Oct. 21, 1941. W. TAPPE 2,259,966

FIRE EXTINGUISHING APPARATUS

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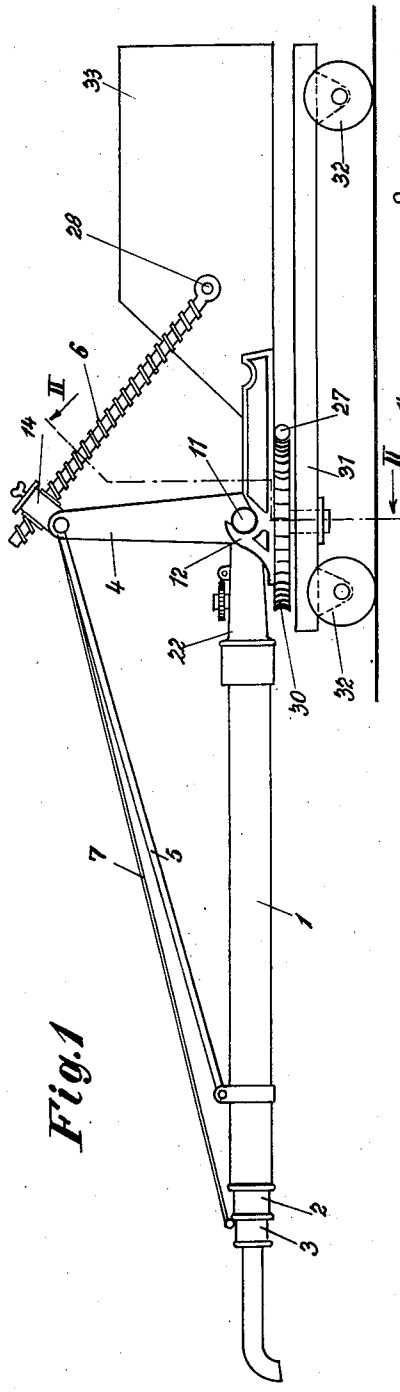


Fig. 1

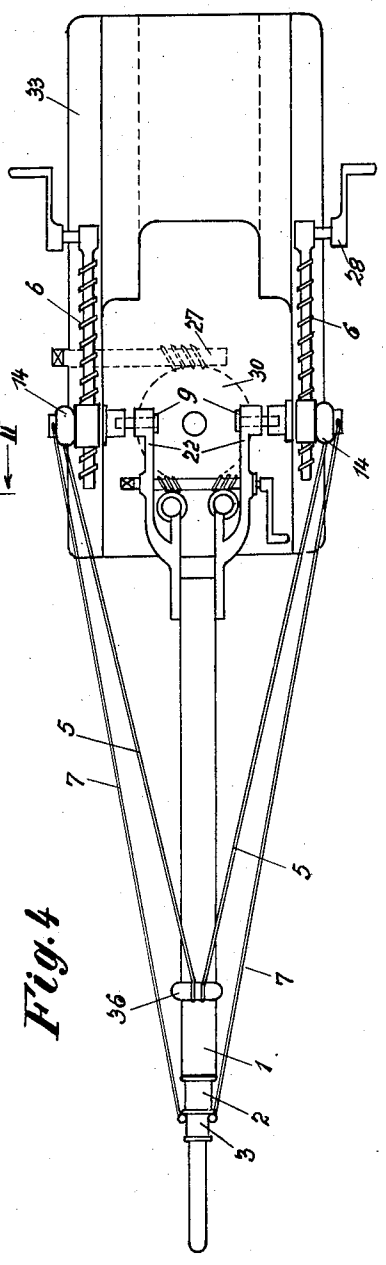


Fig. 4

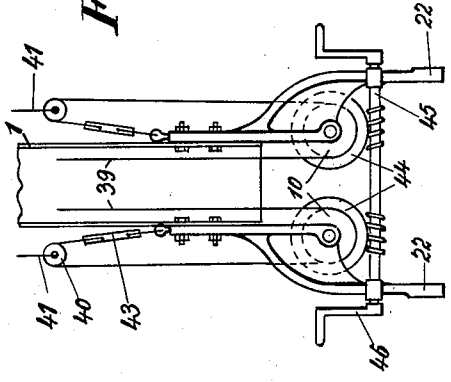
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FIRE EXTINGUISHING APPARATUS

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Fig. 13



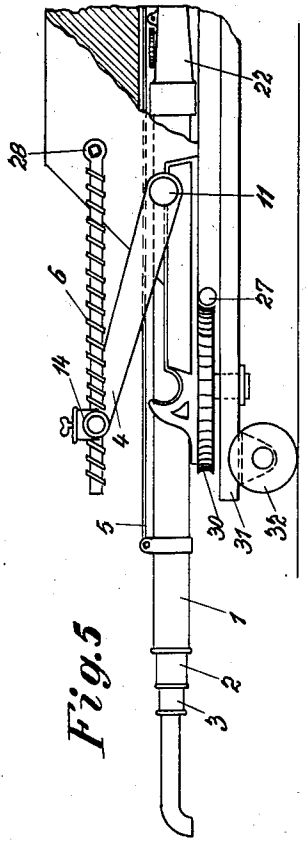


Fig. 5

Fig. 3

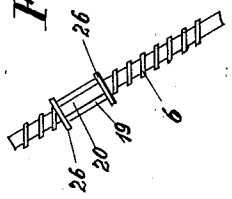
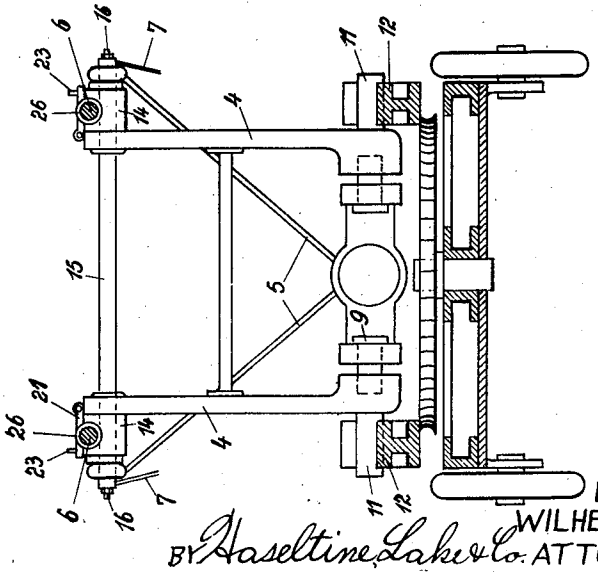


Fig. 2



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FIRE EXTINGUISHING APPARATUS

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Fig. 7

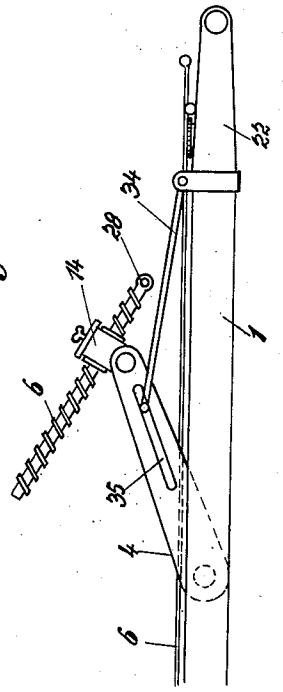


Fig. 6

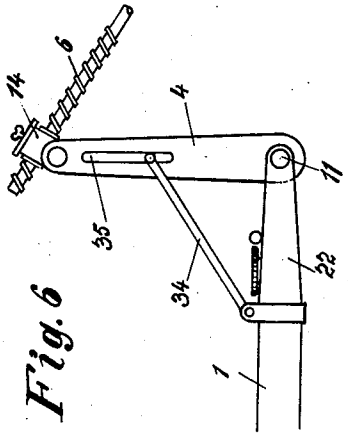
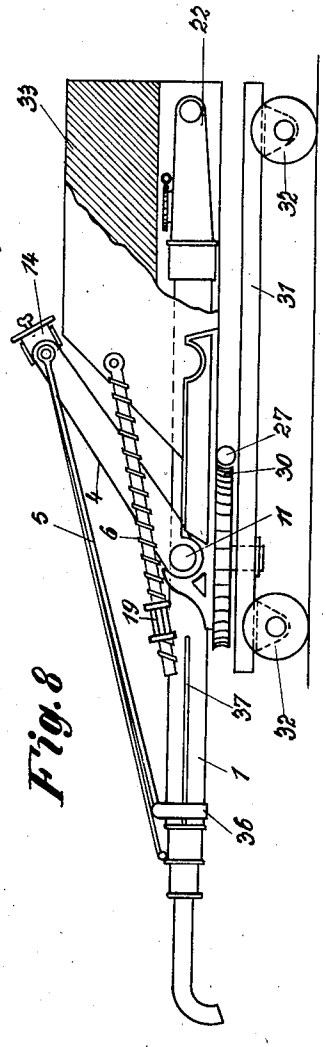


Fig. 8



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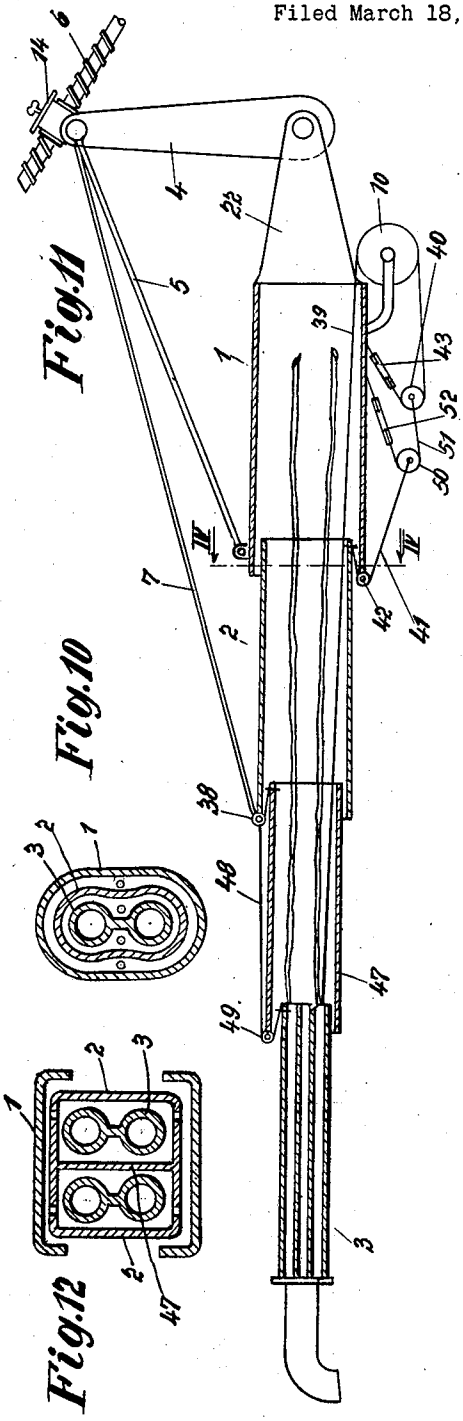


Fig.11

Fig.10

Fig.12

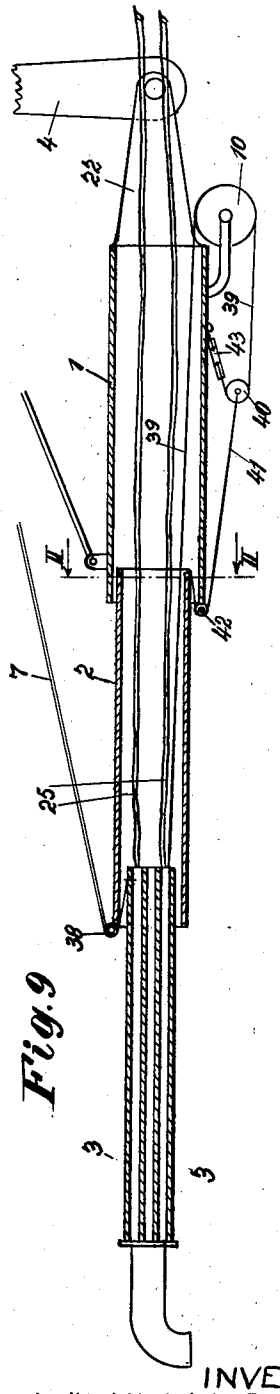


Fig.9

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UNITED STATES PATENT OFFICE

2,259,966

FIRE EXTINGUISHING APPARATUS

Wilhelm Tappe, Bucharest, Rumania

Application March 18, 1938, Serial No. 196,603
In Germany May 18, 1937

7 Claims. (Cl. 169—25)

This invention relates to fire extinguishing apparatus. In the industries dealing with heavy oils and the like both stationary and transportable extinguishing apparatus are used for fighting fires. The mobile apparatus possess the advantage over stationary plants that the initial cost in respect of the works to be protected is lower and that they can at any time be applied at different points of the works, for example a refining plant or the like. It is desirable for these fire extinguishing apparatus to have a form which renders them quickly applicable so that they give effective protection. They are used principally for tanks having their bases at ground level as well as for tanks let into the ground (underground tanks) and for refining plants and other works in which oils are prepared, but in addition they may be employed in connection with chemical works. Having regard to the different uses of such an apparatus, which is required for protecting equally well built in the open tanks, underground tanks and further should meet the requirements of fighting any fire that may occur from a distance, it has been found particularly useful to make the telescopic feed pipe employed, portable, telescopically and vertically extensible, and rotatable by means of a turntable. Now, in order to provide a firm base for the entire pipe assembly and to allow for the rather considerable turning moment occurring when the telescopic pipe is extended it has been proposed to employ a triangular supporting structure, consisting of a first, outer pipe section, a supporting frame adapted to be rigidly connected to the lower end of the said pipe section, and a rigid rod structure connecting the upper part of the supporting frame to the free end of the first pipe section.

Although fairly good results have been obtained with this wholly novel design, it has been found to possess however some drawbacks, which are less concerned with the extinguishing action proper, which is entirely satisfactory than with the mechanical construction per se.

A drawback which constitutes a difficulty has been found to be that the extending of the telescopically extensible pipe sections creates a strong unilateral turning moment, which in certain cases when moving the extinguishing apparatus over a gradient might cause the said apparatus to capsize forward. It has also sometimes been found to be a drawback that the aforementioned triangular supporting structure and in particular the frame on the chassis possesses a height inherent in the design which sometimes is too great to allow the extinguishing apparatus being moved through doors, or passed under already existing pipe systems and steel structures. The main object of the present invention is to overcome these drawbacks for which purpose the apparatus is made transformable at least to the extent of eliminating the undesirable effect of the turning moment for the purposes of transportation, and furthermore so as to reduce the overall height of the apparatus in order to eliminate these difficulties. To do this the telescopic pipe sections are mounted displaceably in relation to the turntable and the chassis in such a way that the centre of gravity of the pipes is displaced in relation to the chassis. Thus, the pipe assembly is no longer rigidly connected to the turntable or to the chassis carrying them, nor rigidly connected to the supporting frame, rather does the pipe assembly, which if desired may be provided with lateral journals and adapted to be removed from its working bearings, rest in a slide guide, which enables the pipe assembly, for transporting purposes, to be withdrawn upon the chassis rearwardly if desired into a recess in the counterweight provided at the rear of the chassis. At the same time the rigidity of the triangular supporting structure is also done away with, and for the purpose of reducing the overall height during transportation the supporting frame which is mounted slewably and separately on the turntable, or on a part connected to the said turntable, is swung out of the way so that when the pipe sections are being retracted the said supporting frame also carries out a slewing motion around its axis of rotation, until the upper side of this frame comes down to the level of the pipe sections. The constructional arrangement just outlined admits of several specific solutions, some tending towards the idea of leaving the supporting frame rigidly connected with the elevating means for example the screw spindles, and others relating to the practice of disconnecting the rigid rod, and partly making use of the idea of disconnecting from the supporting frame the elevating means, which are in the form of screw spindles and which for the purpose of being detachably secured can be held in holders on the supporting frame by means of nut members, whilst retaining the connection between the supporting frame and the rigid rod.

Special attention must be paid to the guiding of the ropes for extending and retracting the telescopic pipe sections. It is particularly when

the extended sections are in horizontal position that they require supporting ropes having their point of attachment at the upper end of the supporting frame and extending thence to the front end of the pipe assembly, in which position they are exposed to heavy pulling stresses. Further ropes are required for extending and retracting the telescoping pipe sections. A further object of the invention is to provide a fire extinguishing apparatus which in case of danger can be brought into use quickly, and which comprises the least possible number of separate parts, and in which the requisite guy ropes and pulling ropes are combined in a suitable manner, while at the same time taking care that the guy ropes are independent of the pulling ropes so that the former can carry out their duty of securely holding the pipe assembly in any position. In principle this is solved by connecting the guy ropes which are attached to the supporting frame to the rear end of the third pipe section via pulleys provided at the front end of the second pipe section, and by connecting the front pipe section to the rear end of the first pipe section via a pulling medium, which is passed through the interior of the pipes to a drum, to which rotation is to be imparted and which is provided at the rear end of the pipe section, and to a loose pulley acting in the manner of tackle of pulleys. The pin of this loose pulley is connected to the rear end of the second pipe section via a pulley disposed at the front end of the first pipe section, if necessary by interposing a further loose pulley acting in the manner of a tackle of pulleys for each further added slidable pipe section, which is connected to its neighbour by means of a pulley disposed at the front end and a rope passed around the said pulley. The pulling means which are passed through the interior of the pipes is preferably in the form of a chain and in this case the drum at the rear end of the pipe assembly is in the form of a chain wheel. If the two chain wheels for the two draw chains are placed horizontally and each connected to a wormwheel it is possible by means of a worm acting upon both wormwheels to move both chains forward or backward simultaneously.

As extinguishing medium use can be made of foam, smothering gases and the like. The front pipe section can consist of two or more pipes placed parallel to one another in a bundle, in order to make it possible to convey the various components appertaining to the extinguishing medium separately to the mouthpiece of the pipe assembly, or the various pipes of the bundle can be used for conveying extinguishing media of differing composition (air foam, chemical foam and the like), to the mouthpiece of the pipe assembly. From an economic point of view it has of advantage in the case of a small fire which does not require for example large quantities of foam to convey the extinguishing foam only through one of these pipes while yet taking full advantage of the extinguishing pipe. In this case each of the separate pipes can be provided with its own nozzle and the various nozzles can be of differing length. In this form the pipe assembly offers the further advantage that if one of the pipes in the bundle is damaged, the assembly is not thereby put out of action, the damaged pipe being simply cut out, for example by means of an automatically acting device working for example on the principle of a check valve. At the rear end these various pipes in the bundle at the front are then of course connected to a corresponding number of hosepipes which are passed through the interior of the pipe assembly.

Several examples of embodiment of the invention are illustrated in the accompanying drawings, in which:

Fig. 1 is a side view of a fire extinguishing apparatus having a telescopic pipe;

Fig. 2 is a section through the apparatus along the line II—II of Fig. 1;

Fig. 3 illustrates the upper end of an elevating spindle with nut member;

Fig. 4 illustrates a plan view of the extinguishing apparatus;

Fig. 5 illustrates a side view of the extinguishing apparatus the pipes being retracted and the supporting frame folded down;

Figs. 6 and 7 illustrate modified forms of construction;

Fig. 8 shows a side view corresponding to Fig. 5 to illustrate yet another embodiment;

Fig. 9 is a side view of the triangular supporting structure with the pipes in extended position;

Fig. 10 is a section through the pipe assembly along the line II—II in Fig. 9;

Fig. 11 is a side view corresponding to Fig. 9, showing four telescoping pipe sections;

Fig. 12 is a section on the line IV—IV in Fig. 11; and

Fig. 13 is a plan view on a larger scale of the rope drive.

The fire extinguishing pipe which consists of several telescopically mounted pipe sections **1**, **2**, **3**, is disposed upon a turntable **30**, carried on the chassis **31**, and adapted to be erected, the chassis being fitted with two, three, or four, preferably rubber-tired wheels **32**. This turntable carries at the rear a box-like superstructure **33**, which can be filled with water or sand and thus act as a counterweight for the fire extinguishing pipe proper. By means of a crank which can be placed on the pin **27** the turntable with the extinguishing pipe and the box **33** can be slewed via a gearing not described herein in detail. The fire extinguishing pipe itself is provided at the rear end a triangular supporting structure consisting of the first pipe section **1**, the supporting frame **4** rigidly connected to the rear end of the pipe section **1**, and consisting preferably of two supporting arms connected at the top by means of a cross member, and finally of rigid rods **5**, which connect the free end of the first pipe section **1** to the upper part of the supporting frame **4**.

Where the first pipe section **1** is connected to the supporting frame **4** this bearer possesses trunnions **11** which can be placed in tipping bearings provided at both sides of the turntable **30**, in such a way that the bearer together with the pipe sections can be slewed and thus also raised in these bearings. These tipping bearings **12** for accommodating the trunnions **11** can also be in the form of bearings open at the rear or at if necessary the top, as their only purpose is to take up bearing pressure. The adjusting for height is effected by means of the elevating means attached to the rear end of the chassis, the said means being detachably connected to the upper end of the supporting frame **4**. Two spindles **6** are preferably used as elevating means, which can be inserted in holders **14** pivotally mounted at the upper end of the supporting frame **4**. The rear ends of these spindles are preferably adapted to be pivotable to a certain extent around a suitable point on the superstructure **33** which serves as counterweight, so that

they can be moved through a certain angle in harmony with the turning of the triangular supporting structure when the extinguishing pipe is being raised. The spindle drive is actuated by a crank placed on the pin 28.

The arrangement of the holders 14 on the supporting frame 4 can be seen in Fig. 2. Each holder is provided with a bore through which a bolt can be passed, or if desired, a shaft passing also through the holder on the opposite side; by means of a nut 16 the holder and at the same time the ends of the rigid rod 5 as well as the rear eyelets of the guy ropes 7 are pressed against one of the side members of the supporting frame. The bearing is provided with two bearing surface shoulders which form the bearing surface proper. The nut member 19 seen in Fig. 3 is of circular section, but as shown at 20 it is flattened at two points opposite one another. The distance of the two flattened portions from one another corresponds approximately to the internal distance of the bearing shoulders, so that when the nut member 19 is inserted in the holder 14 which has been given a fork shape by means of the two shoulders, it is secured against rotation. Each nut member 19 is further provided at both ends with an integral collar 26, by means of which the push or pull exerted by the spindles 6 upon the holders 14 during the rotation of said spindles is transmitted to the supporting frame 4 the bolts 15 which are appropriately dimensioned. By means of a cover 21 hinged on the holder and which can be secured by means of the wing-nut 23 the holder 14 can be closed at the top, so that the nut member 19 is secured against any rotation, displacement or dropping out.

Figures 4 to 8 illustrate the disconnecting of the arrangement of the pipe sections 1, 2, 3 which is displaceable in relation to the chassis 31. If the first pipe section 1 is as shown in Fig. 4 provided with a bearing foot 22 in the form of a fork, this foot can be connected to the vertical posts of the supporting frame 4 by means of the bolts 9, the said bolts meshing in openings provided in the said posts. The connection is established either by means of threads on the bolts or the bolts can be placed under the action of a spring which draws the bolts through the bolt holes in the foot 22 into the holes in the supporting frame posts. Disconnecting is in this case easily and simply effected by drawing out the bolts against the spring action, whereby the rear fork-shaped shoulders 22 of the pipe section 1 is released from the supporting frame 4.

If for the purpose for example of facilitating transportation of the entire apparatus on the chassis, the telescopically mounted pipes are to be still further retracted or pushed back on the chassis so that their centre of gravity coincides approximately with that of the chassis not only the aforesaid connecting bolts 9 are as mentioned above disconnected thus releasing the fork-shaped shoulders 22 from the supporting frame 4, but as shown in Fig. 5, also the upper ends of the stays incorporated with the rigid rod 5 are disconnected from the upper end of the supporting frame 4, preferably folded together side by side and placed flat upon the first pipe section 1. The pipe can then be pushed further back upon the chassis, and to do this the floor of the chassis frame 31 or of the turntable 30 is preferably provided with a sliding guide extending rearwardly which enables the pipe to be pushed back easily and at the same time prevents the pipe assembly from falling off the chassis.

In order to enable the supporting frame 4 to be folded down so as to reduce the overall height of the apparatus, the trunnions 11 are withdrawn from the tipping bearings 12 and also pushed back on the chassis or turntable in sliding guides provided for this purpose, so that the supporting frame 4 together with the spindles 6 which remain connected thereto can be tilted forwardly as can be seen in Fig. 5. For this purpose the said spindles are of course pivotally connected at the rear as already mentioned, and the holders 14 which receive the nut member 19 at the top of the supporting frame posts are also pivotally mounted.

In order to enable the pipe assembly to be pushed back the superstructure 33 which is provided at the rear of the chassis for accommodating the counterweight is provided with a hollow passage extending rearwardly in the centre thereof, so that the pipe assembly can if desired be pushed back beyond the rear edge of this superstructure or of the chassis.

In the embodiment shown only diagrammatically in Figs. 6 and 7 an additional rigid system of rods 34 has been provided by means of which the rear end of the pipe section 1 is connected to the upper end of the supporting frame 4, a ring being for example provided at the rear end of the said pipe section. This system of rods 34 consisting for example of two stays, is slideably guided in slots 35 provided in the vertical posts of the supporting frame 4, being at the same time articulated on the pipe section 1.

If after the stays appertaining to the rod 5 have been disconnected from the supporting frame 4 as hereinbefore explained, the pipe assembly is to be pushed back, the said pipe assembly is pushed through the supporting frame 4 which is held in position by the spindles 6, so that the additional rods 34 together with their connecting members move upwardly in the slots 35 until they reach the upper edge of the said slots, moving downwardly again as soon as the pipe assembly has passed through the supporting frame, until they again reach the lower edge of the slots. If now the spindles are rotated via the aforesaid crank pin 28 the supporting frame 4 will be folded down rearwardly at the same time exerting pressure upon the rods 34, so that the pipe assembly will be driven to a certain extent positively and rearwardly upon the chassis. The angle enclosed by the supporting frame and the said auxiliary rods 34 increases during this procedure, until it takes up the position as shown in Fig. 7, which will probably represent the position in which the pipe assembly has been sufficiently pushed back on the chassis, so that the centre of gravity of the said pipe assembly at least approximately coincides with that of the chassis. It will be understood that when the pipe assembly is again to be brought into working position, the spindles are to be turned in the opposite direction so that the supporting frame 4 is again erected, the latter will exert a pulling action upon the additional rods 34, by means of which action the pipe assembly will again to a certain extent positively be drawn forward until the supporting frame has taken up its vertical or working position, whereupon the pipe assembly with the rods 34 is drawn through the supporting frame forwardly, until it again occupies the position shown in Fig. 6, whereupon all that remains to be done is to connect the forks shaped

shoulders 22 at the rear end of the first pipe section to the supporting frame by means of the bolts 9.

The embodiment shown in Fig. 8 illustrates another possibility of attaining the desired effect. In this case, when the pipe assembly is to be retracted upon the chassis, the spindles 6 with the nuts members 19 are lifted out of the holders 14 and folded down forwardly. Now, when the pipe assembly is pushed through rearwardly pressure is exerted via the draw bar 5 articulated at the front end of the pipe section 1 upon the supporting frame 4 which is pivotably mounted on the chassis by means of the trunnions 11, in such a way that the supporting frame folds down rearwardly. If may be advisable to effect this folding down of the supporting frame beforehand, for which purpose the ring which establishes connection between the front end of the pipe section 1 and the rod 5 is first pushed rearwardly along the said pipe section. For this purpose grooves 37 may for example be provided on both sides at the centre portion of the said pipe section in which the said ring meshes by means of a pin, being in this way guided in these grooves during the longitudinal rearward movement. In this way the ring 36 can first be pushed back along the pipe section 1 so that the rod 5 which remains connected thereto will cause the supporting frame 4 to be folded back, whereupon the pipe assembly can be pushed rearwardly upon the chassis through the passage provided in the counterweight superstructure 33, the ring 36 meantime proceeding in the forward direction in the grooves 37 in the pipe section 1 until it reaches the front end thereof in the position shown in Fig. 8.

The guiding of the cables or ropes is effected in the following manner.

At the upper end of the supporting frame 4 the guy ropes 7 are detachably hooked, and are then passed over the pulleys 38 provided at the front end of the pipe section 2 into the interior of the said pipe 2 and connected to the rear end of the pipe section 3. The action of these guy ropes upon the pipes 2 and 3 is therefore such as to cause a rearwardly directed pressure upon the pipe 2 and a forwardly directed force to act upon the pipe 3. The pipe 3 is held in the desired position against the force exerted upon it in the forward direction by means of a chain 39 attached to its rear end and passed through the interior of the pipes 2 and 1 to the rear and then passed over a drum or chain wheel 10 located at the rear of pipe 1 and over a loose pulley 40, being finally attached to the rear end of pipe section 1. A further rope 41 is joined to the pin of this loose pulley 40, and is connected to the rear end of the pipe 2 via a pulley 42 mounted on the front end the pipe section 1, so that the said pipe 2 is pushed forward so as to equalize the force exerted by the guy rope 7 in the opposite direction. A turn-buckle 43 is inserted in the chain 39 preferably closely in front of its point of attachment to the pipe section 1, and this turn-buckle affords the possibility of either shortening or lengthening this guy rope as required.

As shown in Fig. 13, the two chain wheels 10 are mounted horizontally and provided each with a helicoidal wheel 44 mounted upon the same shaft. At right angles to the axis of the telescopic pipe and meshing with the wormwheels 44 there is mounted a worm shaft 45, provided with right and left hand worms for the two helicoidal wheels, so that when the crank 46 is rotated both chain wheels 10 can be rotated simultaneously. Thus when rotating in one direction the pipe section 3 is drawn rearwardly by the chain 39 taking all intermediate parts with it. Owing to the tackle-like action of the loose pulley 40 the transmission thus effected results in the pipe 2 being moved rearwardly at half the speed of the pipe section 3, the said transmission at the same time producing a corresponding power transmission ratio.

The hosepipes 25 which are attached to the foremost pipe section 3 at the rear end thereof, are pushed out rearwardly through the open end during this rearward movement.

If the crank 46 is turned in the opposite direction the loose pulley 40 with the tackle-like action and with it also the rope 41 will be drawn rearwardly so that the pipe 2 will be moved forward. This positive thrust action causes pressure to be exerted upon the rope 7 via the pulley 38, so that also the foremost pipe section 3 is drawn forward. Also during the extension the motion of the pipe section 3 is twice as rapid as that of the pipe section 2.

If as shown in Fig. 11 more than three pipe sections are used, a pipe section 47 being for example interposed between the sections 2 and 3, all that is required to ensure positive guiding of all pipe sections is to take a rope 48 and attach it to the front end of the pipe section 2 and via a pulley 49 arranged at the front end of the pipe section 47, connect said rope 48 to the rear end of the foremost pipe section 3. As each pipe section is to move at twice the speed of its immediately adjacent external neighbour, it is necessary where a pipe section such as 47 and, if desired other pipe sections have been interposed, to provide further loose pulleys with tackle-like action in order to obtain this effect. In the example shown in Fig. 11 the rope 41 has for this purpose been attached not direct to the loose pulley 40 but to an interposed loose pulley 50, and the rope 51 passing over the said pulley 50 is attached to the aforesaid pulley 40, whilst the other end of the said rope 51, preferably having interposed therein a turn-buckle 52, is attached to the first pipe section 1 towards the rear end thereof. In this case it is preferable to arrange all the aforesaid rope guides in two groups, for instance symmetrically on both sides of the pipe assembly.

The pipes may have any desired circular section, but they can also be somewhat flattened as shown in Figure 10, or again they may consist of iron sections which mutually guide one another as in Figure 12. The foremost pipe section which usually consists of one single length of pipe to which the nozzle is attached can alternatively consist of two or more separate pipes arranged in a bundle i. e. parallel to one another, each being provided with its own feed hosepipe, the said separate pipes being preferably connected in pairs by means of webs as shown in section on the drawings. These pipes can then have a common nozzle or each its own nozzle, the said nozles having, if desired, differing lengths.

What I claim and desire to secure by Letters Patent of the United States is:

1. In a fire extinguishing apparatus having a carriage, a turntable rotatably mounted on said carriage, a supporting frame, means for pivotally mounting said supporting frame adjacent its lower end on said turntable, a telescopic pipe, there being means for detachably connecting the first

section of said telescopic pipe to said supporting frame adjacent its lower end, a rigid rod structure connected to the first section of said telescopic pipe, means for detachably connecting said rigid rod structure to the supporting frame to form a triangular supporting structure, and a controlling rod articulated at one end to the first pipe section and having its other end slidably guided in slots in the supporting frame, the combination of pivoted elevating means rising rearwardly to operative position and folding down forwardly to idle position for causing said triangular supporting structure to turn about the pivotal mounting of the supporting frame, detachment of said first pipe section and the rigid rod structure from the supporting frame, permitting the rearward displacement of the telescopic pipe and also the lower portion of the supporting frame towards the carriage and the folding down of said supporting frame in a forward direction toward the forward end of the telescopic pipe, the movements of the supporting frame assisting to a certain extent the displacement of the telescopic pipe owing to the connection between these members afforded by the controlling rod.

2. In a fire extinguishing apparatus having a carriage, a turntable rotatably mounted on said carriage, a supporting frame, horizontal pivot means for pivotally mounting said supporting frame adjacent its lower end on said turntable in such manner that the pivotal axis can be displaced along the turntable, a telescopic pipe, further pivot means for detachably connecting the first section of said telescopic pipe to said supporting frame adjacent its lower end, a rigid rod structure connected to the first section of said telescopic pipe, and pivoted means for detachably connecting said rigid rod structure to the supporting frame to form a triangular supporting structure, the combination of substantially horizontal guideways upon said turntable supporting the first mentioned pivot means having recesses in each end allowing displacement of said first pivot means from one recess portion at one end to the other recess portion at the other end and elevating means rising rearwardly to operative position and folding down forwardly to idle position for causing said triangular supporting structure to turn about the pivotal mounting of the supporting frame, detachment of the first pipe section and the rigid rod structure from the supporting frame permitting the rearward displacement of the telescopic pipe and the lower end of supporting frame towards and along the carriage and the folding down of the supporting frame in a forward direction toward the forward end of the telescopic pipe so as to bring the center of gravity of said pipes substantially into register with that of the carriage for transport, movement being assisted by displacement of the pivotal axis of said supporting frame.

3. In a fire extinguishing apparatus having a carriage, a turntable rotatably mounted on said carriage, a supporting frame, and horizontal trunnions adjacent one end of said supporting frame, the combination of guideways formed with bearing recesses at each end adapted to receive said trunnions, a telescopic pipe, means for detachably connecting the first section of said telescopic pipe to said supporting frame adjacent its lower end, a rigid rod structure connected to the first section of said telescopic pipe, means for detachably connecting said rigid rod structure to the supporting frame to form a triangular supporting structure, and elevating means rising rearwardly to operative position and folding down forwardly to idle position for causing said triangular supporting structure to turn about the pivotal mounting of the supporting frame, detachment of the first pipe section and the rigid rod structure from the supporting frame permitting the rearward displacement of the telescopic pipe towards the carriage and the folding down forwardly of the supporting frame, the latter movement being assisted by displacement of the trunnions of the supporting frame from the bearing recesses at the forward end of the guideways to the bearing recesses at the other or rear end.

4. In a fire extinguishing apparatus having a carriage, a turntable rotatably mounted on said carriage, a supporting frame, means for pivotally mounting said supporting frame adjacent its lower end on said turntable, a telescopic pipe, and means for detachably connecting the first section of said telescopic pipe to said supporting frame adjacent its lower end, the combination of a ring member capable of longitudinal displacement mounted on the first section of said telescopic pipe, there being a rigid rod structure connected to said ring member and to the supporting frame to form a triangular supporting structure, elevating means rising rearwardly to operative position and folding down forwardly to idle position for causing said triangular supporting structure to turn about the pivotal mounting of the supporting frame, and means for detachably connecting said elevating means to the supporting frame, detachment of the first pipe section and the elevating means from the supporting frame permitting the displacement of the telescopic pipe towards the carriage and the folding down towards the carriage of said supporting frame with the rigid rod structure connected thereto a wide range of movement being permitted to the telescopic pipe by the longitudinal displacement thereon of the ring connected to the rigid rod structure.

5. In a fire extinguishing apparatus having a carriage, a turntable rotatably mounted on said carriage, a supporting frame, means for pivotally mounting said supporting frame adjacent its lower end on said turntable, a telescopic pipe, pivot means for detachably connecting the first pipe section of said telescopic pipe to the supporting frame adjacent its lower end, the combination of means for simultaneously relatively displacing the pipe sections by approximately the same amount including guy ropes fastened at one end to the supporting frame and passing over the front end of the second pipe section and attached to the rear end of the pipe section sliding inside said second pipe section, said guy ropes being of such length that when the telescopic pipe is extended or retracted said guy ropes remain taut in all positions of the pipe sections, a rigid rod of said telescopic pipe to the supporting frame to form a triangular supporting structure, elevating means for causing said triangular supporting structure to turn about the pivotal mounting of the supporting frame, and means permitting, upon the detachment of the first pipe section from the supporting frame, the displacement of the telescopic pipe towards and along the carriage and the folding down of the supporting frame so as to bring the center of gravity of said pipes substantially into register with that of the carriage for transport.

6. In a fire extinguishing apparatus having a carriage, a turntable rotatably mounted on said

carriage, a supporting frame, means for pivotally mounting said supporting frame adjacent its lower end on said turntable, a telescopic pipe, means for detachably connecting the first pipe section of said telescopic pipe to the supporting frame adjacent its lower end, means for simultaneously relatively displacing the pipe sections by approximately the same amount including guy ropes fastened at one end to the supporting frame and passing over the front end of the second pipe section and attached to the rear end of the pipe section sliding inside said second pipe section, said guy ropes being of such length that when the telescopic pipe is extended or retracted said guy ropes remain taut in all positions of the pipe sections, a chain connected at one end to the rear of the foremost pipe section, a chain wheel rotatably mounted at the rear end of the first or rearmost pipe section, a tackle pulley, said chain passing down the interior of the telescopic pipe over said chain wheel and tackle pulley and being secured at its other end to the first pipe section, a pulley disposed at the front end of said first pipe section, a cable connected to the rear of the second pipe section passing over said pulley section and at the other end to the pin of the tackle pulley, a rigid rod structure connecting the first section of said telescopic pipe to the supporting frame to form a triangular supporting structure, elevating means for causing said triangular supporting structure to turn about the pivotal mounting of the supporting frame, and means permitting, upon the detachment of the first pipe section from the supporting frame, the displacement of the telescopic pipe towards the carriage and the folding down of the supporting frame.

7. A fire extinguishing apparatus as in claim 6, comprising a telescopic pipe having first, second and foremost pipe sections and a number of sections interposed between said second and foremost pipe sections, and a corresponding number of tackle pulleys interposed between the chain and the cable secured to the rear end of the second pipe section.

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