

No. 692,380.

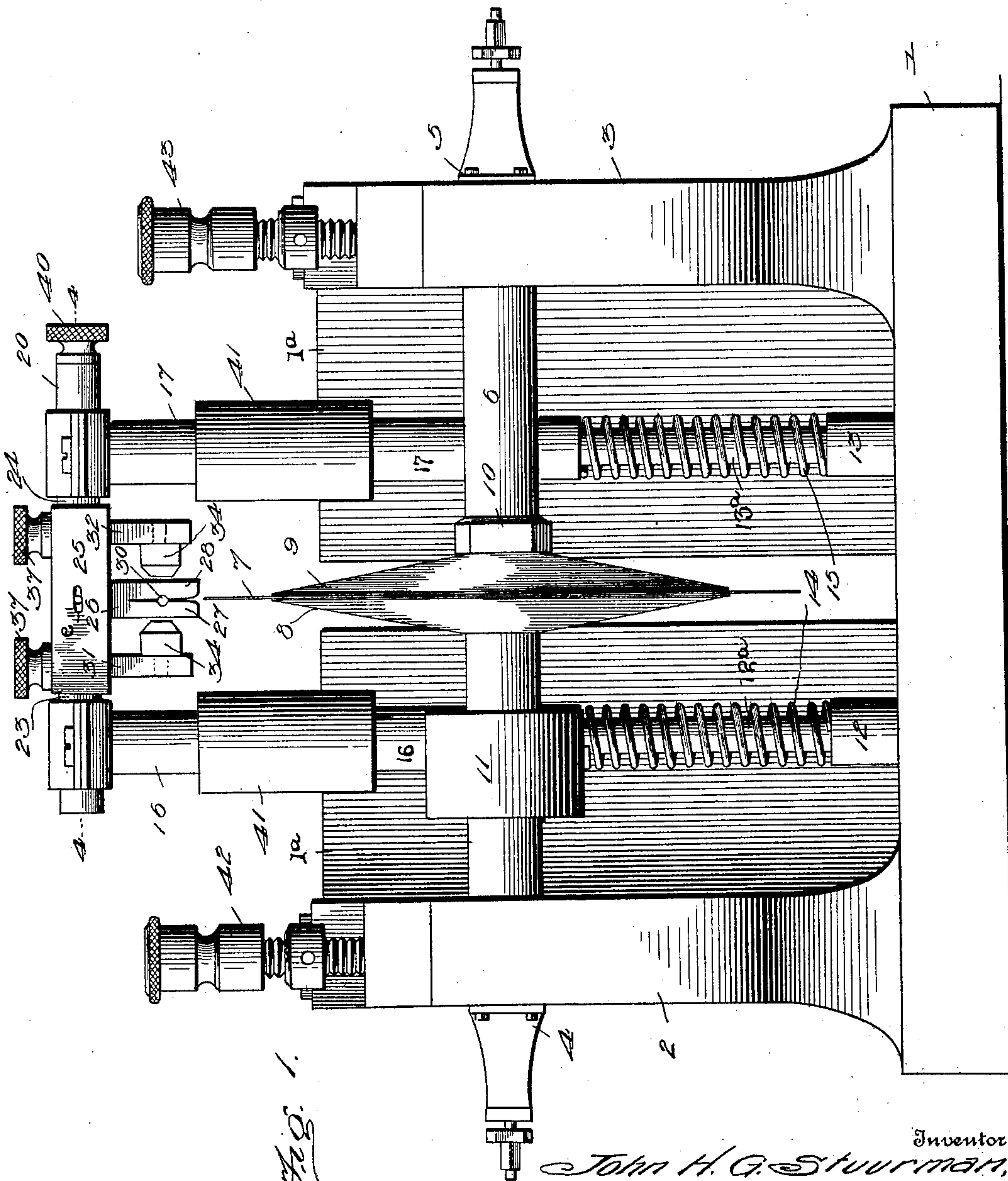
Patented Feb. 4, 1902.

J. H. G. STURMAN.  
DIAMOND CUTTING MACHINE.

(Application filed Apr. 30, 1901.)

(No Model.)

3 Sheets—Sheet 1.



Witnesses

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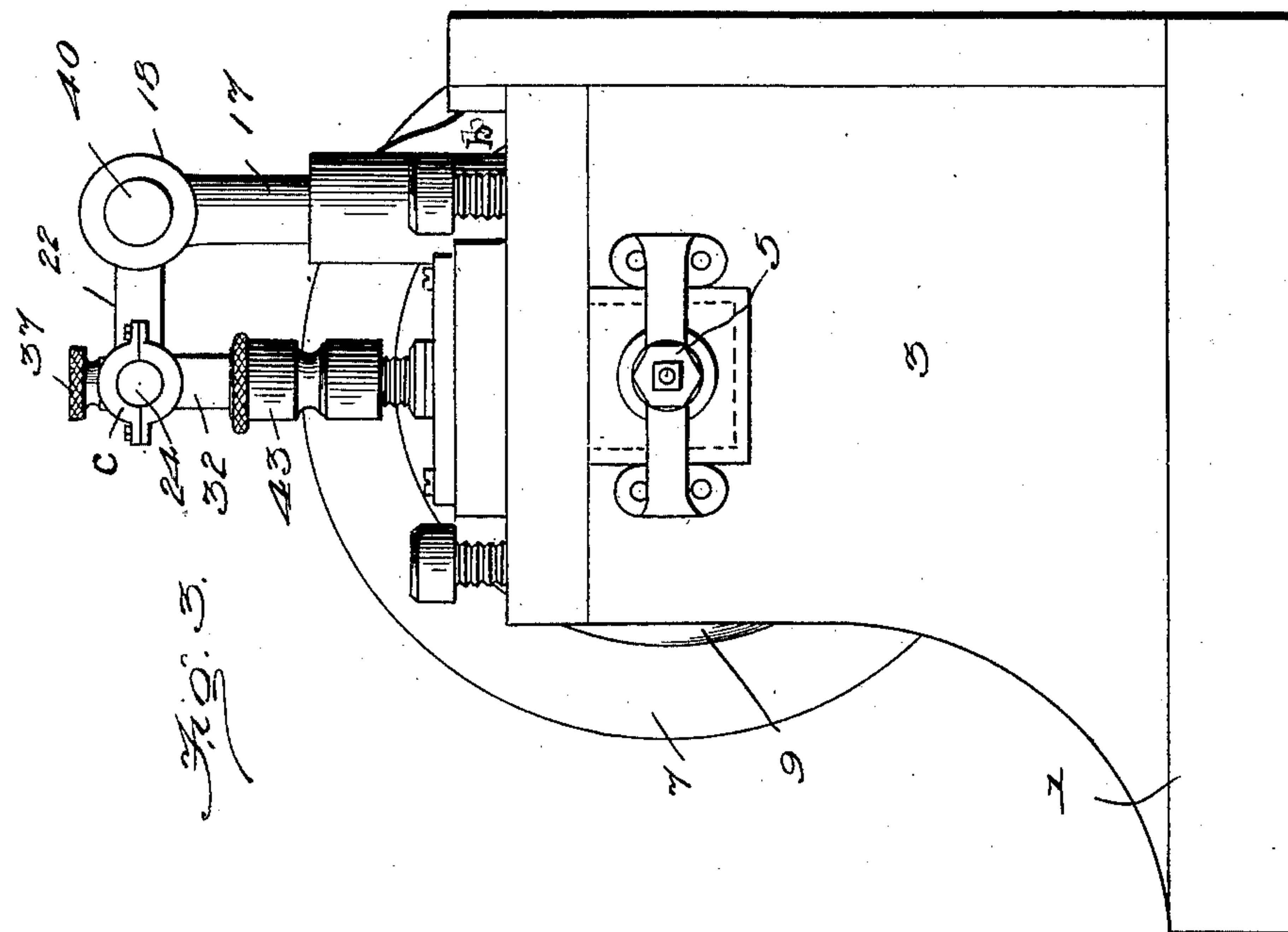
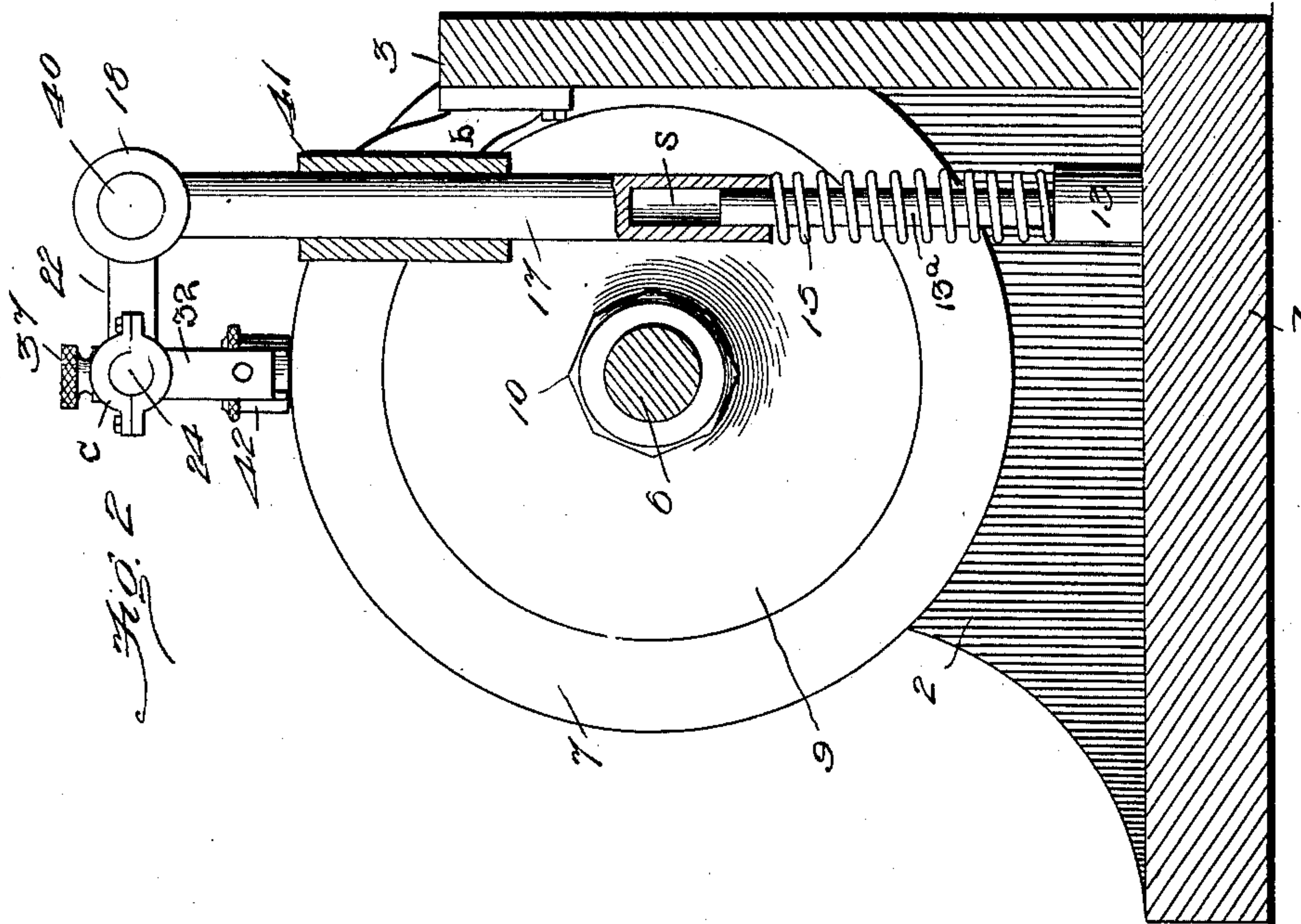
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3 Sheets—Sheet 2.



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Fig. 4

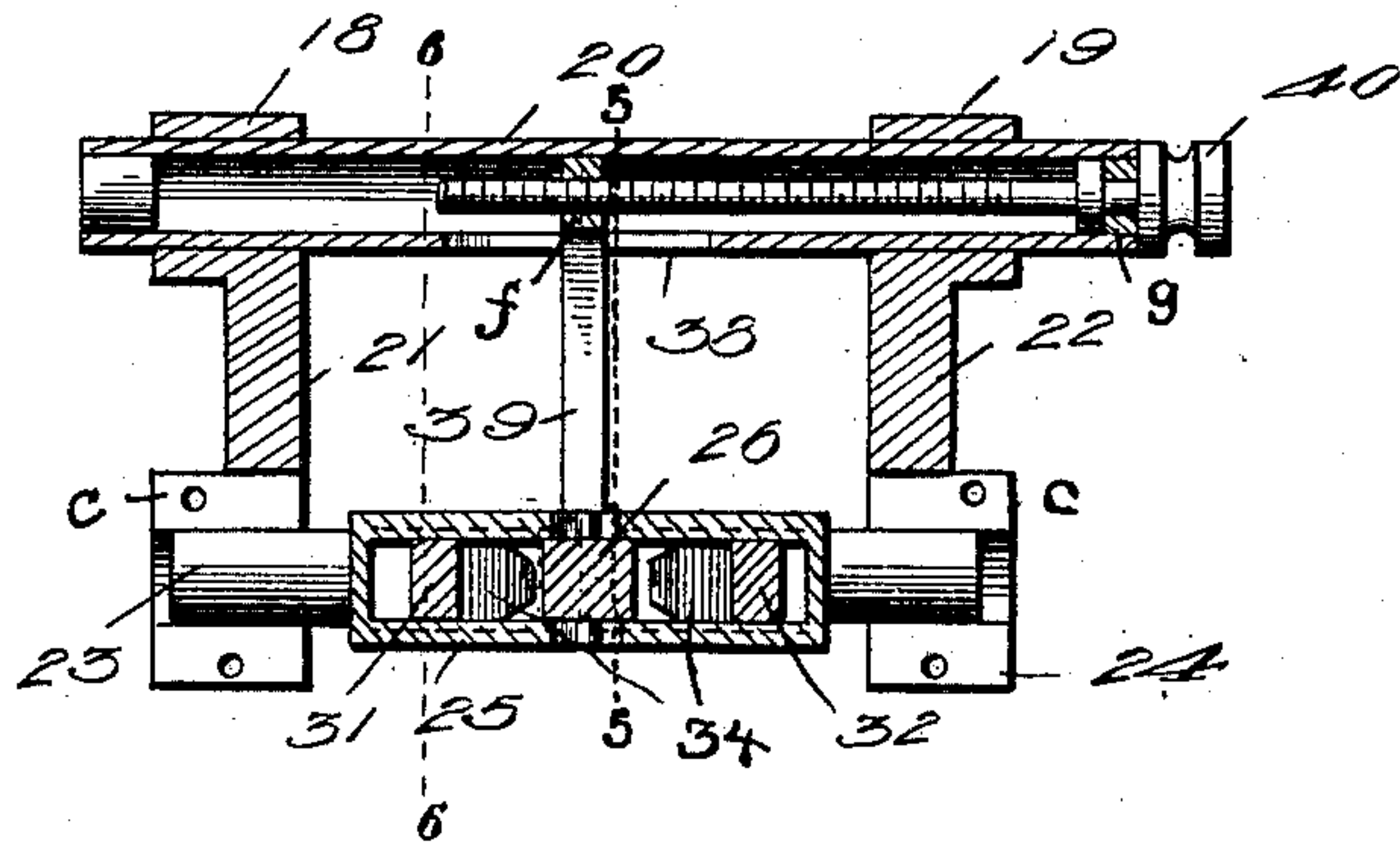


Fig. 5.

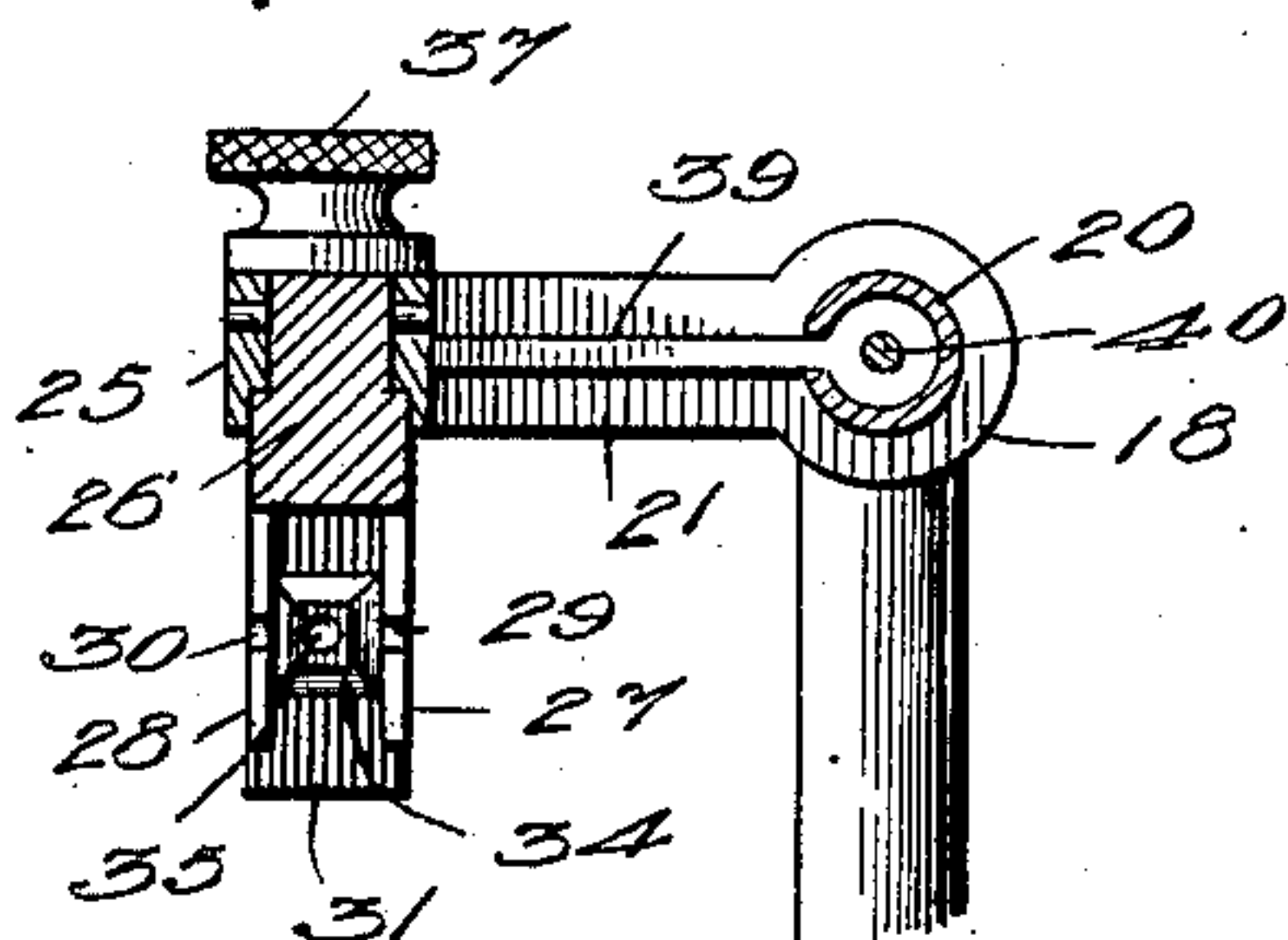


Fig. 6.

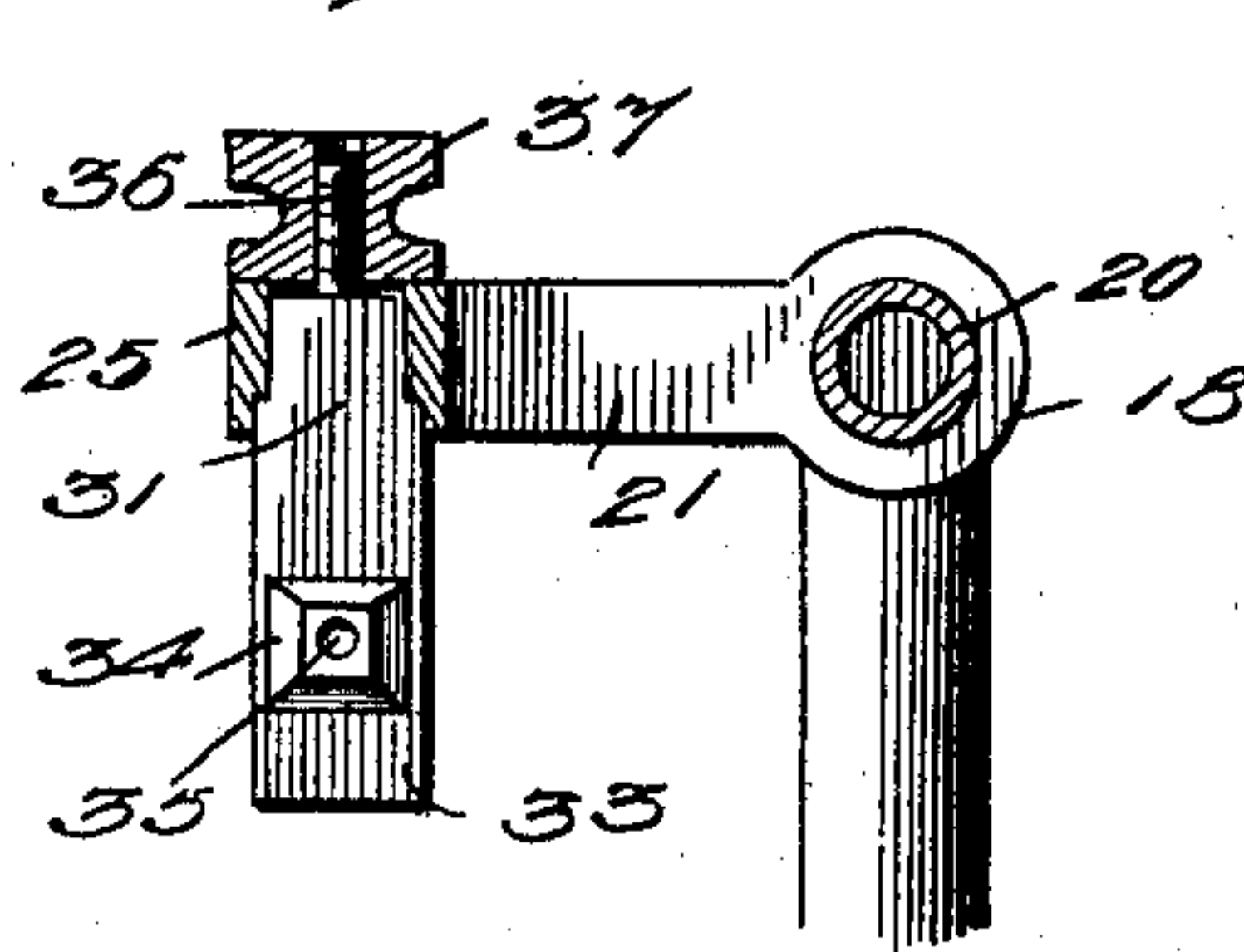


Fig. 7.

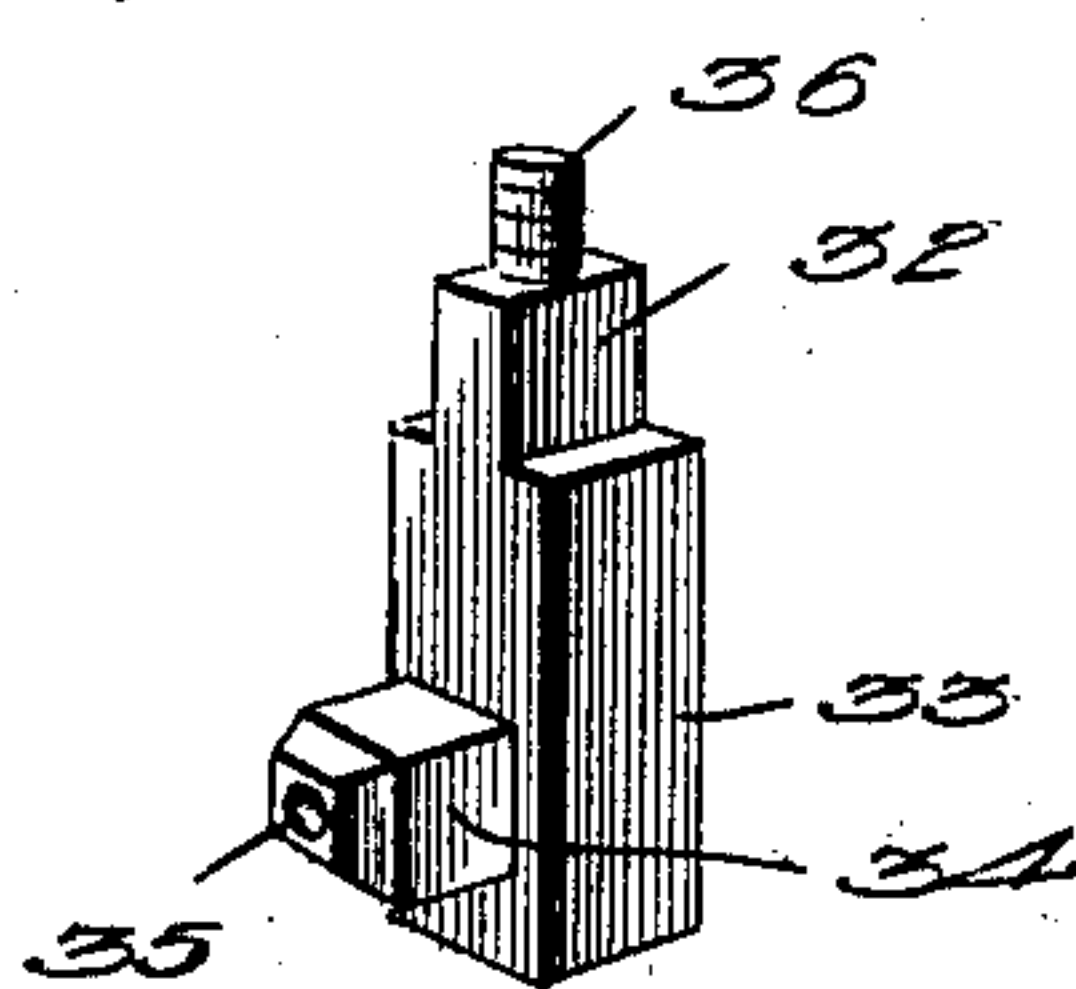


Fig. 8.

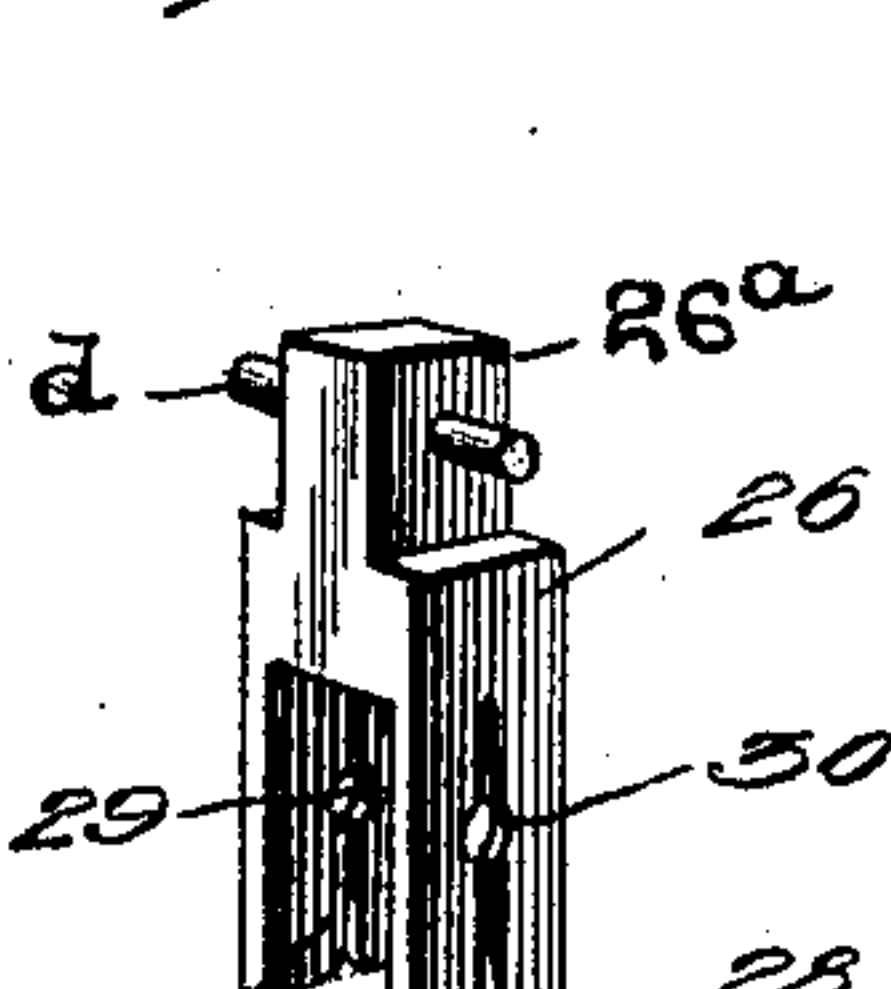
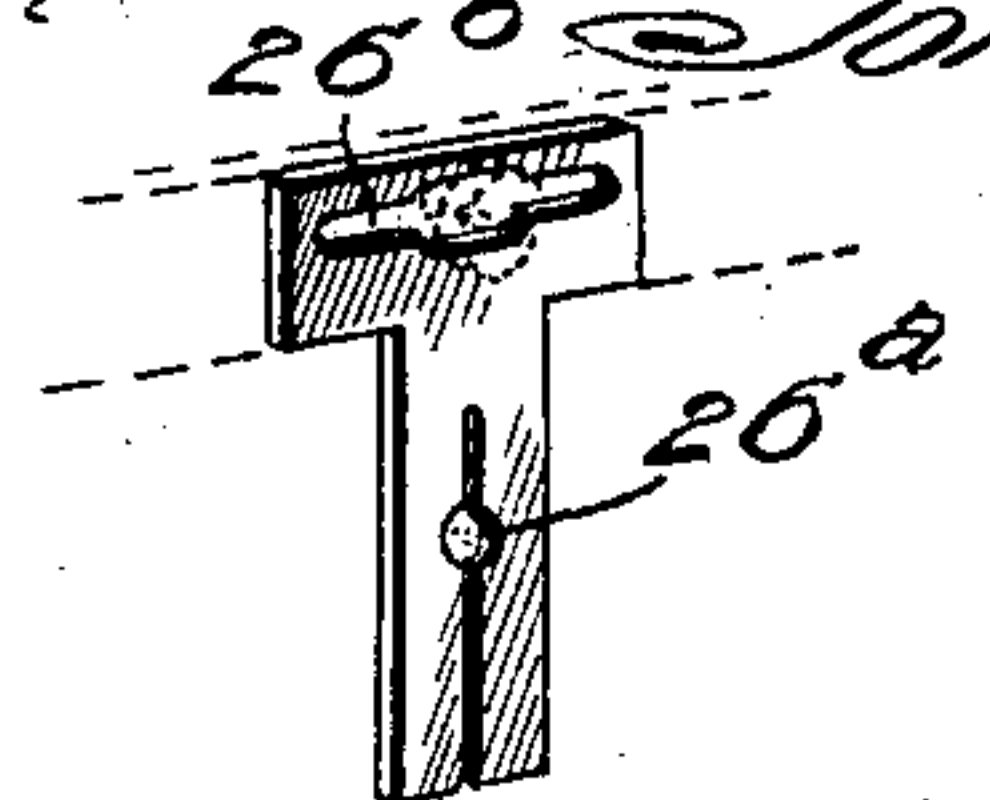


Fig. 9.



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# UNITED STATES PATENT OFFICE.

JOHN H. G. STUURMAN, OF BROOKLYN, NEW YORK, ASSIGNOR OF ONE-HALF  
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## DIAMOND-CUTTING MACHINE.

SPECIFICATION forming part of Letters Patent No. 692,380, dated February 4, 1902.

Application filed April 30, 1901. Serial No. 58,173. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN H. G. STUURMAN, a citizen of the United States, residing at and whose post-office address is Thirteenth avenue, corner of Forty-eighth street, Brooklyn, in the county of Kings and State of New York, have invented new and useful Improvements in Diamond-Cutting Machines; of which the following is a specification.

10 My invention relates to diamond-cutting machines; and the object is to provide a machine which will cut a diamond in two parts on the line of either its major or minor axis with precision, certainty, and expeditiously, and thus divide the stone into two parts of substantially equal value.

As is well known in the art the usual practice of cutting a diamond is accomplished by the slow process of grinding off all irregular surfaces, the parts or portions removed being reduced to "diamond-dust," a commodity of little value in the market.

My invention proposes to divide the diamond into two sections or parts of substantially equal size and weight and in a condition so that the corners and edges may be readily removed and the fragments utilized for engravers' tools, glass-cutters, and diamond drills.

30 The method of cutting the stone or diamond in two forms the subject-matter of a separate application, and I will not in this application enter into a detailed description thereof, but will confine myself to the machine for accomplishing the desired result.

I have fully and clearly illustrated the invention in the accompanying drawings, wherein—

40 Figure 1 is a view in front elevation of a diamond-cutting machine constructed in accordance with my invention. Fig. 2 is a vertical transverse section through the frame of the machine, taken on the line 2 2 of Fig. 1, also showing one of the housing-supports partly in vertical section. Fig. 3 is an end elevation of the machine. Fig. 4 is a horizontal section taken on the line 4 4 of Fig. 1. Fig. 5 is a transverse section taken on the line 5 5 of Fig. 4. Fig. 6 is a view, partly in section, taken on the line 6 6 of Fig. 4. Fig. 7 is a detail perspective view of one of

the dop-holders. Fig. 8 a detail perspective view of the cutting-disk guide. Fig. 9 is a detail perspective view of a cutting-disk guide of modified form.

Referring to the drawings, 1 designates the base, having vertical back plates 1<sup>a</sup>, arranged with a vertical space between their approaching inner edges, as shown. On each end of the base are mounted or formed vertical end pieces 2 3, forming supports, in which are formed bearings 4 5, wherein is journaled a shaft 6. On this shaft 6 are mounted circular clamping-disks 8 9, between which is clamped the thin metal cutting-disk 7, the clamp being effected by means of a nut 10, threaded on the shaft. A band-pulley 11 is mounted and secured on the shaft 6 at such convenient point as not to interfere with the required manipulation and operation of the cutting of the diamond or stone. A belt (not shown) may be arranged on the pulley 11 and connected to a suitable motor, whereby the shaft, with the cutting-disk, may be rotated.

The diamond or stone holding dops and the adjusting mechanism associated therewith are resiliently supported above the cutting-disk, substantially as indicated in the drawings. Reference being had to the drawings, it will be perceived that this mechanism comprises two standards 12 13, having shoulders adjacent to their lower ends and reduced vertical extensions 12<sup>a</sup> 13<sup>a</sup>, the upper ends of which slidably engage in sockets or sleeves s, formed in the lower ends of the housing supports or standards 16 17. On the extensions 12<sup>a</sup> and 13<sup>a</sup> are disposed expansive spiral springs 14 15, having their lower ends resting on the said shoulders and their upper ends bearing against the lower ends of the rods 16 17, so that these rods are resiliently and yieldingly supported. To the back pieces 1<sup>a</sup> are secured brackets b, carrying vertical guide-sleeves 41 41 at their outer ends, in which the rods 16 17 are slidably disposed and guided.

The upper ends of the rods 16 17 terminate in bearings 18 19, in which is mounted a tube or sleeve 20, for the purpose hereinafter specified. Extending horizontally and forward from each of the rods 16 17, adjacent to the bearings 18 19, are arms 21 22, formed with



bearings *cc* at their outer ends, in which are slidably seated bearing-supports 23 24 of an elongated rectangular housing 25, having an opening extending substantially its length, wherein is disposed a cutting-disk guide 26, composed of a body formed with depending opposite arms 27 28, provided with vertical slits, into which the cutting-disk projects when the housing is depressed and by which it is held in alinement with the intended cut. In these slits are formed registering openings 29 30, into which opposite points of the diamond project and are held during the operation of cutting. This guide 26 is formed with an upward projection 26<sup>a</sup>, which fits in the opening of the housing and is provided with a cross-pin *d*, which engages in opposite slots *e*, whereby a limited lateral adjustment is afforded and the guide maintained in proper vertical position. It will be perceived by reference to the drawings that the tube 20, arms 21 22, and housing 25 embody elements which constitute a frame carried by the rods 16 17 and overhanging the cutting-disk.

Arranged and held in the housing 25 and disposed on each side of the cutting-disk guide are two dop-holders 31 32, having a vertically-projecting portion and a threaded stem 36, to which are fitted clamping-nuts 37, which bear with their lower edges on the housing and serve to clamp the dop-holders therein in any position to which they may be adjusted. To the inner face of each dop-holder is formed or secured a lug 34, extending inward and having in their outer ends recesses or seats 35, in which the dops are seated and held. The dop-holders may be adjusted so as to bring the dops between the arms 27 28 of the cutting-disk guide and hold the diamond or stone in fixed position, with its horizontal axis on a true plane and, of course, with its vertical axis directly in line with the slits and cutting-disk. The dops may be filled with plaster-of-paris or some suitable cement, or the diamond may be embedded in plaster-of-paris or cement and then inserted. Different-sized dops will be used for different-sized diamonds, the size being stamped at a convenient point thereon.

Projecting rearward from the housing 25 and extending through a horizontally-placed slot 38, formed in the tube 20, is an arm 39, formed at the end within the tube with a threaded nut *f*, in which engages a threaded rod 40, held against endwise displacement, as indicated at *g*, Fig. 4. By means of the threaded rod and its engagement with the arm 39 the required accurate adjustment of the housing may be made, it being essential that the diamond shall be cut in two on the line of one of its girdles—that is, directly on the line of either its major or minor axis.

Because the dop-holders, the cutting-disk guide, and the frame carrying them are of weight sufficient to interfere with the successful cutting of the stone by the cutting-disk I have provided the expansive springs

to resiliently support the frame and normally lift and hold the frame, with the diamond, above and out of contact with the cutting-disk. It is therefore necessary in the operation of cutting the diamond in twain to depress the frame to bring it, with the diamond, in proper relation and position with the edge of the cutting-disk. This is accomplished manually by pressing upon the top of the mechanism with a force sufficient to accomplish the purpose. The correct amount of pressure, however, can only be determined by actual experiment.

In the modified form of cutting-disk guide shown in Fig. 9 and designated by 26<sup>a</sup> the guide will be bolted to the outside of the housing by a bolt, which will engage a similar disk-guide on the other side of the housing, and thus securely clamp both disk-guides in rigid position. It will be perceived that the guides 26<sup>a</sup> may be adjusted independently of the dop-holders through the medium of the slot 26<sup>b</sup>, or the guides may be adjusted coincidently with the dop-holders through the medium of the adjusting bolt or screw 40. When the modified form of guides is employed, it will, of course, be apparent that the rod or arm 39 will have to be connected at a convenient point to the housing, so that it will not interfere with the rear guide.

Various changes may be made in the construction of this machine without departing from the spirit of the invention. For instance, the bracket 41, through which the rods on the standards 12 13 pass, may be dispensed with and others substituted, or any preferred form of bearing for the shaft 6 may be used, or the form of lubricators 42 43 may be substituted by others, or any slight changes and modifications may be made from time to time which might properly suggest themselves to those skilled in the art, and I therefore reserve the privilege of making such changes and utilize all the equivalents included within the scope of the claims.

I claim—

1. In a diamond-cutting machine, the combination with a vertical rotating cutting-disk, of an overhanging arm arranged above the cutting-disk, a cutting-disk guide depending therefrom, stone-holding dops depending from said arm, and means for rotating the cutting-disk.

2. In a diamond-cutting machine, the combination of a vertically-rotating cutting-disk, oppositely-placed dop-holders, and a cutting-disk guide disposed between the dop-holders.

3. In a diamond-cutting machine, the combination of a rotating cutting-disk, a resiliently-supported frame, a disk-guide secured in said frame, laterally-adjustable dop-holders disposed on each side of the disk-guide, and means for adjusting dop-holders and disk-guide in relation to the rotary disk.

4. In a diamond-cutting machine, the combination of a rotating cutting-disk, standards having shoulders adjacent to their base, ver-



tical rods having sockets in their lower ends to engage over the upper ends of the said standards, expansive springs on the standards to yieldingly support the vertical rods, a frame supported by the rods, stone-holding dops adjustably arranged in the frame, a disk-guide formed with vertical slits to take on the disk and opposite apertures in the disk-guide to take in the corners of the diamond.

5. In a diamond-cutting machine, the combination of a rotating cutting-disk, a horizontally-disposed tube resiliently supported above the disk, a housing adjustable lengthwise and having an arm projected into the tube, a threaded rod to engage the end of the arm within the tube, stone-holding dops mounted in the housing, and a disk-guide intermediate the stone-holding dops.

6. In a diamond-cutting machine, the combination with a base, of a rotary cutting-disk mounted thereon, a frame mounted on the base, adjustable dop-holders carried by the frame, means to clamp the dop-holders in adjusted position, a disk-guide arranged intermediate the dop-holders, and springs to normally lift and hold the frame with the dop-holders and disk-guide above the disk.

7. In a diamond-cutting machine, the combination with a rotating cutting-disk mounted thereon, a resiliently-supported disk-guide carried by the base and arranged above the cutting-disk, whereby pressure must be exerted upon the guide to bring the guide in operative relation to the disk, said guide comprising two bifurcated arms spaced apart, of a pair of dops one arranged on each side of the guide and adapted to be adjusted toward and from the same, and means for adjusting the guide and dops simultaneously with an independent relation to the rotary disk.

8. In a diamond-cutting machine, the combination of a rotary cutting-disk, a resiliently-supported frame arranged over the disk, an endwise-adjustable housing in the frame, oppositely-placed dop-holders in the housing, and a disk-guide having a vertical slit to engage over the disk and disposed intermediate the dop-holders.

In testimony whereof I affix my signature in presence of two witnesses.

JOHN H. G. STUURMAN.

Witnesses:

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JOACHIM S. VAN WEZEL.