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PATENTED OCT. 8. 1907.

J. A. HELLSTROM & G. W. EXLER.
CORK CUTTING AND TAPERING MACHINE.

APPLICATION FILED DEC. 13, 1905. RENEWED FEB. 15, 1907.

2 SHEETS—SHEET 1.

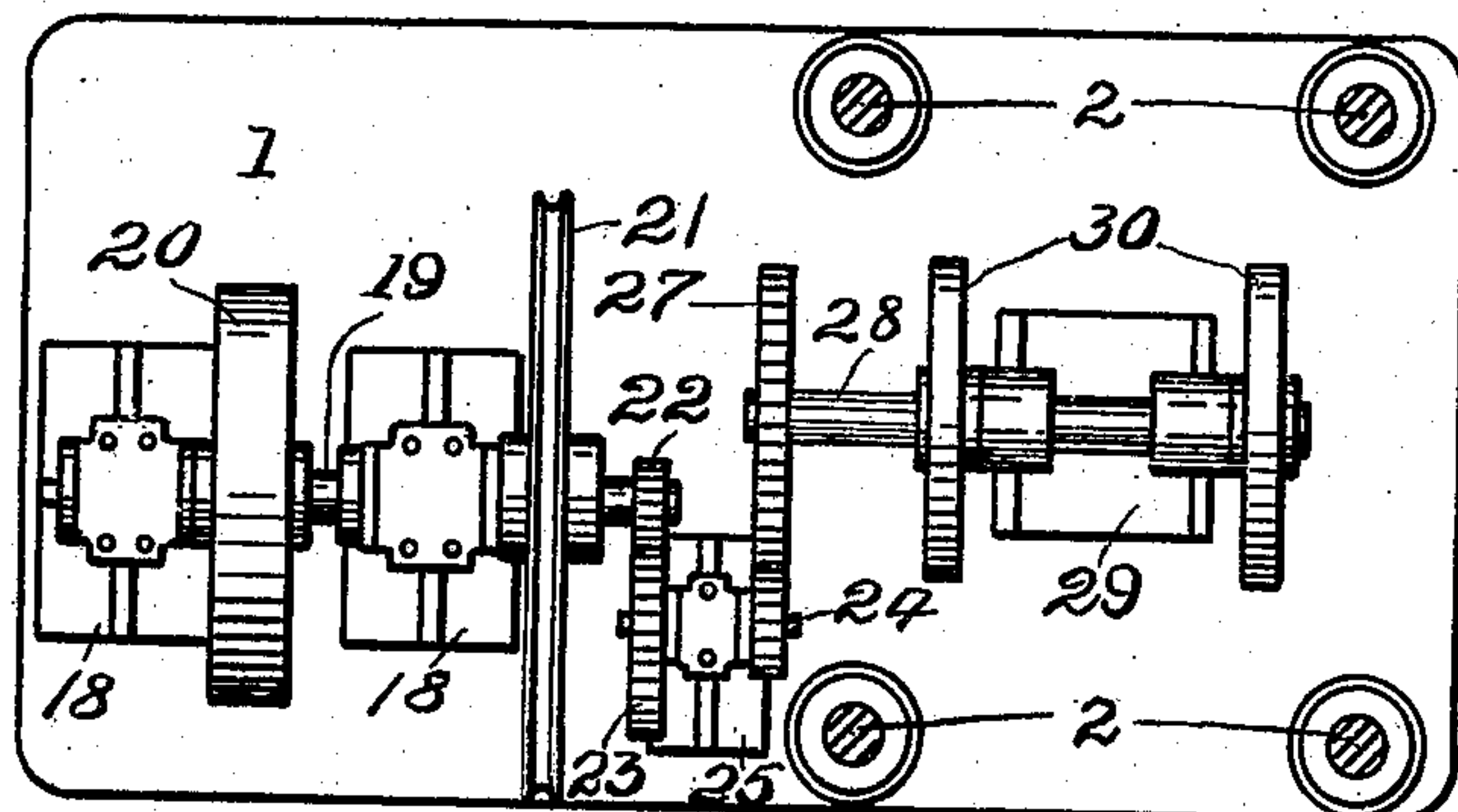


Fig. 3.

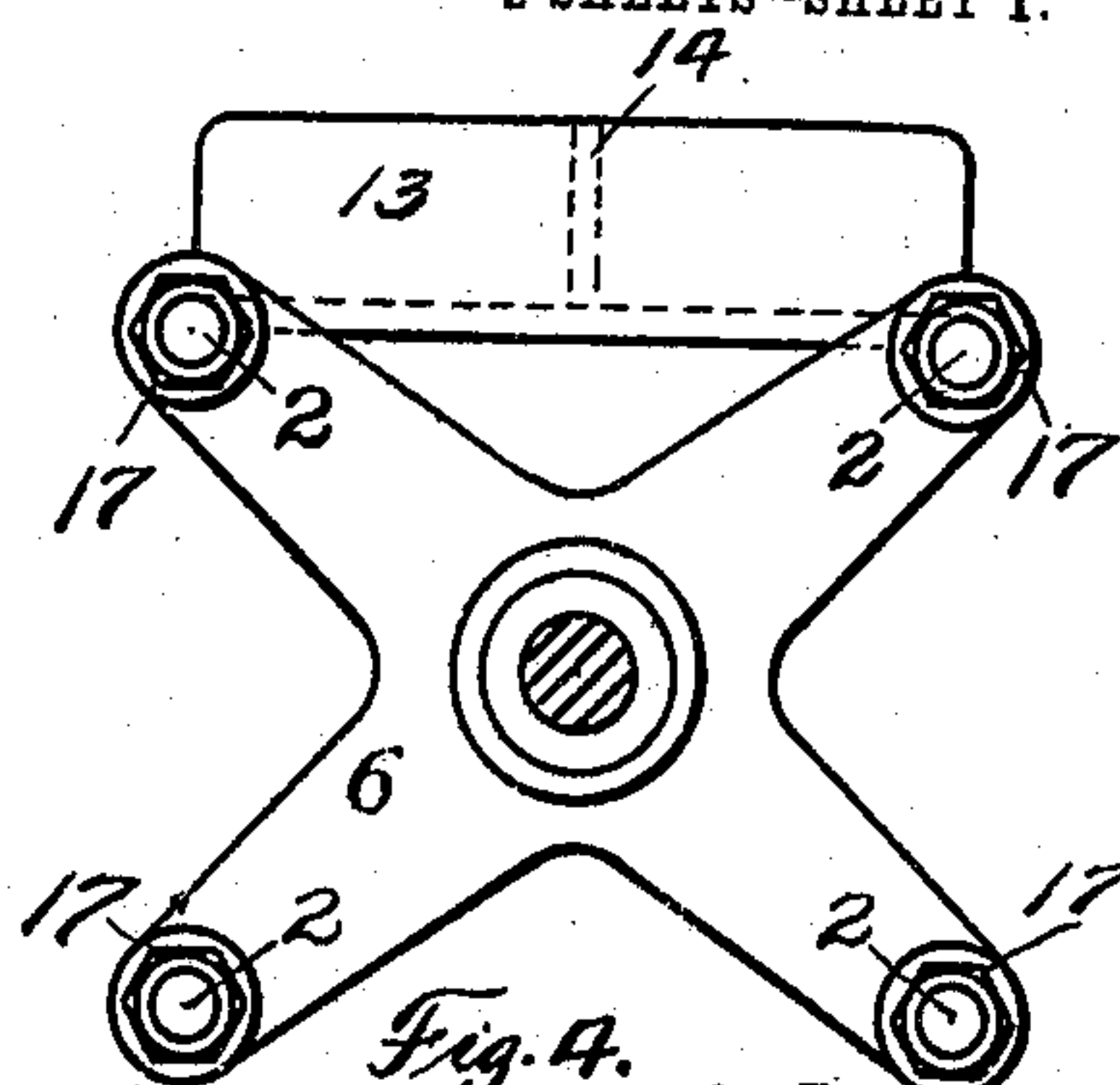


Fig. 4.

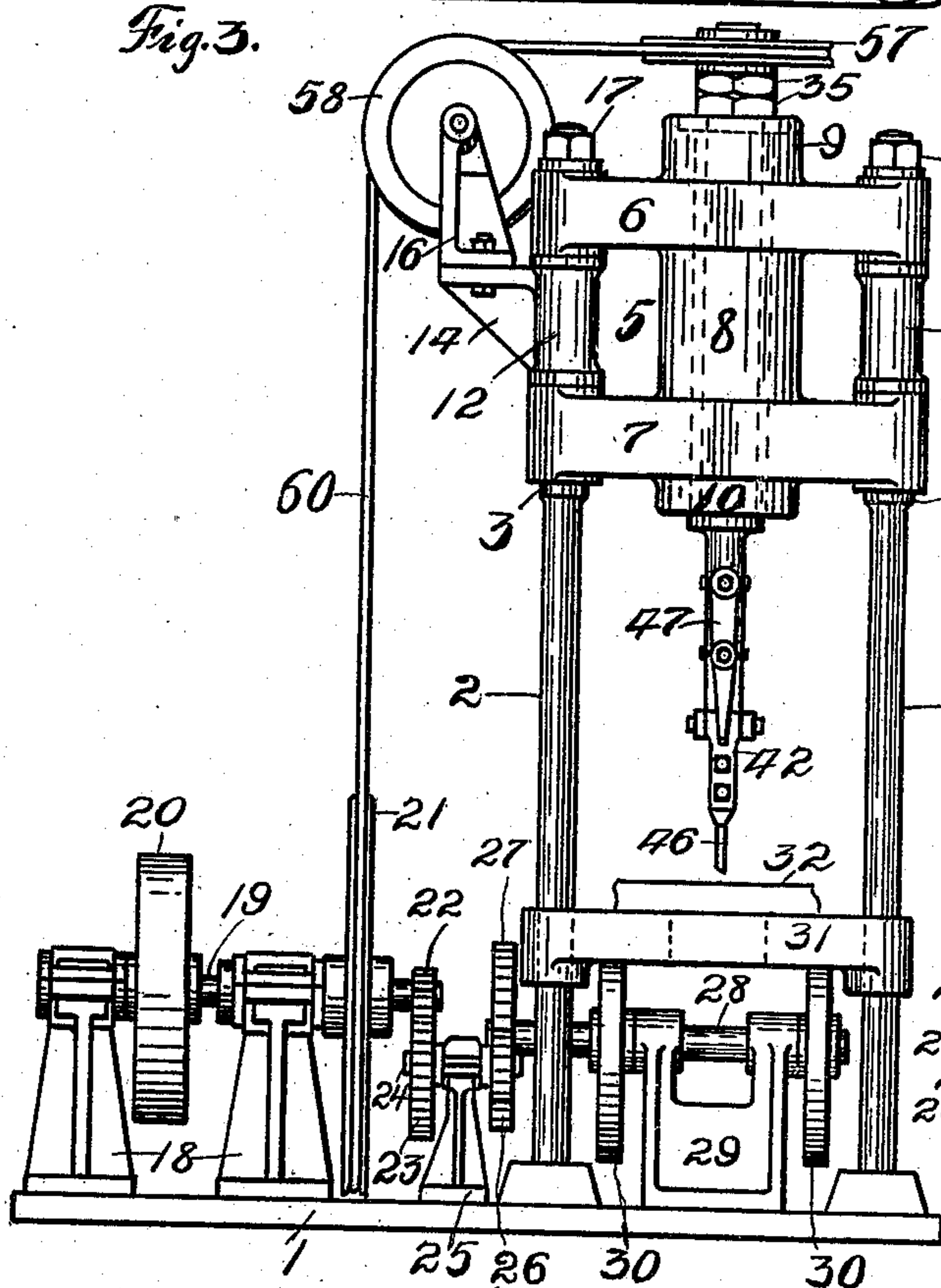


Fig. 1.

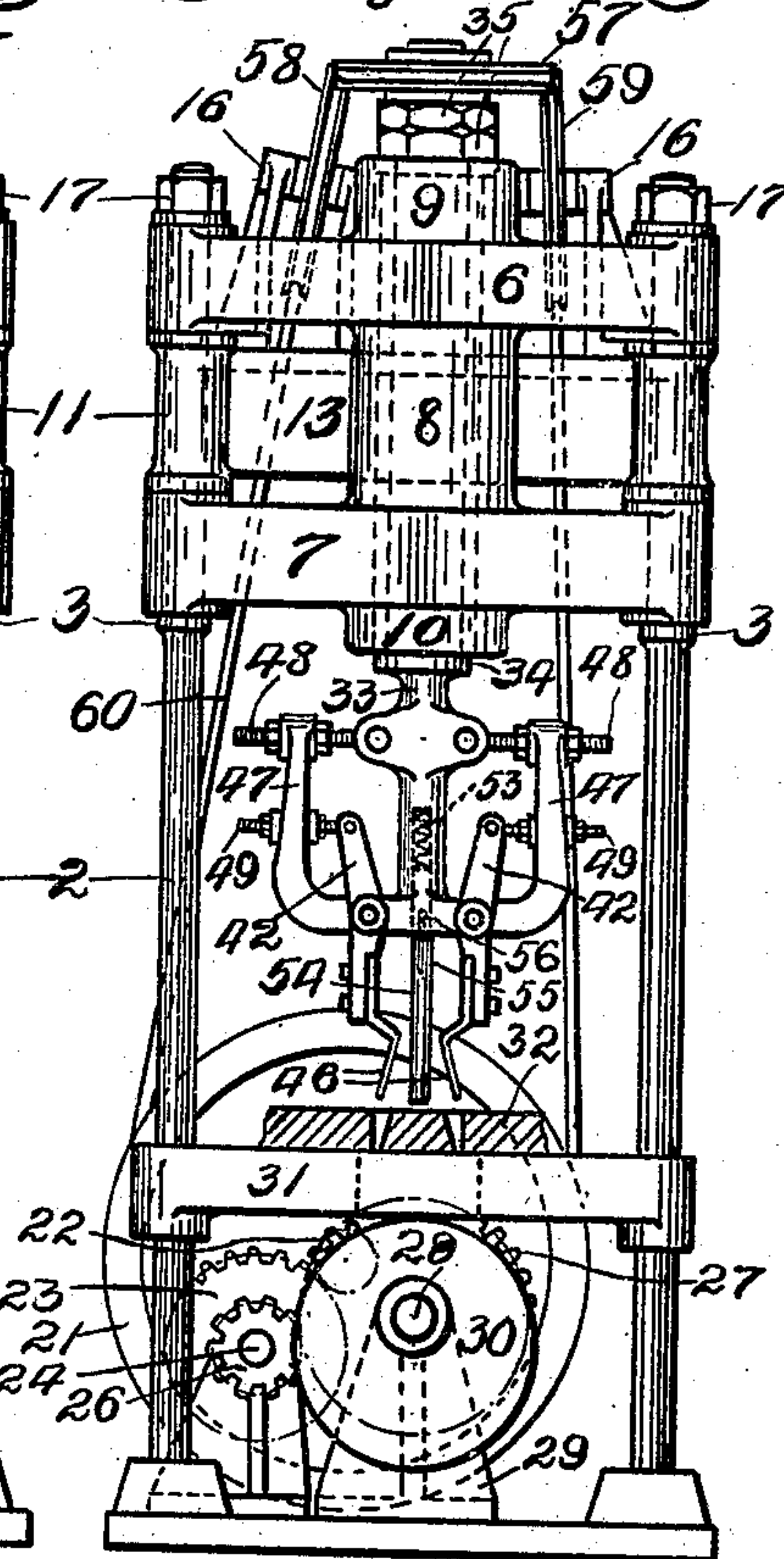


Fig. 2.

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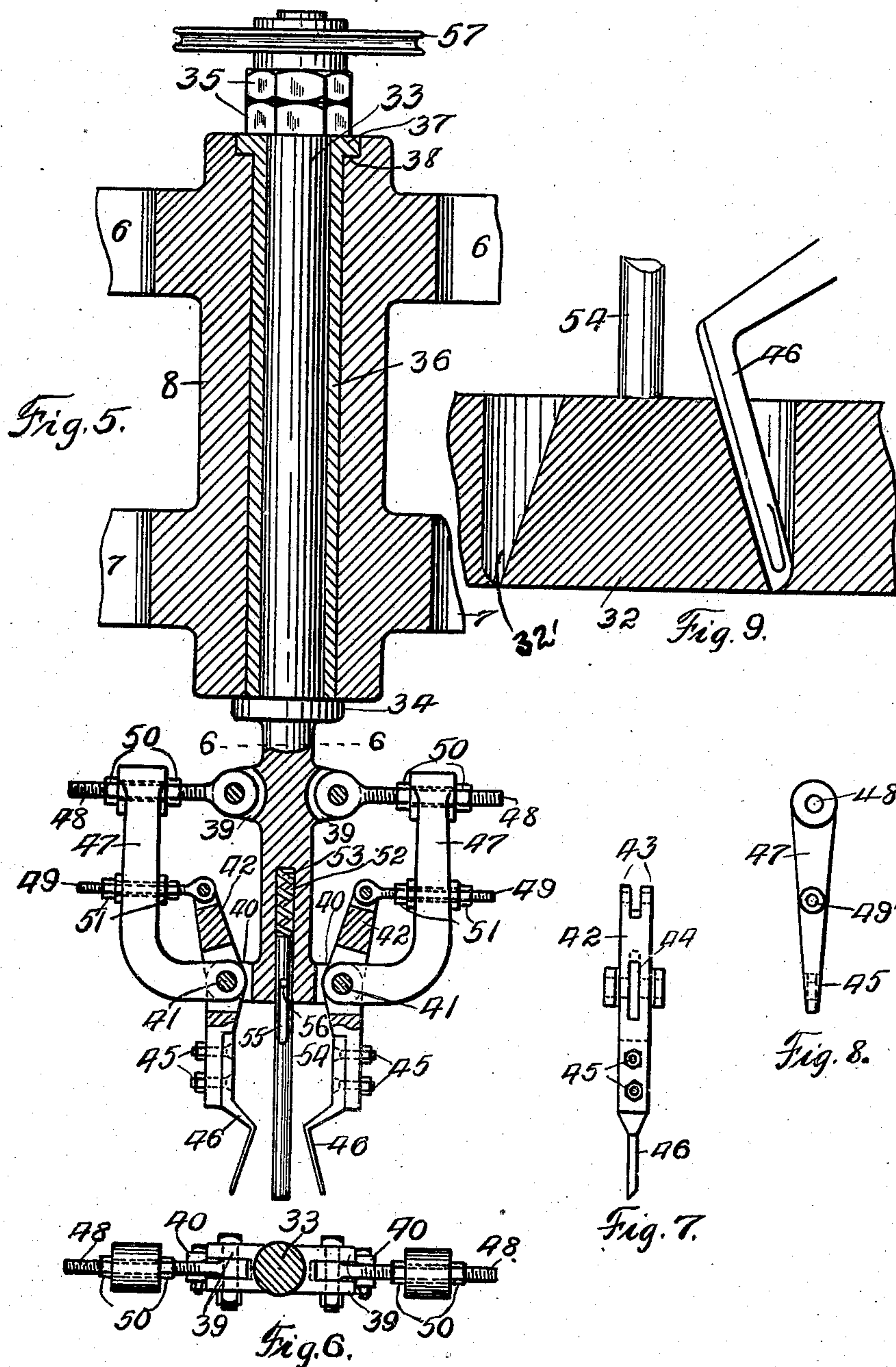
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Witnesses:

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UNITED STATES PATENT OFFICE.

JOHN A. HELLSTROM, OF PITTSBURG, AND GEORGE W. EXLER, OF ALLEGHENY, PENNSYLVANIA, ASSIGNORS OF ONE-THIRD TO THOMAS H. FLYNN, OF PITTSBURG, PENNSYLVANIA.

CORK CUTTING AND TAPERING MACHINE.

No. 867,822.

Specification of Letters Patent.

Patented Oct. 8, 1907.

Application filed December 13, 1905, Serial No. 291,625. Renewed February 15, 1907. Serial No. 357,576.

To all whom it may concern:

Be it known that we, JOHN A. HELLSTROM, a subject of the King of Sweden, residing at Pittsburg, and GEORGE W. EXLER, a citizen of the United States of America, residing at Allegheny, in the county of Allegheny, and State of Pennsylvania, have invented certain new and useful Improvements in Cork Cutting and Tapering Machines, of which the following is a specification, reference being had therein to the accompanying drawing.

This invention relates to new and useful improvements in cork cutting and tapering machines and contemplates the provision of means for simultaneously rotating the cutting knives and reciprocating the blank holder, in their opposed relation.

In machines of that type where rotary cutters are employed the operation of cutting a cork consumes a very limited period of time, and it is a desideratum that the knives be engaged with the blank only during such a period of time as is necessary for a perfect cutting operation.

Our invention aims to attain this end by the specific means to be described, the constituent elements of the mechanism being so arranged, that when a single cork has been cut from the blank, the said blank will be moved away from engagement with the knives, and the cork cut therefrom ejected by a suitable device and conveyed away by any conventional feeding mechanism.

In connection with our machine means are employed for feeding the blank successively after each operation of the rotary knives, but this means does not constitute a part of the present invention, and we have not deemed it necessary to show the same, as any conventional constructions known in the art may be effectually employed.

The detailed construction will appear in the course of the following description in which reference is had to the accompanying drawings forming a part of this specification, like numerals designating like parts throughout the several views, in which:

Figure 1 is a side elevation; Fig. 2 is an end elevation showing the mechanism for reciprocating the blank holder; Fig. 3 is a top plan view, the mechanism for rotating the cutters being removed to show the system of transmission employed; Fig. 4 is a top plan view of the supporting frame for the cutter rotating mechanism; Fig. 5 is a longitudinal fragmentary section showing the arrangement of the rotating cut-

ter knives and the holder therefor; Fig. 6 is a section on the line 6—6 of Fig. 5; Fig. 7 is an elevation of the knife holder; Fig. 8 is an elevation of an adjustable bracket, having connection with said knife holder, by which the angle of the knives may be set, and Fig. 9 is a longitudinal section illustrating diagrammatically the kerf formed in the blank by the rotating knives and showing the manner in which the cork is simultaneously cut from the blank and tapered.

In the practical embodiment of our invention we employ a framework which consists of an elongated base 1, of rectangular contour, having mounted at one side thereof four vertical supporting posts 2. The posts 2 are each formed along their upper portion with peripheral flanges 3, which constitute a support for a framework 5, comprising upper and lower spaced cross-shaped frames 6 and 7, which are united by a central web 8. The frame 6, is provided with an upwardly extending flange 9, and the frame 7 is provided with a downwardly extending flange 10, said flanges 9 and 10 being in axial alinement with said web 8. The flanges 9 and 10, the web 8, and the frames 6 and 7, at a central point, are formed with a longitudinal bore, as shown in Fig. 5. The ends of the arms of the cross-shaped frames 6 and 7 are formed with longitudinal bores, through which the posts 2 extend, the frame 7, resting upon the flanges 3 of said posts 2. Bushings 11 and 12, are sleeved upon the posts 2, between the frames 6 and 7, and serve to reinforce the structure. The bushings 12, are formed with an integral transverse connecting bracket 13, which is braced by a central rib 14, and constitutes a support for a number of alined bearings 16, as shown in Figs. 1 and 2. The frames 6 and 7, in the operation of the machine, are maintained from vibration upon the posts 2, by virtue of securing nuts 17, which are threaded upon the upper ends of said posts.

Mounted upon the base 1, on the side adjacent the posts 2, are spaced alined bearings 18, which support a horizontal shaft 19, carrying a drive pulley 20, preferably located between said bearings, and a transmission pulley 21, located upon the inner end of said shaft. A small pinion 22, is mounted upon the extremity of the shaft 19, and constantly meshes with a larger pinion 23, mounted upon one end of a short length horizontal shaft 24, supported in a bearing 25, resting upon the base 1. A smaller pinion 26 is mounted upon the other end of said shaft 24, and meshes with a larger pinion 27, mounted upon the

end of a horizontal shaft 28, extending between the posts 2, and supported in bearings 29, resting upon the base 1. Said shaft 28 also carries a pair of spaced cam-wheels 30, which are arranged in axial and peripheral alinement. The cam-wheels 30 constitute a support, for a blank supporting frame 31, having its corner extremities loosely sleeved upon the posts 2, so as to be capable of a slidable movement thereupon, the said posts 2 serving as guides.

- 10 The blank or material 32 from which the cork is to be cut rests upon the top of the frame 31, as shown in Fig. 2.

As shown in Fig. 5, a vertical shaft 33 extends through the central bore in the flanges 9 and 10, the frames 6 and 7 and the web 8, and is restrained from vertical movement therein by an integral peripheral flange 34, formed adjacent to the flange 10, and by securing nuts 35, carried adjacent to the upper end thereof. A bushing 36 is supported between said shaft and the inner circumference of said bore by means of an integral flange 37, which rests upon an interior shoulder 38, formed within the bore of the flange 9. The shaft 33 is formed with a reduced lower portion, which is provided with spaced apertured ears 39 and 40, arranged in alinement with one another, and in oppositely disposed pairs. Fulcrumed upon pintles 41, journaled in the ears 40, of the shaft 33, are a pair of oppositely disposed knife holders 42 each having a transverse slot 44, extending therethrough. Secured to the lower portion of said knife holders as at 45, by bolts or other desirable securing means are angular cutting knives 46, clearly illustrated in Fig. 5. A pair of oppositely-disposed L-shaped brackets 47, are likewise fulcrumed upon the pintles 41, the ends of said brackets extending through the walls 44 in the knife holders 42. The brackets 47 are supported and connected to the shaft 33 by eye-bolts 48. The eye-bolts 48, are fulcrumed between the ears 39 of the shaft 33, and the knife-holders 42 are connected to the brackets 47 by means of eye-bolts 49 fulcrumed between the ears 43 of the knife holders 42. Said eye-bolts in a spaced parallel relation, extend through transverse openings 48' 49', as shown in Fig. 8, in the brackets 47, and are restrained from movement, by nuts 50 and 51, arranged in pairs on each side of said brackets. The nuts 50 and 51, may be moved, in effecting a change in the relation of the position of the brackets and the knife holders 42.

The lower end of the shaft 33, is formed with a recess 52, in which is mounted an expansive spiral spring 53, which bears against the upper end of a follower 54, provided with a short length longitudinal slot 55, through which projects a stop and guide pin 56, carried within the recess 52.

Mounted upon the upper end of the shaft 33, is a pulley 57, disposed so as to lie in a horizontal plane. Similarly constructed pulleys 58 and 59 are mounted in the bearings 16, which bearings as hereinbefore stated, are supported upon the bracket 13.

The pulley 57 is driven from the pulley 21, by an endless belt 60, which is trained over the pulleys 21, 58, 57 and 59 in the order named, as shown in Figs. 1 and 2.

In operation, power is applied to the pulley 20, and through the gearing employed, the shaft 33, for revolving the guiding knives, and the shaft 28 for reciprocating

the blank supporting table, are rotated simultaneously. The shaft 33 is rotated through the medium of the driving belt 60, and the shaft 28 is rotated through the gear train 22, 24, 26, and 27. The knife holders 42 of course revolve with the shaft 33, by which they are carried, and the frame 31, rides upon the peripheries of the cam wheels 30, and hence is raised thereby and gravitates downward in the lowermost position of said cam wheels. When the cam wheels 30 are in their uppermost position, the frame 31 will carry the blank 32 into engagement with the knives 46, and the blank will remain in engagement with said knives long enough for a cork to be formed therefrom. In the cutting operation, the cork is formed as shown in Fig. 9. It will be noted that the knives 46, are of angular contour, and that the cutting blades thereof are disposed on an oblique axis, so that as the knives bite into the blank, a central portion 32' having an inclined or beveled surface, corresponding to the degree of incline of the blades of the knives 46, will be formed. The arrangement of the bracket 47, and the connecting eye-bolts 50 and 49, constitute means for adjusting the angle of said knife holder, and changing the angular relative disposition of the knives, so as to vary the degree of taper of the cork to be formed. This adjustment is effected by a movement of the bolts 49, in either direction, in the bores 49' of the brackets 47. It will be observed that when said bolts 49 are moved in either direction, the knife holders 42, will be swung upon their fulcrums 41, in a corresponding direction, moving the knives 46 therewith. The bolts 48 constitute a means of suspending the brackets 47 from the shaft 33, and are adjusted in said brackets by the nuts 50, to correspond to the predetermined adjustment of the bolts 49, by the nuts 51.

By the provision of a knife holder and an adjusting bracket therefor having a common fulcrum, we are enabled to set the knives to any required angle and position, with relation to one another, so that corks of substantially the same size at the base, may be cut, but possessing beveled surfaces of varying degrees of incline. This is especially advantageous since it eliminates the necessity of changing the knives in varying the degree of taper.

It is obvious that we may change various parts of the machine, such as the system of gearing and the arrangement of the frame-work without departing from the scope of our invention as defined in the appended claims.

Having fully described our invention, what we claim as new and desire to secure by Letters Patent is:

1. In a machine of the class described, a supporting frame, a rotating shaft carried by said frame, L-shaped brackets pivotally connected at one end to said shaft, bolts connected to said shaft and passing through the opposite ends of said brackets, knife-holders pivotally mounted on said shaft, the pivotal points of the knife-holders co-inciding with the pivotal points of the brackets and bolts pivotally attached to the knife-holders and extending through the brackets, a movable blank holder disposed adjacent said shaft and means for moving the blank holder towards said shaft.

2. In a machine of the class described, a supporting frame, a rotatable shaft mounted in said frame, a blank-support movable relatively to the shaft, means for moving said blank-support, brackets fulcrumed on said shaft, means for connecting the free ends of the brackets to the shaft and for adjusting said free ends, knife-holders ful-

crumed on the shaft, the fulcrum points of the knife-
holders and the brackets co-inciding and means carried by
the brackets for adjusting the angle of the knife-holders
and sustaining the knife-holders rigidly in adjusted posi-
5 tion relative to the brackets.
3. In a cork cutting and tapering machine, a frame,
blank-supporting means carried thereby, a revolving shaft
journaled in said frame, knife-holders fulcrumed upon
said shaft, brackets fulcrumed upon said shaft at the same
10 point as said knife-holders, adjustable connections be-

tween said brackets and said knife-holders and adjustable
connections between said brackets and said shaft.

In testimony whereof we affix our signatures in the
presence of two witnesses.

JOHN A. HELLSTROM.
GEORGE W. EXLER.

Witnesses:

LOUIS ALPERN,
JULIUS M. KOPP.