

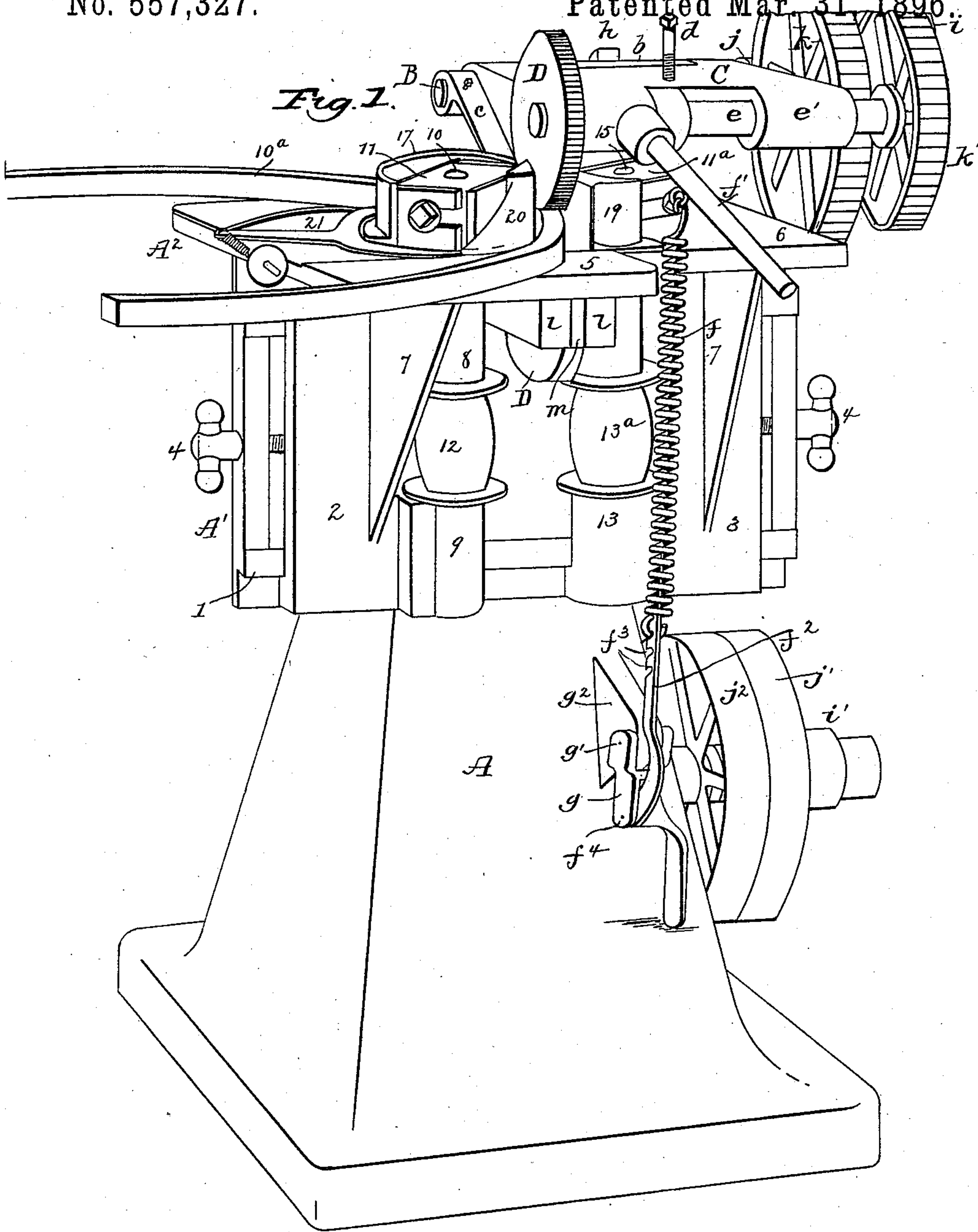
(No Model.)

2 Sheets—Sheet 1.

G. A. ENSIGN.
PLANING APPARATUS.

No. 557,327.

Patented Mar. 31, 1896.



Witnesses
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S. G. Nottingham

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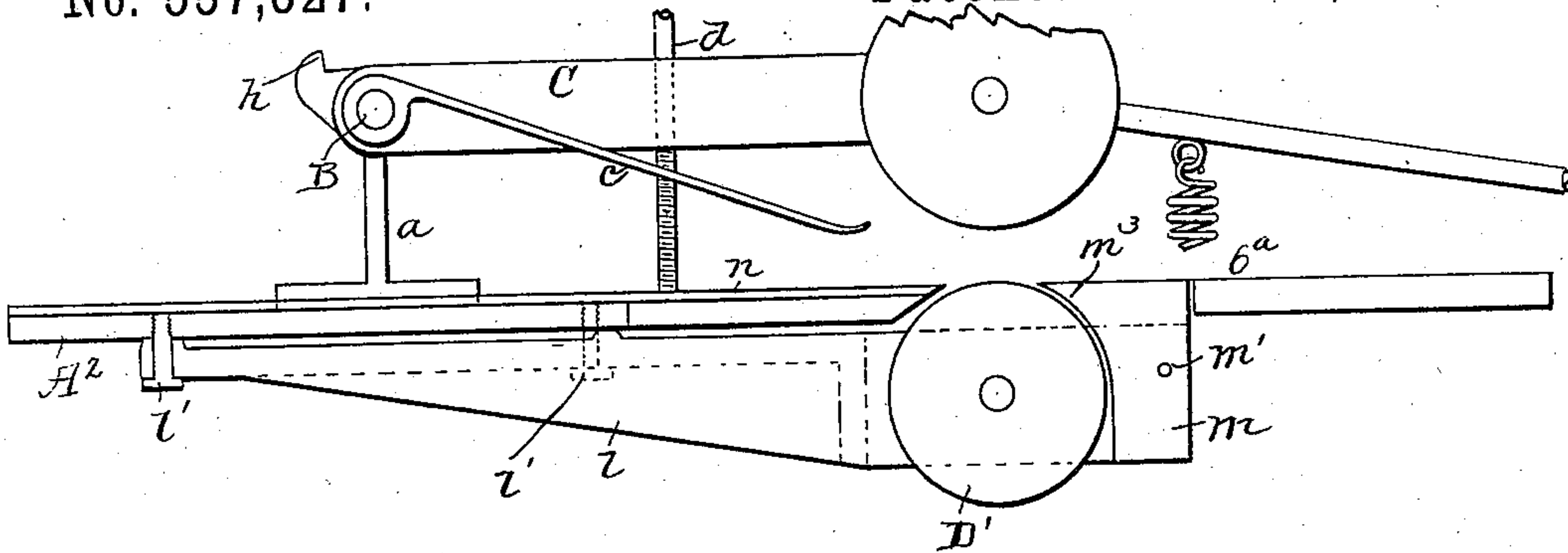
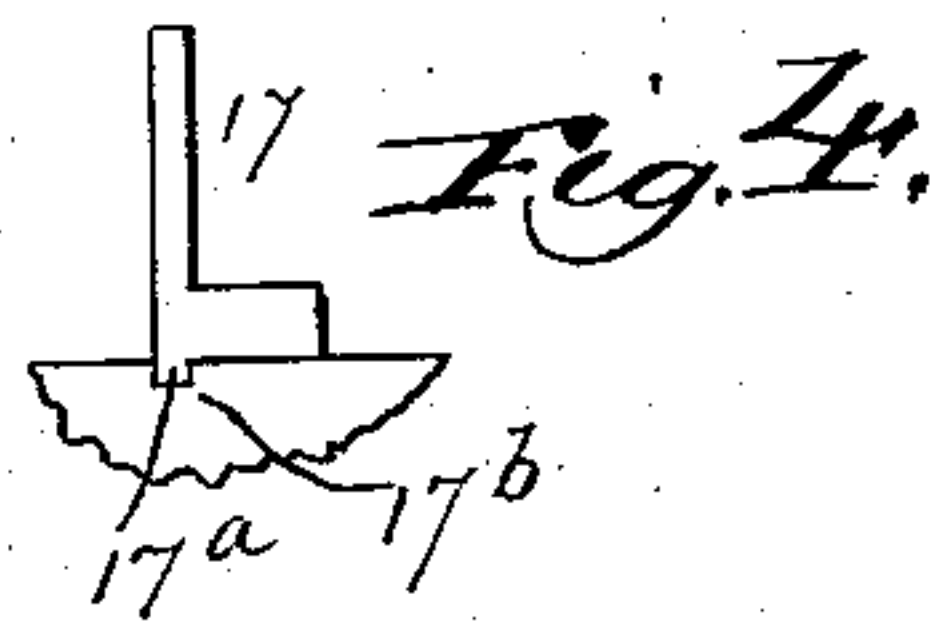
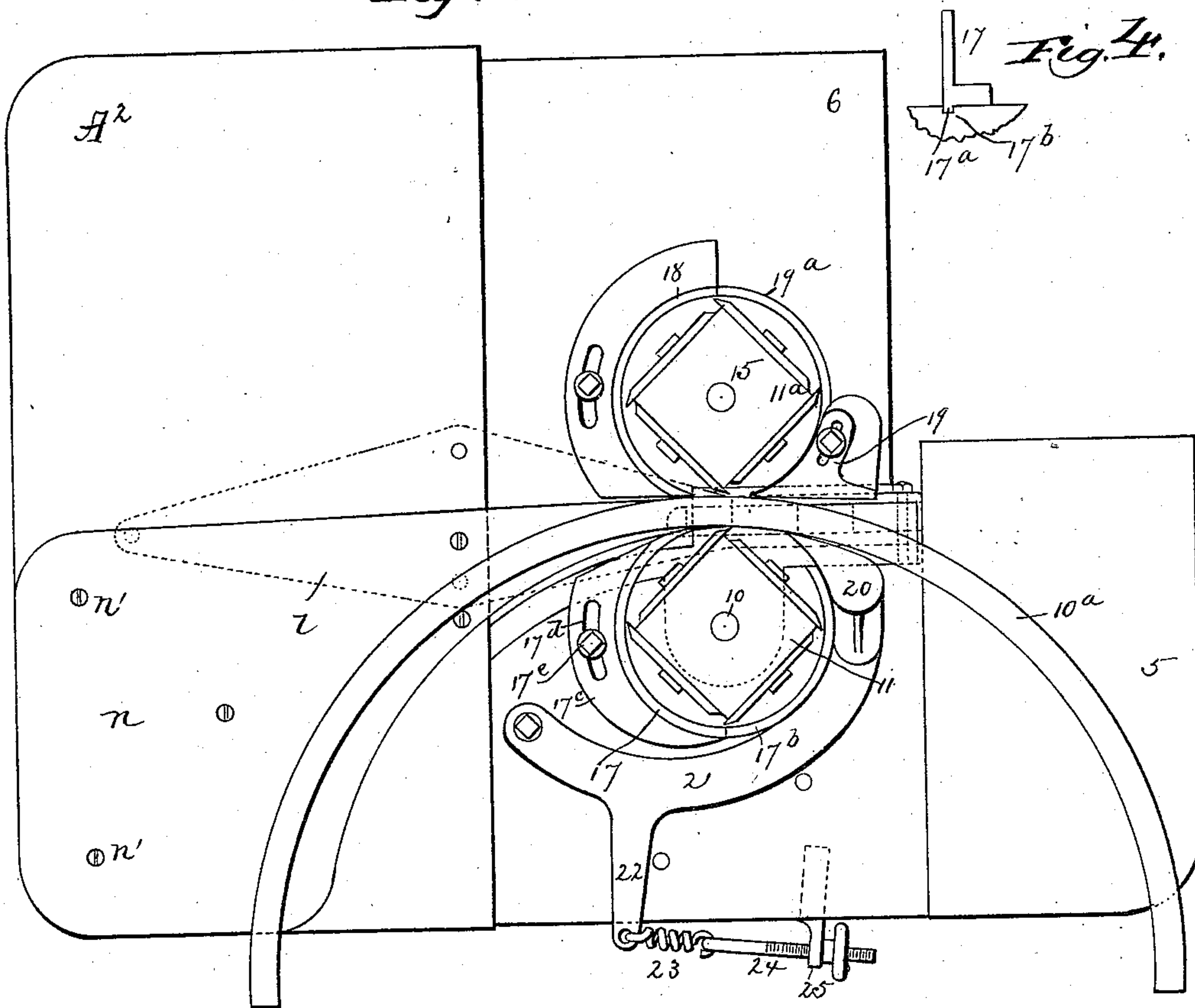


Fig. 2.



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UNITED STATES PATENT OFFICE.

GEORGE A. ENSIGN, OF DEFIANCE, OHIO, ASSIGNOR TO THE DEFIANCE MACHINE WORKS, OF SAME PLACE.

PLANING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 557,327, dated March 31, 1896.

Application filed May 14, 1895. Serial No. 549,326. (No model.)

To all whom it may concern:

Be it known that I, GEORGE A. ENSIGN, of Defiance, in the State of Ohio, have invented certain new and useful Improvements in Plan-
5 ing Apparatus; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

10 My invention relates to an improvement in planing apparatus, and more particularly to machines for planing fellies, one object of the invention being to produce efficient feeding mechanism and to so construct and arrange
15 the same that the feed-roller which operates upon the felly will be disposed immediately between the cutter-heads.

A further object is to produce a felly-plan-
20 ing machine capable of adjustment for operating upon the inner and outer faces of fellies of any size desired.

A further object is to produce simple and efficient guides for a felly-planing machine, and to so construct said guides that they can
25 be readily adjusted for fellies of different sizes.

A further object is to so construct the feed-
30 ing mechanism for a felly-planer that it can be readily raised when access to the cutters for any reason is desired.

With these objects in view the invention consists in certain novel features of construction and combinations and arrangements of parts, as hereinafter set forth, and pointed
35 out in the claims.

In the accompanying drawings, Figure 1 is a perspective view of a planing-machine embodying my improvements. Fig. 2 is a plan
40 view of a portion of the machine with the feeding mechanism removed and showing the cutter-heads and guides. Fig. 3 is a detail sectional view, and Fig. 4 is a detail view.

A represents a base or trunk having on its top a vertical frame or support A' for a hori-
45 zontal fixed table A². The frame or support A' is also made with a flange 1, which serves as a guide for two bed-plates 2 3, adapted to be adjusted relatively to each other by means of screws 4, and said bed-plates carry at their
50 upper ends tables 5 6, respectively, which are suitably braced by brackets 7 7.

The bed-plate 2 is made with journal-bear-
ings 8 9 for a vertical shaft 10, the upper end of which passes through the table 5 and has a
cutter-head 11 secured thereon. Between the 55
bearings 8 9 the shaft 10 is provided with a pulley 12 for the reception of a suitable belt, by which motion will be transmitted thereto. The bed-plate 3 is similarly provided with journal-bearings 13 13 for the reception of a
60 vertical shaft 15, which passes up through the table 6 and is provided at its upper end with a cutter-head 11^a and between its ends with a pulley 13^a. Between these cutter-heads the felly 10^a to be operated upon will be
65 passed and its inner and outer faces will be simultaneously planed by the cutters 11 11^a.

It will be seen from the construction and arrangement of parts above described that the cutters and their adjustable bed-plates
70 can be readily adjusted relatively to each other and to the felly to be operated upon, and that the cutters can thus be set for any desired size of felly.

To maintain the proper relation of the felly
75 to the cutter-heads, a series of guides is provided in close proximity to each cutter-head.

A guide 17, concentric with the shaft 10 of the cutter-head 11, is mounted on the adjustable table 5 and provided with a rib 17^a, Fig. 80
4, to enter a groove 17^b, also concentric with said shaft 10, the inner end of said guide 17 being adapted to bear against the inner face of the felly being operated upon. The guide 17 is made at its bottom edge with a flange
85 17^c, having an elongated slot 17^d for the reception of a bolt 17^e, whereby to adjust the guide for fellies of different sizes and secure it in the position to which it shall be adjusted. A guide 18, in all respects similar to the
90 guide 17, is located adjustably on the table 6 and bears exactly the same relation to the cutter-head 11^a as the guide 17 bears to the cutter-head 11. Thus the felly passes between the ends of the guides 17 and 18, the
95 guide 17 bearing against its inner face and the guide 18 against its outer face, and both guides are disposed at the same side of the respective cutter-heads. At the other side of the cutter-head 11^a and adapted to bear
100 against the outer face of the felly another normally-fixed guide 19 is adjustably secured

to the table 6. The table 6 is made with an annular groove 19^a, corresponding with the groove 17^b of the table 5, and into this groove ribs—such as shown at 17^a, Fig. 4—project

5 from the guides 18 and 19.
At the opposite side of the cutter-head 11 from the normally-fixed guide 17 a yielding guide 20 is located and adapted to bear with a yielding pressure against the inner face of
10 the felly. The guide 20 is located at the free end of an arm 21, the opposite end of which is pivotally connected to the adjustable table 5. The arm 21 is provided between its ends with a projection 22, to which one end of a
15 spring 23 is secured, the other end of said spring being connected with a screw 24, passing through an arm 25 projecting from said table 5. By means of the screw 24 the tension of the spring 23 can be adjusted and the
20 pressure of the yielding guide 20 on the felly regulated. The screw 24 will be secured in the position to which it may be adjusted by means of a nut 26.

A post or casting *a* is located on the fixed
25 table 2 and provided at its upper end with an elongated perforated boss *b*, in which a non-revoluble shaft B is mounted. On one end of this shaft a spring-arm *c* is adjustably secured, the free end of said spring-arm being
30 adapted to bear on the upper face of the felly when the latter is disposed horizontally in the machine. A frame or casting C is secured to the shaft B and supported in a proper horizontal position, for a reason hereinafter explained, by means of an adjusting-screw *d*,
35 which passes through said frame or casting and bears at its lower end on the fixed table 2. A shaft *e* is mounted in suitable bearings *e'* *e''* formed at the free edge of the frame or
40 casting C. On the inner end of the shaft *e* a feed wheel or roller D (preferably serrated or toothed on its periphery) is secured and adapted to bear upon the upturned face of the felly to retain the latter down to its proper place
45 and when rotated, as presently explained, to properly feed said felly forward between the cutters.

The feed roller or wheel D is kept in engagement with the felly with the proper degree of pressure by means of a spring *f*, one end of which is attached to an arm *f'* projecting from the frame or casting C, and the other end of said spring is attached to a link *f''*, the latter being made with a series of
55 notches *f'''*, whereby the spring can be so attached thereto as to adjust its tension. The lower end of the link *f''* is curved, and its lower extremity is, by means of a pin *f''''*, pivotally connected to a lever *g* at a point between the
60 ends of the latter. The lever *g* is pivotally connected, by means of a pin *g'*, to a lug or projection *g''* on the base or trunk A. Thus it will be seen that when the pivot-pins *f''''* *g'* are in line with each other the spring *f* will
65 exert a downward pull upon the free edge of the frame or casting C and maintain the feed-roller D in contact with the felly with the

proper pressure. When it is desired to inspect the cutters, to remove a chip or other obstruction, or to inspect the inner parts of the
70 mechanism for any reason, the lever *g* will be operated to relieve the tension on the spring *f* and the spring will be detached, whereupon the frame or casting C will be freed and can be turned or swung back to a
75 vertical or nearly vertical position and made to rest against a stop *h*, when ready access may be had to the cutter-heads.

A casting *l* is held to the fixed table A² by screws *l'* and made with a bifurcated end for
80 the reception of an idle-roll D' disposed immediately under the feed-roller D and adapted to bear against the under face of the felly. In the bifurcated end of the casting a tail-piece *m* is inserted and held in place by means
85 of a screw *m'*, the upper face of said tailpiece being flush with the higher or raised portion 6^a of the table 5, and a portion of the inner edge of the tailpiece being curved, as at *m''*, concentric with the idle-roll D'. A sole-plate
90 *n* is secured to the fixed table A² by means of countersunk screws *n'* and projects across the adjustable table 6 to a point near the upper periphery of the idle-roll D', the thickness of
95 said sole-plate being equal to the amount that the forward portion of the adjustable table 6 is higher than the central portion thereof. The casting *l* will be so adjusted that the idle-roll D' will project a predetermined amount
100 above the sole-plate *n* and the raised portion of the adjustable table 6.

On the outer end of the shaft B a cone-pulley *i* is loosely mounted and carries a pinion *j*. Motion is imparted to the cone-pulley by means of a suitable strap from a
105 cone-pulley *i'* mounted on a short shaft projecting from the base or trunk A. Tight and loose pulleys *j'* *j''* are also located on said short shaft for the reception of a belt from any convenient source of power. The pinion *j*
110 carried by the cone-pulley *i* transmits motion to a gear-wheel *k* mounted on a stud or pintle projecting from the frame or casting C. The hub of the gear-wheel *k* carries a pinion which transmits motion to a gear-wheel *k'* on the
115 shaft *e* of the feed-roller D, and thus motion is imparted to the latter.

It will be seen that by adjusting the screw *d* the frame or casting C can be so disposed that the feed-roller will always be in the
120 proper plane to work upon the felly when the latter is inserted under it and that the frame and feed-roller will be prevented from dropping when one felly shall have passed through the machine and before another is inserted.
125

Having fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a planing-machine, the combination with a framework and a fixed table thereon,
130 of adjustable tables, cutter-heads carried by said adjustable tables, a feed-roller, a casting secured to the fixed table and bifurcated at one end, an idle-roller mounted in said bifur-

cated end of the casting immediately under said feed-roller, a sole-plate secured to the fixed table projecting over one of said adjustable tables and terminating in proximity to said idle-roller, and a tailpiece secured to said casting and terminating in line with surface of the sole-plate and the highest portion of the other adjustable table, substantially as set forth.

10 2. In a planing-machine, the combination with suitable framework and cutter-heads adapted for the passage of a felly-strip between them, of a hinged frame or casting, a revoluble shaft carried thereby, a feed-roller
15 carried by said revoluble shaft and adapted to bear on the felly-strip, a spring secured at one end to said frame or casting, a link to which said spring is connected and a lever pivoted to the framework of the machine and
20 pivotally connected with the link, substantially as set forth.

25 3. In a planing-machine, the combination with suitable framework, and cutter-heads adapted for the passage of a felly-strip between them, of a hinged frame or casting, a revoluble shaft in said frame or casting, a

feed-roller carried by said shaft and adapted to bear upon the felly-strip, a spring-arm adapted to bear upon the felly-strip and gearing carried by the hinged frame or casting for transmitting motion to said revoluble shaft, substantially as set forth. 30

4. In a planing-machine, the combination with a suitable framework, two adjustable tables and cutter-heads carried by said tables and adapted for the passage of a felly-strip between them, of a series of normally-fixed adjustable guides adapted to partially embrace the cutter-heads and bear against the felly-strip, a yielding guide adapted to bear
40 against the felly-strip, a pivoted arm by which said yielding guide is carried, an adjustable spring connected to said pivoted arm and means for applying tension to the spring, substantially as set forth. 45

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

GEORGE A. ENSIGN.

Witnesses:

GEO. W. DEATRICK,
MAY E. FISHER.