No. 708,900. Patented Sept. 9, 1902.

F. MURGATROYD.

REVOLVING STEAM CONNECTION.

(Application filed Feb. 7, 1902.)

(No Model.)

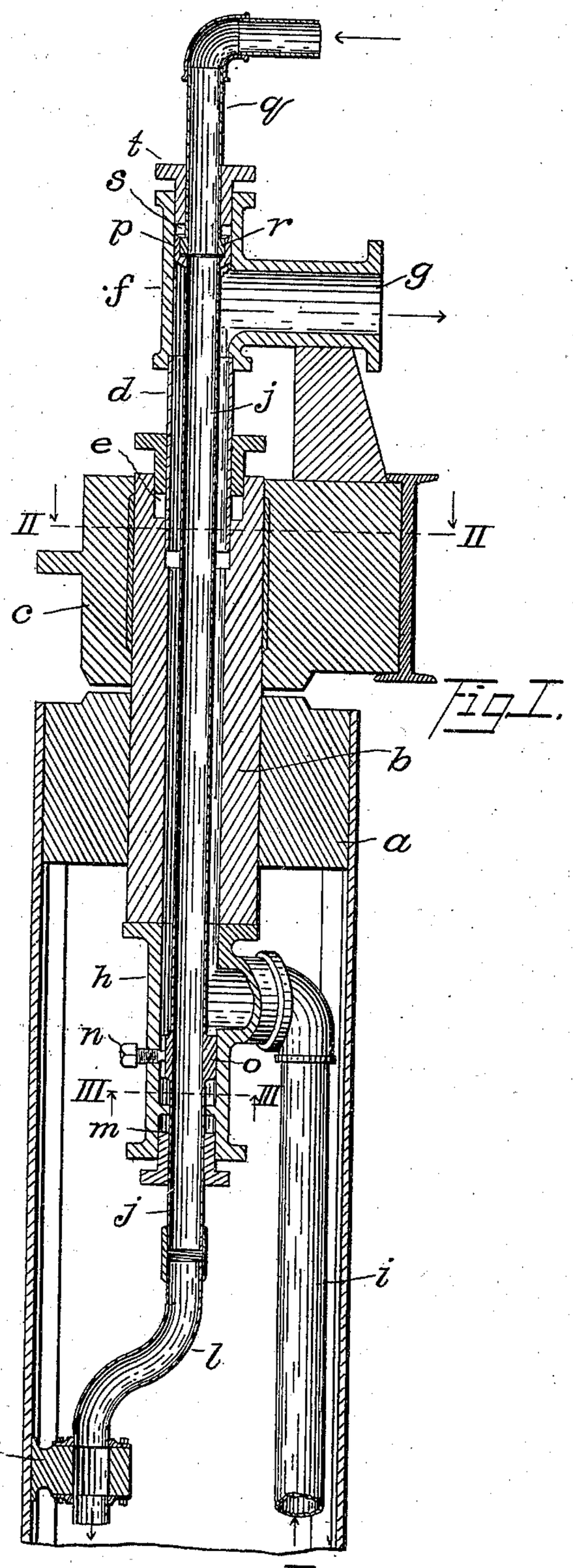

Fig. I.

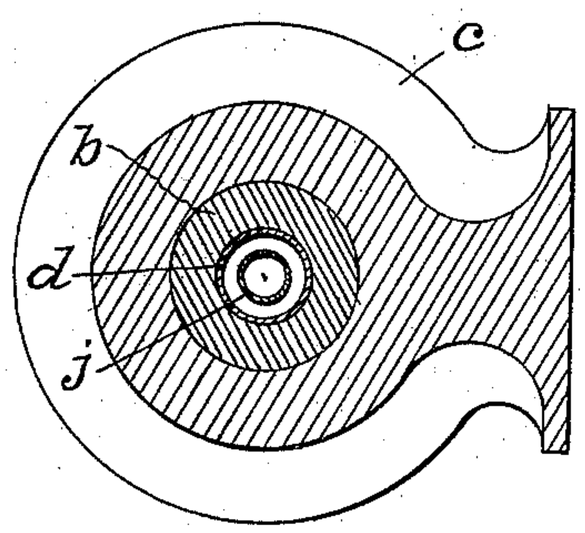

Fig. II.

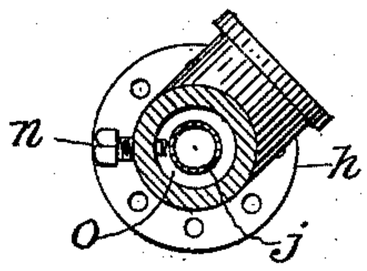

Fig. III.

Witnesses=
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UNITED STATES PATENT OFFICE.

FRANK MURGATROYD, OF CLEVELAND, OHIO.

REVOLVING STEAM CONNECTION.

SPECIFICATION forming part of Letters Patent No. 708,900, dated September 9, 1902.

Application filed February 7, 1902. Serial No. 92,999. (No model.)

To all whom it may concern:

Be it known that I, FRANK MURGATROYD, a citizen of the United States, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Revolving Steam Connections, of which the following is a specification.

The invention described herein relates to cranes and other revoluble machines into and out of the revolving portions of which it is necessary to convey steam or other gases or fluids.

It has been found in practice that in revolving machines which are subjected to sudden stresses or jars, such as hoisting-machines and especially cranes used in forges, the steam or other fluid connections are in danger of being broken. Therefore the object of the invention is to provide improved means for conveying said gases or fluids to and from such machines which will permit of some variations in the relative positions of the stationary and revolving parts, due to settling or jars or other causes, without straining said parts excessively and which will be simple and durable in construction and have all its parts which may occasionally need attention easily accessible.

Minor objects will become apparent from the description.

To these ends my invention consists in the novel features and combinations hereinafter described and claimed, an embodiment thereof as applied to a revoluble crane being illustrated in the accompanying drawings, in which—

Figure I is a sectional elevation showing live and exhaust steam connections. Fig. II is a section taken on line II II, and Fig. III is a section on line III III of Fig. I.

The reference-letter *a* indicates the mast of a crane provided with a journal block or trunnion *b*, projecting from its end and rigidly secured thereto. A stationary bearing-block *c*, fastened to some suitable part of a building or other structure made and provided therefor, is fitted to said journal and, together with a suitable base-bearing, (not shown,) serves to hold said crane in an upright position, while permitting it to revolve upon an axis passing through the centers of both of said bearings. The journal-block *b* is hollow throughout its length, and its upper end is counterbored concentric with its axis to receive the lower end of a pipe *d* and is also counterbored and provided with a gland to form a stuffing-box *e* for said pipe, which may be of the usual form, as plainly shown in Fig. I. The upper end of the pipe *d* is screw-threaded or otherwise firmly and tightly jointed to a stationary T *f*, having an outlet branch *g* for the exhaust-steam. The said member *f* is supported extraneously to the movable portions of the machine—as, for example, by a bracket projecting from the bearing-block *c*, as shown.

Jointed and securely attached by bolts or otherwise concentrically to the lower end of the journal-block *b* is another hollow T-shaped casting *h*, the lateral branch of which is connected with the exhaust-pipe *i*. Thus, it will readily be understood, a passage for exhaust-steam is provided from the pipe *i* through the T *h* and the journal-block *b*, which revolves with the crane, into and through the pipe *d* and the T *f*, which latter are held stationary upon the extraneous structure. The stuffing-box *e* prevents the escape of exhaust-steam at the joint between the fixed and movable parts, and the pipe *d* should have some range of longitudinal movement in the counterbore of the journal-block, so as to permit of variations in the relative positions of the said fixed and movable parts, which may occur through settling, jars, &c.

I will now proceed to describe the means for conducting live steam, or other fluid, into the revolving part of the machine. A tube *j* of a smaller diameter than the exhaust-passage is inserted through the axial bore of the journal-block *b* and the casting *h* and is supported and attached to the movable structure *a* in any suitable way, as by a bracket *k* and connecting-pipe *l*. A stuffing-box and gland *m* of the ordinary construction is provided in the lower end of the casting *h* to prevent exhaust-steam escaping around the tube *j*. Means, such as a set-screw *n*, in the casting *h*, engaging a longitudinal slot in a fixed collar *o* on the tube *j* below the exhaust-entrance to said casting, are employed to prevent the tube *j* turning relatively to the movable parts of the machine, and thereby unscrewing the joint between the pipes *j* and *l*; but while I

prefer this construction it is obvious to anyone skilled in the art that other well-known means may be substituted in place of said set-screw and collar to prevent the disjointing of pipes *j* and *l*. Upon the upper end of the tube *j* is formed a flaring socket *p*, the outside of which is fitted to slide snugly into the upper axial bore of the T *f* and rest normally somewhat above the exhaust-outlet *g*. The inlet-pipe *q*, which is preferably of the same diameter as the tube *j*, has a cylindrical collar *r* formed upon its lower end, turned to a close sliding fit in the socket *p*, and a gland *t* is fitted between the pipe *q* and the said bore of the T *f*, thus forming in the upper end of said T a stuffing-box *s*, which may be filled with suitable packing to prevent the escape of both the live steam from the joint between pipes *q* and *j* and exhaust-steam from the T *f*.

It will now be seen that the stationary pipe *q* and the revoluble pipes *j* and *l* form a conductor for steam or other fluid entering the machine and that such fluid is prevented from escaping by the stuffing-box *s*, and the exhaust or outgoing fluid is held from leakage around the tube *j* by the stuffing-boxes *s* and *m*, while at the same time the socket *p* is free to revolve between the collar *r* and the casting *f*. The journal-block *b* may also turn about the pipe *d*. It will also be seen that should the fixed and movable parts of the machine change somewhat their relative positions by reason of settling, jars, or other causes the collar *r* may slide somewhat upward or downward in the socket *p* without producing any undue strain upon the parts or leakage, and likewise the pipe *d* may slide upward or downward in the counterbore of the journal-block *b*.

It is obvious that the fluid may enter through what we have called the "exhaust-passages" and be discharged through the tube *j*, &c., if for any reason such a circulation should be desired.

Other modifications may be made in the details and application of the device provided the principles of construction set forth respectively in the following claims are employed.

I therefore particularly point out and distinctly claim as my invention—

1. In a fluid supplying and discharging device for revoluble machines, the combination with a hollow trunnion and a suitable bearing therefor, of a fixed discharge-pipe having a lateral outlet and inserted through a stuffing-box into the bore of said trunnion, a revoluble supply-tube passing axially through said discharge-pipe and trunnion and provided with a stuffing-box at the revoluble end of the discharge-passage, a stationary supply-tube communicating with the outer end of said revoluble tube, and a fluid-tight joint between said supply-tubes adapted to permit of both the revolution and a limited relative longitudinal movement of said revoluble tube, substantially as set forth.

2. In a fluid supplying and discharging device for revoluble machines, the combination with a hollow trunnion and a suitable bearing therefor, of a fixed discharge-pipe having a lateral outlet and inserted through a stuffing-box into the bore of said trunnion, a revoluble supply-tube passing axially through said discharge-pipe and trunnion provided with a stuffing-box at the revoluble end of the discharge-passage and having a socket formed upon its outer end, a stationary supply-tube having a cylindrical collar upon its inner end fitted to slide into said socket, and an open-ended stuffing-box fitted to receive said socket and adapted to prevent the escape of both the incoming and outgoing fluid, substantially as set forth.

3. In a fluid supplying and discharging device for revoluble machines, the combination with a hollow trunnion and a suitable bearing therefor, of a discharge-pipe inserted through a stuffing-box into the bore of said trunnion and having a fixed T upon its outer end, a lateral discharge-outlet and a stuffing-box for the supply-tube upon the inner end of said trunnion, a supply-tube carried by the revoluble portion of the machine passing axially through said inner stuffing-box, the bore of the trunnion and the discharge-pipe and terminating in a socket fitted to said fixed T beyond the lateral outlet thereof, a stationary supply-tube having a cylindrical collar upon its inner end fitted to slide into said socket, and a gland upon said stationary supply-tube adapted to hold suitable packing in the outer end of said fixed T against the joints formed by said collar and socket, substantially as set forth.

In testimony whereof I affix my signature in the presence of two subscribing witnesses, at Cleveland, Ohio, February 5, 1902.

FRANK MURGATROYD.

Witnesses:
JOHN T. SULLIVAN,
L. G. HOPPER.