Jan. 8, 1929.

1,697,940

H. L. TURNEY

CONVEYING SYSTEM

Filed Nov. 25, 1924

7 Sheets-Sheet 1

Fig. 1a.

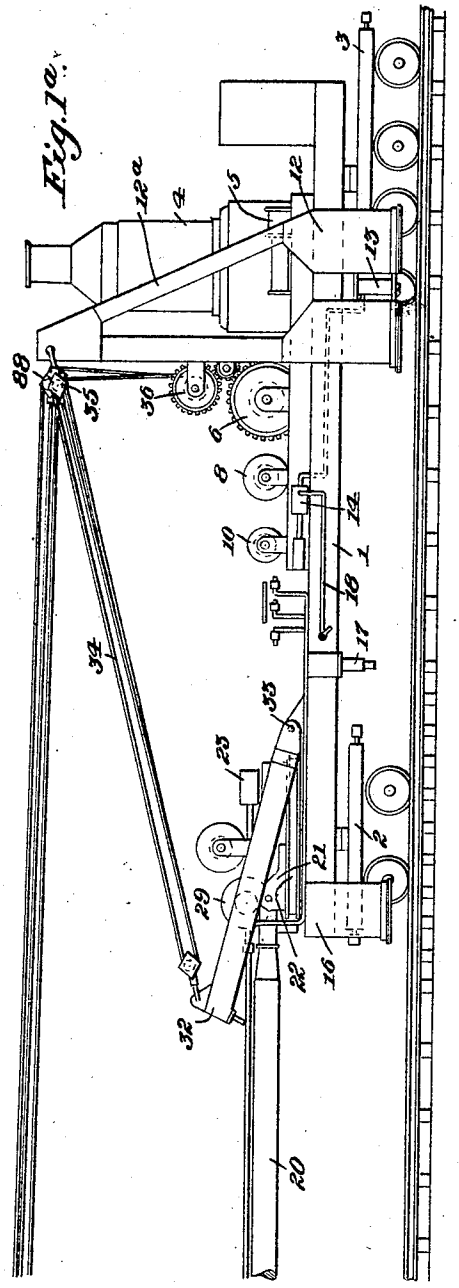
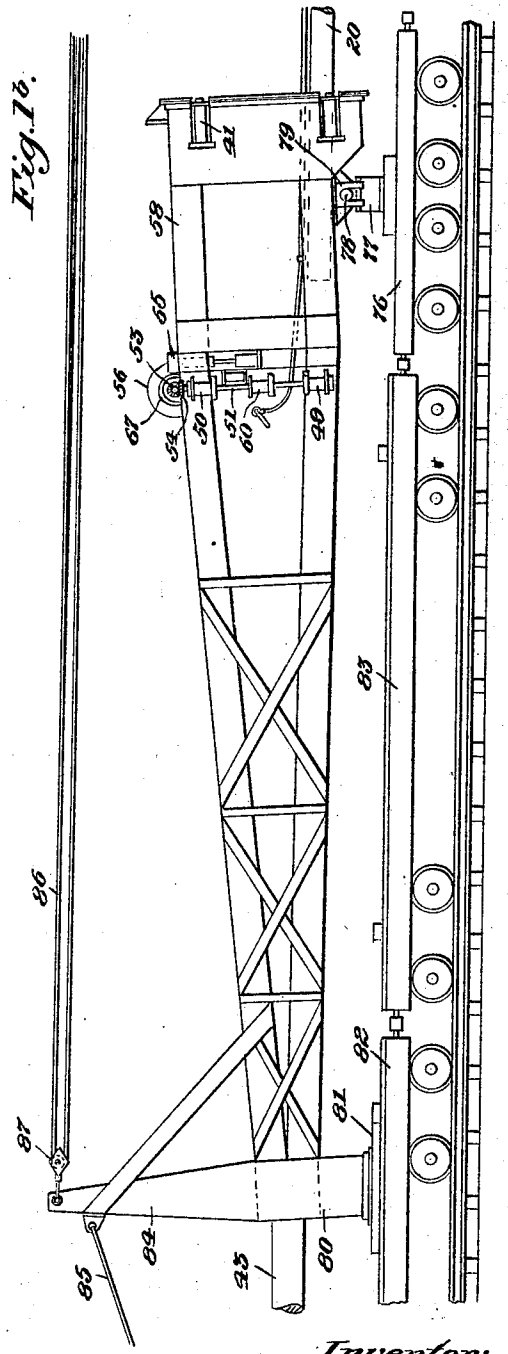


Fig. 1b.



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1,697,940

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CONVEYING SYSTEM

Filed Nov. 25, 1924

7 Sheets-Sheet 2

Fig. 4.

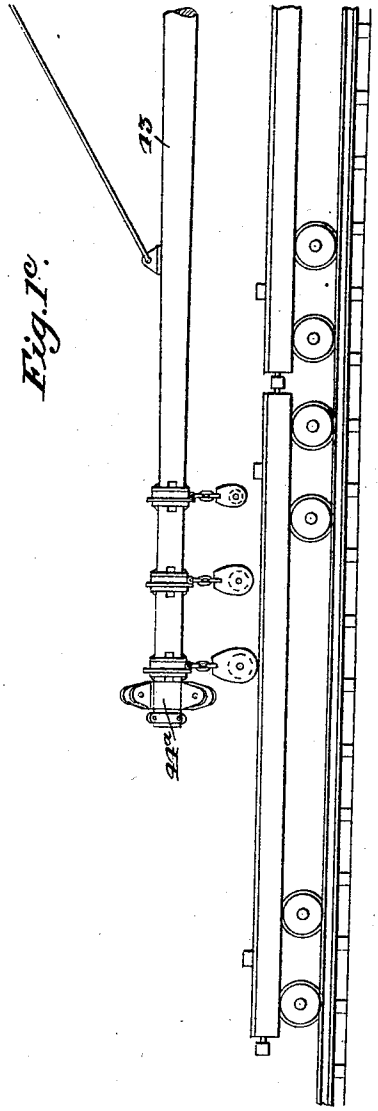
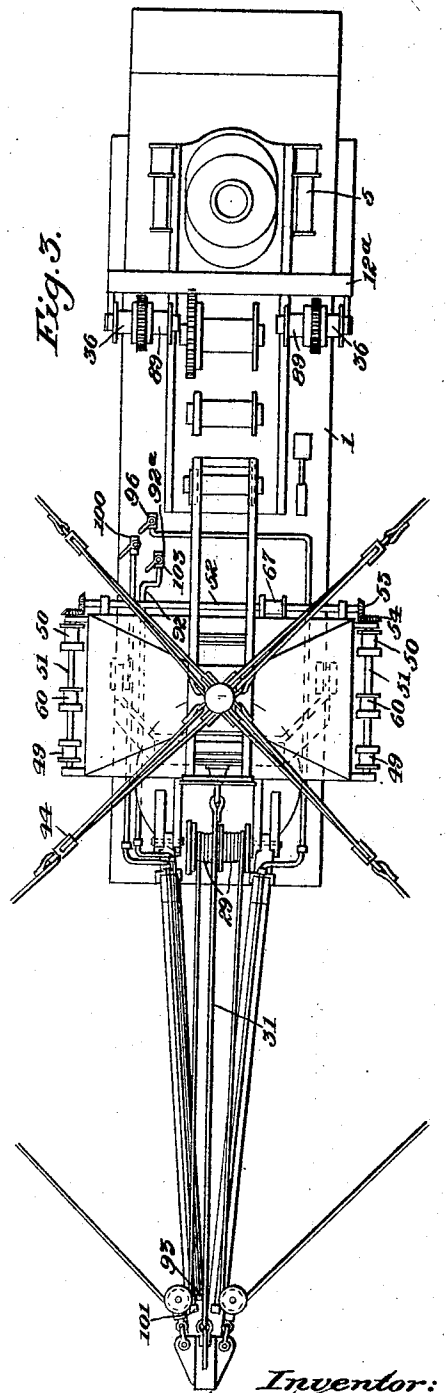


Fig. 5.



Inventor:
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By [illegible]
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Jan. 8, 1929.

1,697,940

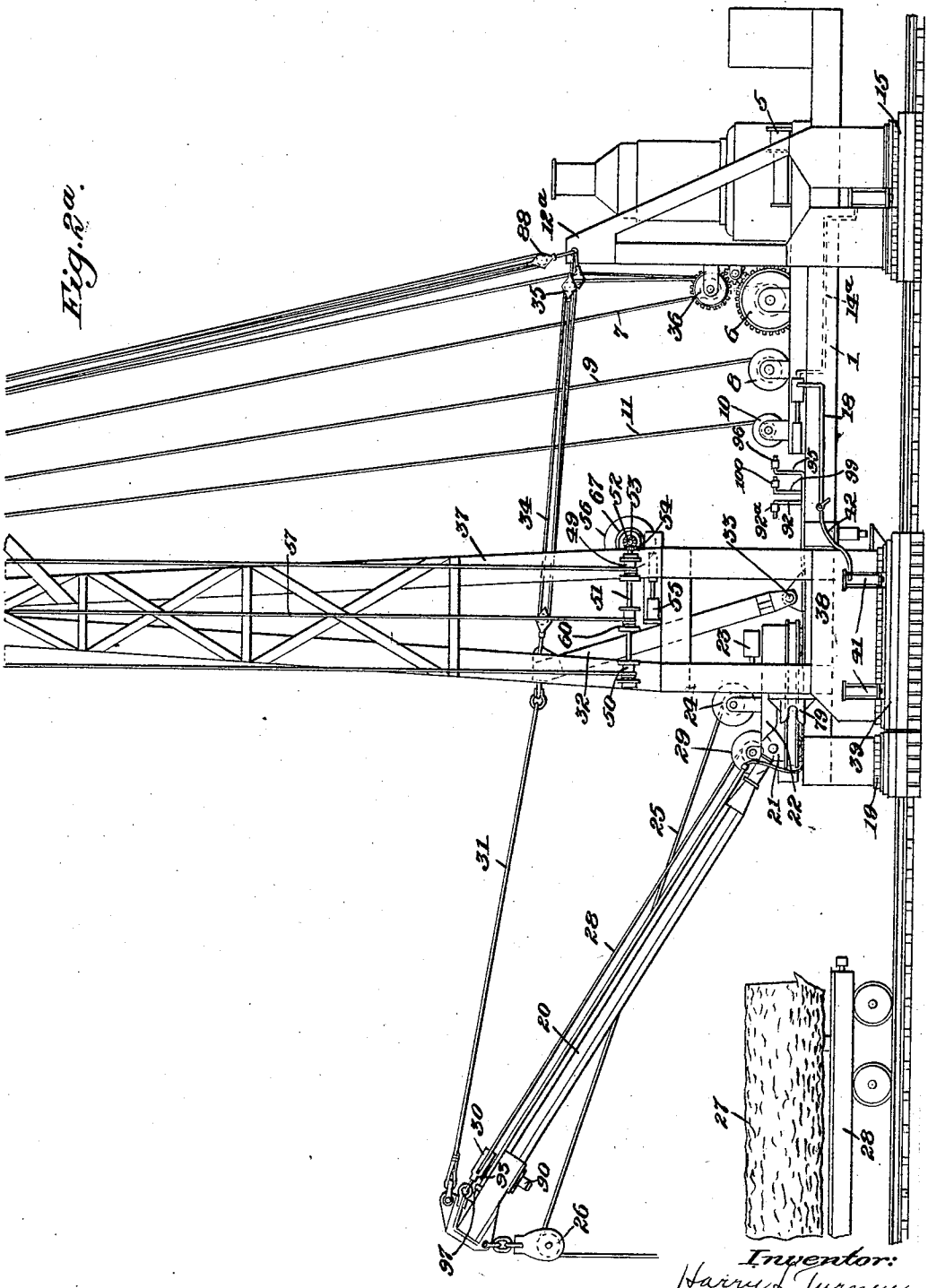
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CONVEYING SYSTEM

Filed Nov. 25, 1924

7 Sheets-Sheet 3

Fig. 2a.



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CONVEYING SYSTEM

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7 Sheets-Sheet 4

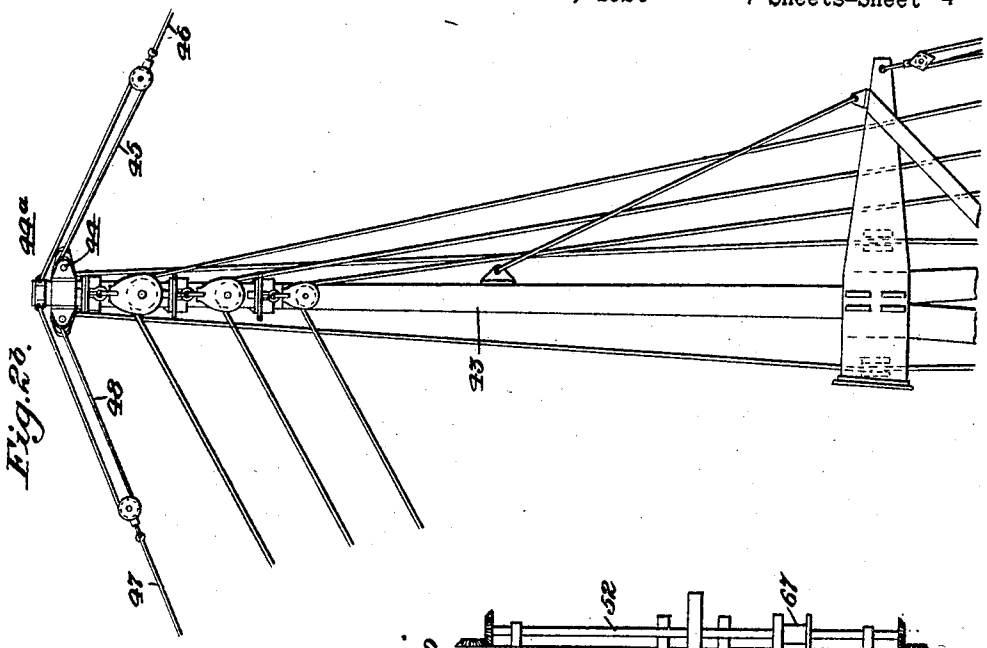


Fig. 2a.

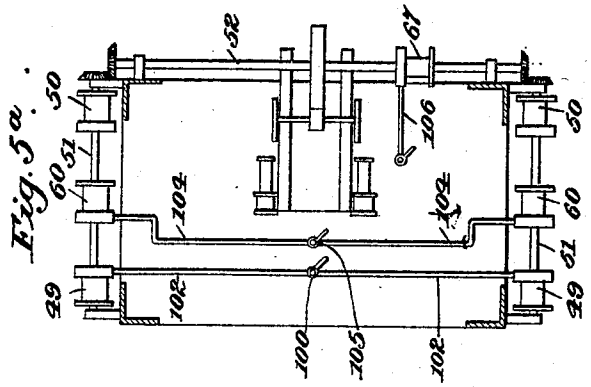


Fig. 5a.

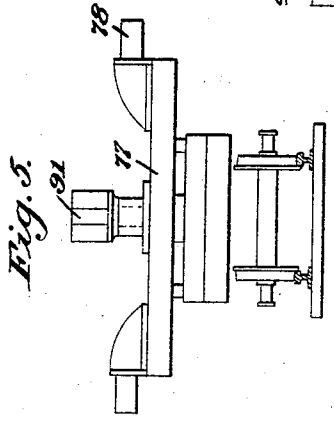


Fig. 5.

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1,697,940

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CONVEYING SYSTEM

Filed Nov. 25, 1924

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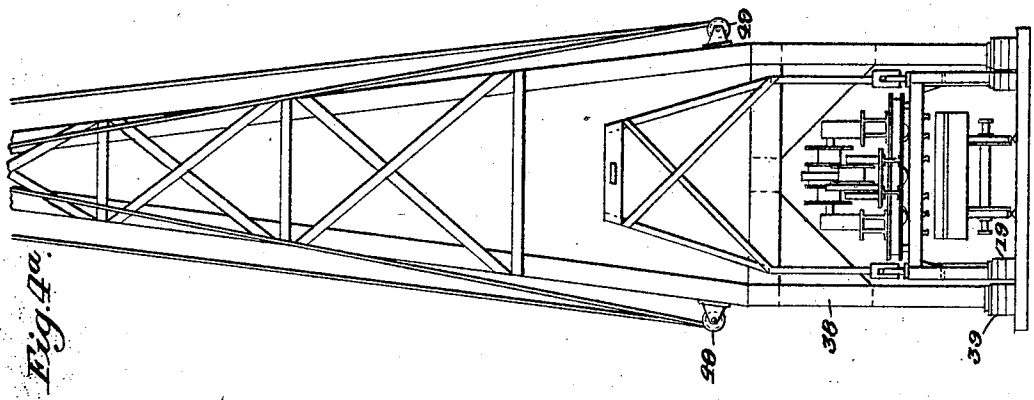


Fig. 4a.

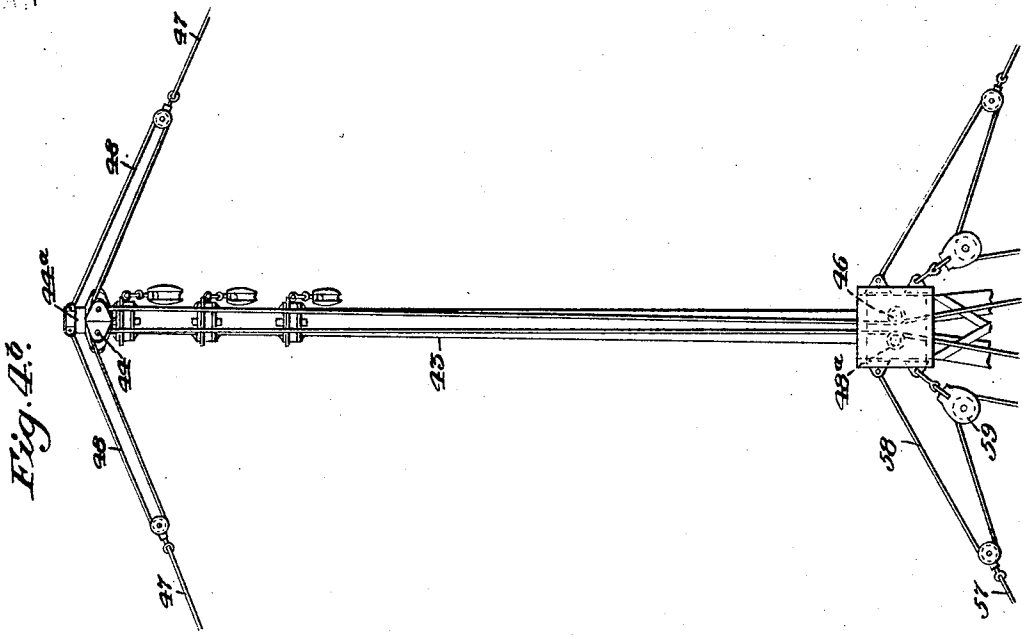


Fig. 4b.

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Jan. 8, 1929. 1,697,940

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CONVEYING SYSTEM

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Fig. 6.

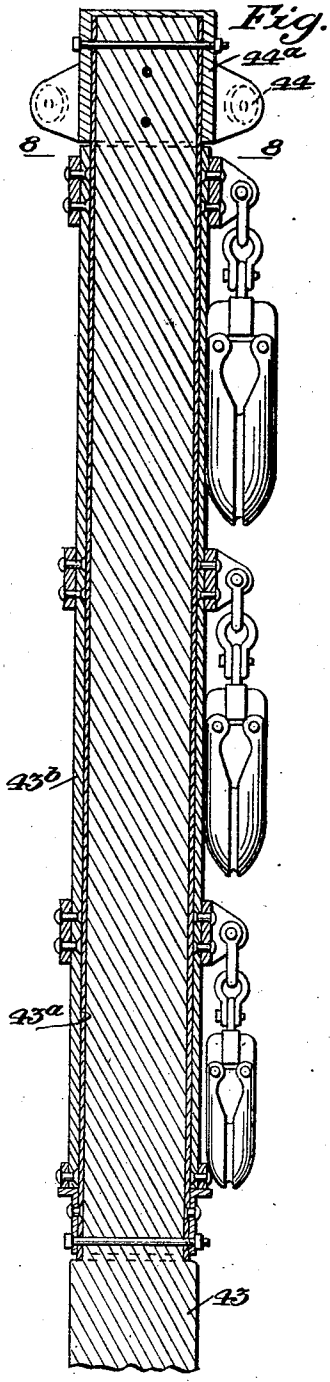


Fig. 7.

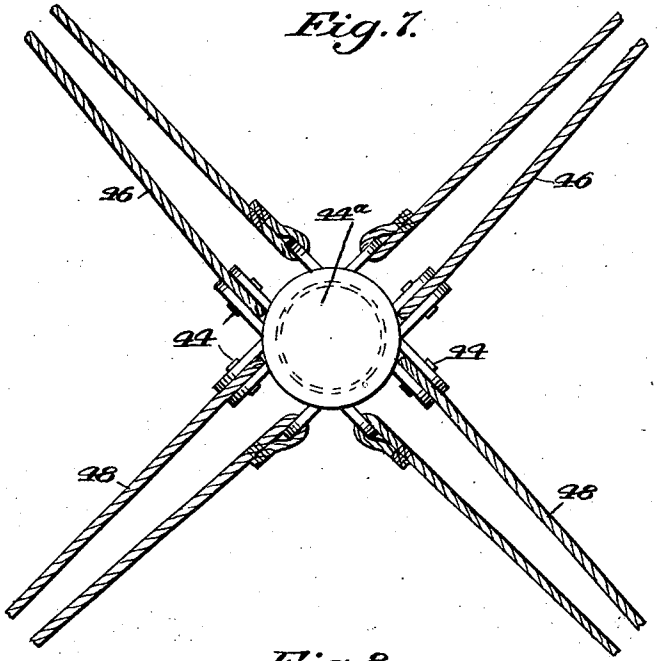
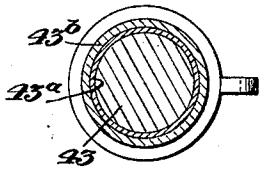


Fig. 8.



Inventor:
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Jan. 8, 1929. 1,697,940

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CONVEYING SYSTEM

Filed Nov. 25, 1924 7 Sheets-Sheet 7

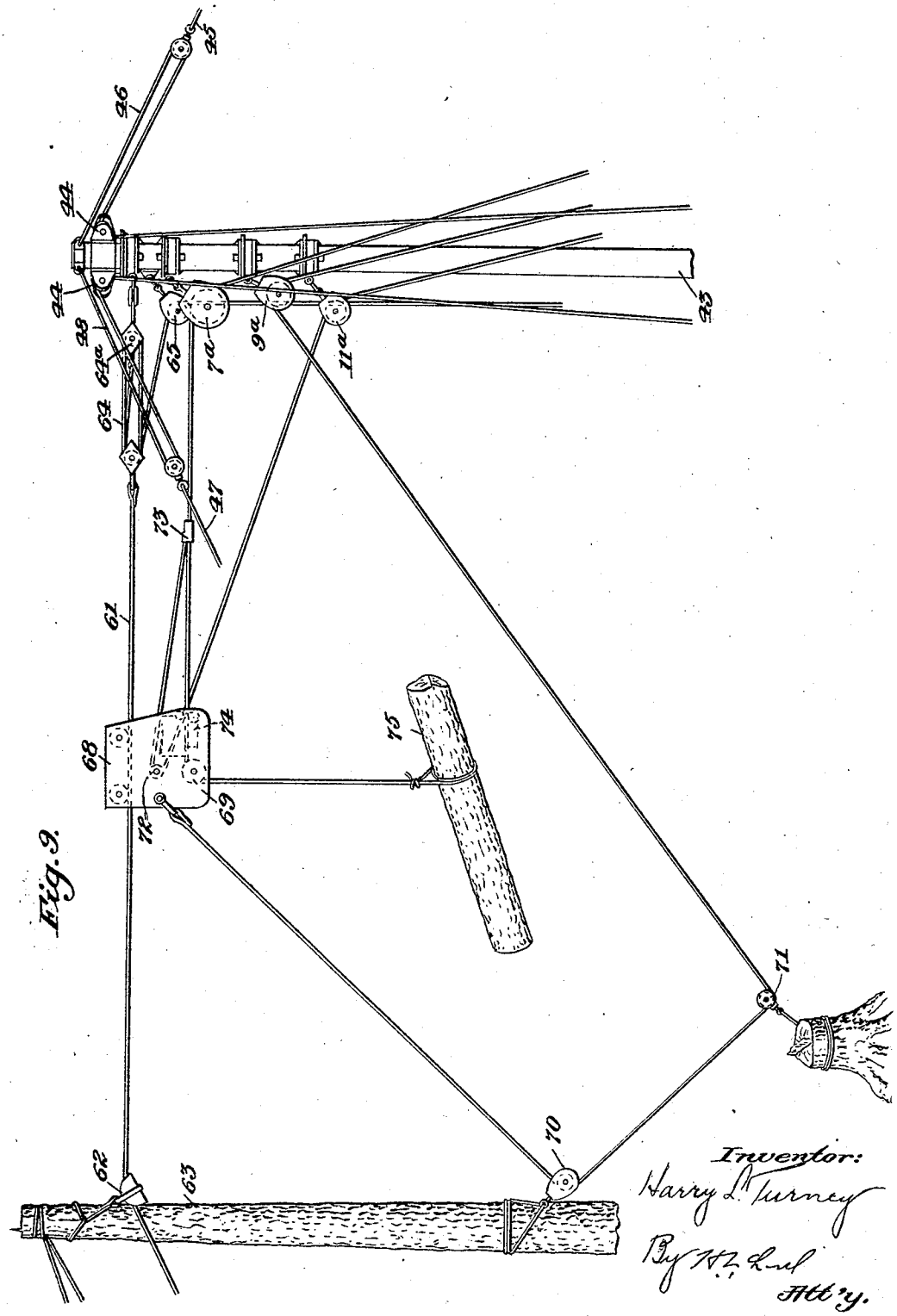


Fig. 9.

Inventor:
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Patented Jan. 8, 1929.

1,697,940

UNITED STATES PATENT OFFICE.

HARRY L. TURNEY, OF PORTLAND, OREGON.

CONVEYING SYSTEM.

Application filed November 25, 1924. Serial No. 752,182.

This invention is designed to simplify conveying systems, particularly those subjected to great loads such as logging systems and in the accompanying drawings and specification the invention is exemplified as adapted for the handling of logs.

It is desirable with such systems to utilize a mast which under some conditions has been supplied by what is known as a head tree, and in other systems by a mast which is carried directly by the power car. It is not always convenient to locate a head tree and it is with present appliances very difficult to lift or place a head tree which is not already standing. A mast arranged directly on the power cars places a tremendous strain upon those cars both when in use and when they are being transported from one place to another. The great weight and other factors entering into such construction form limiting factors as to the width and height of the mast which are not desirable.

In the present construction I have formed a stationary mast, or one which rests upon an earth foundation which may be readily loaded on cars, moved from one location to another, and swung or raised in its new location. In this way I can relieve the power car of the excessive load which the mast gives to it and yet form a foundation for the mast independent of the power car so as to make a foundation as stable as may be desired and relieve the car of the wracking incident to the mast strains. In carrying out my invention I make a forked mast which may be swung straddle of the track so that the cars to be loaded may be moved through the mast and I also form a power car with a loading boom which may be located within the forks of the mast so that its boom may operate at one side of the mast in proper relation to conveying devices on the mast. I also provide devices which control the mast, such as guy lines, as it is being swung, or raised and lowered.

The mast having its stable foundation may be readily utilized either with relation to a carrier system or in relation to what is known as the high lead system of logging. Details and features of the invention will appear more fully from the specification and claims.

The invention is illustrated in the accompanying drawings as follows:—

Fig. 1[a] shows a side elevation of the power car with its loading boom.

Fig. 1[b] shows the mast laid down and loaded for transportation from one place to another, Fig. 1[b] being in continuation of Fig. 1[a].

Fig. 1[c] shows the upper end of the mast and is in continuation of the loading or knock-down arrangement of the mast as it appears in actual practice.

Fig. 2[a] shows a side elevation of the lower part of the device set up and in working position.

Fig. 2[b] shows the upper end of the mast, the figure being in continuation of Fig. 2[a].

Fig. 3 a plan view of the structure as shown in Fig. 2[a].

Fig. 4[a] a view of the device from the front end of the power car with the loading boom removed.

Fig. 4[b] a similar view of the upper end of the mast, the view being in continuation of Fig. 4[a].

Fig. 5 an end view of the mast loading car.

Fig. 5[a] a plan view of the engine and drum platform on the tower or mast.

Fig. 6 a section of the top of the mast.

Fig. 7 an enlarged plan view of the top of the mast showing the connection of the guy lines.

Fig. 8 a section on the line 8—8 in Fig. 6.

Fig. 9 a side elevation of the upper end of the mast connected with a carrier system.

1 marks the power car platform. This is mounted on the removable trucks 2 and 3. A boiler 4 is mounted on the power car and the engine 5 is shown in diagram and adapted to operate the cable operating drums of the system, the drum 6 operating the skidding line 7, the drum 8 operating the haul back line 9, the drum 10 operating the straw line 11. Legs 12 are arranged on the sides of the platform 1 and a jack 13 is supplied which receives its power from a pump 14 by way of a pipe 14[a]. The legs 12 can be carried by a platform or planking 15, the jack operating to lift the platform to permit the removal of the truck 3. In like manner the forward end of the power car is supplied with legs 16 and a jack 17, the jack being supplied from the pump 14

by means of a pipe 18. The front end of the platform being raised by the jack the truck 2 may be removed. The legs 16 are then carried by the planking or crib work 19.

A boom 20 is hinged on brackets 21. The brackets 21 are mounted on a turn table 22. An engine 23 is mounted on the turn table receiving its power from the boiler through a flexible connection (not shown). The engine drives the load line 24 which operates the loading line 25. The loading line 25 passes over a pulley block 26 at the end of the boom in the usual manner and is adapted to operate on a log as 27, the log being shown as loaded on a car 28. In the ordinary operation the car 28 will have moved the forward end of the power car through the forks of the mast.

Slewing line drums 29 are also mounted on the platform 22 and are driven from the engine 23. The slewing lines extend over blocks 30 and are anchored in the usual manner. By operating the slewing lines the boom may be swung as desired to the side of the track to pick up a log and again swung to the position over the car to be loaded so as to deposit the log.

The boom is supported by a link 31 which is connected to a strut 32 pivotally mounted at 33 on the platform 1. The strut is supported and swung by a line 34 which extends over a block 35 to drums 36 on the power car, these drums 36 being driven by suitable gearings from the engine 5.

The mast 37 is forked at its bottom forming the legs or forks 38. These forks are sufficiently wide to straddle the track and permit a movement of the power car through it and also the cars to be loaded through it. The mast is mounted when in use upon a crib or platform 39 which is independent of the power car, thus relieving this car of all strain and also giving to the mast a direct connection and support on the ground. In order to facilitate the positioning of the mast for loading and unloading the mast has the jacks 41 which may be connected by detachable and flexible connections 42 with the line 18 running to the pump.

The lower or tower portion of the mast is extended by a pole 43 which is stepped in the upper end of the tower. Guy pulleys 44 are carried by a cap 44^a on the top of the pole or mast extension and guy wires 45 extend toward the rear of the mast with a tightening line 46 extending from a block on the guy line 45 and the pulley block 44 on the cap. Forward guy lines 47 are operated by the tightening lines 48 extending over the blocks 44. There are two rear lines and two front lines arranged diagonally. The tightening lines 46 and 48 extend downwardly along the mast outside of the tower through the guide pulleys 48^a to drums 49 and 50 respectively arranged at opposite sides of the towers. These drums are carried by shafts 51. The shafts 51 are driven from a cross shaft 52 by means of bevelled gears 53 and 54. The cross gear is driven from an engine 55 through a gear 56 mounted on the cross shaft. It will readily be seen that as the drums 49 and 50 are permitted to play out or wind up, the guy lines may be made taut when the mast is in its upper position and may also be controlled so as to guide the mast as it is being raised to position in the manner hereinafter described. Guy lines 57 at the sides are provided at the foot of the pole mast and at the top of the tower. Tightening lines 58 are provided in the guy line system which extend over blocks 59 and thence downwardly to drums 60 mounted on the shafts 51. As these drums are operated, therefore, these side guy lines may be made taut so as to hold the tower against sideway. A carrier cable 61 is secured at 62 to a tail tree 63 and is tightened by a tightening line 64 extending through blocks 64^a on the mast and a guide block 65 on the mast. The tightening line 64 extends to a drum 67 on the cross shaft 52. A carrier 68 is provided which may be of any desired form, such for instance as shown in my application, Serial Number 705,597. The skidding line 7 extends over a pulley 7^a on the mast and the pulley 69 on the carrier. The pull back line 9 extends over a pulley 9^a on the mast and a pulley 70 on the tail tree to the carrier, the pull back line being guided as necessary by a block 71. The trip line or straw line 11 extends through a block 11^a on the mast and a pulley 72 on the carrier and is attached to the skidding line for pulling slack. The trip line also operates a cam 74 which is designed to engage and hold the skidding line in the manner of my application as above referred to. It will readily be seen that with this mechanism and these extensions the carrier may be readily operated so as to carry the skidding line to the log so that the log may be lifted by the skidding line and the carrier brought in to a position adjacent to the track. Here the log as 75 may be picked up by the boom and loaded on the car. These lines may be used, however, if desired for a high lead system and operate in the usual manner in which the skidding line drags the log to the loading position. The mast loading car 76 has a bolster 77 carrying the trunnions 78. These trunnions are adapted to slide into sockets 79 mounted on the side of the mast as the car is moved up to the mast, the front end of the loading car extending into the fork. In order to make the trunnions register with the sockets the mast is supplied as before stated with the jacks 41. A supporting post 80 extends laterally from the mast and is swivelled on a platform 81 which is arranged on a car 82 in front of the loading car, ordinarily there being interposed an idling car 83 in or-

der to give the length between the loading car and the auxiliary supporting car 82. A lifting post or strut 84 also extends laterally from the mast so that when the mast is in a loaded position as shown in Fig. 1[b] this strut or post extends upwardly as high as it is desirable to have such a post due to bridges or obstructions through which it may be necessary to haul the car. A brace rod 85 extends from the post 84 to the mast pole or extension 43 thus supporting it from the strain when the tower or mast as a whole is laid down. Lifting lines 86 extend through blocks 87 on the post 84 and through blocks 88 on the post or strut 12[a] to drums 89 on the power car. The boom has a pintle 90 near its end which is adapted to fit in a socket 91 on the bolster 77 so that as the mast is lifted the end movement of the opposing cars may be prevented. When, therefore, it is desired to lift the mast the strain is put on the lifting line 86 and this swings the mast to the vertical position where a suitable post or platform 39 may be provided. The loading cars are then merely moved forward and out of the way. Steam or power from air supplied from the energy of the steam is delivered to the tower engine 55 through a line 92 which is controlled by a valve 92[a] on the platform 1. The line 92 has a flexible connection 93 on the boom and the line is carried from this connection into the tower through a line 94 which branches to the cylinders of the engine. Similarly a line 95 with a controlling valve 96 extends to a cable 97 on the boom from which a flexible hose or pipe 98 leads to the platform and to the drums 50 controlling said drums and a similar pipe 99 controlled by a valve 100 on the platform 1 leads out on to the boom and to a guy connection 101, thence by a flexible pipe 102 to the drums 49, thus controlling these drums. In this way the guy lines being drawn in and out may be controlled by the operator on the platform as the mast is being raised, the same operator controlling and lifting the drums 89.

The drums 60 are connected by pipes 104 leading from the pipe 94 and these are supplied with control valves 105. These are ordinarily only operated after the tower is in place and can be operated from the tower platform. A line 106 leads from the line 94 to the drum 67. Controlling valves are supplied for each of the lines on the platform so that they may be controlled from the platform after they are lifted. It will be understood that the lines leading to the platform which as the platform is swung are connected at the end of the boom will after the mast has been lifted to its position be disconnected at the boom and connected to these same lines at points on the platform 1.

After the mast is fully swung to its position and guyed a power car is moved forward carrying the boom and front end of the car through the fork. The platform is then jacked up by means of the jacks 13 and 17 and the trucks 3 removed, the platform then being supported by the bases or crib works 15 and 19 as heretofore described. In this position the mast and boom are in operative positions, the mounting of the power car being independent of the mast and the mast being of stationary type with an earth foundation.

What I claim as new is:—

1. In a conveying system, the combination of a forked mast provided with supporting feet at the bottom of each mast adapted to straddle a railroad track with the feet supporting the mast and with a car passage between the forks; and a swinging mounting for the forked mast on which the mast as a whole, including the legs of the forks, swings, the swinging connection between the mast and mounting being above the bottom of the mast.

2. In a conveying system, the combination of a forked mast adapted to straddle a railroad track with a car passage between the forks: and a swinging mounting for the forked mast on which the mast as a whole, including the legs of the fork, swing comprising a car detachable from the mast with the mast in an upright position.

3. In a conveying system, the combination of a forked mast adapted to straddle a railroad track with a car passage between the forks; and a detachable swinging mounting for the mast comprising a car movable toward and from the mast and into and out of engagement with the mast on which the mast as a whole, including the legs of the fork, swing by a movement between the forks.

4. In a conveying system, the combination of a forked mast adapted to straddle a railroad track with a car passage between the forks; and a detachable swinging mounting for the mast on which the mast as a whole, including the legs of the fork, swing comprising a car movable toward and from the mast and between the forks of the mast and having a trunnion bolster adapted to pivotally engage the mast.

5. In a conveying system, the combination of a forked mast adapted to straddle a railroad track with a car passage between the forks, said mast having sockets at its side; and a detachable swinging mounting for the mast on which the mast as a whole, including the legs of the fork, swing comprising a car movable toward and from the mast and between the forks of the mast, said car having trunnions adapted to pivotally engage the sockets on the mast.

6. In a conveying system, the combination of a forked mast adapted to straddle a railroad track with a car passage between the forks; a swinging mounting for the forked mast; a post extending laterally from the

mast; and means acting on the post for swinging the mast.

7. In a conveying system, the combination of a forked mast adapted to straddle a railroad track with a car passage between the forks; a swinging mounting for the forked mast; guy lines attached to the mast; means controlling the guy lines as the mast is swung; and means mounted on the swinging mast actuating the guy lines.

8. In a conveying system, the combination of a forked mast adapted to straddle a railroad track with a car passage between the forks; a swinging mounting for the forked mast; guy lines attached to the mast; means controlling the guy lines as the mast is swung; and means comprising a motor and drums mounted on the swinging mast controlling the guy lines.

9. In a conveying system, the combination of a forked mast adapted to straddle a railroad track with a car passage between the forks; a swinging mounting for the forked mast; guy lines attached to the mast; means mounted on the swinging mast actuating the guy lines; a power car independent of the mast; and devices on the power car controlling said means.

10. In a conveying system, the combination of a forked mast adapted to straddle a railroad track; conveying devices carried by the mast; a swinging mounting for the mast; a power car independent of the mast adapted to move between the forks of the mast; and a loading boom on the power car adapted to act upon material conveyed by the devices.

11. In a conveying system, the combination of a forked mast adapted to straddle a railroad track; a power car detachable from the mast having an end extending through the fork; and a loading boom on said end of the car.

12. In a conveying system, the combination of a forked mast adapted to straddle a railroad track; a power car detachable from the mast having an end extending through the fork; a loading boom on said end of the car; conveying devices on the mast; and means on the car actuating said devices.

13. In a conveying system, the combination of a forked mast adapted to straddle a railroad track; a power car detachable from the mast having an end extending through the fork; and a horizontally swinging loading boom on said end of the car.

14. In a conveying system, the combination of a forked mast adapted to straddle a railroad track with a car passage between the forks; a car carrying a swinging mounting for the mast; a post extending laterally from the mast; a power car; and means on the power car acting on the post to swing the mast.

15. In a conveying system, the combination of a forked mast adapted to straddle a railroad track with a car passage between the forks; a transporting car having a mounting on which the mast may swing; a power car; means detachably connecting the power car with the transporting car; and means on the power car swinging the mast.

16. In a conveying system, the combination of a forked mast adapted to straddle a railroad track with a car passage between the forks; a transporting car having a mounting on which the mast may swing; a power car; means detachably connecting the power car with the transporting car comprising a loading boom; and means on the power car swinging the mast.

17. In a conveying system, the combination of a forked mast adapted to straddle a railroad track with a car passage between the forks; a transporting car having a mounting on which the mast may swing, said car being movable away from the mast; a power car; means detachably connecting the power car with the transporting car; and means on the power car swinging the mast.

18. In a conveying system, the combination of a forked mast adapted to straddle a railroad track with a car passage between the forks; a transporting car having a mounting on which the mast may swing; a power car; means detachably connecting the power car with the transporting car comprising a loading boom; and means on the power car swinging the mast, said power car being movable through the fork to position the boom for loading operations.

19. In a conveying system, the combination of a forked mast adapted to straddle a railroad track with a car passage between the forks a transporting car having a mounting on which the mast may swing, said car being movable away from the mast; a power car; means detachably connecting the power car with the transporting car comprising a loading boom; and means on the power car swinging the mast, said power car being movable through the fork to position the loading boom for loading operations.

20. In a conveying system, the combination of a forked mast adapted to straddle a railroad track with a car passage between the forks; a transporting car having a mounting on which the mast may swing; a power car; means detachably connecting the power car with the transporting car comprising a loading boom having a detachable thrust connection with the transporting car; and means on the power car swinging the mast.

21. In a conveying system, the combination of a forked mast adapted to straddle a railroad track with a car passage between the forks; a transporting car having a mounting on which the mast may swing; a power car; means detachably connecting the power car with the transporting car; means on the power car swinging the mast; conveying de-

vices on the mast; and means on the power car actuating said devices.

22. In a conveying system, the combination of a forked mast adapted to straddle a railroad track with a car passage between the forks; a transporting car having a mounting on which the mast may swing; a power car; means detachably connecting the power car with the transporting car comprising a loading boom; means on the power car swinging the mast, said power car being movable through the fork to position the boom for loading operations; conveying devices on the mast; and means on the power car actuating said devices.

23. In a conveying system, the combination of a forked mast adapted to straddle a railroad track with a car passage between the forks; a detachable swinging mounting for the mast comprising a car movable between the forks of the mast and having a trunnion bolster adapted to pivotally engage the mast; a power car; and a loading boom on the power car detachably connected to the bolster.

24. In a conveying system, the combination of a forked mast adapted to straddle a railroad track; conveying devices carried by the mast; a swinging mounting for the mast; a power car independent of the mast adapted to move between the forks of the mast, said power car having removable trucks; a loading boom on the power car adapted to act with the devices; mechanism on the power car supplying energy for said devices; and means on the power car for supporting the power car independent of the trucks.

25. In a conveying system, the combination of a forked mast adapted to straddle a railroad track; conveying devices carried by the mast; a swinging mounting for the mast; a power car independent of the mast adapted to move between the forks of the mast, said power car having removable trucks; a loading boom on the power car adapted to act with the devices; mechanism on the power car supplying energy for said devices; and means on the power car for supporting the power car independent of the trucks and said mast.

26. In a conveying system, the combination of a forked mast adapted to straddle a railroad track with a car passage between the forks; said mast having pivotal mounting members on its sides; and a car having registering pivotal mounting members adapted to engage the mounting members on the mast.

27. In a conveying system, the combination of a forked mast adapted to straddle a railroad track with a car passage between the forks, said mast having pivotal mounting members on its sides; a car having detachable registering pivotal mounting members adapted to engage the mounting members on the mast; a power car; means detachably connecting said cars; and power means on the car for actuating the mast.

28. In a conveying system, the combination of a forked mast adapted to straddle a railroad track with a car passage between the forks, said mast having pivotal mounting members on its sides; a car having registering pivotal mounting members adapted to engage the mounting members on the mast; and jacks on the mast for adjusting the mast to bring the pivotal mounting members into register.

29. In a conveying system, the combination of a forked mast adapted to straddle a railroad track with a car passage between the forks and having feet adapted to support the mast when in place independently of the track; a swinging mounting for the forked mast on which the mast as a whole, including the legs of the fork, swings, the swinging connection between the mounting and mast being above the bottom of the mast; a power car independent of the mast; a cable actuating mechanism on the power car; and a cable extending from the power car to the mast for elevating the mast.

30. In a conveying system, the combination of a forked mast adapted to straddle a railroad track with a car passage between the forks; a swinging mounting for the forked mast adapted to swing the mast to a position straddling the railroad track; a power car on the track independent of the mast and adapted to pass through the mast when in position straddling the track; and means on the power car supplying energy to swing the mast.

In testimony whereof I have hereunto set my hand.

HARRY L. TURNEY.