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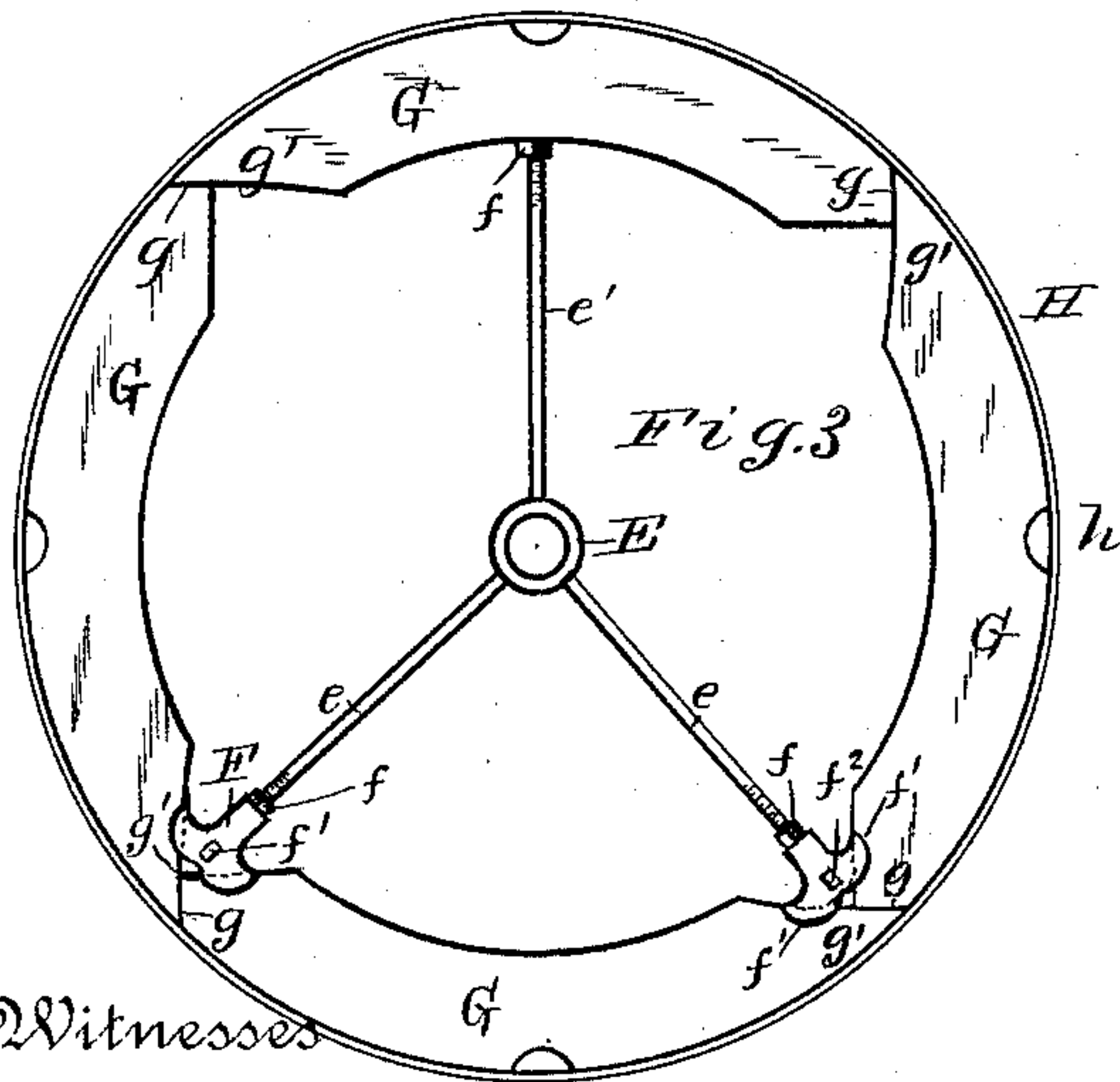
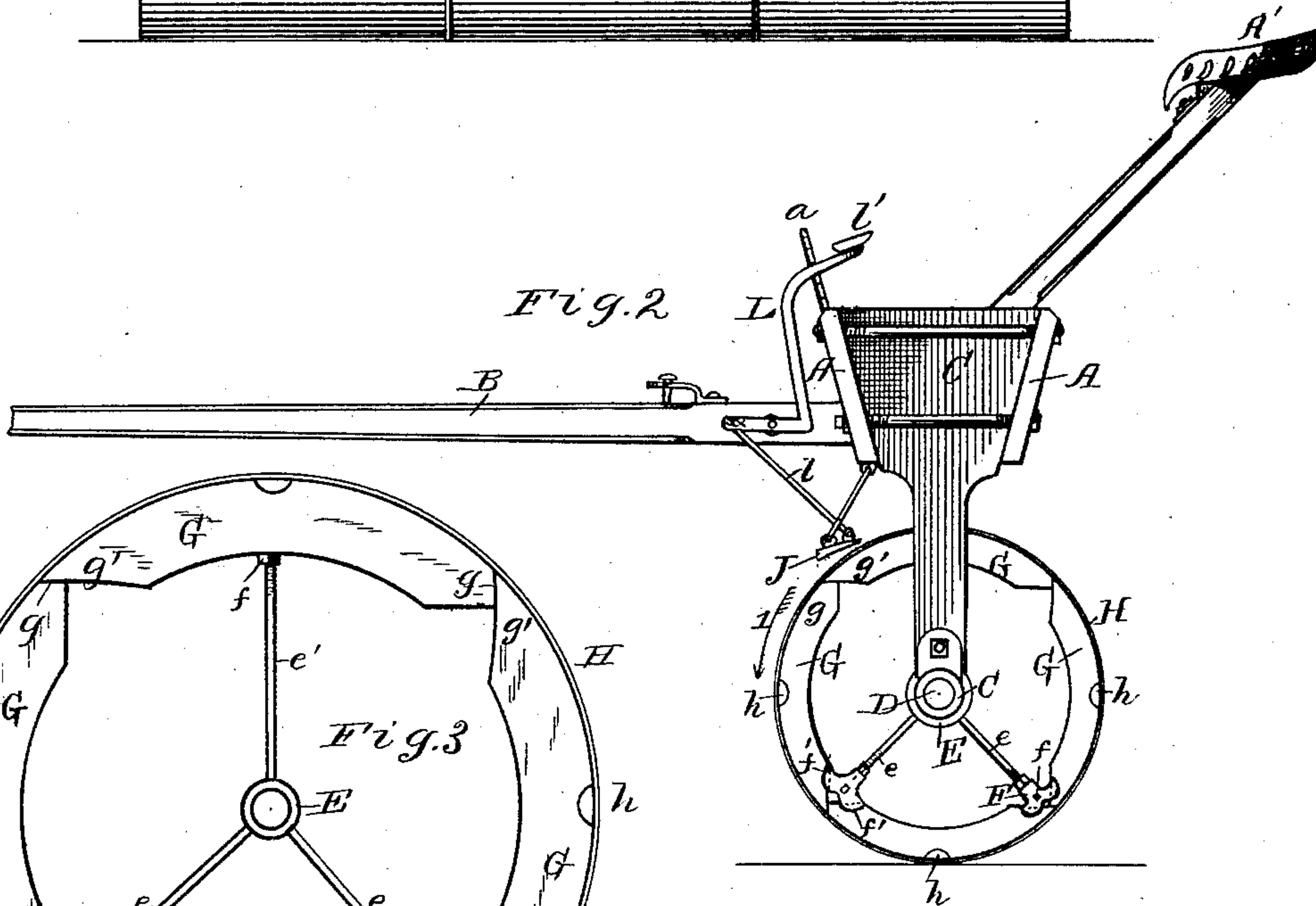
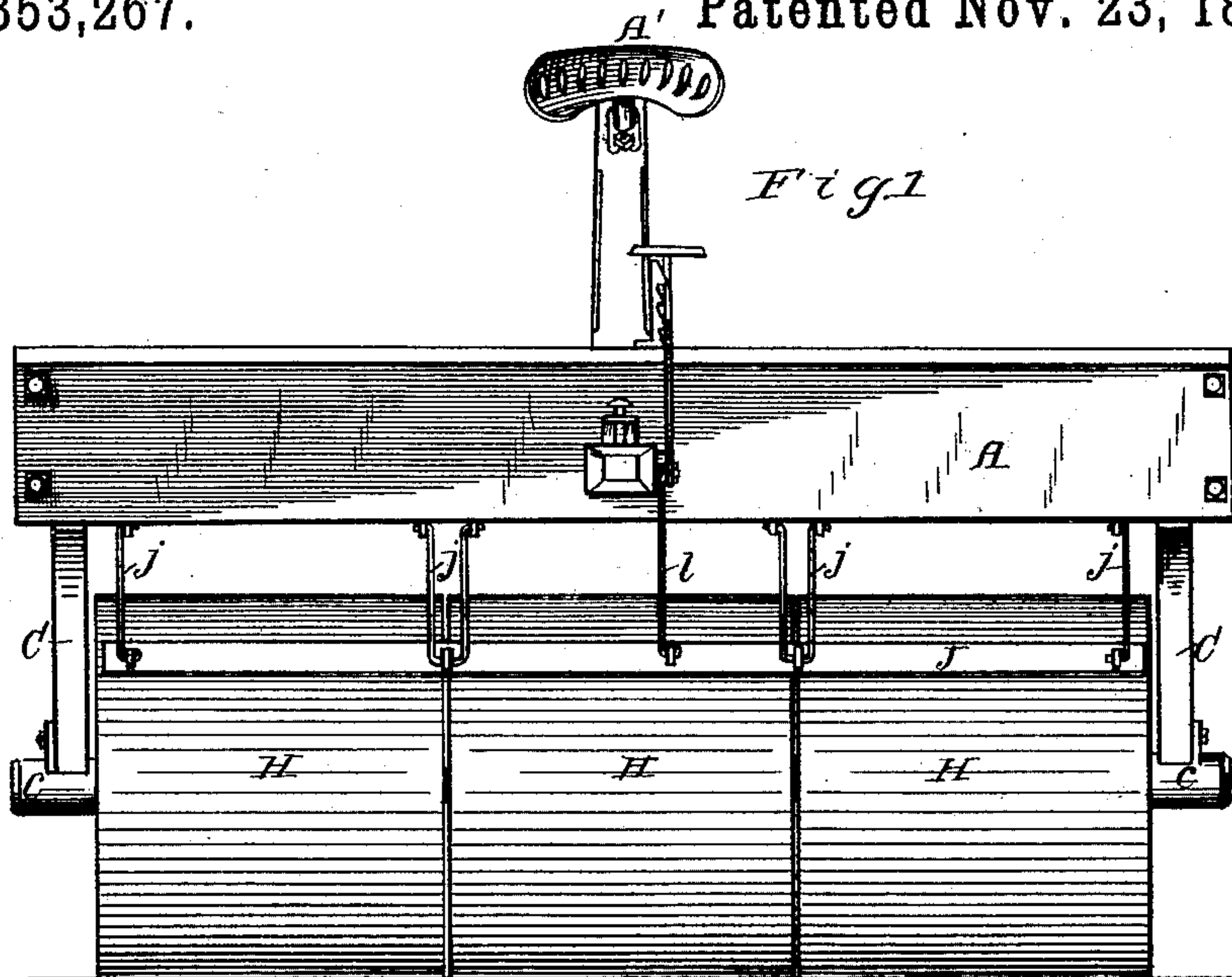
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F. H. NORTON.

LAND ROLLER.

No. 353,267.

Patented Nov. 23, 1886.



Witnesses

J. C. Turner.
J. S. Barker.

Inventor

Fred H Norton
By his Attorneys
Lambert & Bliss

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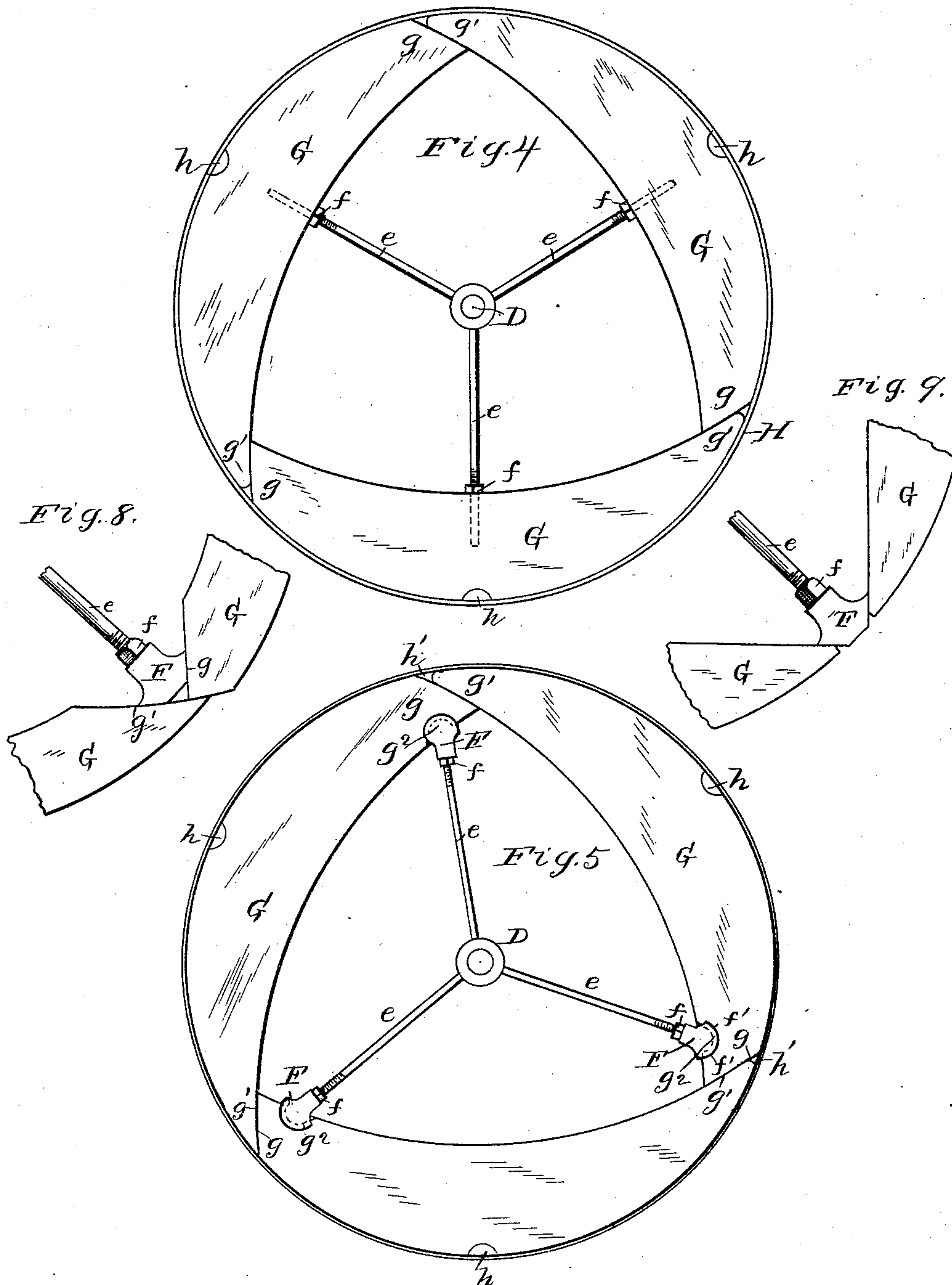
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Fig. 6

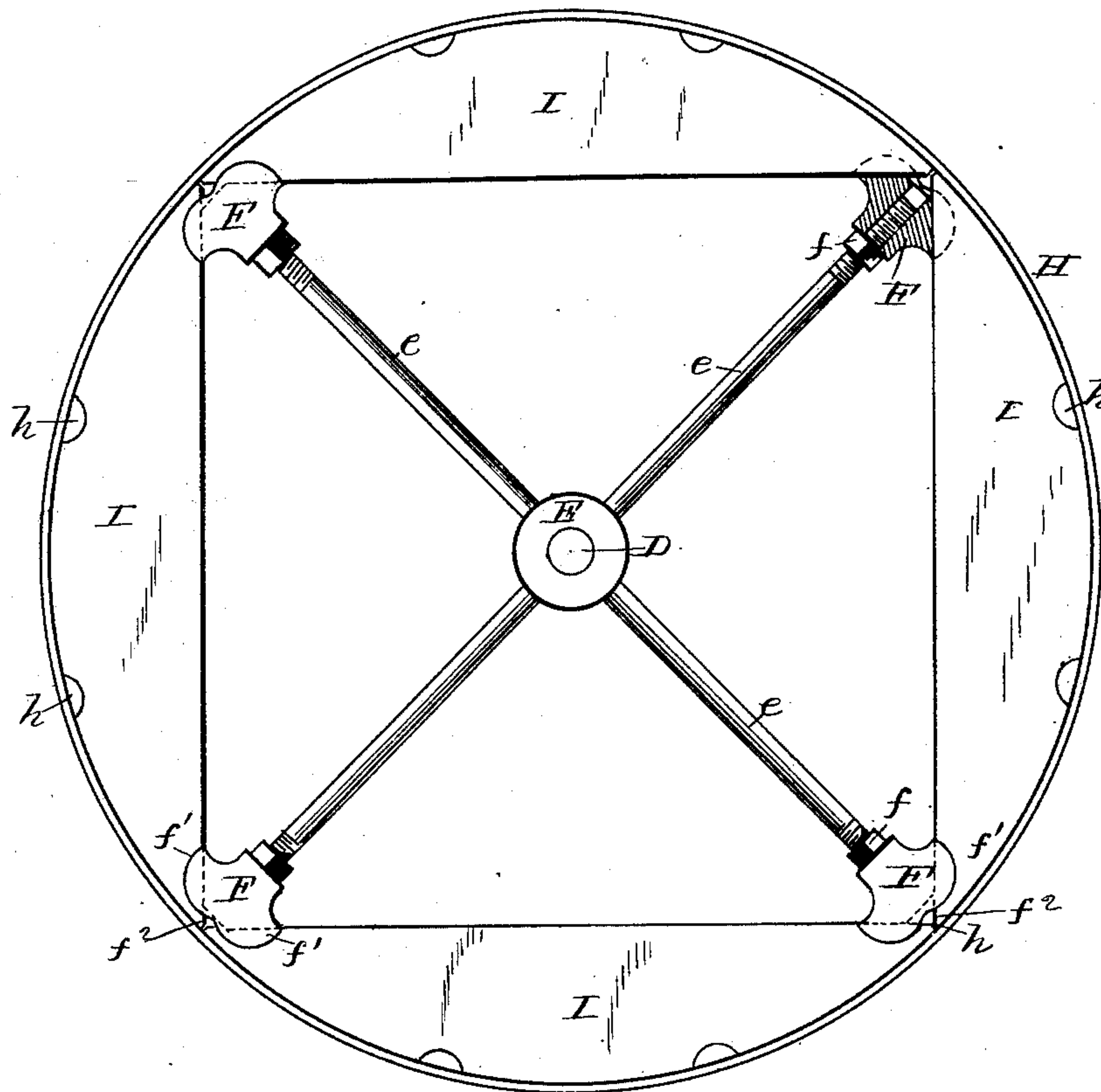
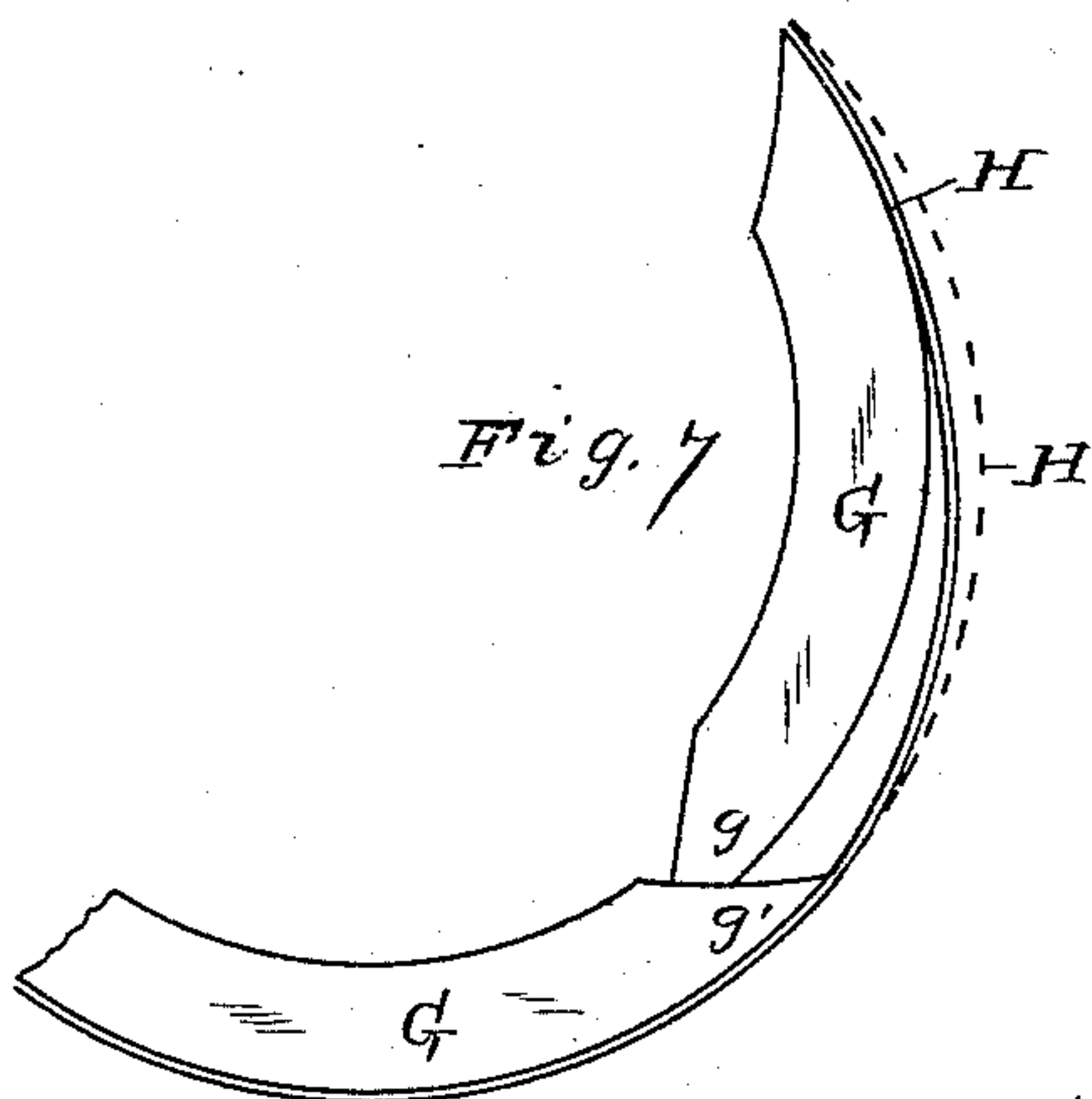


Fig. 7



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UNITED STATES PATENT OFFICE.

FRED. H. NORTON, OF GOUVERNEUR, NEW YORK, ASSIGNOR TO THE ST. LAWRENCE MANUFACTURING COMPANY.

LAND-ROLLER.

SPECIFICATION forming part of Letters Patent No. 353,267, dated November 23, 1886.

Application filed June 9, 1886. Serial No. 204,677. (No model.)

To all whom it may concern:

Be it known that I, FRED. H. NORTON, a citizen of the United States, residing at Gouverneur, in the county of St. Lawrence and State of New York, have invented certain new and useful Improvements in Land-Rollers, of which the following is a specification, reference being had therein to the accompanying drawings.

Figure 1 is a front view of a roller containing my improvements. Fig. 2 is an end view. Fig. 3 is an end view, detached, of one of the drum-sections enlarged. Fig. 4 is an enlarged end view of a modification of the roller. Fig. 5 is another modification. Fig. 6 shows a part of the invention applied to a roller having fellies of a different construction. Fig. 7 is a partial end elevation of the roller, illustrating the mode of tightening the fellies against the shell. Figs. 8 and 9 illustrate one of the differences in mode of operation between my invention and those which precede it.

Like letters of reference indicate like parts in all the figures.

A A are the side boards of the seat-box or weight-box. A' is the seat. B is the tongue. C C are the end boards, extending down below the bottom of the box to form hangers, and having the bearings *c c* bolted to their lower ends. As these parts may be of any usual or approved construction, they need not be further described.

D is the axle, mounted in the bearings *c c*, and either free to turn therein or permanently keyed or otherwise secured thereto.

The drum-sections, preferably three in number, of the roller are mounted on the axle, and have at their ends hubs E E, from which radiate spokes.

In Figs. 2 and 3 I have shown three spokes, *e e e'*. The spokes *e e* carry at their outer ends blocks or foot-pieces F F, the inner ends or shanks of which receive the outer ends of the spokes, which are threaded and carry nuts *f f*, for a purpose to be explained. The outer faces or edges of these foot-pieces are provided with flanges *f' f'*, between which flanges are seated the adjacent ends of the fellies G G, as is indicated by dotted lines and full lines. (See, particularly, Figs. 2, 3, 6.) By preference the other spoke, *e'*, enters its felly about midway between the ends of the felly.

The fellies G G, of which in Figs. 2 and 3 there are four, are circular upon their outer faces, and are also, by preference, circular upon their inner faces throughout a part of their length. The ends of these fellies are not both of the same form, but are by preference of substantially the form indicated at *g g'*, for a purpose which I will now explain.

By reference to Fig. 7 it will be seen that the section of shell H is not in a true arc of a circle, but is a little flattened, and it will also be seen that the adjacent ends of the fellies are in close contact with each other, this being true of all the fellies. It will also be understood that when the felly which is just within the flattened portion of the shell shall have been thrust outward until its periphery at both ends matches closely the periphery of both adjacent fellies the flattened portion of the shell will have been thrust outward so as to form part of a true circle, and that in this operation all of the parts—to wit, the shell, the fellies, and the spokes—have been brought under tension and the ends of the fellies have been jammed tightly into contact with each other. This forcing outward of the felly may be effected by means of the nut on the spoke *e'*; or, by preference, the end *g* of that adjusting or tightening felly may be driven out by means of a hammer, in which latter case I prefer to follow the felly up by turning the nut outward, keeping it in firm contact with the felly after each blow.

While the foot-pieces F are by preference made converging upon their outer edges, so as to fit closely the converging adjacent ends of the fellies, yet it will be understood that they (the foot-pieces) do not perform the function of wedges. In fact, the object in making their outer edges converging is simply that they may fit the ends of the fellies so as to get fair seats, the fellies being all sawed in the same shape as a matter of convenience in their manufacture, the shape of the fellies having been decided upon after experimenting with a view to obtain the most desirable shape to effect a suitable tension of parts, while insuring that the ends of the fellies shall under all circumstances be in close contact throughout the entire extent of their adjacent surfaces. In fact, in Fig. 4 I have shown a drum sup-

ported upon three fellies at each end, with the tension affected by the same mode of operation and with three spider-spokes; but the arrangement of the spokes differs from that heretofore described.

In Fig. 4 the spokes are equidistant from each other, and each engages with its respective felly at a point above midway between the ends of the felly. It will readily be seen, however, that the parts operate in substantially the same manner as in the four-felly wheel, so far as relates to the movement of the fellies relative to each other is concerned, when one or more of them is being driven outward to produce the required tension.

In Fig. 5 three fellies and three spokes are shown; but the ends of the spokes bear against the ends of the fellies instead of against their centers. In this figure the spokes carry foot-pieces F , having overlapping flanges and nuts f to thrust the foot-pieces outward. The foot-pieces enter sockets, notches, or seats g^2 , formed for their reception in the ends g of the fellies. For convenience in description, I will refer to these fellies as having each a pointed end and a wide curved end, g . It will be seen that the wide curved end of each felly is so shaped as to fit quite accurately the inner curved face of the adjacent end g' of the next felly, so that when the wide curved end is forced outward, so much of it as is between the pointed end of the adjacent felly and the center of such adjacent felly is in close contact therewith. This construction insures that the ends of the fellies shall be forced more tightly into contact with each other as the tension is increased—a mode of operation exactly the reverse of that which exists in those rollers where the ends of the fellies are formed upon practically radial lines, and may be therefore spread apart by means of interposed wedges which are driven between them to produce the desired tension.

Of course in Fig. 4 there should be a little looseness between the fellies and the inserted ends of the spokes to avoid cramping of parts as the fellies are thrust outward.

In Fig. 6 a four-felly drum is shown with wedges mounted on the ends of the four spokes at the adjacent ends of the fellies and operating to produce tension by spreading the fellies apart. The difference in the mode of operation between these wedges, placed in this relation to the fellies, and that of the foot-pieces in Figs. 2, 3, 5 will be readily understood.

I do not claim the method shown in Fig. 6 for separating the ends of the fellies by thrusting a wedge in between them, because this does not form any part of my invention, nor does the wedge, in combination with the fellies, operate in the same manner as my tension devices do, as will be hereinafter fully explained. This Fig. 6, however, illustrates one part of my invention—to wit, the flanges f' , which project from the edges of both the wedges and the foot-pieces and embrace and overlap the adjacent ends of the fellies. These

flanges perform two functions—to wit, they keep the fellies in plane and prevent lateral displacement, and they also support them against being split.

h h are drainage openings or holes formed in the outer edges of the fellies. In Fig. 6 similar drainage-openings are also shown between the ends of the adjacent fellies, and the flanges f' are notched centrally, as at f^2 , in order that in case said flanges are forced out into contact with the shell of the drum they shall not obstruct the drainage-hole.

Of course the fellies G in Figs. 2 to 5, and the fellies I in Fig. 6, may be further secured in place within the shells H by means of pins, set-screws, or other similar devices driven through the shell into the fellies.

Referring particularly to Figs. 1 and 2, J is a scraper suspended by links j j from box A . The lower ends of the links are by preference pivoted to the forward edge of the scraper. L is a bent lever pivoted at b to the tongue B , and connected by a link, l , to the scraper, preferably near its rear edge. V is a foot-piece or toe-piece on the upper end of the lever. a is a ratcheted bar projecting upward from the box A , close by the lever L , so that the driver can by his foot press down the lever and lock the scraper out of contact with the roller, or can let the scraper down upon the roller to remove adhering dirt or other material. By this arrangement of lever, pivoted links, and locking devices I secure a cheap and desirable means for supporting and operating the scraper, and one which will admit of the scraper being supported in such position that a small part of its weight can be utilized to hold its cutting-edge in contact with the drum when the earth is of a not very adhesive nature, and will also admit of the scraper being held upon the drum with greater pressure when the character of the soil makes it necessary or desirable.

In Figs. 2 and 3 I have shown alternatives for the nuts f , which are employed for thrusting the foot-pieces outward. In these figures, f^2 is a key seated in a slot, which extends through the foot-piece in such position relative to the end of the spoke that by means of a wedge-shaped key, the inner edge of which bears against the spoke, the foot-piece may be forced outward against the fellies.

By examining Figs. 7 and 9 it will be readily understood that when the wider end, g , of either of the fellies is thrown outward for the purpose of producing tension upon the fellies and shell the ends of the fellies, instead of being separated, as is the case with the construction shown in Figs. 6 and 8, are crowded against each other more firmly than when the parts are under less tension. This increase in tension is due to the change which is made in the shape of a line drawn around the outer edges of the fellies, while in the construction shown in Figs. 6 and 8 the tension is due not to any change in such form or outline, but simply to an increase in diameter (and consequently in

circumference) of the practically circular form of the shell, against which the edges of the fellies are always forced throughout their entire extent, even when their ends are separated by forcing the wedges in between them, as is indicated in Fig. 8.

I am aware of Patents Nos. 201,873, 239,976, and 250,644, and do not claim anything therein shown; but my foot-pieces differ materially in their construction and operation from those shown in either of said patents, from the fact, among other things, that in neither of them is the construction of parts such that the foot-pieces can be operated to thrust the end of one felly outward relatively to the opposing end of an adjacent felly. Furthermore, neither of the earlier foot-pieces is wedge-shaped, and is not therefore adapted to rest in an angle between two fellies and slide upon one or both of said fellies when being forced outward for the purpose of producing tension upon the shell and other parts.

What I claim is—

1. The combination, substantially as herein set forth, of the shell, spokes within the shell, a series of fellies having their ends of different widths, and means for moving the wider end of a felly outward relatively to an adjacent felly to produce tension of the parts.

2. The combination set forth herein of the shell, spokes supported within the shell, a series of fellies one or more of which has its wider end, *g*, abut against an adjacent felly, and its narrow end, *g'*, inserted behind the wider end, *g*, of an adjacent felly, and means for moving the wider end of said felly relatively to and sliding upon the end of an adjacent felly to produce tension of the parts.

3. The combination, substantially as herein set forth, of the shell, spokes supported within the shell, a series of fellies having their ends of different widths and having their wider ends formed in arcs of circles, and having its narrow end, *g'*, inserted behind the wider end of an adjacent felly, and means for moving the wider end of said felly relatively to and sliding upon the end of an adjacent felly to produce tension of the parts.

4. In a land-roller, the combination, with the seed-box and the shell, of the scraper *J*, its supporting-links *j j*, the lever *L*, link *l*, and the ratchet bar *a*, substantially as set forth.

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

FRED. H. NORTON.

Witnesses:

A. CORBIN, Jr.,
S. W. HARRIS.