

A. GIBB & T. G. MENZIES.
 SELF DISCHARGING SKIP.
 APPLICATION FILED JULY 22, 1910:

1,006,931.

Patented Oct. 24, 1911.
 3 SHEETS—SHEET 1.

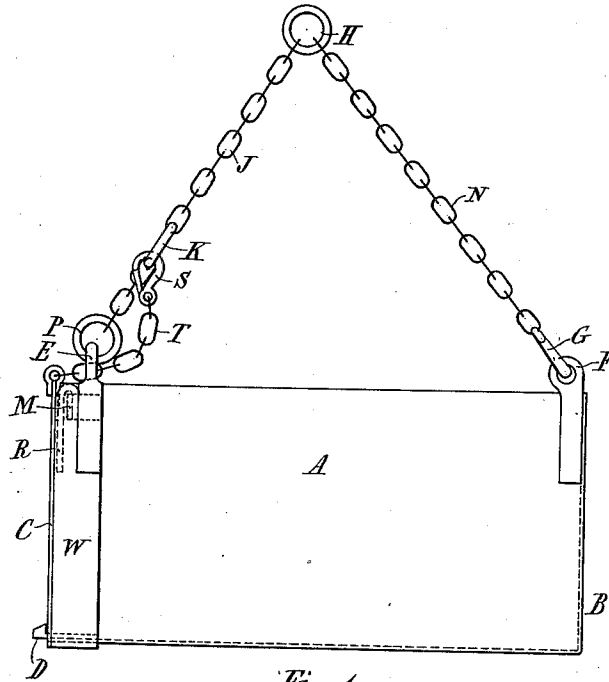


Fig. 1

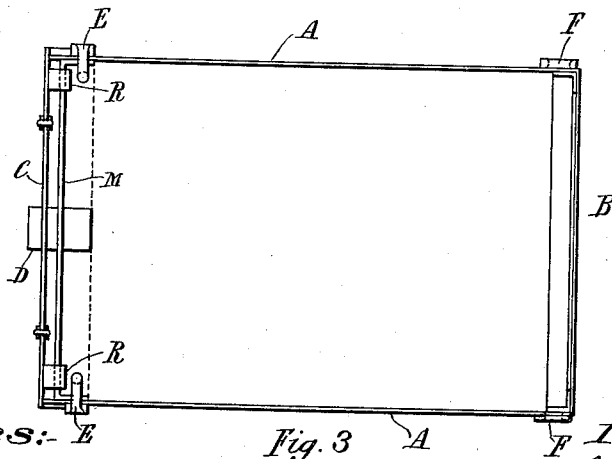


Fig. 3

Witnesses: E
 O. W. Holmgren,
 J. George Barry,

Inventors:
 Alexander Gibb &
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 by their attorneys
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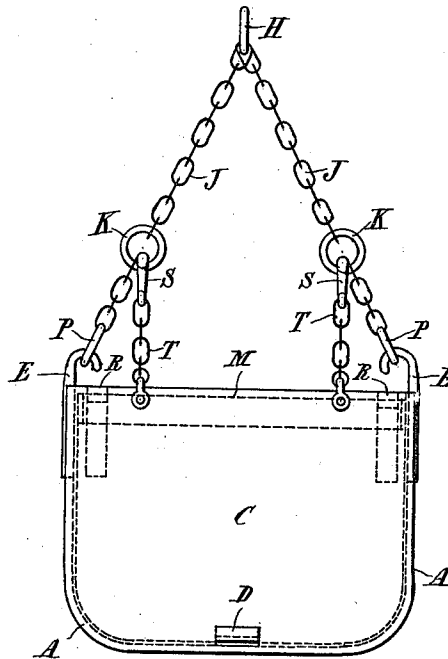


Fig. 2

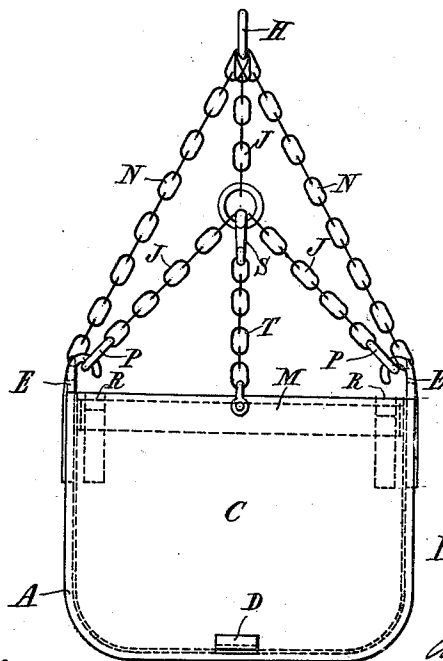


Fig. 4

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 O. W. Holmgren.
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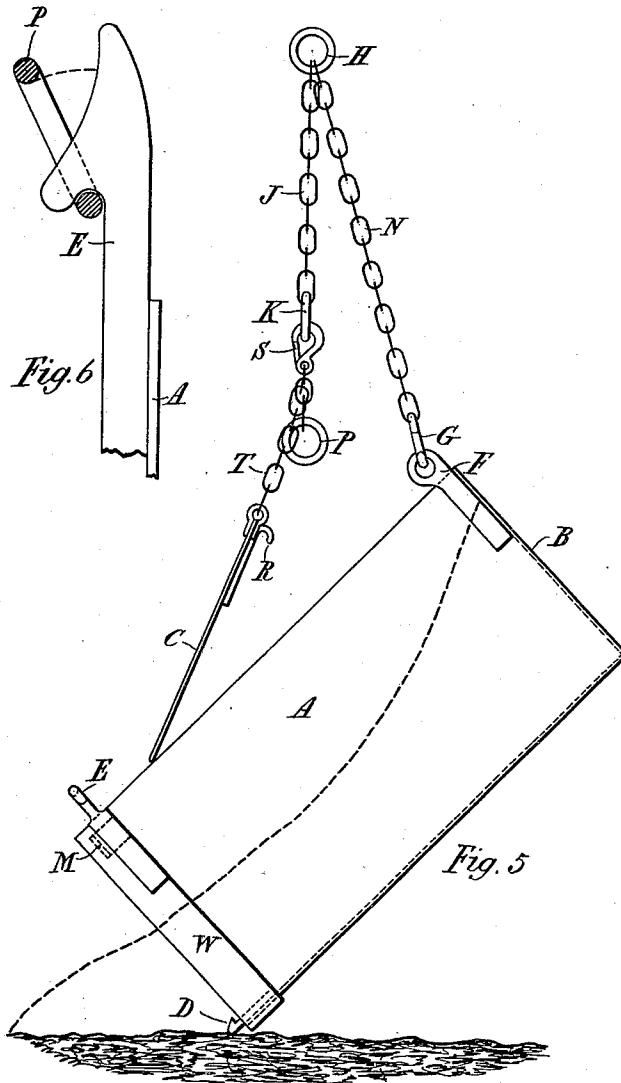
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3 SHEETS—SHEET 3.



Witnesses:

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UNITED STATES PATENT OFFICE.

ALEXANDER GIBB, OF PONTYPOOL, ENGLAND, AND THOMAS GRAHAM MENZIES, OF NORTH QUEENSFERRY, SCOTLAND.

SELF-DISCHARGING SKIP.

1,006,931.

Specification of Letters Patent.

Patented Oct. 24, 1911.

Application filed July 22, 1910. Serial No. 573,237.

To all whom it may concern:

Be it known that we, ALEXANDER GIBB and THOMAS GRAHAM MENZIES, civil engineers, subjects of the King of Great Britain, and residents, respectively, of Goytre House, Pontypool, Monmouthshire, Wales, and Ferry Craig, North Queensferry, Fifeshire, Scotland, have invented new and useful Improvements in Self - Discharging Skips, of which the following is a specification.

This invention relates to self discharging skips or buckets and is particularly applicable to the depositing of concrete under water.

The object of the present invention is to provide a skip which can be slung from a crane having a single hoisting and lowering rope, and which is so constructed and slung from the said crane that, on the skip being landed on the ground or other support, certain parts of the sling by which it is suspended are automatically released, thus enabling the skip to be tilted; a door in the skip to be automatically opened at the same time and the contents discharged very gently. The design of the skip is such that it can be very cheaply constructed, and it has no complicated parts liable to get out of order in the rough usage to which this class of machinery is subject.

The accompanying drawings illustrate the construction and mode of operation of the skip.

The same parts in each view are similarly lettered.

Figure 1. is a side elevation of the skip. Fig. 2. is an end elevation of the skip looking on the door end. Fig. 3. is a plan of the skip with chains removed for clearness. Fig. 4. is an end elevation viewed at the door end of the skip showing an alternative method of attaching the sling chains. Fig. 5. is a side elevation of the skip in the process of tipping and discharging its contents. Fig. 6. illustrates an alternative method of forming the hooks E. E.

The skip is built in rectangular box form, open at the top, by bending a single body plate A trough-wise and is closed permanently at one end by the plate B which is attached by angle irons and rivets to the body plate A. The other end of the skip is temporarily closed by the movable door C.

This door consists of a single plate large

enough to cover and fit snugly over the end of the skip. The door is provided at its upper edge with two hooks R. R. by means of which it is hung on a bar M which stretches across the door end of the skip and is attached at its ends to the body plate A. The lower edge of the door is notched to fit into the catch D which is attached to the bottom of the skip. It will be seen that the door is kept in place normally covering the end of the skip by means of the two hooks R. R. and the catch D. The door can only be removed by lifting it out of the catch D, this operation simultaneously disengaging the hooks R. R. from the bar M. Two short chains T. T. terminating in the spring hooks S. S. are also attached to the upper edge of the door as shown in Fig. 2. This arrangement may be replaced by the alternative method shown in Fig. 4 in which only one short chain T with spring hook S is attached to the middle of the top edge of the door C. The use of these chains and hooks will be described later.

The body of the skip is provided with two eye lugs F. F. permanently attached one on each side of the upper edge of the body plate A near to the permanently closed end. Two hooks E. E. are permanently attached also to the top edge of the body plate one on each side near the door end. These hooks are made in the form shown and it will be seen that the door end of the skip may be suspended by a bridle chain such as J. J. having two tails terminating in rings P. P. in which the hooks E. E. are hung. The construction is such that the rings P. P. will remain in position on the hooks E. E. when the tails J. J. are taut, but if the skip be permitted to rest on the ground or other support the tails J. J. will slacken, causing the rings P. P. to drop off the hooks E. E. An alternative form of hook as shown in Fig. 6 may be used in place of those marked E. E. The advantage of the hook as illustrated in Fig. 6 is that the ring P cannot fall over the shank when the chain is slackened, but must always fall clear on one side.

The door end of the skip may be reinforced by having a strip W riveted to the body plate A in the position shown.

In order to suspend the skip from a crane rope and operate it in the manner required, there is provided a bridle chain consisting of four tails J. J. and N. N. all springing

from one common apex ring H which is attached to the said crane hoisting and lowering rope. The tails N. N. terminate in spring hooks G. G. which are hooked one in each eye lug F. F. The tails J. J. terminate in rings as before described, also other rings K. K. are included in the tails J. J. in an intermediate position between the end rings P. P. and the apex ring H. The positions of the rings K. K. are such that the spring hooks S. S. at the ends of short chains T. T. which are securely attached to the door may be hooked into them when the bridle chain is taut. The skip is thus suspended in a horizontal position from its four corners when filled with material to be deposited.

The discharging operation is as follows:—
The skip is lowered on to the ground (or other support) and as the bridle chains slacken the rings P. P. fall off the hooks E. E. falling in toward the middle of the skip. The spring hooks G. G. and S. S. will remain attached respectively to the eye lugs F. F. and the rings K. K. If the bridle chain be now hauled taut and an attempt made to lift the skip by means of the crane from which it is suspended the pull will be exerted through the tails J. J. and the short chains T. T. on the door thus lifting it out of its fastenings at R. R. and D. and at the same time the closed end of the skip will be tilted up into the position shown in Fig. 5 thus permitting the contents to be gently tipped out. As hoisting continues the door end of the skip is gradually drawn back until the maximum angle of tilt is reached, when the skip begins to rise bodily off the ground, the door C hanging loose by the tails J. J. When the skip is landed to be refilled the spring hooks G. G. are released from the eyes F. F. leaving only the door C hanging on the bridle chain. The door can thus be easily directed and lowered into place. The spring hooks S. S. are then released from the rings K. K. leaving the bridle chain suspended from the crane and the skip ready to receive a fresh charge of concrete or other material. Using the alternative method of attaching the bridle chain as shown in Fig. 4, the mode of operation is similar to that above described, the only difference being that the door C is pulled open and suspended by one chain instead of two. This arrangement offers ad-

vantages in replacing the door when the skip has to rest on uneven ground and is thus leaning slightly to one side. It will be noticed that the tipping action can be carried out very gently, gradually spreading the contents out on the ground or floor. This is a very desirable feature when a skip is required to deposit concrete under water where much disturbance would cause the cement mortar to be washed away from the aggregates. The skip may be used for depositing other material such as earth, broken stone, ore, coal, grain, etc. The skip may be suspended and operated from any crane, derrick, or like hoisting machine. One bridle chain may be used for operating a number of skips, the bridle always being left on the crane hook when the skips are detached for filling.

The skip when used with solid materials to be deposited may have its door removed altogether if the material to be deposited is of such a nature that it will not be spilled when the skip is slung into the horizontal position. In this case, the skip would be slung by the four tails J. J. and N. N. respectively attached to the hooks E. E. and the eye lugs F. F. the rings K. K. not being used for any purpose in this instance. The tilting of the skip would be effected in the manner previously described.

What we claim, and desire to secure by Letters Patent of the United States is:—

A skip for discharging concrete, tails for suspending the skip at both ends from a suitable support, the tails at the front end of the skip being automatically detachable at points above the bottom of the skip, a door at the front end of the skip and a flexible door-opening connection connected to the door and the detachable tails and arranged to hang loosely when the skip is suspended by the tails at both ends and to tighten and open the door when the tails at the front end are detached, substantially as described.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

ALEXANDER GIBB.
THOMAS GRAHAM MENZIES.

Witnesses:

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JAMES R. MARR.