No. 744,397. PATENTED NOV. 17, 1903.

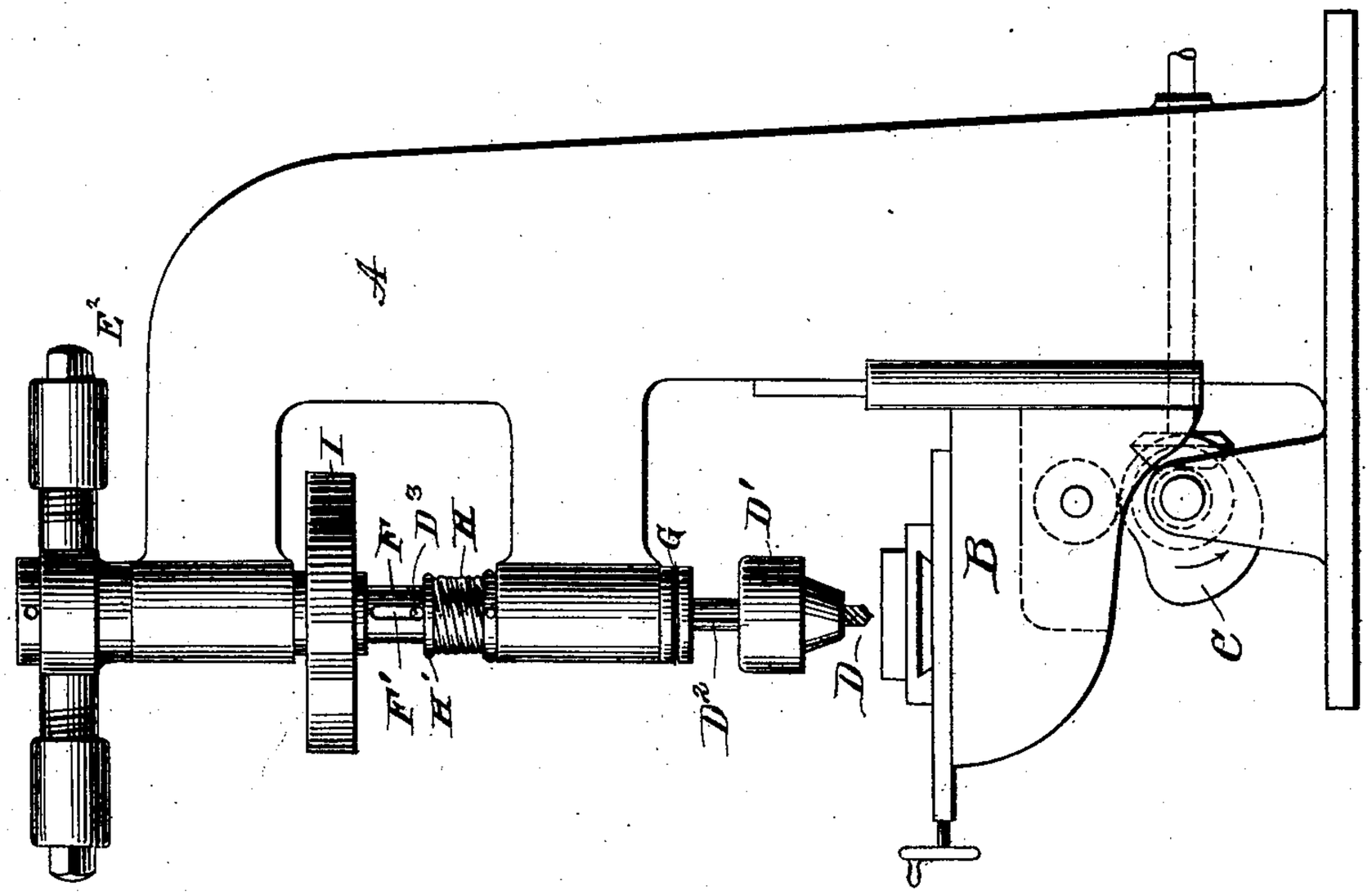
G. B. PICKOP.

DRILLING MACHINE.

APPLICATION FILED FEB. 20, 1902. RENEWED OCT. 6, 1903.

NO MODEL. 2 SHEETS—SHEET 1.

Fig. 1.



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NO MODEL. 2 SHEETS—SHEET 2.

Fig. 4.

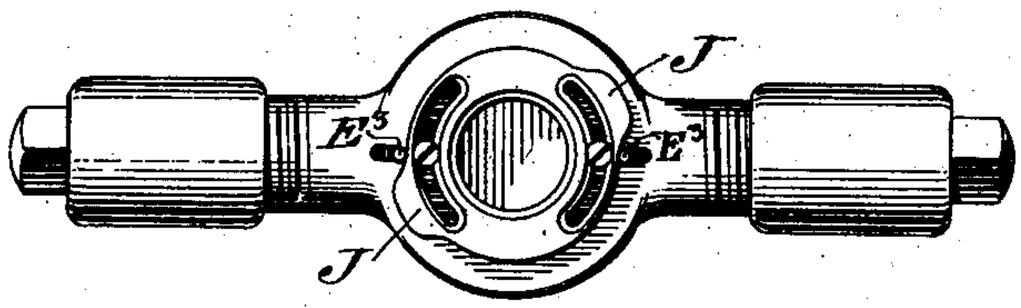

Fig. 2.

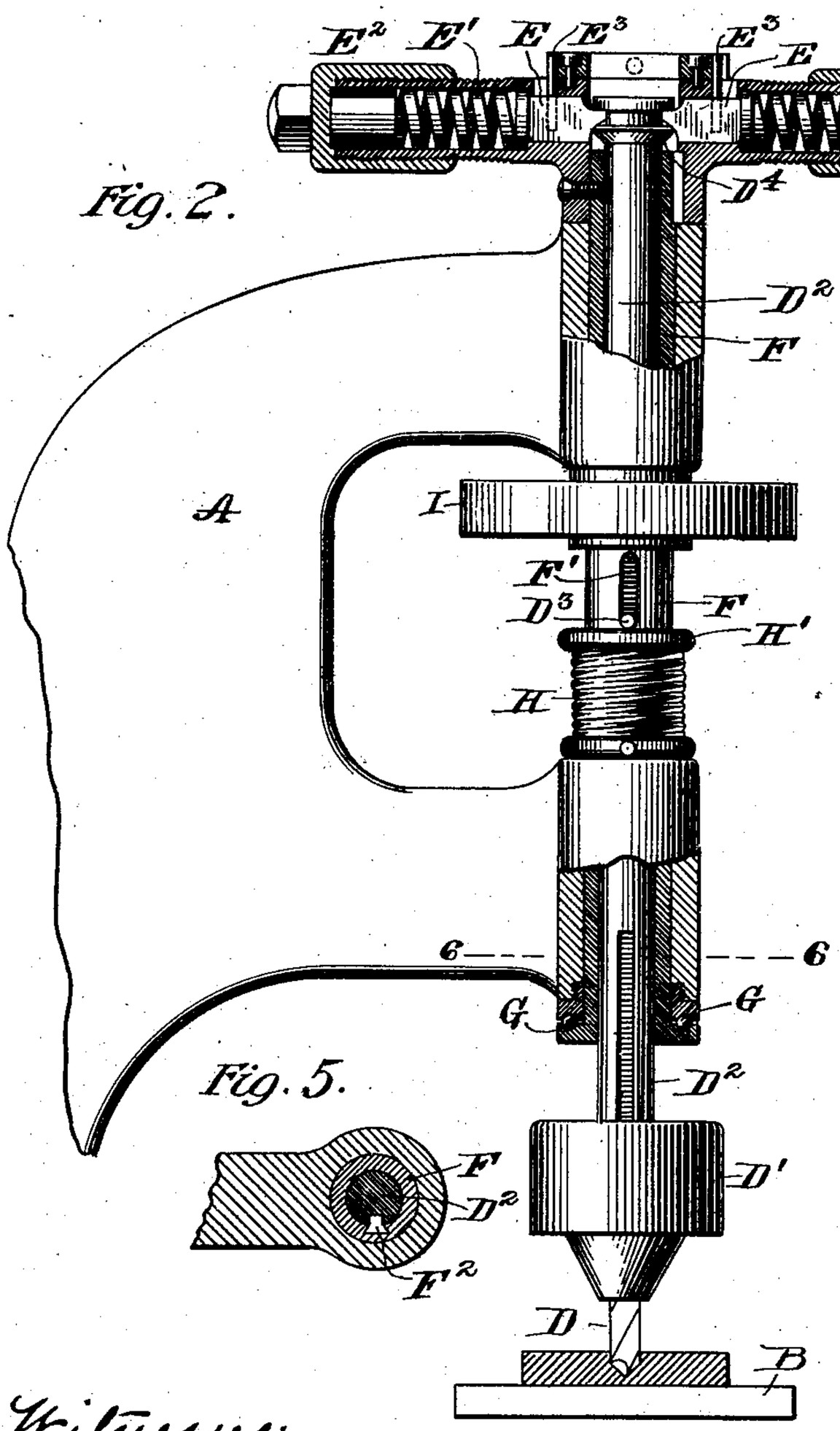

Fig. 3.

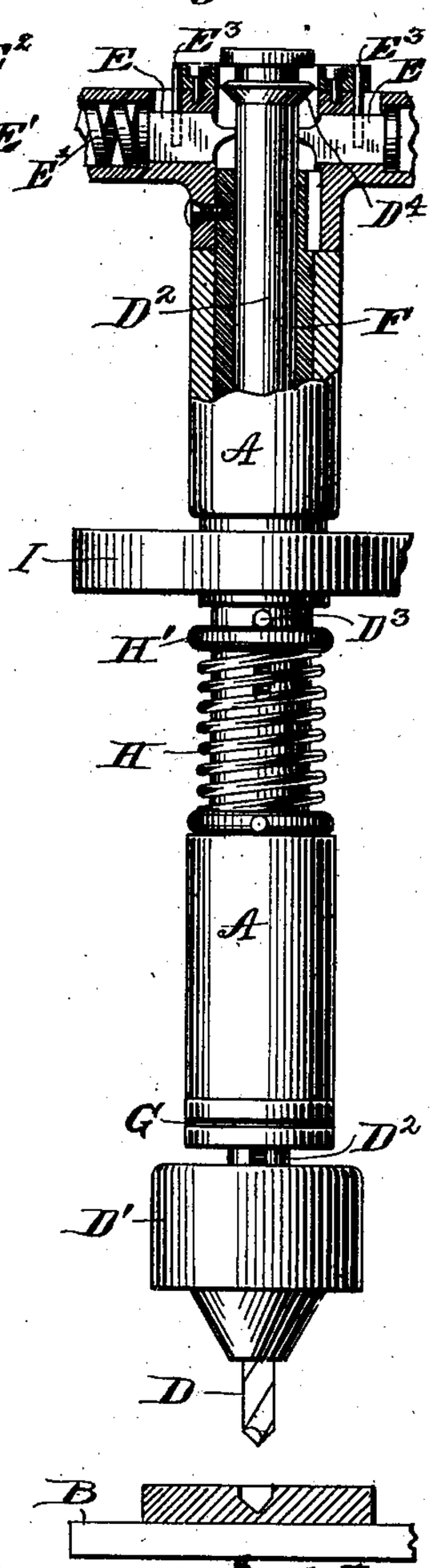

Fig. 5.

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No. 744,397. Patented November 17, 1903.

UNITED STATES PATENT OFFICE.

GEORGE B. PICKOP, OF NEW BRITAIN, CONNECTICUT, ASSIGNOR TO P. & F. CORBIN, OF NEW BRITAIN, CONNECTICUT, A CORPORATION OF CONNECTICUT.

DRILLING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 744,397, dated November 17, 1903.

Application filed February 20, 1902. Renewed October 6, 1903. Serial No. 176,011. (No model.)

To all whom it may concern:

Be it known that I, GEORGE B. PICKOP, a citizen of the United States, residing at New Britain, in the county of Hartford, State of Connecticut, have invented certain new and useful Improvements in Drilling-Machines, of which the following is a full, clear, and exact description.

My invention relates to improvements in drilling-machines.

The object of my invention is to provide a simple, inexpensive, effective, and durable cast-off device whereby the work of the machine will be automatically checked in the event the drill is too dull to accomplish its function properly or in the event that the material to be bored is so hard as to endanger breakage.

In the drawings, Figure 1 is a side elevation. Fig. 2 is a relatively enlarged side elevation of the drilling mechanism, showing details of construction. Fig. 3 is a similar view illustrating the parts in a different position. Fig. 4 is a plan view of the top of the machine. Fig. 5 is a section on the line 6 6, Fig. 2.

A is a frame of suitable construction supporting a work-table B, which may in the particular form shown in Fig. 1 be moved up and down by means of a suitable cam C or other controller. The work-table B carries the work and in this particular form the work is fed up to the drill.

D is the drill, carried in a suitable chuck D'.

D^2 is a drill-spindle, which bears at its upper end flanges forming an annular groove, into which head project one or more spring-pressed dogs E E.

E' represents springs for causing the dogs to project inwardly and against the drill-spindle D^2. The lower flange is preferably provided with a beveled surface D^4 for the purpose hereinafter described. The springs E' are carried in a suitable head or frame E^2, which may be fixed upon a sleeve F, surrounding the drill-spindle D^2. This sleeve F is attached to the said drill-spindle D^2 by means of a pin D^3, bearing in a slot F' in said sleeve. The pin D^3 and slot F' permit the desired longitudinal independent action of the sleeve F and spindle D^2, but spline them in such a way that any rotative movement of one would be imparted to the other. The sleeve F may have suitable bearings in the frame A, and to take the thrust against the end of the drill antifriction devices G G may be applied.

H is a spring bearing against the stationary part of the frame A at one end and against a ring H' on the sleeve F. The pin D^3 rests on ring H', and the latter tends to normally elevate the said pin and said spindle D^2.

I is a suitable wheel mounted upon the sleeve F and by which the sleeve and drill may be rotated.

The tension of the springs E' may be varied in any well-known way—for example, by means of adjusting the heads E^2, which heads may be changed or modified in a variety of ways obvious to the mechanic. The tension of the spring E' determines the degree of pressure with which the dogs E engage the drill-spindle D^2. The lower side of that portion of the dogs E E which engages the lower flange may be beveled, so that when the drill becomes dull or when the feed is too rapid or when the metal which it is desired to bore is too hard these dogs E E may be forced back and the drill-spindle will be forced upwardly under the influence of the spring H, the pin D^3 riding up in the slot F'. When the operator has detected the cause of temporary failure of the drill to work, he remedies the fault, and then may depresss the drill-spindle until the beveled surface D^4 comes in contact with the dogs E, thus forcing said dogs backwardly until the annular groove lies opposite the dogs, whereupon the springs E' will force the dogs ahead into said groove, and the said drill will be held down in the operative position until another emergency occurs. The degree of resistance or force necessary to unseat the dogs E may be varied to accord with the desired work.

In Figs. 2, 3, and 4 I have shown that the dogs E E carry pins E^3 E^3, projecting through the slot in the head and lying in front of a cam J, which may be of any desired form. By moving the cam J said pins are projected back in the slot, whereupon the dogs E are withdrawn from engagement with the drill-spindle.

While the pin D^3 may be relied upon to properly spline the sleeve F and the drill-

spindle D^2, nevertheless another spline F^2 may be employed, carried by the said sleeve and projecting into a suitable slot in the drill-spindle. This is best seen in the sectional view, Fig. 5.

I claim—

1. In a drilling-machine, a drill-spindle, a work-support, means for moving one of said parts toward the other to effect a feed, said drill-spindle being mounted in a suitable rotary sleeve, means to prevent independent rotation of said sleeve relatively to the drill, and means to permit independent longitudinal movement of the sleeve and drill-spindle, and a yielding detent to resist independent longitudinal movement of said parts adapted to automatically free itself for the purposes specified.

2. In a drilling-machine, a drill-spindle, a work-support, means for moving one of said parts toward the other to effect a feed, said drill-spindle being mounted in a suitable rotary sleeve, means to prevent independent rotation of the sleeve relatively to the drill, and means to permit independent longitudinal movement of the sleeve and drill-spindle, and a yielding detent carried by said sleeve to resist independent longitudinal movement of said parts adapted to automatically free itself for the purpose specified.

3. In a drilling-machine, a drill-spindle, a sleeve surrounding the same and a spline between said sleeve and said spindle, one of said parts having longitudinal movement independent of the other, a spring-pressed detent to resist the independent movement of said parts when the same are in the operative position and adapted to automatically release said parts under certain conditions.

4. In a drilling-machine, a drill-spindle, a work-support, means to move one of said parts toward or away from the other part to effect a feed, a rotatable sleeve carrying said drill-spindle, means to positively prevent independent rotative movement of said sleeve and spindle, and means to yieldingly resist independent longitudinal movement of said parts yet automatically freeing said parts when the drill encounters undue resistance.

5. In a drilling-machine, a drill-spindle, a supporting-sleeve, a spline between said sleeve and spindle, a spring-pressed dog carried by one of said parts and frictionally engaging the other part and arranged to disengage said other part when the drill encounters undue resistance.

6. In a drilling-machine, a drill-spindle, a surrounding sleeve, a spline between said spindle and sleeve, means to normally move the spindle upwardly in said sleeve, and a yielding latch to hold said spindle detachably in operative position, said yielding latch being arranged to disengage said spindle when the drill encounters undue resistance.

7. In a driling-machine, a drill-spindle and means to rotate said spindle, means to frictionally hold said spindle in its operative position, said means comprising a dog rotatable with said spindle and bearing in a groove in the same, and means for varying the degree of frictional resistance between said dog and spindle, said frictional means automatically freeing said spindle when the drill encounters undue resistance.

Signed at New Britain, Connecticut, this 18th day of February, 1902.

GEORGE B. PICKOP.

Witnesses:

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G. E. ROOT.