

(No Model.)

A. E. BROWN.

DEVICE FOR SUPPORTING FLEXIBLE PIPES.

No. 467,746.

Patented Jan. 26, 1892.

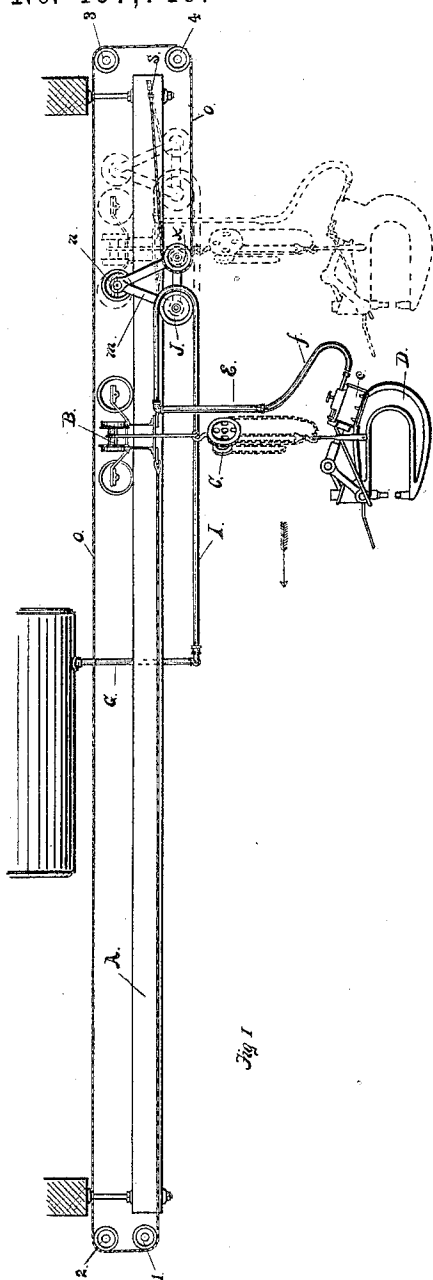


Fig. 1

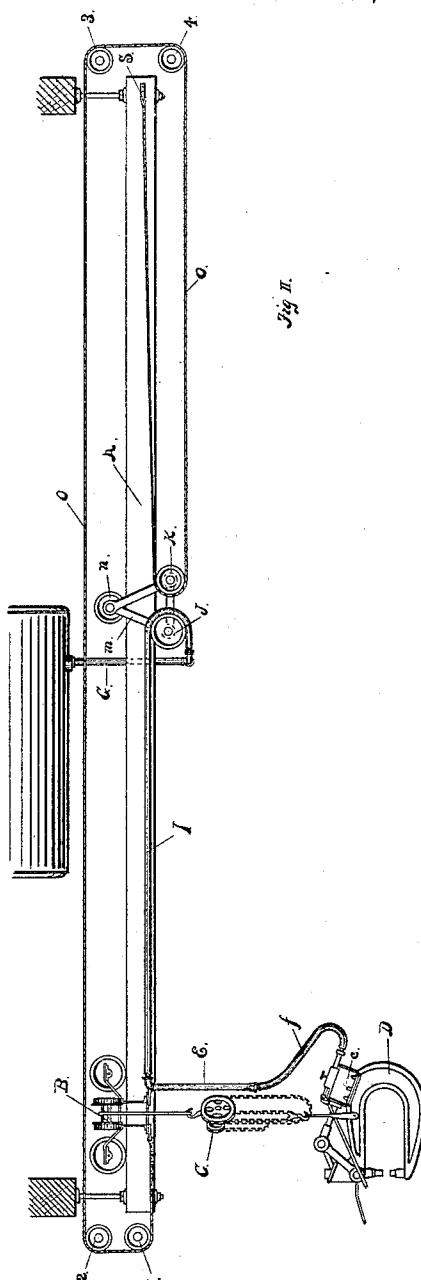


Fig. 2

WITNESSES,

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DEVICE FOR SUPPORTING FLEXIBLE PIPES.

SPECIFICATION forming part of Letters Patent No. 467,746, dated January 26, 1892.

Application filed June 13, 1891. Serial No. 396,071. (No model.)

To all whom it may concern:

Be it known that I, ALEXANDER E. BROWN, of Cleveland, in the county of Cuyahoga and State of Ohio, have invented a certain new and useful Device for Supporting and Controlling the Movements of Flexible Steam, Compressed Air, and other Supply Pipes for Driving Movable Machinery; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming a part of this application.

In the use of the various kinds of portable machines adapted either to be suspended so as to be both moved about laterally and raised and lowered or to be trucked back and forth over the floor of the shop in which they are used, and driven by compressed air or other power medium supplied to the machine by means of a flexible pipe connecting the machine with the source of supply of the motive power, a great inconvenience has always been encountered in handling the flexible supply-pipe, (which sometimes has to be of considerable length to permit all the necessary movements or travel of the movable machine to which one of its ends is connected,) the latter being usually dragged about over the floor or ground, or whenever partially held up out of the way supported only here and there, and often so as to interfere with some of the movements of the machine or impede the rapid working movements of the men engaged in managing the machine.

My invention has for its main object to provide for use a means for holding up or supporting the flexible supply pipe or tube entirely out of the way, and at the same time permitting its distension, doubling up on itself, and in fact all other movements necessary to the manipulation of the machine to which it supplies power without ever offering any material impediment to the movements of the machine itself; and to this main end and object my invention may be said to consist, essentially, in a novel combination or arrangement of the flexible supply-pipe with a traveling and supporting wheel or sheave and a cable mounted on a series of overhead rope wheels or idlers, all as will be hereinafter explained, and as will be more particu-

larly pointed out and clearly defined in the claim of this specification.

To enable those skilled in the art to which my invention relates to fully understand and practice the same, either carried out in the exact form of apparatus shown or under some modification of the mechanical contrivance herein shown and described, I will now proceed to more fully describe my improvement, referring by letters to the accompanying drawings, which make part of this specification, and in which I have shown the invention carried out in precisely the manner in which I have so far practiced it.

In the drawings, Figure I is a side view or elevation of a suspended riveting-machine, the compressed-air-supply pipe of which is supported overhead by a mechanism embracing my invention. Fig. II is a similar view, but showing the suspended riveting-machine moved to another point or locality and illustrating the changed condition or positions of the flexible supply-tube and its suspending or supporting devices.

At Fig. I, I have illustrated by dotted lines still another position of some of the movable suspended parts, and in all the figures the same part will be found designated by the same letter of reference.

A is the overhead or elevated tramway, on which is mounted the carriage or trolley B, from which is suspended by means of a lifting and lowering block and tackle C the machine to be handled, which in this case is represented as being a well-known form of riveting-machine D.

Depending from a given point of the trolley or carriage B is a stiff or inflexible pipe E, which at its upper end connects with one end of the usual flexible tube I for supplying the compressed air or other power medium for driving the riveting-machine D, and which at its lower end is joined to one end of the flexible connecting-tube f, that forms the communication between said pipe E and the cylinder c of the riveting-machine.

I is the usual long flexible tube through which the compressed air is supplied from a fixed source of supply to the upper end of the pipe E, and this tube I has its stationary or fixed end coupled, as shown, in the usual man-

ner with the stationary pipe G, that is supposed to run to and be connected with the air-drum or source of supply of the compressed air or other medium used as the motive power. Of course for the combined rigid and flexible tubes E and *f* might be substituted one flexible tube; but where the shorter flexible tube *f* will afford all the requisite leeway for the up-and-down movements of the machine D the arrangements of pipes shown is preferable. As shown, (see Fig. I,) the flexible tube I is formed into a sort of horizontal loop and at the root of the loop makes about a half-turn around a rope-wheel or idler-sheave J, and this idler is preferably mounted in a skeleton carriage or trolley *m*, the track-wheel *n* of which runs on the tramway A and which is provided with another idler K, over or partially around the periphery of which lies the cable *o*, one end of which is fastened to a fixed point *s*, as shown, and the other end of which is attached to the trolley B. This cable *o* runs, it will be seen, over a series of idlers or rope-wheels loosely mounted on fixed axes in the following manner—that is to say: Starting from the fixed point of attachment *s* of one of its ends it passes to the left (see Fig. I) to and half around the wheel *k* of trolley *m*, then backward or to the right to and partially around the idler 4, thence upward to and over idler 3, thence horizontally along to the left (clear to the other side of the tramway) to and over the idler 2, thence down to and partially round the idler 1, and thence to the trolley B, to which, as before mentioned, its other end is fastened.

By the arrangement of the cable *o* and the other shown parts, as set forth, I am enabled to keep the long flexible tube I always suspended (in its looped or doubled-over condition) in a position about parallel with the tramway or overhead beam A, while at the same time I can unfold (so to speak) or lengthen out the tube I, so as to straighten it out to an extent nearly equal to its entire length, and have the thus straightened-out tube extend or run off horizontally either to the right or to the left of the fixed point at which one of its ends is coupled to the stationary supply-pipe G. This desirable mode of action and the general operation of the contrivance will be easily understood (after what has already been explained) from the following description, read in connection with the drawings. Supposing the riveting-machine D to be suspended at the point or locality illustrated at Fig. I, and that its use be desired at the place at which it is shown in Fig. II, to shift the machine from one to the other of these two positions, the attendant simply pulls the machine along, as usual, in the direction indicated by the arrow at Fig. I, which causes the trolley B to travel in the usual manner in the same direction, (to keep over the suspended machine D,) and as the trolley moves along, carrying with it the movable end of tube I, the latter rotates, by peripheral con-

tact with it, the wheel J of the carriage *m*, and at the same time draws the said carriage along on the tram-way A. This action or movement of the carriage *m* causes the idler *k*, mounted thereon, to rotate and at the same time to distend the loop of the cable *o*, that passes around it, into the condition finally seen at Fig. II. It will be seen that in the position seen at Fig. II, nearly the entire length of the flexible tube I—that is, all but the small portion required to make the half-turn around the wheel J—lies in about a horizontal line, running off to the left from the fixed point of attachment of one end of said tube to the stationary pipe G, and that therefore in one direction the greatest practicable amount of distention of the tube is utilized to give the greatest possible scope of movement in this direction to the machine D; and it will be understood that if the machine be moved from the position shown in Fig. I in the opposite direction, as indicated by the dotted lines at Fig. I, showing the carriage *m* shifted and the corresponding change in the loops of the tube I and cable *o*, the tube I may be straightened out to almost its full length, and that thus supposing the extreme length of the tube I to be twenty feet the scope of movement in a horizontal line of the machine D will be nearly forty feet. It will be seen that inasmuch as one leg of the cable-loop that embraces the idler *k* has its end secured to the fixed point *s*, while the other leg or strand passes off movably over the periphery of idler 4, an extent of cable will be paid out over said idler 4, when the carriage *m* moves to the position shown in dotted lines, equal to twice the distance the said carriage will have moved. It will also be seen that during this movement of carriage *m* the sheave or wheel J (the axis of which will have moved the same distance as the carriage *m*) will have taken up, so to speak, an amount of the upper strand or leg of the loop of the tube I just equal to the length of cable paid out over idler 4, because the lower leg or strand of the tube's loop having its end immovable all the tube taken up by the movement of carriage *m* must come out of the upper strand of the loop, so that the trolley B will move a distance equal to the length of cable paid out over idler 4, and just twice as far as the carriage *m*. Thus it will be seen, by the arrangement of parts shown, the cable *o* and the looped tube I are kept always in the properly taut or distended condition, the friction of the moving parts of the whole organism operating to keep the flexible tube I in proper condition under all changes in the position of the machine I, while at the same time (no counter-weight or other resistant having to be overcome) there is practically no material impediment offered to the free and easy movement of the machine D by the attendant, who has to shift its positions as occasion may require. Of course the carriage *m* might be dispensed with and the axes of the wheels J and *k* be merely linked or coupled together;

but I deem it preferable, especially where there may be a considerable weight of flexible tubing to suspend, to use some such means as the skeleton carriage *m'* to support these wheels (and the adjacent cable and flexible tube loop ends) directly from the tramway A.

Many modifications in the details of construction as well as in the sizes, proportions, and precise relative arrangement of the parts of the whole contrivance may of course be made without changing its mode of operation, and hence without departing from the pith or essence of my invention.

Having now so fully described my novel device or contrivance that those skilled in the art can make and use it, either in the form shown or under some modified form, what I claim as new, and desire to secure by Letters Patent, is—

The combination, with a movable machine, 20
a flexible tube for supplying compressed air or other motive medium thereto and having one of its ends immovable and the other attached to said movable machine, and a cable 25
connected with said tube, of a carrier adapted to engage the tube and the cable and operating to form and hold the said supply-tube in a horizontal loop overhead, and to distend said horizontal loop, thus permitting the requisite horizontal movement of the movable 30
machine, all substantially in the manner and for the purposes hereinbefore set forth.

In witness whereof I have hereunto set my hand this 9th day of June, 1891.

ALEX. E. BROWN.

In presence of—

E. T. SCOVILL,
M. MILLARD.