

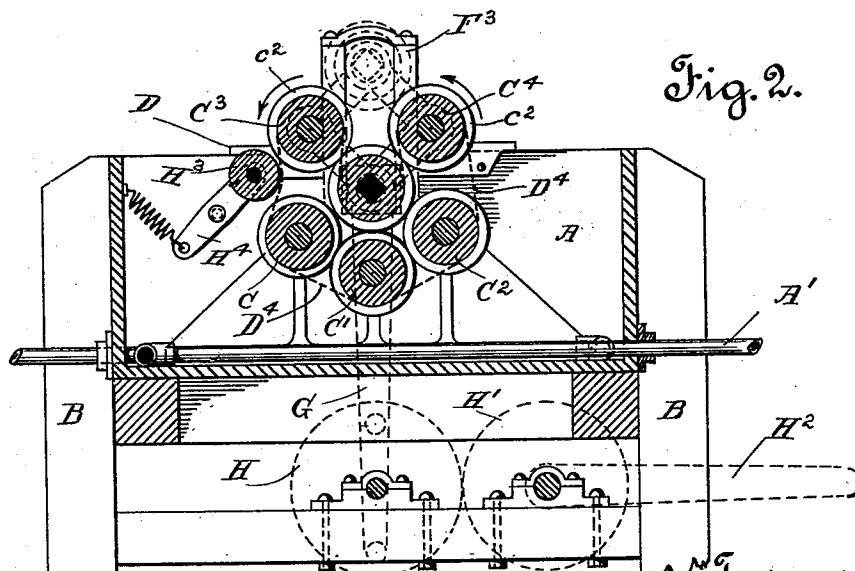
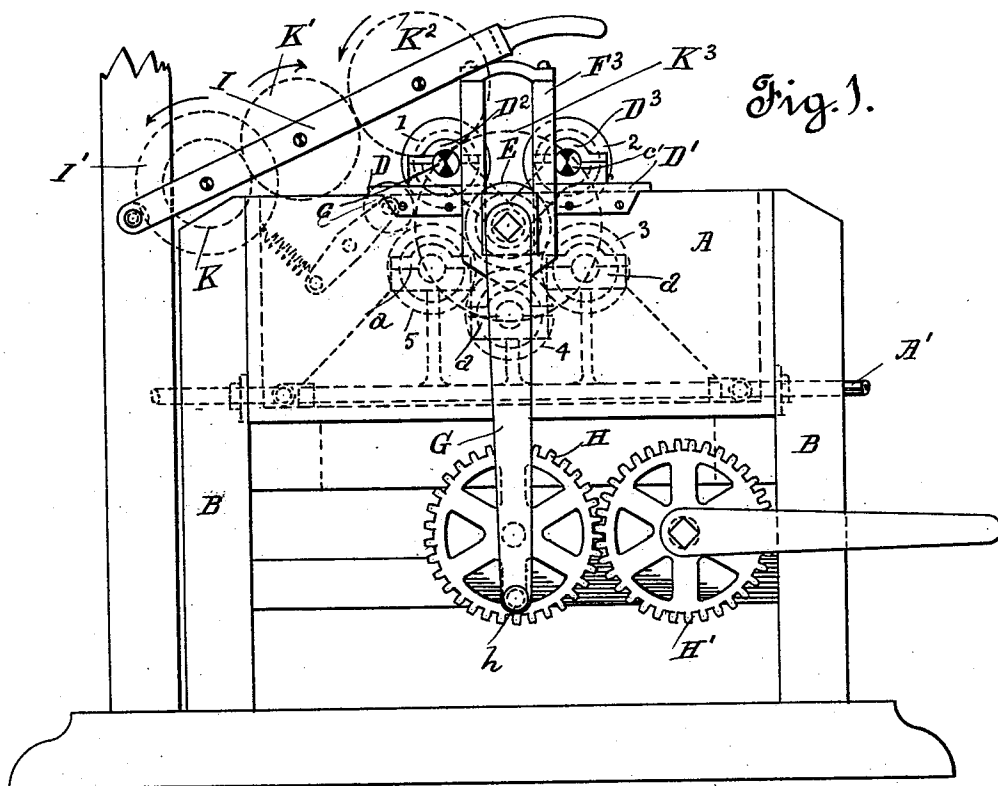
(No Model.)

3 Sheets—Sheet 1.

W. A. TIPSON.
PIPE MAKING MACHINE.

No. 518,558.

Patented Apr. 17, 1894.



Witnesses.
W. H. Cook

Inventor.
William A. Tipson
by *W. A. Cook*
Att'y

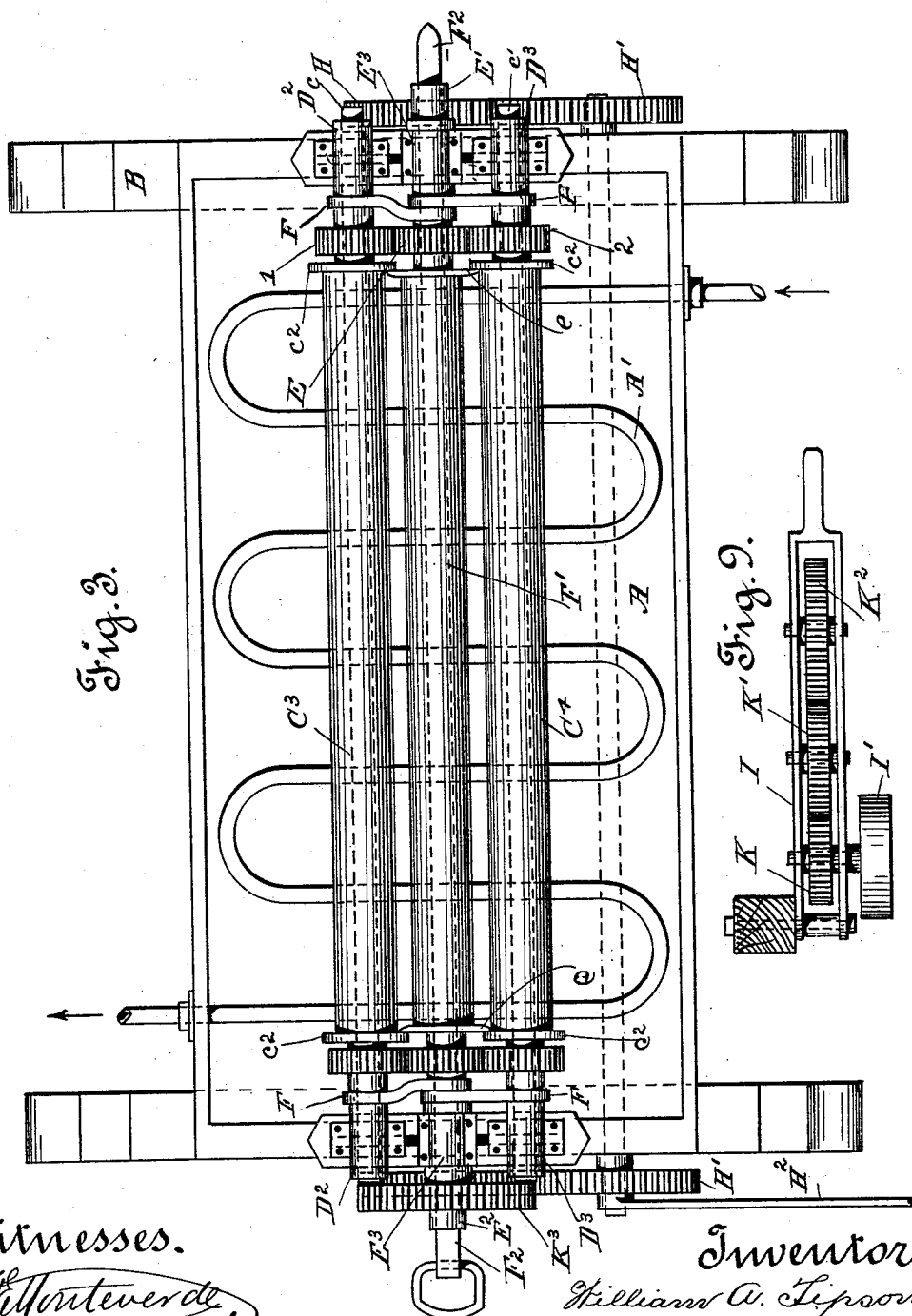
(No Model.)

3 Sheets—Sheet 2.

W. A. TIPSON.
PIPE MAKING MACHINE.

No. 518,558.

Patented Apr. 17, 1894.



Witnesses.

H. Monteverde,
W. H. Cobb.

Inventor.

William A. Tipson

By *W. A. Acker*
Atty

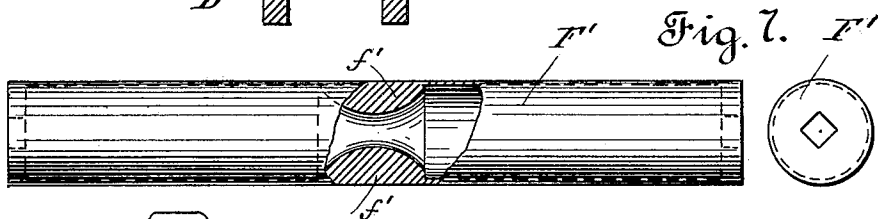
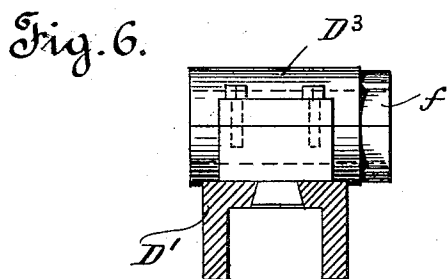
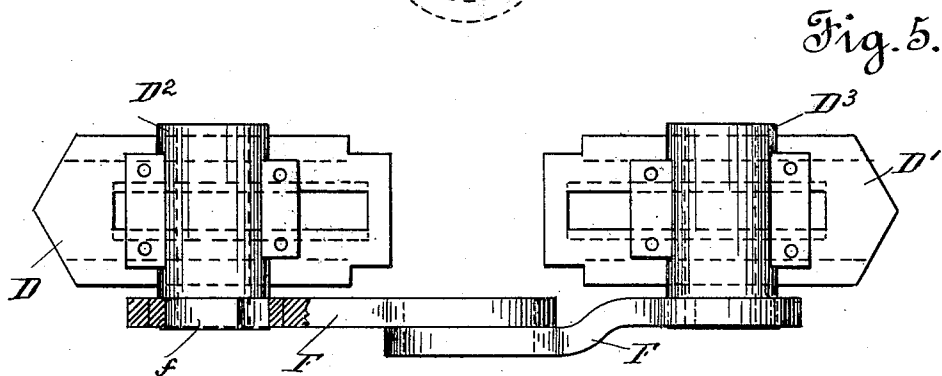
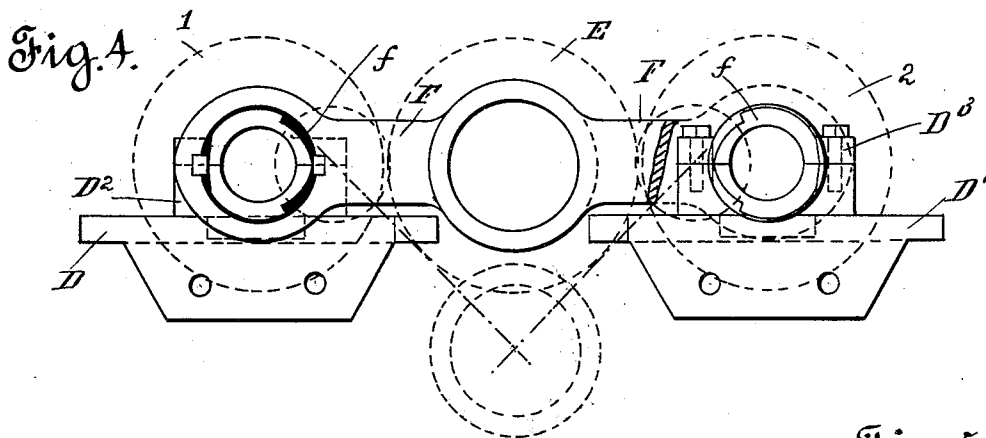
(No Model.)

3 Sheets—Sheet 3.

W. A. TIPSON.
PIPE MAKING MACHINE.

No. 518,558.

Patented Apr. 17, 1894.



Witnesses.
W. H. Cobb.
J. A. Antevorde.

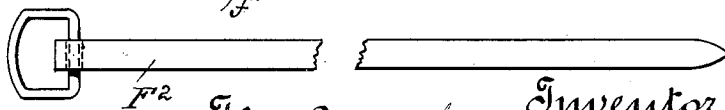


Fig. 8.

Inventor.
William A. Tipson
by W. A. Acker
Att'y

UNITED STATES PATENT OFFICE.

WILLIAM A. TIPSON, OF SAN FRANCISCO, CALIFORNIA, ASSIGNOR TO THE
PACIFIC ASPHALTUM PIPE COMPANY, OF CALIFORNIA.

PIPE-MAKING MACHINE.

SPECIFICATION forming part of Letters Patent No. 518,558, dated April 17, 1894.

Application filed June 15, 1893. Serial No. 477,742. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM A. TIPSON, a citizen of the United States, residing at San Francisco, in the county of San Francisco and State of California, have invented certain new and useful Improvements in Pipe-Making Machines; and I do hereby declare the following to be a full, clear, and exact description of said invention, such as will enable others skilled in the art to which it most nearly appertains to make, use, and practice the same.

This invention relates to an improved pipe making machine, and more especially is it designed for the manufacture of asphaltum or bituminous pipe, which consists in the arrangement of parts and details of construction, as will be hereinafter more fully set forth in the drawings, described and pointed out in the specification.

The object of the present invention is to provide a machine which shall receive a sheet or layer of the pipe material therein, cause the same to be wound or rolled upon a mandrel and while being rolled thereon cause the overlapping ends of the sheet to be gradually interworked into the body of the sheet, so that when the section of pipe is formed an entirely smooth surface is provided.

The essential features of the machine consists of the open heating tank, a series of supporting and pressure rolls located therein, of the pipe mandrel secured between the rolls, of mechanism for raising and lowering the mandrel, and of an endless belt which passes over the face of the rolls.

In order to more fully comprehend my invention, reference must be had to the accompanying sheets of drawings, which form a part of this specification, wherein—

Figure 1, is an end elevation of the machine. Fig. 2, is a vertical cross sectional elevation of Fig. 1; Fig. 3, top plan showing the entire machine; Fig. 4, a detail side elevation of the connecting links which throw the pressure rolls in or out as the mandrel is lowered or raised; Fig. 5, a top plan of Fig. 4, with mandrel and pressure rolls removed, showing more fully the sliding boxes which cause the pressure rolls to move in or out with the vertical travel of the mandrel; Fig. 6, is an end elevation of Fig. 5, showing the

frame in section; Fig. 7, detail of the mandrel, partly broken away in order to show interior guides; Fig. 8, broken detail of locking rod for the mandrel; and Fig. 9, is a top plan of the mechanism for throwing power on or off the pipe machine.

The letter A, is used to indicate the heating tank, which is supported by the outer frame B. Into this tank extends the heating pipe A', which is coiled therein, as shown. This tank is designed to be filled with water, which is kept in a heated condition by means of the heating pipe A'. Within the heating tank, I secure, within suitable bearings a, the supporting rolls C, C', C², which extend the entire length of the tank, but the rolling surface only equals that of the pipe mandrel. To the top of the tank ends, I fasten the grooved or slotted plates D, D', within the slotted portion of which the sliding bearing boxes D², D³, work, through which boxes extend the reduced ends c, c', of pressure rolls C³, C⁴. The ends of each supporting and pressure roll have cast or otherwise secured thereon, the collars or flanges c², which act as cutters for forming a clean end to the section of pipe being rolled upon the mandrel, as hereinafter described. Over the rolls C, C', C², C³ and C⁴, is secured the endless belt D⁴. Upon the reduced end portion of the supporting and pressure rolls, is located, beyond the collar or flanges c², the gears 1, 2, 3, 4 and 5, which intermesh with large gear E, fastened to hollow axles E', E². These axles work within bearing boxes E³. The inner end of the axles is cast with a cutting flange or collar e, which is located in advance of the collar or flanges c², of the supporting and pressure rolls.

Connection is formed between hollow axles E', E², and pressure rolls C³, C⁴, by means of the straps or links F, one end of which straps I loosely secure upon the inner portion of the hollow shafts and the other over eccentric collars f, fastened rigidly to the ends of pressure rolls C³, C⁴, outside of the sliding bearing box. Between the end cutting flanges or collars e, of hollow axles E', E², fits the hollow mandrel F', which is secured therebetween by means of locking bar F², which passes through the hollow shafts and mandrel, as

shown in Fig. 3. By preference this bar is cast rectangular in shape and opening through hollow shafts and ends of mandrel correspond with the shape thereof. In order that this rod may be kept in true line with the openings of the hollow axles, I secure to the inner walls of the hollow mandrel the guide blocks f' , see Fig. 7.

The bearing boxes E^3 , have vertical movement within guide standard F^3 , attached to frame of the machine or heating tank. As the boxes are raised or lowered, the mandrel is likewise moved, and as the mandrel is vertically carried the pressure rolls C^3 , C^4 , are moved in or out through the medium of the straps or links eccentrically connected thereto, and fastened to the hollow axles. This movement of the pressure rolls C^3 , C^4 , is necessary in order that the mandrel may clear the same as lowered between the rolls to form the pipe or when raised with the formed pipe thereon to be removed from between the cutting collars of the hollow axles. The bearing boxes are raised or lowered by means of the crank rod G , the upper end of which is fastened to the boxes, while the lower end is connected to cog-wheel H , by wrist-pin h . As this cog-wheel is rotated, the crank rod is moved up or down as desired. This cog-wheel engages with cog-wheel H' , located to one side thereof, and motion of said wheel is imparted to cog-wheel H . By preference, I operate the cog-wheel through the medium of lever H^2 . As the mandrel passes below the pressure rolls, the link or strap connection serves to draw the latter inward, so that as the plate of asphaltum is wound upon the mandrel, said rollers will bear tightly thereagainst. The endless belt is maintained against the rolls by means of the idler H^3 , supported within the tank by spring actuated frame H^4 . In working this class of machinery I have ascertained that the driving power must be so connected that the operator can throw the same off and stop the working of the machine instantly, consequently instead of using the ordinary pulley wheel for driving the gear mechanism, which will not permit an instant stop, I prefer to employ a power device entirely independent of the machine.

At any suitable point convenient to the operator, is suspended the swinging bracket I , between the arms of which the varying size gears K , K' , K^2 , are journaled, each of which intermesh with the other. Motion is imparted to gear K , and successively to the others, by the rotation of pulley wheel I' . When it is desired to set the pipe machine in motion, the swinging bracket is lowered until gear K^2 , intermeshes with large gear wheel K^3 , secured to the outer end of shaft E^2 . This imparts motion to said shaft and gear E , which intermeshing with gears 1, 2, 3, 4 and 5, causes rotation of the rolls and endless belt.

In case the rolls do not bear with sufficient pressure upon the mandrel to firmly roll the

pipe material, and greater pressure is desired, it is only necessary that lever H^2 , be forced downward, which through the medium of cog-wheels and crank rod before described, will cause the mandrel to move downward toward the lower supporting rolls and draw the pressure rolls inward through the medium of the connecting straps or links. In this manner I can increase or decrease the pressure of the rolls upon the mandrel.

As the mandrel is raised from within the heating tank, by the before described mechanism, the pressure rolls are forced outward, through the medium of the connecting straps or links, in order that the mandrel may clear the same. When lifted from within the tank, the mandrel, carrying the formed pipe, is removed from between the collars or flanges e , by withdrawing the locking bar. As the pipe is being formed the surplus material is cut off by the cutting flanges e , and e^2 , and falls within the tank.

In order to stop the machine, the swinging bracket is raised, which lifts gear K^2 , from contact with gear K^3 , and instantly stops the working of the machine.

Having thus described my invention, what I claim as new, and desire to secure protection in by Letters Patent of the United States, is—

1. In a pipe making machine, the combination with the heating tank, of the supporting rolls located therein, the pressure rolls, the endless belt secured over said rolls, the hollow mandrel upon which the pipe is formed, the rod for locking the mandrel in proper position, and suitable mechanism for imparting motion to the mandrel and pressure rolls.

2. In a pipe making machine, the combination with the heating tank, of a series of supporting rolls secured therein, the adjustable pressure rolls working within sliding bearing boxes, the endless belt secured over the rolls, the vertically movable hollow mandrel axles, the links or straps forming connection between the pressure rolls and hollow axles, so as to impart an inward or outward movement to said rolls with the vertical adjustment of the hollow axles, the hollow mandrel, the bar for locking the mandrel between the hollow axles, a device for raising or lowering the mandrel, and suitable mechanism for rotating the rolls and mandrel.

3. In a pipe making machine, the combination with the heating chest, a series of supporting rolls secured therein, the pressure rolls having a longitudinal movement, the vertically adjustable mandrel axles, connecting mechanism between the vertically adjustable mandrel axles and longitudinally movable pressure rolls, in order that the latter will be forced in or out with the vertical movement of the former, the endless belt secured over the rolls, the hollow mandrel fitting between the mandrel axles, and suitable mechanism for imparting motion to the mandrel and rolls.

4. In a pipe making machine, the combina-

tion with the heating tank, supporting rolls secured therein, the pressure rolls, endless belt secured thereover, the mandrel axles, gear mechanism between the pressure rolls, supporting rolls and mandrel axles, the swinging bracket, power transmitting gears working therein, and the driving gear, for imparting motion to the machine, which engages with one of the power transmitting gears when the bracket is lowered.

5. In a pipe making machine, the combination with the heating tank, the supporting rolls located therein, the longitudinally movable rolls, endless belt secured over the rolls, vertically adjustable mandrel axles connected to the pressure rolls, the gears secured upon the ends of supporting and pressure rolls, gear wheels secured to the mandrel axles which intermesh with gears of the supporting and pressure rolls, mechanism for transmitting motion to the mandrel axles and rolls, the mandrel secured between the axles, a crank rod for imparting vertical movement to the mandrel axles, and mechanism for operating the crank rod.

6. In a pipe making machine, the combination with the heating tank, the supporting rolls, the longitudinally movable pressure rolls, endless belt secured thereover, vertically movable mandrel axles, a mandrel secured therebetween, the cutting collars or

flanges projecting from the pressure and supporting rolls and mandrel axles, connecting mechanism between the pressure rolls and mandrel axles, a device for vertically adjusting the mandrel axles, which causes the pressure rolls to move in or out, and suitable mechanism for imparting motion to the mandrel shafts and rolls.

7. In a pipe making machine, the combination with the heating tank, the supporting rolls, the pressure rolls, endless belt secured thereover, the mandrel axles carrying a forming mandrel therebetween, flanges projecting from the rolls and axles for cutting the surplus material from the ends of the mandrel in order to give clean ends to the pipe, when formed, and of suitable mechanism for imparting motion to the mandrel axles and rolls.

8. In a pipe-making machine, the combination with the hollow mandrel axles, of the hollow mandrel fitting therebetween and provided with internal guides *f'*, and a locking bar inserted through the axles and mandrel and between said guides.

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

WILLIAM A. TIPSON.

Witnesses:

N. A. ACKER,
LEE D. CRAIG.