

H. C. FITZKE.
CONCRETE MIXING MACHINE.
APPLICATION FILED MAR. 23, 1908.

945,508.

Patented Jan. 4, 1910.

9 SHEETS—SHEET 1.

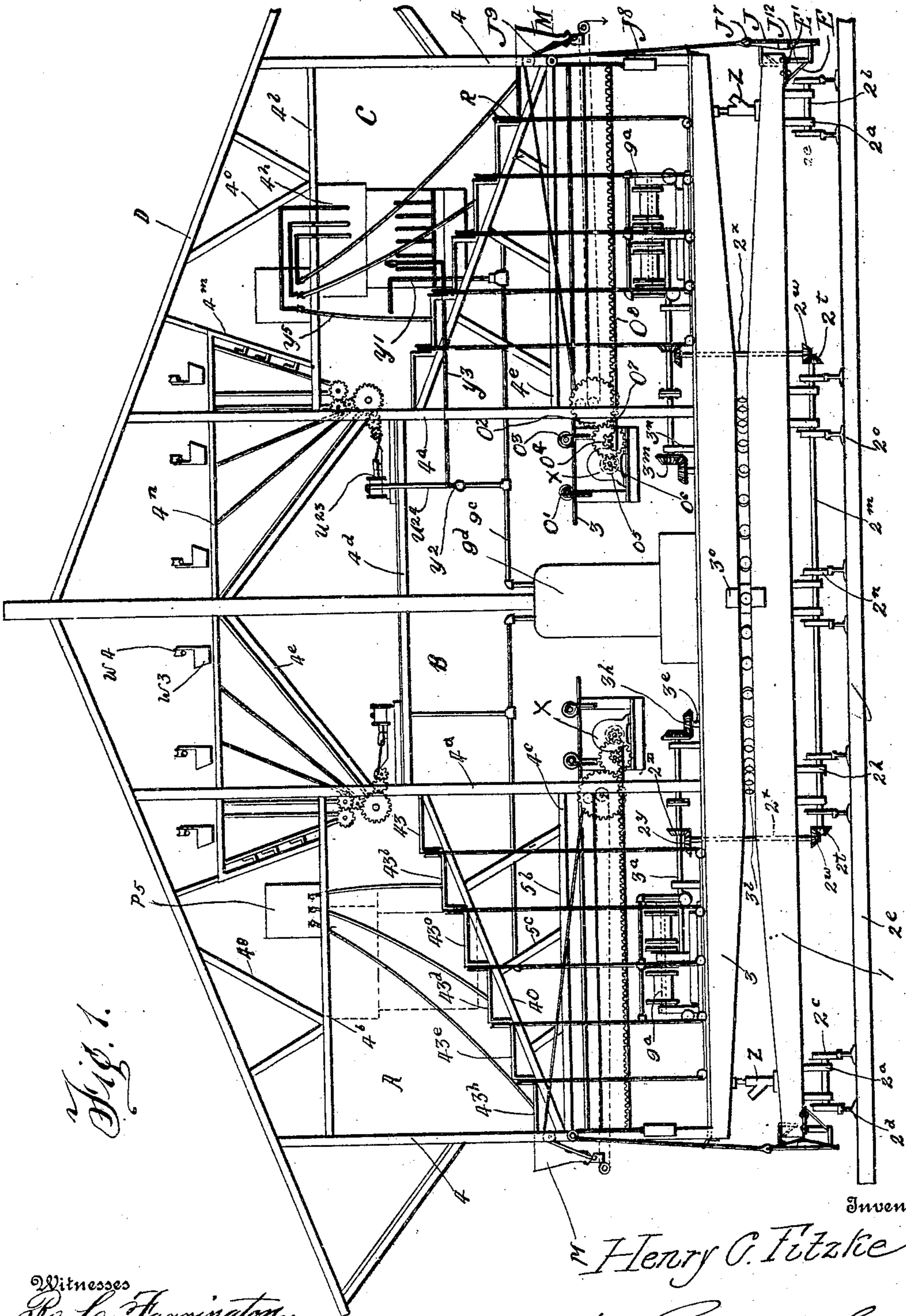


Fig. 1.

Witnesses
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N. B. Bogan

By

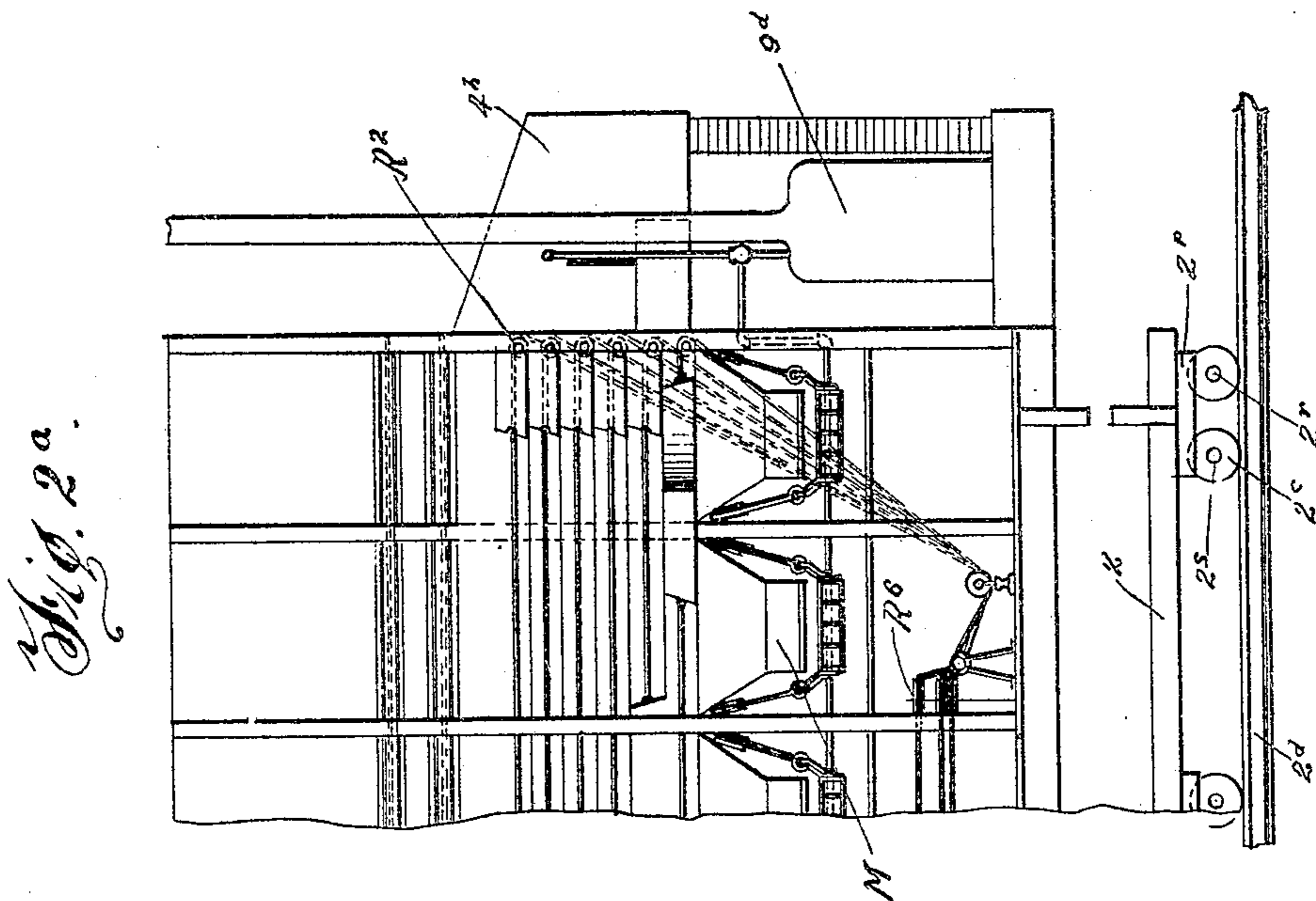
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9 SHEETS—SHEET 3.



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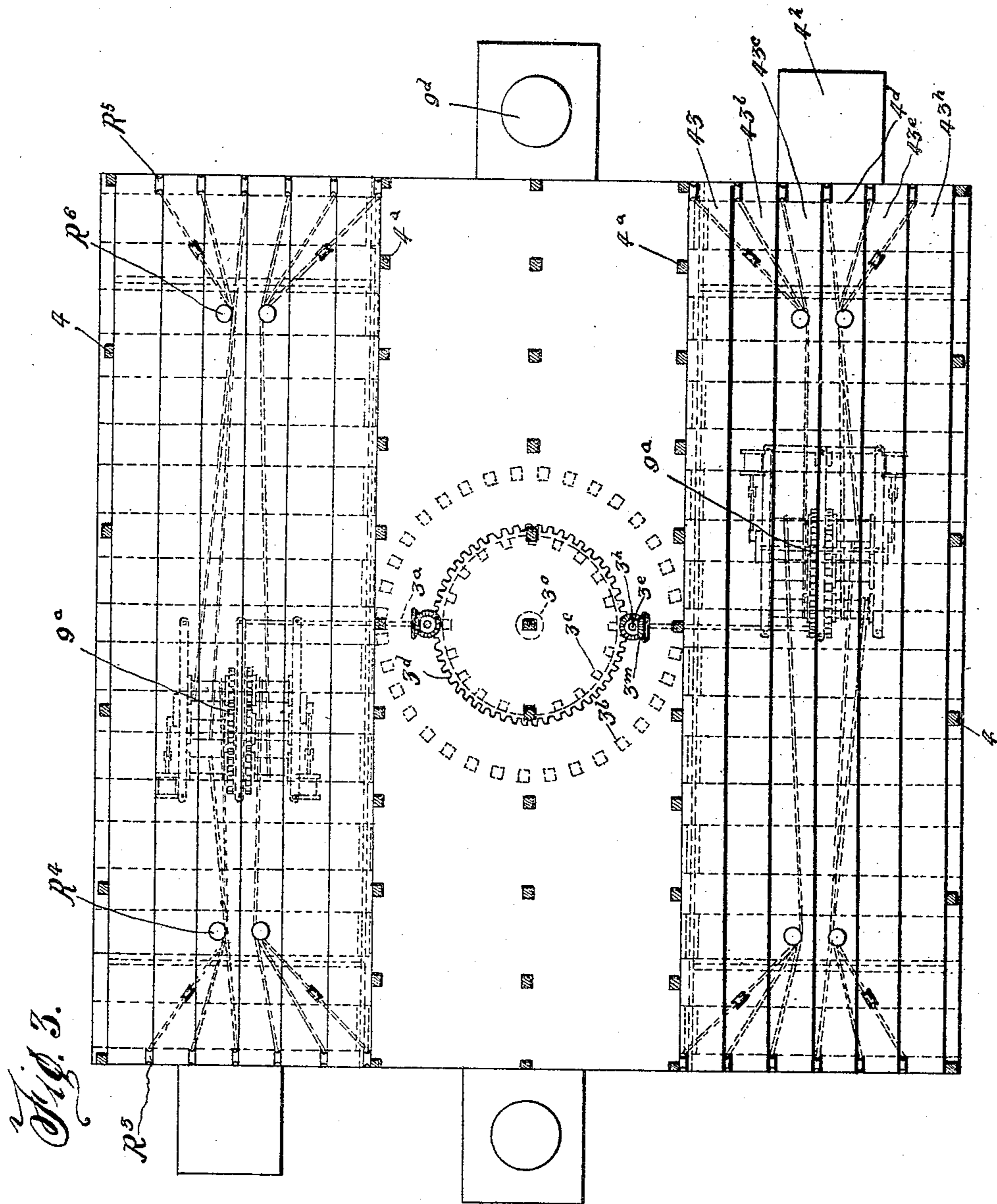


Fig. 3.

Witnesses
R. F. Farrington.
N. L. Bopp

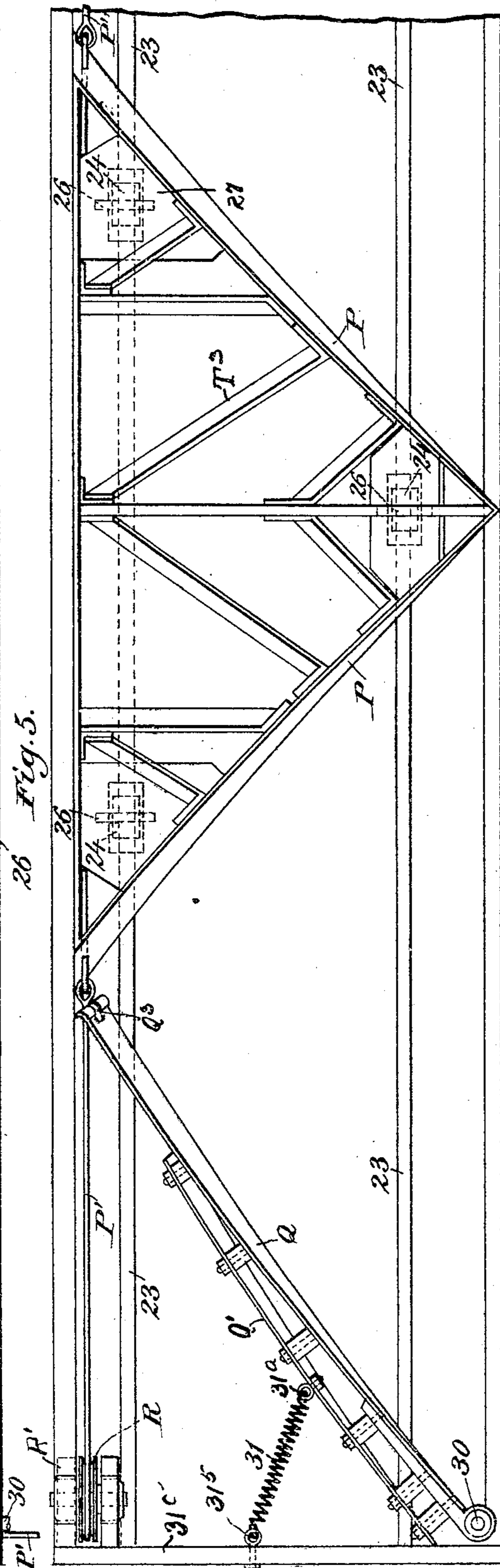
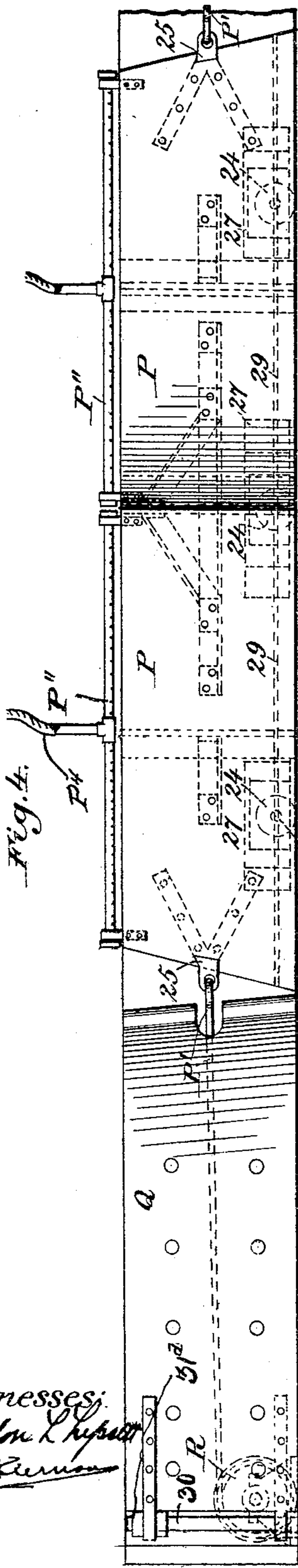
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9 SHEETS—SHEET 5.



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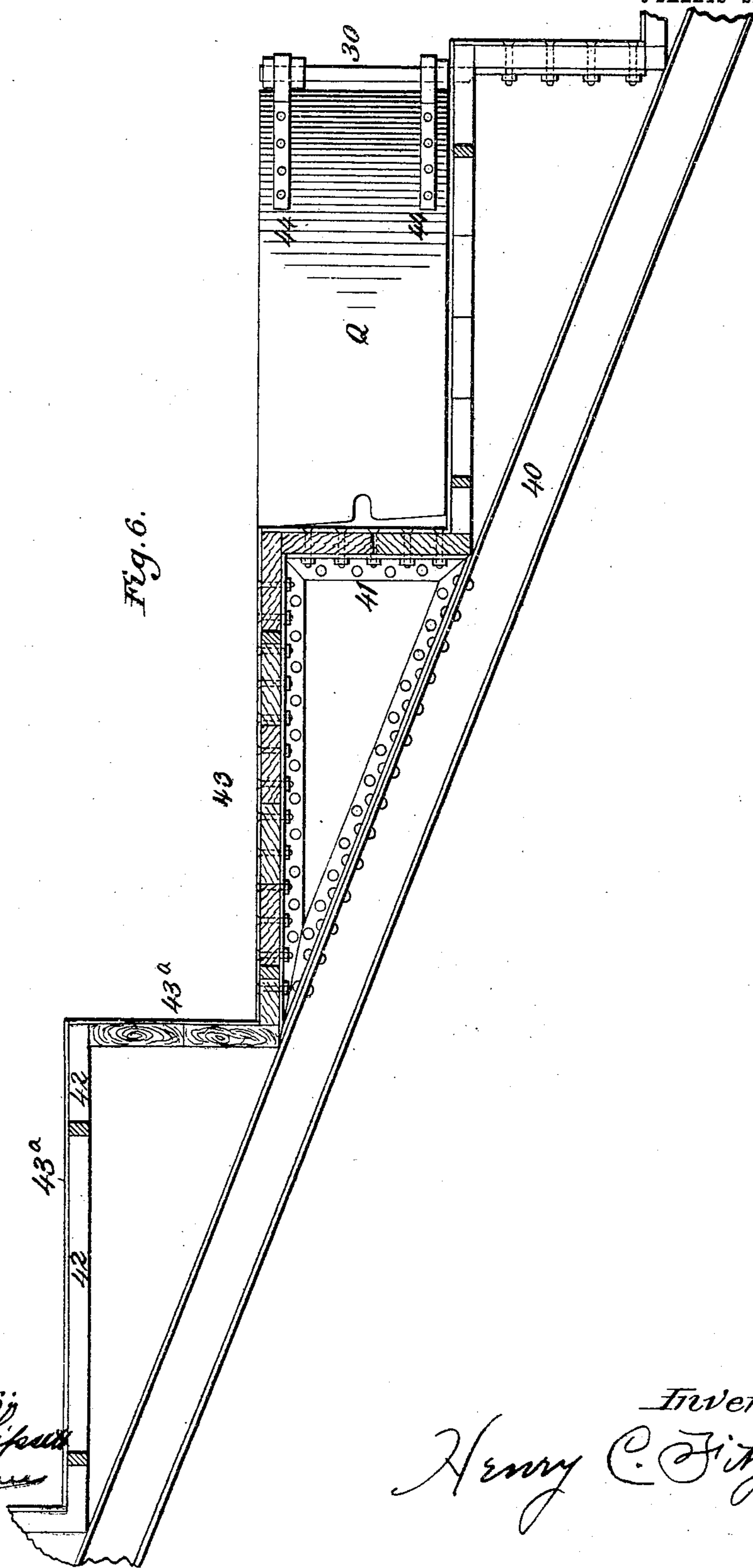
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9 SHEETS—SHEET 6.

Fig. 6.



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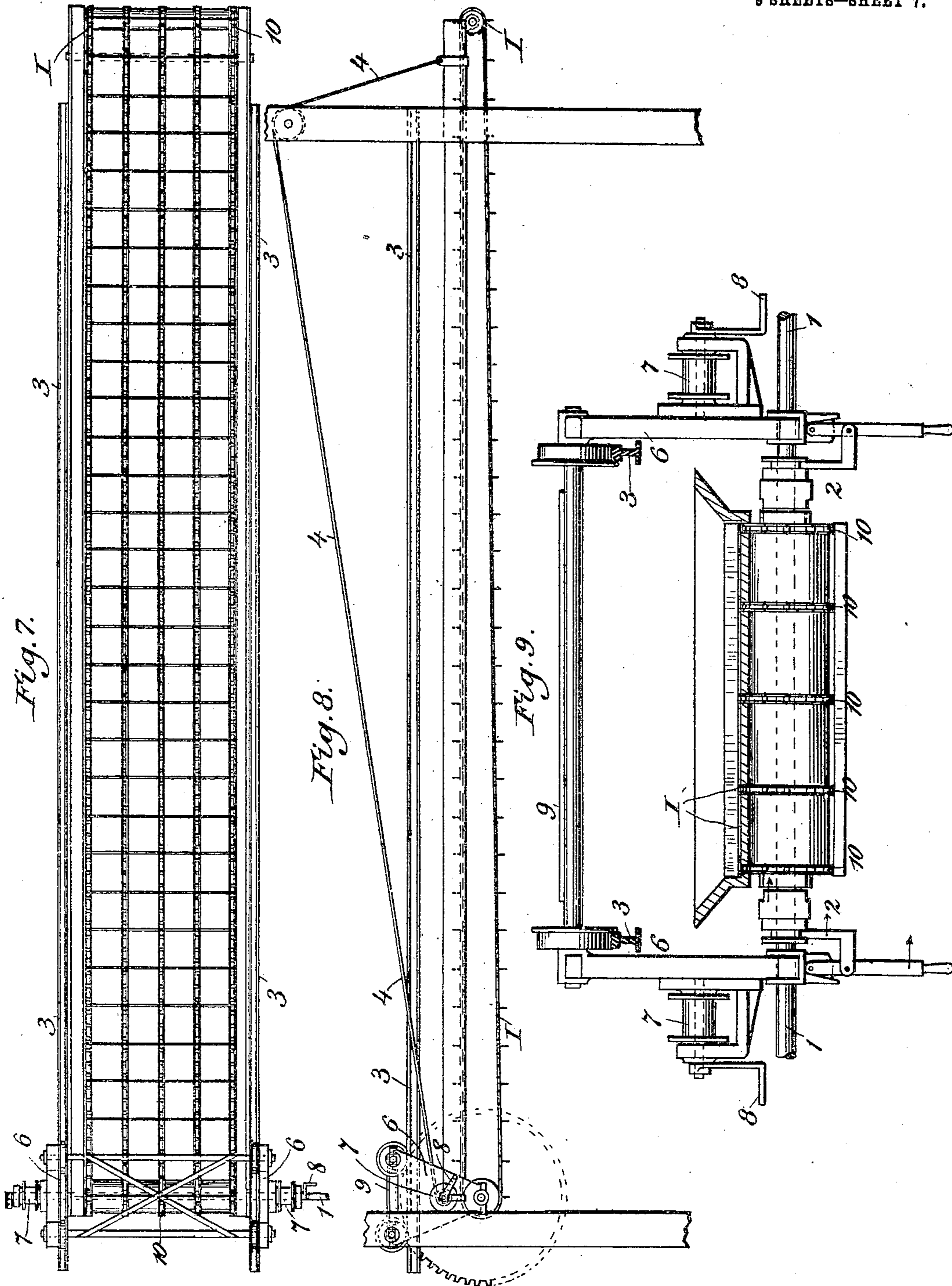
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9 SHEETS—SHEET 7.



Witnesses:

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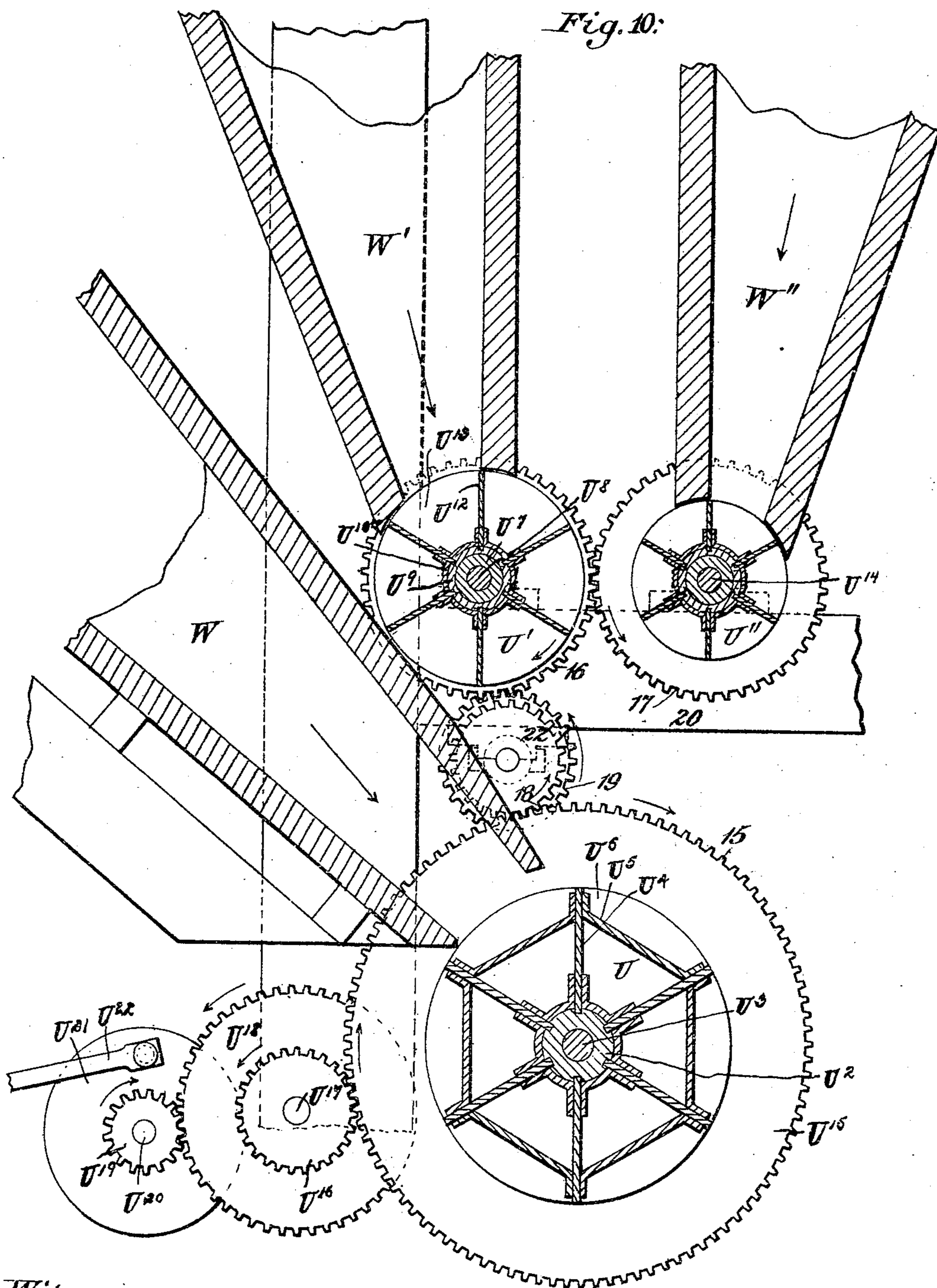
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9 SHEETS—SHEET 8.



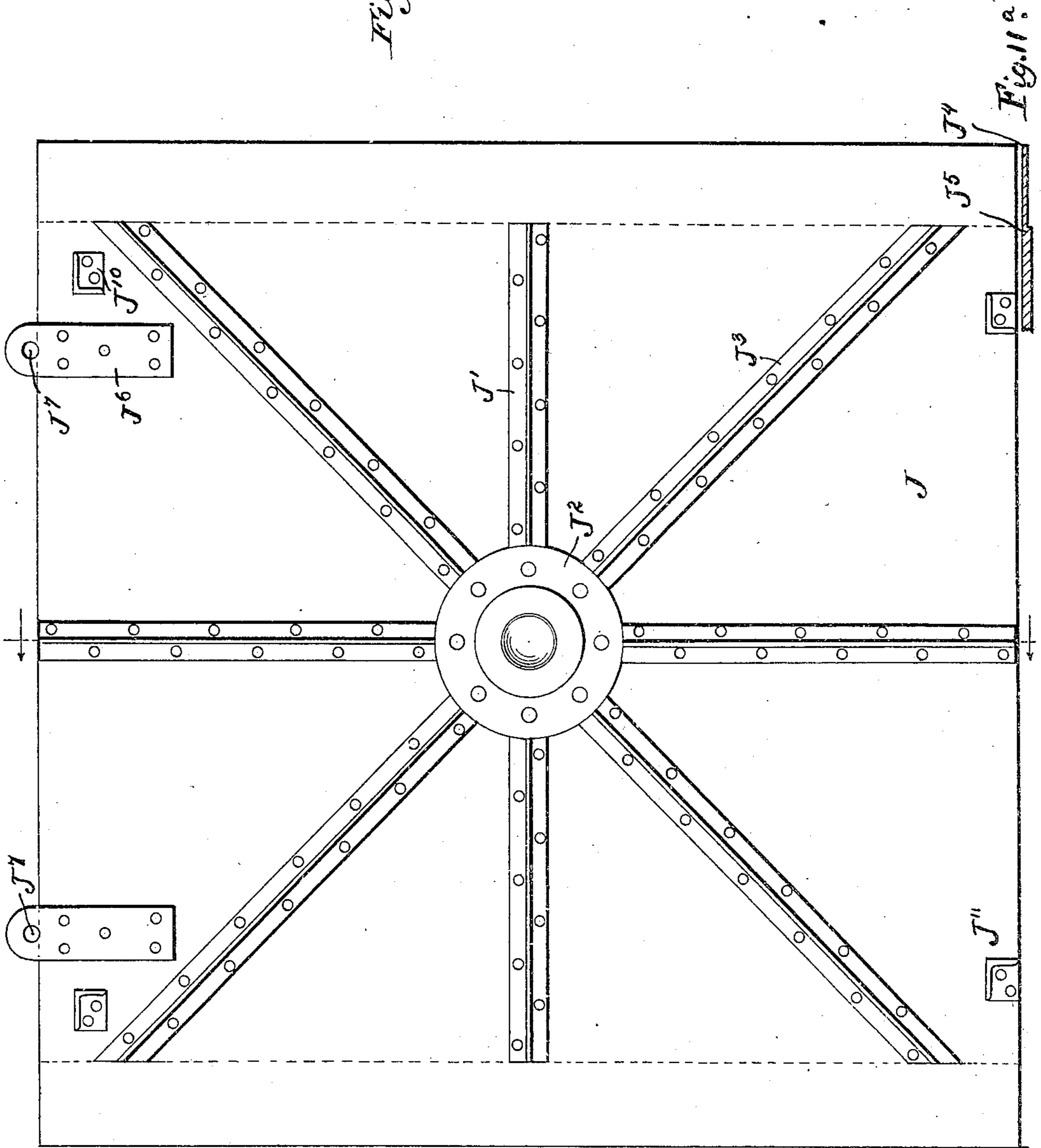
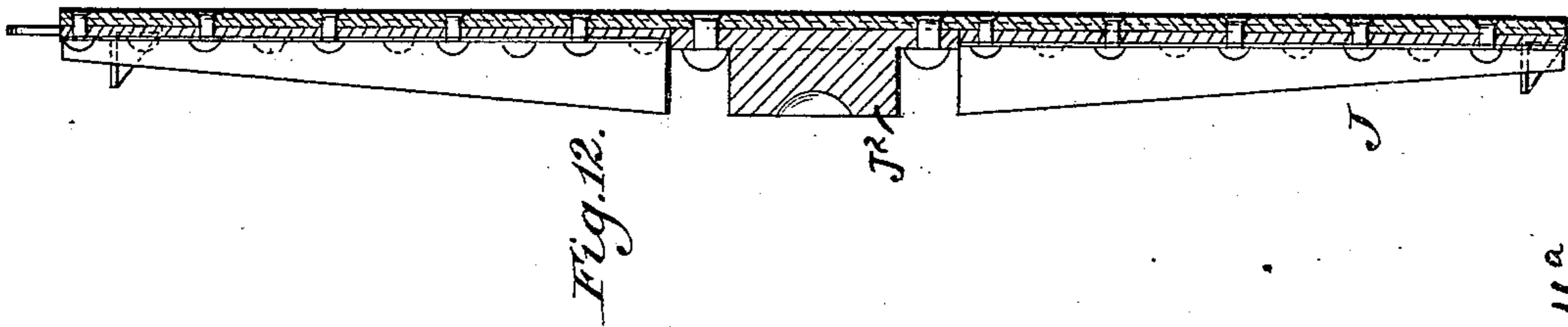
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APPLICATION FILED MAR. 23, 1908.

Patented Jan. 4, 1910.
9 SHEETS—SHEET 9.



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Fig. 11.

Inventor:
Henry C. Fitzke

UNITED STATES PATENT OFFICE.

HENRY C. FITZKE, OF PECULIAR, MISSOURI.

CONCRETE-MIXING MACHINE.

945,508.

Specification of Letters Patent.

Patented Jan. 4, 1910.

Application filed March 23, 1908. Serial No. 422,852.

To all whom it may concern:

Be it known that I, HENRY C. FITZKE, a citizen of the United States of America, at present residing at Peculiar, county of Cass, Missouri, have invented a new and useful Concrete-Mixing Machine, of which the following is a specification.

This invention relates to a portable concrete mixing machine and the primary object thereof is to provide in a manner as hereinafter set forth a machine embodying means for mixing a concrete substance.

With the foregoing and other objects in view, the invention consists of the novel construction, combination and arrangement of parts hereinafter more specifically described and illustrated in the accompanying drawings, wherein is shown the preferred embodiment of the invention, but it is to be understood that changes, variations and modifications can be resorted to which come within the scope of the claims hereunto appended.

In describing the invention in detail, reference is had to the accompanying drawings wherein like reference characters denote corresponding parts throughout the several views, and in which,

Figure 1 is an end elevation of a machine in accordance with this invention, Figs. 2 and 2^a when taken together are a side elevation of the machine, Fig. 3 is a top plan also showing various elements of the machine in dotted lines, Fig. 4 is a front elevation of one of the plows and a sweep, Fig. 5 is a top plan of one of the plows also showing the track therefor, the track being broken away at one end, Fig. 6 is an end view partly in section of a plurality of tracks for the plows and platforms, the supports for the tracks being broken away, Fig. 7 is a plan of the conveyer, Fig. 8 is a side elevation of the conveyer, Fig. 9 is an end view partly in section of the conveyer, Fig. 10 is a sectional view illustrating the combined measuring and feeding device for the materials which are admixed to form the concrete substance, Fig. 11 is a rear elevation of an adjustable form for the installing of the concrete substance, Fig. 11^a is a detail of the form, Fig. 12 is a central sectional view of the form shown in Fig. 11.

Referring to the drawings in detail, the machine comprises a portable base formed of longitudinal and horizontally extending

beams 1, 2, respectively which are suitably secured together. Each of the horizontally extending beams at each end is provided with a pair of hangers or supports 2^a in which is journaled an axle 2^b carrying wheels 2^c traveling upon the track rails 2^d mounted upon the ties 2^e. In one of the horizontally extending beams 1 is journaled an elongated axle 2^m carrying wheels 2ⁿ which travel upon track rails 2^o. Each of the longitudinally extending beams 2 is provided with hangers or supports 2^a in which are journaled axles 2^r carrying wheels 2^c which travel upon the rails 2^d. The elongated axle 2^m at each end thereof is provided with a beveled pinion 2^t, each of which meshes with a beveled gear 2^w carried on the lower end of a vertically extending rotatable driven shaft 2^x. These shafts extend up into a superstructure to be hereinafter referred to and each has its upper end provided with a beveled gear 2^y meshing with the beveled gear 2^z carried by a drive shaft 3^a to be hereinafter referred to. By such construction, it is evident that when the drive shaft 3^a is rotated, the shaft 2^x will be driven causing the rotation of the axle 2^m and the shifting of the machine base upon the track rails.

Adjustably mounted upon and supported by the machine base is a superstructure carrying a duplex feeding and measuring mechanism, two sets of mixer plows, duplex sets of conveyer mechanism, duplex sets of water feeding devices, duplex sets of installing devices, and duplex operating mechanisms.

Before describing the various mechanisms specifically, a description of the superstructure will first be set forth. The superstructure comprises a base or platform 3 having interposed therebetween and the machine base a turntable consisting of a series of rollers 3^b and 3^c as shown in dotted lines in Fig. 3. The turntable further comprises a circular tooth rack 3^d with which engages gear wheels carried on the ends of the shafts 3^e. The shafts 3^e extend through the platform 3 and each on its upper end carries a beveled gear 3^h meshing with the beveled gear 3^m on the end of the shaft 3^a. These latter shafts are journaled in the uprights 3ⁿ connected to the platform 1. By the foregoing arrangement, it is evident that when either of the shafts 3^a is operated so as to

revolve the gear 3^m, motion will be transmitted to the shaft 3^e and the sprocket wheel on the lower end of said shaft engaging with the rack 3^c will shift the turntable thereby carrying the superstructure therewith. The turntable is connected in any suitable manner to the base or platform 3 and furthermore a pivoted connection is provided between the base 3 and the machine base as indicated at 3^o. The superstructure further comprises besides the base or platform 3, the end supporting uprights 4, divisional walls 4^a, the supports 4^b, 4^c, 4^d, 4^e, 4^f, 4^g, and 4^h. The walls 4^a divide the superstructure into the chambers A, B, and C, the chamber B is the intermediate chamber while the chambers A, C, are the end chambers.

The roof for the superstructure is indicated at D and is supported by the divisional walls 4^a and uprights 4^o.

Within each of the chambers A, C, is arranged the mechanism for mixing and conveying the concrete substance and as the mechanism in the chamber A is similar to that in the chamber C, but one will be described, as the description of such will apply to the other, similar reference characters being employed to designate the mechanisms in such chambers. In each of the chambers A, C, is arranged supports 40, 5^b and 5^c, the supports 40 extending downwardly at an inclination, and braced by the supports 5^b and 5^c. Upon the supports 40 is positioned a series of platforms arranged in a step-like manner and which extends longitudinally with respect to the superstructure.

The platforms are indicated by the reference characters 43, 43^b, 43^c, 43^d, 43^e, and 43^f and are formed from longitudinally extending members 42 reinforced by metallic plates 43^a. Strengthening frames 41 are riveted to the platforms and to the supports 40 as clearly shown in Fig. 6. Each of the platforms is provided with a pair of rails 23 upon which travel the wheels of a plow to be hereinafter referred to. Each of the platforms 43 at each inner corner has journaled in bearings R' grooved pulleys.

The grooved pulley at one end of a platform is indicated by the reference character R and the pulley at the other end by the reference character R². Traveling over the pulley R is a rope or cable P' and traveling over the pulley R² is a rope or cable P². The members P' and P² are connected to the inner corner of a triangular-shaped plow P shiftably mounted on the rails 23 and which will be hereinafter more specifically referred to. Pivotaly mounted at each outer corner of a platform as at 30 is a sweep Q consisting of a metallic plate of a length substantially to extend from the outer to the inner edge of the platform. Carried by the inner face of the sweep Q is a bar Q' to which is

attached one end 31^a of an expansible spring 31. The other end 31^b of said spring is secured to a support 31^c connected to the platform. The inner end of the sweep Q is rounded and cut-away as at Q³ through which extends a rope or cable. The cut-away portion Q³ is approximately centrally of the inner end of the sweep Q and the said inner end of the sweep Q inclines away with respect to the plow. The lower portion of the inner end of the sweep Q is adapted to be engaged by the lower portion of the side of the plow as clearly shown in Fig. 4, that is to say, when the plow moves toward the sweep, as the plow moves toward the sweep and engages the inner end of the sweep, the sweep is forced toward the front end of the platform, such action being caused by the side of the plow, such operation of the sweep with respect to the plow cleans the adhering material from the bottom of the plow and also sweeps from the platform that material which is interposed between the sweep and that side of the plow which engages the sweep. When the plow moves in the opposite direction the sweep is caused to assume an angular position with respect to the platform through the medium of a pulling spring 31. The pivot 30 is of a height approximately equal to that of the sweep and extends through the strips or eyes 31^d which are fixedly secured to the sweep. The construction and arrangement of the sweep is clearly shown in Figs. 4 and 5.

Each of the plows P consists of a triangular-shaped body portion with the side walls thereof inclined outwardly toward the bottom. The back and side walls of the body portion of the plow are braced through the medium of the bracing members T³. Carried by the body portion of the plow at each corner thereof is a support 27 for a spindle 26, and which carries a roller 24, said rollers 24 traveling upon the track 23. At each inner corner of the body portion of the plow is arranged an eye 25 having attached a flexible pulling member. Certain of the plows carry a pair of water spray pipes P'' which are connected by the flexible hose connections P⁴ to a water supply P⁵.

The construction of the plows is clearly shown in Figs. 4 and 5. The plows are adapted to be shifted successively with respect to each other and longitudinally of the platforms and when moving toward the ends of the platforms they eventually engage the inner ends of the sweeps Q and carry them outwardly in a manner as hereinbefore referred to. These sweeps scrape the material off of the sides of the plows. The distance between the points Q³ and R' is about the same as from Q³ to the apex of the plow, now then when the rope or cable P² arrives at the end of the platform, the sweeps will extend longitudinally with re-

spect to the platform, when the plow moves back the spring 31 will pull the sweep back to position. By the use of these sweeps, the plows will be thoroughly cleansed of all material adhering to same and at the same time, the sweeps will keep the terminals of the platforms free from all material and prevent the plows from carrying or pushing any material off the ends of the platforms.

The ropes or cables P' and P^2 are alternately wound and unwound on and off a series of drums or windlasses 9^a as shown in Figs. 1, 2 and 3. The members P' extend downwardly from the platforms and travel over the sheaves R^3 and also over the sheaves R^4 , then wind upon or unwind off the drums or windlasses 9^a . The flexible pulling members P^2 pass over the sheaves R^5 , then over the sheaves R^6 and then unwind off or wind on the drums or windlasses 9^a . The drums or windlasses 9^a are driven in a successive manner from the engine 9^b which communicates with the steam line 9^c , opening into a boiler 9^d (Fig. 1) which is arranged at one end of the chamber B. Two boilers are used, one for the mechanisms in the chamber A and the other for the mechanism in the chamber C.

One of the functions of the machine is to provide means for thoroughly and economically mixing a plurality of ingredients to form a concrete substance, the ingredients being fed to the upper of the platforms in a manner hereinafter referred to. The ingredients falling upon the upper of the platforms are dislodged or discharged therefrom through the medium of a plow, the material then falling upon and discharged from the next platform and such operation is continued until all of the plows have successively acted upon the material which thoroughly admixes the same. During the operation of the three lower-most plows, water is supplied to the material through the medium of the pipes P'' which assist in causing the ingredients to adhere together. When the material reaches the lower-most platform, that is platform 43^b , it is discharged into the hoppers M and from the hoppers fed to a series or set of conveyers which are arranged below the platforms within the chamber A or the chamber C and extend transversely with respect to the chamber. The conveyers are so set up that they can be shifted laterally with respect to the super-structure so as to deposit the concrete substance at various points or distances from the super-structure. The set of conveyers which are arranged in each chamber A or C is portable and the conveyers of the set are shifted laterally from a common driving mechanism but each conveyer of a set when used for conveying purposes can be operated independently of the other.

The conveyers are best shown in Figs. 7,

8 and 9 and each consists of hangers 6, the hangers of each conveyer of each set being arranged in parallelism with respect to each other and the hangers 6 of all the conveyers of a set have journaled therein a drive shaft 1 which extends longitudinally with respect to the chamber in which the set of conveyers is positioned. The hangers 6 are secured to a truck 9 traveling upon a pair of rails M^3 supported by the members 4 and 4^a . Mounted upon the shaft 1 is a drum M^5 which has attached thereto clutching members M^6 , upon which are loosely mounted the inner ends of the side rails M^8 . Upon the shaft 1 are mounted clutching members M^9 adapted to be shifted to engagement with the clutching members M^6 , whereby the drum M^5 can be coupled with the shaft 1 so that it will be revolved. The actuating means for the clutching members M^9 and each of which consists of a shifting arm and a lever indicated by the reference character M^{13} , the said means being carried by the hangers 6 at the lower ends thereof. Supported at the forward ends of the side rails M^8 is a drum N^5 . Traveling over the drums M^5 and N^5 is an endless conveyor belt I, formed by the carriers I^2 into a series of divisions, each division adapted to receive a quantity of concrete substance and which is discharged from the conveyer at the outer end thereof. When the drum M^5 is clutched to the shaft 1, motion will be transmitted to said drum whereby the belt I will be caused to travel as will be evident. The outer end of the conveyer is suspended by flexible cables 4^m which have their ends attached as at 4^n to the side bars or plates M^8 . The cables 4^m travel over the sheaves $4^{o'}$ journaled in a support 4 and the said cables 4^m extend rearwardly and each is wound upon a drum 7 fixed to a rotatable shaft 7^a journaled in a bracket 7^b attached to a hanger 6. For the rotation of the shaft 7^a a handle 8 is provided. The shaft 1 is driven from a motor X mounted in a carriage O which is provided at its top with wheels O' traveling upon a pair of tracks M^3 . A single motor X is employed for operating the shaft 1 to cause the travel of the conveyer belts of a set together or intermittently and to also cause the shifting laterally of the entire set of conveyers. The shaft 1 carries a large gear wheel O^2 which meshes with a gear wheel O^3 mounted upon a counter-shaft O^4 . The gear wheel O^3 meshes with the pinion O^5 on the motor shaft O^6 . The counter-shaft O^4 is provided with a pinion O^7 which meshes with the rack O^8 secured to the members 4 and 4^a .

By the foregoing construction and arrangement of parts it is evident that when the clutching members M^8 and M^7 are in engagement with each other and that when the motor X is operated the drum M^5 will

be rotated causing a travel of the conveyer belt I. The set of conveyers will when the motor is operated, be shifted laterally owing to the engagement of the pinion O^7 with the rack O^8 .

The machine carries at each side thereof a plurality of forms, preferably ten in number, which constitute a means for forming the outer face of a wall when building the same from the concrete substance. The forms are so positioned with respect to the discharge end of the conveyer that the concrete substance will be deposited to one side of the form as clearly shown in Fig. 1, in other words, the forms constitute what may be termed mold boards, each of said forms is rectangular in contour and indicated by the reference character J and formed of a steel plate reinforced by T-irons J' and also reinforced centrally by a hub J^2 . The T-irons J' and hub J^2 are riveted to the plate as at J^3 . The T-iron J' terminates at a point removed from each vertical edge of the plate, that portion of the plate at each end which extends from the ends of the T-irons J' is reduced in thickness as at J^4 whereby when the forms overlap, the inner face of the forms will be substantially in the same plane. The shoulders J^5 formed by the reduced ends J^4 are on opposite faces of the plate with respect to each other. The plate at its top has secured thereto a pair of short hangers J^6 which project from the top edges of the plate and are apertured as at J^7 . To the hangers J^6 are attached counter-balanced suspension cables J^8 which extend over sheaves J^9 carried by the members 4. One face of the plate J at its top has connected thereto a pair of supporting ledges J^{10} and the plate has also secured in proximity to its bottom a pair of supporting ledges J^{11} . The forms are held in position by drop dogs J^{12} carried by a bracket E, the dogs engaging the ledge J^{10} and J^{11} . The beams 1 also constitute means for assisting in maintaining the forms in position. Owing to the arrangement of the counter-balanced suspension means for the forms, they can be readily elevated when the dogs are released and also the jack screws as will be evident.

The ingredients to be mixed to provide a concrete substance are discharged upon the platform 43 from a duplex series of bins arranged in the top of the super-structure. By way of example it will be stated that crushed rock, sand and cement are employed to form the concrete substance. A set of bins is employed for each set of platforms. But one set of bins will be described, the description of the latter applying to the other set.

The bins are designated by the reference characters W, W' and W'', the bin W for the crushed rock or gravel, the bin W' for

sand, and the bin W'' for cement. In proximity to the outlet ends of the bin W is arranged a measuring device U consisting of a hub U^2 fixed to a shaft U^3 and having secured thereto a radially extending series of arms U^4 connected together by plates U^5 to provide compartments U^6 . Arranged in proximity to the outlet ends of the bin W' is a measuring device U' consisting of a hub U^7 fixed to a shaft U^8 and surrounded by a sleeve U^9 which is also surrounded by a sleeve U^{10} having fixed thereto a radially extending series of plates U^{12} forming compartments U^{13} . Arranged in proximity to the outlet of the bin W'' is a measuring device U'' fixed to a shaft U^{14} . The construction of the measuring device U'' is similar to that of the measuring device U' but its capacity is not as great as the measuring device U'. Fixed to the shaft U^3 is a large gear wheel U^{15} which meshes with a pinion 18 carried by a counter-shaft U^{22} , the latter being provided with a pinion U^{19} which meshes with a gear wheel U^{16} on the shaft U^8 . The gear wheel U^{16} meshes with the gear wheel 17 on the shaft U^{14} . The direction of rotation of the pinions 18 and 19, gears 16 and 17 and gear U^{15} is indicated by the arrows. The shafts U^8 , U^{14} and 22 are carried by the support 20. The gear wheel U^{15} is driven by a pinion U^{16} carried by a shaft U^{17} which has mounted thereon a large gear U^{18} meshing with the pinion U^{19} upon a shaft U^{20} , the latter being provided with a crank disk U^{21} to which a crank rod U^{22} is pivotally connected. On the operation of the crank disk U^{20} , motion is transmitted to the gear U^{15} which operates the measuring device U and through the medium of the pinions 18 and 19 and gears 16 and 17 the measuring devices U' and U'' are operated. The crank rod U^{22} is operated by the engine U^{23} mounted upon the support 4^a and connected by the pipe U^{24} to the steam line 9^c. The material is fed to the bins W, W' and W'' by the buckets W^3 suspended upon the cable ways W^4 and arranged in the top of the super-structure the upper ends of the bins W, W', W'' being open so that the buckets can readily dump the material therein. At each end of the super-structure and oppositely disposed with respect to each other are pilot-houses Y for the operators, from each of the pilot-houses extends a throttle lever for opening and closing the steam line to the engine 9^b and a throttle valve Y^2 is provided in the connection U^{23} which is operated from the pilot-house by the lever U^3 . Levers Y^4 extend from the pilot-house to valves Y^5 in the water conducting pipes P^4 so as to open and close the water supply when occasion so requires. Jacks Z are interposed between the beams 1 and the base or platform 3 so as to hold the super-structure in a perfect position.

What I claim is:

1. A machine for the purpose set forth comprising a plurality of longitudinally extending platforms arranged in a step-like manner, tracks embedded in each of said platforms, plows provided with rollers traveling upon said tracks, means for shifting said plows in opposite directions, and means whereby said plows are successively shifted with respect to each other when traveling in the same direction.
2. A machine for the purpose set forth comprising a plurality of platforms arranged in a step-like manner each of said platforms provided with a plurality of tracks, V-shaped plows having rollers at the front and rear thereof traveling upon said tracks, means for shifting said plows in opposite directions, means whereby said plows are successively shifted with respect to each other, and an angularly disposed sweep at each end of a platform and associating with and engaged and operated in one direction by a plow, and means for operating the sweeps in the opposite direction.
3. A machine for the purpose set forth comprising a plurality of platforms arranged in a step-like manner, plows traveling upon said platforms, means for shifting said plows in opposite directions, means whereby said plows are successively shifted with respect to each other, and a sweep at each end of a platform and associating with the plow.
4. A machine for the purpose set forth comprising a plurality of platforms arranged in a step-like manner, V-shaped plows traveling upon said platforms, means for shifting said plows in opposite directions, means whereby said plows are successively shifted with respect to each other, and measuring devices for supplying to the uppermost platform materials to form a concrete mixture.
5. A machine for the purpose set forth comprising a plurality of platforms arranged in a step-like manner, plows traveling upon said platforms, means for shifting said plows in opposite directions, means whereby said plows are successively shifted with respect to each other, measuring devices for supplying to the uppermost platform materials to form a concrete mixture, and a conveying means for the concrete mixture.
6. A machine for the purpose set forth comprising a plurality of platforms arranged in a step-like manner, V-shaped plows traveling upon said platforms, means for shifting said plows in opposite directions, means whereby said plows are successively shifted with respect to each other, an angularly disposed sweep at each end of a platform and associating with and engaged and operated in one direction by a plow, and measuring devices for supplying to the uppermost platform materials to form a concrete mixture.
7. A machine for the purpose set forth comprising a plurality of platforms arranged in a step-like manner, plows traveling upon said platforms, means for shifting said plows in opposite directions, means whereby said plows are successively shifted with respect to each other, a sweep at each end of a platform and associating with the plow, and a measuring mechanism for supplying to the uppermost platform materials to form a concrete mixture.
8. A machine for the purpose set forth comprising a plurality of platforms arranged in a step-like manner, tracks embedded in each of said platforms, V-shaped plows having rollers arranged therein, said rollers traveling upon said tracks, means for shifting said plows in opposite directions, means whereby said plows are successively shifted with respect to each other when traveling in the same direction, measuring devices, for supplying to the uppermost platform materials to form a concrete mixture, and means arranged in operative relation with the lowermost platform for receiving and conveying the concrete mixture.
9. A machine for the purpose set forth comprising a plurality of platforms arranged in a step-like manner, plows traveling upon said platforms, means for shifting said plows in opposite directions, means whereby said plows are successively shifted with respect to each other when traveling in the same direction, measuring devices for supplying to the uppermost platform materials to form a concrete mixture, and means arranged in operative relation with the lowermost platform for receiving and conveying the concrete mixture.
10. A machine for the purpose set forth comprising a plurality of platforms arranged in a step-like manner, V-shaped plows traveling upon said platforms, means for shifting said plows in opposite directions, means whereby said plows are successively shifted with respect to each other, an angularly disposed sweep at each end of a platform and associating with and engaged and operated in one direction by a plow, measuring devices for supplying to the uppermost platform materials to form a concrete mixture, and means arranged in operative relation with the lowermost platform for receiving and conveying the concrete mixture.
11. A machine for the purpose set forth comprising a plurality of platforms arranged in a step-like manner, plows traveling upon said platforms, means for shifting said plows in opposite directions, means whereby said plows are successively shifted with respect to each other, a sweep at each

end of a platform and associating with the plow, measuring devices interposed between the feed supply and the platforms for supplying to the uppermost platform materials to form a concrete mixture, and means arranged in operative relation with the lowermost platform for receiving and conveying the concrete mixture.

12. A machine for the purpose set forth comprising a plurality of platforms arranged in a step-like manner, V-shaped plows traveling upon said platforms, means for shifting said plows in opposite directions, means whereby said plows are successively shifted with respect to each other when traveling in the same direction, measuring devices for supplying to the uppermost platform materials to form a concrete mixture, means arranged in operative relation with the lowermost platform for receiving and conveying the concrete mixture, and means whereby said conveying means can be projected laterally with respect to the lowermost platform.

13. A machine for the purpose set forth comprising a plurality of platforms arranged in a step-like manner, plows traveling upon said platforms, means for shifting said plows in opposite directions, means whereby said plows are successively shifted with respect to each other, means for supplying to the uppermost platform materials to form a concrete mixture, means arranged in operative relation with the lowermost platform for receiving and conveying the concrete mixture, and means whereby said conveying means can be projected laterally with respect to the lowermost platform.

14. A machine for the purpose set forth comprising a plurality of platforms arranged in a step-like manner, V-shaped plows traveling upon said platforms, means for shifting said plows in opposite directions, means whereby said plows are successively shifted with respect to each other, an angularly disposed sweep at each end of a platform and associating with and engaged and operated in one direction by a plow, means for supplying to the uppermost platform materials to form a concrete mixture, means arranged in operative relation with the lowermost platform for receiving and conveying the concrete mixture, and means whereby said conveying means can be projected laterally with respect to the lowermost platform.

15. A machine for the purpose set forth comprising a plurality of platforms arranged in a step-like manner, plows traveling upon said platforms, means for shifting said plows in opposite directions, means whereby said plows are successively shifted with respect to each other, a sweep at each end of a platform and associating with the

plow, means for supplying to the uppermost platform materials to form a concrete mixture, means arranged in operative relation with the lowermost platform for receiving and conveying the concrete mixture, and means whereby said conveying means can be projected laterally with respect to the lowermost platform.

16. A machine for the purpose set forth comprising a plurality of platforms arranged in a step-like manner, plows traveling upon said platforms, means for shifting said plows in opposite directions, means whereby said plows are successively shifted with respect to each other, means for supplying to the uppermost platform materials to form a concrete mixture, means arranged in operative relation with the lowermost platform for receiving and conveying the concrete mixture, supporting means for the platforms, and means for revolving said supporting means.

17. A machine for the purpose set forth comprising a plurality of platforms arranged in a step-like manner, V-shaped plows traveling upon said platforms, means for shifting said plows in opposite directions, means whereby said plows are successively shifted with respect to each other, an angularly disposed sweep at each end of a platform and associating with and operated by a plow, means for supplying to the uppermost platform materials to form a concrete mixture, means arranged in operative relation with the lowermost platform for receiving and conveying the concrete mixture, supporting means for the platform, and means for revolving said supporting means.

18. A machine for the purpose set forth comprising a plurality of platforms arranged in a step-like manner, plows traveling upon said platforms, means for shifting said plows in opposite directions, means whereby said plows are successively shifted with respect to each other, a sweep at each end of a platform and associating with the plow, means for supplying to the uppermost platform materials to form a concrete mixture, means arranged in operative relation with the lowermost platform for receiving and conveying the concrete mixture, supporting means for the platform, and means for revolving said supporting means.

19. A machine for the purpose set forth comprising a plurality of platforms adapted to receive materials for forming concrete substances, plows having rollers traveling over said tracks for mixing said materials, said rollers constituting a shiftable supporting means for said plows, means arranged in operative relation with respect to one of said platforms for receiving and conveying the concrete substances, means for supplying the materials to one of said plat-

forms, supporting means for the platforms, and means for shifting said supporting means.

20. A machine for the purpose set forth comprising a plurality of platforms adapted to receive materials for forming concrete substances, plows having rollers traveling over said tracks for mixing said materials, said rollers constituting a shiftable supporting means for said plows, means arranged in operative relation with respect to one of said platforms for receiving and conveying the concrete substances, means for supplying the materials to one of said platforms, supporting means for the platforms, means for shifting said supporting means, and means for laterally projecting said receiving and conveying means.

21. A machine for the purpose set forth comprising a portable base, supporting means above the base, means for revolving said supporting means, a plurality of platforms arranged in a step-like manner and mounted upon said supporting means, plows, a shiftable supporting means for each of said plows, said shiftable supporting means traveling from end to end of the said platforms, means for operating the shiftable supporting means, means for supplying materials to form concrete substances to the uppermost platform, and a receiving and conveying means arranged in operative relation with respect to the lowermost platform.

22. A machine for the purpose set forth comprising a portable base, supporting means above the base, means for revolving said supporting means, a plurality of platforms arranged in a step-like manner and mounted upon said supporting means, plows, a shiftable supporting means for each of said plows, said shiftable supporting means traveling from end to end of the said platforms, means for operating the shiftable supporting means, means for supplying materials to form concrete substances to the uppermost platform, a receiving and conveying means arranged in operative relation with respect to the lowermost platform, and a sweep arranged at each end of each of the platforms and associating with a plow.

23. A machine for the purpose set forth comprising a platform provided with a plurality of tracks, a V-shaped plow, a shiftable supporting means connected to and arranged within said plow and traveling from end to end of said tracks, said plow being V-shaped in contour, and means for shifting said supporting means in either direction with respect to the tracks.

24. A machine for the purpose set forth comprising a platform provided with a plurality of tracks, a V-shaped plow, a shiftable supporting means connected to and arranged within said plow and traveling from

end to end of said tracks, said plow being V-shaped in contour, and means for shifting said supporting means in either direction with respect to the tracks, and a water supply means connected to said plow.

25. A machine for the purpose set forth comprising a platform provided with a plurality of tracks, a V-shaped plow, a shiftable supporting means connected to and arranged within said plow and traveling from end to end of said tracks, said plow being V-shaped in contour, and means for shifting said supporting means in either direction with respect to the tracks, each side of said plow inclining downwardly and outwardly.

26. A machine for the purpose set forth comprising a platform provided with a plurality of tracks, a V-shaped plow, a shiftable supporting means connected to and arranged within said plow and traveling from end to end of said tracks, said plow being V-shaped in contour, and means for shifting said supporting means in either direction with respect to the tracks, and a water supply means connected to said plow, and each side of said plow inclining downwardly and outwardly.

27. A machine for the purpose set forth comprising a platform provided with tracks, a V-shaped plow, a roller journaled at each corner of said plow and traveling upon said tracks, said rollers constituting a supporting means to be connected to two of the corners of the plow for shifting it in alternate directions with respect to the direction of the tracks.

28. A machine for the purpose set forth comprising a platform provided with tracks, a V-shaped plow, a roller journaled at each corner of said plow and traveling upon said tracks, said roller constituting a supporting means to be connected to two of the corners of the plow for shifting it in alternate directions with respect to the direction of the tracks, said plow having the outer sides thereof inclining downwardly and outwardly.

29. A machine for the purpose set forth comprising a platform provided with tracks, a V-shaped plow, a roller journaled at each corner of said plow and traveling upon said tracks, said rollers constituting a supporting means to be connected to two of the corners of the plow for shifting it in alternate directions with respect to the direction of the tracks, and means carried by the plow for supplying water to said platform.

30. A machine for the purpose set forth comprising a platform provided with tracks, a V-shaped plow, a roller journaled at each corner of said plow and traveling upon said tracks, said roller constituting a supporting means to be connected to two of the corners of the plow for shifting it in alternate di-

rections with respect to the directions of the tracks, said plow having the outer sides thereof inclining downwardly and outwardly, and means carried by the plow for
5 supplying water to said platforms.

31. A machine for the purpose set forth comprising a plurality of platforms arranged in a step-like manner, tracks in the upper face of each of said platforms, a V-
10 shaped plow mounted upon each of said platforms, a roller journaled in each corner of said plow, said rollers traveling upon said tracks, means connected to two of the corners of the plow for shifting it in opposite
15 site directions with respect to the direction of the tracks.

32. A machine for the purpose set forth comprising a plurality of platforms arranged in a step-like manner, tracks in the upper face of each of said platforms, a V- 20 shaped plow mounted upon each of said platforms, a roller journaled in each corner of said plow, said rollers traveling upon said tracks, means connected to two of the corners of the plow for shifting it in opposite 25 directions with respect to the direction of the tracks, and means carried by each of the plows for supplying water to the platform.

HENRY C. FITZKE.

Witnesses:

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