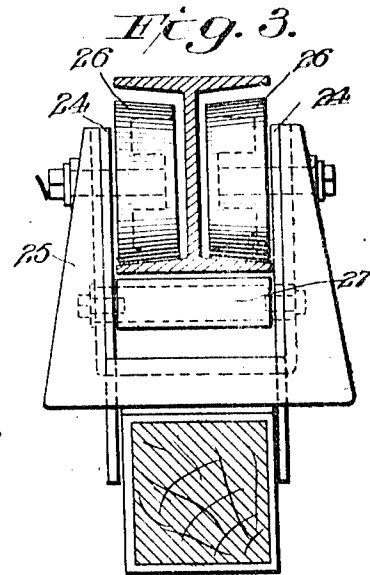
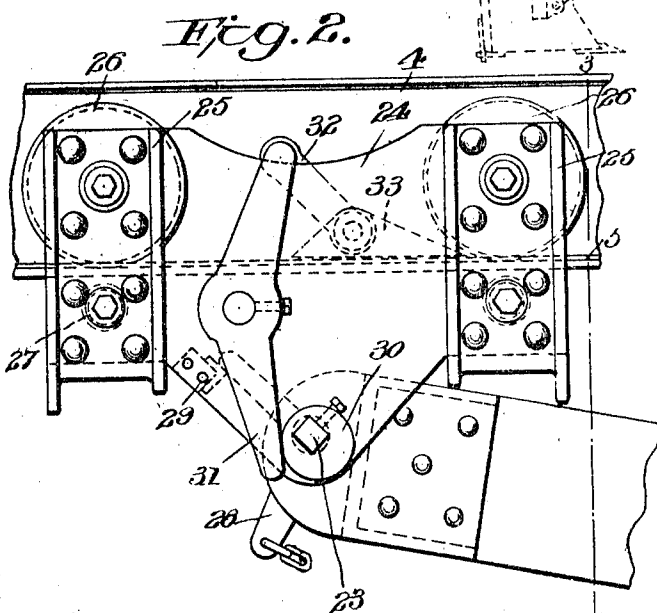
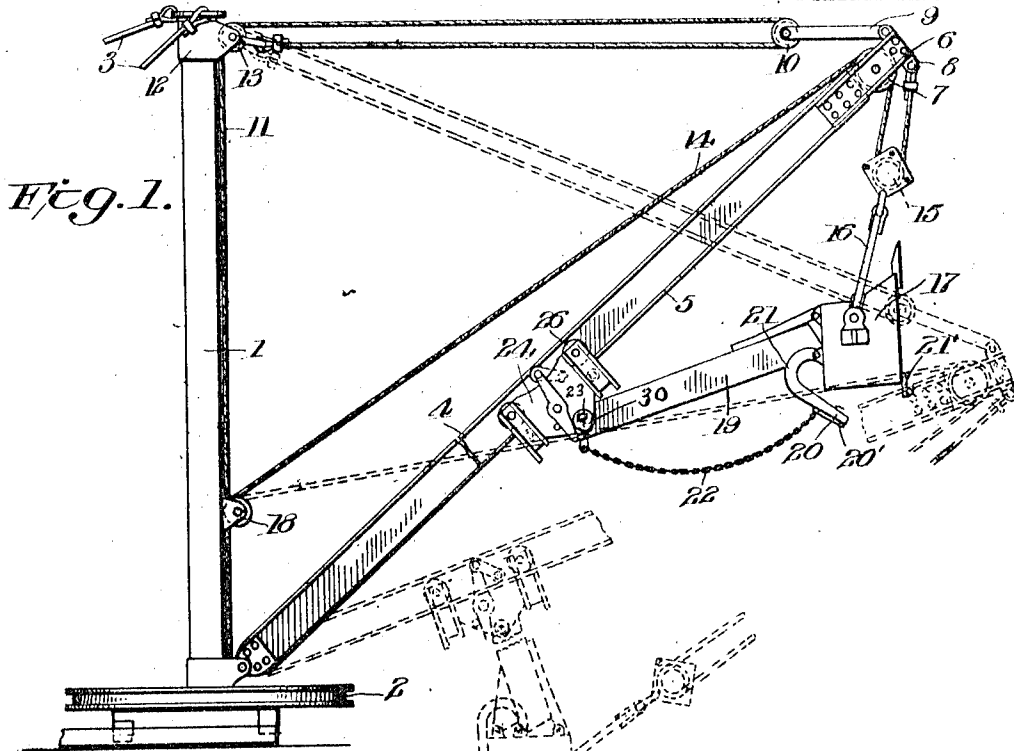


A. G. BANSMER.
EXCAVATOR.
APPLICATION FILED MAR. 7, 1912.

1,064,120.

Patented June 10, 1913.

2 SHEETS—SHEET 1.



WITNESSES

C. H. Wacker.
E. Williams.

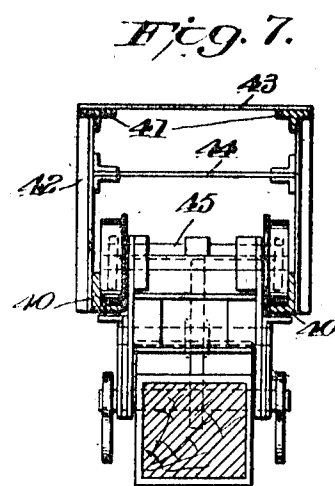
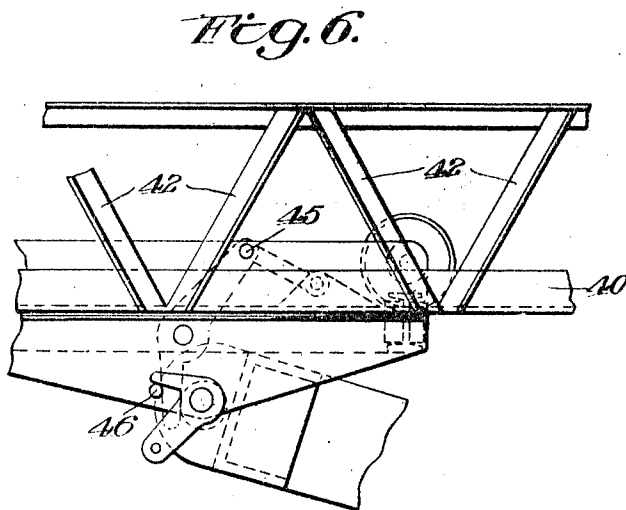
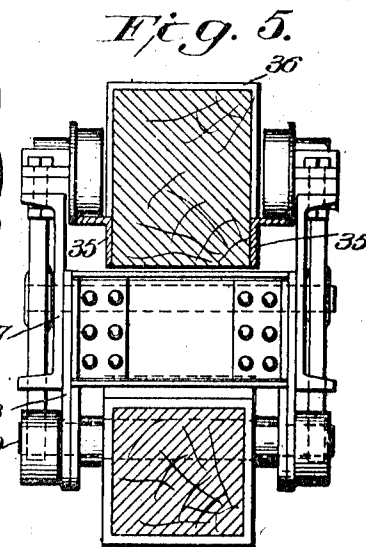
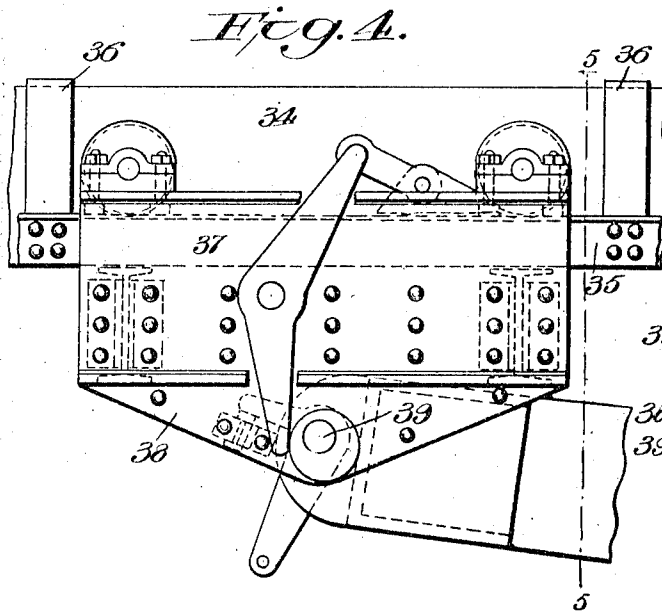
INVENTOR
Adolph G. Bansmer
By *Chas. E. Rindan* Attorney.

A. G. BANSMER.
EXCAVATOR.
APPLICATION FILED MAR. 7, 1912.

1,064,120.

Patented June 10, 1912.

2 SHEETS—SHEET 2.



WITNESSES

E. N. Walker.
E. Williams.

INVENTOR

Adolph G. Bansmer
By *Chas. H. Jordan* Attorney

UNITED STATES PATENT OFFICE.

ADOLPH GUSTAV BANSMER, OF BROOKLYN, NEW YORK.

EXCAVATOR.

1,064,120.

Specification of Letters Patent.

Patented June 10, 1913.

Application filed March 7, 1912. Serial No. 632,210.

To all whom it may concern:

Be it known that I, ADOLPH G. BANSMER, a subject of the Emperor of Germany, residing at Brooklyn, New York, have invented certain new and useful Improvements in Excavators, of which the following is a full, clear, and exact specification.

This invention relates to improvements in excavators, and its object is to provide improved means for automatically dumping the bucket, to provide improved means for locking the dipper arm to the boom at the desired point, and generally to improve the construction and arrangement of the parts to the end that the operation will be simplified and the durability and efficiency of the apparatus enhanced.

The invention will be first fully described with reference to the accompanying drawings, which are to be taken as a part hereof, and the novel features will be subsequently particularly pointed out in the appended claims.

In the drawings, wherein similar numerals of reference are used to indicate corresponding parts in each of the several views: Figure 1 is an elevation of an excavating apparatus embodying my invention, showing the scraping and dumping positions by dotted and full lines respectively; Fig. 2 is an enlarged side elevation of the carriage with adjacent portions of the boom and dipper arm; Fig. 3 is a transverse section on the line 3—3 of Fig. 2; Fig. 4 is a side view of a modified form of carriage; Fig. 5 is a transverse section on the line 5—5 of Fig. 4; and Figs. 6 and 7 are similar views of another modification.

An excavating apparatus of the type to which my invention appertains employs a mast 1, rising from a turntable 2, and secured by guy ropes 3 or other convenient or preferred form of braces. A boom 4 is hinged at its lower end to the lower end of the mast and this boom is constructed with longitudinal tracks 5 along its lower edge for the travel of the main rollers of the carriage. In the preferred form, the boom is I-shaped in cross section, as shown more clearly in Fig. 3, and to the opposite sides of the web or body at the upper end of the boom I secure the brackets 6, between which is journaled a pulley 7, and beyond the pulley a cross-bar 8 is secured to the brackets, an arm 9 being pivoted to the upper end of said cross bar. A pulley 10 is car-

ried by the free end of this arm and a cable 11 passes around said pulley, one end of the cable being secured to a block 12 at the upper end of the mast while the run of the cable extending from the sheave 10 passes over a sheave 13 carried by said block 12 and thence passes down the mast to be connected with the operating engine (not shown). A second cable 14 passes over the pulley 7 and has one end secured to the lower end of the cross bar 8, that portion of the cable between the cross bar 8 and the pulley 7 passing around a pulley 15 mounted on the bail 16, pivoted to and projecting forward from the front end of the scoop, scraper, dipper or bucket 17. From the pulley 7, the cable 14 passes to a pulley 18, on the mast, and thence passes to the operating engine.

The scoop or bucket 17 is carried by the lower end of a dipper arm 19 and the bottom wall 20 of the bucket constitutes a door to control the discharge of the material taken up by the bucket, being provided with side arms 21, overhanging the bucket and hinged or pivoted upon the upper edge of the same. A sliding bolt 20' is mounted on the door 20 and engages a keeper 21', on the bottom of the bucket, to hold the door normally in its closed position, and a chain 22 or other flexible connection is attached to the bolt and to devices at the upper end of the dipper arm for automatically releasing the bolt. The upper end of the dipper arm is secured to a pivot pin or rock shaft 23 which is rotatably mounted in the carriage. The carriage consists of side plates 24 arranged at opposite sides of the boom and secured, at their ends, to stirrups, hangers or brackets 25, which pass under the boom and up close to the sides thereof to furnish bearings for the supporting rollers or wheels 26, which run upon the tracks 5. Retaining rollers 27 are also provided at the ends of the carriage to engage the under side of the boom and thereby prevent the supporting rollers leaving the rails. The rock shaft or pivot pin 23 is mounted in and extends between the side plates 24, as will be understood, and an angle lever or trip 28 is loosely mounted on said shaft or pin, the chain 22 being attached to one arm of said trip and the other arm being arranged to impinge against a stop 29, in the form of a cross bar secured to and extending between the side plates of the carriage. It will be seen

at once that as the dipper arm is swung upward, the trip will be brought against the stop and thereby oscillated so that a pull will be exerted on the chain 22 and the bolt released to permit the door to open and the contents of the bucket to be discharged. On one end of the shaft or pivot 23, I provide a cam 30 arranged to bear against the lower end of a brake lever 31, which is fulcrumed upon one or both of the side plates 24, and projects above the upper edge thereof, the upper end of the lever being pivotally connected to the upper end of a link 32, which extends downwardly and forwardly between the side of the carriage and the boom and has its lower end pivoted to a brake shoe 33, arranged to bear upon the rail 5 and engage between the same and the forward supporting roller 26. It will readily be seen that when the dipper arm is raised, the cam will release the brake lever so that the brake shoe will be free and the carriage may then travel along the boom. As the dipper arm is returned to a perpendicular position, the cam will bear upon the brake lever and actuate the same to apply the brake shoe so that the carriage will be locked to the boom whereupon the bucket may be effectually operated to take up the dirt, gravel or other material to be moved. By properly governing the time and speed of operation of the cables 11 and 14 at the engine, the movement of the boom, the carriage, and the bucket may be so adjusted as to lock the carriage to the boom at any point along the same and discharge the contents of the bucket wherever desired.

It will be noted that I have produced an apparatus which is composed of few parts and that the parts are simple in construction and compactly arranged. The carriage is entirely automatic in its operation and is so combined with the boom that it can not slip transversely around the same and does not project therefrom in such a manner as to be liable to interfere with the operating cable or the dipper arm.

Should conditions require the use of a wooden boom, the construction shown in Figs. 4 and 5, may be employed. In this arrangement, the wooden boom 34 has angle bars 35, disposed along its sides at its lower edges to constitute track rails, these bars being rigidly secured to hangers 36 passed over the boom at intervals along the same. The side plates 37 of the carriage are in the form of channel bars connected at their ends by transverse I-beams which are arranged close to the under side of the boom to hold the supporting rollers on the track rails. Wings 38 are secured to and depend from the side plates to provide bearings for the rock shaft 39, upon which are mounted the dipper arm, the door-releasing trip, and the brake-controlling cam.

When the apparatus is to be subjected to very heavy strains, the construction shown in Figs. 6 and 7 may be employed. In this form, instead of a single I-beam, the boom is formed of a pair of angle bars 40, constituting the track rails, which are connected to the upper longitudinal bars 41, by truss bars or braces 42, disposed at the outer sides of the rails, the bars 41 being connected by cross braces 43. Additional cross braces 44 may be provided at an intermediate point between the rails, as shown best in Fig. 7, if deemed necessary.

It will readily be seen that the boom has an open bottom in this construction and the brake lever is, therefore, arranged centrally between the side plates of the carriage instead of outside the same. The pivot pin 45 inserted through the upper end of the lever is extended to the sides of the carriage and there connected to the links which carry the brake shoes. The trigger for discharging the contents of the bucket is arranged outside the carriage and may be duplicated at the two sides, the stop being in the form of a pin or lug 46, projecting from the side of the carriage.

The operation of the apparatus will be easily understood from the foregoing description. The parts being in the position shown in full lines in Fig. 1, if the cable 14 be gently slackened the carriage will descend on the boom to any desired point. When this point is reached, the cable is released so that the dipper arm swings to a position approximately at a right angle to the boom, thereby operating the brake so that further movement of the carriage along the boom will be prevented. The cable 11 is now paid out whereupon the boom will swing downward and rest upon the dipper arm, its weight serving to hold the bucket to its work. A forward pull upon the cable 14 will draw the bucket through the earth or material being moved until the bucket is filled and the boom is then drawn upward by means of the cable 11 at the proper period of the operation so that by the time the trip lever is actuated to release the door of the bucket, the bucket will have been swung to a position over the dumping point.

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

1. In an excavator, the combination of a boom having spaced longitudinal flanges, a carriage traveling on said flanges, a dipper arm pivotally hung on said carriage, a bucket carried by said arm, means for actuating the boom, means for operating the dipper arm and to effect movement of the carriage along the boom, and means controlled by the dipper arm for locking the carriage to the flanges on the boom.

2. In an excavator, the combination of a boom having spaced longitudinal flanges, a carriage traveling on said flanges, a dipper arm pivotally hung on said carriage, a bucket carried by said arm, means for actuating the boom, means for operating the dipper arm and to effect movement of the carriage along the boom, means controlled by the dipper arm for locking the carriage to the flanges of the boom, and means controlled by the dipper arm to discharge the contents of the bucket.

3. In an excavator, the combination of a boom, a carriage mounted to travel thereon, a dipper arm hung on the carriage, a bucket carried by said arm, means for actuating said arm, a closure for the bucket, a trip consisting of an angle lever mounted on the support for the dipper arm, a connection between one arm of said lever and the closure, and a stop on the carriage in the path of the other arm of the lever.

4. In an excavator, the combination of a boom, a carriage movable therealong, a brake lever fulcrumed on the carriage, a brake shoe connected with said lever and arranged to engage the boom, a dipper arm hung on the carriage, and means movable

with the dipper arm and bearing on the brake lever to actuate the same.

5. In an excavator, the combination of a boom, a carriage mounted to travel thereon, a brake lever on the carriage, a brake shoe connected to the upper end of the brake lever and adapted to engage the boom, a rock shaft journaled in the carriage, a dipper arm secured to said rock shaft, and a cam on said shaft bearing against the lower end of the brake lever.

6. In an excavator, the combination of a boom, having spaced longitudinal flanges, a carriage mounted to travel on said flanges, a brake lever on the carriage, a brake shoe connected to the upper end of the brake lever and adapted to engage the said flanges, a rock shaft journaled in the carriage, a dipper arm secured to said rock shaft, and a cam on said shaft bearing against the lower end of the brake lever.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

ADOLPH GUSTAV BANSMER.

Witnesses:

J. SCHAEFER, Jr.,
JACOB SCHAEFER.