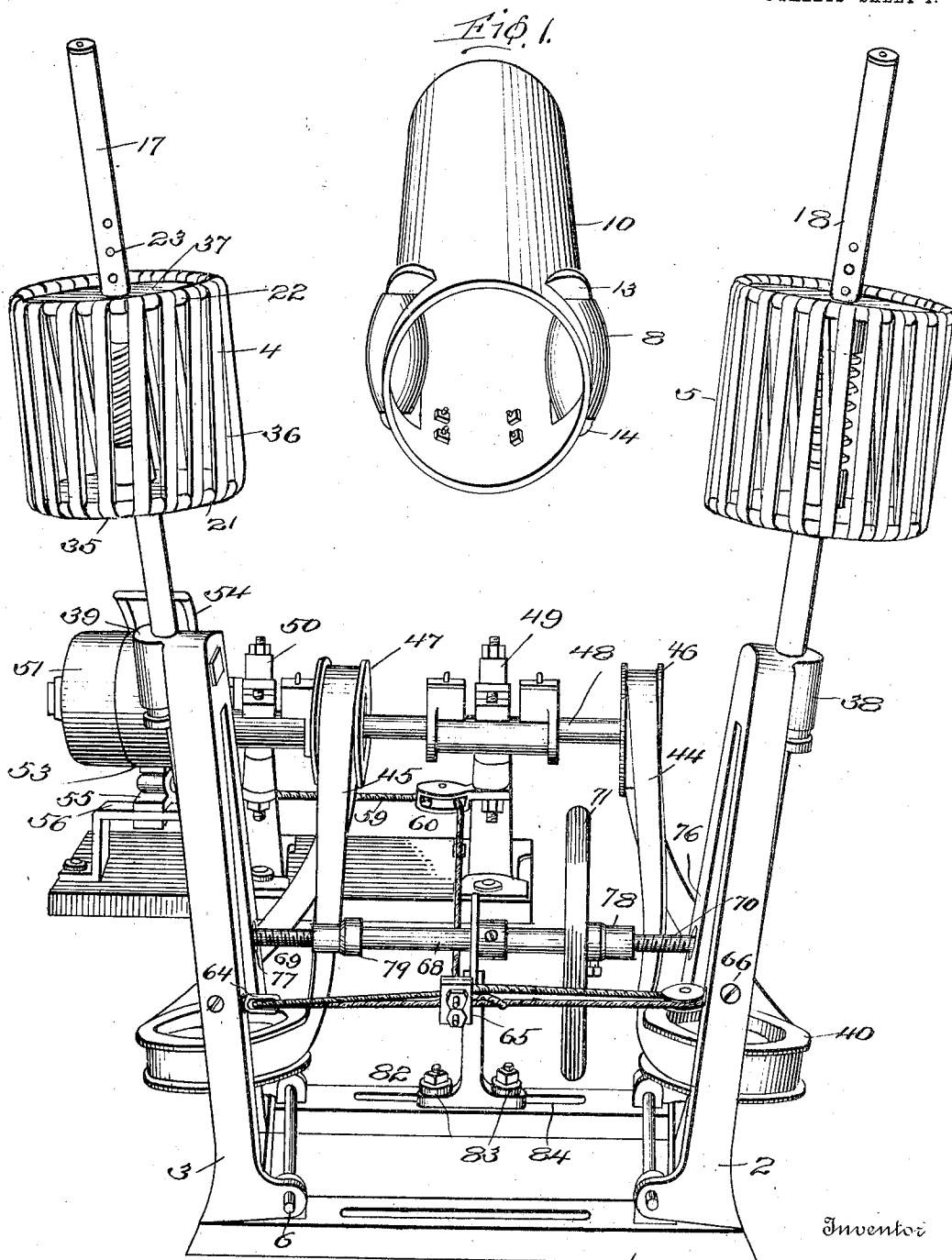


C. JORDAN.
PIPE LOADING MACHINE.
APPLICATION FILED JULY 10, 1909.

960,227.

Patented May 31, 1910.

5 SHEETS—SHEET 1.



Witnesses
Wm. Fowler
A. S. Kitchen

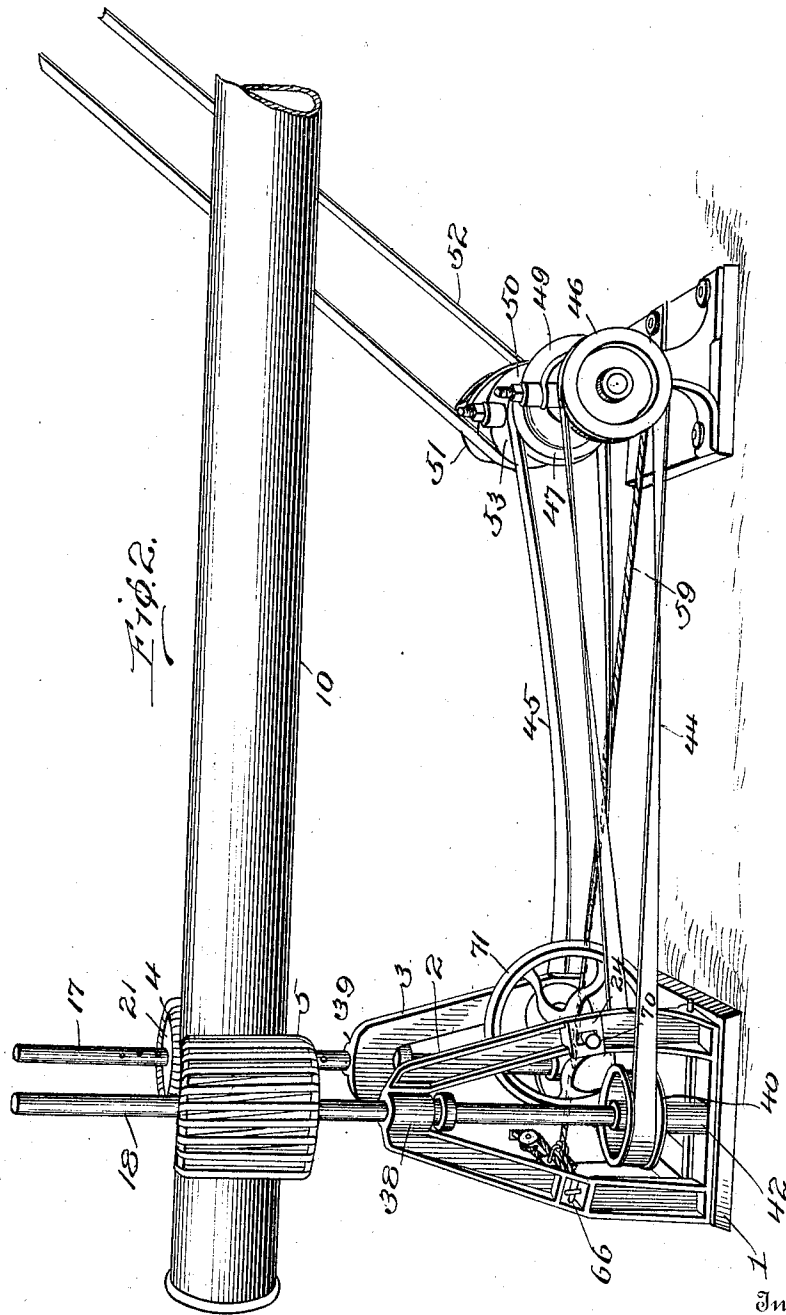
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Inventor

Witnesses

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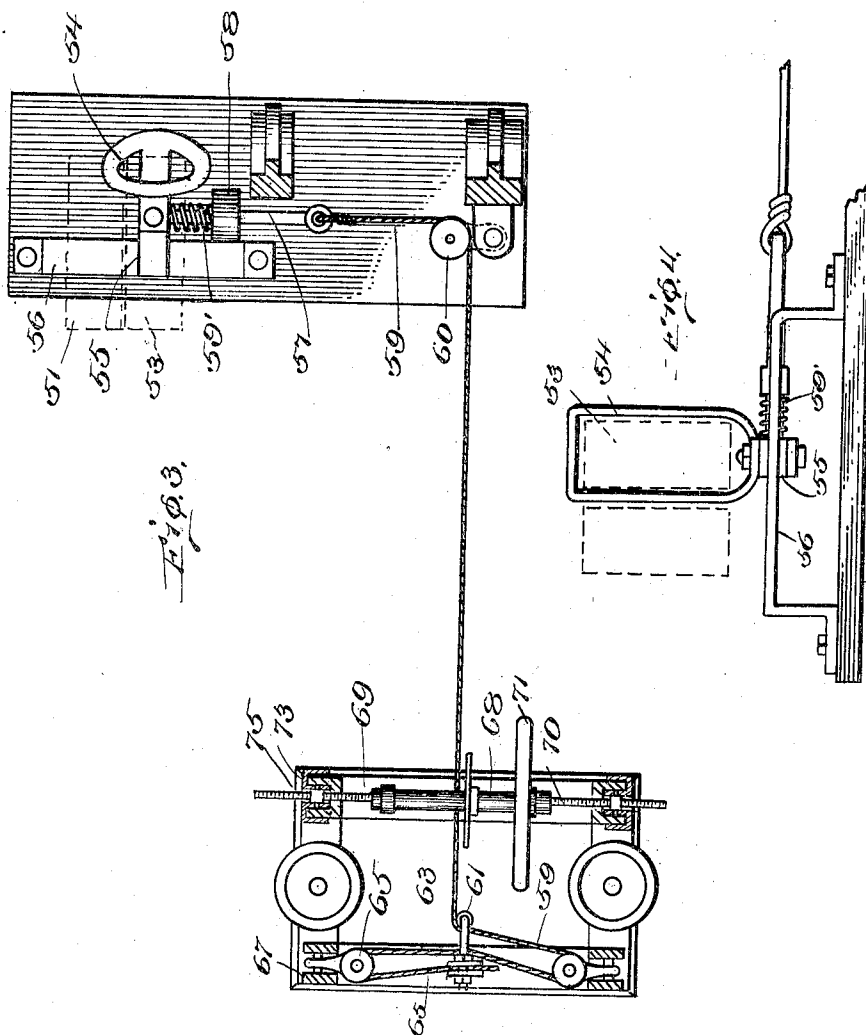
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5 SHEETS—SHEET 3.



Witnesses
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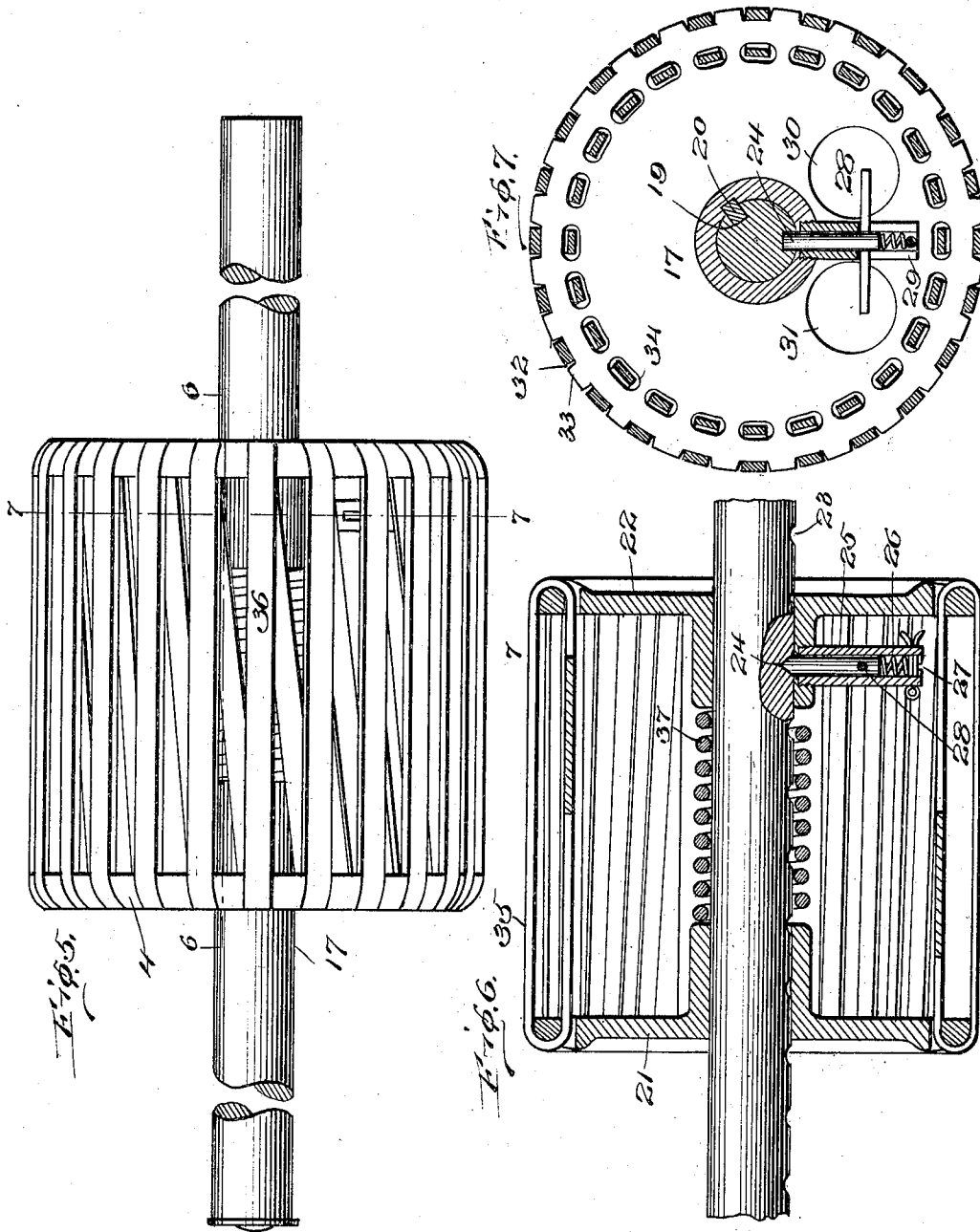
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5 SHEETS—SHEET 4.



Witnesses

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A. L. Kitchen.

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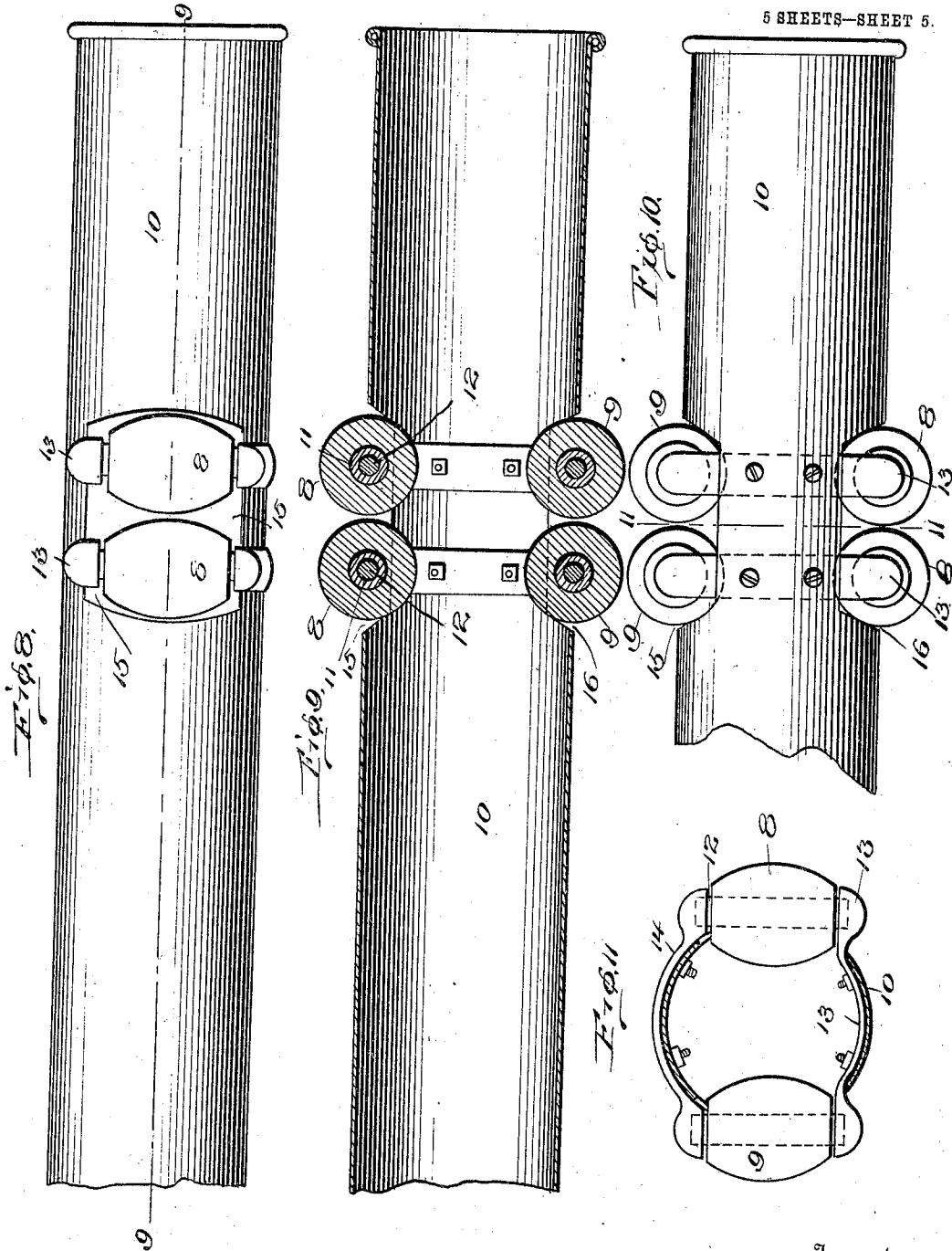
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5 SHEETS—SHEET 5.



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UNITED STATES PATENT OFFICE.

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PIPE-LOADING MACHINE.

960,227.

Specification of Letters Patent.

Patented May 31, 1910.

Application filed July 10, 1909. Serial No. 507,009.

To all whom it may concern:

Be it known that I, CORNELIUS JORDAN, a citizen of the United States, residing at Cohoes, in the county of Albany and State of New York, have invented certain new and useful Improvements in Pipe-Loading Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to improvements in machines for forcing tubular fabric over a receiving tube, commonly known as pipe loading machines, and has for an object the arrangement of means for automatically and positively forcing fabric over a tube.

Another object of the invention is the arrangement of an improved tube with a plurality of rollers, in combination with co-acting rollers for crowding or forcing fabric on the tube.

A further object of the invention is the arrangement in a pipe loading machine of means for crowding fabric on the tube and mechanism for turning on and off the power automatically as the means for forcing the fabric over the tube is brought into contact with the tube and removed.

A still further object of the invention is the arrangement in a pipe loading machine, of friction heads or rollers formed with a plurality of engaging straps, and means for maintaining the same taut.

With these and other objects in view the invention comprises certain novel constructions, combinations and arrangement of parts as will be hereinafter more fully described and claimed.

In the accompanying drawings: Figure 1 is a perspective view of an embodiment of the invention, looking from the front. Fig. 2 is a perspective view of the machine shown in Fig. 1, but looking at the same from one side, and showing the friction heads or rollers against the fabric carrying tube. Fig. 3 is a fragmentary sectional view through Fig. 2, approximately on line 3—3 thereof. Fig. 4 is an enlarged detail fragmentary view of a belt shifting mechanism, embodying certain features of the invention. Fig. 5 is a side elevation of a friction head or roller, together with its driving rod. Fig. 6 is a section through Fig. 5, approximately on

line 6—6 thereof. Fig. 7 is a section through Figs. 5 and 6 on lines 7—7. Fig. 8 is a side elevation of the fabric carrying tube embodying certain features of the invention. Fig. 9 is a longitudinal section through Fig. 8, approximately on line 9—9. Fig. 10 is a top plan view of the tube shown in Fig. 8. Fig. 11 is a section through Fig. 10 on line 11—11.

In constructing the pipe loading machine embodying the invention, a tube of any desired dimension is provided, and supported at one end in any desired manner. This tube is arranged to have one end positioned between a pair of rollers or friction heads for engaging and coöperating with a pair of anti-friction rollers located on the tube for forcing or crowding tubular fabric upon the fabric supporting tube. The friction heads or feeding rollers are formed with ends acted upon by a spring, which normally tends to force the same apart, and are connected by strips of flexible material, as for instance a good quality of leather, which are laced through suitable openings in the ends, and form a yielding fabric gripping surface. The strips of leather or other material hold the ends from separating to any large extent under the action of the spring, and consequently the spring, by its action, keeps the leather strips taut for properly acting upon the fabric being forced on the tube.

The friction heads or rollers are slidably mounted upon driving shafts in order to be adjusted to various heights for accommodating the tubes positioned therebetween, and are arranged to be driven by any suitable power. The driving shafts for the friction heads or rollers are arranged in pivotally mounted brackets, which may be moved for forcing the friction heads against or from the tube positioned therebetween. Connected with the brackets carrying the driving shafts of the friction heads is a belt shifting mechanism which will automatically throw the power belt to an idle pulley when the friction heads have been removed from the tube, and will automatically throw the power belt upon the power pulley when the friction heads have been moved against the tube. By this means whenever a quantity of tubular fabric has been started on the tube or pipe, and the friction heads or

rollers forced against the same, the fabric will be forced or pushed upon the tube by the rotation of the friction heads which do not act directly against the tube, but co-act with the rollers on the tube, so as to force the fabric on the tube and not strain or stretch the same. After the fabric has been placed upon the tube the same may be withdrawn and dried during the withdrawing movement by forcing heated air through the tube, and from thence out through the fabric. Also if desired the heated air may be used during the loading of the pipe, though ordinarily the same is not used until the pipe is unloaded.

In order that the invention may be more clearly understood, an embodiment of the same is shown in the accompanying drawings, in which 1 indicates a base upon which are pivotally mounted supporting brackets 2 and 3, which carry friction heads or rollers 4 and 5. The friction heads or rollers 4 and 5 are bodily movable with their supporting brackets 2 and 3, which are journaled upon shafts 6 and 7 so that when supporting brackets 2 and 3 are moved toward each other the friction heads or rollers 4 and 5 will be moved against the rollers 8—8 and 9—9 connected with the tube or pipe 10.

In connection with the tube or fabric supporting pipe 10, are arranged the rollers 8—8 and 9—9, more clearly shown in Figs. 8 to 11 inclusive. Each of the rollers 8—8 and 9—9 are constructed preferably of some slightly yielding substance, as for instance, wood, and are each provided with a bearing sleeve 11 constructed of metal. Passing through each of the sleeves 11 is a bearing shaft 12 which shafts are secured in brackets 13 and 14. Brackets 13 are bolted or otherwise rigidly secured to tube or pipe 10 so that the ends thereof project a slight distance on each side, but the central or body portion thereof is positioned inside of the tube with the ends extending through openings 15 and 16. Brackets 14 are bolted or otherwise rigidly secured to pipe 10, but are positioned entirely outside of the pipe, and are arranged to have their ends come opposite the ends of brackets 13, so that the rollers 8—8 and 9—9 may be positioned in openings 15 and 16. The central part of the rollers are preferably arranged so as to extend equally inside and outside of the pipe, though this position is not absolutely necessary. The brackets 13 and 14 are so arranged as to cause the rollers 8—8 and 9—9 to be positioned almost in contact, as clearly shown in Figs. 8 to 10 inclusive. In mounting the tube 10 the same may be supported at or near the end opposite the end carrying the rollers 8—8 and 9—9. The tube 10 is also arranged so that the friction rollers 5 and 6 when forced against the tube will come between the respective rollers 8—8

and 9—9, so as to bear evenly against all of the rollers, and thus present a gripping and feeding device for the fabric that is of maximum efficiency and causing a minimum amount of strain on the fabric being crowded or loaded upon the machine.

In arranging the friction rollers 4 and 5 and operating mechanism in combination with pipe 10, pipe 10 is arranged with brackets 13 uppermost as the same are positioned on the interior of the pipe. The brackets 14 being beneath the pipe will not interfere in forcing the fabric over the pipe as the sagging of the cloth or fabric at this point prevents any interference between the fabric and the brackets.

The friction heads or rollers, as more clearly seen in Figs. 5, 6 and 7, are slidably mounted upon driving shafts 17 and 18. Each of the friction heads or rollers is of identical construction, and therefore the description of head or roller 4, with particular reference to Figs. 5, 6 and 7, will be applicable to both rollers. Roller or head 4 is slidably mounted upon shaft 6, and is designed to be rotated thereby. A key-way 19 is formed in shaft 17 for accommodating keys 20—20 rigidly secured to the ends 21—22. By this means the head or roller may be moved longitudinally of its driving shaft 17, but will be also in connection therewith so as to be always positively rotated thereby. Shaft 17 is also formed with a plurality of apertures 23 which preferably extend only a short distance into the shaft for accommodating a locking pin 24 which is mounted in a guide 25 and adapted to freely reciprocate therein. A spring 26 is also mounted in guide 25, and presses against a stop 27 and against one end of pin 24, so as to normally force the same against shaft 17, and into apertures 23 when the same have come opposite the pin. The bar 28 is passed through pin 24, which acts as a hand-hold, and is designed to be movable in slots 29—29. End 22 is formed with openings 30 and 31 through which the fingers of an operator may be passed, and pressure applied to bar 28 for raising pin 24 out of any of the apertures 23, so as to permit the adjustment of the head or roller to any desired extent. Each of the ends 21 and 22 is provided with notches 32, and corresponding lugs 33. Arranged in a radial line between the shaft 17 and the periphery of the head is an aperture 34 for each of the notches 32. Threaded through apertures 34 and laid in notches 32, is a strip of flexible material 35, preferably of some good quality of leather. Preferably the strip 35 is sufficiently long to be threaded in and out for forming all of the friction bars 36 on the entire head, so that it will only be necessary to fasten the strip or member 35 together at one point.

The ends of the strip 35 are preferably secured together beneath bars 36, so that the fastening means will not come in contact with rollers 8—8 and 9—9. In order to hold the bars 36 of the flexible strip 35 taut a spring 37 is provided which surrounds shaft 17, and continuously presses against the hubs of ends 21 and 22 for giving the same a continuous tendency to separate. By this means a friction head is provided that has not only friction bars which are yielding, but also ends that will yield in addition to the bars.

The friction heads 4 and 5 may be freely adjusted on the driving shafts 7 and 8, so as to permit pipe 10 to be arranged at any height, and also to accommodate any sagging in the pipe, either before or after the fabric has been loaded thereon. The driving shafts of the friction heads are pivotally mounted at 38 and 39 in brackets 2 and 3, and extend down from thence, and are rigidly secured to pulleys 40 and 41. Preferably the ends of shafts 17 and 18 extend through pulleys 40 and 41, and rest in sockets in supporting brackets 42 and 43, whereby not only shafts 17 and 18 are correctly held in position, but also their driving pulleys 40 and 41. Passed around pulleys 40 and 41 are blades 44 and 45 which also pass over pulleys 46 and 47 rigidly secured to shaft 48, which is journaled in brackets 49 and 50 at any desired height.

Rigidly secured to shaft 48 is a driving or power pulley 51 which is adapted to be moved by a power belt 52 when the belt has been shifted upon pulley 51. A spider 53 is provided on shaft 48 and is designed to have automatically shifted thereon belt 52 when the friction heads or rollers 4 and 5 have been moved to the position shown in Fig. 1.

In order to shift belt 52 from pulley 51 to pulley 53, and then back again, a shifting fork or guide 54 is provided which is bolted or otherwise secured to a bracket 55 which is slidably mounted upon guide 56. Bracket 55 is rigidly secured to reciprocating bolt 57, which is guided by a guiding lug 58 through which the same passes. A spring 59 surrounds shaft 57 and is positioned between lugs 58 and bracket 55, and continuously presses against bracket 55 and lugs 58 for giving bracket 55 a tendency at all times to move over beneath pulley 51, and thereby to shift belt 52 from pulley 53 to pulley 51. Reciprocating shaft 57 has connected with one end thereof a cable 59 which passes over a pulley 60 and from thence over a pulley 61. From pulley 61 the cable 59 passes over pulley 62, through the guiding U-bolt 63, and from thence over pulley 64, from which the cable extends back to the U-bolt 63, and is clamped thereto between bars 65—65. Pulleys 62 and 64 are pivotally mounted

upon pins 66 and 67 secured in brackets 2 and 3, so that when the heads 4 and 5 and brackets 2 and 3 are moved apart pulleys 62 and 64 will be moved apart, and consequently cable 59 pulled, which will also pull shaft 57 to the position shown in Fig. 3. When the heads 4 and 5 are moved together brackets 2 and 3 will also be moved toward each other, which will cause cable 59 to be slackened, and permit spring 59' to force the belt guide 54 together with belt 52, from pulley 53 to pulley 51.

In order to properly move brackets 2 and 3 and the various mechanism carried thereby a shaft 68 is provided having threaded ends 69 and 70, the threads at the ends being arranged as right and left threads, so that when shaft 68 is rotated by hand wheel 71 the brackets 2 and 3 will be moved toward each other, or from each other as the threads are desired to operate in pivotally mounted nuts 72 and 73, which are journaled in supporting members 74 and 75. Suitable slots 76 and 77 are provided in brackets 2 and 3 for permitting the reciprocation of shaft 68, and also the swinging or pivotal movement of brackets 2 and 3. Shaft 68 is secured thereto by any desired means, as for instance set screws or sleeves 78 and 79 which may be clamped upon shaft 68 at any desired point for preventing the heads 4 and 5 from being forced too tightly against rollers 8—8 and 9—9. Shaft 68 also carries a guiding wheel 80 which operates in bifurcated end 81 of bracket 82, which bracket 82 is secured by any desired means, as for instance bolts 83, to the base 1. By the arrangement of slots 84 in base 1 bracket 82 may be adjusted as desired. Guiding wheel or disk 80 is rigidly secured to shaft 68 by any desired means, as for instance by a set screw, and is designed to cause heads 4 and 5 to approach the rollers 8—8 and 9—9 at the same time, and to prevent the movement of one head and not the other.

By this construction and arrangement of various mechanism as set forth, tubular fabric may be loaded upon the pipe quickly and without straining or tearing the fabric. Also it will be observed that by the operation of hand wheel 70 the machine will automatically stop or start according to where the friction heads or rollers 4 and 5 have been moved. It will also be observed that the friction heads during operation are self-tightening for accommodating various strains. Another important point is the arrangement of the hand wheel and surrounding parts in its particular association with the friction heads and connecting parts, whereby positive means for closing the friction heads or rollers against the tube at any required pressure is provided.

What I claim is:

1. In a pipe loading machine, the combi- 130

nation with a pipe, of means for forcing fabric over said pipe, means for operating said first mentioned means, and power controlling means for automatically throwing
5 into operation said second mentioned means when said first mentioned means are brought into contact with said pipe.

2. In a pipe loading machine, the combination with a pipe, of a pair of gripping
10 members in contact with said pipe, means for operating said gripping members, and means for automatically throwing into operation said last mentioned means when said gripping members have been forced in contact with said pipe.

3. In a pipe loading machine, the combination with a pipe, of gripping members for forcing fabric over said pipe, means for forcing said gripping members into contact
20 with said pipe, means for rotating said gripping members, and means connected with said gripping members for automatically throwing into operation said last mentioned means when the gripping members are
25 forced into contact with said pipe.

4. In a pipe loading machine, the combination with a pipe, of a pair of gripping members for forcing fabric over said pipe, an independent pivotally mounted rotating
30 shaft for each of said gripping members for independently rotating the same, movable brackets for moving each of said shafts for causing said gripping members to move toward and from said pipe, a pivotally
35 mounted shaft receiving member positioned in each of said brackets, a shaft threaded at each end engaging said shaft receiving member, and means for rotating said threaded shafts, whereby said brackets are moved
40 toward and from each other.

5. In a pipe loading machine, the combination with a pipe, of a pair of gripping members for forcing fabric over said pipe, a rotatable shaft for each of said gripping
45 members, pivotally mounted brackets carrying said shafts, a transverse shaft threaded at each end, a threaded nut pivotally mounted in each of said brackets, said nuts being designed to engage the threaded end of said
50 shaft, and means for rotating said threaded shaft for causing said brackets to move toward and from each other.

6. In a pipe loading machine, the combination with a pipe, of a pair of gripping
55 members for forcing fabric over said pipe, a rotating shaft for each of said gripping members, a movable bracket for each of said shafts, a transversely disposed shaft oppositely threaded at each end, a threaded pivotally arranged shaft receiving member
60 mounted in each of said brackets for receiving the end of said transverse shaft, means for rotating said threaded shaft for causing said brackets to be moved toward
65 and from each other, and means for prevent-

ing said shaft from moving longitudinally, whereby said gripping members will be caused to engage said pipe at the same time.

7. In a pipe loading machine, the combination with a pipe, of a pair of gripping
70 and feeding rollers, a rotating shaft for each of said gripping and feeding rollers, a pivotally mounted bracket carrying each of said shafts, a nut arranged in each bracket formed with journal members pivoted in
75 said brackets, a single transversely positioned rotatable shaft engaging said nuts for moving said brackets for causing the gripping members to engage and disengage said pipe, means for rotating said last mentioned shaft, and means for rotating the
80 shafts carrying the gripping and feeding rollers.

8. In a pipe loading machine, a pipe, a pair of friction rollers for forcing fabric
85 over said pipe, a rotating shaft for each of said friction rollers, pivotally mounted supporting means for each of said shafts, whereby said friction rollers may be moved toward and from said pipe, means for rotating said
90 shafts, and means connected with said pivotally mounted supporting means and with the means for rotating said shafts, whereby when said friction rollers are moved from said pipe the means for rotating said shafts
95 will be thrown out of operation, and when said friction rollers are moved over into engagement with said pipe said means for rotating said shaft will be thrown into operation.

9. In a pipe loading machine, a pipe, a pair of friction rollers for forcing fabric over
100 said pipe, a shaft for each of said rollers, a pivotally mounted support for each shaft, means for rotating each of said shafts, a power belt for conveying power to the means for rotating said shafts, a belt shifting device for said belt, and means connected
105 therewith and with said pivotally mounted shaft supports, whereby when said shaft supports are moved apart said belt will be moved out of communication with the means for rotating said shafts, and when said shaft supports are moved toward each other said belt shifting mechanism will be moved for
110 causing said belt to convey power to the means for rotating said shafts.

10. In a pipe loading machine, a pipe formed with an aperture in each side at
120 one end, a pair of brackets secured to said pipe at each of said apertures, one of said brackets being positioned inside of said pipe, and the other of said brackets being positioned on the outside of said pipe, rollers journaled in the ends of said brackets, and
125 friction rollers co-acting with the rollers mounted in said brackets for forcing fabric over said pipe.

11. In a pipe loading machine, a pipe, friction rollers co-acting with said pipe and
130

adapted to force fabric thereover, said friction rollers comprising end members, flexible means connecting said end members, and means for giving said end members a continuous tendency to move apart for keeping said flexible means taut, and means for rotating said friction rollers.

12. In a pipe loading machine, a pipe, a pair of friction rollers designed to force fabric over said pipe, each of said friction rollers comprising end members, a spring for normally forcing said end members apart, and flexible means connecting said end members and arranged to present parallel straps as the outer surface of the friction rollers, and means for rotating said friction rollers.

13. In a pipe loading machine, a pipe, a pair of rollers acting against said pipe for forcing fabric thereover, each of said rollers comprising end members, a flexible strap threaded through said end members and woven back and forth so as to form the outer surface thereof which is designed to engage said pipe, and means for giving said end members a continuous tendency to move apart for keeping said strap taut.

14. In a pipe loading machine, a pipe, anti-friction rollers arranged to engage the

pipe and force fabric thereover, each of said rollers comprising end members, flexible means connecting said end members, a spring for giving said end members a tendency to move apart in order to keep taut said flexible members, and a locking means for locking said rollers in position, and means for moving said rollers.

15. In a pipe loading machine, a pipe, a plurality of anti-friction rollers arranged to engage said pipe and force fabric thereover, each of said rollers comprising end members, a flexible periphery, means for causing said end members to have a tendency to separate for causing the means forming the periphery to remain in a taut condition, a shaft for each of said friction rollers formed with a plurality of counter-sunk portions, a reciprocating pin connected with each of said rollers for engaging into said counter-sunk portions for locking said rollers at any desired point on said shafts, and means for rotating said shafts.

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

CORNELIUS JORDAN.

Witnesses:

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