

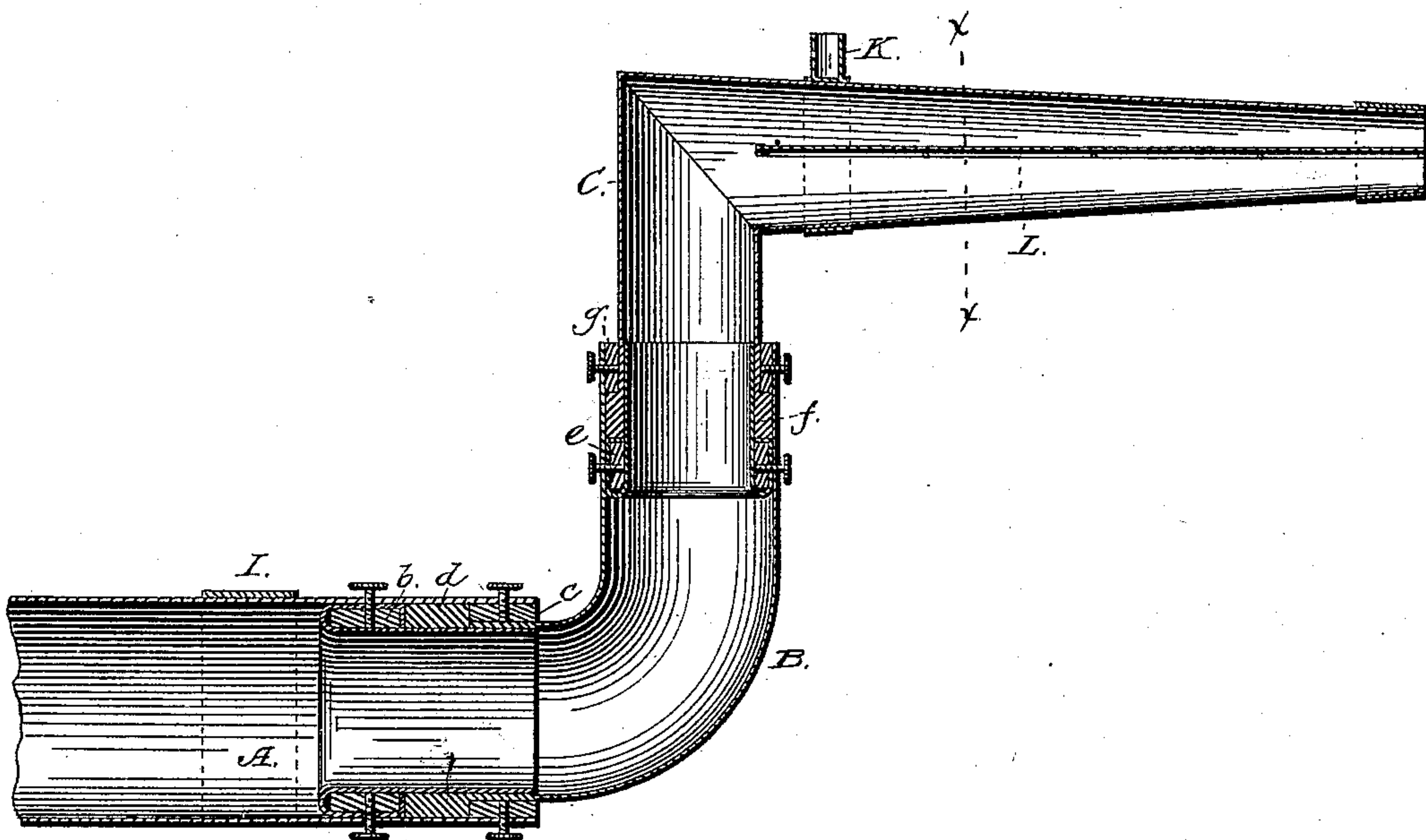
(No Model.)

J. E. RUSSELL.  
HYDRAULIC MINING MACHINE.

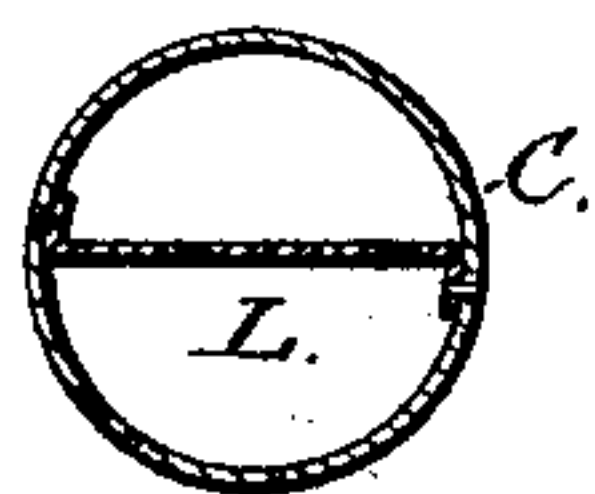
No. 273,397.

Patented Mar. 6, 1883.

*Fig. 1.*



*Fig. 2.*



*Attest;*

*Chas W Fisher.*  
*W. A. Brunt.*

*Jay E. Russell* *Inventor*

# UNITED STATES PATENT OFFICE.

JAY E. RUSSELL, OF SAN FRANCISCO, CALIFORNIA.

## HYDRAULIC MINING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 273,397, dated March 6, 1883.

Application filed March 24, 1882. (No model.)

*To all whom it may concern:*

Be it known that I, JAY E. RUSSELL, of the city and county of San Francisco, State of California, have invented an Improvement in Hydraulic Mining Apparatus; and I do hereby declare the following description and accompanying drawings are sufficient to enable any person skilled in the art or science to which it mostly appertains to make and use my said invention without further invention or experiment.

In the drawings, Figure 1 shows a longitudinal section of my device; Fig. 2, a cross-section on line *x x*.

My invention relates to an improved construction and arrangement of that class of hydraulic pipes and nozzles which are used for directing and delivering a stream of water against a bank in hydraulic mining.

My improvement consists in such a construction of the pipe that the nozzle can have both a vertical and horizontal play through the medium of two moving water-tight joints for the purpose of directing a column of water to any desired point of the compass, and at the same time throwing an incessant stream of water from the nozzle, such construction to be substantially that hereinafter described.

A represents a section of pipe through which water is forced by its own pressure when conducted from higher points. *b*, an iron band, is inserted on the inside of the pipe, between which band and the inside of the pipe a circular leather flap is inserted. Both band and flap are held firmly to the pipe by means of set-screws passing through the side of the pipe leather and band.

B represents a pipe-elbow, as much smaller in diameter as the thickness of the band *c*, through which band the pipe B plays.

*d* is an iron band firmly riveted to the extreme end of and outside of elbow B.

*e* is an iron band inserted on the inside of section A and outside of section B. The band *e* is fastened to the end of section A by screws. The band *d* plays between band *e* and the flap, the flap passing between the edges of bands *e* and *d*, and also lying flat on the inside of the edge of

section B, the leather flap being pressed water-tight by the passing force of the water, thus making a swivel of the three bands parallel to each other, one of which bands revolves between the other two, and the pressure of the water makes the two bands *d* and *e* also water-tight.

C represents another section of a pipe-elbow, as much smaller in diameter as the band *g*, through which band *g* the pipe C plays. The band *f* is fastened at the end of section C, and plays between bands *g* and *e*, a leather flap being arranged after the manner of the other elbow union at *b e d*.

I is a fastening passing half-way around the pipe, and to be securely bolted to planking or a log.

K is a socket wherein to insert the end of a lever for the purpose of turning the pipe C in any desired direction. The diaphragm L passes the length of the pipe C to prevent a circular motion of the water.

I am aware that expensive hydraulic machines have heretofore been made chiefly of cast-iron with central bolts and knuckle-joints, which resist and waste the force of the passing water. My machine avoids such obstacles.

Having thus described my invention, what I claim, and wish to secure by Letters Patent, is—

1. The combination of the section of pipe A with elbow-sections B and C, united by a joint constructed with metallic bands, and a flap of leather or other flexible material, arranged to render water-tight the seam of the bands with the pipe, and also the seams between the bands, substantially as above shown and described.

2. The combination, with the ends of pipe-sections, of bands forming a swivel or revolvable joint and leather or other flexible flap, rendering water-tight both the seams between the pipe and the bands and those between the bands themselves, substantially as herein shown and described.

JAY E. RUSSELL.

Witnesses:

E. G. RUSSELL,  
F. W. RIECHERS.