

J. O. HUFFMAN.
 ROTARY SEWING MACHINE SHUTTLE AND ACCESSORIES.
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931,610.

Patented Aug. 17, 1909.

Fig. 3.

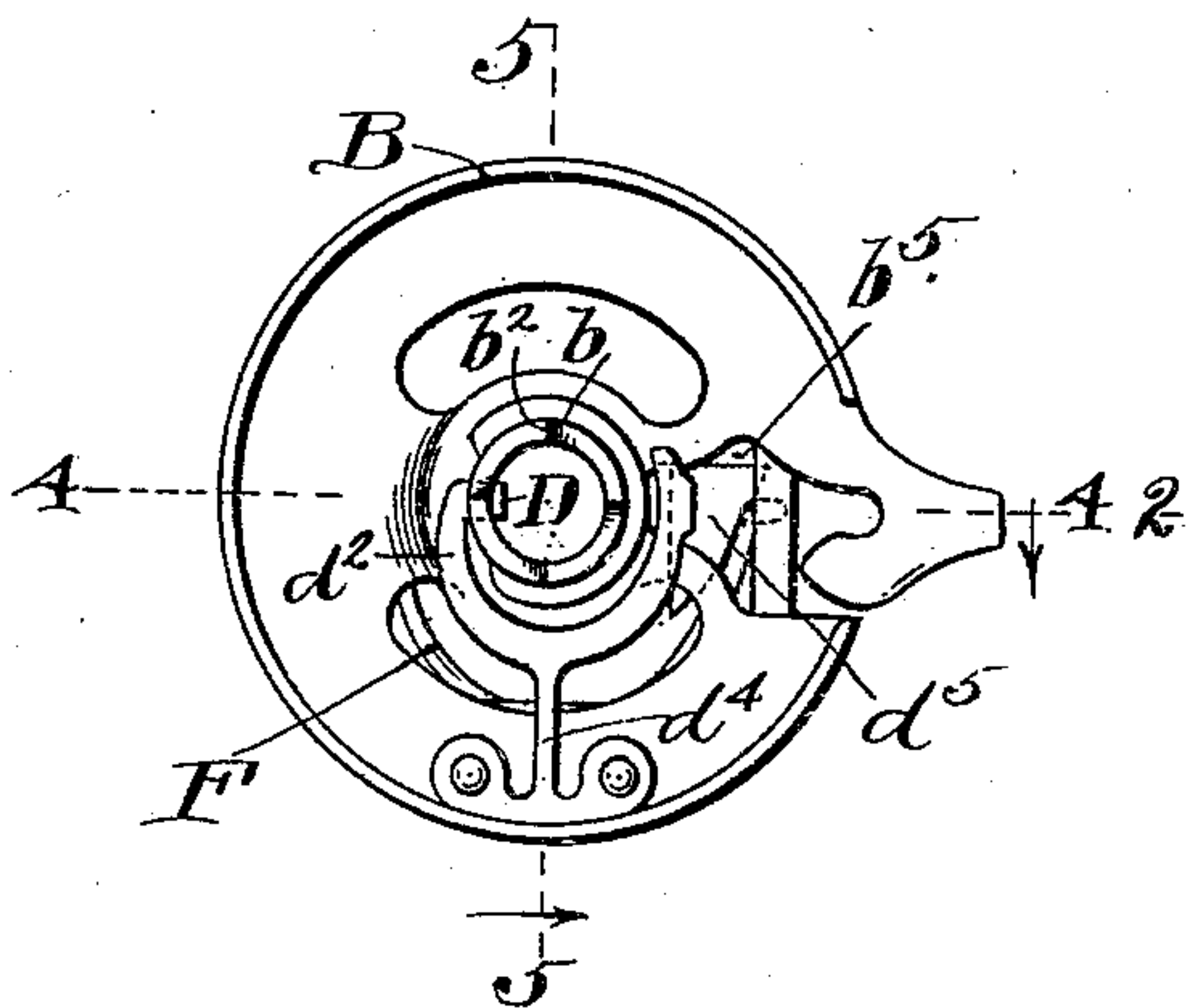


Fig. 1.

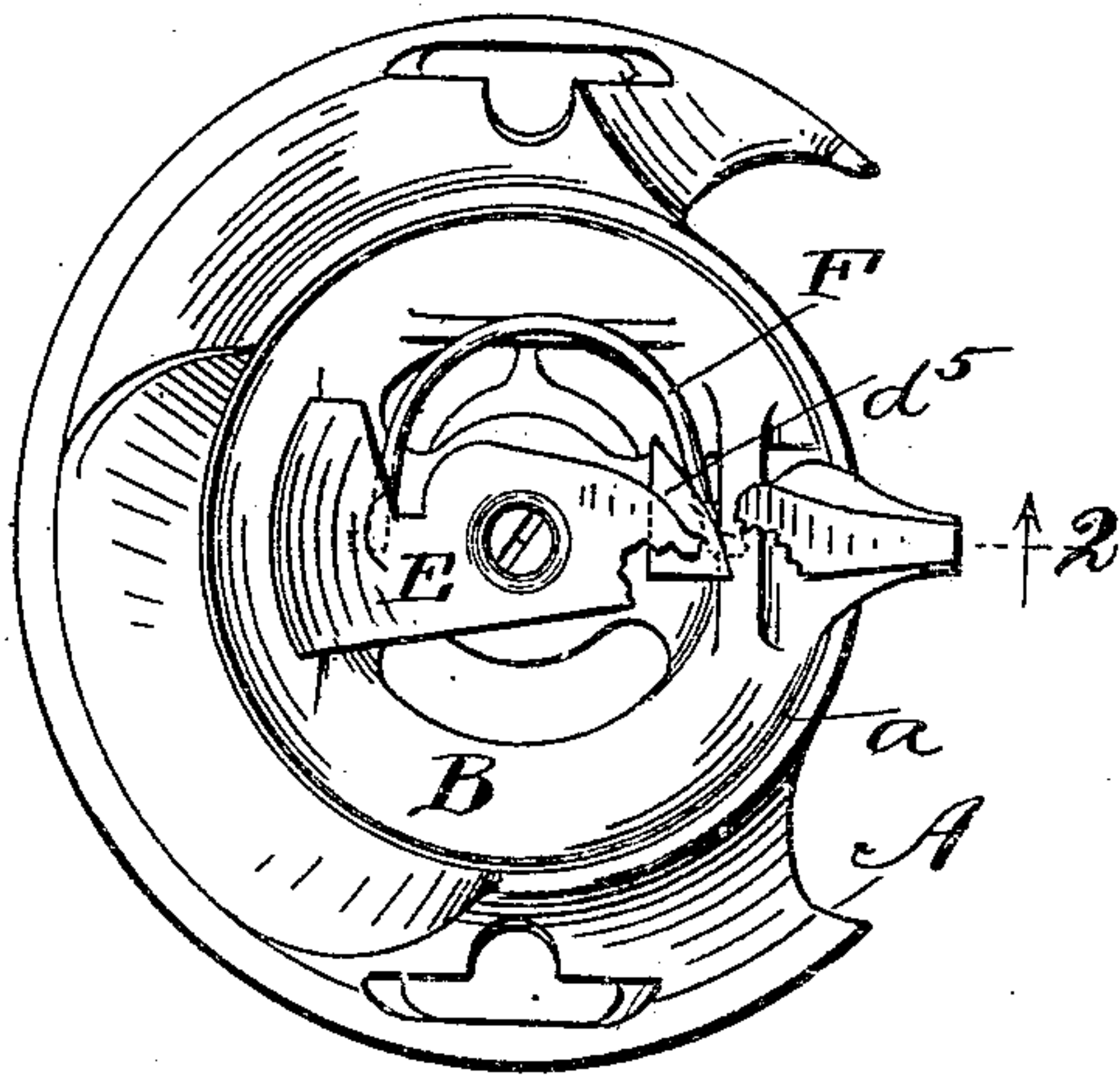


Fig. 4.

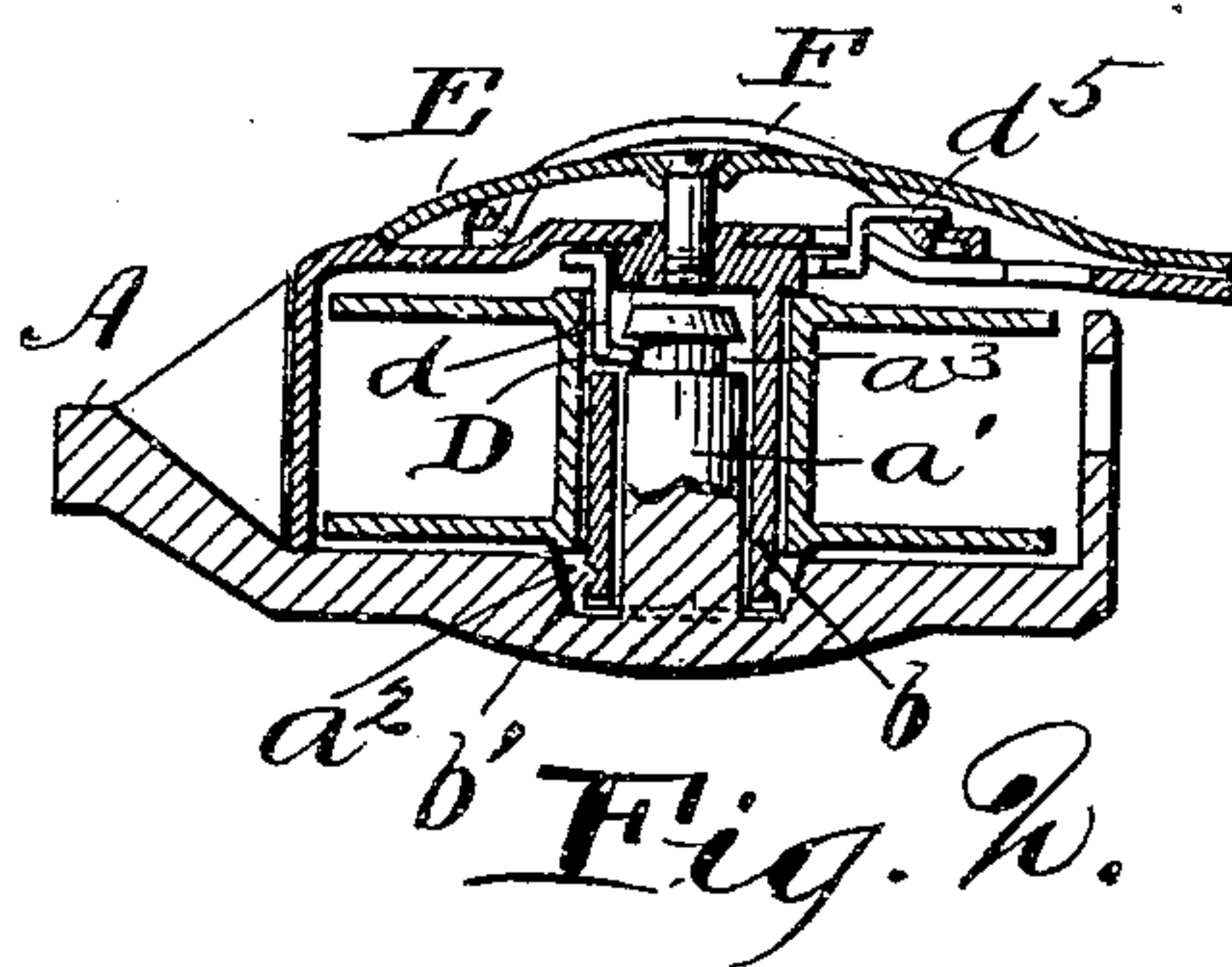
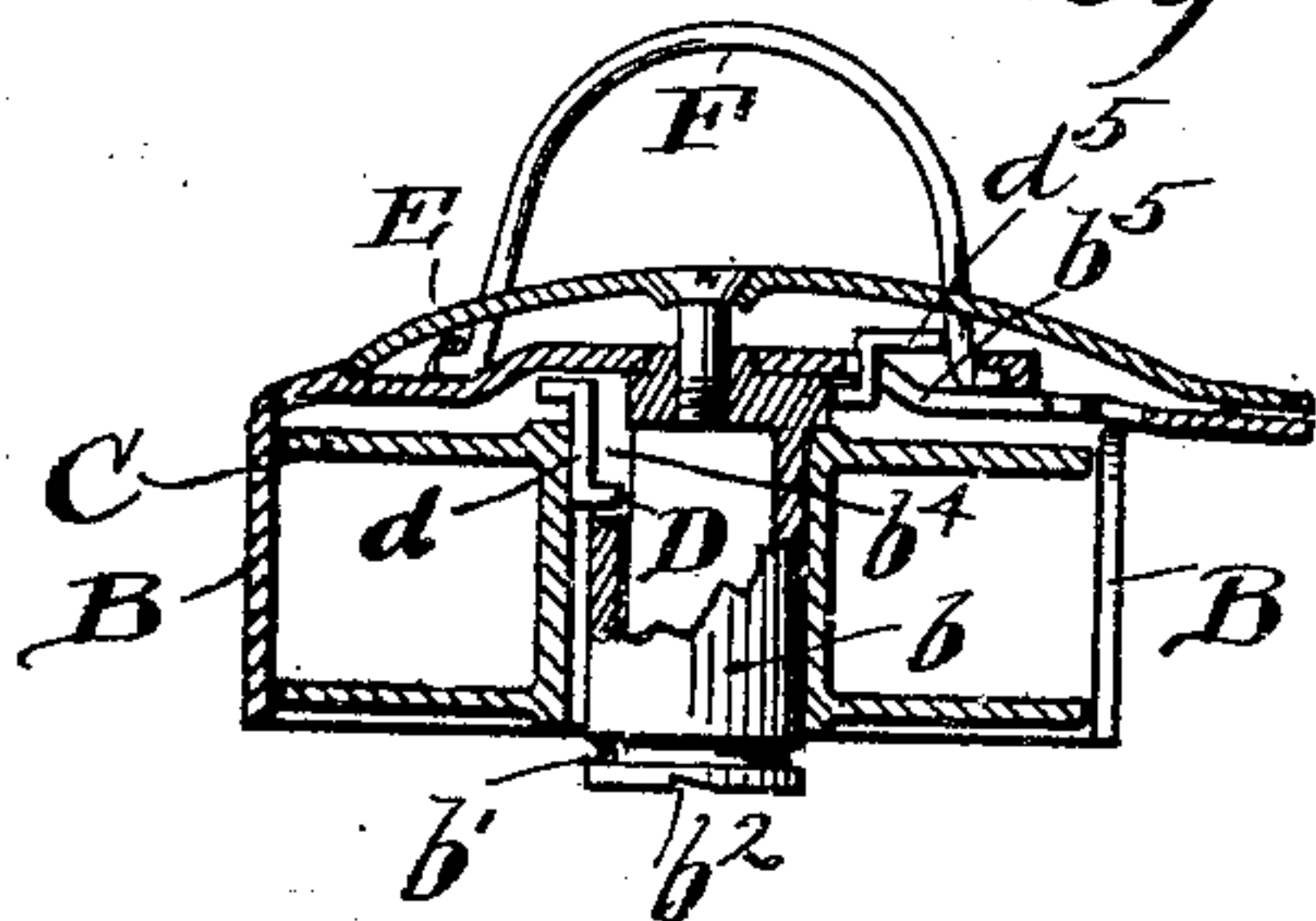


Fig. 5.

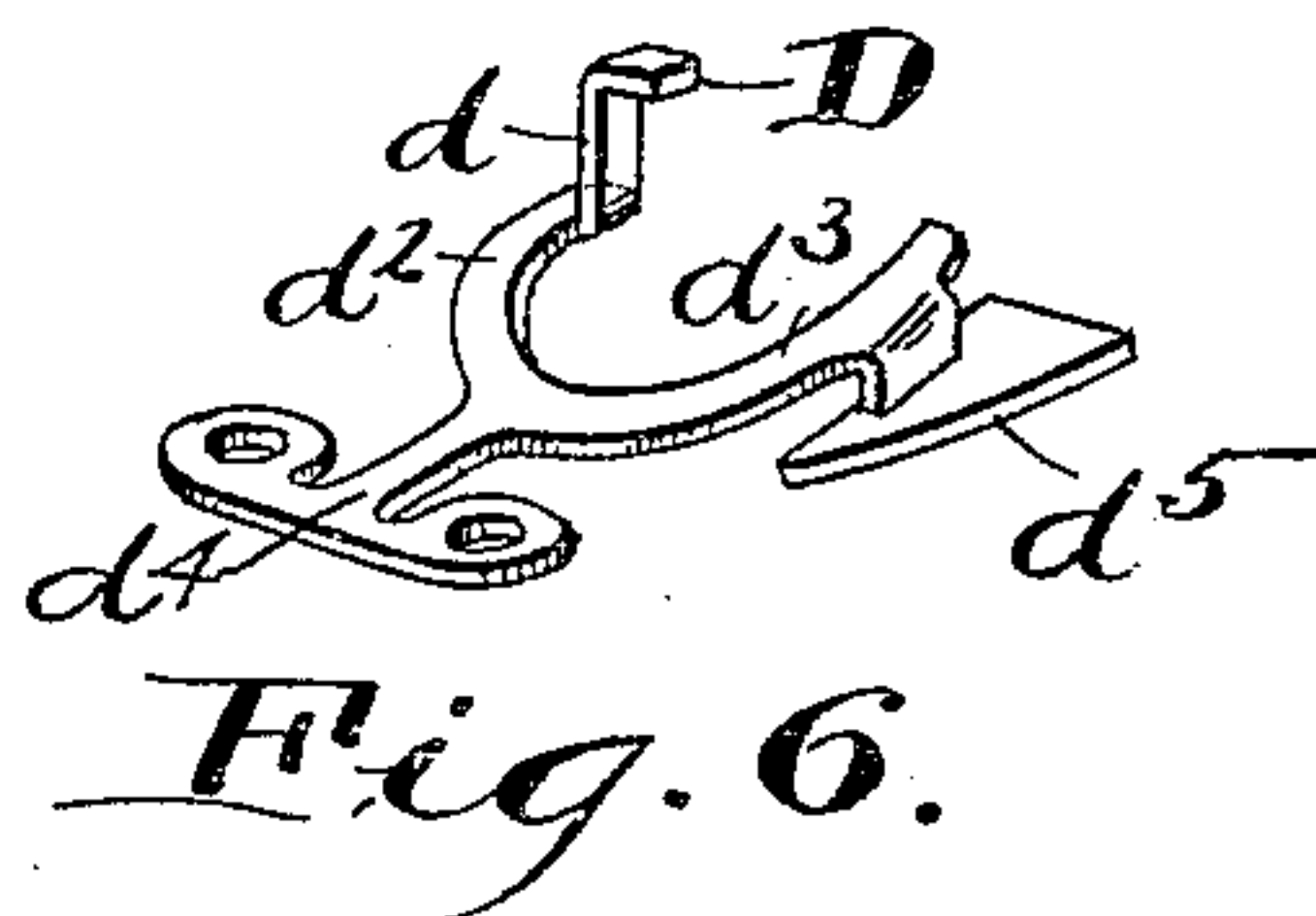
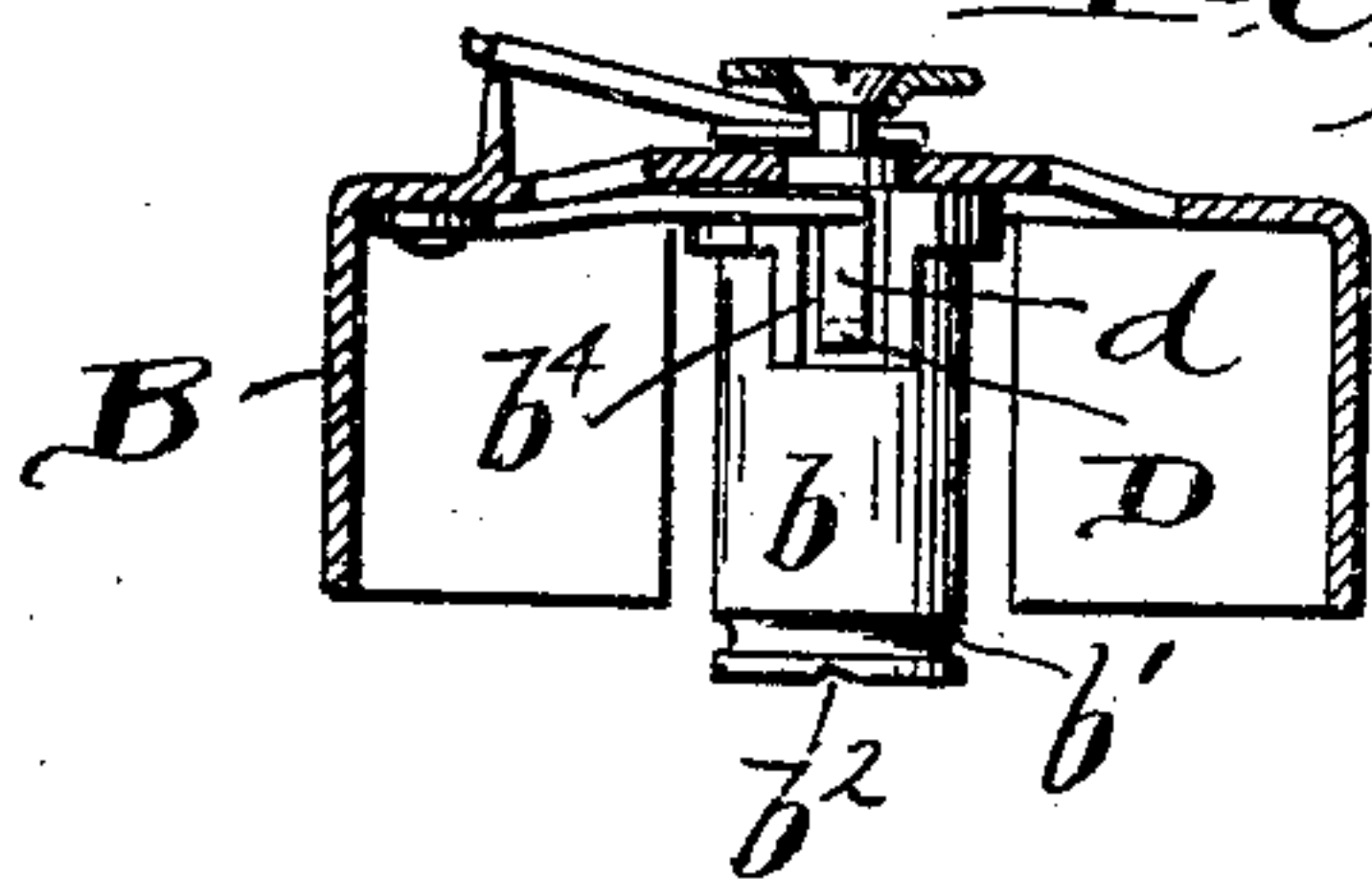


Fig. 6.

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ROTARY SEWING-MACHINE SHUTTLE AND ACCESSORIES.

No. 931,610.

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To all whom it may concern:

Be it known that I, JOHN O. HUFFMAN, a citizen of the United States, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented a certain new and useful Improvement in Rotary Sewing-Machine Shuttles and Accessories, of which the following is a full, clear, and exact description.

10 The upper thread of a rotary sewing machine sometimes gets into the shuttle behind the bobbin case. When it does get into such shuttle as have been used heretofore, it generally gets wrapped about the shuttle pin with very disastrous results. Sometimes 15 this wrapping of thread gets so large that it thrusts the bobbin case outward with force enough to break whatever retaining device is provided for holding it in. Sometimes this wrapping of thread wedges itself 20 into the tubular bobbin case pin, so as to securely fasten it to the shuttle pin and prevent their separation. It is not uncommon to be obliged to cut the bobbin case out 25 of the shuttle for this reason.

Another defect of the rotary shuttle mechanism in use is that when the bobbin case is removed from the shuttle the bobbin will drop out of the case unless great care is 30 taken to hold the case in such position as to make this impossible.

The primary object of the improvements constituting this invention is to correct both of the above noted defects.

35 The invention will be described in connection with the accompanying drawings, in which—

Figure 1 is a front elevation of a shuttle and its adjuncts embodying the present invention. Fig. 2 is a sectional view thereof 40 in the plane indicated by line 2—2 of Fig. 1. Fig. 3 is a rear view of the bobbin case. Fig. 4 is a sectional view thereof in the plane indicated by line 4—4 in Fig. 3 showing the parts in such position that the bobbin is 45 held in the case. Fig. 5 is a transverse sectional view in the plane of line 5—5 on Fig. 3; and Fig. 6 is a perspective view of the spring device carried by the bobbin case.

50 Referring to the parts by letters, A represents the rotary shuttle, B the bobbin case, and C the bobbin. The shuttle has the usual cylindrical recess a for the reception of the bobbin-case, and a centrally placed cylindrical post, or shuttle-pin a' , as it is com-

monly called, which projects forward from the back of the shuttle.

The bobbin-case B has a centrally placed tubular post or bobbin-case pin b , which projects rearward from the front of said case and is adapted to slip with some freedom over the shuttle pin and to be rotatable thereon. In the bottom of the shuttle recess a is an annular groove a^2 around the shuttle pin. The bobbin-case pin projects 65 backward beyond the plane of the open rear edge of the bobbin case, so that this projecting end may enter the annular groove a^2 . On the projecting part of the bobbin-case pin there is an external circumferential 70 groove b' ; and on the end of this pin are several little saw-like teeth b^2 . The described groove b' and the teeth b^2 are not essentials, but they are practically valuable adjuncts, and are among the improvements 75 hereinafter claimed.

If with the described construction, the upper thread gets into the shuttle behind the bobbin case, it will engage with the projecting part of the bobbin-case pin and not with 80 the shuttle pin. If the shuttle be now rotated, this thread is not likely to be wound up, even on the projecting end of the bobbin-case pin, but will generally be broken after one or two revolutions of the shuttle. If, 85 however, this thread is wound up, it will be wound on the bobbin-case pin, and will come out of the shuttle with the bobbin-case when it is removed. If it were not for the groove b' , the thread would more readily 90 slip behind the end of the bobbin-case pin into engagement with the shuttle pin; but when the bobbin-case pin is provided with this groove such action cannot take place. The saw-teeth b^2 serve the useful purpose 95 of cutting out any dirt or lint which may get into the annular recess a^2 .

The shuttle pin is provided, near its end, with a circumferential groove a^3 . This is 100 for the reception of a spring finger D carried by the bobbin-case and projecting through a suitable slot b^4 in the bobbin-case pin. When this finger engages in this groove the bobbin-case will be held in the shuttle, while the latter rotates. This finger D is an 105 integral part of the little arm d , which is about as thick as the wall of the bobbin-case pin, and which normally lies in the slot b^4 in said pin. A suitable spring is provided which acts to hold the finger and arm in 110

such position that the latter does not project outside of the bobbin-case pin, and the former does project inward so as to be able to engage in the groove a^3 on the shuttle pin. The specific spring mechanism shown for operating this arm and finger is believed to be a thoroughly practical form of the required mechanism; but, obviously, is but one of many forms of mechanism which could be employed for the purpose. As shown, the arm d is an integral part of one of two branches d^2 , d^3 , of a spring d^4 which is attached to the inner side of the end of the bobbin case. The other branch d^3 , which lies on the opposite side of the bobbin-case pin, is bent forward so as to pass through a hole b^5 in the end of the bobbin-case, and is provided, outside of said bobbin-case, with a plate d^5 having a cam shaped edge. A lever F is pivoted to the top of the bobbin-case. When this lever lies down against the top of the bobbin case the finger D is in position to engage with the groove a^3 . When the bobbin C is in the bobbin-case and the latter is in the shuttle, the operator, in order to remove the bobbin-case from the shuttle, takes hold of this lever and swings it away from the end of the bobbin-case. In so moving, the lever, by engaging with the cam shaped edge of the plate d^5 , moves the spring structure of which the finger D and arm d are parts, so as to withdraw said finger from the groove a^3 and at the same time forces the arm d outward, so that it presses against the tubular barrel of the bobbin with sufficient force to hold said bobbin in the bobbin-case. This lever in the form shown is a bail, of which one arm, when the bail is swung forward, engages a cam plate E fixed to the front face of the bobbin-case. This engagement impedes the outward swinging of the bail, and therefore the position in which the bail will normally lie is that shown in Figs. 1, 2, 3 and 5, where it is out of engagement with the plate E.

Having described my invention, I claim:

1. The combination of a shuttle having (1) a bobbin-case recess (2) a pin projecting from the back of said recess and (3) an annular groove in the back of the shuttle around said pin, with a bobbin-case having a cylindrical tubular pin adapted to embrace the shuttle pin and of such length as to project into said annular groove.

2. The combination of a shuttle having (1) a bobbin-case recess (2) a pin projecting from the back of said recess and (3) an annular groove in the back of the shuttle around said pin, with a bobbin-case having a cylindrical tubular pin adapted to embrace the shuttle pin and of such length as to project into said annular groove of the shuttle,—the projecting part of said bobbin-case pin having a circumferential groove.

3. The combination of a shuttle having (1) a bobbin-case recess (2) a pin projecting from the back of said recess and (3) an annular groove in the back of the shuttle around said pin, with a bobbin-case having a cylindrical tubular pin adapted to embrace the shuttle pin and of such length as to project into said annular groove of the shuttle,—the end of said bobbin-case pin being provided with cutting teeth.

4. The combination of a shuttle having (1) a bobbin-case recess (2) a pin projecting from the back of said recess and (3) an annular groove in the back of the shuttle around said pin, with a bobbin-case having a cylindrical tubular pin adapted to embrace the shuttle pin and of such length as to project into said annular groove, and means for holding the bobbin-case in the shuttle.

5. The combination of a rotary shuttle having a bobbin-case recess and a pin projecting from the back of said recess, and provided near its outer end with a circumferential groove, with a bobbin-case having a centrally placed cylindrical tubular pin adapted to embrace and rotate upon the shuttle pin and having a slot through its wall adjacent to the annular groove in the shuttle pin, a bobbin having a cylindrical barrel which embraces the bobbin-case pin, a spring actuated arm normally lying in the recess in the bobbin-case pin between the shuttle pin and the barrel of the bobbin, and having a finger which projects into the interior of said pin into engagement with the circumferential groove in the shuttle pin, and means for moving said arm and finger outward so as to free the shuttle pin and force said arm into frictional contact with the cylindrical barrel of said bobbin.

6. The combination of a rotary shuttle having a bobbin case recess and a pin projecting from the back of said recess and provided near its outer end with a circumferential groove, with a bobbin case having a centrally placed cylindrical tubular pin adapted to embrace and rotate upon the shuttle pin, and having a slot through its wall adjacent to the annular groove in the shuttle pin, a bobbin having a cylindrical barrel which embraces the slotted part of the shuttle case pin, a spring actuated arm normally lying in the recess in the bobbin case pin between the shuttle pin and the barrel of the bobbin, and having a finger which projects into the interior of the pin into engagement with the circumferential groove in the shuttle pin, a cam plate connected with said spring arm, and a lever pivoted to the outer end of the bobbin case and adapted to engage with the edge of said cam plate and thereby to move said spring arm outward, and thereby withdraw the finger thereon from the shuttle pin and

force said arm into frictional contact with the cylindrical barrel of said bobbin.

5 7. The combination of a rotary shuttle having a bobbin-case recess and a pin projecting from the back of said recess, said pin being provided near its end with a circumferential groove, with a bobbin-case having a centrally placed slotted cylindrical tubular pin adapted to embrace and rotate upon the
10 shuttle pin, a spring secured to the inner face of the back of the bobbin-case having two branches, one of which is provided with an arm which normally lies in the slot in the bobbin-case pin and is terminated by a
15 finger which projects into the interior of

said pin, the other branch of said spring having a forwardly turned arm which passes through a hole in the end of the bobbin-case and is provided with a beveled surface outside of said case, and a bail piv- 20 oted to the outside of the bobbin-case and adapted to engage with said beveled surface, and a fixed beveled plate with which one arm of said bail engages.

In testimony whereof, I hereunto affix my 25 signature in the presence of two witnesses.

JOHN O. HUFFMAN.

Witnesses:

E. B. GILCHRIST,

H. R. SULLIVAN.