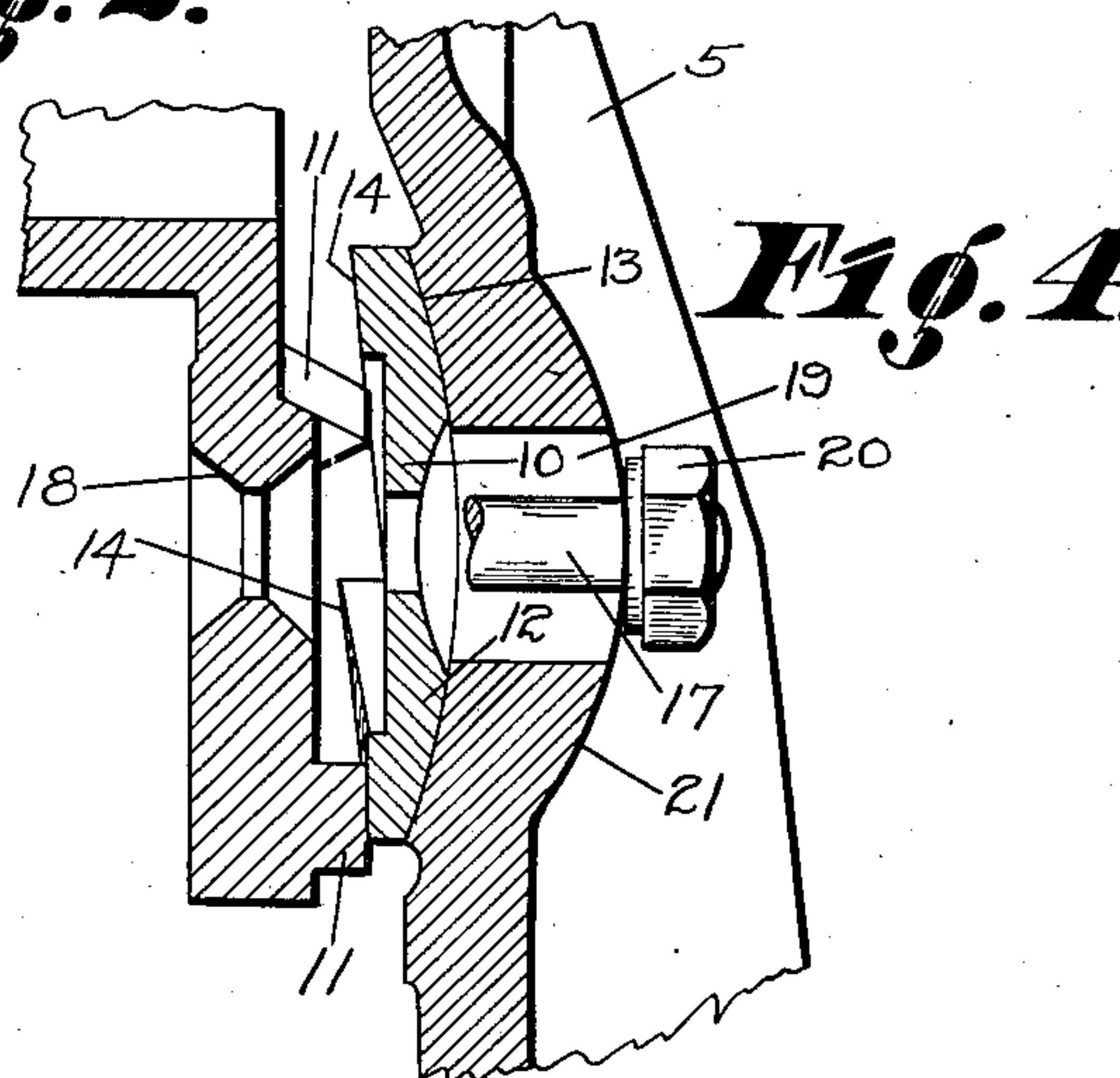


Fig. 4.

INVENTOR.

JOSEPH B. JACKSON.

BY

Claude F. Snider
ATTORNEY.

UNITED STATES PATENT OFFICE

2,046,292

LOOM SHUTTLE BOX

Joseph B. Jackson, Hopedale, Mass., assignor to
Draper Corporation, Hopedale, Mass., a cor-
poration of Maine

Application December 2, 1935, Serial No. 52,490

5 Claims. (Cl. 139—183)

The present invention pertains to looms, and has more particular reference to shuttle box constructions having a back box plate in alignment with a lay-carried reed.

5 Looms of the type mentioned have a reciprocating lay on which is mounted a shuttle box in which a fly shuttle is received. The shuttle box includes a back box plate having a shuttle guiding surface which must be accurately aligned
10 with the reed so as to properly start the shuttle on its flight across the loom. The outer end of the back box plate is usually rigidly fastened to the lay, either the fastening means or the box plate being constructed to provide for proper ad-
15 justment of the shuttle guiding surface. Since the inner end of the box plate is fixed with respect to the lay, being usually fixed to the lay sword, the attaching means for the inner end of the box plate must provide or permit the desired
20 adjustment of the box plate.

There is shown in patent to C. D. Brown, No. 1,971,249, granted Aug. 21, 1934, an attaching means for the above-mentioned purpose which includes a resilient pad positioned between the
25 back box plate and the sword, which pad is deformable to permit the desired adjustment. I propose to provide, in a loom having a lay, lay sword, and back box plate having an adjustable shuttle guiding surface as aforesaid, a single ad-
30 justing element positioned between the sword and box plate which element shall provide for proper adjustment of the box plate but which shall be rigid as distinguished from the resilient pad of the said Brown patent.

35 The specific form of adjusting element at present preferred is constructed so as to be bodily movable about one axis for tilting the shuttle guiding surface, and rotatable about a different axis for moving the shuttle guiding surface for-
40 wardly and rearwardly. Preferably, the element and sword are provided with cooperating curved surfaces accommodating the first mentioned movement, while the element and box plate are provided with other cooperating surfaces for mov-
45 ing the box plate upon rotation of the element.

The said preferred form is shown on the accompanying drawing, of which:

Fig. 1 is a plan view of a lay, shuttle box and other parts of a loom to which the invention has
50 been applied;

Fig. 2 is a horizontal sectional view of certain parts of Fig. 1, this view being to a larger scale;

Fig. 3 is a vertical sectional view taken approximately on line 3—3, Fig. 2, but to a still larger
55 scale; and

Fig. 4 is a vertical sectional view taken approximately on line 4—4, Fig. 2, to the same scale as Fig. 3.

The loom to which my invention has been ap-
plied is generally of conventional construction, 5 except as regards the lay sword, shuttle box and box plate adjusting means, and accordingly only a part thereof is shown on the drawing. Of the conventional parts, the drawing shows the right hand end of the lay 1, a picker stick 2, 10 shuttle 3 and front box plate 4. The lay is mounted on lay swords, as 5, for reciprocation toward and from the front of the loom, which is in a direction downwardly of the sheet of drawing as viewed in Fig. 1. The lay is adapted to 15 carry the usual reed, not shown. The shuttle is picked along the lay, from side to side of the loom, and is guided in its flight by the reed and by a shuttle guiding surface on the back box plate to be more fully described. 20

The shuttle box includes, in addition to the front box plate 4, a back box plate the outer end 6 of which is fixed to the lay as by means of a bolt 7. The back box plate is provided with a shuttle guiding surface 8 which must be accu- 25 rately aligned with the reed, as is well known in the art. The particular box plate shown is constructed of two separate pieces, the outer end or piece 6 being relatively fixed and the inner piece, which carries the shuttle guiding surface, being 30 adjustable. The two pieces may be connected by a universal joint indicated generally at 9 and more fully disclosed in patent to W. I. Stimpson, No. 1,848,674, granted March 8, 1932. The uni- 35 versal joint permits the shuttle guiding surface to be adjusted about different axes, one extending horizontally longitudinally of the lay and shuttle box and the other extending vertically. In other words, the shuttle guiding surface may be tilted about a horizontal axis to bring it into 40 a plane parallel with the reed, and the inner piece having the shuttle guiding surface may be moved bodily forwardly or rearwardly into horizontal alignment with the reed. 45

The inner end of the back box plate is fixed to the lay sword 5 by means which can be manipulated to produce the desired adjustment of the shuttle guiding surface, the box plate being firmly fixed in position after the adjustment is accom- 50 plished. The box plate does not directly contact the lay sword, but is spaced therefrom by an adjusting element 10. This element is constructed to have two separate and distinct movements, one with the box plate and one relative to the box 55

plate, each of which movements produces a different character of adjustment.

One movement of the adjusting element is bodily with the inner piece of the box plate about a horizontal axis extending longitudinally of the lay. To this end, the box plate may be provided with rearwardly projecting lugs 11, 11 which contact the front face of the element. Preferably, the lugs are equally spaced circumferentially of the element to provide a firm three-point contact between the element and back box plate. The element 10 is convex rearwardly, as at 12, to provide a curved surface cooperating with a concave curved surface 13 formed on the sword. Preferably, the surfaces are segments of a sphere, the center of which is slightly forwardly of the shuttle guiding surface. The curved surfaces act, when the adjusting element is raised or lowered, to cause the element to move with the box plate about the aforesaid horizontal axis, which passes through the center of curvature of the surfaces. This movement of the adjusting element produces the above mentioned tilting for adjusting the vertical inclination of the shuttle guiding surface.

The adjusting element 10 may also be rotated, independently of the box plate, about its own horizontal axis which is at a right angle to the lay and shuttle box. The element may be provided with a cam surface comprised of a plurality of inclined surfaces 14, 14 three such surfaces being shown. The surfaces 14 extend circumferentially of the element in proper position to engage the lugs 11, 11. If desired, the surfaces may be serrated, as shown, to prevent rotation of the adjusting element by pressure applied to the box plate. The periphery of the adjusting element may be notched, as at 15, or otherwise suitably formed for engagement by a wrench or other tool. It will be apparent that rotation of the adjusting element about its own axis serves to vary its effective thickness. It is by this means that the inner piece of the back box plate is moved forwardly or rearwardly into horizontal alignment with the reed. This latter movement may be about the point of bolt 16 as an axis.

Suitable fastening means, such as bolt 17, may be provided for fixing the inner end of the box plate in adjusted position. The bolt 17 may have a head (not shown) fitting into a countersink 18 in the box plate, the bolt passing loosely through the adjusting element and a slot 19 in the sword and being provided with a nut 20. The back surface of the sword may be curved as shown at 21, Fig. 4, to better fit the nut and washer in any position which the bolt may assume.

It is believed that the manner of using the above described device and the advantages thereof will be obvious.

Having fully disclosed the preferred embodiment of my invention, I claim:

1. In a loom, the combination of a lay adapted to carry a reed, a lay sword, a shuttle box including a back box plate having a shuttle guiding surface, means securing the outer end of said box plate to the lay, means for adjusting the inner end of said box plate both bodily forwardly and rearwardly and rotatively about a horizontal axis

extending longitudinally of the lay, said means being comprised of a single element movable about one axis for producing said bodily adjustment and about a different axis for producing said rotative adjustment, and means for fixing said box plate in adjusted position.

2. In a loom, the combination of a lay adapted to carry a reed, a lay sword, a shuttle box including a back box plate having a shuttle guiding surface, means securing the outer end of said box plate while permitting adjustment of said shuttle guiding surface, a single element movable bodily with the inner end of said box plate about one horizontal axis for adjusting the vertical inclination of said surface, said element being separately rotatable about a different horizontal axis for adjusting said surface forwardly and rearwardly with respect to the reed, and means for securing said box plate and shuttle guiding surface in adjusted position.

3. In a loom, the combination of a lay, a shuttle box carried by the lay and including a back box plate, said box plate being comprised of outer and inner pieces the latter of which is provided with a shuttle guiding surface, means securing said outer piece with respect to the lay, means adjustably securing said pieces together, a single element moving with said inner member about a horizontal axis which extends longitudinally of the lay to adjust the vertical inclination of said shuttle guiding surface, said element being rotatable independently of said inner member for adjusting the latter forwardly and rearwardly, and means for securing said member in adjusted position.

4. In a loom, the combination of a lay adapted to carry a reed, a lay sword, a shuttle box including a back box plate having a shuttle guiding surface, means for attaching said box plate to the lay while permitting universal adjustment of said shuttle guiding surface relative to the lay, and an adjusting element positioned between said box plate and sword for adjusting both the vertical inclination and horizontal alignment of said shuttle guiding surface relative to the reed, said element and sword being provided with cooperating curved surfaces for effecting the first of said adjustments, and said element being provided with a cam surface for effecting the second of said adjustments upon movement of the element relative to said box plate.

5. In a loom, the combination of a lay adapted to carry a reed, a lay sword, a shuttle box including a back box plate comprised of an outer attaching piece and a relatively adjustable inner piece, said inner piece being provided with a shuttle guiding surface, an adjusting element positioned between said inner member and said sword, said element and sword being provided with cooperating curved surfaces constituting a universal joint, said element being further provided on its front face with a cam surface adapted to move said inner member forwardly or rearwardly upon rotation of the element relative to said inner member, and means for fixing said member and element to the sword in adjusted position.

JOSEPH B. JACKSON.