

No. 672,887.

Patented Apr. 30, 1901.

H. S. BROWN.
PLAITING MACHINE.

(Application filed Dec. 26, 1900.)

(No Model.)

2 Sheets—Sheet 1.

Fig. 1.

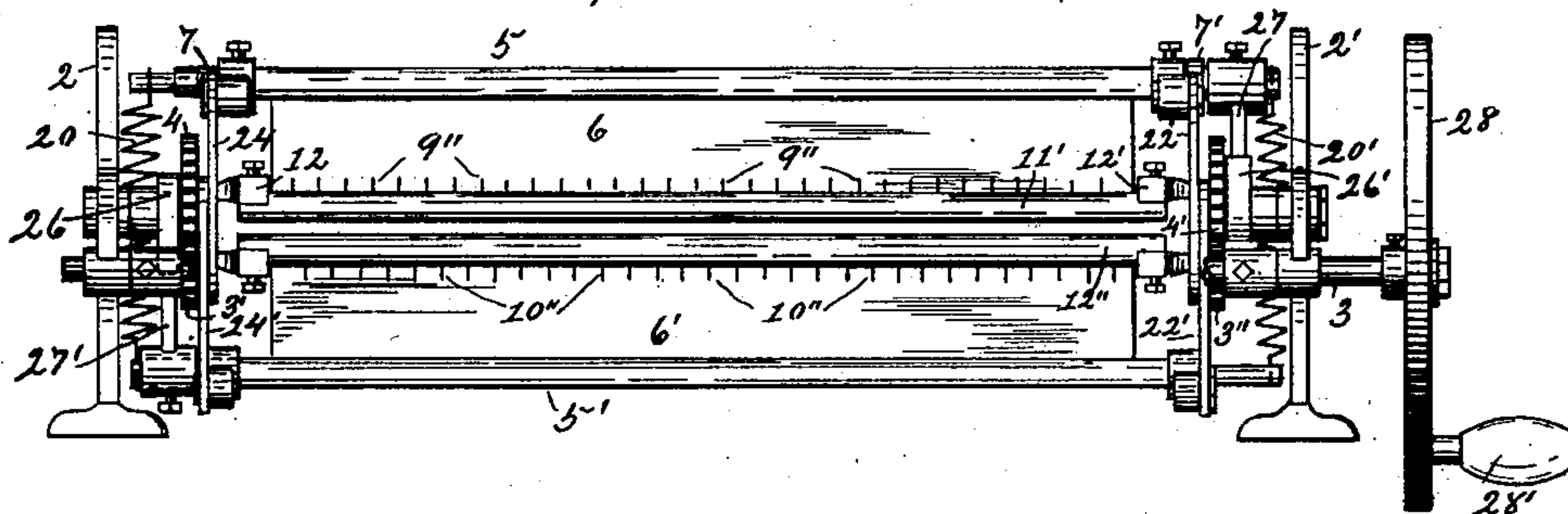


Fig. 2.

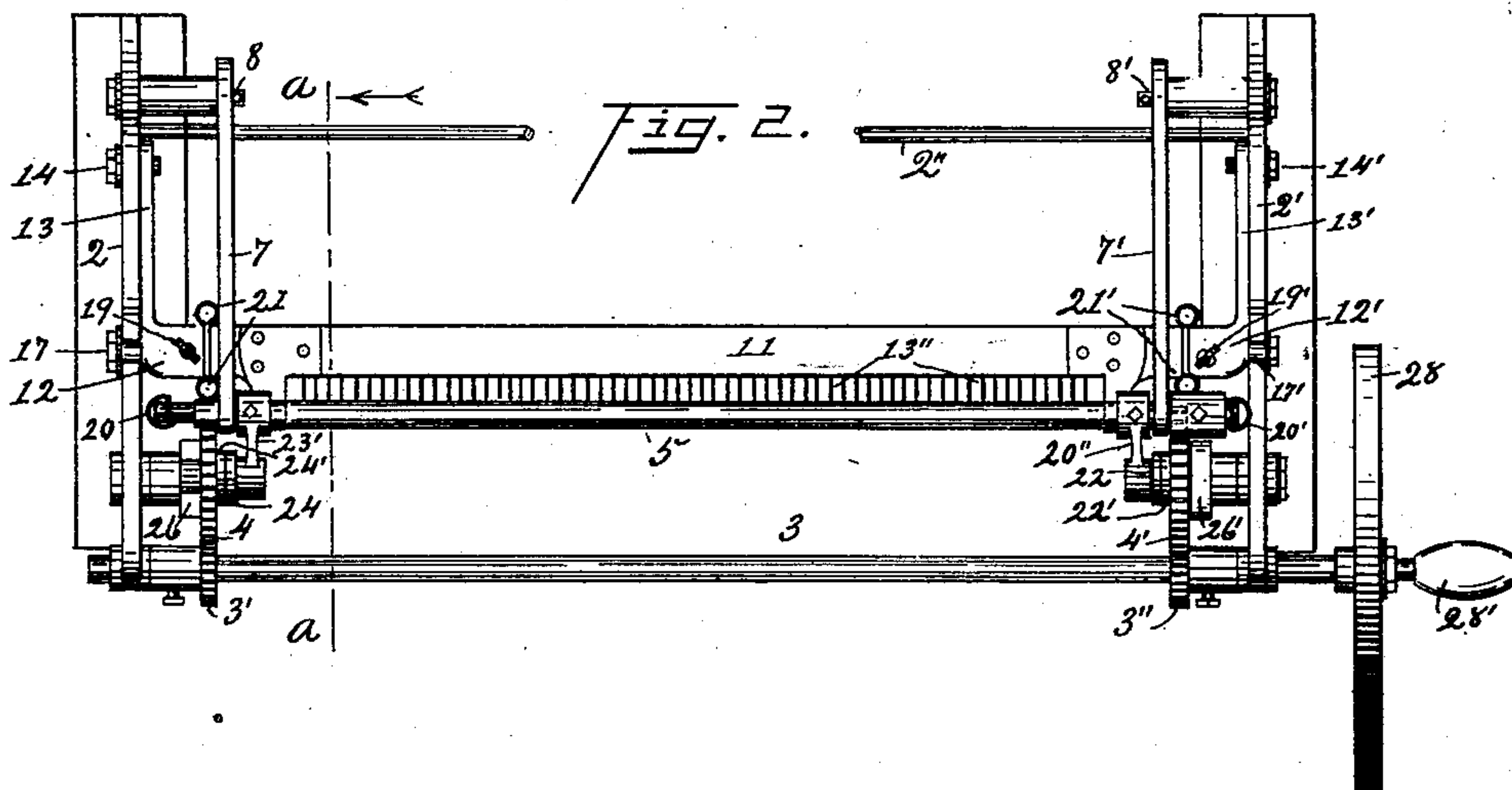
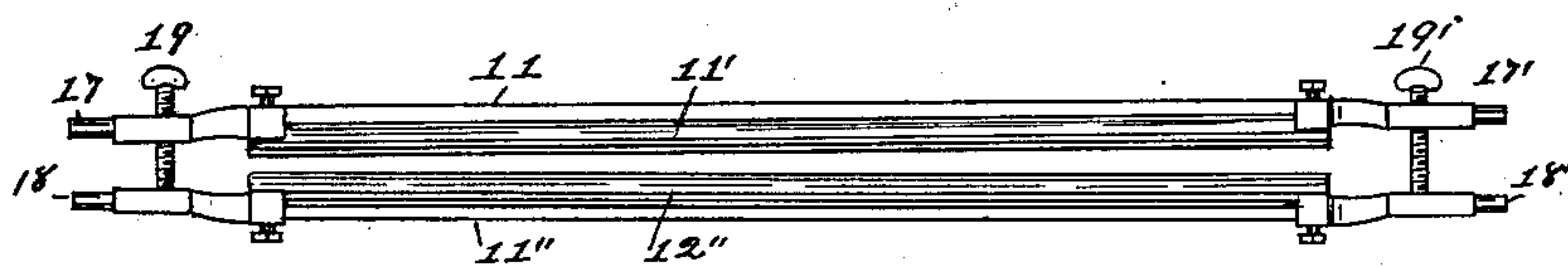


Fig. 3.



Witnesses:
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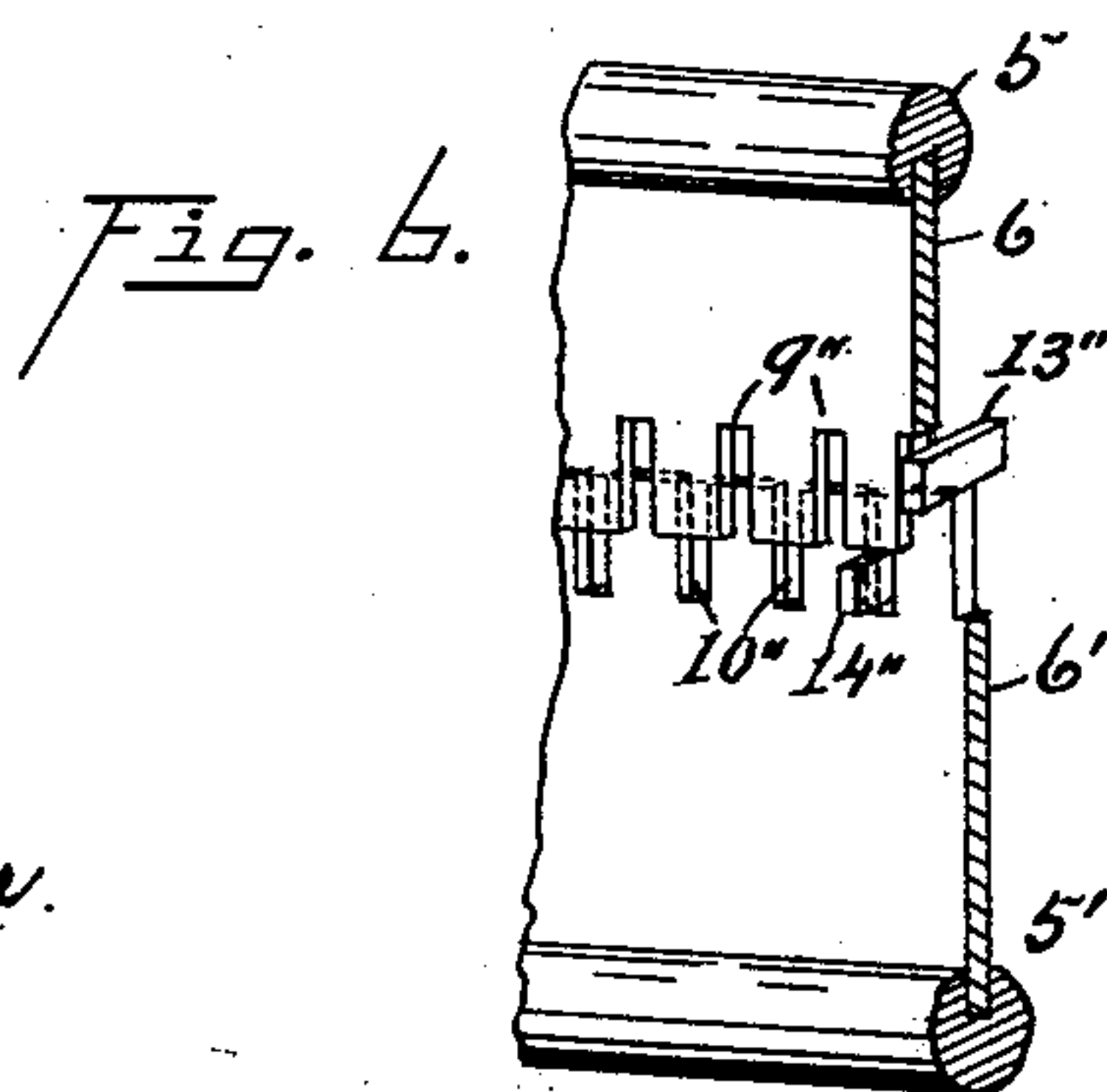
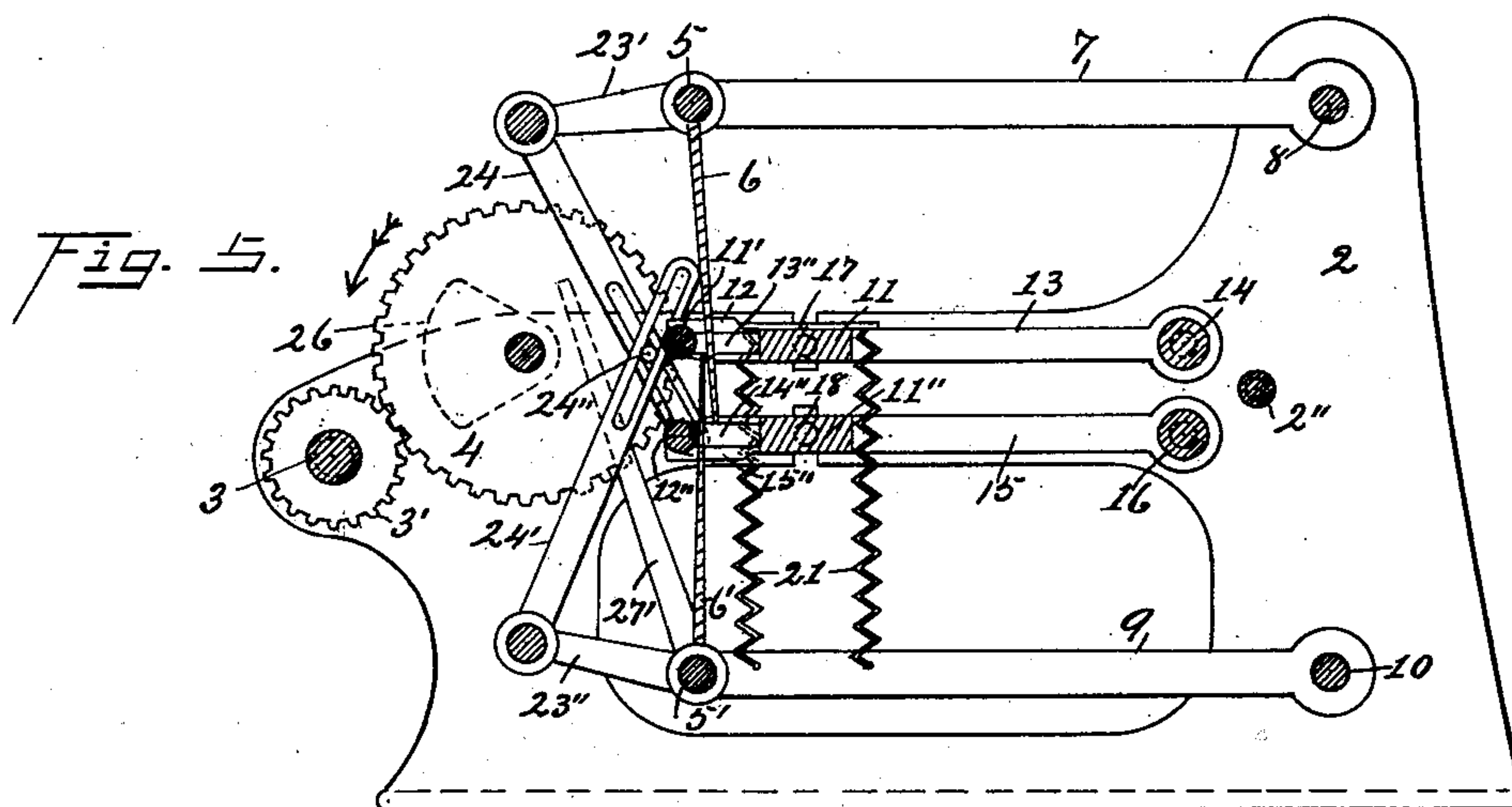
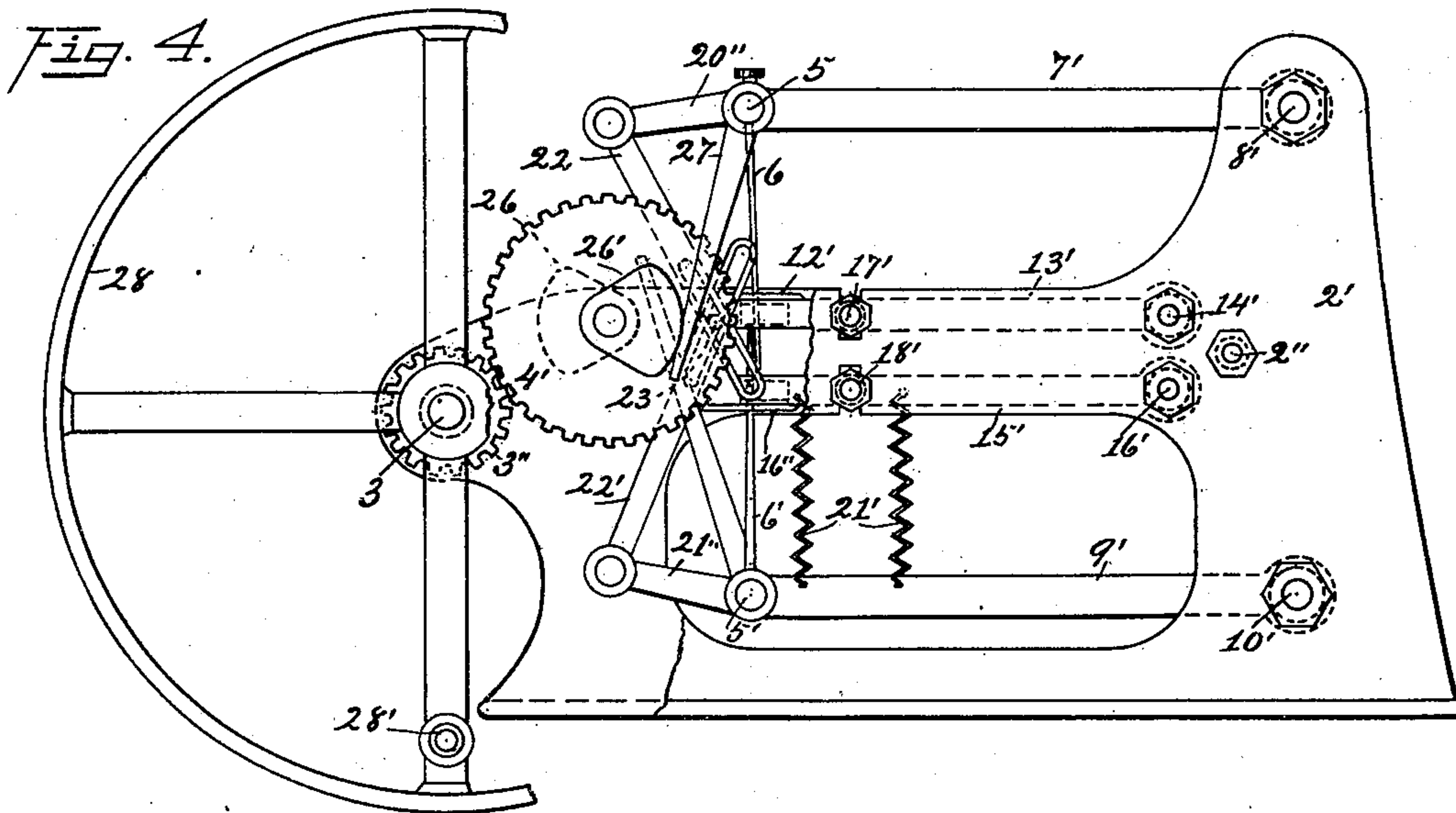
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H. S. BROWN.
PLAITING MACHINE.

(Application filed Dec. 26, 1900.)

(No Model.)

2 Sheets—Sheet 2.



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UNITED STATES PATENT OFFICE.

HENRY S. BROWN, OF NEW YORK, N. Y.

PLAITING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 672,887, dated April 30, 1901.

Application filed December 26, 1900. Serial No. 41,030. (No model.)

To all whom it may concern:

Be it known that I, HENRY S. BROWN, a citizen of the United States, residing at New York, Manhattan borough, in the county and State of New York, have invented certain new and useful Improvements in Plaiting-Machines, which improvements are fully set forth in the following specification and accompanying drawings, in which—

Figure 1 is a front elevation view of a plaiting-machine embodying my said improvements. Fig. 2 is a plan view of said machine. Fig. 3 is a detail view designed to illustrate the manner of adjustment of certain parts of the machine. Fig. 4 is a side elevation view, a portion of one of the frame members being broken away to better disclose the operative parts. Fig. 5 is a vertical section on the line *a a* of Fig. 2. Fig. 6 is a detail perspective view illustrating the relative operation of the reefing-blades with respect to the reefing-beds which I employ.

Similar reference-numerals denote like parts throughout the several views of the drawings.

This invention relates to improvements in mechanical structures of that class commonly known as "plaiting-machines," and particularly to plaiting-machines capable of being utilized in the production of so-called "accordion-plaiting," as by folding or reefing flexible material, such as fabrics, paper, and the like.

The object of this invention is to provide a plaiting-machine of the character above indicated which shall be simple, cheap, and novel as regards construction, which shall embody efficient reefing-beds for engagement of the reefing-blades employed in the operation of the machine and novel means for actuating the reefing-blades employed, and which shall possess certain well-defined advantages over prior analogous structures.

The invention consists in the employment of certain novelly-formed parts, in the novel disposition and arrangement of the various parts, in certain combinations of the latter, and in certain details of construction, all of which will be specifically referred to hereinafter and set forth in the appended claims.

Having reference to the accompanying drawings, 2 2' represent opposing upright

frame members tied by the rod 2'' and by other means, as will hereinafter appear.

3 is the main shaft, journaled in the frame members 2 2', and 3' 3'' are pinions mounted on said shaft and meshing at all times, respectively, with the spur-wheels 4 4'.

5 5' are blade-backs, the one carrying a downwardly-extending blade 6 and the other an upwardly-extending blade 6'. These blades are mounted to oscillate or rock, the one at the free ends of the opposing radial arms 7 7', fulcrumed, respectively, at 8 8', and the other at the free ends of the opposing radial arms 9 9', fulcrumed, respectively, at 10 10'. The blades 6 6' are capable of being moved edgewise toward and away from each other as well as being oscillated or rocked, as above stated.

An essential feature of my invention is the employment, in conjunction with reefing-blades adapted to at times overlap or project one beyond the other at the free edges thereof, of reefing-beds, one for engagement of each of said reefing-blades and adapted to limit the movement thereof in one direction in the practical operation of the machine, the said reefing-beds being located, respectively, in the paths of said blades in their movements toward and from each other. To accomplish this end, I provide the blades 6 6' each with a series of open slots or kerfs 9'' 10'' along its free edge and adjust said blades so that the kerfs of one blade will not register or aline with the kerfs in the opposite blade. I further arrange the reefing-beds both in the paths along which the blades 6 6' travel in their movements toward and from each other, the upper bed being arranged for coöperation with the blade 6' and serving to limit its movement in the direction of blade 6 and the lower bed being arranged for coöperation with the blade 6 and serving to limit the movement thereof in the direction of the blade 6'.

As here shown, the reefing-beds which I employ comprise the one parallel frame-pieces 11 11', firmly connected at their ends by the offsets 12 12' of the opposing radial arms 13 13', fulcrumed, respectively, at 14 14', and the other like frame-pieces 11'' 12'', firmly connected at their ends by the offsets 15'' 16'' of the opposing radial arms 15 15', fulcrumed, respectively, at 16 16', Figs. 4 and 5.

The frame portions of the respective reef-

ing-beds carry each a series of transversely-
 arranged reefing-bars 13" 14", those provided
 for one of said beds being firmly held in po-
 sition by the frame-pieces thereof and being
 5 spaced out of alinement with the kerfs of the
 blade coöperating with such bed and in aline-
 ment with the kerfs of the opposite blade, and
 the reefing-bars provided for the opposite bed
 are firmly held in position by the frame-pieces
 10 thereof and are also spaced out of alinement
 with the kerfs of the blade coöperating with
 such bed and in alinement with the kerfs of
 the opposite blade.

When desired for service, both of the reef-
 15 ing-beds are held firmly in position, as by lock-
 ing their coöperating radial arms against
 movement in any well-known manner, as in-
 dicated at the points 17 17' 18 18'. It will
 here be observed that this construction per-
 20 mits adjustment of either reefing-bed regu-
 larly toward or away from the other, to facili-
 tate which the adjusting-screws 19 19' are pro-
 vided. It will also be observed that either
 end of either of the reefing-beds may be ad-
 25 justed toward or away from the correspond-
 ing end of the other reefing-bed, as illustrated
 in Fig. 3, slight play being left at the fulcrums
 of the respective radial arms carrying said
 beds, and when the reefing-beds are adjusted
 30 as indicated in Fig. 3 each plait of the prod-
 uct of the machine will be tapering in form,
 or wider at one end than at the other, which
 is at times desirable.

Attention is here called to the fact that the
 35 blades which I employ are, aside from the ques-
 tion of gravity, which may be taken into con-
 sideration in connection with the upper blade,
 yieldingly held each to engagement with its
 coöperating reefing-bed by means of a suit-
 40 able connection or connections 20 20', here
 shown in the form of a spiral spring and as
 yieldingly tying together the two blades. If
 desired, any approved means may be em-
 ployed for adjusting the tension of said con-
 45 nections.

In the practical operation of the machine
 blade 6 is elevated against the tension of the
 connections 20 20' and the gravity of said
 blade and its coöperating parts, and when re-
 50 leased at the limit of its upward travel it de-
 scends to engagement with its coöperating
 reefing-bed by reason of its own gravity, the
 gravity of its coöperating parts, and the ten-
 sion of the connections 20 20', and the blade
 55 6' is urged downward against the tension of
 said connections; but here the gravity of said
 blade and its coöperating parts will not aid
 in the return movement thereof, and for this
 reason I employ the compensating connec-
 60 tions 21 21', here shown in the form of a spiral
 spring and as yieldingly tying together said
 blade and the reefing-bed coöperating there-
 with.

For actuating the blades 6 6' to cause them
 65 to move alternately away from each other I em-
 ploy the links 22 22', each provided with a slot-
 like opening and both engaging at the open-

ings therein a projection 23, fixed in the spur-
 wheel 4'. Link 22 is pivotally connected with
 the radial arm 20' and depends therefrom, 70
 the said arm projecting outward from the
 blade-back 5, and link 22' is pivotally con-
 nected with the radial arm 21' and extends
 upwardly therefrom, the said radial arm pro-
 jecting outward from the blade-back 5'. The 75
 foregoing parts are duplicated at the oppo-
 site side of the machine and denoted by the
 numerals 24, 24', 24'', 23', and 23''. When mo-
 tion is imparted to the shaft 3, so as to turn
 the spur-wheels 4 4', which are adjusted so 80
 that the projections 23 24'' will stand uni-
 formly opposite each other in the direction
 indicated by the arrow 25 in Fig. 5, the said
 projections before respectively reaching the
 vertical center lines of the wheels 4 4' will re- 85
 spectively engage the upper ends of the slot-
 like openings in the links 22 24 and through
 the medium of said links elevate the blade
 6, and when the said projections reach a point
 at the opposite side of the wheels 4 4' they 90
 respectively engage the lower ends of the slot-
 like openings in the links 22' 24' and depress
 the blade 6'. During this alternate movement
 of the blades 6 6' and while one of said blades
 is being moved away from the other the lat- 95
 ter is rocked or oscillated backward in a man-
 ner to reverse the overlapping relation of said
 blades on the return of the blade thus moved
 away to engagement with its coöperating reef-
 ing-bed. The forward rocking movements 100
 of the blades 6 6' are imparted alternately
 thereto by means of the same mechanism—
 that is, the link connections and radial arms
 projecting forwardly from the blade-backs
 utilized in moving said blades one away from 105
 the other; but the rearward rocking move-
 ments of said blades are effected by means
 of the cams 26 26', rotating one with each of
 the spur-wheels 4 4' and arranged oppositely
 to each other, the said cams being duly timed 110
 to alternately engage and move backward one
 the arm 27, projecting downwardly from the
 blade-back 5, and the other the arm 27', ex-
 tending upwardly from the blade-back 5', and
 thus correspondingly rock said blades rear- 115
 wardly. At all times the forward rocking
 movement of the forwardly-lapping blade is
 limited by one or the other of the cams 26 26'
 or by the front frame-piece of one of the
 reefing-beds, as desired, and the rearwardly- 120
 lapping blade is held against forward rocking
 movement by its engagement with the oppo-
 site blade, and during the movement of one
 of said blades away from the other the for-
 wardly-lapping blade may have a sliding en- 125
 gagement with said frame-piece of the reef-
 ing-bed and the rearwardly-lapping blade
 may have a sliding engagement with said for-
 wardly-lapping blade.

Any approved means may be employed 130
 whereby power and motion may be imparted
 to the main shaft 3, as the wheel 28, provided
 with the handle 28'.

The operation of the machine will be ap-

parent from the foregoing description thereof, it being necessary only to state that the material to be reefed or plaited is inserted between the front frame-pieces of the reefing-beds and grasped by one of the blades 6 6' and that the folding or reefing of the material is effected at the reefing-bars 13'' 14''.

It will be seen that my improved plaiting-machine is well adapted for the purpose for which it is designed and, further, that the same may be modified to some extent without material departure from the spirit and principle of my invention.

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

1. A machine of the class herein described comprising a pair of reefing-blades movable edgewise toward and away from each other, adapted to overlap each other at the free edges thereof, and each provided along its free edge with a series of kerfs, the kerfs of one blade being out of alinement with the kerfs of the other blade; reefing-beds located in the paths traversed by said blades in their movements toward and from each other, and each provided with a series of suitably-spaced reefing-bars, the bars of one bed registering only with the kerfs in one of said blades, and the bars of the other bed registering only with the kerfs in the other blade, and means for thus moving said blades.

2. A machine of the class herein described comprising a pair of reefing-blades movable edgewise each toward and away from the other, and each provided along its free edge with a series of kerfs, the kerfs of one blade

being out of alinement with the kerfs of the other blade; reefing-beds located in the paths traversed by said blades in their movements toward and from each other, each admitting of variable adjustment along said blade-paths, and each provided with a series of suitably-spaced reefing-bars, the bars of one bed registering only with the kerfs in one of said blades, and the bars of the other bed registering only with the kerfs in the other blade, and means for thus moving said blades.

3. A machine of the class herein described comprising a pair of reefing-beds, one arranged adjacent to and in a parallel plane with, the other, and capable of being adjusted to a position out of parallel with the other in said parallel plane; and means for locking said reefing-beds when thus adjusted.

4. A machine of the class herein described comprising a pair of yieldingly-controlled reefing-blades arranged to alternately lap each beyond the other at the free edges thereof, and thereat provided with kerfs out of alinement as regards the respective blades; a pair of reefing-beds located respectively in the paths traversed by said blades, and each provided with a series of suitably-spaced reefing-bars, the bars of the said beds registering respectively with only one of said blades and serving to limit the direct movement of the other blade, and whereby material may be reefed or folded directly on said bars; and means for duly moving said blades.

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Witnesses:

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