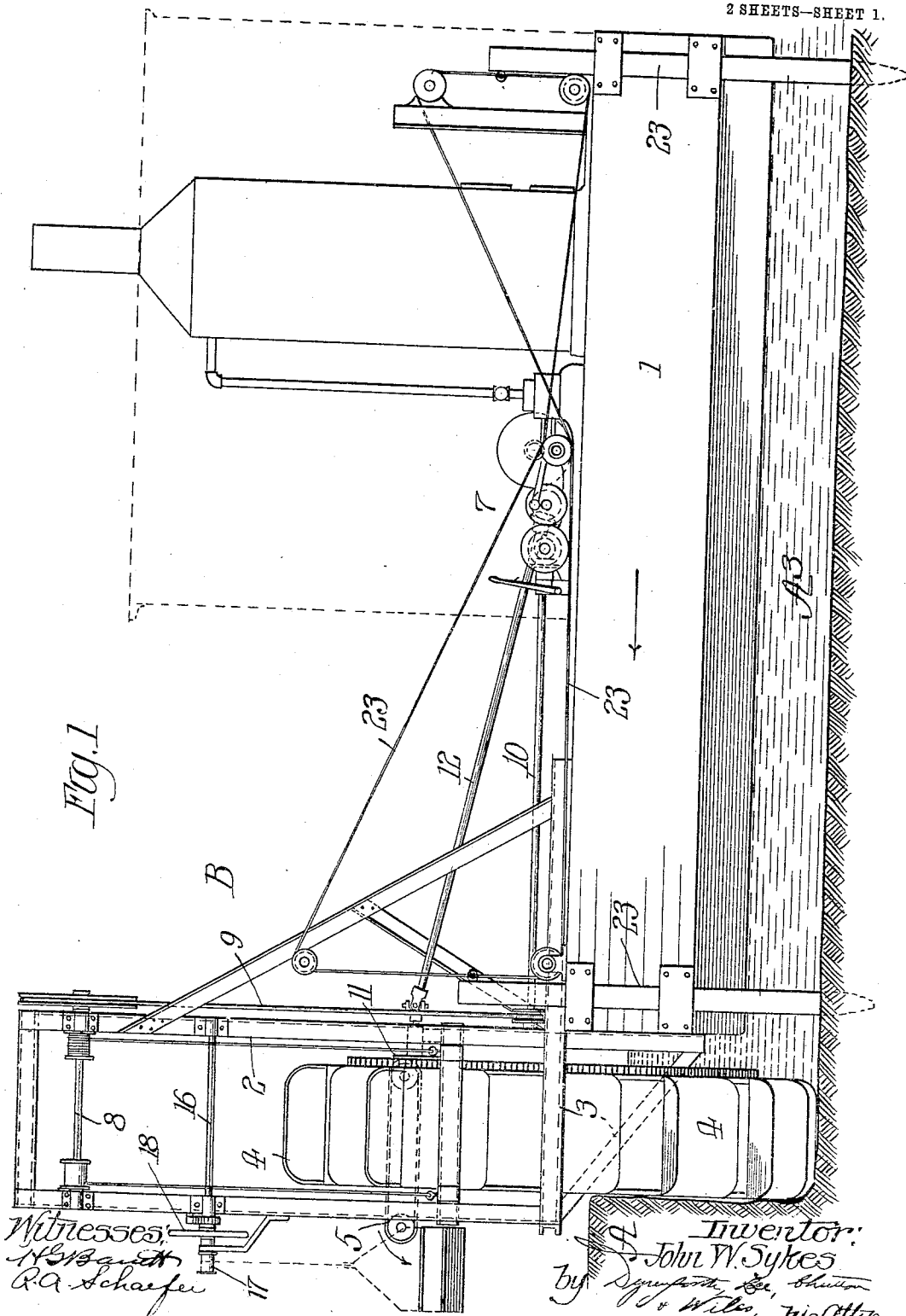


941,051.

J. W. SYKES.
DIKE BUILDING APPARATUS AND PROCESS.
APPLICATION FILED MAR. 30, 1908.

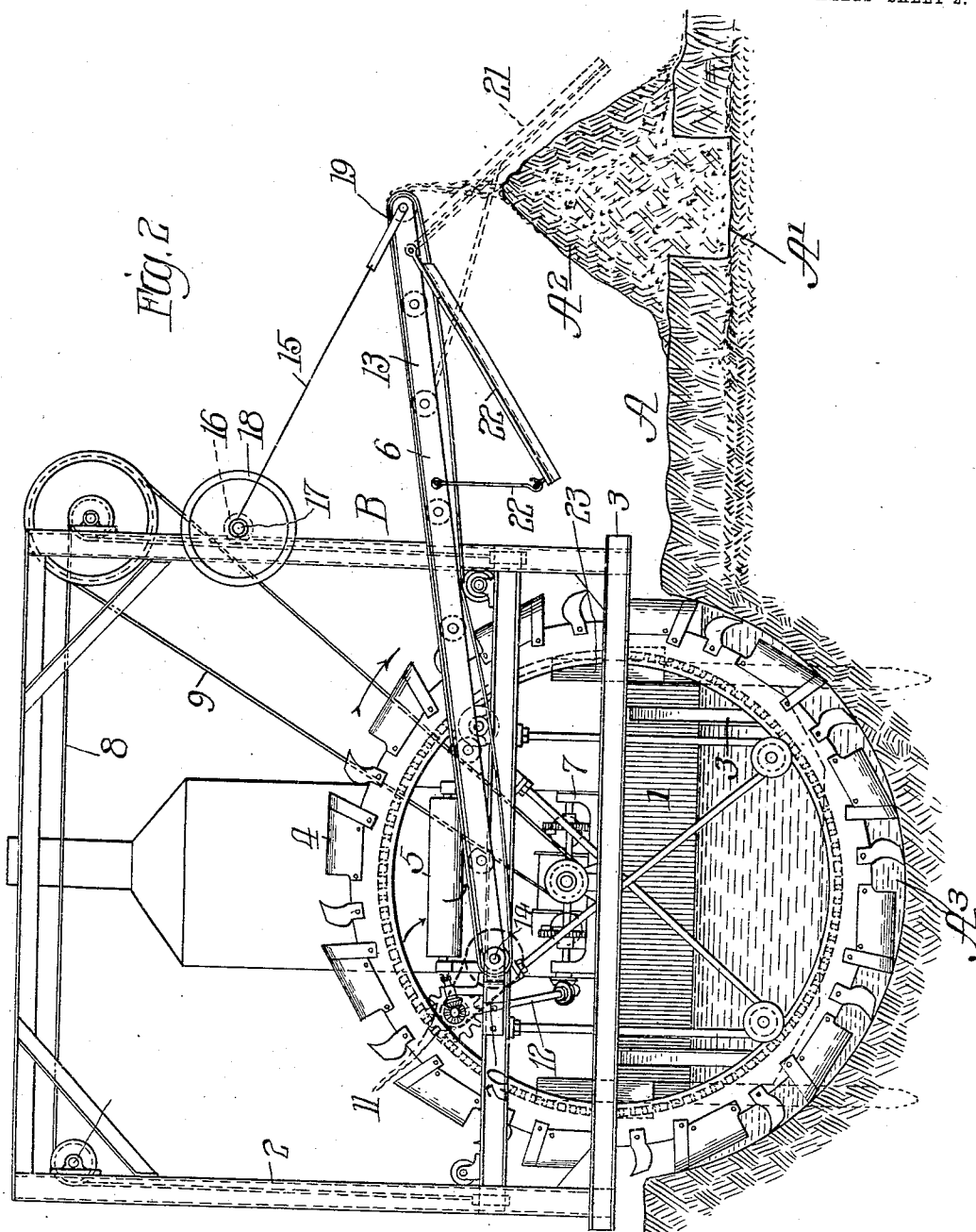
Patented Nov. 23, 1909.

2 SHEETS—SHEET 1.



941,051.

2 SHEETS—SHEET 2.



Witnesses:
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UNITED STATES PATENT OFFICE.

JOHN W. SYKES, OF CHICAGO, ILLINOIS.

DIKE-BUILDING APPARATUS AND PROCESS.

941,051.

Specification of Letters Patent.

Patented Nov. 23, 1909.

Application filed March 30, 1908. Serial No. 424,057.

To all whom it may concern:

Be it known that I, JOHN W. SYKES, a citizen of the United States, residing at 1879 West Taylor street, Chicago, in the county of Cook and State of Illinois, have invented a new and useful Improvement in DiKE-BUILDING Apparatus and Processes, of which the following is a specification.

My invention relates particularly to a method of and apparatus for building dikes; and my primary object is to provide a thoroughly practical and economical method of and apparatus for constructing dikes or embankments in swampy or marshy land.

It may be preliminarily stated that in certain sections of our country, notably in the Southern States, there are large areas of fertile land of swampy or marshy character which lies at or near sea-level (in some instances beneath sea-level).

It is the object of my invention to provide an economical method and means for effectively reclaiming lands of the character indicated. To enable lands of this character to be reclaimed, it is necessary to construct dikes or embankments for keeping out the water, to provide ditches into which the water may be drained, and to provide small drainage channels at close intervals, intercepting the ditches, provision being made, where it is impossible to provide for natural drainage, for pumping the water out of the inclosure formed by the dikes. In such districts the surface soils are usually of a very mushy or unstable consistency, and great difficulty has been experienced in constructing dikes at all suitable for the purpose intended. Heretofore, it has been the common practice to employ a dredging machine having buckets adapted to raise large chunks or sections of earth and drop the same along the line where the dike is to be formed. This method of operation results in the formation of a dike of very irregular form in cross-section, the tendency of the material being to spread out, or ooze in both directions laterally from the line where the material is dropped, so that it is practically impossible to secure a dike of desired height. Moreover, in practice, it is impossible to drop the material from the shovels with any desired degree of uniformity, so that great interstices result in the dike formation, rendering the dike ineffective for its purpose. In addition to this, there is a great waste of land, owing to the spreading tendency which re-

sults, both from the irregularity in dropping the shovelfuls and from the instability of the oozy, loose soil, which gives way under the weight of the heavy bucketfuls of material which are dropped.

According to the preferred method of practicing my invention, I cut a small channel through the top soil along the line which the dike is to occupy, removing the looser soils, usually of a peat-like formation and composed principally of decayed vegetable-matter, and then by means of suitable ditching apparatus, equipped with an endless conveyor, I construct a ditch and deposit the soil removed from this ditch, by a gradual dropping process, into the preparatorily excavated small channel, gradually building up the dike to the desired height above the surface of the land. In carrying out this process, the top layer of the earth, where the main ditch is being constructed, may be deposited at one side of the preparatorily formed small channel, and the firmer portions of the earth, which are excavated in the formation of the main ditch, may be dropped into the small channel and then built up into an embankment of desired height, thus providing a dike of desired consistency and providing against undesirable seepage. Moreover, in this method of formation of the dike, a key is provided at the base-portion of the dike, which is received by the preparatorily formed small ditch which has the effect of preventing undue spreading or shifting of the material of the dike. Preferably the ditching apparatus is mounted on the front end of a flat-boat or scow adapted to move in the main ditch, so that the apparatus will cut its own channel as the work proceeds. By preference, also, the ditching apparatus comprises a ditch-cutting wheel which revolves in a plane transverse to the longitudinal axis of the scow, so that a ditch having a semi-circular bottom may be formed, such ditches having the least tendency to fill in soils in which the apparatus is designed to operate.

My invention is illustrated in the accompanying drawings, in which—

Figure 1 represents a longitudinal sectional view of a ditch in process of formation, my improved apparatus being shown in side elevation; and Fig. 2, a cross-sectional view of the main ditch and dike, my improved apparatus being shown in front end elevation.

In the construction illustrated, A represents a section of earth; A¹ a preparatorily formed key-receiving channel; A², a dike in process of formation in and over the channel A¹; A³, a main ditch in process of formation parallel with the channel A¹; and B, my improved apparatus for digging the ditch and constructing the dike.

The small channel A¹ which is to receive the base of the dike or embankment may be preparatorily cut in any suitable manner.

The apparatus B preferably comprises a flat-boat or scow 1; a ditching wheel-frame 2 supported by brackets 3 at the front end of the scow; a transversely-disposed ditching-wheel 4 supported in the frame 2 and serving to deliver material cut from the ditch upon a small conveyer 5 disposed longitudinally with relation to the flat-boat; a transversely-disposed conveyer 6 supported on the frame 2 in advance thereof and serving to receive the material from the conveyer 5 and deliver the same laterally at some distance from the main channel; and a motor or engine 7 serving to operate the ditching apparatus.

The flat-boat 1 may be of any suitable construction, but should be large enough and strong enough to support the ditch-cutting apparatus in the manner illustrated. The frame 2 may be of any suitable construction. The ditching-wheel 4 may be raised and lowered in the frame 2 by means of hoisting mechanism 8 operated by a belt 9 connected with a pulley on a shaft 10 which is geared to the motor. The channel-cutting and earth-elevating wheel 4 is constructed in a well-understood manner, and operated by mechanism 11 having a shaft 12 geared to the motor.

The conveyer 6 comprises a frame 13 supported on a pivot 14 and having connected with its free end a cable 15 passing about a drum 16 on a shaft 17 which may be operated by a hand-rail 18; and an endless belt or conveyer 19 which is operated by a belt or sprocket-chain 20 connected with the wheel-operating mechanism 11, as indicated by dotted lines in Fig. 2. Pivotaly connected with the frame 13 near the free end of the lateral conveyer is a chute 21, which may be extended to occupy the position indicated by dotted lines in Fig. 2, or which may be folded with relation to the frame 13 and supported in an inoperative position, as indicated by the full lines in Fig. 2, by means of a hook 22.

The flat-boat is equipped with anchoring means 23, which may be of any suitable construction. No novelty for the anchoring means shown is claimed, and it is unnecessary to describe the same in detail.

Assuming the channel A¹ to have been preparatorily cut the apparatus B may be stationed in position to cut a ditch parallel

with the channel A¹ and deliver the material in and over the channel A¹. During the initial operation of lowering the cutting-wheel 4, the chute 21 may be extended to the position shown by dotted lines in Fig. 2, so that the surface cutting will be delivered at one side of the channel A¹, after which the chute 21 may be folded and the material allowed to drop in a continuous stream into and over the channel A¹, thereby forming a dike substantially as illustrated. After the wheel has been lowered the required distance it may be raised and the scow may be moved forward substantially the width of the cutting-wheel, whereupon the cutting operation may be repeated. In practice, the scow is usually supported on a body of water and cuts its own channel as the digging operation proceeds. The continuous delivery of the spoils in comparatively small pieces or chunks results in the formation of a closely compacted dike of a desired and uniform cross-section. Moreover, the dike, when formed in and over the small channel A¹, is strongly anchored in position, extending, as it does, to the bottom of or beneath the comparatively loose vegetable or peat formation, and is well calculated to prevent seepage of water. Furthermore, a dike may be constructed, according to my improved method, in regions where the old methods have proven wholly inadequate and impracticable, at very moderate expense. There is economy, also, in the practice of my improved method, owing to the fact that the material excavated is all utilized to the best advantage, and the dike and ditch therefore occupy a minimum area of land.

When it is considered that the low marshy grounds, usually submerged or partially submerged, which it is the object of my invention to reclaim, are of exceedingly rich soil, and when it is also borne in mind that lands may be reclaimed according to my improved method at an expense of only a few dollars per acre, the great value of my invention will be appreciated.

The foregoing detailed description is given for clearness of understanding only, and no undue limitation is to be understood therefrom.

What I regard as new and desire to secure by Letters Patent, is—

1. In apparatus for the purpose set forth, the combination with means for digging a ditch, of means for delivering the surface cuttings at a given distance from the ditch, and means for delivering the lower cuttings in a stream at a different distance from the ditch.

2. In apparatus for the purpose set forth, the combination with a boat, or scow, of a ditch-cutting and earth-elevating wheel supported at the front end of the scow and disposed in a transverse plane, a longitudinal

conveyer operative to deliver the dirt in front of said wheel, and a transverse conveyer located in front of said wheel and serving to receive the dirt from said first-named conveyer and deposit the same at one side of the ditch. 5

soil, and then excavating dirt at one side of said channel and delivering the same in a stream into and over said preparatorily formed channel. 10

JOHN W. SYKES.

Witnesses:

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3. The method of forming a dike in marshy land, which consists in preparatorily cutting a channel through the loose surface