A. H. HALL.

SPLINT CUTTING MACHINE.

APPLICATION FILED MAY 1, 1909.

963,141.

Patented July 5, 1910.

4 SHEETS—SHEET 1.

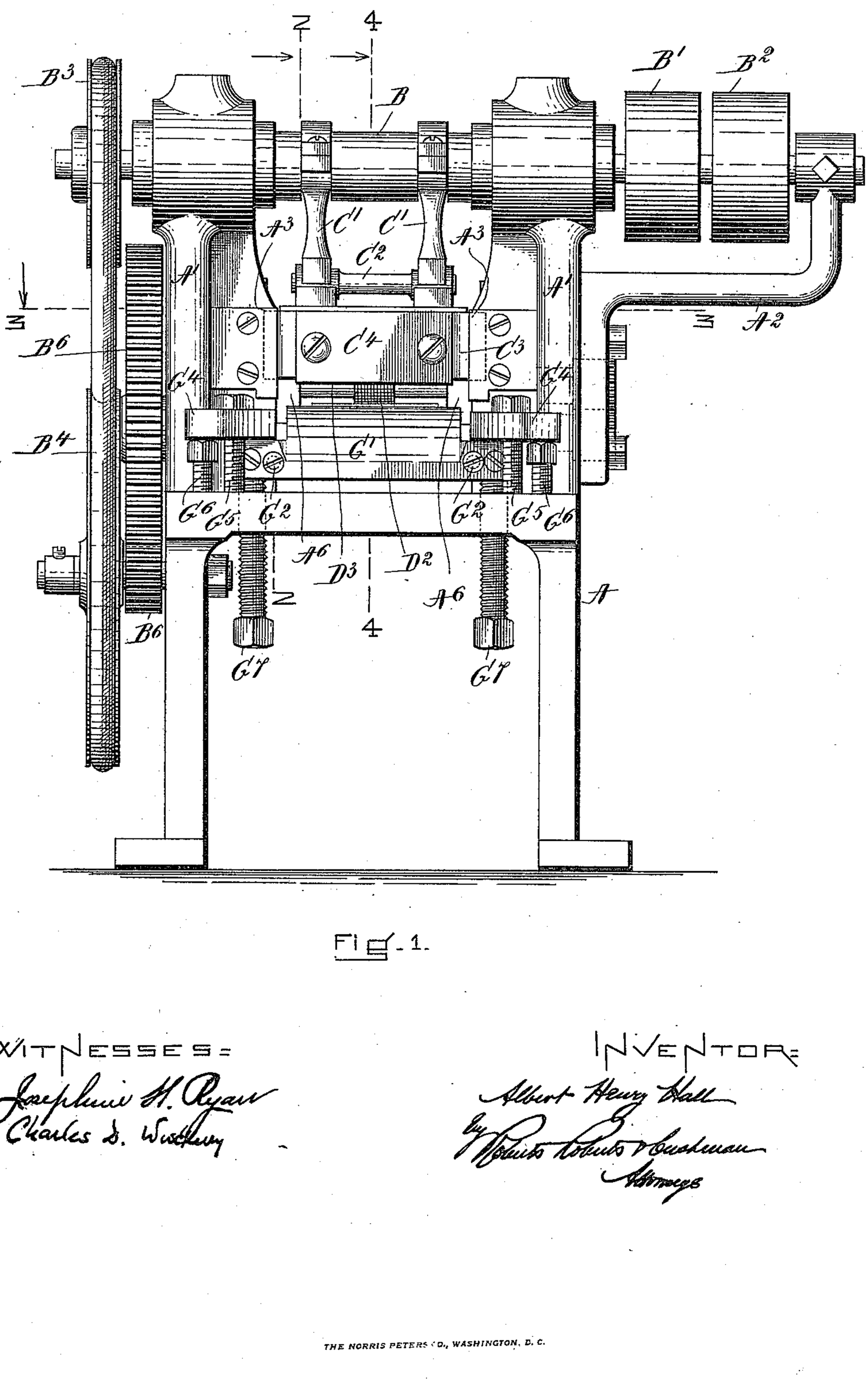

Fig. 1.

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4 SHEETS—SHEET 2.

Fig. 8.

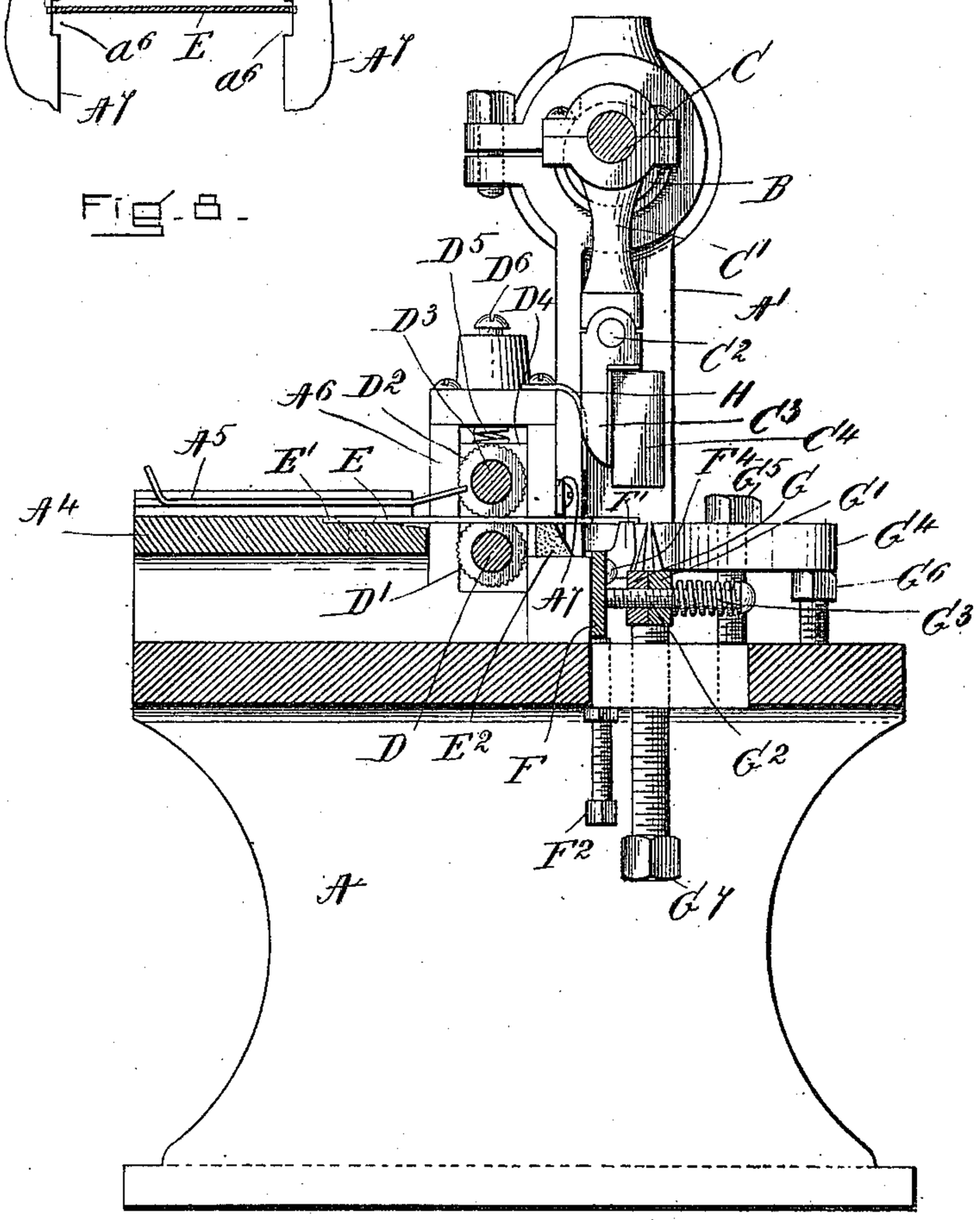

Fig. 2.

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4 SHEETS—SHEET 3.

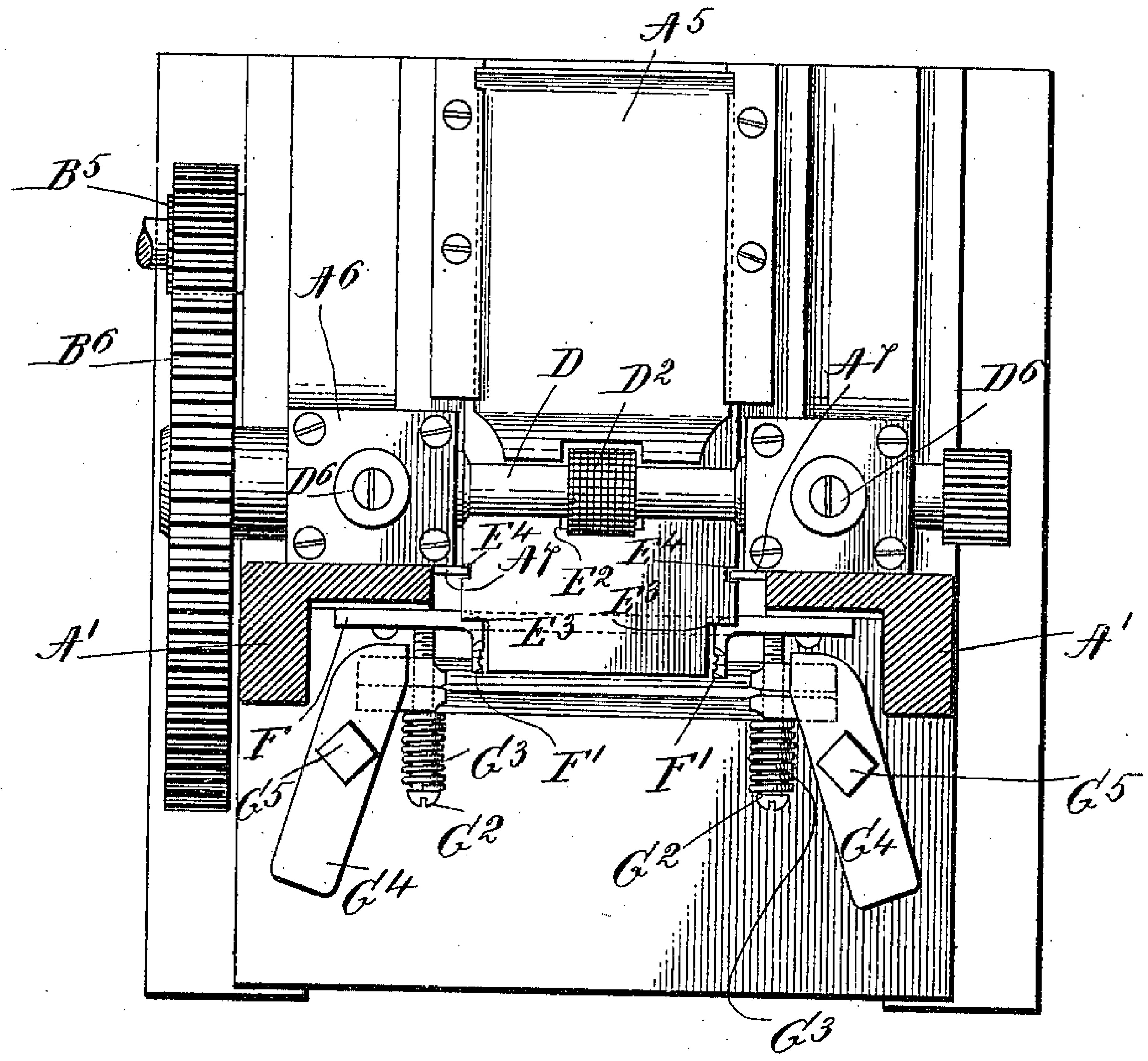

Fig. 3.

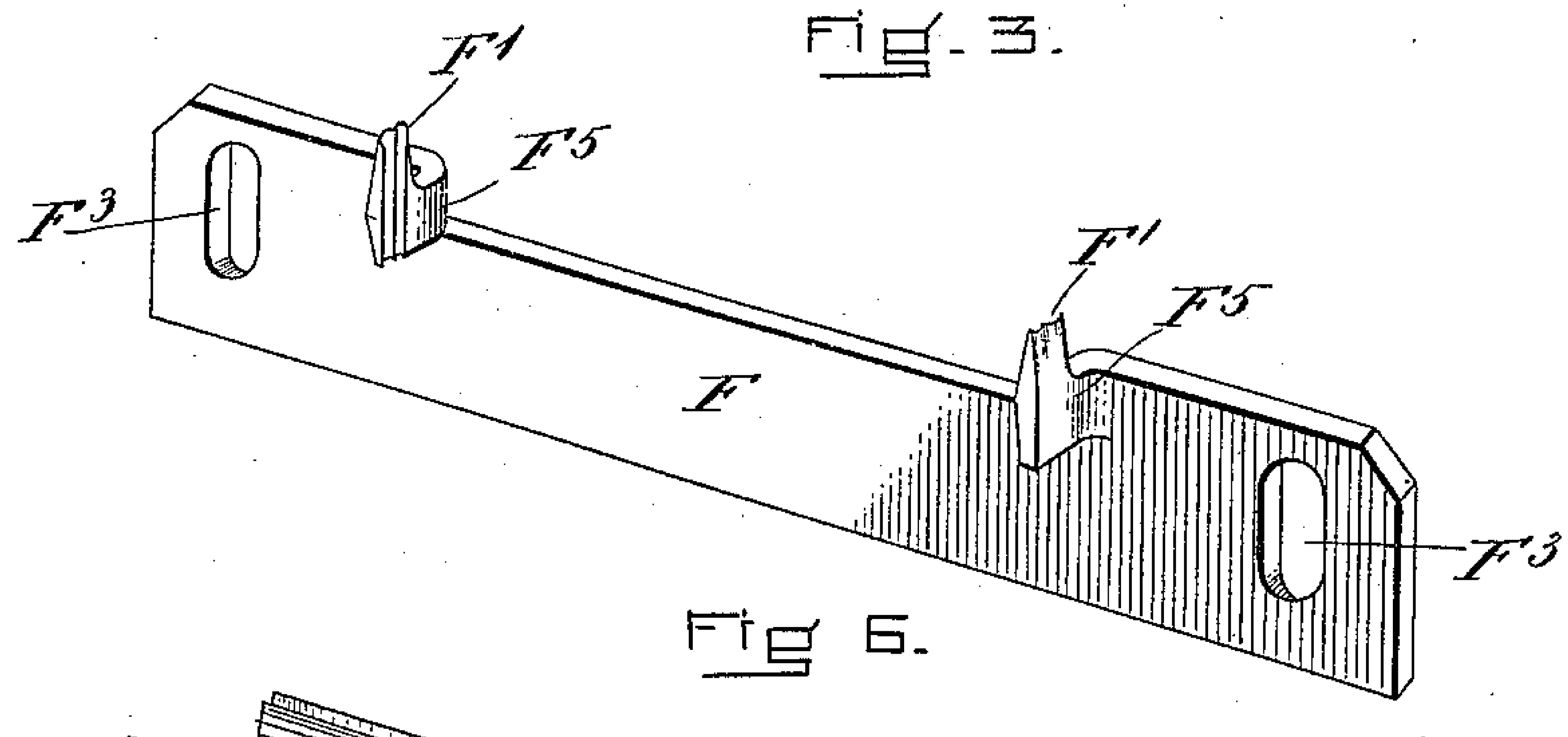

Fig 6.

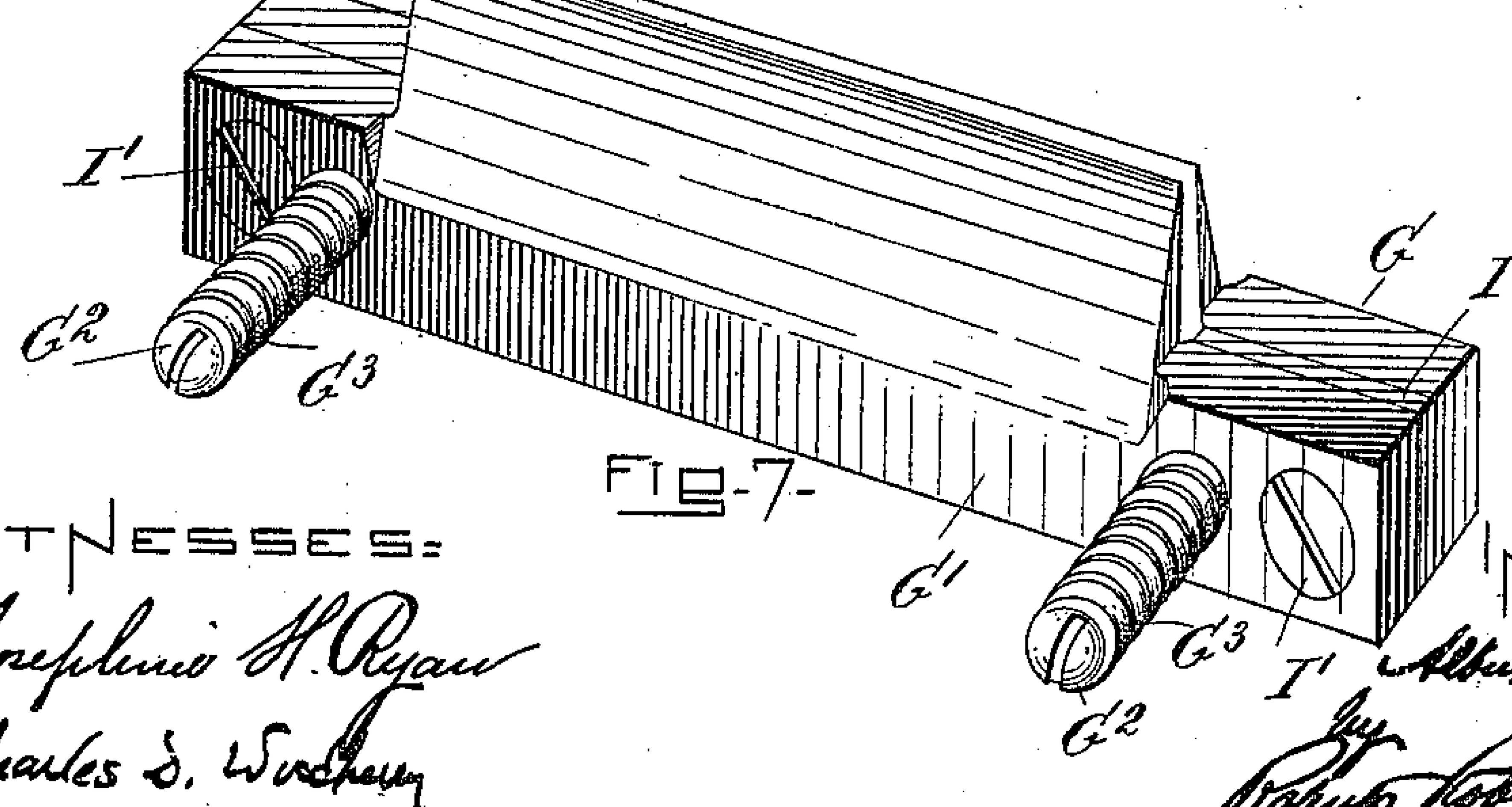

Fig-7-

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SPLINT CUTTING MACHINE.

APPLICATION FILED MAY 1, 1909.

963,141.

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4 SHEETS—SHEET 4.

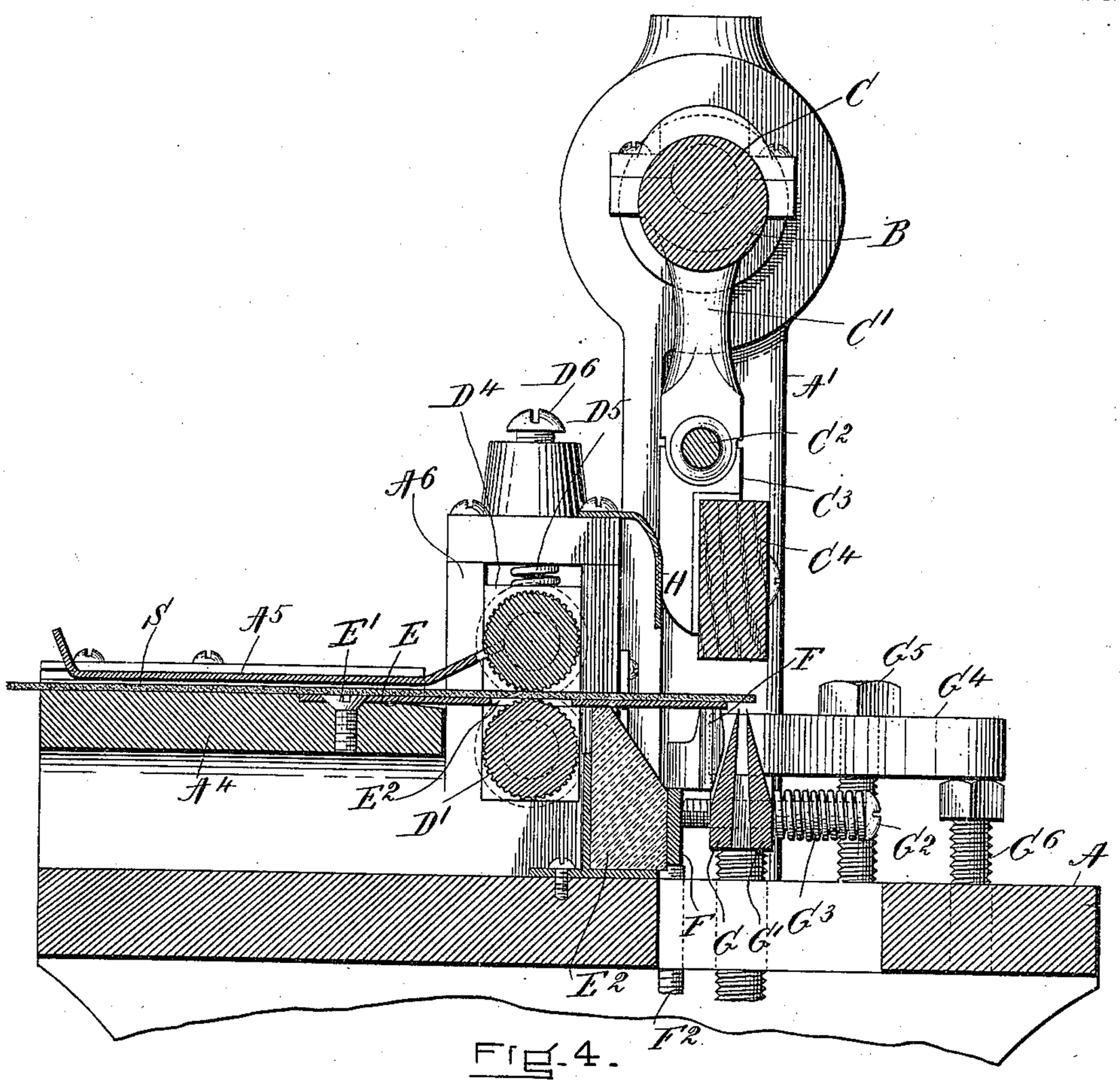

FIG. 4.

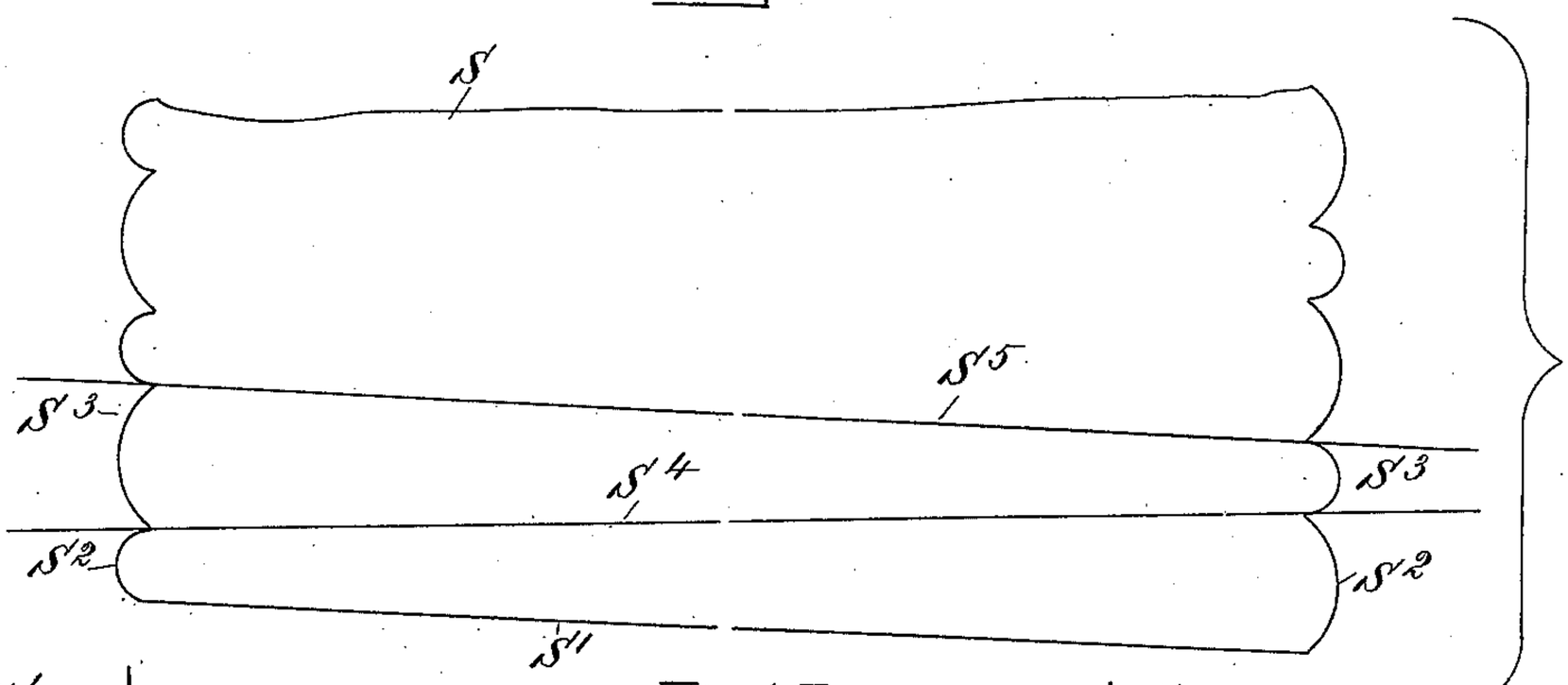

FIG. 5.

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UNITED STATES PATENT OFFICE.

ALBERT HENRY HALL, OF PERU, MAINE, ASSIGNOR TO FORSTER MANUFACTURING COMPANY, OF DIXFIELD, MAINE, A CORPORATION OF MAINE.

SPLINT-CUTTING MACHINE.

963,141. Specification of Letters Patent. Patented July 5, 1910.

Application filed May 1, 1909. Serial No. 493,312.

To all whom it may concern:

Be it known that I, ALBERT HENRY HALL, a citizen of the United States, and resident of Peru, in the county of Oxford and State of Maine, have invented new and useful Improvements in Splint-Cutting Machines, of which the following is a specification.

My invention relates to machines for cutting splints from a veneer strip, and is particularly addressed to the formation of such splints with rounded or otherwise finished ends as distinguished from square ended splints, such as formed by mere severance from a veneer strip by a cross-cutting knife.

This invention is, moreover, especially intended for use in the manufacture of toothpicks, and will be described in relation to that use.

Heretofore one of the principal objects of manufacturers of toothpicks, namely, the production by automatic means of a tapered, round pointed toothpick, has been only imperfectly attained. Toothpicks have been manufactured automatically for a long time by feeding a veneer strip previously prepared by slabbing the strip at both edges and either on one or both sides at a distance of about five-eighths of an inch from each edge, thus securing a taper transversely or sectionally. The strip has then been fed to the cutting devices which consist of two straight knives adjustably secured under a vertically reciprocating block, the feed and the intermittent descent of the block upon the knives being so related that at each descent two toothpicks are severed from the forward end of the strip. These knives are set with their edges at a slight angle, each being hollow ground. As the strip is fed forward it protrudes one toothpick width beyond the face of the outer knife so that when the block descends, two toothpicks are simultaneously severed, one falling down the outer face of the outer knife and the other passing down between the two knives into a clearance space below. The toothpick strip is supported by a spring plate, the front edge of which lies directly behind the rear or inner knife. Below this spring plate there is placed a rubber cushion which deadens vibration and, to some extent, contributes to the upward spring of the plate. This plate also is recessed to admit the knurled feed rolls which take hold of the toothpick strip and feed it forward. The function of this spring plate is first to support the toothpick strip between the forward end of the strip to prepare it for the forward feed after each cutting stroke of the reciprocating block; thus the spring plate by its vertically reciprocating action lifts the strip clear of the back of the rear knife so that when it feeds forward between the strokes of the block, the strip may not strike the back of the knife and stop it. The above description applies to machines heretofore in use for making plain square ended toothpicks.

Manufacturers have long desired to finish such toothpicks by making their ends rounded; that is to say, instead of giving them what may be termed chisel points, the manufacturers have tried to give them points like a round nosed tool. In order to do this adequately, it is essential that in the finished toothpick the side surfaces shall meet and register truly with the curve at the end; otherwise, angles and splinters would be formed and mar the appearance and detract from the utility of the finished toothpick. So far as it is known, the only approach to success in this direction has been in the manufacture of toothpicks of the general character above described with only one end rounded, and this the wider end. When the manufacturer has contented himself with cutting one toothpick at a time the rounding of one end has been accomplished with fair success by making the knife with what may be termed a U-shaped cutting edge, that is to say, the two angularly related knife edges have been joined at one end by a curved knife integral with at least one of the two longer knives or edges. This mode of operation necessitated an adjustment of the strip feed to throw a slight excess beyond the outer edge of the front or outer knife so that this member or branch of the U-shaped edge sliced off a little waste from the strip, the toothpick itself being forced down between the two branches of the U. So far as making a toothpick with one rounded end is concerned, this mode of construction and operation was successful mechanically, but suffered under the disadvantage incident to small production as

compared with a machine which cut two toothpicks at a time. In order to cut two toothpicks at a stroke and at the same time to produce one rounded end on each toothpick, the attempt has been made to provide the outer or forward knife with a curved projection so that the entire edge of the cutting die might be described as a very flat S with one short branch; that is to say, the U-shaped cutting die had at the free end of one of the long branches of the U a reverse curve and extending a short distance parallel to the long edge of that branch of the U to which this projection was attached. With a knife thus shaped the plan has been to feed forward the toothpick strip two toothpick spaces at a time as in the older practice and to round the larger ends of the two toothpick pieces simultaneously, the bend of the U doing this for the inner toothpick and the hook on the outer knife doing it for the outer end on the other side of the strip. Knives of this character, whether the simple U or the U-shaped knife with the curved extension, are very difficult to make in the first place, are also very difficult to grind, and they have presented an almost insuperable difficulty in the matter of a proper clearance especially at that portion of the knife represented by the curved extension. Little shreds of the toothpick material are caught by the cusp or angle at the curved extension and wedge in between it and the strip of material.

A further attempt has been made to round both ends of the toothpick automatically by making the main cutter with its edge in a closed curve, in other words, by closing the open end of the U-shaped cutting die employed for rounding only one end of the toothpick. Such a knife, therefore, was, in effect, a tube with a very narrow mouth. With such a cutter it was possible only to cut one toothpick at a time and an appreciable amount of waste resulted. Still further, but less successful, attempts have been made in effect to combine the tubular cutter with auxiliary curved projections at the forward side of the front cutter which might enable a two-toothpick feed to be used to sumultaneously cut and round the ends of two toothpicks at a time. All of these knives which in one way or another involved straight and curved portions in the same blade, have presented practical difficulties and disadvantages and however plausible they may have been in theory, in practice they have not enabled the manufacturers to produce economically and in quantity the desired wooden toothpick rounded at both ends.

The improvements in toothpick making machines which embody the present invention accomplish the following new result, to wit: The automatic production of toothpicks rounded at both ends having the straight sides and the rounded ends accurately in register, and in full productive quantity, namely, at least two toothpicks at a single stroke of the machine. This new result is further qualified by the capacity of a machine constructed and operated according to the principle presently to be stated for making four, or even more, finished double round ended toothpicks at a single stroke of the machine. The practical limit of such simultaneous production is determined only by the feed capacity of the machine; it is believed that by employing a continuous strip-feed and remaining content with the production of two toothpicks at a stroke, a more satisfactory and rapid production will be secured than by arranging the machine to cut a larger number of toothpicks from the strip at a stroke and employing an intermittent feed.

The principle of operation which characterizes my invention is the successive accomplishment of the two essential elementary cuts; first: Making the round end cuts at both sides of the toothpick strip and thereafter making the straight cut which severs the toothpick from the strip and in so adjusting or spacing the functionally operating cutting members that the feed of the machine shall bring the toothpick strip to the straight or long cutter with the previously formed round cuts in true register with the straight cuts.

In the machine whereof the functionally related factors exemplify the above stated principle of operation and produce the above stated new result, the toothpick strip feed may be of the well known continuous character as by means of roughened or knurled feed rolls which advance the strip over a spring plate to the cutting dies or members. The reciprocating cutting block may be also mounted and operated as in existing machines and consist of a block of hard wood, fiber, or it may be soft metal, secured to a suitably guided cross head to which reciprocating motion is imparted by means of links, eccentrics and a shaft. The face of this block is preferably broad enough to meet and coöperate with the end cutting and side cutting knives or dies simultaneously. Regarding the side of the machine from which the toothpicks are delivered from the strip as the front of the machine and the feed side as the rear, I arrange adjacent to the spring plate at the two sides thereof the end cutting or point forming die which consists of a steel bar with upwardly extending projections in which the end cutting blades are formed. Each of these blades (if for a two-pick feed machine) has a double curve one of the curves being slightly broader than the other (if the picks are to be tapered from end to end), the

distance from cusp to cusp being the same as the spacing between the side cutting blades or dies which sever the toothpicks from the strip. These end cutters are preferably rigidly and non-adjustably secured in the machine so far as relates to the advance of the strip feed, but provision is necessarily made for vertical adjustment of these end cutters as by a screw and slot arrangement. The front cutters are a pair of straight hollow ground blades each mounted on or integral with its own backing or bar and adjustably secured at the front of the machine, the rear blade of the pair lying close to the front edge of the spring plate which supports the veneer strip. The cutter bars are spaced apart at one end more than at the other so that the two cutting edges converge slightly if it be desired to make toothpicks which taper from one end to the other. These cutter bars are vertically and horizontally adjustable and are clamped at the front of the machine.

A specific exemplification of the above generally described improvements is illustrated in the drawings hereto annexed wherein—

Figure 1 is a front elevation of a toothpick cutting machine; Fig. 2 is a side view taken in section at the line 2 in Fig. 1 looking in the direction indicated by the arrow; Fig. 3 is a plan view and section taken at the line 3 in Fig. 1 looking in the direction of the arrow; Fig. 4 is a side elevation and section on a larger scale taken at the line 4—4 in Fig. 1 looking in the direction indicated by the arrow; Fig. 5 is a plan view on a large scale of the forward end of a veneer strip from which toothpicks are severed; Fig. 6 is a view in perspective of the end-shaping knife; Fig. 7 is a view in perspective of the cross cutting or severing knives; and Fig. 8 is a detail showing the strip supporting spring plate in cross section where the said plate engages with the keepers hereinafter specifically to be described.

Referring to Fig. 1, the frame A of the machine is provided with upright standards A′ which at their upper ends carry the bearings for the main shaft B of the machine, and has a lateral bracket A^2 which provides a bearing for the outer end of the shaft B upon which the fast and loose pulleys B′, B^2, are placed. At the opposite end of the shaft B there is secured the pulley B^3 which, by means of a belt, drives the pulley B^4 situated below and to the rear of the pulley B^3. Upon a shaft of the pulley B^4 there is secured the pinion B^5 which meshes with and drives the gear B^6, the latter being secured to the shaft D (Fig. 2) upon which the driving feed roll D′ is placed. The other feed roll, D^2, is mounted upon a shaft which turns in the box bearings D^4 which are mounted in the upright guides A^6 and are held downwardly pressed by means of springs D^5 held under compression by the adjusting screws D^6 (see Figs. 2 and 4).

A suitably prepared veneer strip S (Fig. 4) is inserted in the machine between the table A^4 and the plate A^5 and is moved forward until it is engaged by the knurled feed rolls D′, D^2, which grip and feed the strip forward to the cutting members. The splint strip S is sustained at its forward end by the spring plate E which is secured to the table A^4 as by screws at E′. This spring plate is perforated at E^2 to allow the feed rolls D′, D^2, to engage the splint strip S. In front of the feed rolls the spring plate E rests upon a block E^2 of elastic material such as rubber which serves to supplement the elasticity of the spring plate E and also to suppress the tendency to vibration in the said spring plate. The spring plate extends forward to the cutting members, serving as a support to hold the splint strip during the splint cutting operation.

The cutting members consist of two knives or sets of knives each independently secured and independently adjustable; the rearmost knives are shaped and arranged to perform the office of making the end cuts for the toothpicks or similar splints which are afterward severed by the forward knives. The end-shaping knives are shown in perspective in Fig. 6, the end-cutting knives themselves being shown at F′; each is a double curved cutting tool, the forward curve on one and the rearward curve on the other being broader than the rearward curve on the former and the forward curve on the latter. Each one of these curved portions constitutes in effect a gouge-shaped cutting tool. These knives F′ are mounted on or preferably formed as part of the forwardly projecting necks F^5 which are secured to and preferably integral with the cutter bar F. Vertical slots at F^3 provide for the vertical adjustment of the knives F′. This end-cutting knife is secured in the frame of the machine by means of screws F^4 (Fig. 2) which pass through the slots F^3 in the bar F. The bar F rests upon the adjusting screws F^2 which are threaded through the base of the machine. The splint-severing knives are shown in perspective in Fig. 7. These knives G, G′, are long enough to make a severing cut across the entire width of a splint strip as it emerges from the forward side of the machine.

In order to form splints which taper from one end to the other, the knives G, G′ are spaced apart at one end by a spacer block I; screws I′ secure the two knives together. These severing knives are also provided with screws G^2 over which the springs G^3 are held under compression between the heads of the screws and the body or bar

of the knife G′. As shown in Fig. 2, these screws G^2 project at the back of the knife G′ and when the knives are in place, bear against the face of the knife bar F. The severing knives G, G′ rest upon the adjusting screws G^7 and are held thereon by the yoke bars G^4, the inner ends of which rest upon the ends of the bars or bases of the knives G, G′, the outer ends resting upon adjusting screws G^6. Holding screws G^5 pass through the yokes G^4 and are threaded into the base of the machine. By means of the several adjusting screws above described, the two sets of knives, namely, the rear knives F, F′ and the front or severing knives G, G′ may be accurately adjusted and secured in place. Above them the complemental member consisting of the block C^4 which is composed of wood, fiber, or soft metal, is secured to the cross head C^3 which slides in the guides A^3. Vertical reciprocating motion is imparted to the block C^4 by means of the connecting rods C′ which have their bearings upon crank pins C at the upper ends and the wrist pin C^2 at the lower end; the cross head C^3 is carried by the said wrist pin, and the crank pins C form part of the main shaft B.

The adjustment of the two sets of cutting knives is made with relation to the rate of feed of the strip of veneer S, the span of the end-shaping blades F′ and the rate of reciprocation of the cutter block C^3.

The relation between the rate of feed of the veneer strip S and the recurrent reciprocations of the cutter block C^4 is established by the diameter and gear ratios of the pulleys B^3, B^4, and pinion B^5 and gear B^6; the end-shaping knives F′ and the severing knives G, G′, are adjusted so that when the forward end of the strip S is presented to the severing knives G, G′, the cross cuts made by those knives shall register exactly with the cusps of the double curves previously formed in the strip by the end-shaping knives F′. Referring to Fig. 5, the lines S^4, S^5 represent the locations of the cross cuts made by the knives G, G′, the line S′ representing the forward edge of the strip S. The cuts, S^4, S^5, sever the veneer strip from one side to the other and pass accurately through the cusps or points formed by the junction of the curvilinear cuts S^2, S^3. The feed of the machine is determined so that between each descent of the cutter block C^4 the veneer strip S is fed forward a distance equal to the mean width of two toothpicks. When the cutter block C^4 descends, the cut at the line S^5 severs a tapered toothpick which falls down over the forward side of the knife U′ and the splint or toothpick formed by the cuts S^4, S^5 is pressed down into the space between the knives G, G′ and falls from the machine.

The operation of the machine is as follows: The round end cutters being properly adjusted in the machine, the front cutters are adjusted with reference to the rear or round end cutters so that as the strip is fed forward the descent of the cutter block causes the straight blades to register with the cusps or indentations previously made at the side of the strip by the rear or round end cutters. When this adjustment has been properly secured the machine is set in motion, the strip fed forward over the spring plate, the dentation of the sides of the strip first produced by the cusped round end cutters, and the toothpicks then sliced off the forward end of the strip two at a time by the straight cutters, one toothpick falling down at the front of the machine and the other passing down between the two straight blades. This machine is just as rapid in its operation as the old machine for making square or chisel pointed toothpicks; at the same time each toothpick as it falls from the machine is properly and accurately finished with the desired round ends. The cutters are comparatively inexpensive to make, are readily provided with the proper shape or clearance, are easy to regrind, can be quickly and accurately adjusted in the machine, and are not subject to any of the difficulties and detriments which have attached to the use of the U-shaped or other irregular cutter blades such as hereinabove alluded to.

There are sundry minor improvements in the above described machine.

First, as to the spring plate: This plate has necessarily to be weakened by the provision of a squared hole to admit one of the feed rolls and it is quite common in the operation of such machines to have the spring plate break at this weakened portion. When it does the tendency is for the forwardly moving veneer strip to carry the broken end of the spring plate out over the cutters which then, at the next descent of the cutter block, are ruined and the machine thrown out of operation. In order to guard against such accidents, I arrange a pair of keepers at each side of the spring plate in the rear of the cutters and notch the spring plate so that the keepers enter these notches. The keepers are also notched so that the vertical oscillation of the spring plate is limited by the upper and lower walls of the notches in the keepers and thus any tendency of the plate to spring too high or if broken to be fed forward over the knives is effectively checked. The above mentioned keepers are shown in Figs. 3 and 8. The vertical plates A^7 are notched at a^6 (Fig. 8) this notch being of sufficient vertical height to allow for the vibration of the spring plate E at each descent of the cutter block C^4.

Notches E^4 are formed in the sides of the spring plate and the keepers A^7 enter these notches E^4. If, for the reasons above alluded to, the spring plate E should break at its weakened portion, the engagement of the forward end of the plate with the said keepers prevents it from being pushed forward under the cutting knives. The spring plate E is moreover notched at E^3; the knives F′ stand close to the side edges of the plate E, the front edge of which lies close to the rear severing knife G. Thus, the spring plate E is arranged to support the veneer strip for the operations of both the end-shaping knives and the severing knives.

Second: It has been observed in the manufacture of toothpicks by machines of this general character that occasionally a cross grained or warped part of the veener strip will curl up off the spring plate, strike against the rear part of the cutter block or its cross head and curl over backward out of the machine. Then the strip has to be broken off at a point close in front of the feed rolls so that it may resume its normal operation and this necessarily wastes more or less material. I obviate this difficulty by securing a guard plate immediately behind the reciprocating cross head, this guard plate having an edge which hangs down near the spring plate just in advance of the feed rolls. If the strip curls up so that its end is advanced against the back side of the reciprocating cross head, the first attempt of the cross head to carry the strip upward and curl it over brings the strip sharply against the edge of the guard plate and automatically breaks it off. The small piece broken off by this means may come forward between the cutters and cause the production of two or three defective toothpicks, but otherwise is of no detrimental effect.

The guard plate aforesaid is shown at H (Figs. 2 and 4). If the splint strip be curled up and accidentally engaged by the back of the cutter block C^4 or cross head C^3, it will be carried up against the lower lip of the guard plate H and broken off.

What I claim and desire to secure by Letters Patent is:

1. In a splint-making machine, the combination of splint-strip feeding devices, a double curved end shaping cutting die, a double bladed severing cutting die, corresponding in blade spacing to the dimensions of the curves of the end-shaping die, the end-shaping die in advance of the severing dies in the feed direction, a member complementary to the cutting dies, and means to bring the cutting dies and complementary member intermittently into operation on an advancing splint-strip.

2. In a splint-making machine, the combination of splint-strip feeding devices, a double curved end-shaping cutting die, independently adjustable, a double bladed severing cutting die corresponding in spacing to the dimensions of the curves of the end-shaping dies, also independently adjustable, the end-shaping die in advance of the severing die in the feed direction, a member complementary to the cutting dies, and means to bring the cutting dies and complementary member intermittently into operation on an advancing splint-strip.

3. In a splint-making machine, the combination of splint-strip feeding devices, a cusped end-shaping cutting die, a plural bladed severing cutting die corresponding in blade-spacing to the cusp-spacing of the end-shaping die, the end-shaping die in advance of the severing die in the feed direction, a member complementary to the cutting dies, and means to bring the cutting dies and complementary member intermittently into operation on an advancing splint strip.

4. In a splint-making machine, the combination of a splint-strip feeding device, a cusped end-shaping cutting die, independently adjustable, a plural bladed severing die, corresponding in blade-spacing to the cusp-spacing of the end-shaping die, also independently adjustable, the end-shaping die in advance of the severing die in the feed direction, a member complementary to the cutting dies, and means to bring the cutting dies and complementary member intermittently into operation on an advancing splint-strip.

5. In a splint-making machine, the combination of splint-strip feeding devices, an end-shaping cutting die provided with pairs of blade-curves, each pair having one curve shorter than the other, a plural bladed severing cutting die, having mutually converging blades whereof an adjacent pair are spaced at one end to correspond with the span of the longer curve of a pair of blade-curves of the end-shaping die, and at the other end to correspond with the span of the shorter curve of a pair of blade-curves of the end-shaping die, the end-shaping die in advance of the severing die in the feed direction, a member complementary to the cutting dies, and means to bring the cutting dies and complementary member intermittently into operation on an advancing splint strip.

6. In a splint-making machine, the combination of splint-strip feeding devices, an independently adjustable end-shaping cutting die provided with pairs of blade-curves, each pair having one curve shorter than the other, a plural bladed severing cutting die also independently adjustable having mutually converging blades, whereof an adjacent pair are spaced at one end to corre-

spond with the span of the longer curve of a pair of blade-curves of the end-shaping die, and at the other end to correspond with the span of the shorter curve of a pair of blade-curves of the end-shaping die, the end-shaping die in advance of the severing die in the feed direction, a member complementary to the cutting dies, and means to bring the cutting dies and complementary member intermittently into operation on an advancing splint-strip.

7. In a splint-making machine, the combination of splint-strip feeding devices, a double-curved end-shaping cutting die, a double bladed severing cutting die corresponding in blade-spacing to the dimensions of the curves of the end-shaping die, the end-shaping die at least one full feed distance in advance of the severing die in the feed direction, a member complementary to the cutting dies, and means to bring the cutting dies and complementary member intermittently into operation on an advancing splint-strip.

8. In a splint-making machine, the combination of splint-strip feeding devices, a double-curved end-shaping cutting die, independently adjustable, a double-bladed severing cutting die corresponding in spacing to the dimensions of the curves of the end-shaping die, also independently adjustable, the end-shaping die at least one full feed distance in advance of the severing die in the feed direction, a member complementary to the cutting dies, and means to bring the cutting dies and complementary member intermittently into operation on an advancing splint-strip.

9. In a splint-making machine, the combination of splint-strip feeding devices, a cusped end-shaping cutting die, a plural bladed severing cutting die corresponding in blade-spacing to the cusp-spacing of the end-shaping die, the end-shaping die at least one full feed distance in advance of the severing die in the feed direction, a member complementary to the cutting dies, and means to bring the cutting dies and complementary member intermittently into operation on an advancing splint-strip.

10. In a splint-making machine, the combination of splint-strip feeding devices, a cusped end-shaping cutting die, independently adjustable, a plural bladed severing cutting die corresponding in blade-spacing to the cusp-spacing of the end-shaping die, the end-shaping die at least one full feed distance in advance of the severing die in the feed direction, a member complementary to the cutting dies, and means to bring the cutting dies and complementary member intermittently into operation on an advancing splint-strip.

11. In a splint-making machine, the combination of a splint-strip feeding device, an end-shaping cutting die provided with pairs of blade-curves, each pair having one curve shorter than the other, a plural bladed severing cutting die, having mutually converging blades whereof one pair are spaced at one end to correspond with the span of the longer curve of a pair of blade-curves of the end-shaping die, and at the other end to correspond with the span of the shorter curve of a pair of blade-curves of the end-shaping die, the end-shaping die at least one full feed distance in advance of the severing die in the feed direction, a member complementary to the cutting dies, and means to bring the cutting dies and complementary member intermittently into operation on an advancing splint-strip.

12. In a splint-making machine, the combination of splint-strip feeding devices, an independently adjustable end-shaping cutting die provided with pairs of blade-curves, each pair having one curve shorter than the other, a plural bladed severing cutting die also independently adjustable having mutually converging blades whereof an adjacent pair are spaced at one end to correspond with the span of the longer curve of a pair of blade-curves of the end-shaping die, and at the other end to correspond with the span of the shorter curve of a pair of blade-curves of the end-shaping die, the end-shaping die at least one full feed distance in advance of the severing die in the feed direction, a member complementary to the cutting dies, and means to bring the cutting dies and complementary member intermittently into operation on an advancing splint-strip.

13. In a splint-cutting machine, the combination of splint-strip feeding devices, cutting dies and complementary member, means to bring the cutting dies and complementary member intermittently into action on an advancing splint-strip, a strip supporting spring-plate reaching toward the cutting die, a pair of keepers one at each side of the spring plate and engaging therewith, to hold the said strip in case of breakage.

14. In a splint-cutting machine, the combination of splint-strip feeding devices, cutting dies and complementary member, means to bring the cutting dies and complementary member intermittently into action on an advancing splint-strip, a strip-supporting spring plate reaching toward the cutting die, and laterally notched to admit a pair of keepers, one on each side of the spring plate, said keepers, each keeper consisting of a plate standing substantially at a right angle to the spring plate and notched to limit the vibratory movement of the strip.

15. In a splint-making machine, the combination of splint-strip feeding devices, cut-

ting dies and a reciprocating complementary member, a guard plate located directly in the rear of the complementary member, to arrest and sever the end of a splint-strip in case the latter engages with the reciprocating complementary member to be lifted thereby.

Signed by me at Dixfield, Maine this twenty sixth day of April 1909.

ALBERT HENRY HALL.

Witnesses:
N. B. WOODSMAN,
MAURICE W. FORSTER.