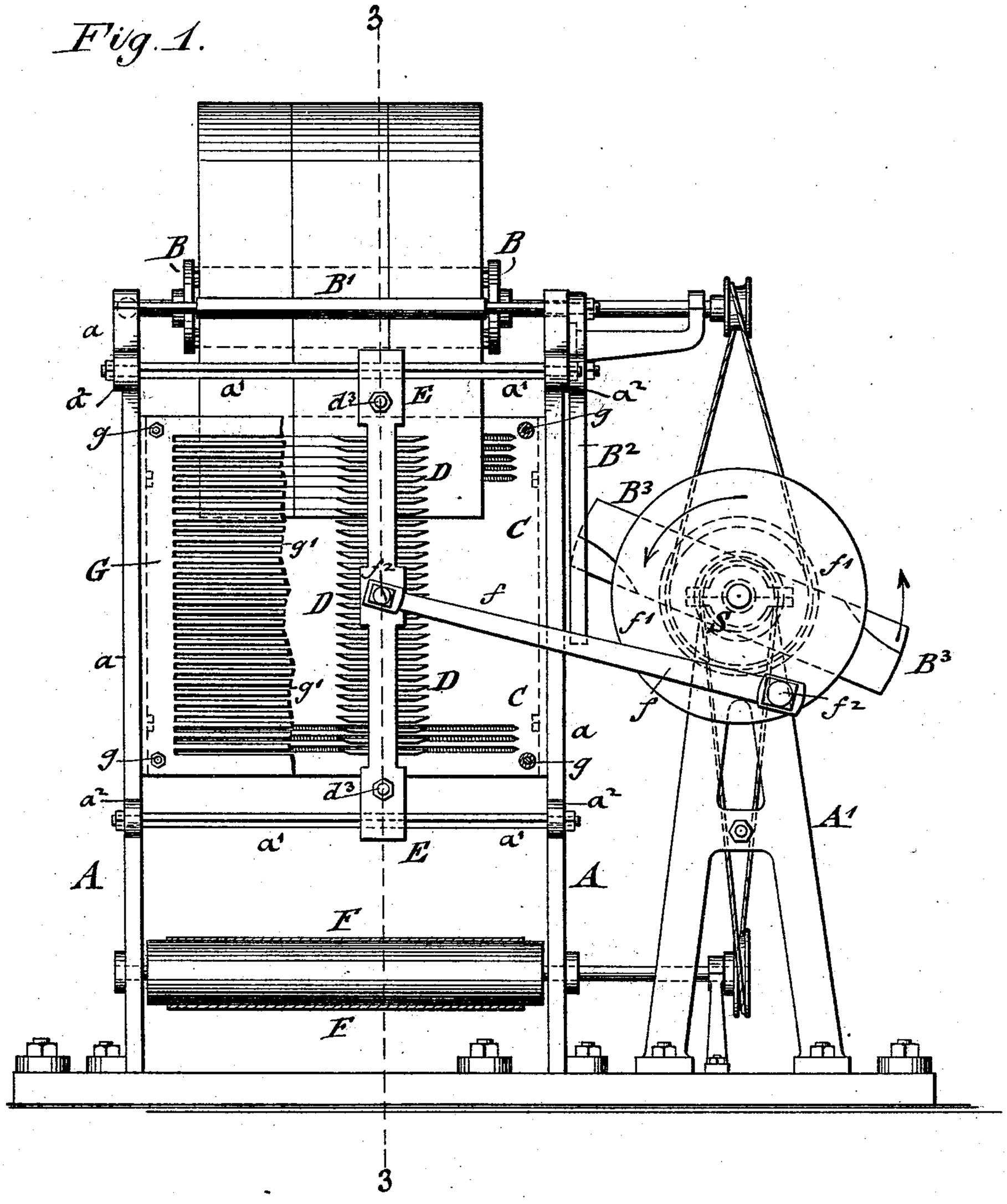
(No Model.) 3 Sheets—Sheet 1.

J. POWERS.

MACHINE FOR CUTTING TOOTHPICKS.

No. 517,625. Patented Apr. 3. 1894.

Fig. 1.



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(No Model.) 3 Sheets—Sheet 2.

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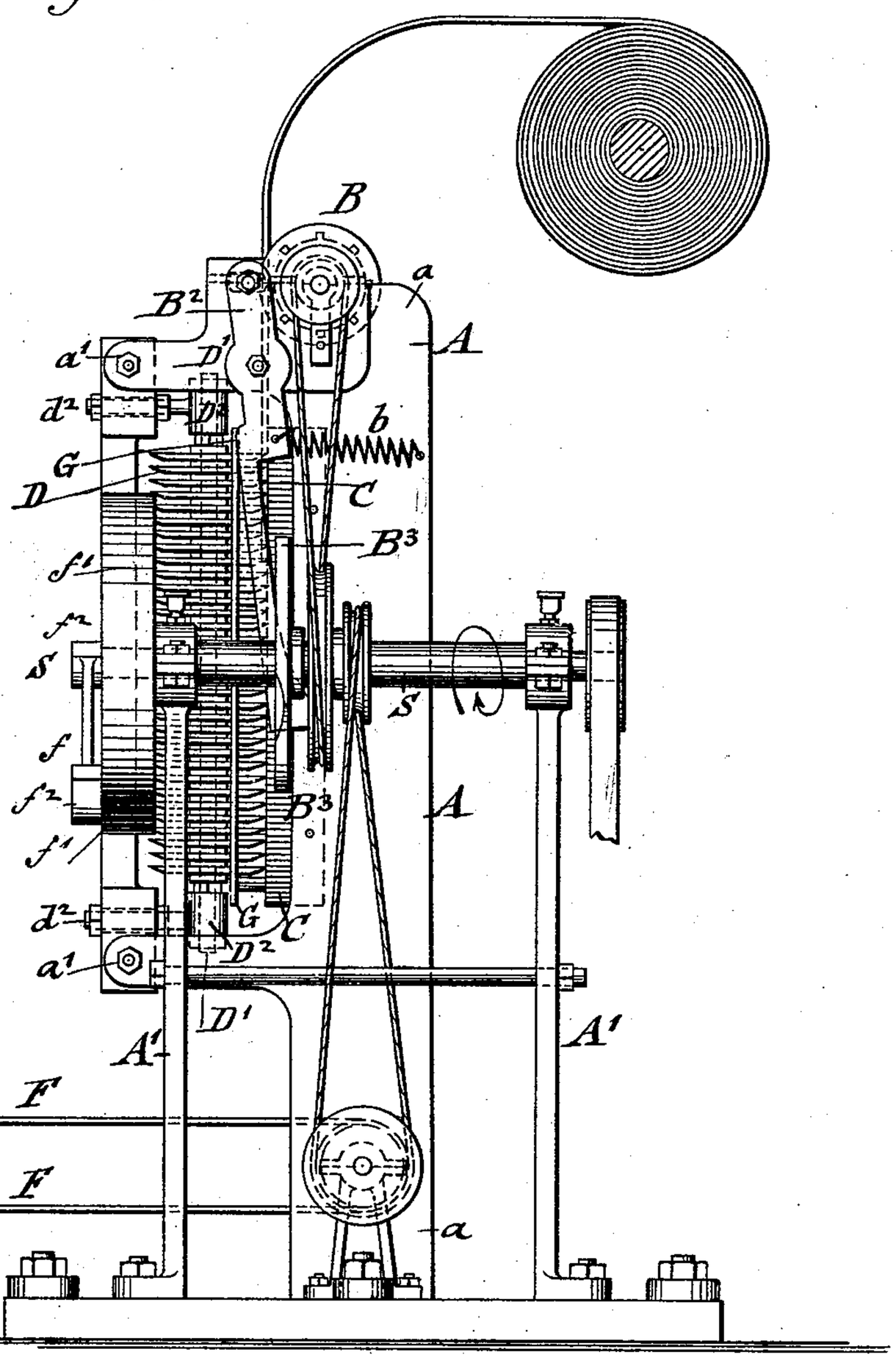
Fig. 2.



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(No Model.) 3 Sheets—Sheet 3.

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Fig. 3.

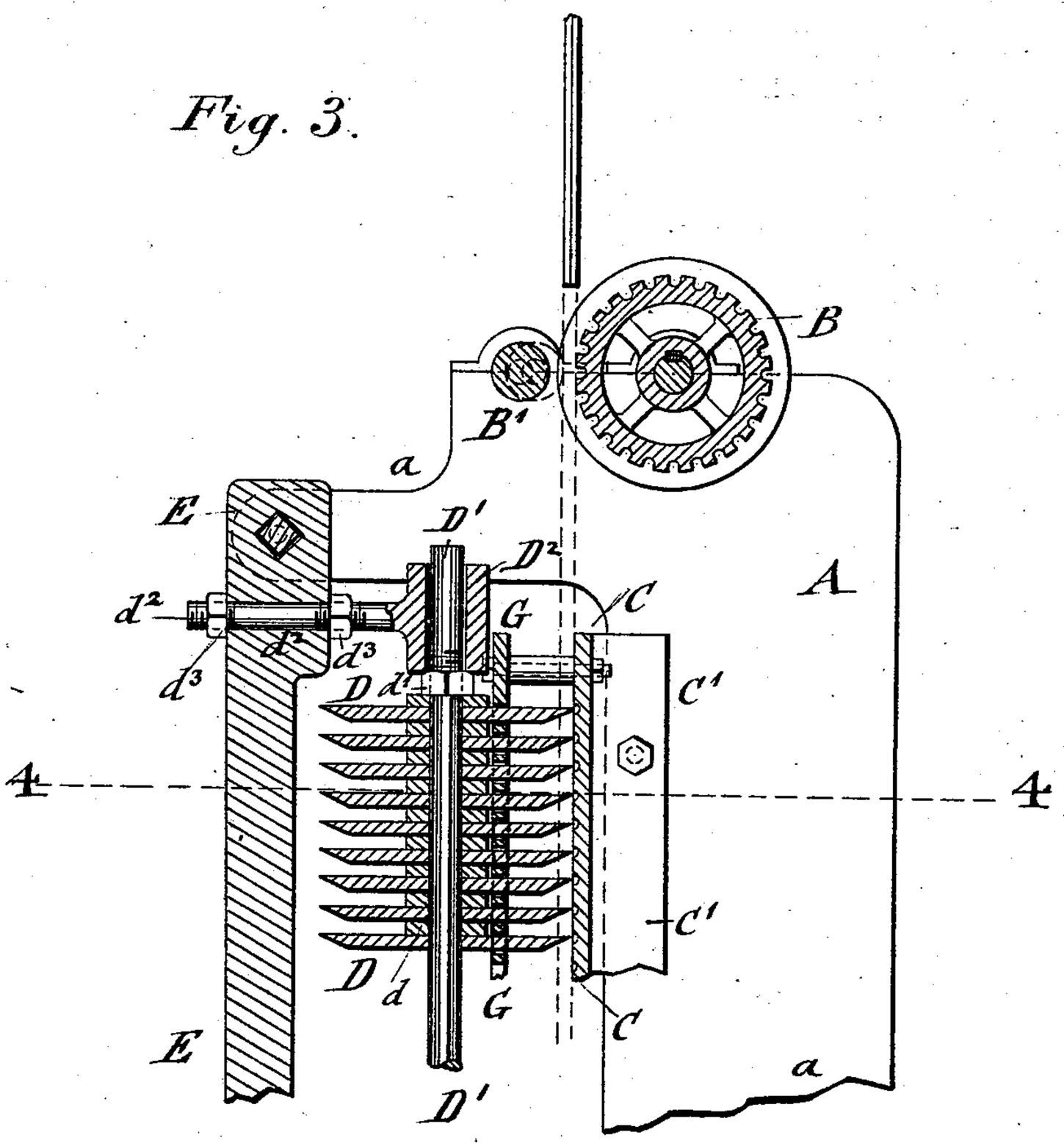

Fig. 4.

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JAMES POWERS, OF NEW YORK, N. Y.

MACHINE FOR CUTTING TOOTHPICKS.

SPECIFICATION forming part of Letters Patent No. 517,625, dated April 3, 1894.

Application filed January 5, 1894. Serial No. 496,837. (No model.)

To all whom it may concern:

Be it known that I, JAMES POWERS, a subject of the Czar of Russia, residing in the city, county, and State of New York, have invented certain new and useful Improvements in Machines for Cutting Toothpicks, of which the following is a specification.

This invention has reference to an improved machine for cutting tooth-picks and other articles from veneers the cross-section of which corresponds to the shape of the articles to be produced; and the invention consists of a machine for cutting toothpicks, &c., which comprises, first, means for intermittently feeding the veneer; second, a stationary plate provided with parallel grooves, over which the veneer passes; third, a plate in front of the same provided with parallel slots in line with the grooves of the stationary plate; fourth, a series of gang or rotary disk-shaped cutting-knives which are mounted on a vertical shaft and guided in the slots of the guide-plate; fifth, means for moving the gang of cutting-knives over the veneer and back, and sixth, an endless belt or conveyer below the gang of cutting-knives on which the tooth-picks, as they are cut from the veneer, are dropped and conducted to a suitable receptacle.

The invention consists further of certain details of construction and combination of parts, which will be fully described hereinafter and finally pointed out in the claims.

In the accompanying drawings, Figure 1, represents a front-elevation of my improved machine for cutting toothpicks from veneers, some of the parts being cut away and others in section. Fig. 2, is a side-elevation of my improved machine. Fig. 3, is a detail vertical transverse section of the upper part of the machine, taken on line 3—3 Fig. 1, and Fig. 4, is a detail horizontal section on line 4—4, Fig. 3.

Similar letters of reference indicate corresponding parts in all the drawings.

Referring to the drawings, A represents the supporting-frame of my improved machine for cutting toothpicks from veneers. The frame A is composed of two upright standards *a a*, which are connected by transverse tie-rods *a'*. At their upper ends, parts of the frame A are arranged the intermittently-actuated feed-rollers B B' by which the veneer, that is wound up in a suitable roll, is fed to the cutting mechanism. The feed-roller B is supported by suitable journal-bearings on the uprights *a a*, the feed-roller B being of larger size than the roller B' and provided with longitudinal grooves or ribs. Continuous rotary motion is imparted to the shaft of the feed-roller B from a driving-shaft S by a belt and pulley transmission which is arranged at right-angles to the shaft of the feed-roller B and supported in bearings of separate standards A', or on suitable brackets attached to the main-frame A, or on any other suitable support. The shaft of the smaller feed-roller B' is guided in slots of the supporting-frame A and connected at one end with a fulcrumed lever B^2, the upper end of which is pivoted to the shaft of the feed-roller B', while the lower end is engaged twice at each revolution of the shaft S by a diametrical cam-piece B^3, the beveled ends of which engage the lower tapering or reduced end of the fulcrumed lever B^2 and produce the oscillation of the same, so as to bring the small feed-roller B' at each rotation of the shaft S twice in contact with the grooved feed-roller B so that by the pressure of the rollers B B', the sheet of veneer is taken hold of and fed in downward direction between the feed-rollers. As soon as the diametrical cam-piece B^3 has released the lower end of the fulcrumed lever, the feed-roller B' is moved away from the grooved feed-roller B by means of a spiral spring *b* which is attached by one end to said lever below its fulcrum, and by its other end to the supporting-frame A, as shown in Fig. 2. By the receding motion of the feed-roller B' the sheet of veneer is released while at each forward motion of the feed-roller, B', the sheet of veneer is moved forward by the feed-rollers.

Below the grooved feed-roller B and tangentially or nearly so, to the circumference of the same, is arranged a plate C that is provided with flanges C' at its ends by which it is attached to the standards *a a* of the supporting-frame A. The guide-plate C extends from one standard *a* to the other and is provided in its face with parallel grooves into which the edges of the disk-shaped cutting-knives D enter after they have cut through the sheet of veneer that is fed downward in

front of the guide-plate C. The disk-shaped cutting knives D are splined rigidly to a vertical spindle D′, said knives being separated from each other by suitable collars *d*, and firmly retained on the spindle by means of screw-nuts *d′* applied to the threaded ends of the same. The upper and lower ends of the spindle D′ are supported in sleeve-shaped bearings D^2 which are provided with threaded shanks d^2 that are arranged at right-angles and which are passed through a vertical cross-piece E and secured to the same by means of screw-nuts d^3, one on each side of the said cross-piece, as shown in detail in Fig. 3.

In front of the guide-plate C is supported on short posts *g*, arranged at the corners of said guide-plate, a second plate G, which is provided with parallel slots *g′*, the upper edges of which are in line with the upper edges of the parallel grooves of the guide-plate C, said slots serving for guiding and steadying the rotary cutting-knives D and steadying the same while they pass over the sheet of veneer and exert a cutting action on the same. The slotted plate G is close to the retaining collars *d d* for the cutting knives, as shown in Figs. 3 and 4. By the guide-slots of the plate G the cutting-knives D are guided and steadied during the cutting action on the veneer, so that a uniform width and size of the toothpicks are secured.

The entire gang of cutting knives D is adjustable relatively to the grooved plate C and slotted guide-plate by means of the threaded shanks d^2 of the sleeves D^2 and the screw-nuts d^3 so that the accurate position of the knives toward the veneer to be cut is obtained. In case one of the knives is broken and has to be replaced, or in case the knives have to be sharpened, the entire gang is removed with the spindle D′, by first detaching the sleeves D^2 and then unscrewing the fastening screw-nuts *d′* and removing the intermediate collars *d*. After the knives are sharpened, they are replaced on the spindle, and secured in position by the collars and screw-nuts. The ends of the spindle D′ are then replaced into the sleeves D^2 and the same secured again to the supporting cross-piece E. As by sharpening, the knives become smaller in diameter, they have to be adjusted closer to the grooved plate C, the slotted guide-plate G being in this case likewise placed closer to the plate C by shortening the sleeves of the supporting-posts *g* of the guide-plate G.

The cross-piece E, on which the gang of cutting-knives is supported, is guided on the horizontal top and bottom tie rods *a′* which are made of rectangular cross-section and attached to forward-extending brackets a^2 of the supporting-frame A, said rods passing through corresponding recesses in the upper and lower ends of the cross-piece E. The cross-piece E is reciprocated by a pitman-connection *f* with a crank-disk *f′* on the driving-shaft S, said pitman being connected with wrist-pins f^2 on the crank-disk and cross-piece, as shown in Fig. 1. By this transmitting mechanism, each full rotation of the driving shaft S imparts a forward and backwardly reciprocating motion to the cross-piece E and the gang of cutting-knives supported by the same, so that the sheet of veneer which is fed over the grooved guide-plate C is cut by the forward and backward motions of the knives into as many tooth-picks as there are cutting-knives arranged in the gang. During the forward motion of the cross-piece, the cutting-knives are rotated with their spindle so as to exert a uniform cutting action on the sheet of veneer which is at the time in front of the guide-plate C. During the backward motion of the gang of knives, the sheet of veneer is likewise held in stationary position so as to be subjected to the cutting action of the knives, so that during both the forward and backward motions of the cutting-knives a set of tooth-picks is cut. When the gang of cutting-knives arrives at the end of the forward or backward stroke of the pitman *f*, the feed-rollers are rapidly rotated by the action of the transmitting belt and pulley mechanism and by the motion of the smaller feed-roller and oscillating lever B^2, so that the required length of veneer is fed forward over the guide-plate C.

The batch of toothpicks which is cut by the forward or backward motion of the cutting-knives is dropped from the same onto a horizontal apron or conveyer F, simply by the rotary motion of the knives and the action of the guide-plate G, which acts as a clearing-plate for the picks. The apron F is mounted on suitable rollers, to which continuous rotary motion is imparted by a belt and pulley transmission from the shaft S, as shown in Figs. 1 and 2. From the apron or conductor the toothpicks are conveyed to a suitable receptacle for bundling and packing.

It is obvious that in place of toothpicks, any other articles, such as match-sticks, cigar-lighters, &c., can be made and that when the machine is built on a somewhat larger size, heavier veneers or sheets can be cut into strips or pieces useful for kindling wood and the like.

The advantages of my improved machine for cutting toothpicks are, first, that a very large quantity of toothpicks can be made within a given time, as with each rotation of the driving-shaft a number of toothpicks corresponding to twice the number of cutting-knives arranged in the gang are cut from the sheet of veneer; second, that the machine is of a comparatively simple construction and can be furnished at small expense, being operated either by hand or power, as desired; thirdly, that owing to the automatic working of the machine, one man can attend to several machines so as to keep the same supplied with the required quantity of veneer.

Having thus described my invention, what

I claim as new, and desire to secure by Letters Patent, is—

1. A machine for cutting toothpicks, &c., from veneer, consisting of intermittently-operated feed-device for feeding a sheet of veneer, a grooved guide-plate arranged below the feed-rollers, a reciprocating gang of disk-shaped cutting-knives and a slotted steadying plate for said cutting-knives, located in front of the grooved guide-plate, substantially as set forth.

2. A machine for cutting toothpicks, &c., from veneers, comprising an intermittently-actuated feed-device, a stationary guide-plate provided with parallel grooves in the face of the same, a gang of disk-shaped cutting-knives arranged in front of the guide-plate, means for imparting reciprocating motion to said gang of cutting-knives, and a steadying-plate arranged in front of the guide-plate and provided with slots for the passage of the cutting-knives, substantially as set forth.

3. A machine for cutting toothpicks, &c., from veneer, which comprises an intermittently-actuated feed-device, a guide-plate arranged below the feed-device and provided with parallel grooves in its face, a stationary plate arranged in front of the guide-plate and provided with parallel slots in line with the grooves of the guide-plate, a gang of disk-shaped cutting-knives, said knives passing through the slots of the steadying-plate into the grooves of the guide-plate, sleeves for supporting the spindle of the cutting-knives, a cross-piece to which the shafts of the sleeves are applied, and means for imparting reciprocating motion to said cross-piece, substantially as set forth.

4. The combination, of an intermittently-actuated feed-device for the veneer, a stationary guide-plate having parallel grooves below the same, a steadying-plate in front of the guide-plate provided with parallel slots, a gang of rotary disk-shaped cutting-knives arranged to pass through the slots of the steadying-plate means for imparting reciprocating motion to the gang of cutting-knives, and an endless apron or conductor arranged below the guide-plate and cutting knives for receiving the toothpicks or other articles cut from the veneer, substantially as set forth.

5. A machine for cutting toothpicks from veneers which comprises an intermittently-actuated feed-device, a guide-plate having parallel grooves in its face, a steadying-plate in front of the guide-plate, said steadying plate being provided with parallel slots, a gang of rotary disk-shaped cutting-knives adapted to pass through the slots of the steadying-plate, means for adjusting the entire gang of cutting-knives relatively to the guide-plate, and means for imparting reciprocating motion to the gang of cutting-knives, substantially as set forth.

In testimony that I claim the foregoing as my invention I have signed my name in presence of two subscribing witnesses.

JAMES POWERS.

Witnesses:
PAUL GOEPEL,
K. R. BRENNAN.