TITLE: SECURE ACCESS MEANS

ABSTRACT: A gate assembly comprising a plurality of modular components dis-engageably engageable one with another; wherein each modular component is engageable with a further modular component by means of at least one spigot receivable into corresponding portions of respective modular components; and a supporting member; the arrangement being such that a selected number of said plurality of modular components engaged together and mounted on said supporting member provides a gate of a desired length, said length determined by the number of modular components and the number of spigots selected.
SECURE ACCESS MEANS

The present application relates to a secure access means for a site, for example a gate assembly provided to allow and restrict entry, in particular a gate assembly including a cantilevered gate.

Industrial or building sites generally have a perimeter fence to enclose and secure the site, including a gate to permit entry and exit. Such sites can vary in size from the very large to the very small, and can be intended to last for a few months to many years. When a site is designated for industrial or building use a first step is usually to prepare a perimeter fence and gate, such a fence and gate providing a minimum level of security for the site however large or long term the intended use. The gate is arguably the most complicated and the weakest point of such an enclosure mechanism and many gate systems are available, however there are a number of problems with current gate systems. For example, many gates are delivered and installed as prefabricated units, which are difficult and expensive to transport and handle, require specialist equipment or manpower to safely install, and, at the end of the life of the site, to remove. In addition, such prefabricated units do not allow for flexibility in the size of a gate, which can cause problems with some sites.

The present invention seeks to address the problems with known gates and provide a versatile, variable sized gate assembly which is simple and inexpensive to transport, requires little or no specialist equipment or manpower to safely install, can easily be safely removed as required, and is re-usable.

The present invention provides, according to a first aspect, a gate assembly comprising a plurality of modular components dis-engageably engageable one with another wherein each modular component is engageable with a further modular component by means of at least one spigot receivable into corresponding portions of respective modular components. The invention further provides a supporting member; the arrangement being such that a selected number of the plurality of modular components engaged together and mounted on the supporting member
provides a gate of a desired length, the length determined by the number of modular components and the number of spigots selected.

One embodiment of the invention provides for a gate assembly in which the gate is a cantilever gate, and the supporting member comprises at least one roller; the arrangement being such that with the plurality of modular components engaged together and mounted on the at least one roller, the engaged modular components are movable on the rollers to operate as a closure for an opening.

Preferably the gate assembly further comprising an upright for maintaining a vertical orientation of the mounted modular components, such that the engaged modular components are movable on the rollers in an orientation determined by the upright.

A second embodiment of the invention provides for a gate assembly in which the gate is a swing gate, and the supporting member is a gate post.

Preferably, in either embodiment, a majority of the modular components are substantially rectangular.

In addition, preferably the corresponding portions of the modular components comprise a top portion and/or a base portion.

Preferably the spigot includes flow drilled tapped hole openings created by friction drilling.

Preferably the spigot openings are adapted and positioned to bring modular components into desired alignment one with another.

Preferably, for a gate with rollers, attachments means are provided to attach the rollers to the ground.
Preferably the attachments means further includes a beam for attachment to the ground, and the rollers are attachable to the beam.

Preferably the beam is positioned in alignment with the upright and accordingly to the orientation of the gates.

Preferably the beam includes planar plates extending away from the beam for attachment of the rollers and/or the upright.

The arrangement in accordance with either embodiment may comprise a further upright, which may be distal the upright.

In accordance with the first embodiment the upright and/or the further upright preferably comprise a pair of columns and the modular components are received between the columns.

Preferably, in accordance with either embodiment, at least one of the spigots is a pivotable spigot.

Preferably the pivotable spigot is position-able adjacent a modular component.

Preferably an end module is pivotable about an adjacent module to provide a pivotable gate.

The gate assembly may further comprise a motor engaged with a modular component to move the gate assembly.

In accordance with the first embodiment the arrangement may be such that with the motor switched on the modular gate assembly is urged along the rollers. In addition, the modular gate assembly may be urged between the pair of pillars of said or of each upright.
Each modular component may include a channel in a base portion for engagement with the rollers.

A third embodiment of the invention provides for a kit of parts for assembling a closure, the kit of parts comprising a plurality of modular components dis-engageably engageable one with another, at least one spigot, and a supporting member. Each modular component is engageable with a further modular component by means of an at least one spigot receivable into corresponding portions of respective modular components. The arrangement is such that a selected number of the plurality of modular components engaged together by a required number of spigots and mounted on the supporting member provides a gate of a desired length, the length determined by the number of modular components and the number of spigots selected.

Preferably the modular components of the gate or the kit of parts comprise a plurality of types of modular components.

Preferably the plurality of types of modular components comprise modular components of different lengths.

Preferably the at least one spigot is selectable from a plurality of types of spigot.

Preferably the plurality of types of spigot include spigots of different lengths, and spigots with or without a pivotable portion.

Preferably the length of the gate is determined by the number and type of modular components, and the number and type of spigots, selected.

Preferred embodiments of the present invention will now be described by way of example only and with reference to the accompanying drawings in which:

Figure 1 shows a prior art cantilever gate,

Figure 2a shows a plan view of modular components of a cantilever gate assembly in accordance with one embodiment of the present invention,
Figure 2b shows a perspective view of the modular components of Figure 2a.

Figure 2c shows a plan view of a further component of the cantilever gate of Figure 2a.

Figure 2d shows a close up view of a portion of a modular component of Figure 2a.

Figure 2e shows a plan view of a portion of the modular components of Figure 2a.

Figure 2f shows a plan view of two further portions of the modular components of Figure 2a.

Figure 2g shows variable width gate modules connected together to provide a variable width gate.

Figure 3a shows a plan view of a base portion of the cantilever gate assembly in accordance with one embodiment of the present invention.

Figure 3b shows a perspective view of roller wheels mounted on the base portion of Figure 3a.

Figure 3c shows a close up view of the mounted roller wheels and base portion of Figure 3b.

Figure 4 shows a perspective view of a base portion attached to an upright.

Figure 5a shows a side view of a cantilever gate assembly of the present invention, with several modular portions joined together.

Figure 5b shows a perspective view of a cantilever gate assembly with several modular portions joined together.

Figure 6a shows a portion of the gate of Figures 5 a and b, including a swing gate attachment in a closed position.

Figure 6b shows the swing gate attachment of Figure 6a in an open position.

Figure 6c shows a detail of the attachment mechanism for the swing gate to a modular portion of the cantilever gate assembly of Figures 6 a and b.

Figure 6d shows the swing mechanism of Figures 6a to c, mounted on a gate portion.

Figure 6e shows the detail of Figure 6d mounted between modular portions of the cantilever gate assembly of Figure 6 a and 6b.

Figure 7a shows a plan view of a detail of a module of a cantilever gate assembly with a control box mounted thereon.
Figure 7b shows a perspective view of the detail of Figure 7a,
Figure 8 shows several modules of the cantilever gate assembly stacked for storage or transport.
Figure 9a shows a further embodiment of the present invention, including a shortened spigot attached to a gate post,
Figure 9b shows a gate module mounted on the shortened spigot of Figure 9a, and
Figure 9c shows several gate modules joined together and mounted on the shortened spigot of Figure 9a to form a longer swing gate.

Figure 1 shows an example of a prior art cantilever gate used as an access point for a site protected by a perimeter fence.

Figure 2a shows a portion of a modular cantilever gate assembly in accordance with a first embodiment of the present invention.

The cantilever gate assembly as shown in Figure 2a comprises a beam 50, an upright 70 attached to one end of the beam, and two modular components 2, attached one to the other, mounted on the beam 50. The beam, 50, is attached to the ground by conventional means and includes wheeled carriages or rollers 54, bolted or otherwise affixed thereto, at either end, one of which is obscured by the position of the gate module 2 positioned thereon. The beam and upright are positioned at one side of an opening for which the cantilever gate assembly provides a closure.

The first gate module 2, positioned on and obscuring one of the rollers, is a standard rectangular shape with a respective top 4 and base 8 portion forming two opposing sides of the rectangle, and with further connecting portions 14 forming the remaining two opposing sides of the rectangle, with intermediate reinforcing portions 6 extending between top 4 and base 8 portions to increase the strength and improve the security of the gate, without unduly increasing the weight of the gate.

The second gate module, positioned adjacent a first end of the first gate module, is similar to the first gate module but includes a sloped end 16 giving the second module
a roughly triangular shape. The second gate module, when provided as an end gate, is often conventionally shaped in a similar way, but it is contemplated that any shaped gate module may be provided as an end gate. An advantage of the present invention lies in many similar or identical gate modules being dis-engageably engageable, one to another, to provide a closure for an opening, or entry-way.

The second end of the first gate module 2 is shown with a spigot 12 extending out of the top 4 and base 8 portions, the spigot 12 provided to fix gate modules 2 together. Figure 2b shows a perspective view of the arrangement of Figure 2a. A further feature, channel 10, provided to base portion 8 can be seen more clearly from this perspective and is provided to fit around and engage with rollers 54, whereby the modular gate 2 can be urged in a direction parallel to beam 50 by contact of the internal surface of channel 10 with roller wheels 56, 57.

Figure 2c shows a spigot 12 in accordance with Figures 2a and b. As can be seen the spigot 12 comprises a hollow bar with a rectangular cross section and including fixing points 13, 15 on adjacent faces towards either end. Spigot 12 is preferably made from a suitably strong material such as a metal.

Figure 2d shows a detail of an end of a gate module 2, with a spigot 12 extending out of, for example, top portion 4. Openings are provided in the top portion 4 which match the openings 13, 15 of the spigot, and one such opening 21 may be seen in Figure 2d. Opening 21 provided in a side face of top portion 4 matches a corresponding opening 13 in spigot 12 and bolting the spigot to the top portion by means of opening 13 with opening 21, and by means of opening 15 with a corresponding opening in the top portion (not shown) provides for a secure fixing which maintains the connected modular gates in the same plane in a longitudinal and a vertical direction.

It is contemplated that friction drilling is employed to produce flow drilled tapped hole openings, and the spigot is flange bolted to the internal walls of top portion 4,
using for example serrated head flange bolts to lock tight and ensure a robust attachment.

Each joint fixing a spigot to a top 4 or base 8 portion of a module 2 therefore has a double wall thickness, improving the strength of such joints over conventional joints. In addition, providing fixing points on adjacent sides of the spigot, and top and base portions of the module 2, pulls the gate module 2 into alignment with the beam 50 in the plane of the gate module and holds the gate module in that position. Such a secure engagement of the gate modules together allows for many modules to be connected thus and further allows for a variable length gate which remains aligned with the beam in the plane of the gate.

Figure 2d also shows an opening 5 on a side 14, one or more of which may be utilised to bolt or otherwise further attach modules together.

Figure 2e shows a plan view of two modules 2, with end portions 14 adjacent and a spigot 12 extending outwardly and away from an open end of each of a top 4 and base 8 portion of a first of the two modules 2, towards a corresponding open end of a top 4 and base 8 portion of a second of the two modules 2. Openings 13, 15 can be seen on adjacent sides of the spigot 12 extending from the base 8 portion of the first module, with corresponding openings 21, 23 on base portion 8 of the base 8 portion of the second module. In addition, openings 5 can be seen in adjacent end portions 14 of each gate module.

Figure 2f shows alternative versions of spigots usable with gate modules of the present arrangement. Figure 2f shows a spigot which is longer, with optional openings intermediate the two ends of the spigot. The longer spigot shown in Figure 2f can provide a stronger attachment between two gate modules as it will extend further into at least one of the modules, rendering the resulting gate stronger. In addition, the longer spigot can extend the length of a gate a desired additional amount, as a pair of gate modules may be connected by such a longer spigot, with a portion of the spigot present outside the gate module openings, which means that the total length
of the gate is extended by the additional length of the second version of the spigot. In addition, a version of a spigot is shown which may connect two modules in which two conventional spigots are connected by a thinner portion, which allows the length of the spigot to be adjusted, and therefore which allows the gate length to be adjusted.

Also, the connection of a module to a gate post, for example via a spigot, may comprise alternative versions of spigots of an adjustable size. In this way the hinge connecting a gate with a post may be an adjustable distance from the post providing an adjustable sized gate to fit an opening. This provides versatility in the length of the final gate which is very desirable and useful.

Figure 2g shows a gate comprised of several gate modules, in which several of the modules are of a different size. In particular the general width of a gate module is contemplated to be a conventional 1000mm. Additional modules are available comprising 600mm or 300mm or such like, and use of a variety of gate modules with a variety of spigots can provide a gate which is very close to the exact size required. Indeed, the availability of modules of different size, together with the availability of spigots of different size, provides for a gate of a size almost exactly matching the requirements of any closure.

Figure 3a shows a beam 50 which forms a base of the cantilever gate assembly of the present invention. The beam 50 is a long, preferably metal, bar 40 with planar upper 41 and lower 43 surfaces, the lower surface 43 of which is suitable for, and intended to, rest upon the ground. At a first end 45 of the bar 40 the lower surface 43 extends on either side of the bar 40, outwardly and away from the bar to form a planar plate 42 with openings 44 suitable for bolting the plate to the ground. At the second end 47 of the bar 40 the lower surface 43 extends in a similar fashion but provides a larger planar plate 52 with openings 53 suitable for bolting the plate to the ground. With both sets of planar plates 42, 52 bolted or otherwise fixed to the ground, beam 50 provides a fixed, rigid base for the gate.

The upper surface 41 of the bar also extends outwardly and away from the beam 50 at respective ends 45, 47 into planar plates 48, each plate including openings 49
permitting attachment of items to the beam 50, for example wheeled carriages or rollers 54. Figure 3a shows planar plates 48 extending a small way along upper surface 41 of the bar, with six openings 49 to fix for example rollers to the plates at first end 45, and three openings 49 to fix for example rollers to the plates at second end 47. It is contemplated that the planar plate 48 at first end 45 may extend towards or beyond at least the middle of the bar in some embodiments. Extending the planar plate 48 adjacent first end 45 towards the middle of bar 40, including additional openings 49, provides for rollers 54 to be fixed to the bar at a position closer to end 47. For narrow entry-ways which have, in particular, restricted space for gate overhang, it is very convenient to be able to attach rollers at intermediate positions along the beam.

Alternatively, or in addition, beam 40 may be a variable length beam.

Second end 47 of beam 50 includes a T-section 46 extending adjacent planar plates 52, and including on a top surface further planar plates 74. Further planar plates 74 include openings 76 suitable for attachment of items such as upright 70.

Figure 3b shows the beam 50 of Figure 3a with rollers 54 mounted thereon, attached by means of bolts through openings 49 to planar plates 48 at respective ends 45, 47 of bar 40.

Figure 3c shows an end 45 of beam 50 with rollers 54 attached. The rollers are conventional and will not be discussed in detail, except to describe the four wheels 56 provided facing upwards with an axis of rotation perpendicular to a plane of the beam, and a further lateral wheel 57 with an axis of rotation parallel to a plane of the beam, and perpendicular to the axis of rotation of four wheels 56.

Figure 4 shows upright 70 mounted on planar plates 74 at second end 47 of beam 50, for example by bolting base portions 73 of upright 70 to plates 74 by means of openings 76, or by other suitable means. As can be seen upright 70 comprises two columns 72, preferably of a suitably strong material such as metal, each column 72
including a planar base portion 73 and connected together by a top portion 75 and base connector 77.

Figure 5a shows a cantilever gate assembly in accordance with the present invention with several modular gates 2 connected together, with a spigot 12 extending from a top 4 and base 8 portion of an end gate module 2. The modular gates 2 are connected, each to its neighbour, by means of a spigot 12, one end of which is inserted into a top 4 or base 8 portion of a gate module 2, the other end of which is inserted into a corresponding top 4 or base 8 portion of a neighbouring gate module 2. Each spigot 12 is bolted into position in, for example a top portion, through openings 23, 25 in said top portion, and by openings 13 and 15 positioned towards each end of the spigot, and into position in a respective base portion in a similar fashion. As discussed, it is contemplated that the openings are provided by friction drilling and the spigot flange bolted to the internal walls of top portion 4.

Figure 5a further shows upright 70 mounted on beam 50, with the several modular gates 2 positioned with channel 10 in each case engaged with rollers 54, not shown, the modular gates extending through the opening 78 of upright 70.

Figure 5b similarly shows a cantilever gate assembly with several modular gates 2 connected together and mounted on beam 50 with channel 10 engaged with rollers 54 and extending through the opening 78 of upright 70, in accordance with the present invention.

Figure 6 shows several modular gates 2 of the present invention joined together and pivot-ably attached, at one end, to a gate module 2 forming a swing gate.

The arrangement is more readily observed in Figure 6b, in which the swing gate is shown in an open position.

It is contemplated that the module forming the swing gate is similar to, and interchangeable with, any other of the modular gate portions 2 of the cantilever gate
assembly. The swing action of the gate is due to the nature of the spigot inserted into each of top 4 and base 8 portions of the last gate module and the swing gate.

Figure 6c shows a detail of a hinged spigot 27, in particular showing a first 112 and a second 114 portion, the first portion 112 including a planar extension 122 from one side which includes an opening, the second portion 114 including two parallel planar extensions 124 from a side both of which also include an opening. The arrangement is such that with the planar extension 122 of the first portion 112 substantially sandwiched between the two planar extensions 124 of the second portion 114 the openings are aligned and the two portions 112, 114 may be bolted together by inserting a bolt 120 into the openings and fixing the two portions 112, 114 together.

With the two portions 112, 114 fixed together by bolt 120 through the openings in planar extensions 122, 124 the two portions may pivot around the position of the bolt. In a first, closed position the two portions 112, 114 align to form a straight line, resulting in the swing gate remaining parallel to the modular gates. In a second, open position the two portions 112, 114 move rotatably out of planar alignment about the pivot point of bolt 120, and the swing gate moves out of the plane of the modular gate or gates.

Figure 6d shows a hinged, pivot-able spigot 27 with end 114 inserted into a top portion 4 of a modular gate 2, and flange-ably bolted thereto through openings 21, 23 in the top portion and openings 13, 15 in end 114 of spigot 12. Second end 112 extends outwardly from the top portion 4 of the modular gate 2, and may be connected to a further modular gate 2 to provide a swing gate.

Figure 6e provides further detail of the pivot point of the pivot-able spigot 27 rotatably connecting the two ends 112, 114 of the pivotal spigot together.

Figure 7a shows a motor unit attached to the beam 50, suitable to move modular gates 2 of the gate assembly through opening 78 of upright 70, to open and close the gate. Figure 7a further shows rack 11, attached to an exterior surface of channel 10, which
engages with a pinion (not shown) in the motorised unit. With the motor switched on
the gate is urged in a direction parallel to the beam, with roller wheels 56, 57 assisting
movement.

Figure 7b shows a perspective view of the motor unit attached to the beam 50. The
motor unit and utility thereof is conventional and will not be further discussed. The
cantilever gate assembly is adapted to include a motor plate which fits directly to the
support frame. The motor plate may be fitted to either side of the support frame, to
provide flexibility in respect of the direction for gate movement. In addition modular
gate portions 2 may be fitted either way round to maintain inside face bolt heads and
to ensure racking remain inside a perimeter.

Further conventional means are provided to each gate module 2 to provide additional
strength to the gate assembly and assist in the prevention of sagging where several
modules of the gate assembly are joined together.

Figure 8 shows several modular gates 2, stored for use or transport.

Figure 9a shows a further embodiment of the present invention in which a gate post
103 includes planar extensions 116 adjacent the top of the post and engaged with a
shortened spigot 28. Further planar extensions 116 (not shown) are positioned
adjacent the base of the post. Shortened spigot 28 is similar to a first portion 112 of
hinged spigot 27, and includes a planar extension 122.

Figure 9b shows a first end of top 4 and base 8 portions of a modular gate 2 mounted
on the shortened spigot 28 of Figure 9a, and a further shortened spigot 28 engaged
with the planar extensions 116 adjacent the base of the post, respectively. Planar
extensions 122 of respective shortened spigots 28 may be positioned between planar
extensions 116, suitably positioned on post 103 adjacent the top and base of the post.

A modular gate thus mounted rotates about a bolt 120, inserted through openings in
planar extensions 122, 124 to open and close the swing gate, respectively allowing
and preventing access through the entry-way.
Such a swing gate, attached directly to a pole by means of a shortened spigot, may include a single gate module 2 or, as is shown in Figure 9c, may include several gate modules 2 joined together as described herein.

In use, the components of the modular gate assembly can initially be stacked together and conveniently stored without taking up too much room. Figure 8 shows modular gates stored in a pile in a dismantled state.

When it becomes necessary to provide a gate, for example a gate in a perimeter fence, or other such, an estimate may be made as to the length of the opening or gate to be provided and the number, type and size of modular components may then be collected together, including the number of each size of gate portions and the number and arrangement of each spigot to be used to connect the gate portions together and to any posts, if used. The modular components may include, for a swing gate, at least one gate post, at least one modular gate portion 2, a variety of spigots as required for the width and nature of the opening to be closed, and any other equipment required to fix a gate post to the ground. Alternatively for a cantilever gate the modular components may include at least one upright 70, at least one modular gate portion 2, spigots 12, rollers 54, and optionally a beam 50 or plates 42, 52, and any other equipment required to fix the upright and rollers and/or beam, if needed, to the ground. The modular components thus collected may then be loaded onto a truck or van, either manually or using machinery.

On arrival at the site the modular components may be unloaded and a base established for the gate, or the cantilever gate assembly. The base is positioned at one side of the entry-way for which a closure is required. The base may be a concrete surface, upon which a gate post or the beam 50 may be affixed, for example by bolting or other means, or a flat portion for secure placement of plates 42, 52, if needed, either by forming concrete foundations on the ground for the plates, or by placing the plates on the ground and weights on the plates. For the cantilever gate assembly, once the base has been secured, the rollers 54 and upright 70 may be affixed thereto, either by bolting or other conventional means.
The modular gates 2 may then be assembled together to form a closure for the opening in the fence.

In particular, the number of modular gates 2 used is determined by the size of the opening, which in turn is determined by the size of the entry-way, and the sort of access required, i.e. whether access is required by very large machinery, lorries, cars, and/or people.

The size of the opening to be closed by the gate determines the modular gates used and also the spigots used to connect the gates together and to any posts, if used. In particular conventional, large modular gates may be connected together, and optionally narrower modular gates may also be used to extend the length of the gate a small amount. Alternatively, particular spigots may be selected to finely tune the gate length as required.

For a conventional swing gate a gate post is established at a desired position at one side of an opening. A first pair of spigots may be attached to respective portions of the gate post and inserted into open ends of respective top 4 and base 8 portions of a first gate module 2, and secured thereto by means of serrated head flange bolts inserted into each of opening 21 of the gate module 2 through opening 13 of the spigot, and opening 23 of the gate module 2 through opening 15 of the spigot. The bolts are then locked tight. A further gate module is selected and similarly attached to the gate module mounted on the gate post, this process is repeated until a desired gate length is achieved. The length of gate provided can be matched very accurately to the opening to be closed by the gate by selecting the appropriate combination of conventional gate lengths and narrower gate lengths and also by selecting appropriate spigots.

For a cantilever gate at least one upright 70 is provided in a suitable position at one side of an opening to be closed by the gate, in addition rollers 54 are positioned suitably on at least the same side of the opening as the upright, and all are secured to the ground. A first gate module 2 is then inserted into opening 78 of upright 70 with
channel 10 enclosing roller 54 adjacent upright 70. Spigots 12 are inserted into open ends of respective top 4 and base 8 portions of the first gate module, and secured thereto by means of serrated head flange bolts inserted into each of opening 21 of the gate module 2 through opening 13 of the spigot, and opening 23 of the gate module 2 through opening 15 of the spigot. The bolts are then locked tight.

The first gate module 2 is then urged through opening 78 of upright 70 and the exposed end of respective spigots 12 are inserted into top 4 and base 8 portions of a second gate module 2, with channel 10 of the second gate module 2 positioned to accommodate rollers 54. End 14 of the first gate module 2 adjacent end 14 of the second gate module 2 may then be fixed to end 14 of the second gate module by means of openings 5 in end 14, by conventional means for example by bolting, to more firmly secure the gate modules together.

This process may be repeated, with each additional gate module 2 urged through opening 78 of upright 70, additional spigots 12 inserted into open ends of top 4 and base 8 portions of the additional gate module 2 and secured thereto, and with adjacent ends 14 of neighbouring gate modules fixed together by conventional means. During this process rollers 54 adjacent upright 70 fit within channels 10 of respective additional gate modules 2, until a completed gate of a desired length is achieved. Conventional means may then be adopted to prevent the completed gate rolling off the assembly in either direction.

A gate of a desired length may be provided by selecting appropriately sized gate modules, for example conventional sized gate modules may be selected to obtain a gate of the approximately desired length, and then an additional, shorter module may be selected to increase the gate length as desired. In addition, or alternatively, spigots may be selected to connect the gate modules together, such that a larger spigot may be selected to connect two modules together to slightly increase the length of the gate.

An example of such larger spigots may be seen in figure 2f. A selection of gate modules of 1000m may be selected to achieve approximately the correct gate length, then a 600m or 300m module may be selected to extend the gate length further, and
finally a selection of standard and long spigots may be made for connecting the modules together to produce a gate of a length desired to form a closure for a desired opening.

Optionally, a swing gate may be provided on the cantilever gate. Often it is advantageous to provide a small entry for example for pedestrian access, or for cars or small vans, without engaging motor 60, in which case a hinged spigot 27 may be used to connect two gate modules 2 together. While gate modules 2 connected by spigots 12 are secured on the beam by channel 10 in rollers 54, and by the position of the gate module 2 within opening 78 of upright 70, any gate modules 2 attached after a hinged spigot 27 is used for connection can swing out of the plane of the gate to provide access to the site without using motor 60 or rollers 54.

It is usual to include one gate module 2 only for limited access by means of such a swing gate, but the present invention does allow for a larger gate if needed. In particular the closure may comprise only a swing gate, comprising one or more modules 2 engaged together by means of spigots 14.

A motor 60 may then be bolted onto a plate positioned onto the assembly, onto a selected side of the gate, and the necessary wiring of switches and provision of power attended to. Each gate module may be positioned so that the relevant rack 11 is in a position suitable for the motor, once provided.

The motor may be positioned at a variable height to improve the versatility of the gate assembly, in particular the length of the gate assembly, and the ease with which the motor may be positioned.

A wider opening may sometimes be required than is provided by installing and utilising a swing gate, in which case movement of the completed gate may be initiated. Such movement may utilise motor 60, or may simply be achieved by urging the completed gate over the rollers in the desired direction.
Further rollers 54 may be positioned at first end 45 of the beam, remote from upright 70 at second end 47 of the beam, to engage with a modular gate 2 as it passes along first rollers 54.

In addition, a further upright may be positioned remote from the first upright 70 and second end 47 of beam 40, to mark the end position of the gate, and to ensure secure closure when the span of the gate has been covered. Alternatively other means may be provided to secure the gate in a closed position.

Rollers 54 include wheels 56 with an axis of rotation perpendicular to the plane of the gate, in a direction broadly parallel to the ground, and a lateral wheel 57 with an axis of rotation parallel to the plane of the modular gate, in a direction broadly perpendicular to the ground. Wheels 56 and wheel 57 rotate freely as the internal surface of channel 10 moves, relative to the roller 54, in response to action of motor 60 or by gentle urging by other means in a direction parallel to beam 50.

With the modular gate components positioned thus, with gate modules 2 connected together via spigots 12, positioned over rollers 54 and within opening 78 of upright 70, the completed gate may be placed in a closed orientation positioned across a site entry-way, preventing access. An end of the modular gate may be inserted into an opening 78 of a second upright 70 at a second end of the site entry-way to secure the gate in position.

When access is required to the site, any utilised locking mechanism may be released and the gate opened. For a swing gate this may be initiated conventionally, or with a motor, and for a cantilever gate any motor unit may be engaged to initiate movement of the completed gate away from the second upright, or second end of the site entry-way, towards and through the first upright 70, towards a second, open orientation, where access through the entry-way is possible. The modular gate may move as far as is required or until the site entry-way is completely open.
The open orientation permits access to the site, with the size of the opening depending, for a cantilever gate, on the amount of movement of the completed gate. For access to people via a swing gate, the last modular gate may be connected to the remaining gates by a pivotable spigot 27, and when any locking mechanism is released the gate may rotate about the pivot point of the pivotable spigot and allow entry to the site. For access to vehicles or suchlike any locking mechanism may be released and the completed gate moved parallel to the beam, over the rollers and through the upright opening until the desired gap is achieved and the site entry-way is fully open.

When the need for a perimeter fence with gated access has ended, the modular components may be dismantled, the post or beam and rollers removed from the ground, and all the components loaded onto a van or lorry, without expensive or complicated machinery or personnel, and the components placed in storage until needed again.

The present invention allows a perimeter fence to secure a site and to restrict and permit entry via a gate across an entry-way, in which the width of the gate is not limited in length or by the conditions available for the gated area. A wide variety of lengths of entry-way can be accommodated, in a wide variety of types of soil or surface, in a wide variety of locations, and the time, cost and expertise of providing such a gate is significantly reduced over that currently available.

The invention has further advantages, for example if one or more gate modules 2 are damaged the module 2 may be removed and replaced simply, efficiently and cheaply. In addition, should the size of the gated area need to be adjusted, this can be accommodated very simply.

In addition, it is not possible to separate the modules when the gate is in a closed orientation, rendering the gate, and site, secure.
The invention is not restricted to details of the foregoing embodiment. For example for a cantilever gate a beam 50 may not be required, plates X and rollers Y may instead be attached directly to the ground; or a large detachable weight, placed on the ground, may be used to provide stability, with either the upright and plates attached thereto, or the weight placed on the plates.

While the spigot 12, hinged spigot 27, shortened hinged spigot 28, or other spigot used is flange bolted to an internal surface of the top portion 4, or base portion 9, other fixing means are contemplated.

The module used for the swing gate may include additional features to the remaining modules of the cantilever gate assembly, for example it may include a lock or attachment means, or be in some other way distinctive.

The module gates 2 shown in the drawings may be of any alternative design, providing for suitable entry restrictions. It is contemplated that the gate may be moved by means alternative to the motor unit, for example by manual or other suitable means.

For a swing gate a variable hanging height is contemplated, and reversible brackets are also contemplated for increased versatility. In addition, a catenary may be provided for the upper surface of the gate for improved security.
CLAIMS:

1. A gate assembly comprising:
   a plurality of modular components dis-engageably engageable one with another;
   wherein each modular component is engageable with a further modular component by means of at least one spigot receivable into corresponding portions of respective modular components; and
   a supporting member;
   the arrangement being such that a selected number of said plurality of modular components engaged together and mounted on said supporting member provides a gate of a desired length, said length determined by the number of modular components and the number of spigots selected.

2. A gate assembly as claimed in claim 1 wherein said gate is a cantilever gate.

3. A gate assembly as claimed in claim 2 wherein said supporting member comprises at least one roller;
   The arrangement being such that with said plurality of modular components engaged together and mounted on said at least one roller, said engaged modular components are movable on said rollers to operate as a closure for an opening.

4. A gate assembly as claimed in claim 3 further comprising an upright for maintaining a vertical orientation of said mounted modular components, and wherein said engaged modular components are movable on said rollers in an orientation determined by said upright.

5. A gate assembly as claimed in claim 1 wherein said gate is a swing gate.

6. A gate assembly as claimed in claim 5 wherein said supporting member is a gate post.
7. A gate assembly as claimed in claim 1 wherein a majority of said modular components are substantially rectangular.

8. A gate assembly as claimed in any one of the preceding claims wherein said corresponding portions comprise a top portion and/or a base portion.

9. A gate assembly as claimed in claim 1 wherein said spigot includes flow drilled tapped hole openings created by friction drilling.

10. A gate assembly as claimed in any one of the preceding claims wherein said spigot openings are adapted and positioned to bring modular components into desired alignment one with another.

11. A gate assembly as claimed in claim 3 further comprising attachments means to attach said rollers to the ground.

12. A gate assembly as claimed in claim 11 wherein said attachments means further includes a beam for attachment to the ground, wherein said rollers are attachable to said beam.

13. A gate assembly as claimed in claim 12 wherein said beam is positioned in alignment with said upright and accordingly to said orientation of said gates.

14. A gate assembly as claimed in claim 12 wherein said beam includes planar plates extending away from the beam for attachment of said rollers and/or said upright.

15. A gate assembly as claimed in claim 1 further comprising a further upright.

16. A gate assembly as claimed in claim 15, wherein said further upright is distal said upright.
17. A gate assembly as claimed in claim 15 wherein said upright and/or said further upright comprises a pair of columns and said modular components are received between said columns.

18. A gate assembly as claimed in claim 1, wherein at least one of said spigots is a pivotable spigot.

19. A gate assembly as claimed in claim 18, wherein said pivotable spigot is position-able adjacent a modular component.

20. A gate assembly as claimed in claim 19, wherein said end module is pivotable about an adjacent module to provide a pivotable gate.

21. A gate assembly as claimed in claim 3, further comprising a motor engaged with a modular component such that, with the motor switched on, the modular gate assembly is urged along the rollers.

22. A gate assembly as claimed in claim 21, where said modular gate assembly is urged between the pair of pillars of said or of each upright.

23. A gate assembly as claimed in claim 3, wherein each modular component includes a channel in a base portion for engagement with said rollers.

24. A kit of parts for assembling a closure, the kit of parts comprising:

   a plurality of modular components dis-engageably engageable one with another;

   at least one spigot, and

   a supporting member,

   wherein each modular component is engageable with a further modular component by means of said at least one spigot receivable into corresponding portions of respective modular components;
the arrangement being such that a selected number of said plurality of modular components engaged together by a required number of said spigots and mounted on said supporting member provides a gate of a desired length, said length determined by the number of modular components and the number of spigots selected.

25. A gate assembly as claimed in claim 1 or a kit of parts as claimed in claim 24, wherein said modular components comprise a plurality of types of modular components.

26. A gate assembly or kit of parts as claimed in claim 25, wherein said plurality of types of modular components comprise modular components of different lengths.

27. A gate assembly as claimed in claim 1 or a kit of parts as claimed in claim 24, wherein said at least one spigot is selectable from a plurality of types of spigot.

28. A gate assembly or kit of parts as claimed in claim 27 wherein said plurality of types of spigot include spigots of different lengths, and spigots with or without a pivotable portion.

29. A gate assembly as claimed in claim 1 or a kit of parts as claimed in claim 24, wherein said length of said gate is determined by the number and type of modular components, and the number and type of spigots, selected.

30. A gate assembly substantially as described in the accompanying specification.

31. A gate assembly substantially as described in the accompanying drawings.