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PATENTED MAR. 8, 1904.

E. A. LUNDGREN & C. H. JOHANNESSEN.  
GRASS TWINE FEEDING MACHINE.

APPLICATION FILED JUNE 13, 1903.

NO MODEL.

3 SHEETS—SHEET 1.

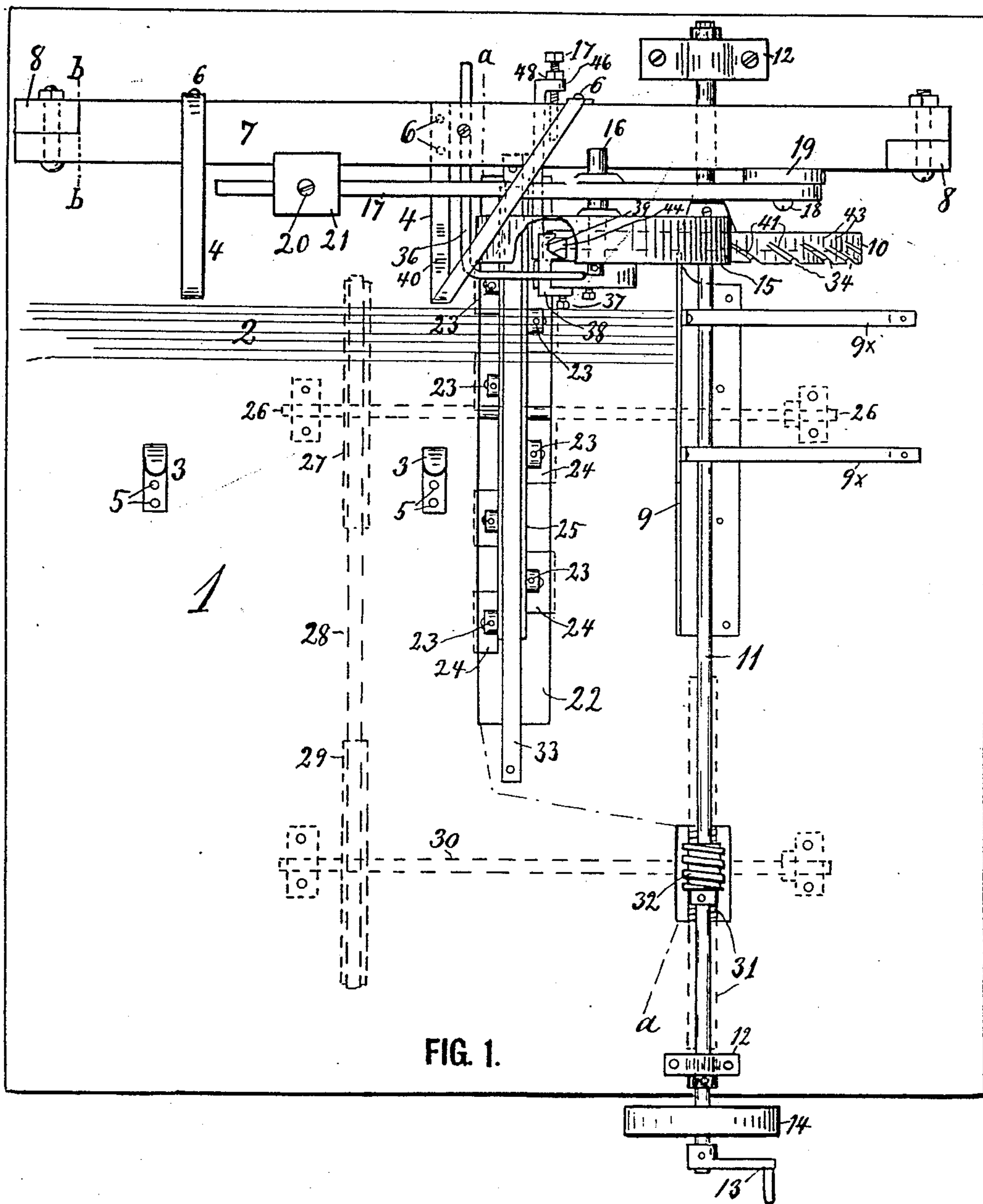


FIG. 1.

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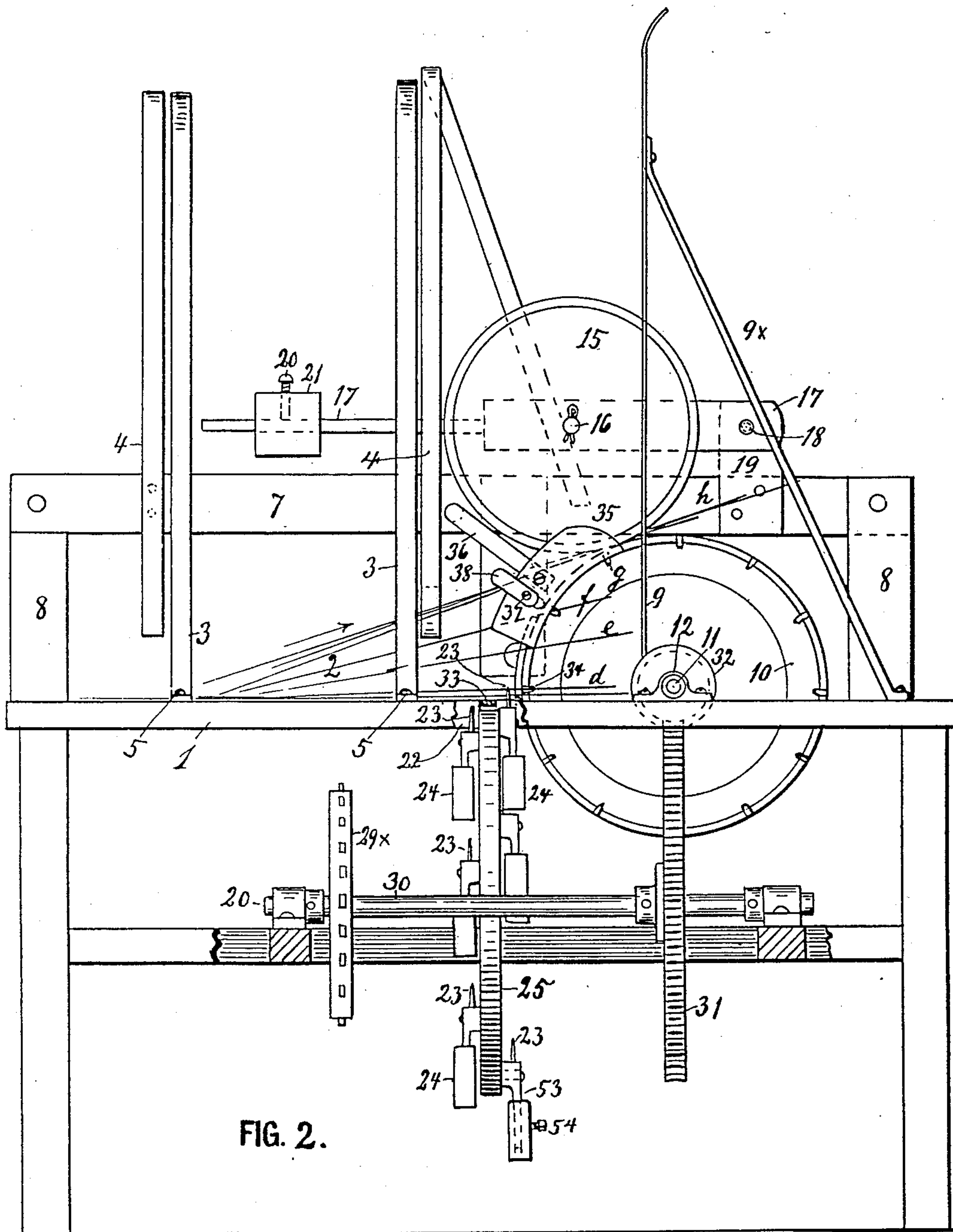
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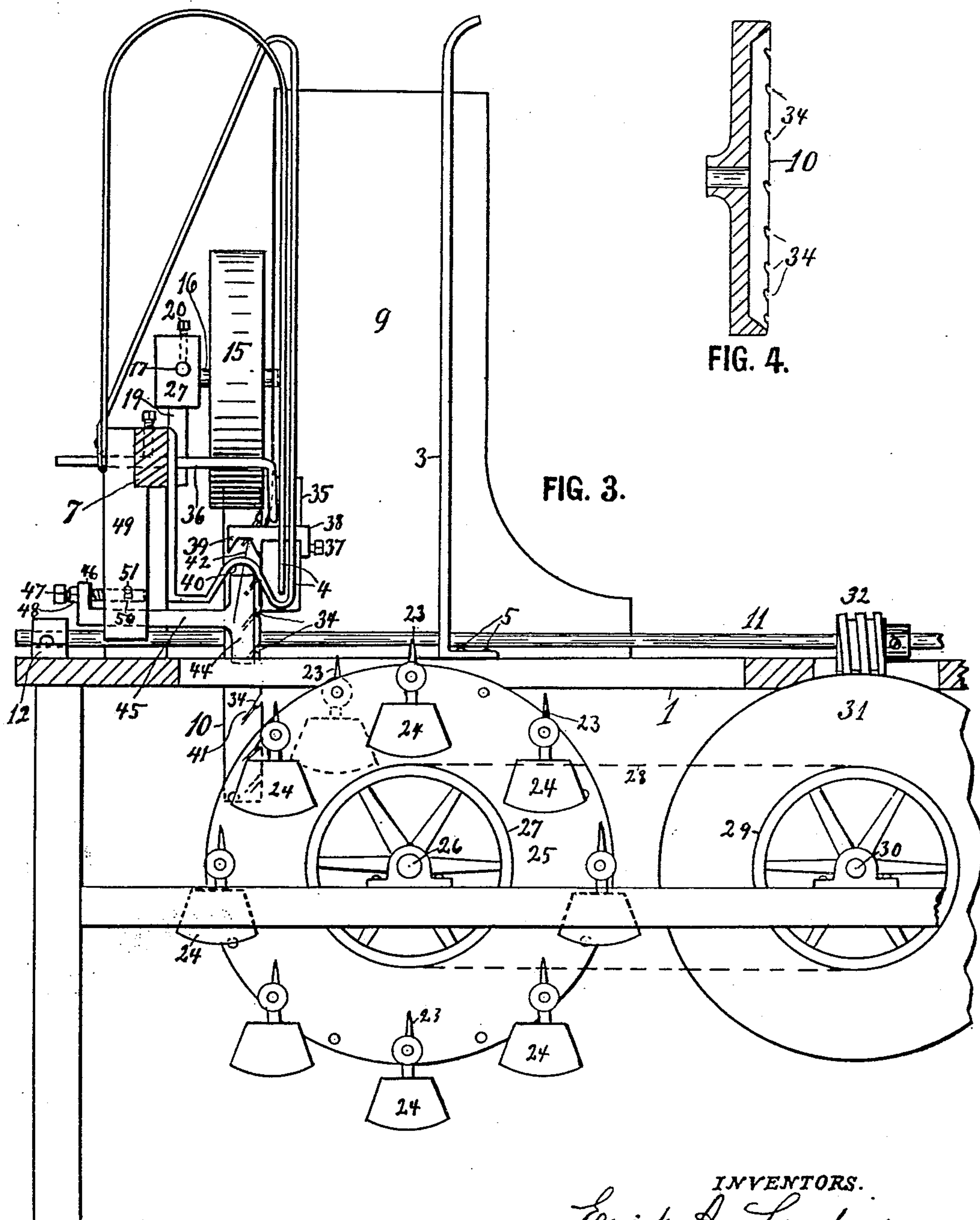
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3 SHEETS—SHEET 3.



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## UNITED STATES PATENT OFFICE.

ERICK. A. LUNDGREN AND CARL H. JOHANNESSEN, OF ST. PAUL,  
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## GRASS-TWINE-FEEDING MACHINE.

SPECIFICATION forming part of Letters Patent No. 754,374, dated March 8, 1904.

Application filed June 13, 1903. Serial No. 161,397. (No model.)

*To all whom it may concern:*

Be it known that we, ERICK. A. LUNDGREN, a citizen of the United States, and CARL H. JOHANNESSEN, a subject of the King of Sweden and Norway, both residing at St. Paul, in the county of Ramsey and State of Minnesota, have invented certain new and useful Improvements in Grass-Twine-Feeding Machines; and we do 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, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, which form a part of this specification.

Our invention relates to feeding devices for grass-twine-making machines; and the main object of the invention is to provide a cheap, simple, efficient, and durable grass-twine feeder or device for feeding the grass to the twine-forming part of such machinery. This object we attain by the novel construction and arrangement of parts illustrated in the accompanying drawings, in which—

Figure 1 is a top or plan view of our feeding device. Fig. 2 is a front elevation of the device or machine in Fig. 1 with a few portions of the table broken away and the frame below the table, which frame is also more fully indicated in one of the many ways it may be constructed. Fig. 3 is a sectional end elevation of the main portion of the machine with the table 1 cut on the line *a a* and the frame-bar 7 cut on the line *b b* in Fig. 1. Fig. 4 is a diametrical section of the grass-feeding wheel of the machine. In Figs. 1, 2, and 3 more or less of the weights 24 are omitted, so as to not crowd the drawings, which can easily be understood from the weights shown.

Referring to the drawings by reference characters, 1 designates the feeding-table, upon which the long grass or straw 2 to be formed into twine is placed between upright guides 3 in front of it and 4 in the rear of it. The front guides are secured at 5 upon the table, while the rear guides are secured at 6 to a horizontal frame-bar 7, held by two posts 8,

projecting upward from the table, so that the grass may pass under the guides when fed to the wheels and any surplus of short straw may pass under the guides and out at the rear of the machine.

Projecting upward from the table and held by the braces 9<sup>x</sup> is also a broad guide 9, against which are placed the stubble ends of the pile of grass placed between the guides 3 and 4 to be operated on.

10 is the feed-wheel proper and will hereinafter often be termed the "primary" feed-wheel. It is secured on the shaft 11, journaled in the bearings 12, fixed upon the table. It has feed-notches 34 in one edge, may preferably be concaved at one side, so that the notched edge forms a rim, as shown in Fig. 4, and may be revolved either by a crank 13 or a pulley 14. Upon the feed-wheel rests a rubber-faced presser-wheel 15, revolving on a stud 16, secured in a lever 17, pivoted at 18 to the arm 19 of the framework. On the free end of this lever is adjustably held by a set-screw 20 a weight 21, by which the pressure of the presser-wheel upon the feed-wheel is regulated. The face of the presser-wheel is preferably wider than the face of the feed-wheel and projects a little forward over the feed-notches 34 in the front rim of the latter. The grass is fed forward by and between the two wheels a few straws at a time—that is to say, when, for example, four straws are fed three inches forward then four more straws are fed along at the side of the first four straws, and when the first four straws have moved forward six inches then still other four straws are started, and so on, forming a strand of straws overlapping each other by three inches or any other distance desired. How the straws are thus regulated and brought in between the wheels will now be described.

Through a large slot 22 in the table project upwardly into the grass pile the sharp points of fingers 23 of weights 24, pivoted near the periphery of a secondary feed-wheel 25, secured on a shaft 26, journaled in suitable framework below the table and rotated very slowly by the pulley 27, belt 28, pulley 29,



and shaft 30, on which is also secured a worm-gear 31, driven by a worm 32, secured on the feed-wheel shaft 11.

33 is a metallic strip bridging the slot 22 in the table to prevent the grass from bulging down into the slot and helping to guide the grass sidewise toward the feed-wheel, against the side of which it is impelled in a yielding manner and with even pressure by the fingers 23 of the weights 24. In this manner the grass is brought into the slanting or hook-shaped notches 34 in the edge of the feed-wheel and by the latter carried upward like the straw *e* in Fig. 2. At this point the surplusage of grass is swept away from the notch by a block 35, held close to the side of the feed-wheel by an arm 36, secured in the frame-bar 7. Upon the block 35 is secured by the set-screw 37 a clamp 38, formed at its rear end with a bifurcated guide 39, which helps to bring the straws sidewise in between the wheels 10 and 15, as does also the guiding loop or arch 40 of the guide 4 nearest to the feed-wheel. Also the shallow slanting grooves 41 in the face of the feed-wheel, extending from each notch 34, assist in bringing the straws between the wheels so that they come through as at *h* in Fig. 2. They are firmly held and pushed as a strand into the usual funnel, (not shown,) by which they are further formed into a twine which is twisted or bound in cotton threads or both twisted and bound in the usual way as it emerges from the small end of the funnel.

It will be understood that while a notch 34 of the feed-wheel passes from *d* to *e* in Fig. 2 it gets filled with straws of grass, and while passing from *e* to *f* the straws in the notch are separated from the pile of straw, and while the notch moves from *f* to *g* the inverted-V-shaped guide 39 brings the straws in about central line of the face of the feed-wheel, or in a position about like the line 42 in Fig. 3, so that the moment the straws are disengaged from the notch near the top of the wheel their front ends simply swing sidewise to the central position already occupied by the part of the straw held between the wheels. The marks 43 across the face of the feed-wheel (shown in Fig. 1) are shallow grooves or corrugations to help hold the straws more firmly between the wheels.

The size of the notches 34 may be regulated, so as to receive more or less straw in the formation of light or heavy twine. This is done by the curved plate or gage 44, fitting the face of the feed-wheel at the point where the straw enters the notches 34. Said plate 44 is held by an arm 45, sliding in a hole in the framework and having in its angularly-formed end 46 an adjustment-screw 47 with a jam-nut 48 to hold it firmly. A smooth part of the screw is journaled in the frame-arm 49 and provided with an annular groove 50, in which engages a pin 51, so that in turning the screw the gage-plate 44 will move so as to cover more or less

of the notches 34 at the point where they receive the grass.

In Fig. 2 is indicated, at the lowest weight 24, that said weights are adjustable upon the arm 53 by a set-screw 54, so that the tension 70 to the fingers 23 may be regulated.

As already stated, the wheel 15 is preferably and to good advantage, but not necessarily, let slightly into the block 35, so that the straw has no chance to escape upward between the block and the upper wheel, but passes simply under the latter and is then moved in between the wheels in a slightly-slanting position and then allowed to run in a straight direction. It will also be understood that the gage 44 may be made adjustable in any suitable manner, and it may or may not extend up under the guide 39. Also that instead of pulleys 27 29 and a belt 28, as indicated in Figs. 1 and 3, we may use sprocket-wheels, of which one, 29<sup>x</sup>, is shown in Fig. 2, and common belt-chains, (not shown,) or the shafts 26 and 30 may be geared together in any suitable manner. It is also understood that the weights 24 are very desirable and preferable means for feeding the grass to the feed-wheel, as the weights will tilt, and thus release their hold on the grass whenever the latter becomes too hard crowded against the primary feed-wheel.

Having thus described our invention, what we claim, and desire to secure by Letters Patent, is—

1. A grass-twine-feeding machine having two wheels rolling face to face so as to feed grass between them, one of said wheels having in its rim notches adapted to carry grass from a supply in between the wheels.

2. A grass-twine-feeding machine having two wheels rolling face to face so as to feed grass between them, one of said wheels having in its rim notches adapted to carry grass from a supply in between the wheels and auxiliary slanting guiding-grooves extending from the notches upon the face of the wheel.

3. A grass-twine-feeding machine having a feed-wheel with a concave side forming a rim, and in said rim notches adapted to carry grass from a supply into feeding mechanism, a block or sweeper adjacent to the side of the wheel to separate the surplus grass outside the notch from the grass in the notch and a presser-wheel rolling face to face upon the feed-wheel.

4. A grass-twine-feeding machine having a feed-wheel with a concave side forming a rim, and in said rim notches adapted to carry grass from a supply into a feeding mechanism and a block or sweeper adjacent to the side of the wheel to separate the surplus grass outside the notch from the grass in the notch, an adjustable gage partly covering the notches while they are in a position to receive the grass and a presser-wheel rolling face to face upon the feed-wheel.

5. A grass-twine-feeding device having a



feed-wheel with feed-notches in its edge adapted to carry grass from a supply upon the face of the wheel, a presser-wheel bearing with its face against the face of the feed-wheel and  
5 adjustable means for giving pressure to the presser-wheel toward the feed-wheel.

6. A grass-twine-feeding device having a feed-wheel with feed-notches in its edge adapted to carry grass from a supply upon the face  
10 of the wheel, a presser-wheel bearing with its face against the face of the feed-wheel, said presser-wheel having its face covered with rubber or similarly soft material and adjustable means for giving pressure to the presser-  
15 wheel toward the feed-wheel.

7. A grass-twine-feeding device having a feed-wheel with feed-notches in its edge adapted to carry grass from a supply upon the face of the wheel, a presser-wheel bearing with its  
20 face against the face of the feed-wheel, the face of said presser-wheel projecting out over the notched rim or edge of the feed-wheel and adjustable means for giving pressure to the presser-wheel toward the feed-wheel.

8. In a grass-twine-feeding machine, the combination with a primary feed-wheel having feed-notches in its edge or rim, and a presser-wheel rolling face to face therewith so as to feed grass between them endwise into the  
30 twine-forming device, of a secondary feed-wheel having yielding fingers moving the supply of grass in small portions sidewise against the notched edge or rim of the primary feed-wheel.

9. In a grass-twine-feeding machine, the combination with a primary feed-wheel having a side rim with notches adapted to take a few straws at a time from a supply of grass, a presser-wheel rolling face to face on said wheel,  
40 of a secondary feed-wheel having yielding fingers moving a portion of the supply gently toward the side of the primary feed-wheel; said secondary wheel revolving in a vertical

plane, and said fingers being pivoted near the periphery of the wheel, and having weights se- 45 cured to them to hold them normally upright, or in a position to engage and move some of the grass-supply sidewise toward the side of the feed-wheel.

10. In a grass-twine-feeding machine, the combination with a primary feed-wheel adapted to take a few straws at a time from a supply of grass, and a presser-wheel rolling face to face therewith, of a secondary feed-wheel having yielding fingers engaging the supply to  
55 move a portion thereof gently toward the primary wheel, said fingers being pivoted near the periphery of the wheel and having adjustable weights holding the fingers in position to engage the supply. 60

11. In a grass-twine-feeding machine, the combination with a primary feed-wheel having at one side a rim with notches adapted to take a few straws at a time from a supply of grass, and a presser-wheel rolling face to face upon  
65 said wheel, of a secondary feed-wheel having yielding fingers moving a portion of the supply gently against the side of the primary wheel; said secondary wheel being operatively connected with the shaft of the primary feed-  
70 wheel by a speed-reducing mechanism or gearing.

12. The combination with the feed-wheel 10 having the feed-notches 34 in its edge, of the sweeping-block 35 adjacent thereto, the  
75 inverted-V-shaped guide 39 secured to said block, and the weighted wheel 15 resting on the feed-wheel, and means for bringing grass into contact with the notches of the feed-wheel.

In testimony whereof we affix our signatures 80 in presence of two witnesses.

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Witnesses:

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