To all whom it may concern:

Be it known that I, William S. Alexander, a citizen of the United States, residing at Esmere, in the county of New Castle and State of Delaware, have invented certain new and useful Improvements in Quick- Releasable Nuts and Bolts, of which the following is a specification, reference being had therein to the accompanying drawing.

My invention relates to a quick releasable nut and bolt and has for its principal object the construction of a nut and associated parts in such a manner that they may be easily and quickly applied to or removed from a bolt of ordinary construction.

A further object resides in the provision of a spacing member of novel construction which may be removed from the bolt independently of the nut.

My quick releasable nut and bolt is particularly adapted to be used in such places where it is desirable to quickly remove a nut without mutilating the threads of the bolt and nut so that both the nut and bolt, with their associated parts, may be used over a number of times. In ship building, metal building and bridge construction, concrete construction, and similar constructions, it is often necessary to temporarily apply nuts and bolts and it is desirable to be able to quickly release and remove the same, without mutilation, so that they may be used over a number of times. By having the parts quickly releasable, the person removing the same will not have to damage the parts and there will be a considerable saving, not only in labor but also in money from the fact that the parts may be used over a number of times.

It has been found, in using nuts and bolts of ordinary construction, that they will often bind and cannot be quickly removed. It has also been found that the person desiring to remove the same will often chisel or otherwise damage the parts so that it is necessary to throw them away, or will so mutilate the threads of the bolts that they cannot be used over again. It is to overcome these objections that I have perfected my invention and while I have illustrated and described the preferred embodiment thereof, it will be understood that such minor changes may be made as would fall within the scope of the appended claims.

In the drawings:

Fig. 1 is a longitudinal vertical section with parts in elevation.
Fig. 2 is a top plan.
Fig. 3 is a transverse section through the bolt showing a face view of the spacing member.
Fig. 4 is a transverse section through the bolt showing a front face view of the nut.
Fig. 5 is a longitudinal vertical section through the washer; and
Fig. 6 is a longitudinal vertical section through the nut.

In the drawings, 1 indicates a bolt having the enlarged head 4 and threaded portion 5. The bolt may be passed through any desired object indicated at 4 and will be held in position by the nut and associated parts to be described.

The nut is formed in two sections indicated at 5 and each section is provided with an exteriorly tapered shank 6 and with a semicircular threaded recess 7. A shoulder 8 is formed at the top of the tapered shank, of each section, and it will be understood that when the two sections are placed together they will form a complete nut with a threaded bore and with a circular exteriorly tapered shank.

In connection with the nut I use a washer 9 having a central tapered opening 10. This tapered opening is of sufficient size to receive and cooperate with the tapered shank of the nut in a manner to be described.

A spacing member 11 is adapted to be placed between the washer 9 and object 4, through which the bolt passes, and this spacing member is substantially U-shaped, as shown, of such a size as to fit around the bolt and of any desired thickness or length.

The tapering of the shank 6 of the nut and opening 10 in the washer 9 are such that, when the nut and washer are upon the bolt and tight against the end of the spacing member, a slight rotation of the nut will allow the release of the sections 5 from the threaded portion 3 of the bolt and allow the tapered shanks to be withdrawn from the tapered opening in the washer. I have found that by tapering the shank and opening at 30 degrees and providing eight threads to an inch, the parts may be quickly released and removed. However, I wish it understood that I do not limit myself to
this particular degree of tapering or to the number of threads to an inch. It will be further understood that the nut may be rotated independently of the washer or they may be rotated together. I have found that sometimes in removing the parts from the bolts, it is best to first rotate both the nut and washer and then the nut may be rotated independently.

In assembling, the bolt 1 will be placed through the object 4, with the head 2 engaging one face of the object. The spacing member 11 is then placed around the bolt with one end thereof engaging the face of the object. The washer 9 is then placed over the end of the bolt and engaged with the end of the spacing member and it will be understood that the tapered opening 10, in the washer, is of such diameter as to allow it to be freely placed over the bolt. The sections 8 of the nut are next placed in position, with their tapered shanks 6 entering the tapered opening of the washer, and the threads in the recesses 7 engaging the threaded portion 3 of the bolt. A slight rotation of the sections of the nut will bind the sections against the bolt with the tapered shank binding in the tapered opening. This will prevent the sections from being separated.

When it is desired to release, a slight rotation of the nut, in the opposite direction, will release the binding action and the sections of the nut quickly disengage from the bolt. As previously stated, if desired, initially both the nut and washer may be rotated together, and this will space the washer from the spacing member. This allows the washer to be slid from the shank of the nut and the sections removed. A still quicker way of releasing the parts is to first remove the U-shaped spacing member from the bolt. This can be done by hitting the opened end of the member with a hammer or other suitable object. After the spacing member has been removed the washer may be moved towards the head of the bolt and this will allow the sections of the nut to drop from the bolt. The shoulder 8 of the nut will limit the movement of the nut with respect to the washer and a sufficient portion of the nut will always protrude to be engaged by a wrench or other instrument. I preferably have the nut and washer of the same general outline in order that they might be engaged, if desired, by the same wrench or other instrument at the same time.

From the above it will be seen that I have provided means for easily and quickly releasing a nut from the bolt and that the nut and associated parts may be removed from the bolt without in any way damaging the parts. The several parts may be used over a number of times, thereby saving considerable expense in material as well as labor in the removal.

Hoping fully described my invention, what I claim as new and desire to secure by Letters Patent is:

1. A quick releasable nut and bolt comprising a threaded bolt, a washer provided with a tapered opening through which the bolt passes, and a sectional nut, said nut having a tapered shank adapted to be received in the tapered opening of the washer and rotatable independently of the washer.

2. A quick releasable nut and bolt comprising a threaded bolt, a washer provided with a tapered opening through which the bolt passes, and a sectional nut, said nut provided with a tapered shank adapted to be received in the tapered opening of the washer, and a portion adapted to overlie the entire outer face of the washer.

3. A quick releasable nut and bolt comprising a threaded bolt, a washer provided with a tapered opening through which the bolt passes, and a sectional nut, said nut provided with a tapered shank adapted to be received in the tapered opening of the washer, and a portion adapted to overlie the entire outer face of the washer, the edges of the overlying portions of the nut adapted to align with the edges of the washer.

4. A quick releasable nut and bolt comprising a threaded bolt, a washer provided with a tapered opening through which the bolt passes, and a sectional nut, said nut provided with a tapered shank adapted to cooperate with the tapered opening of the washer to engage the sections of the nut with the bolt, the taper of the opening and shank being at such a degree as to release the sections of the nut from the bolt and washer on a slight rotation of the nut independently of the washer.

5. A quick releasable nut and bolt comprising a threaded bolt, a washer having a tapered opening through which the bolt passes, a sectional nut having a tapered shank adapted to be received in the tapered opening of the washer, and a U-shaped spacing member adapted to partially surround the bolt and engage the opposite face of the washer.

6. A quick releasable nut and bolt comprising a threaded bolt, a washer having a tapered opening through which the bolt passes, and a nut having a tapered shank adapted to be received in the tapered opening of the washer, said nut having a flange formed entirely around its outer face and adapted to overlie the washer whereby the nut may be rotated independently of the washer.

In testimony whereof I hereunto affix my signature in the presence of two witnesses.

WILLIAM S. ALEXANDER.

Witnesses:
GEORGE M. PRINCE,
KATHARINE L. BOYS.