No. 794,203. PATENTED JULY 11, 1905.

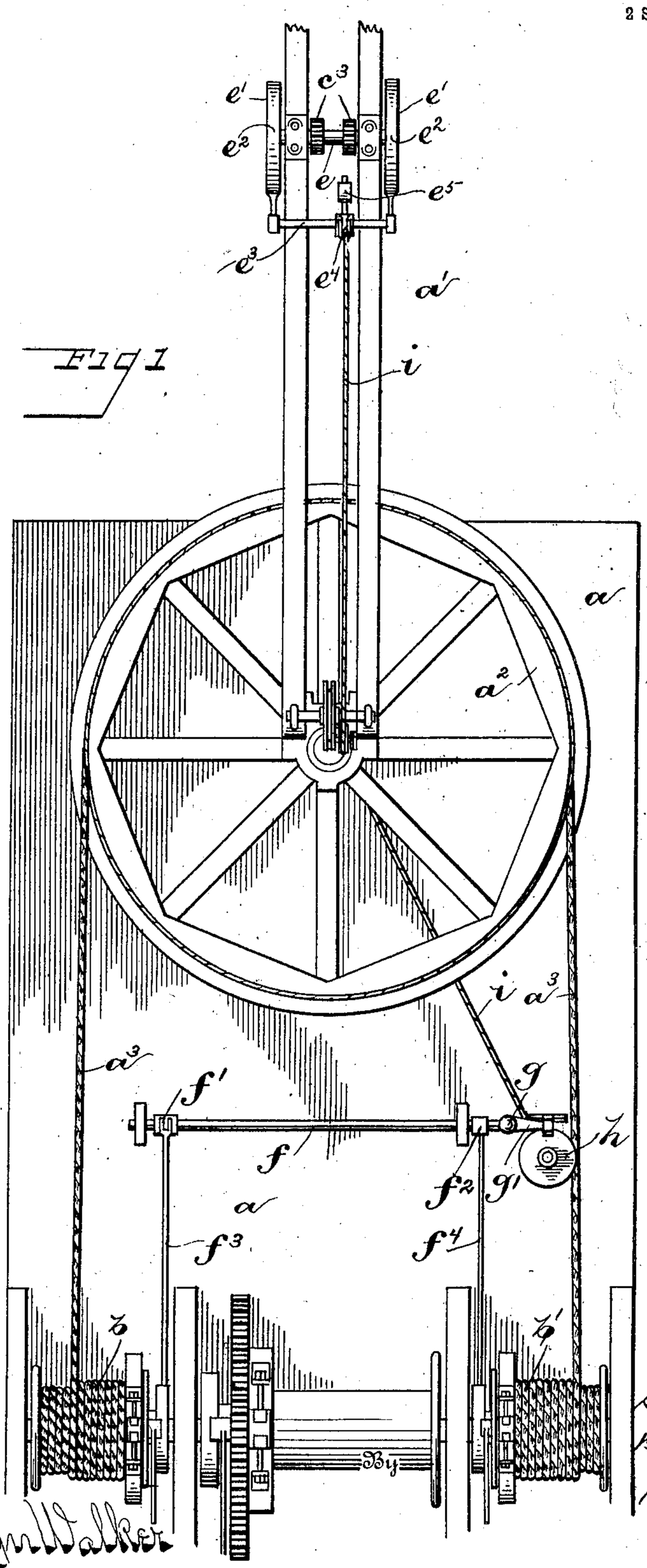
G. E. TURNER.

CONTROLLING MECHANISM.

APPLICATION FILED NOV. 21, 1904.

2 SHEETS—SHEET 1.

Fig 1



Witnesses

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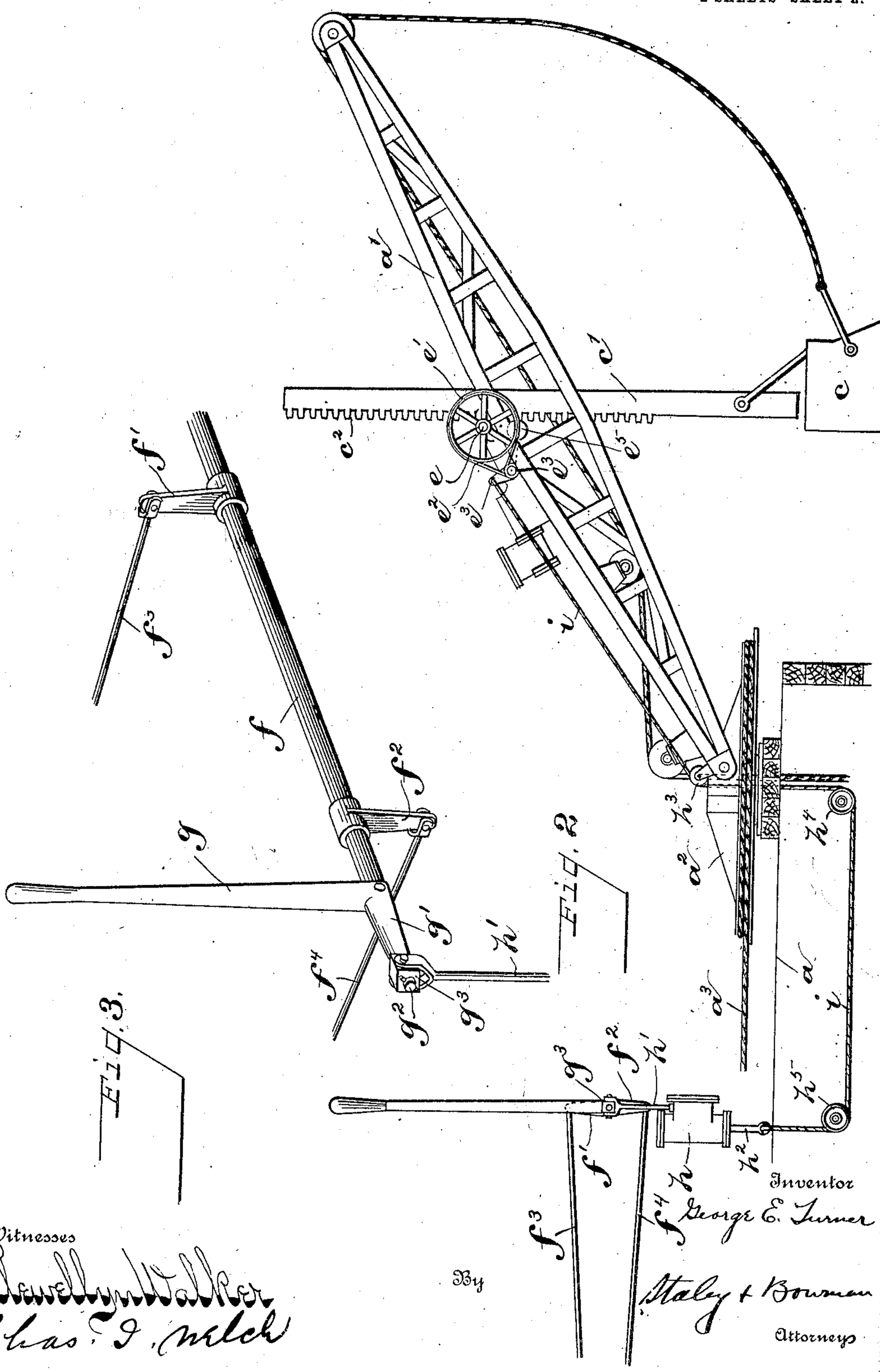

FIG. 2.

FIG. 3.

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No. 794,203. Patented July 11, 1905.

UNITED STATES PATENT OFFICE.

GEORGE E. TURNER, OF BELLEFONTAINE, OHIO.

CONTROLLING MECHANISM.

SPECIFICATION forming part of Letters Patent No. 794,203, dated July 11, 1905.

Application filed November 21, 1904. Serial No. 233,555.

To all whom it may concern:

Be it known that I, GEORGE E. TURNER, a citizen of the United States, residing at Bellefontaine, in the county of Logan and State of Ohio, have invented certain new and useful Improvements in Controlling Mechanism, of which the following is a specification.

My invention relates to controlling mechanism whereby a plurality of mechanical movements may be controlled by the operation of a single lever, and is particularly adapted for use in dredge-boat or steam-shovel construction.

The object of my invention is to greatly simplify the construction as well as the means and mode of operation of such machines, whereby they are not only cheapened, but are rendered more efficient by placing the controlling means of several operations under the constant control of the operator in a central position, enabling him to control the movements by various movements of a single lever which may be continuously retained in the grasp of the operator instead of shifting from one set of levers to another, thus adding to the safety of the device as well as the speed with which the various operations may be performed, and at the same time leave the other hand of the operator free to control various other movements by a corresponding lever.

With the above primary and other incidental objects in view my invention consists of the devices and parts or their equivalents hereinafter described, and set forth in the claims.

In the drawings, Figure 1 is a plan view of a portion of a dredge-boat, showing such parts of the apparatus as are necessary to exemplify my invention. Fig. 2 is a side elevation of a portion of the dredging apparatus, and Fig. 3 is a detail of the controlling-lever and connections.

Like parts are indicated by similar characters of reference throughout the several views.

The deck of the dredge-boat is indicated by the letter a.

a' is the boom, located upon a turn-table a^2 and adapted to be swung from side to side by the operation of a cable a^3, the opposite ends of which are secured upon the revoluble drums b b'. These drums are loose upon their driving-shaft, but adapted to be engaged therewith by suitable clutches.

c is the dipper, and c' the dipper-handle provided with the usual racks c^2, meshing with pinions c^3 on the shipper-shaft e.

It is desirable to control the descent of the dipper when dropped to its working position by suitable brake mechanism on the shipper-shaft and by the same means to oppose the inward thrust upon the dipper-handle as the dipper is hoisted. In the present device this is preferably done by one or more brake-wheels e' on the shipper-shaft e, each of which wheels is equipped with a friction-band e^2, adapted to be tightened by the oscillation of a rock-shaft e^3, located on the boom a' and adjacent to said brake-wheels. To provide means for either separately or simultaneously operating said rock-shaft and one or other of the drum-engaging clutches of the drums b b, there is provided a transverse shaft f, having suitable bearings and provided with both an upwardly-extending arm f' and a downwardly-extending arm f^2, which are respectively connected by links f^3 f^4 with the engaging clutches of the swinging drums b b'. Thus when the shaft f is oscillated in one direction one of said drum-clutches will be set and the other released. Upon the opposite oscillation of the shaft f the operation of the clutch mechanism will be reversed.

To oscillate the shaft f, a lever g is pivoted to the extremity of the shaft f, the axis of its pivotal connection being at right angles to the axis of the shaft. An arm g' extends laterally from the lever g, the longitudinal axis of which arm is normally coincident with that of the shaft f. The arm g' terminates in a trunnion g^2, on which is mounted a swivel-block g^3, having pivotally secured thereto the end of a valve-stem h' of a ram h. The rock-shaft e^3 is provided with a rock-arm e^4 and counterbalance e^5. A cable i is secured at one end to the rock-arm e^4 and at its opposite end to a piston-rod h^2 of the ram h. In the drawings the cable i is shown passing over a sheave h^3, thence through a central

opening in the turn-table a^2, over sheaves h^4 and h^5 to the piston-rod h^2. It is to be understood that this arrangement might be varied and the cable i conducted by suitably-arranged sheaves over the turn-table and to the piston-rod.

Referring to the drawings, the movement of the lever g forward from the perpendicular will cause the clutch mechanism of the drum b to be engaged, and the boom will swing to the left. The movement of the lever rearward from the perpendicular will set the clutch mechanism of the drum b' and move the boom to the right. The return of the lever g to the perpendicular will release either clutch which has been set, so that both drums are free, and the movement of the boom will stop. The lateral movement of the lever g, whatever the position it may occupy in relation to the vertical, will operate the valves of the ram h to admit steam or water, as the case may be, and cause the piston to move upwardly, which movement transmitted through the cable i will oscillate the rock-shaft e^3 to set the friction-bands e^2 upon the brake-wheels e'.

It will be seen that the operator by the use of one hand may move the boom in either direction and arrest the movement at the proper time and simultaneously hold or release the shipper-shaft mechanism, as desired, and that, further, any one of these operations may be performed singly and independently of the other operations.

Having thus described my invention, I claim—

1. In a machine as described, brake devices therefor, boom-swinging devices, a single lever for controlling the swinging movement of said boom devices and said brake devices, and connections between said lever and said brake devices for applying and releasing said brake during the swinging movement of said boom.

2. In a machine as described, boom-swinging devices, a brake device on said boom, a single controlling-lever for said boom-swinging and brake device, means for operating said brake by said lever simultaneously with the operation of the boom-swinging devices through the instrumentality of said lever, substantially as specified.

3. In a machine as described, a shipper-shaft, brake devices therefor, boom-swinging devices, a single controlling-lever for said boom-swinging and shipper-shaft brake devices, and connections between said controlling-lever and said devices, substantially as specified.

4. In a machine as described, a brake device, a ram for operating said brake device, means for swinging transversely said brake device, and a single controlling hand-lever, and connections between said hand-lever and said brake device whereby in moving the lever in one direction said brake will be moved transversely and moving the lever in a transverse direction will control said ram and thereby operate the brake device.

5. In a machine as described, shipper-shaft brake devices, boom-swinging devices, a single controlling-lever capable of movement in two directions, connections between said lever and boom-swinging devices adapted to operate said devices when the lever is moved in one direction, connections between said lever and shipper-shaft brake devices adapted to control said brake devices when said lever is moved at right angles to the boom-controlling movement, substantially as specified.

6. In a machine as described, boom-swinging devices, cable-operated brake devices for the shipper-shaft, a ram to operate said cable, a rock-shaft, oppositely-extending lateral arms on said rock-shaft, connections between said lateral arms and the boom-swinging devices, a hand-lever pivotally secured to the rock-shaft, its pivotal connection being at right angles to the axis of the rock-shaft, a lateral arm on said lever, a connection between said lever-arm and the controlling-valve of the ram, substantially as specified.

7. In a device as described, boom-swinging devices, brake devices for the shipper-shaft, a ram for operating said brake devices, a rock-shaft, a controlling-lever secured to said rock-shaft adapted to oscillate same but capable of a lateral movement independent of said rock-shaft, a connection between said rock-shaft and boom-swinging devices, a connection between said lever and said ram, substantially as specified.

8. In a machine as described, boom-controlling devices, dipper-controlling devices, a rock-shaft, a controlling-lever secured thereto and capable of movement in two directions, connections between said rock-shaft and boom-controlling devices, and connections between said controlling-lever and dipper-controlling devices, substantially as specified.

In testimony whereof I have hereunto set my hand this 15th day of November, A. D. 1904.

GEORGE E. TURNER.

Witnesses:
JOHN E. WEST,
R. F. TREMAIN.