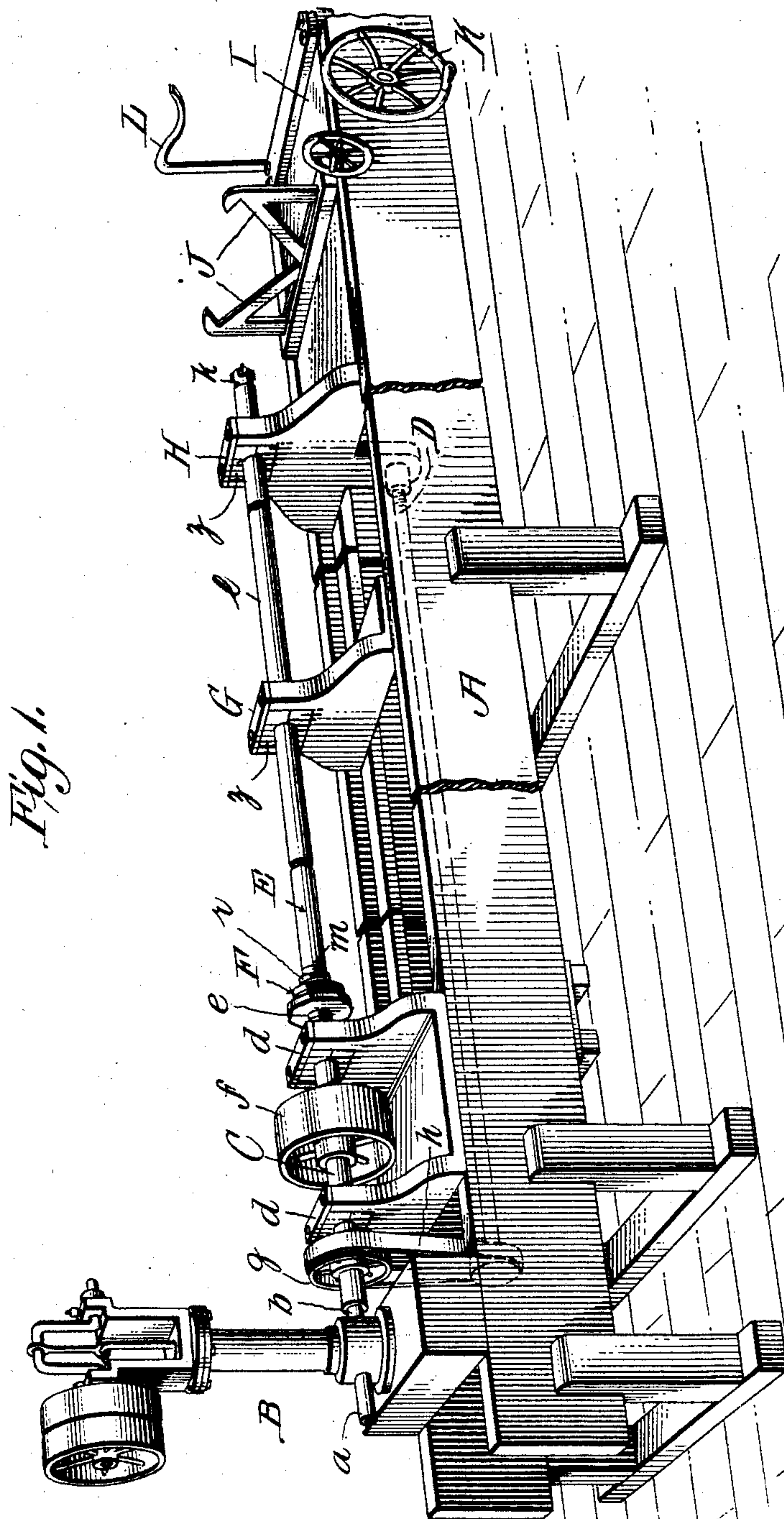


No. 866,822.

PATENTED SEPT. 24, 1907.

B. MOR. SPRATT.
WOOD BORING MACHINE.
APPLICATION FILED DEC. 8, 1906.

2 SHEETS—SHEET 1.



Witnesses

C. W. Holmes
J. J. Shuey Jr.

By

Inventor

B. M. Spratt.
James J. Shuey
Attorney

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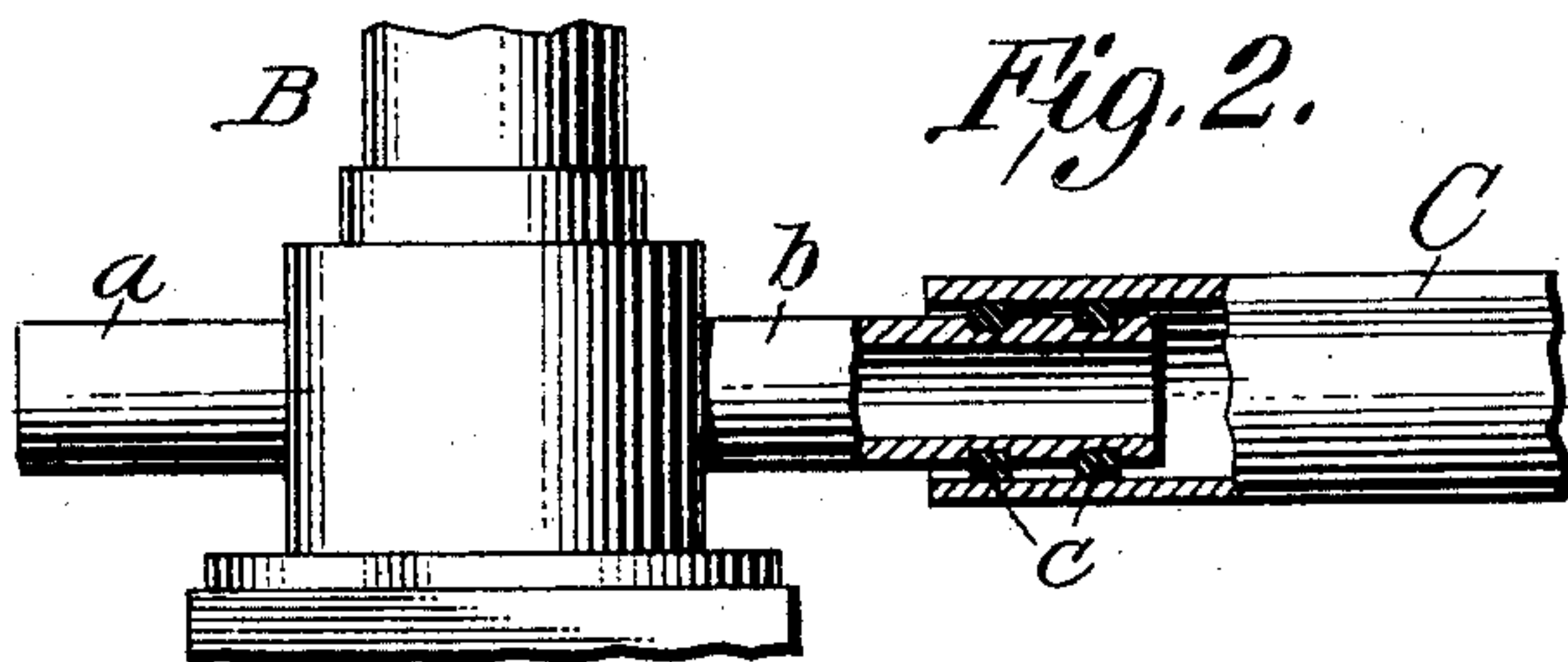


Fig. 2.

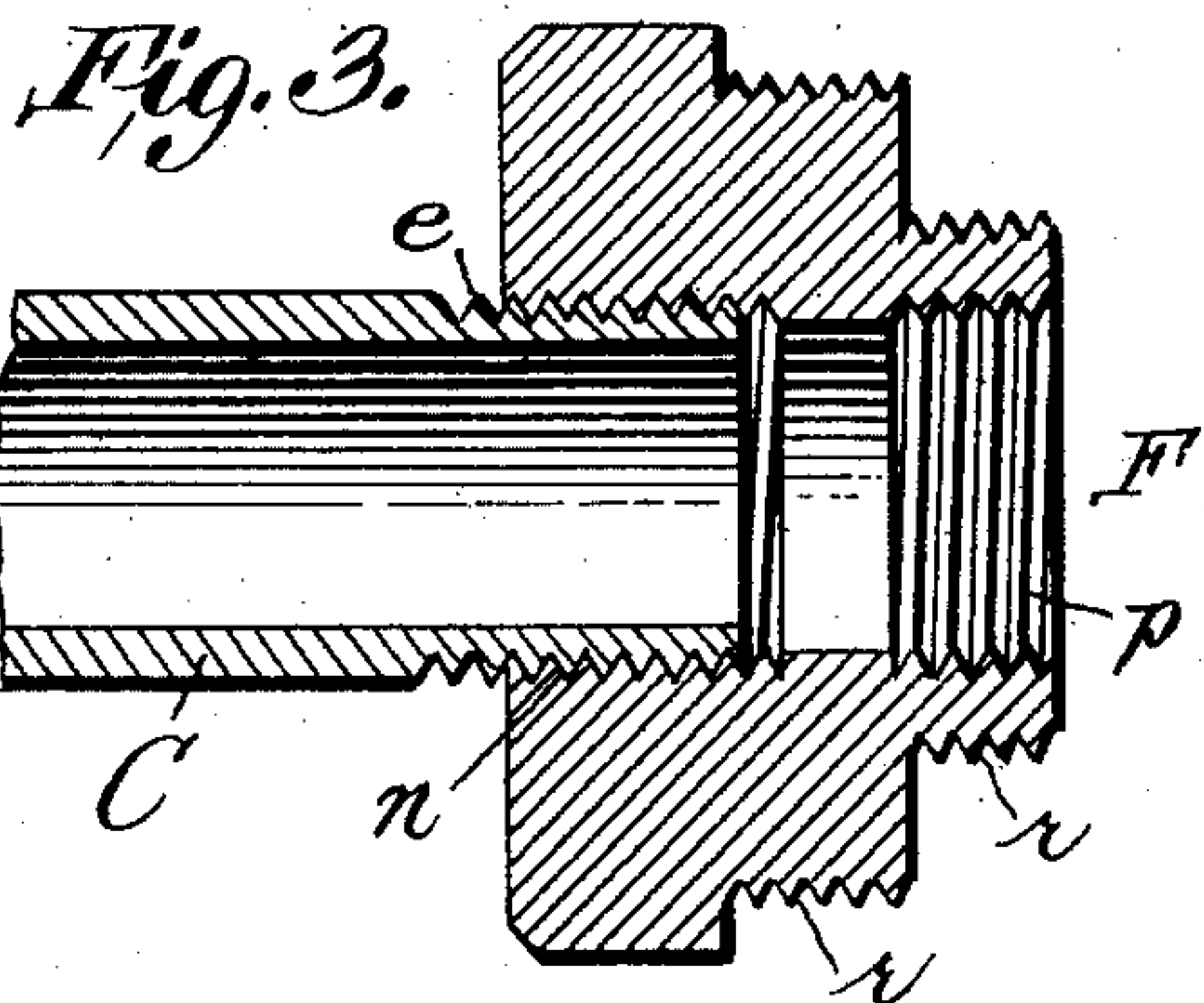


Fig. 3.

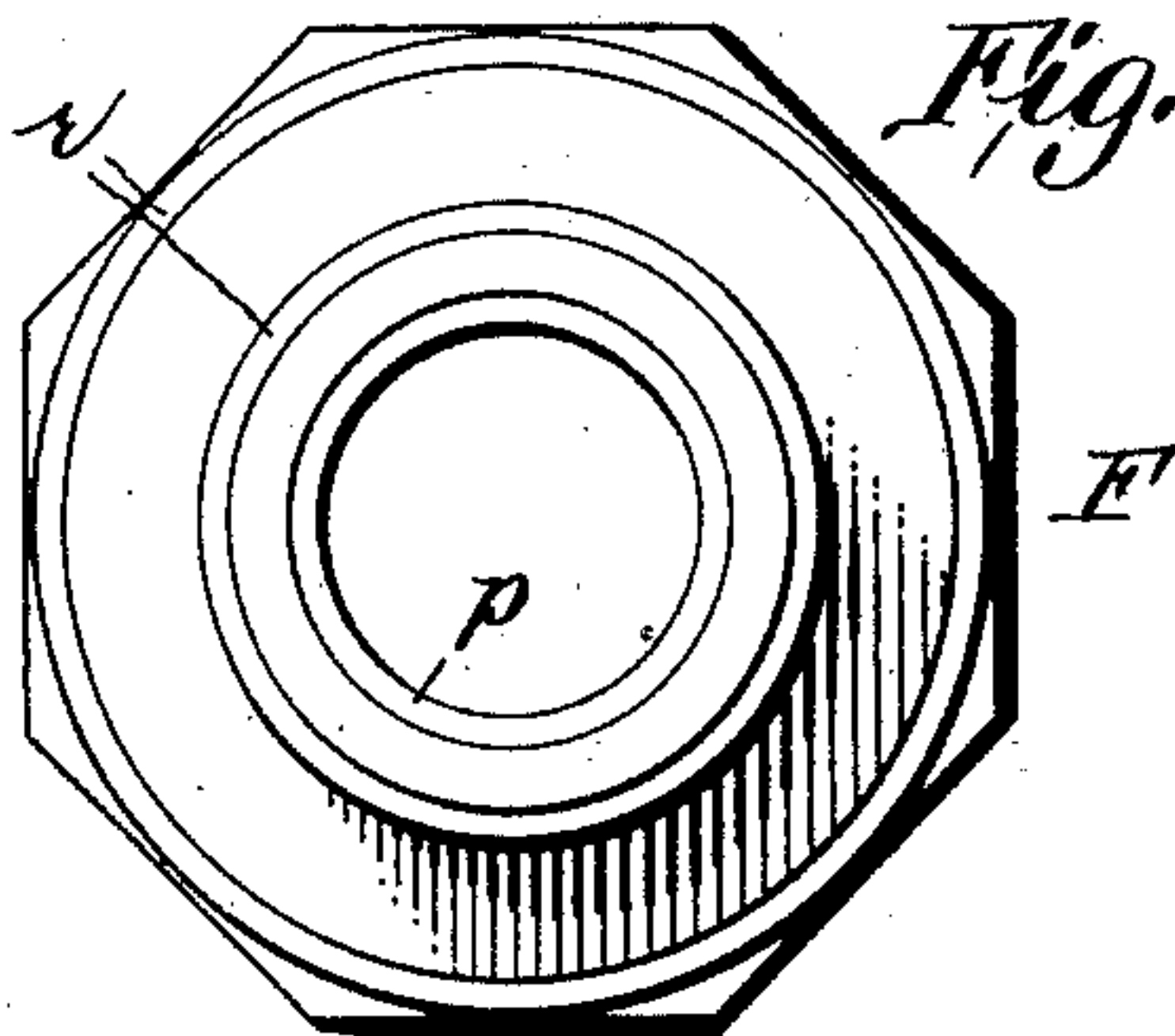


Fig. 4.

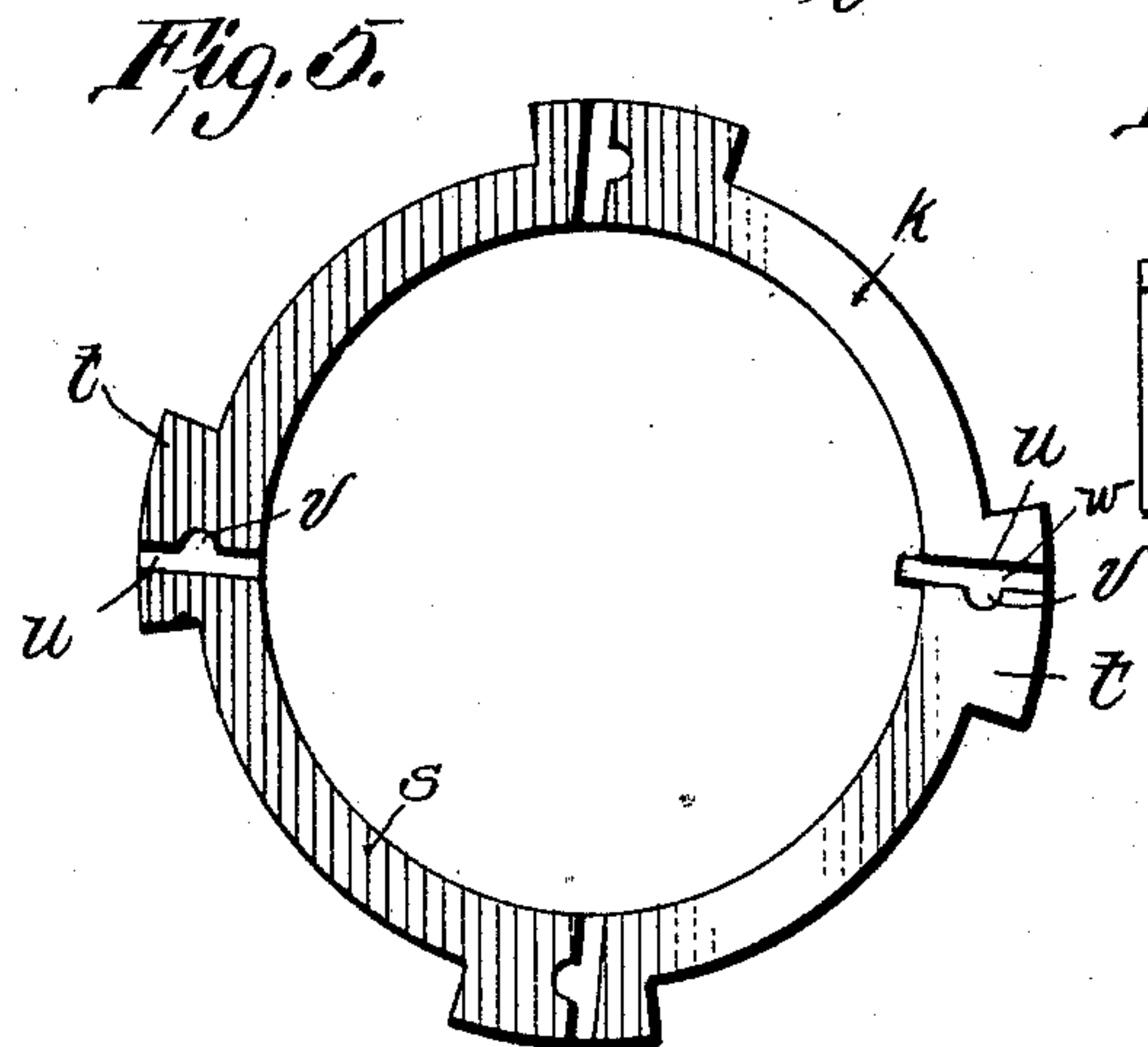


Fig. 5.

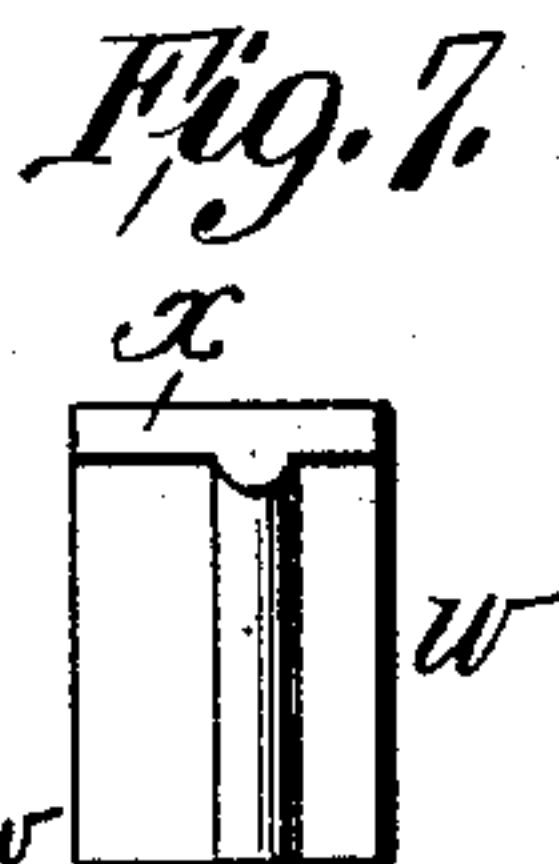


Fig. 7.

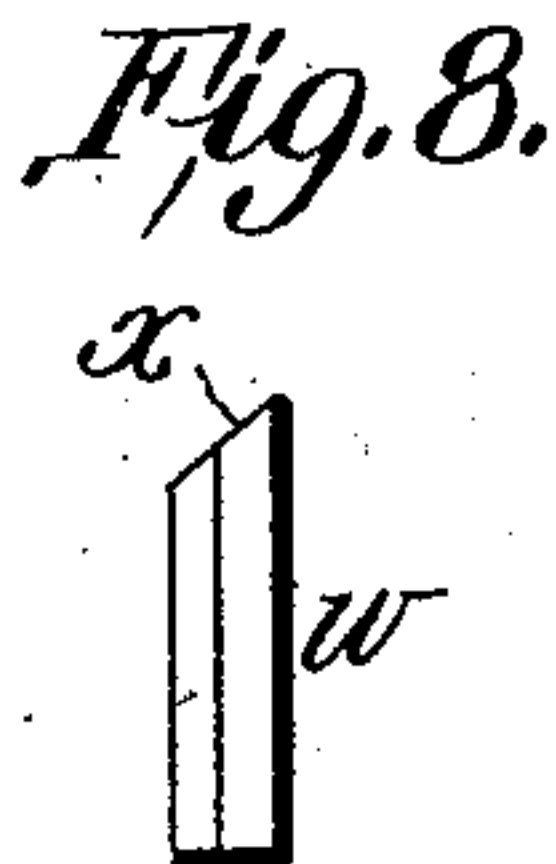


Fig. 8.

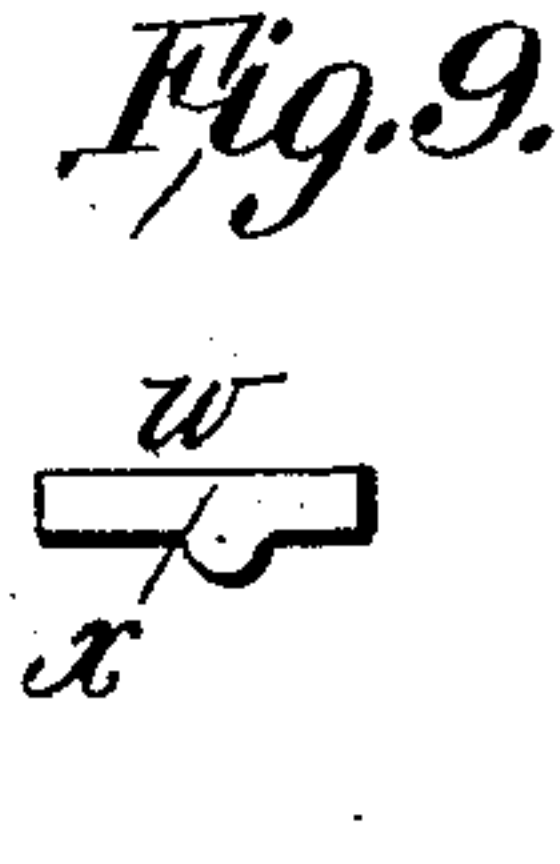


Fig. 9.

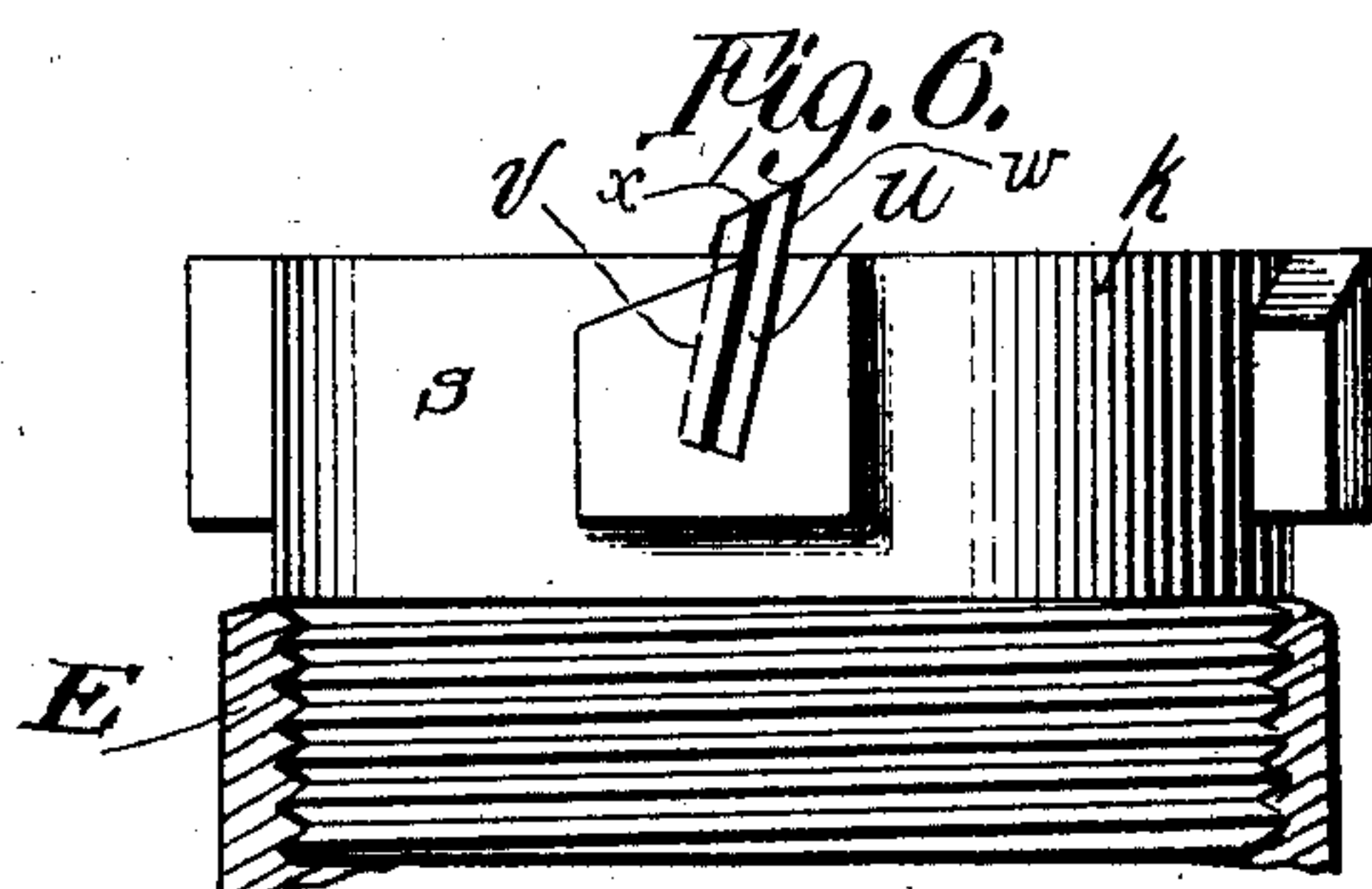


Fig. 6.

Witnesses

O. H. Holmes
J. J. Shuck Jr.

By

Inventor
B. M. Spratt.
James Shuck
Attorney

UNITED STATES PATENT OFFICE.

BARNETT McREE SPRATT, OF CHESTER, SOUTH CAROLINA.

WOOD-BORING MACHINE.

No. 866,822.

Specification of Letters Patent.

Patented Sept. 24, 1907.

Application filed December 8, 1906. Serial No. 346,978.

To all whom it may concern:

Be it known that I, BARNETT McREE SPRATT, a citizen of the United States, residing at Chester, in the county of Chester and State of South Carolina, have invented new and useful Improvements in Wood-Boring Machines, of which the following is a specification.

My invention relates to wood working machines and more particularly to wood boring machines of the hollow auger type; and its general object is to provide an efficient machine for boring wood columns in such manner that a core of larger diameter is formed and saved, this being materially advantageous inasmuch as the core constitutes a valuable merchantable commodity.

With the foregoing in mind, the invention will be fully understood from the following description and claims when the same are read in connection with the accompanying drawings, forming part of this specification, in which:

Figure 1 is a perspective view of the machine constituting the present and preferred embodiment of my invention. Fig. 2 is a detail view, partly in elevation and partly in longitudinal section, illustrative of the manner in which the eduction pipe of the air compressor is arranged in the rear end or tail of the hollow mandrel of the machine. Fig. 3 is an enlarged diametrical section of the coupling for effecting connection between the hollow mandrel and hollow augers of various diameters; a portion of the mandrel being shown in said coupling. Fig. 4 is a front elevation of the said coupling. Fig. 5 is an enlarged front elevation of the cutter-head of the hollow auger; the same being shown with one of the blades in proper position therein. Fig. 6 is a view showing the cutter head in side elevation with one of the blades in proper position therein and also showing said cutter head as properly positioned relative to the tube or barrel *l*, which latter is in diametrical section. Fig. 7 is a side elevation of one of the blades carried by the cutter-head, removed. Fig. 8 is an edge elevation of said blade. Fig. 9 is an end view of the same.

Similar letters designate corresponding parts in all of the views of the drawings, referring to which: A is the main frame of the machine. The said main frame is preferably of the general shape and construction illustrated, though it may be of any shape and construction compatible with the purpose of my invention without involving departure from the scope of the invention as defined in the appended claims.

B is an air compressor fixed on and rising from the rear portion of the main frame A. In general the said air compressor is of the conventional construction, and it may be actuated from any suitable source of power. It is provided as shown with an air induction pipe *a* and air eduction pipe *b*; the said pipe *b* being provided on its outer side with one or more (preferably two) elastic packing rings *c*, for a purpose hereinafter pointed out.

C is a hollow mandrel extending lengthwise of the

machine and journaled in suitable standards *d* connected to and rising from the main frame A. The said mandrel C is exteriorly threaded at its forward end, as indicated by *e* in Fig. 3, is provided with a pulley *f* to receive a belt (not shown) through the medium of which the mandrel is rotated, and is also provided with a pulley *g* on which is a belt *h* for rotating the column-feeding screw D, shown by dotted lines in Fig. 1. At its rear end, the mandrel C surrounds the eduction pipe *b* of the air compressor B and snugly receives the packing rings *c* on said eduction pipe, and consequently it will be apparent that the mandrel will receive practically the full charge of compressed air from the compressor, and there will be little or no leakage at the joint notwithstanding the fact that the tail of the mandrel turns around the pipe *b*.

E is a hollow auger comprising a cutter-head *k* and a tube or barrel *l* carrying said cutter-head and exteriorly threaded at its rear end, as indicated by *m*, and F, Figs. 1, 3 and 4, is a coupling for fixedly connecting the tube or barrel *l* of the auger to the mandrel C. The said coupling F is interiorly threaded at *n* to receive the forward threaded end of the mandrel C, and interiorly threaded at *p* to receive the rear threaded end of the auger tube or barrel; and it is provided with exterior, threaded steps *r* of which but two are shown although any desired number may be employed. By virtue of this latter provision it will be apparent that auger tubes or barrels of various diameters may be fixedly coupled to the mandrel C; a small, exteriorly threaded auger tube or barrel being screwed into the bore *p* of the coupling F while a larger and interiorly threaded auger tube or barrel is screwed on the particular threaded step of the coupling that it fits.

The annular cutter head *k* of the hollow auger E is preferably attached to the tube or barrel *l* thereof by being screwed into or onto the forward end of said tube or barrel; the former mode of connection being shown in Fig. 6. Said cutter-head is open as shown in Fig. 5 and is provided on its main portion *s* at the forward end thereof with two or more lugs or guides *t* extending radially outward from the periphery of said main portion, and formed preferably by milling out the stock between lugs or guides, this to provide a direct eduction passage at the outer side of the main portion *s* for the chips made by the cutters. Said lugs may be either solid, that is, a part of the head, or may be riveted on, or inserted. These lugs *t* in addition to serving as guides and forming eduction passages for the chips, form stocks in which the cutters or blades are inserted and carried; the said lugs being provided with inclined seats *u* and grooves *v*. These seats *u* and grooves *v* are designed to receive ribbed cutters or blades *w* having beveled or chisel pointed cutting edges *x*. By virtue of this construction it will be seen that when one of the blades *w* is dulled, broken or

otherwise impaired, it may be readily removed and replaced with a new blade; and it will also be seen that the blades *w* project forward of the cutter-head and also project and are arranged to cut over the inside
5 and outside of the rim *i. e.*, the main portion *s* of the cutter-head. From this it follows that when the auger is working in a column or other timber that is being bored, the blades *w* cut a clearance space for compressed air inside and chips outside the rim of the cutter head and provide a passage for the tube or barrel of
10 the hollow auger.

The tube or barrel *l* of the hollow auger *E* is supported by two rests *G* and *H* in which are used interchangeably boxes such as *z*, adapted to take tubes or
15 barrels of different diameters, this with a view of rendering it unnecessary to change the rests when a larger auger is to be substituted for the one shown. The rest *G* is arranged, preferably in an adjustable manner, on the main frame *A*, while the rest *H* is arranged on the carriage *I* which is engaged by the feed
20 screw *D* and is provided with adjustable clamps *J* for holding the column to be bored; said clamps *J* being preferably of the ordinary well known construction.

In addition to the elements mentioned the machine
25 is preferably provided with the usual hand wheel *K* and appurtenances for feeding the carriage by hand, and the usual lever *L* for changing from automatic feed to hand feed and vice versa.

The practical operation of my novel machine is as
30 follows: The column to be bored is secured on the carriage *I* through the medium of the clamps *J*, and the carriage is fed by hand until the end of the column brings up against the cutter-head *k* of the hollow auger when, by preference, the lever *L* is manipulated to
35 change the feed from hand to automatic. With this done, and the auger *E* and air compressor *B* having been put in operation, it will be apparent that the cutter-head of the auger *E* will bore the column in such manner as to form and save a core of an exterior diameter
40 corresponding to the interior diameter of the tube or barrel of the auger, which core constitutes a valuable merchantable commodity. Incident to the described operation, the air compressor *B* affords a direct and constant air pressure, and this constant
45 pressure is as essential to the successful operation of the machine as the cutters, for the reason that in addition to cooling the cutter-head, the constant air pressure passes through the spaces between the lugs or protuberances *t* on the cutter-head and forces chips as
50 soon as formed away from the blades and prevents accumulations of cuttings about the cutter-head. It also forces the cuttings out at the outer side of the tube or barrel of the auger, and through the open end of the column, reduces the cuttings to a comminuted state,
55 precludes choking, and acts as a cushion both to the core and at the outer side of the tube or barrel, and thereby minimizes friction.

It will be gathered from the foregoing that my improvements assure the production of a perfect bore in
60 the column and the formation of a perfect core, and this expeditiously and with the expenditure of but a minimum amount of power.

In addition to boring columns lengthwise, my novel machine is obviously adapted to be used to advantage
65 for boring all other timbers where it is desired to lighten

the material and to prevent cracking or where it is desired to take the heart out of logs and save the cores before quarter sawing.

The means herein shown and described for feeding the column or timber to be bored is of the ordinary, 70 well known construction, and forms no part of my invention. For this reason it is obvious that any other suitable means may be employed for feeding the column or timber without involving departure from the scope of my invention as claimed. 75

Having described my invention, what I claim and desire to secure by Letters-Patent, is:

1. In a machine for the purpose described, a hollow auger comprising a tube or barrel open at its forward end, and an annular cutter-head carried by the tube or barrel
80 at the forward end thereof and having two or more lugs on its periphery extending laterally outward therefrom and forming passages between them, and arranged with their forward ends flush with the forward end of the head, and also having inclined seats in its main portion and said
85 lugs, and grooves in the walls of the seats, and cutters or blades arranged in the seats and having ribs disposed in the walls thereof; said cutters extending forward beyond the forward end of the head and also extending inward and outward with reference to the rim of the head. 90

2. In a machine for the purpose described, the combination with a hollow auger comprising a tube or barrel open at its forward end, and an annular cutter-head carried by the tube or barrel at the forward end thereof and having
95 cutters or blades separated by a space designed to receive a core, and extending forward beyond the forward end of the head and slightly inward from the rim thereof to provide a clearance space and also extending radially outward beyond said rim, whereby passages are afforded between the cutters or blades and at the outer side of the
100 head for cuttings; of means connected with the tube or barrel of the auger, in rear of the cutter-head, for supplying constant fluid pressure to said tube or barrel.

3. In a machine for the purpose described, the combination with a hollow auger comprising a tube or barrel open
105 at its forward end, and an annular cutter-head carried by the tube or barrel at the forward end thereof and having two or more lugs on its periphery extending laterally outward therefrom and forming passages between them and arranged with their forward ends flush with the forward
110 end of the head, and cutters or blades separated by a space designed to receive a core, and seated in said lugs and also extending inward and outward with reference to the rim of the head and arranged with their outer edges flush
115 with the outer sides of the lugs; of means connected with the tube or barrel of the auger, in rear of the cutter-head, for supplying constant fluid pressure to said tube or barrel.

4. In a machine for the purpose described, the combination of a hollow mandrel provided with means through
120 which it may be rotated, means connected with the mandrel for supplying constant fluid pressure thereto, a hollow auger comprising a tube or barrel open at its ends, and an annular cutter-head carried by the tube or barrel at
125 the forward end thereof and having cutters or blades separated by a space designed to receive a core, and extending forward beyond the forward end of the head and slightly inward from the rim thereof to provide a clearance space and also extending radially outward beyond
130 said rim, whereby passages are afforded between the cutters or blades and at the outer side of the head for cuttings, and a coupling detachably connecting the forward end of the mandrel and the rear end of the tube or barrel
135 of the auger.

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

BARNETT McREE SPRATT.

Witnesses:

J. C. McLURE,
J. K. HENRY.