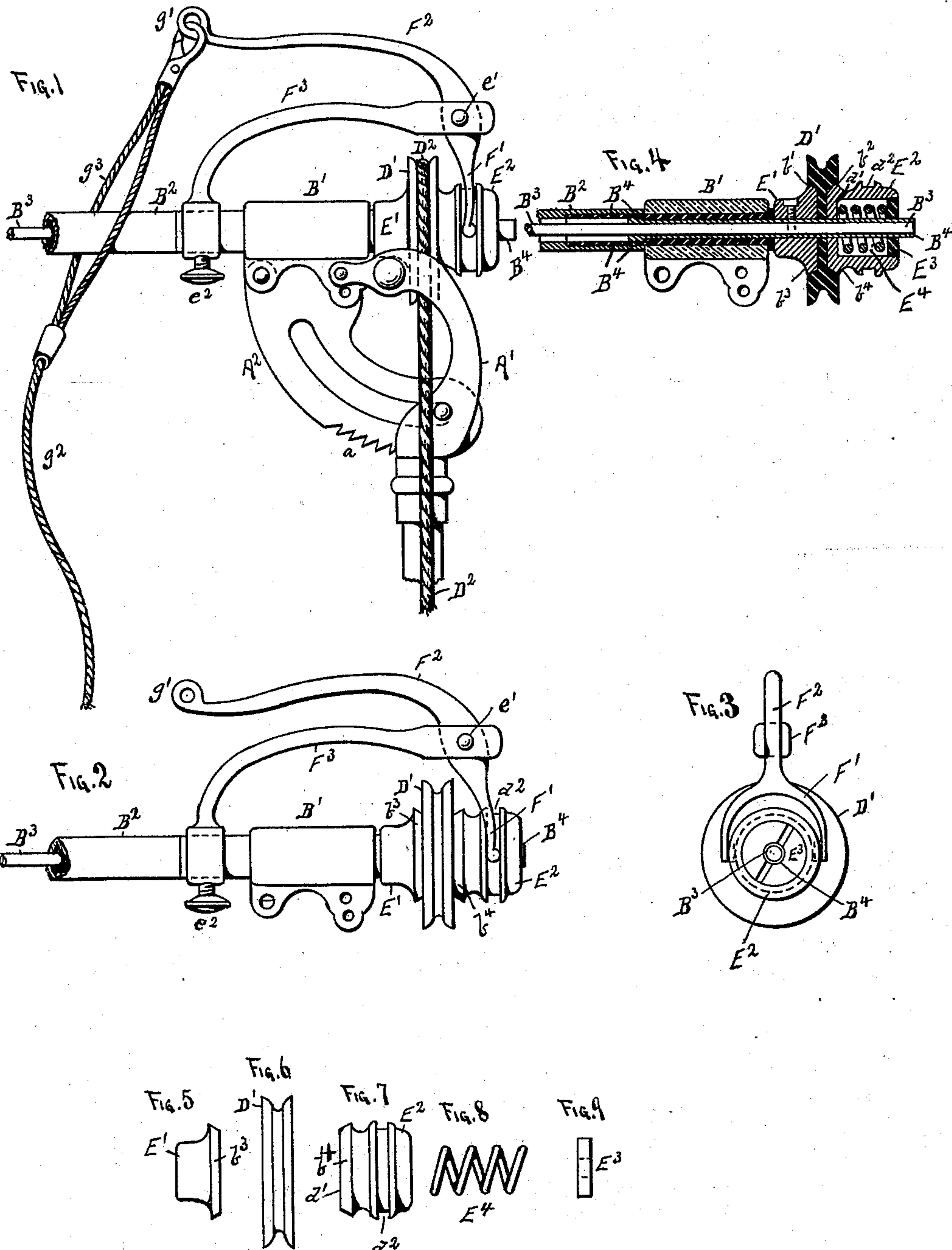


(No Model.)

F. F. ELLIS.
FRICTION CLUTCH FOR DENTAL ENGINES.

No. 547,374.

Patented Oct. 1, 1895.



WITNESSES.
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UNITED STATES PATENT OFFICE.

FREDERICK F. ELLIS, OF MISSOULA, MONTANA.

FRICITION-CLUTCH FOR DENTAL ENGINES.

SPECIFICATION forming part of Letters Patent No. 547,374, dated October 1, 1895.

Application filed January 14, 1895. Serial No. 534,731. (No model.)

To all whom it may concern:

Be it known that I, FREDERICK F. ELLIS, of Missoula, in the county of Missoula and State of Montana, have invented new and useful Improvements in Dental-Engine Friction-Clutches, of which the following is a specification.

This invention relates to dental engines; and it consists in the construction, combination, and arrangement of parts, as hereinafter shown and described, and specifically pointed out in the claim.

This invention is applicable to nearly all forms of dental engines; but for the purpose of illustration I have shown it applied to the "head" portion of an engine in common use.

Figure 1 represents a side elevation with the clutch applied, and Fig. 2 is a side elevation with the clutch relaxed. Fig. 3 is a front elevation of the parts shown in Fig. 2. Fig. 4 is a sectional side elevation. Figs. 5, 6, 7, 8, and 9 are side views of the different portions of the clutch mechanism detached.

A' represents the upper portion of the standard of the dental engine, in which the arm A² is pivoted and adapted to be adjusted by the ratchet-teeth *a*.

B' is the bearing for the driving-shaft casing B², the casing in turn forming the journals for the driving-shaft B³ in the ordinary manner, as more clearly shown in Fig. 4.

D' is a cord-sheave, over which the cord driving-belt D² runs, and is formed, as shown in Fig. 4, with bevel-edged cavities *b'* *b*² on each side and mounted to run loosely upon the sleeve or shell B⁴, surrounding the driving-shaft B³.

Attached to the shell B⁴ and shaft B³, so as to revolve with them, is a collar E', having a beveled surface *b*³, adapted to fit the beveled cavity *b'* of the sheave D', and outside the sheave D' is another drum-like collar E², having a beveled surface *b*⁴, adapted to fit the beveled cavity *b*² of the sheave. This drum E² is hollow and fits loosely around the shell B⁴ by its inner end *d'*, and is provided with a channel *d*² on the outside to receive the forked end F' of a lever F², the lever being pivoted at *e'* to a standard or arm F³, attached to the casing B² by a set-screw *e*² or other means, as shown. The lever F² is extended above the standard F³ and is provided with an eye *g'* to

receive a cord *g*², which extends to the hand of the patient in the chair, so that the patient can by drawing down upon the cord cause the forked lever F² to move the drum E² outward and thus release the sheave D'. The cord *g*² is preferably arranged with a loop *g*³ to pass upon both sides of the casing B², so as to prevent any danger of side strains upon the lever F².

Screwed or otherwise fastened to the sleeve B⁴ is a nut E³, fitting into the outer end of the drum E², and between which and the end *d'* a coiled spring E⁴ is supported inside the drum E², and adapted to keep the drum E² and sheave D' pressed normally against the fixed collar E', the three parts E', D', and E² thereby forming a double-acting friction-clutch to connect the sheave D' to the shaft, so as to revolve it by the cord belt D² so long as the lever F² is left undisturbed.

These dental engines are employed to operate the "grinding-burrs" and other implements for operating on the teeth, and they are frequently employed to grind away sensitive parts of the teeth, and the operator not always being able to determine precisely where the sensitive points of the teeth are often causes needless pain.

The object of my invention is to attach to these engines a device completely under the control of the patient, so that he can instantly stop the burr or other implement when it strikes a sensitive part of the tooth without affecting the operative mechanism of the machine. This, as before stated, is readily accomplished by the act of the patient in drawing downward upon the cord *g*². The action of the shaft B³ is thus perfectly controlled by the patient in the chair entirely independent of the dentist, so that if the patient feels the burr acting too severely upon a sensitive part he can instantly stop it by pulling upon the cord *g*² and without the necessity of notifying the dentist. By forming the sheave D' with the two concave recesses upon both sides and with the opposing clutch members adapted to compress it from both sides the pressure is equalized and no danger exists of crowding the sheave out of place by unequal side pressure. Then again by providing for the two opposing clutch members the clutch is rendered so sensitive that a very slight pull upon

the cord will release it, while at the same time a comparatively slight pressure from the spring E⁴ will be sufficient to hold the clutch normally compressed and in action.

5 Having thus described my invention, what I claim as new is—

10 In a dental engine, a collar fast to the driving shaft and having a beveled surface, a drum running loosely upon said driving shaft and with a similar beveled surface, a cord sheave running loosely upon said shaft between said collar and drum, and with beveled cavities upon its sides corresponding to said

beveled surfaces, a spring within said drum, and adapted to keep said collar sheave and drum normally in contact, and means under the control of the patient in the dental chair to release said drum, substantially as and for the purpose set forth. 15

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses. 20

FREDERICK F. ELLIS.

In presence of—

GEO. H. VERNON,

C. N. WOODWARD.